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**5.01 ENVIRONMENTAL STATEMENT CHAPTER 18: TRAFFIC
AND TRANSPORTATION**

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18 TRAFFIC AND TRANSPORTATION

18.1 Introduction

18.1.1 This chapter presents the assessment of likely significant environmental effects that would be a consequence of the changes in trips on the road and rail networks that would result from the Proposed Development on Traffic and Transportation based on the Core Planning Case. This chapter also includes sensitivity tests quantitative assessments of faster and slower growth assumptions and the implications of there being no widening of the M1 southbound carriageway before 2043. The results of these tests are set out in **Section 18.9**.

18.1.2 The documentation that has been prepared for the application of development consent for the Proposed Development includes a **Transport Assessment (TA) [TR020001/APP/7.02]**. This document describes the detailed analysis that has been undertaken to assess the impacts of the Proposed Development on all surface access transport modes, proposes measures to mitigate the impacts and assesses the operation of the mitigated transport network, and describes mitigation schemes. The mitigation measures take the form of both physical interventions and management of demand.

18.1.3 Another document that has been produced is the **Surface Access Strategy (SAS) [TR020001/APP/7.12]** which sets out the long-term vision and objectives for surface access, covering a 20-year time period, to guide the long-term growth of the airport. The surface access strategy's vision which is shown in **Figure 3.1** of that document is:

“The Applicant will work with partners to contribute towards high quality, efficient, reliable and sustainable surface access for all airport users, and provide for growth while supporting the needs of local communities.

The Applicant will make the best use of the existing runway to provide the maximum benefit to the local and subregional economy whilst actively managing surface access impacts in line with the commitment to responsible and sustainable development.”

18.1.4 There are five objectives that accompany the vision.

- a. increase air passenger public transport mode share;
- b. increase employee sustainable travel mode share;
- c. support Luton Borough Council's climate ambitions;
- d. strive to be the best possible neighbour to communities and authorities;
and
- e. contribute towards the local economy through multi-modal transport links.

18.1.5 The **Framework Travel Plan (FTP) [TR020001/APP/7.13]** sets out a framework for the content of travel plans to be produced every five years once the Proposed Development is approved. The document forms the delivery plan

of the **SAS [TR020001/APP/7.12]**, containing the longlist of interventions and measures, and targets. Surface access is also incorporated into **Green Controlled Growth Framework (GCGF) [TR020001/APP/7.08]** that sets out processes for monitoring and mitigating environmental effects in four environmental topics over ongoing operation of airport, based on defined legally binding Limits and Thresholds.

- 18.1.6 The **GCGF [TR020001/APP/7.08]** is a framework that has been developed since the 2019 statutory consultation took place to address the feedback received on environmental concerns, and the strong desire indicated by stakeholders for the airport to be more ambitious in its approach to reducing and mitigating the environmental effects of expansion. GCG focuses on four key environmental topics; aircraft noise, air quality, greenhouse gas emissions and surface access. The **GCGF [TR020001/APP/7.08]** contains a series of clearly specified 'Limits' for the environmental effects of the expanding, expanded, and lifetime operation of the airport. By enshrining these Limits within the DCO, the GCG Framework ensures that the actual effects of the Proposed Development as they manifest over time are monitored and timely measures are taken to ensure that those Limits are not exceeded.
- 18.1.7 The **EIA Scoping Opinion and Scoping Report [TR020001/APP/5.05]** sets out the proposed scope for the assessment of Traffic and Transportation effects. It described the proposed assessment of likely significant effects of the Proposed Development on the surrounding surface access network based on an assessment of the interaction between future development related movements and existing patterns of vehicular movement. Following the consideration of the responses from stakeholders, the assessment covers the following topics:
- a. severance;
 - b. driver stress and delay;
 - c. pedestrian delay;
 - d. pedestrian fear and intimidation;
 - e. accidents and safety; and
 - f. dangerous and hazardous loads.
- 18.1.8 The location of the airport with respect to the local and strategic transport networks is shown in **Figures 18.1** and **18.2** of this Environmental Statement (ES) **[TR020001/APP/5.03]** respectively.
- 18.1.9 Predictions of the distribution of future year trips on the transport networks are provided by an updated version of the Central Bedfordshire and Luton Traffic Model (CBLTM), both the Highway and Public Transport models. The CBLTM highway model has been amended to provide more detail of the networks around the airport and has included elements from Hertfordshire County Council's COMET transport model to extend the area over which the performance of the highway network can be assessed. The modified version of that model is referred to as the CBLTM-LTN; this is also referred to as the Strategic Model. Further information on the development of this model is

provided in **Chapter 9** of the **TA [TR020001/APP/7.02]**. The extent of the highway network that has been included in the CBLTM-LTN has been agreed as appropriate with the four highway authorities (National Highways, Luton Borough Council (LBC), Central Bedfordshire Council (CBC), and Hertfordshire County Council (HCC)) as part of the scoping exercise for the **TA [TR020001/APP/7.02]**.

- 18.1.10 The 'Do Something' scenarios for CBLTM-LTN include off-site highway improvements that have already been assessed as being required to cater for the additional traffic on the network and these are described in **Section 18.7**.
- 18.1.11 In addition to CBLTM-LTN that assesses strategic impacts, a smaller microsimulation model has been constructed using the VISSIM traffic simulation software, and this has been used to assess impacts on the road network local to the airport and assist in the determination of the nature and scale of the off-site highway works that are required as mitigation to accommodate the additional traffic associated with the Proposed Development.
- 18.1.12 A description of the existing and future mode share is provided in **Sections 6.2** and **9.5** of the **TA [TR020001/APP/7.02]**. The Applicant is committed to developing access to the airport by non-car modes. In recognition of this, the Applicant has developed the **FTP [TR020001/APP/7.13]** in support of the Proposed Development, and this sets out how staff and passenger mode share targets will be established for future years. It is assumed that without further expansion, the 'Do Minimum' scenario, the public transport mode share would be constant at 40% for passengers and 27% for staff in 2027, 2039 and 2043. This represents an improvement compared to share achieved in 2017 which is the base year for the Strategic and VISSIM models and is based on ongoing sustainable travel measures currently being implemented. With the Proposed Development in place, the 'Do Something' scenario, the non-sustainable travel mode share limit for passengers would be 60% by 2027 and 55% by 2039.
- 18.1.13 The assessment reported in this chapter considers the impact on the users of the transport network, both motorised and non-motorised, and the environment for those walking alongside or crossing the network.
- 18.1.14 The remainder of this chapter consists of:
- a. **Section 18.2** Legislation, policy and guidance relevant to the scope and methodology of the Traffic and Transportation assessment;
 - b. **Section 18.3** Scope of the assessment;
 - c. **Section 18.4** Stakeholder engagement undertaken to inform the assessment;
 - d. **Section 18.5** Methodology applied to the assessment;
 - e. **Section 18.6** Assumptions and limitations at this stage of work;
 - f. **Section 18.7** Baseline conditions;
 - g. **Section 18.8** Embedded and good practice mitigation;
 - h. **Section 18.9** Assessment;

- i. **Section 18.10** Additional mitigation;
- j. **Section 18.11** Residual effects;
- k. **Section 18.12** In-combination climate change;
- l. **Section 18.13** Monitoring; and
- m. **Section 18.14** Assessment summary.

18.2 Legislation, policy and guidance

18.2.1 This section identifies the key legislation, policy, and guidance relevant to the scope and methodology for the Traffic and Transportation assessment which may influence the type of mitigation measures that could be incorporated into the Proposed Development during construction or operation.

18.2.2 **Table 18.1** to **Table 18.3** provide descriptions of the relevant policy and guidance, and where each of these have been addressed in the ES.

Legislation

18.2.3 There are no specific legal requirements in relation to Traffic and Transport assessment scope or methodology.

Policy

18.2.4 **Table 18.1** sets out all key policy and describes how and where the ES has responded to it. The relevant documents are:

- a. National Planning Policy Framework, 2021 (Ref. 18.1);
- b. Aviation Policy Framework, 2013 (Ref. 18.2);
- c. Airports National Policy Statement (Ref. 18.3);
- d. National Policy Statement for National Networks (Ref. 18.4);
- e. DfT Circular 02/2013, The Strategic Road Network and the delivery of sustainable development (Ref. 18.5)
- f. Luton Local Transport Plan 2011-2026 (Ref. 18.6);
- g. Luton Borough Council Local Plan 2011-2031 (Ref. 18.7);
- h. Hertfordshire Local Transport Plan (2018-2031) (Ref. 18.8);
- i. Central Bedfordshire Local Plan 2015-2035 (Ref. 18.9)
- j. North Hertfordshire District Council Local Plan 2011-2031(Ref. 18.10); and
- k. Dacorum Borough Council Core Strategy 2006-2031 (Adopted 25 September 2013) (Ref.18.11)

Table 18.1: Traffic and Transportation policy

Policy	How and where addressed in ES
<p>National Planning Policy Framework, 2021</p> <p>The National Planning Policy Framework sets out the Government’s planning policies for England and how these should be applied. Chapter 9 has the title “Promoting sustainable transport” and the first paragraph sets out a number of transport issues that should be considered</p>	<p>Surface transport has been a fundamental consideration in planning for the potential growth of the airport. The surface access strategy as described in the SAS [TR020001/APP/7.12] revolves around increasing the proportion of air passengers travelling to and from the airport by public transport. The investment in the Luton Direct Air-Rail Transit (Luton DART), a</p>

Policy	How and where addressed in ES
<p>from the earliest stages of plan-making and development proposals, so that:</p> <ul style="list-style-type: none"> (a) the potential impacts of development on transport networks can be addressed; (b) opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated; (c) opportunities to promote walking, cycling and public transport use are identified and pursued; (d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and (e) patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places. 	<p>new cable-hauled fast passenger transit connecting Luton Airport Parkway station and the existing Central Terminal Area (the announcement of an official opening date will be made in early 2023) will provide a much more convenient connection between the station and the terminal building which in turn will encourage a greater proportion of air passengers to take advantage of the rail services. The Luton DART will be extended to serve the second terminal.</p> <p>In recognition of the fact that there will still be a significant number of air passengers travelling to and from the airport by car, a number of Highway Interventions (refer to Chapter 4 of this ES [TR020001/APP/5.01]) have been identified in conjunction with the local highway authorities in order to provide mitigation for the increased volumes of traffic on roads in the locality of the airport and the corridor to the M1. The results of the assessment of the environmental aspects (listed in paragraph 18.3.26) of the increased traffic volumes in conjunction with the introduction of the Highway Interventions that have been proposed and are listed in Table 4.1 of Chapter 4 of this ES [TR020001/APP/5.01] are reported in Section 18.9 for both the construction and operation of the Proposed Development.</p>
<p>Aviation Policy Framework</p> <p>Surface access is covered in this document in paragraphs 5.11 to 5.13. The document sets out the requirement that all proposals for airport development should demonstrate how the airport will:</p> <ul style="list-style-type: none"> a. ensure easy and reliable access for passengers; b. increase the use of public transport by passengers to access the airport; and 	<p>The highway and public transport networks, both existing and future with committed improvements, are described in Section 18.7. This demonstrates the quality of the access from the airport to the motorway network and the improvements to rail services that have been introduced recently which, when tied into the opening of the Luton DART link, will provide a very convenient service for air passengers and employees working at the airport and associated offices.</p>

Policy	How and where addressed in ES
<p>c. minimise congestion and other local impacts.</p> <p>The document also states that the general position for existing airports is that developers should pay the costs of upgrading or enhancing road, rail or other transport networks or services where there is a need to cope with additional passengers travelling to and from expanded or growing airports.</p>	<p>The commitments for the increase in use of public transport by air passengers are described in Section 18.1. An FTP [TR020001/APP/7.13] which will support the achievement of those targets has been prepared and tested through a series of workshops attended by representatives of National Highways, LBC, CBC, HCC, and North Herts Council. The FTP [TR020001/APP/7.13] (paragraph 18.8.12) outlines proposals for a comprehensive monitoring process.</p> <p>Traffic models described in Section 18.1 demonstrate that the Highway Interventions that have been proposed and are listed in Table 4.4 of Chapter 4 of this ES [TR020001/APP/5.01] minimise congestion and other local impacts.</p> <p>The Highway Interventions referred to above form part of the Proposed Development and as such will be funded by the Applicant thereby complying with the general position in the document that developers should pay the costs of upgrading or enhancing road, rail or other transport networks or services where there is a need to cope with additional passengers travelling to and from expanded or growing airports.</p>
<p>National Policy Statement for National Networks (NPSNN)</p> <p>This document sets out the need for, and Government’s policies to deliver, development of nationally significant infrastructure projects (NSIPs) on the national road and rail networks in England. It provides planning guidance for promoters of nationally significant infrastructure projects on the road and rail networks.</p> <p>There is a section that outlines in paragraphs 5.203 to 5.205 the general</p>	<p>There are no elements of the Proposed Development that would be classified as a NSIP on the national road or rail network in their own right. However, the NPSNN remains an important and relevant consideration, as works are proposed on the Strategic Road Network at Junction 10 of the M1 as part of the Proposed Development. The relevant policies of the NPSNN are consistent with the relevant policies of the ANPS and have not, therefore, been repeated here and accordingly the ANPS compliance table (Table 18.2) provides the necessary policy response.</p>

Policy	How and where addressed in ES
<p>approach that should be taken when undertaking an assessment. The Applicant should have regard to the policies set out in local plans and also consult the relevant highway authority, and local planning authority, as appropriate, on the assessment of transport impacts. Furthermore, applicants should consider reasonable opportunities to support other transport modes in developing infrastructure.</p>	<p>This table outlines the relevant local plan policies and directs the reader to the section of this chapter where they are addressed.</p> <p>The meetings that are listed in Table 18.6 demonstrate the high level of engagement with the highway authorities whose roads will carry the great majority of the additional traffic related to the Proposed Development.</p> <p>Section 69 of the FTP [TR020001/APP/7.13] sets out a toolbox of interventions to ensure that the airport grows sustainably as it expands. The interventions are grouped under six priority areas – Luton DART and Rail, Bus and Coach, Walking and Cycling, Managing Vehicle Access and Parking, Road Improvement, and Technology and data. The priority areas are detailed in that section, with the longlist of interventions that form the toolbox set out in Tables 9.1 to 9.6 in the FTP [TR020001/APP/7.13].</p>
<p>DfT Circular 02/2013</p> <p>This document sets out the way in which National Highways (formerly the Highways Agency when the document was published) engages with communities and the development industry to deliver sustainable development, whilst safeguarding the primary function and purpose of the strategic road network.</p> <p>The overall forecast demand should be compared to the ability of the existing network to accommodate traffic over a period up to ten years after the date of registration of a planning application or the end of the relevant Local Plan whichever is the greater.</p>	<p>The CBLTM-LTN provides forecast demand that can be compared to the ability of the existing network to accommodate traffic over a period of 21 years from the planned date of the submission of the application for the development consent. This is considerably more than is required in the Circular. The description of the model is provided in Section 9 of the TA [TR020001/APP/7.02]. Highway interventions that are included in the CBLTM-LTN modelled highway network for 2027 and 2039 are summarised in paragraphs 18.9.15 and 18.9.62 respectively. A full list of highway interventions is set out in Table 4.1 in Chapter 4 of this ES [TR020001/APP/5.01].</p>

Policy	How and where addressed in ES
<p>National Highways expects the promoters of development to put forward initiatives that manage down the traffic impact of proposals to support the promotion of sustainable transport and the development of accessible sites.</p> <p>The preparation and implementation of a robust travel plan that promotes use of sustainable transport modes such as walking, cycling and public transport is an effective means of managing the impact of development on the road network, and reducing the need for major transport infrastructure.</p> <p>Developers must ensure all environmental implications associated with their proposals are adequately assessed and reported so as to ensure that the mitigation of any impact is compliant with prevailing policies and standards.</p> <p>A consultation exercise was undertaken in 2022 on a number of proposed changes to the circular. Most of the changes relate to policy on National Highways’ engagement in plan-making and decision-taking.</p>	<p>Physical measures such as the extension of the Luton DART to serve Terminal 2 (paragraph 18.8.2), additional coach and bus bays (paragraph 18.8.15), and restricted growth in the provision of car parking spaces (paragraph 18.8.16) will be supported by a Travel Plan. A Framework Travel Plan has been prepared following a series of workshops that took place between November 2020 and July 2022 (Table 18.6) with National Highways amongst the attendees.</p> <p>The application for development consent is accompanied by this ES and the environmental implications are set out in Section 18.9.</p>
<p>Luton Borough Council Local Plan 2011-2031 (adopted November 2017)</p> <p>The current Local Plan includes two policies that are directly applicable to the transport consideration in this chapter:</p> <p>‘Policy LLP6 - London Luton Airport Strategic Allocation’. Within Section B, which covers airport expansion, there are two transport related criteria that need to be met for the Proposed Development to comply with Local Plan policy. The relevant text is:</p>	<p>The Airport Surface Access Strategy (ASAS) referred to in this policy is a document produced by LLAOL, the operator of the airport. The version of the document that was current at the time of the adoption of the Local Plan was “Airport Surface Access Strategy 2012-2017” (Ref. 18.12). This has since been superseded by “Airport Surface Access Strategy 2018-2022” (Ref. 18.13) and most recently “Airport Surface Access Strategy 2018-2022, 2019 reissue” (Ref. 18.14).</p> <p>The first ASAS referred to above had an Objective 1 “to increase the proportion of their passengers travelling to and from London Luton Airport by public transport to more than 40% by 2017”. The 2018 ASAS</p>

Policy	How and where addressed in ES
<p>viii. <i>incorporate sustainable transportation and surface access measures that, in particular, minimise use of the private car, maximise the use of sustainable transport modes and seek to meet modal shift targets, all in accordance with the London Luton Airport Surface Access Strategy;</i></p> <p>ix. <i>incorporate suitable road access for vehicles including any necessary improvements required as a result of the development.</i></p> <p>‘Policy LLP31 – Sustainable Transport Strategy’. This policy includes as section D an element that relates directly to transport issues associated with the airport. The relevant text is:</p> <p><i>“D. Support for the continued economic success of London Luton Airport as a transport hub (policy LLP6) will be delivered through:</i></p> <ul style="list-style-type: none"> <i>• measures to ensure there is capacity at strategically important junctions; and</i> <i>• continued enhancement of sustainable modes of transport via the Airport Surface Access Strategy.”</i> 	<p>set out several targets, one of which was to increase passenger travel by bus and coach from 16% to 17% and another was to increase passenger travel by rail from 16 to 24%. The base levels referred to in the targets were the mode shares identified in the 2016 CAA passenger survey (Ref. 18.15).</p> <p>The application for development consent through the application of the GCGF [TR020001/APP/7.08] includes a commitment that will limit a maximum of 55% of air passengers travelling to and from the airport to travel by non-sustainable modes, which is consistent with this policy.</p> <p>The transport modelling that has been undertaken together with intensive liaison with the relevant highway authorities has identified those junctions that require improvements. Evidence of the liaison with the highway authorities is presented in Table 18.8.</p> <p>The requirement in Policy LLP31 for measures to ensure there is capacity at strategically important junctions is shown to be met by the results of the junction assessments that form part of the assessment of the operation of the highway network with the proposed mitigation measures in place and the additional trips associated with the assessment phases as reported in Chapter 10 of the TA [TR020001/APP/7.02].</p> <p>The continued enhancement of sustainable modes of travel is demonstrated by the commitment to extend the Luton DART and the provision of enhanced facilities for buses and coaches at Terminal 2.</p>
<p>Luton Local Transport Plan, 2011-2026</p>	<p>No further consideration has been given to this document.</p>

Policy	How and where addressed in ES
<p>This document was published in March 2011 and does not include any targets or schemes that are relevant to the consideration of the Proposed Development.</p>	
<p>Hertfordshire Local Transport Plan (2018-2031)</p> <p>Hertfordshire’s Local Transport Plan 2018-2031 (HLTP) was adopted in May 2018. There is recognition that the airport generates traffic movements on the County’s roads and also that HCC will work with others to seek to improve public transport connections to the airport.</p> <p>The HLTP considers areas around Hertfordshire that have their own growth strategies which will provide employment and business opportunities for Hertfordshire and drive travel demand; one of these is the airport.</p> <p>The HLTP notes that passenger flows for the airport are particularly heavy on the M1 and Midland Mainline railway. Other key routes that lie within the county are identified as the A1081, A505, A602, and B653.</p> <p>By reference to data published by the Civil Aviation Authority (CAA), HCC observes that Stansted Airport is already successful in attracting trips by sustainable modes with 51% using alternatives to the car, in contrast London Luton Airport has around 30% using non-car modes and increasing this level is a key priority for them. The HLTP includes the following policy.</p> <p><i>“Policy 11: Airports</i> <i>The county council, working in partnership with neighbouring local authorities and airport operators, will seek improvements to surface access to Luton and Stansted Airports, and promote and where possible facilitate a modal shift of both airport</i></p>	<p>HCC has been one of the main stakeholders engaged during the preparation for both the 2019 and 2022 statutory consultations, as set out in Table 18.6.</p> <p>As noted in paragraph 18.1.7, increasing the public transport mode share for air passengers is a fundamental tenet of the SAS [TR020001/APP/7.12].</p> <p>To review the potential use of the lower category routes parallel to the A505/A602 corridor by some traffic to avoid congestion at Luton or Hitchin, these roads have been included in the CBLTM-LTN. These roads form part of the COMET model that was added to the CBLTM to provide the comprehensive model to assess the potential impact of the Proposed Development over a wider area than could have been undertaken using the previous version of the model.</p>

Policy	How and where addressed in ES
<p><i>passengers and employees towards sustainable modes of transport.</i> <i>The county council is opposed to new runway development at Luton and Stansted Airports”.</i></p> <p>The airport lies within two identified strategic transport corridors, London – Watford – Luton – Milton Keynes and Luton – Stevenage. Regarding the first corridor HLTP notes that the airport generates significant travel demand and that it will work with LBC¹ and airport operators on improving surface access to the airport, and National Highways to ensure effective operation of the M1. For the second corridor the HLTP notes that the primary connections within this strategic movement corridor are the A505 and A602. These routes provide the strategic link between Luton, the airport, the A1(M) and Stevenage, as well as serving the towns of Hitchin, Letchworth and Baldock. In addition to these towns, the airport generates a significant amount of traffic on the corridor. Traffic flows are generally localised between the towns along the corridor. It is noted that there are a number of lower category parallel routes also serve the corridor with some traffic using these to avoid congestion at Luton or Hitchin.</p>	
<p>Central Bedfordshire Local Plan 2015-2035</p> <p>There is one policy that is related to the expansion of the airport, Policy T2: ‘Highways Safety and Design’. This policy states that “<i>Proposals for new development must not have a detrimental effect on highway safety and patterns of movement, must provide appropriate access and have regard to the Council’s</i></p>	<p>This policy is relevant because one of the proposed highway interventions (Work No. 6e(h) as defined in Chapter 4 of this ES [TR020001/APP/5.01]) is located on highway for which CBC is the highway authority. This involves the introduction of part-time traffic signals at the roundabout that forms the junction of the A1081 London Road with the A1081 westbound on and off-slip roads for which the proposed outline design is shown in</p>

¹ Luton Borough Council

Policy	How and where addressed in ES
<p><i>standards as set out in the Council’s Design Guide and Highway Construction Standards and Specifications Guidance”.</i></p>	<p>Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0017 of the TA [TR020001/APP/7.02].</p> <p>The highway mitigation measures will be designed to comply with the relevant standards and the standard safety audit process will be undertaken.</p>
<p>North Hertfordshire District Council Local Plan 2011-2031</p> <p>There are no policies that are directly related Traffic and Transport assessment.</p>	
<p>Dacorum Borough Council Core Strategy 2006-2031</p> <p>There are no policies that are directly relevant to the Traffic and Transport assessment.</p>	

- 18.2.5 With regard to aviation policy, the Government has also published the documents ‘Making Best Use of Runways’ (Ref.18. 16) and ‘Flightpath to the Future’ (Ref.18.17). In the first of these documents the Government sets out its support for all airports who wish to make best use of their existing runways, including those in the South East, subject to environmental issues being addressed. This **ES [TR020001/APP/5.01]** sets out the manner by which the Proposed Development takes into account the environmental issues and the mitigation measures that will be put in place. The policy document does not specifically address environmental effects relating to surface access.
- 18.2.6 In ‘Flightpath to the Future’ the Executive Summary includes the following two sentences.
- “As the sector recovers from the pandemic, we are committed to working in partnership with all aspects of aviation to support growth and drive forward a successful recovery. This will include building back better and greener to ensure the UK delivers one of the strongest, most modern and most sustainable aviation sectors in the world.”*
- 18.2.7 With the adoption of the measures set out in the **GCGF [TR020001/APP/7.08]** and the **FTP [TR020001/APP/7.13]**, the approach that is to be adopted for the management of the growth in surface access trips, associated with the increase

in air passenger throughput, is in line with the Government’s aim for greener growth.

18.2.8 The ANPS does not have effect in relation to an application for development consent for an airport development not comprised of an application relating to the Heathrow Northwest Runway. Nevertheless, as set out within paragraph 1.41 of the ANPS, the Secretary of State considers that the contents of the ANPS will be both important and relevant considerations in the determination of such an application, particularly where it relates to London or the south east of England. In particular, the ANPS makes clear that, alongside the provision of a new Northwest Runway at Heathrow, the government supports other airports making best use of their existing runways as set out in Beyond the Horizon: Making best use of existing runways (Ref. 18.18), which is the specific policy context for this application.

18.2.9 In addition, whilst the ANPS does not have effect in relation to the Proposed Development, it sets out a number of principles for environmental impact assessment and compliance and these will be an important and relevant consideration in the determination of Luton Rising’s (a trading name of London Luton Airport Limited) application for development consent. A summary of the relevant provisions for the Traffic and Transportation assessment and how these have been addressed of this ES is provided within **Table 18.2**.

Table 18.2: How relevant Traffic and Transportation requirements of ANPS are addressed in the ES

ANPS Section	How and where addressed in ES
<p>Paragraph 5.9</p> <p>Prepare an airport surface access strategy to include the following;</p> <ul style="list-style-type: none"> • Reflect the phasing over the development, implementation, and operational stages; • Reference the role of surface access in relation to air quality and carbon; • Specific targets for maximising the proportion of journeys made to the airport by public transport, cycling or walking; <p>Actions, policies and defined performance indicators for delivering against targets.</p>	<p>The SAS [TR020001/APP/7.12] together with the TA [TR020001/APP/7.02] form part of the documentation for the application for development consent. Between them, these documents show the predicted level of trips by the range of travel modes, which are based on specific targets for maximising the proportion of journeys made by non-car modes. Predicted traffic flows on the highway network in the vicinity of the airport are presented as Tables 1.1 to 1.3 in Appendix 18.2 of this ES [TR020001/APP/5.02] for the years 2016 (18 mppa), 2027 (21.5 mppa), 2039 (27 mppa) and 2043 (32 mppa). These flows reflect the targets that have been adopted to achieve the mode shift.</p> <p>The SAS [TR020001/APP/7.12] in Section 6.1 notes that the Applicant’s toolbox approach ensures that under any future scenario the Applicant will be able to reduce the impact of surface access on air quality. Air quality, which includes emissions from</p>

ANPS Section	How and where addressed in ES
	<p>traffic, is covered in Chapter 7 of this ES [TR020001/APP/5.01] and carbon in Chapter 12 of this ES [TR020001/APP/5.01].</p> <p>The SAS [TR020001/APP/7.12] outlines the approach to determining Key Performance Indices and the way this will be managed and funded is described in Section 8.</p>
<p>Paragraph 5.10</p> <p>The assessment should cover the implications of airport expansion on surface access network capacity using the WebTAG methodology stipulated in the Department for Transport guidance. The Applicant should consult Highways England (now National Highways), Network Rail and highway and transport authorities, as appropriate, on the assessment and proposed mitigation measures.</p> <p>The assessment should distinguish between the construction and operational project stages for the development comprised in the application.</p>	<p>The transport modelling follows the WebTAG methodology.</p> <p>Engagement that has been undertaken is summarised in Section 18.4 of this chapter.</p> <p>Separate assessments for the construction and operation of the Proposed Development are presented in Section 18.9 in this chapter.</p>
<p>Paragraph 5.13</p> <p>The Applicant should have regard to DfT Circular 02/2013, <i>The Strategic Road Network and the delivery of sustainable development</i> (or prevailing policy), and the National Networks NPS.</p>	<p>Both the DfT Circular and the NPSNN have been addressed in Table 18.1.</p>
<p>Paragraph 5.14</p> <p>Where appropriate, the applicant should seek to deliver improvements or mitigation measures that reduce community severance and improve accessibility.</p>	<p>The proposals for surface access as set out in Section 18.8 of this chapter will improve accessibility to the airport for both air passengers and employees.</p> <p>Severance is considered in Section 18.8 in this chapter.</p>

Guidance

Table 18.3: Traffic and Transportation guidance

Guidance	How and where addressed in ES
<p>The ‘Guidelines for the Environmental Assessment of Road Traffic’ (Ref. 18.19) are produced by the Institute of Environmental Assessment (IEA), now the Institute of Environmental Management (IEMA) and referred to as the ‘IEMA Guidelines’.</p>	<p>The guidelines provide recommendations for the manner in which a number of transport related effects can be assessed. The document is referred to in Section 2.2 of Appendix 18.1 of this ES [TR020001/APP/5.02], which describes how the magnitude of impact is assessed in this chapter.</p>
<p>Design Manual for Roads and Bridges</p> <p>Since the EIA Scoping Report was submitted, the DMRB has been updated and presented in a new form. The individual documents that together form the DMRB have been arranged according to the technical discipline and the asset lifecycle stage, as represented by the two letters at the start of the new document codes. For this chapter the two letters are LA, representing “sustainability and environment” and “appraisal”.</p>	<p>The new documents do not provide the same level of guidance that was contained in the old documents that have now been withdrawn, which recommended a range of environmental effects that may be considered important when considering traffic associated with a proposed development or new or changed highway infrastructure. In the absence of alternative guidance in the new documents, the withdrawn documents have been used to assist in setting up the parameters to determine the magnitude of impact that are described in Section 2.2 of Appendix 18.1 of this ES [TR020001/APP/5.02].</p> <p>The principal purpose of the relevant guidance in the DMRB is for the appraisal of road schemes. This chapter describes the assessment of the effects of changed traffic patterns on a predominantly existing transport network, with some changes introduced as mitigation measures, therefore it has been necessary to adapt the guidance to make it relevant.</p>

18.2.10 Although not specifically used in the preparation of this chapter the transport modelling that has produced the predicted future year traffic flows for the ‘Do Minimum’ and ‘Do Something’ scenarios was calibrated and validated for 2016 in accordance with Department for Transport (DfT) Transport analysis guidelines (TAG) (Ref. 18.20).

18.3 Scope of the assessment

18.3.1 This section describes the scope of the Traffic and Transportation assessment, including how the assessment has responded to the Scoping Opinion. The temporal and spatial scope, the relevant receptors, and matters scoped in and out are identified. A description of engagement undertaken with relevant technical stakeholders to develop and agree this scope is provided in **Section 18.4**.

Scoping Opinion

- 18.3.2 The EIA Scoping Report set out the proposed scope and assessment methodologies to be employed in the EIA and is provided in **Appendix 1.1 and 1.2** of this ES [TR020001/APP/5.05].
- 18.3.3 In response to that Scoping Report, a Scoping Opinion was received from the Planning Inspectorate on 9 May 2019 and is provided in **Appendix 1.3** of this ES [TR020001/APP/5.05].
- 18.3.4 **Table 18.4** describes the main matters highlighted by the Planning Inspectorate in the Scoping Opinion and how these have been addressed in this ES. Responses to all comments received during scoping are presented in **Appendix 1.4** of this ES [TR020001/APP/5.02].

Table 18.4: Main Traffic and Transportation Scoping Opinion comments

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
2.2.6	The ES should provide detailed information on the Off-Site Highways Intervention areas, supported by clear and legible plans and figures.	Off-site Highway Interventions are minor roadworks designed to an outline level only, as appropriate for this stage of design development. A description is provided in Section 4.10 and Table 4.4 in Chapter 4 of this ES [TR020001/APP/5.01] which includes references to drawings provided as part of this ES.
2.2.9	The ES should take account of any potential overlap between the expansion proposal and proposed public transport infrastructure links, detailing the outcome of relevant consultations with Network Rail.	The only public transport infrastructure link improvement that forms part of the Proposed Development is the extension of the Luton DART link from Terminal 1 to Terminal 2 (paragraph 18.8.2), which is not part of the network managed by Network Rail. The opening date for the section between Luton Airport Parkway station and airport terminal is to be announced in early 2023.
3.2.3	The ES should assess the likely significant effects which could	The Proposed Development as a whole, including any Off-site Highway

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
	arise from the Proposed Development as a whole, including any off-site works.	Interventions, is considered in the assessment in Section 18.9 .
4.2.2	Applicant should ensure that the relationship between the TA and the scope of the traffic and transport assessment is fully explained and justified within the ES. The Applicant should make effort to agree the scope of the assessment with the relevant consultation bodies.	<p>The relationship between the TA [TR020001/APP/7.02] and the traffic flows used to undertake the assessment reported in the ES is described in Section 18.1.</p> <p>A Scoping Report for the TA [TR020001/APP/7.02] was issued to National Highways, LBC, CBC, and HCC in October 2018 followed by an amended version in February 2019.</p>
4.2.3	For the avoidance of doubt any such travel plan should extend to workforce travel. The Applicant should make effort to agree the scope of the travel plan with relevant consultation bodies. The approach to the assessment should be fully explained and justified within the ES.	<p>An FTP [TR020001/APP/7.13] has been prepared that covers both air passengers and staff based at the airport or offices related to the airport. The plan has been developed in consultation with stakeholders through a series of workshops listed in Table 18.6. The importance of the Travel Plan in achieving a reduction in the magnitude of the impact of traffic associated with the workforce is recognised in paragraph 18.8.12. During construction, a Construction Workers Travel Plan (CWTP) will be in operation. An Outline CWTP is included at (Appendix 18.4 of this ES [TR020001/APP/5.02]).</p>
4.2.8	The Inspectorate recommends that the assessment takes into account personal injury collision data in respect of any roads falling within the study area and for which CBC and HCC are the highways authority. This data should be presented in the ES, alongside the data for LBC.	<p>For the ES the Personal Injury Collision (PIC) data has been analysed for those junctions that are to be assessed following the IEMA Guidelines (Ref. 18.19). On the basis of the percentage growth on roads reported in Table 1.4 of Appendix 18.2 of this ES [TR020001/APP/5.02] there will be no links on roads for which CBC or HCC is the highway authority where the IEMA Guidelines (Ref. 18.19) rule of thumb of a change in traffic flow of 30% (refer to paragraph 2.2.1 in Appendix 18.1 of this ES [TR020001/APP/5.02]) applies,</p>

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
		therefore there is no prospect of there being a significant effect in those two areas as reported in Section 18.9 of this chapter.
4.2.9	The ES should include a description of each scenario used in the assessment demonstrating that the worst-case construction and operational assessment scenarios are identified. The assessment years should be consistent between the traffic and transport and air quality assessments where relevant and effort should be made to be agree the approach with the relevant consultation bodies.	<p>The assessment of the construction of the Proposed Development as described in Section 18.9 under the heading ‘Construction’ covers the periods for each assessment phase when there is predicted to be the greatest level of HGV movements.</p> <p>The assessment reported in this chapter and the Air Quality assessment of transport in Chapter 7 Air Quality of this ES [TR020001/APP/5.01] are based on the same traffic flows forecasts produced by the CBLTN-LTN model. There is a consistent approach to the scenario years assessed through the ES. The rationale for the choice of these years is set out Section 5.4 in Chapter 5 of this ES [TR020001/APP/5.01].</p> <p>The approach to the assessment of transport matters has been discussed extensively with the relevant highway/transport authorities and the list of meetings that have been held is set out in Table 18.6.</p>
4.2.10	In presenting the approach to the assessment of significance as adapted from DMRB guidance, Table 7.4 of the Scoping Report states that low magnitude impacts on receptors of high sensitivity can be ‘minor or moderate’ which lack certainty with regards to the assessment of significant effects. In accordance with DMRB guidance, in these cases ‘a single description should be decided upon with reasoned	This approach has been used in this ES and a reasoned judgement provided in Section 18.9 .

Scoping Opinion ID	Scoping Opinion comment	How this is addressed
	judgement for the level of significance chosen'. Such reasoned judgement should be presented and justified within the ES.	
4.2.11	National Highways has raised concerns about the Applicant's methodology for assessing significance and has recommended an alternative approach. The Inspectorate considers that the scope of the assessment in the ES should be related to the extent of impacts and whether significant effects are likely to occur. The Applicant should make effort to agree its approach with National Highways and other relevant consultation bodies.	National Highways identifies several other major infrastructure projects and refers to different methodologies that were adopted for assessing significance. Consideration has been given to those schemes, but it is noted that circumstances and likely effects from those schemes are likely to be different. In particular with regard to the Bank Station upgrade, Crossrail, Victoria Station upgrade, and HS2, these are projects where the environmental impacts relate to the construction period with minimal operational traffic movements, and for the first three they are located in Central London with all of the additional considerations that arise from the scale of existing movement. Whilst considering the methodology adopted in those other studies not to be transferable to this assessment, the level of analysis that has been carried out has allowed the extent of the impacts to be expanded as requested.
2.4	The SR notes (para. 2.2.18 and paras. 3.4.37 - 3.4.44) that the Proposed Development will require off-site highway improvements but the nature and extent of these is yet to be confirmed. Whilst LLAL appear confident that such interventions will all be within the highway boundary, we consider that this is a further area of uncertainty that needs to be resolved as soon as possible. These changes could themselves have environmental effects that need to be considered in the ES	The Off-Site Highway Interventions being proposed as part of the Proposed Development are described in Section 4.10 and Table 4.4 in Chapter 4 of this ES [TR020001/APP/5.01] which includes references to drawings provided as part of this ES. These are included in the traffic models and as such are assessed in Section 18.9 . The nature and extent of these works have been included in the many meetings with the relevant highway authorities and there has been no indication that they consider the proposed works require land outside of the highway boundary.

- 18.3.5 Most of the comments submitted by National Highways relate to guidance on the preparation of the **TA [TR020001/APP/7.02]**. As recognised by National Highways and demonstrated in **Table 18.6**, there have been regular meetings with National Highways with the objective of reaching agreement on as many matters as possible prior to the submission of the application for development consent. National Highways has identified that any assessment should consider the operation of the Strategic Road Network, which in this case is the M1, A1(M), and A5. These roads have been included in the traffic model and the traffic predictions for the future year scenarios allow that assessment to be undertaken.
- 18.3.6 Most of the comments made jointly by Aylesbury Vale and Buckinghamshire County Council relate to the preparation of the **TA [TR020001/APP/7.02]**. They expressed a desire to work with the Applicant to review the current public transport network and to assess the potential of improving links through the county.
- 18.3.7 St Albans City and District Council has requested that both the **TA [TR020001/APP/7.02]** and the Traffic and Transportation ES chapter should include a detailed assessment of the A1081, A5183, and B653 into Luton from within the St Albans City and district area. These three routes into Luton from within the St Albans City and District area are considered in the analysis reported in this chapter.
- 18.3.8 St Albans City and District Council also notes that the assessment will be based on a 45% use of public transport which it considers will be dependent on the availability of appropriate and convenient public transport access to the airport, and to that end the ES needs to consider the mitigation measures that will be additional to the introduction of Luton DART for this to be achieved.
- 18.3.9 In addition to the introduction of the Luton DART, measures that are intended to make travel by public transport more attractive, some of which are already in place but not at the time of the ES Scoping Report (provided as **Appendix 1.1** and **1.2** of this ES **[TR020001/APP/5.05]**) include:
- a. enhancement to bus and coach services, together with new facilities at Terminal 2, (**paragraph 18.8.15**);
 - b. commencement of Crossrail (Elizabeth Line) services through Central London (**paragraph 18.7.25**); and
 - c. electrification of the railway between Bedford and Corby and the introduction of the East Midlands Railway (EMR) Connect service (**paragraph 18.7.21**).
- 18.3.10 The response from Welwyn Hatfield requests that the application gives very strong consideration to access by means other than the car. This is in line with the surface access strategy that is being developed as part of the surface transport assessment.
- 18.3.11 In the response by Vincent and Gorbing on behalf of the Host Authorities (see Appendix 2 of the Scoping Opinion in **Appendix 1.3** of this ES **[TR020001/APP/5.05]**), several roads are referred to in Hertfordshire about

which there is concern regarding the impact of the additional traffic. These roads are included in the traffic model and therefore sufficient information will be available to assess the impact and identify whether there is the need for mitigation. A further concern is the potential for rat-running along the rural lanes to the east of the airport. The level of detail of the road network in that area has been established in the expectation that this could be a matter of concern. Consequently, this matter will be considered in detail in the **TA [TR020001/APP/7.02]** and the effects on any additional traffic on the local roads is considered in this chapter (**Section 18.9**).

- 18.3.12 There are several matters raised regarding the development of the CBLTM-LTN and potential mitigation measures that have been listed in the Scoping Report. These are principally concerns relating to the **TA [TR020001/APP/7.02]** and have been addressed through a series of technical reports and regular meetings with the appropriate authorities.
- 18.3.13 Royal Mail advised that it had an interest in several properties that are in the vicinity of the airport. It wished to be assured that its presence was recognised and that measures would be introduced to ensure that its service would not be disrupted. A particular concern was the need for consultation with local businesses and occupants regarding road closures/diversions during construction. The principles of consultation during the construction period are set out in the Outline Construction Traffic Management Plan (CTMP) which is **Appendix 18.3** of this ES **[TR020001/APP/5.02]**.

Spatial scope

- 18.3.14 The following paragraphs describe the spatial scope of this assessment. The scale of the area over which there is some change in the movement of people of the transport network can be seen in **Section 6** in the **Need Case [TR020001/APP/7.04]** which shows the airport catchment area obtained from the CAA survey undertaken in 2019 together with the information provided in **Section 7** of that report which is the map of passenger demand growth rates by district. The changes will increase as the various routes to the airport converge closer to the airport. Accordingly, the area for assessment concentrates on the main routes approaching the airport and the local roads around the airport. For rail travel journeys are constrained by the rail network which in this case is the Midlands Mainline running between London St Pancras International and Sheffield.

Study area

- 18.3.15 The extent of the local highway network (study area) for which the effect of the Proposed Development is being assessed is the shaded area shown on **Figure 18.3** of this ES **[TR020001/APP/5.03]**. This area is referred to as the Fully Modelled Area within the CBLTM-LTN and has been agreed as appropriate with National Highways, LBC, HCC, and CBC, which are the four highway authorities, as part of the scoping exercise for the **TA [TR020001/APP/7.02]**.

- 18.3.16 The effect on rail services considers passengers travelling on the services calling at Luton Airport Parkway station and running north and south on both regional and suburban services.

Zone of influence

- 18.3.17 The analysis of the existing catchment area of the airport based on the origins and destinations in the UK referred to in **paragraph 18.3.14** above, demonstrates that although the airport draws some passengers from a wide area, the density of passengers is much higher in areas closer the airport. Hence, it is only when relatively close to the airport that their trips combine to have a potential effect on highway and public transport networks.
- 18.3.18 The zone of influence for the highway network is based on the change in traffic flows. In light of the catchment area there will be changes in traffic flows over many highway links; however as one moves away from the airport the traffic disperses and the effect on the highway network reduces quickly. The Fully Modelled Area within the CBLTM-LTN, shown in **Figure 18.3** of this ES **[TR020001/APP/5.03]**, covers an area in excess of 1,000 sq. km, which allows this dispersal to be modelled. As referred to in **paragraph 18.1.9**, the extent of this is agreed by the relevant highway authorities to contain those sections of highway that have the potential to be adversely affected by the increase traffic flows. In practice, as a result of the dispersal, the zone of influence will be considerably smaller as demonstrated in the output from the CBLTM-LTN.

Temporal Scope

- 18.3.19 The Proposed Development will be delivered incrementally, during which construction and operation may take place simultaneously. Three assessment phases are considered for the purposes of assessment and assessment years for each assessment phase are described in **Chapter 5** Approach to the Assessment of this **ES [TR020001/APP/5.01]**.
- 18.3.20 In order to establish the construction traffic flows that should be used to assess the potential effects during the construction the estimates of the volume of construction traffic that have been prepared for the Construction Method Statement and Programme Report (**Appendix 4.1** of this ES **[TR020001/APP/5.02]**) has been analysed. **Inset 18.1** shows the annual profile of construction traffic as a daily average while **Table 18.5** provides information on average and total activity for the assessment phases.

Inset 18.1 Total construction vehicles travelling to site by assessment phase

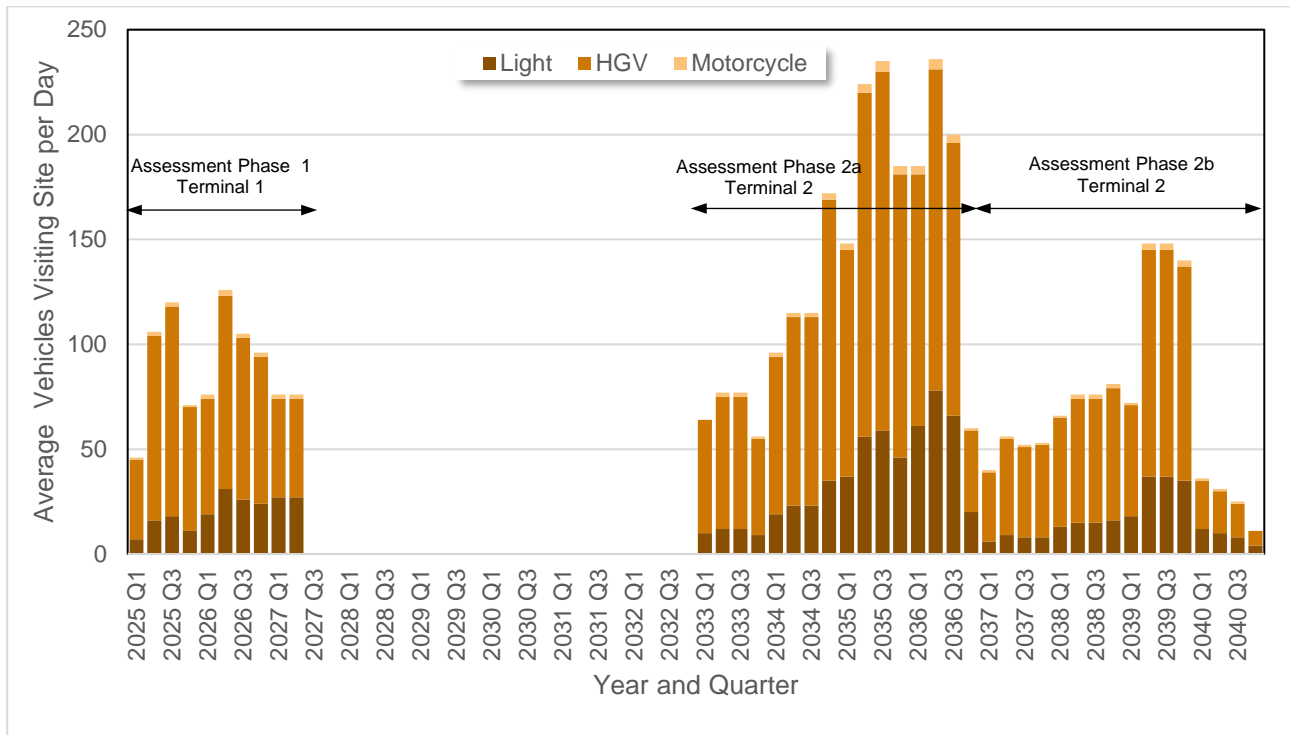


Table 18.5: Construction traffic estimates

Assessment Phase	Duration (Quarters)	Total Vehicles (HGVs)	Average Vehicles per Quarter (HGVs)	Peak Vehicles in a Quarter (HGVs)
Assessment Phase 1	10	57,866 (43,477)	5,787 (4,348)	8,127 (5,933)
Assessment Phase 2a	16	145,887 (106,309)	9,118 (6,644)	15,333 (9,966)
Assessment Phase 2b	16	71,896 (54,199)	4,494 (3,387)	9,687 (7,072)
Overall	42	275,649 (203,985)	6,563 (4,857)	15,333 (9,966)

18.3.21 The graph in **Inset 18.1** shows that for each of the assessment phases, the peak quarters for construction traffic are:

- a. Assessment Phase 1 – 2026 Q2;
- b. Assessment Phase 2a – 2036 Q2; and
- c. Assessment Phase 2b – 2039 Q2 and Q3;

18.3.22 The CBLTM-LTN model has not been run for 2026 and 2036, so the following assessments have been undertaken. For the assessments for assessment

Phases 1 and 2a the tests are more onerous than would occur if traffic flow predictions were available for the years of peak construction traffic.

- a. Construction traffic for Assessment Phase 1 has been tested against the 2027 'Do Minimum' Scenario flows on the basis that the growth in passenger throughput would be restricted (by capacity limitations) until the works are completed. It is considered that in the circumstances where future traffic flow predictions are limited to 2027, 2039 and 2043 that this is the most appropriate approach.
- b. Construction traffic for Assessment Phase 2a has been tested against the 2027 'Do Something' Scenario as this reflects the situation with the throughput at 21.5 mppa. With the throughput at the airport restricted to 21.5 mppa until Terminal 2 is open, this scenario provides the relevant level of airport related traffic on the highway network. There will be background traffic growth that occurs over the period between 2027 and 2036 that is not accounted for. The absence of this background growth in traffic means that the comparison of the construction traffic with the baseline flows on the network will overestimate the increase that results from the addition of the construction traffic. As a consequence, it is expected that using the IEMA guidelines (Ref. 18.19) it is more likely that a road link will be identified as warranting further assessment, and in general the greater the difference in the flow between the 'Do Minimum' and 'Do Something' scenarios the more likely a significant environmental effect will be identified.
- c. Construction traffic for Assessment Phase 2b has been tested against the 2039 'Do Something' Scenario flows as these include a passenger throughput of 27 mppa.

18.3.23 This Traffic and Transportation assessment of the operation of the airport considers each assessment phase in turn with incremental effects. The assessment considers the changes in the movement of air passengers on the transport networks reflecting the increases in air passenger movements and the changes in travel mode. It also considers increases in employee travel to work trips reflecting the change in workforce and mode of travel that is described in **Section 9** of the **TA [TR020001/APP/7.02]**.

Receptors

18.3.24 The receptors that are considered in this chapter are grouped as follows:

- a. car drivers;
- b. pedestrians;
- c. other road users;
- d. occupants; and
- e. public transport passengers.

18.3.25 These are standard receptors in an environmental assessment of the effects of additional travel where the effects on air quality and noise are considered separately. Section 3 of **Appendix 18.1** of this ES **[TR020001/APP/5.02]**

describes the sensitivity of the receptors and also details those road links that are considered to pass through an area where one or more of the receptors is sensitive to one or more of the effects.

Matters scoped in

18.3.26 The environmental issues that have been assessed to determine the Traffic and Transportation effects of the Proposed Development (during construction and once the Proposed Development is complete and fully operational) are as follows:

- a. Severance – this is described in the IEMA Guidelines (Ref. 18.19) as the perceived division that can occur within a community when it becomes separated by a major traffic artery. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities. The IEMA Guidelines (Ref. 18.19) recognises that the measurement and prediction of severance is extremely difficult.
- b. Pedestrian delay – this is defined in the IEMA Guidelines (Ref. 18.19) as an issue, which is affected by changes in the volume, composition and/or speed of traffic may affect the ability of people to crossroads. Typically, increases in traffic levels result in increased pedestrian delay, although increased pedestrian activity itself also contributes.
- c. Pedestrian amenity – this is defined in the IEMA Guidelines (Ref. 18.19) as the relative pleasantness of a journey and can include fear and intimidation if they are relevant. As with pedestrian delay, amenity is affected by traffic volumes and composition along with pavement width and pedestrian activity.
- d. Driver stress and delay – this is identified in the IEMA Guidelines (Ref. 18.19) as an issue that can occur at several points on the network, although the effects are only likely to be significant when the traffic on the highway network is predicted to be at or close to the capacity of the system. The DMRB Guidelines (Ref. 18.19) identify three main components of driver stress:
 - i. frustration;
 - ii. fear of potential collisions; and
 - iii. uncertainty relating to the route to be followed.
- e. Collisions and safety – these are not defined in the IEMA Guidelines (Ref. 18.19), which suggests that professional judgement will be required to assess the implications of local circumstance, or factors which may increase or decrease the risk of collisions.
- f. Hazardous loads – During construction, the Proposed Development is expected to generate some hazardous material. The consideration of hazardous loads is therefore scoped into the construction stage assessment. Prior to the commissioning of the new fuel farm and its direct connection to the existing fuel main there will be an increase in the

number of fuel tankers bringing aviation fuel to the existing fuel depot adjacent to Percival Way. The changes to the volume of fuel tanker trips is considered for all assessment phases.

- 18.3.27 The methodology used to establish the significance of the effects that have been scoped in is described in **Appendix 18.1** of this ES [TR020001/APP/5.02].

Matters scoped out

- 18.3.28 No matters have been scoped out of assessment prior to the analysis.

18.4 Stakeholder engagement and consultation

- 18.4.1 Engagement in relation to Traffic and Transportation has been undertaken with several prescribed and non-prescribed stakeholders. The principal stakeholders with whom engagement has taken place are the four highway authorities who manage the roads that are expected to experience the highest increases in the volume of traffic carried – National Highways, LBC, HCC, and CBC.
- 18.4.2 The early meetings concentrated on discussions around the content of the Transport Assessment Scoping Report (Ref. 18.21) and the development of the Strategic (CBLTM-LTN) and VISSIM models. On completion of the building of these models the three Model Validation Reports (Refs. 18.22, 23, and 24) were made available and the results were discussed at the meetings that followed. Further meetings were held to present the outputs from the two highway models as the results of the three future year scenarios became available, so that the adequacy of proposed mitigation measures could be discussed. The results from the models were shown in PowerPoint presentations which were then sent to the authorities after the meeting.
- 18.4.3 The **Consultation Report [TR020001/APP/6.01]** and **Consultation Report Appendix [TR020001/APP/6.02]** contain a full account of statutory consultation and issues raised in feedback. Matters raised regarding the scope, method, mitigation or compensation being considered as part of the Traffic and Transportation assessment were then subject to further discussions directly with stakeholders during the regular meetings. The main matters/themes raised during consultation considered relevant to the Traffic and Transportation assessment were:
- a. effect of additional traffic on the local highway network in Luton;
 - b. additional traffic passing through Hitchin;
 - c. scope of highway schemes to mitigate impact on local roads;
 - d. impact on the M1 Junction 10 and motorway carriageway to the south;
 - e. airport traffic using rural roads to the east of the airport;
 - f. additional rat-running on local roads to avoid increased congestion;
 - g. enhancement of the provision of non-car modes of access particularly in areas with low public transport accessibility;
 - h. off-airport car parking on local estate roads;
 - i. congestion around the terminal building where car passengers are dropped off and picked up (Drop Off Zone); and
 - j. lack of capacity on the rail network.
- 18.4.4 **Table 18.6** provides a summary of engagement with relevant stakeholders, undertaken to inform this assessment and other transport related work, including the date and time of meetings and a summary of discussions to resolve matters raised.

Table 18.6: Stakeholder engagement relating to Traffic and Transportation

Principal stakeholder and date	Attendees (organisation)	Summary of discussion
Pre 2019 statutory consultation		
National Highways 10/05/18 25/06/18 06/07/18 02/11/18 01/02/19 25/06/19 01/08/19 15/11/19	National Highways Jacobs (Development Control adviser to National Highways)	Scope of CBLTM-LTM and VISSIM models. Review of validation of the models. Potential impacts on motorway network. Potential schemes to increase the capacity of the M1. Presentation of the air traffic forecasting model. Initial discussions on contents of Framework Travel Plan.
LBC 21/03/18 01/02/19 28/06/19 15/08/19 01/11/19	LBC (Planning and Economic Growth)	Scope of CBLTM-LTM and VISSIM models. Review of validation of the models. Committed local highway improvements. Initial discussions on contents of Framework Travel Plan.
CBC 18/12/18 14/03/19 22/10/19	CBC (Community Services)	Scope of CBLTM-LTM and VISSIM models. Review of validation of the models. Initial discussions on contents of Framework Travel Plan.
HCC 15/11/18 25/02/19 04/06/19	HCC (Environment and Infrastructure)	Scope of CBLTM-LTM and VISSIM models. Review of validation of the models. Initial discussions on contents of Framework Travel Plan.
Luton Statutory Consultation - Combined Meeting 08/11/19	National Highways LBC (Planning and Economic Growth) CBC (Community Services) HCC (Environment and Infrastructure)	Strategic modelling. Key modal split and rail/coach assumptions. Mitigation measures and Framework Travel Plan. Development consent order progress and timetable.
Express Coach Services 15/04/19 (Telephone)	National Express Coaches	Potential for creating a hub for express coach services at the airport.

Principal stakeholder and date	Attendees (organisation)	Summary of discussion
Local Bus Services 27/02/19	Arriva	Opportunities for upgrading local bus services to encourage their use by employees for journeys to work.
Post 2019 statutory consultation		
National Highways 17/01/20 01/10/20 18/12/20	National Highways Jacobs (Development Control adviser to National Highways)	Advising highway authority of the changes to the air passenger forecasts and the revised dates for the assessment. Report the initial findings from re-running of the CBLTM-LTN and VISSIM models.
LBC 23/09/20 14/12/20	LBC (Planning and Economic Growth)	Advising highway authority of the changes to the air passenger forecasts and the revised dates for the assessment. Report the initial findings from re-running of the CBLTM-LTN and VISSIM models.
CBC 05/10/20	CBC (Community Services)	Advising highway authority of the changes to the air passenger forecasts and the revised dates for the assessment.
HCC 30/09/20 17/12/20	HCC (Environment and Infrastructure)	Advising highway authority of the changes to the air passenger forecasts and the revised dates for the assessment. Report the initial findings from re-running of the CBLTM-LTN and VISSIM models.
Travel Plan Workshop 10/11/20	National Highways LBC (Planning and Economic Growth) CBC (Community Services) HCC (Environment and Infrastructure) North Herts Council (Strategic Infrastructure and Projects)	Identification of measures that could be incorporated into the Framework Travel Plan to discourage travel to and from the airport by car and encourage greater use of public transport and walking and cycling. Monitoring and structure of group that will oversee progress in achieving targets.
Pre 2022 statutory consultation		
National Highways 13/08/21 15/10/21	National Highways Jacobs (Development Control adviser to National Highways)	Presentation of key forecasting assumptions and results of CBLTM-LTN and VISSIM models for 21.5 mppa 2027, and 32 mppa 2043 scenarios.
National Highways	National Highways	Presentation of results of CBLTM-LTN and VISSIM models for 27 mppa 2039 and

Principal stakeholder and date	Attendees (organisation)	Summary of discussion
19/11/21	Jacobs (Development Control adviser to National Highways)	presentation by York Aviation on air movements forecasting methodology and results.
LBC 10/08/21 14/10/21 19/11/21	LBC (Planning and Economic Growth)	Presentation of key forecasting assumptions and results of CBLTM-LTN and VISSIM models for 21.5 mppa 2027, 32 mppa 2043, and 27 mppa 2039 scenarios.
CBC 10/08/21 15/10/21	CBC (Community Services)	Presentation of key forecasting assumptions and results of the CBLTM-LTN and VISSIM models for 21.5 mppa 2027 and 32 mppa 2043 scenarios.
HCC 09/08/21 15/10/21 15/11/21	HCC (Environment and Infrastructure)	Presentation of key forecasting assumptions and results of CBLTM-LTN and VISSIM models for 21.5 mppa 2027, 32 mppa 2043, and 27 mppa 2039 scenarios.
Travel Plan Workshops 13/10/21 17/12/21	National Highways LBC (Planning and Economic Growth) CBC (Community Services) HCC (Environment and Infrastructure) North Herts District Council (Strategic Infrastructure and Projects)	Identification of measures that could be incorporated into the Framework Travel Plan to discourage travel to and from the airport by car and encourage greater use of public transport and walking and cycling.
Royal Mail 24/01/22	Royal Mail	Discussion regarding Royal Mail concerns about the impact of the airport expansion on its operation.
National Highways 17/01/22	National Highways Jacobs (Development Control adviser to National Highways)	General presentation and discussion around progress on assessment of traffic impacts.
LBC 25/01/22	LBC (Planning and Economic Growth)	Pre-consultation briefing.
HCC 26/01/22	HCC (Environment and Infrastructure)	Pre-consultation briefing.

Principal stakeholder and date	Attendees (organisation)	Summary of discussion
CBC 27/01/22	CBC (Community Services)	Pre-consultation briefing.
Post 2022 statutory consultation		
National Highways 04/04/22 14/04/22 25/04/22 26/04/22 10/05/22	National Highways Jacobs (Development Control adviser to National Highways)	Regular contact and discussion of comments made at statutory consultation.
National Highways 17/03/22 23/05/22	National Highways Jacobs (Development Control adviser to National Highways)	Preliminary results from modelling of 'no widening scheme on M1' scenario. Discussion of Statement of Common Ground
National Highways 01/08/22	National Highways Jacobs (Development Control adviser to National Highways)	Presentation of results from sensitivity test modelling of 'no widening scheme on M1' scenario.
LBC 18/03/22 11/05/22	LBC (Planning and Economic Growth)	Discussion of comments coming out of the statutory consultation.
LBC 10/06/22	LBC (Planning and Economic Growth)	Presentation of results from sensitivity test modelling of 'no widening scheme on M1' scenario.
LBC 01/08/22	LBC (Planning and Economic Growth)	General update on further analysis undertaken since Statutory Consultation.
CBC 22/03/22 29/04/22	CBC (Community Services)	Discussion of comments made at Statutory Consultation.
CBC 27/07/22	CBC (Community Services)	Presentation of results from sensitivity test modelling of 'no widening scheme on M1' scenario.
CBC 10/08/22	CBC (Community Services)	General update on further analysis undertaken since Statutory Consultation.
HCC 25/03/22	HCC (Environment and Infrastructure) WSP	Discussions regarding the transport modelling.

Principal stakeholder and date	Attendees (organisation)	Summary of discussion
HCC 04/05/22	HCC (Environment and Infrastructure)	Discussion of comments made at statutory consultation.
LBC, CBC, HCC 16/03/22	Represented by WSP	Discussion of comments made at statutory consultation.
LBC, CBC, HCC 14/09/22	Represented by WSP	Presentation covering sensitivity test regarding no widening on the M1 southbound carriageway south of Junction 10, and details of predicted traffic flows on B653 and roads to south of A505 in 2043.
DBC 24/03/22	DBC	Discussion of comments made at statutory consultation.
Travel Plan Workshop 12/07/22	National Highways LBC (Planning and Economic Growth) CBC (Community Services) HCC (Environment and Infrastructure) North Herts District Council (Strategic Infrastructure and Projects)	Discussion of governance of the Travel Plan.
Public Transport Mode Share Presentation 24/6/22	National Highways LBC (Planning and Economic Growth) CBC (Community Services) HCC (Environment and Infrastructure)	Presentation explaining the benchmarking approach to the determination of the future public transport mode share for air passengers, rail capacity assumptions, and employee public transport mode share.
Royal Mail 14/02/22 16/03/22	Royal Mail	Further discussion regarding Royal Mail concerns about the impact of the airport expansion on its operation.

18.5 Methodology

Overview

- 18.5.1 This section outlines the methodology employed for assessing the likely significant effects on Traffic and Transportation from the construction and operation of the Proposed Development. A detailed description of the methodology used to calculate the magnitude of impact and the assessment of significance of effects is presented in **Appendix 18.1** of this ES **[TR020001/APP/5.02]**.
- 18.5.2 The effect of the Proposed Development for three future years identified in **Chapter 5** Approach to the Assessment of this ES **[TR020001/APP/5.01]** is based on the changes that occur on the transport networks for a 'Do Minimum' scenario in which there is no further development of the airport, and the throughput remains capped at 18 mppa, and a 'Do Something' scenario which incorporates the additional movements on the transport networks and mitigation measures proposed for each assessment phase.
- 18.5.3 The scale and extent of the assessment has been defined in accordance with the 'Guidelines for the Environmental Assessment of Road Traffic' produced by the IEA, now the IEMA and referred to as the 'IEMA Guidelines' (Ref. 18.19). These guidelines recommend that the environmental effects listed in Table 2.1 of the guidelines may be considered important when considering traffic from an individual development. These include:
- a. severance;
 - b. driver delay;
 - c. pedestrian delay;
 - d. pedestrian amenity;
 - e. accidents and safety; and
 - f. hazardous loads.
- 18.5.4 This list was compared with the effects identified in DMRB and the following additional topics identified for inclusion in this assessment:
- a. driver stress; and
 - b. pedestrian fear and intimidation (to reflect pedestrian amenity);
- 18.5.5 The assessment considers potential impacts on road and transport users, including:
- a. drivers of vehicles;
 - b. passengers in vehicles;
 - c. cyclists;
 - d. pedestrians;
 - e. those living close to the highway network; and
 - f. public transport users.

- 18.5.6 The assessment covers several years to reflect the phased build-up of passenger throughput identifying key infrastructure requirements for each assessment phase. The future year growth is based on passenger demand forecasts. The assessment scenarios are:
- Assessment Phase 1 (2027) – 21.5 mppa;
 - Assessment Phase 2a (2039) – 27 mppa; and
 - Assessment Phase 2b (2043) – 32 mppa.
- 18.5.7 In light of the scale of the Proposed Development and the nature of the local transport networks it was determined at an early stage that the prediction of future airport related trips should be based on the Central Bedfordshire and Luton Transport model which is a multi-modal model used in assessing the impacts of transport schemes and developments proposed for both Luton and Central Bedfordshire. Within that model the airport was represented by a single zone and was located towards the edge of the detailed model network. It was determined that the model would need to be modified to support assessment of the Proposed Development.
- 18.5.8 It was agreed with HCC that parts of its COMET model, a similar model used to test transport schemes in that county could be incorporated into the extended CBLTM-LTN model. The team that has undertaken the surface assess study for the Proposed Development has extensive knowledge of transport issues related to the airport, having been involved in assisting with the growth of the airport since the middle of the 1990s. This knowledge, together with desire lines of travel to the airport derived from the 2019 CAA Passenger Survey at the airport, informed the geographical extent of the detailed area in the enlarged model. The area covered by the detailed network is shown on **Figure 18.3** of this ES **[TR020001/APP/5.03]** and has an area in excess of 1,500sqkm.
- 18.5.9 The means of travel by air passengers and employees to and from the airport is an important component of the building of the trip matrices used in the models. The strategy with regard to achieving an increased use of public transport is described in the **SAS [TR020001/APP/7.12]** and expanded upon in the **TA [TR020001/APP/7.02]**. The broad split between public transport and private modes of travel is shown in **Table 18.7**.

Table 18.7: Assumed mode shares used in CBLTM-LTN

Mode	'Do Minimum' (All Years)	'Do Something' 2027	'Do Something' 2039	'Do Something' 2043
Bus/coach	17%	17%	18%	18%
Rail	23%	23%	27%	27%
Public transport sub-total	40%	40%	45%	45%
Taxi	17%	17%	16%	16%
Car	43%	43%	39%	39%

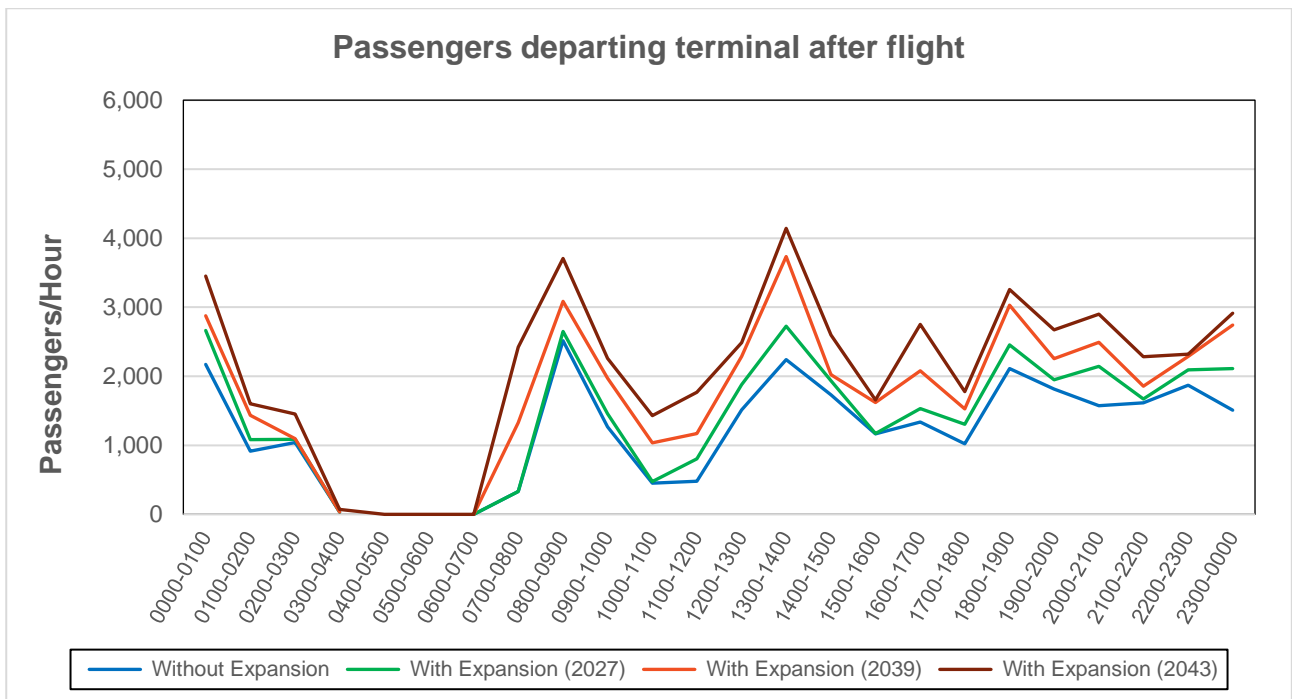
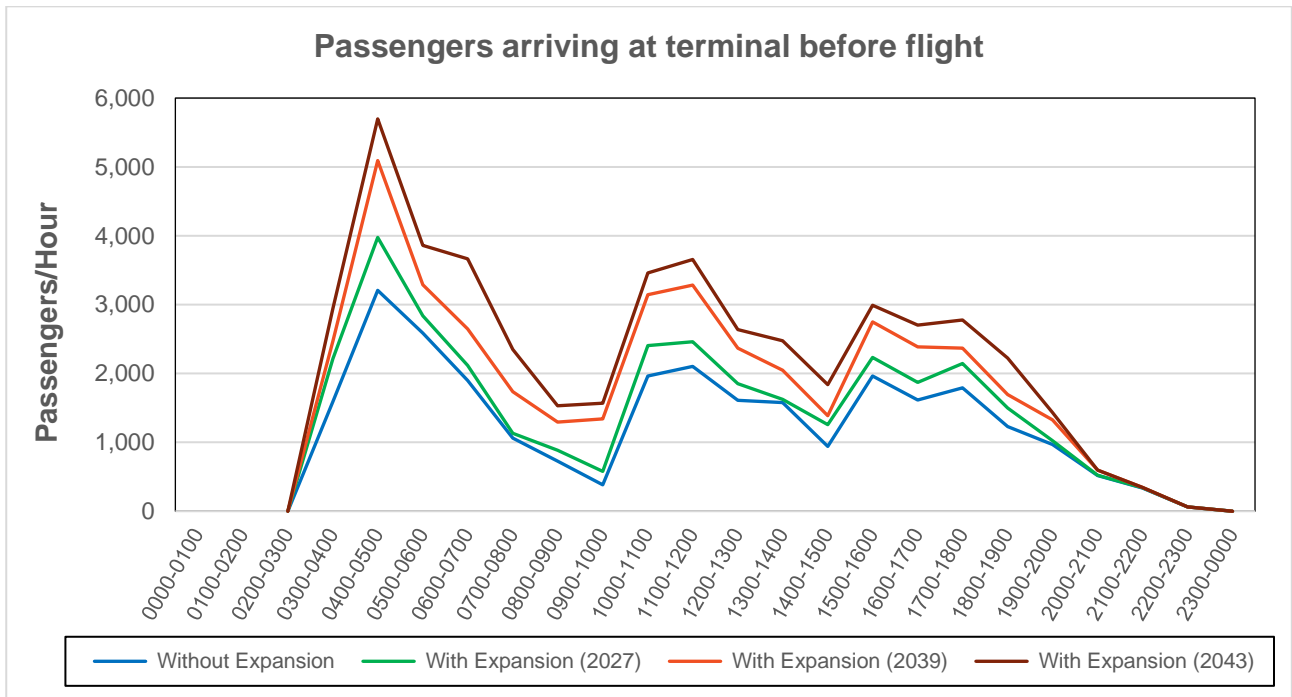
Mode	'Do Minimum' (All Years)	'Do Something' 2027	'Do Something' 2039	'Do Something' 2043
Total	100%	100%	100%	100%

Note: Percentages are subject to rounding

18.5.10 The distribution of trips by time of day has been based on the forecast aircraft movements for October timetables which were prepared specifically as input to the production of the matrices for the CBLTM-LTN. October timetables rather than Busy Day Timetables have been used because the Busy Day in each year is likely to occur in the peak of summer when background road traffic is lower due to the school holidays. The October day represents a typical busier day for the month (excluding the half term peak) to test against a normal level of background traffic demand and is considered more appropriate for surface access modelling and represents a time when total traffic flows are greatest.

18.5.11 Outbound passengers need to arrive at the terminal building some time in advance of the time of the departure of their flight and for inbound passengers there is a lag between an aircraft arriving on its stand and passengers disembarking, passing through the terminal, and then either boarding a train, bus or coach or getting into a car/taxi. To take this into account, it has been necessary to adjust the profile of aircraft movements to convert the profile of the forecasts of aircraft movements to movement on the local transport network. This process is described in **Section 9.5** of the **TA [TR020001/APP/7.02]**. The profiles of air passengers travelling to and from the terminals are shown in **Inset 18.2**. These distributions have been used to develop the matrices for both the highway and public transport components of CBLTM-LTN.

Inset 18.2 Profiles of air passenger airside departures and arrivals at the terminal buildings



18.5.12 In the assessment reported in **Section 18.9**, the scale of the effects that have been examined are influenced to a high degree by the pattern of aircraft movements at the airport. Because almost all of the flights are short haul, either within the United Kingdom or continental Europe, the aircraft are parked overnight rather than flying. Consequently, unlike London Heathrow Airport, there are very few passengers arriving at the airport in the early morning having undertaken an overnight intercontinental flight.

- 18.5.13 The pattern of departures from the airport is one of a high number of departing aircraft leaving in the first few hours of operation, with around 30% of daily departures occurring before 09:00 and this translates to around a third of passengers catching flights arriving at the terminal before 07:00 when the transport networks around the airport are not under pressure. This observation is true for all scenarios. Over the four scenarios between 5% and 6% of air passengers either arrive at or leave the terminal in the morning (08:00 to 09:00) and evening (17:00 to 18:00) peak hours.

Baseline methodology

- 18.5.14 The approach to defining future baseline is described in **Section 5.4** of this **ES [TR020001/APP/5.01]**. The future baseline considered for Traffic and Transportation is described **Section 18.7** of this chapter.
- 18.5.15 Existing data was sourced from the existing CBLTM, Hertfordshire's county-wide model (COMET) and National Highways WebTRIS database. This included traffic count data, journey time survey data, highway demand data and public transport data.
- 18.5.16 Details of the existing data used is provided in the 'Strategic Modelling: Data Collection Report' which is Appendix C of the **TA [TR020001/APP/7.02]**. A summary of the surveys that were undertaken is provided in **Section 9.2** of the **TA [TR020001/APP/7.02]**.
- 18.5.17 Bus company and rail operator websites were reviewed to establish baseline public transport provision, including routes and frequencies.

Construction assessment methodology

- 18.5.18 The basis of the construction assessment is the predicted flows of construction vehicles that have been produced for the Construction Method Statement and Programme Report provided as **Appendix 4.1** of this **ES [TR020001/APP/5.02]**.
- 18.5.19 Using professional judgement, the most appropriate route for construction traffic was identified and presented in the 2019 and 2022 Preliminary Environmental Impact Reports (PEIRs). There were no objections to this routing from the highway authorities. Based on that route, predicted traffic volumes have been produced which have then been compared with the predicted flows that have been extracted from the CMLTM-LTN for the appropriate scenarios on those roads. The scenarios are identified in **Section 18.9**.
- 18.5.20 The methodology that has been used is to undertake further assessment of the effect of the changed vehicle movements where the increase/decrease is 30%, or 10% if there is a sensitive receptor along a specific link. For those road links that exceed that threshold for the increase/decrease in the flows an analysis is undertaken to consider the effects listed in **paragraph 18.5.4** on drivers of vehicles, passengers in vehicles, cyclists, pedestrians, those living close to the highway network. This has established the magnitude of impact which when compared with the sensitivity of that road link gives the significance of the traffic effects and hence whether the effect is significant or not significant. More

detailed information on the analysis process is provided in **Appendix 18.1** of this ES [TR020001/APP/5.02].

- 18.5.21 The Outline CTMP that will be in place prior to commencement of the Proposed Development will secure a routing agreement for the construction HGVs. It is expected that the great majority of construction HGVs will use only motorways and 'A' roads, as directed by the CTMP. In the vicinity of the airport this will be the A1081 and the M1.
- 18.5.22 For the purpose of this assessment, it has been assumed that at the time of peak construction traffic activity all construction HGVs will be limited to the A1081, and the M1. At this stage it is not possible to predict how the traffic will split when it gets to the M1 and, therefore, two alternatives have been considered. The first of these assumes that four fifths of the traffic will either travel to or from a point that will require the traffic to use the M1 to the south of Junction 10 with the remaining construction traffic using the M1 to the north of Junction 10 (Alternative A). The second test has assumed a reversal of these proportions and is referred to as Alternative B.
- 18.5.23 The predicted profile of construction vehicle movements over the period that construction of the Proposed Development will take place is shown in **Inset 18.1**.
- 18.5.24 The higher flows of construction traffic will occur in the interpeak hours with construction traffic discouraged during the normal commuter peak periods through the implementation of the CTMP.

Operational assessment methodology

- 18.5.25 A detailed description of the methodology used for the assessment of the significance of environmental effects for the operational stage is set out in **Appendix 18.1** of this ES [TR020001/APP/5.02]. The assessment is similar to that described for the construction assessment with the exception that the change in traffic flows attributable to the Proposed Development is established by comparing for each link the predicted flows for the 'Do Minimum' and 'Do Something' scenarios.

Highway

- 18.5.26 **Paragraph 2.2.1** of **Appendix 18.1** of this ES [TR020001/APP/5.02] presents two broad rules of thumb from the IEMA guidelines (Ref. 18.19) that are suggested as a means of filtering out road links where the predicted percentage change in traffic flows is at a level where the significance of the effects can be stated to be negligible and further detailed assessments are not warranted.
- 18.5.27 The change in traffic flow along a section of road is the main determinant of the magnitude of the impact.
- 18.5.28 The CBLTM-LTN highway model includes three hourly periods, the definitions of these time periods are:
- a. AM Peak hour between 08:00 and 09:00;
 - b. Interpeak hour (an average hour between 10:00 to 16:00); and

- c. PM Peak hour between 17:00 and 18:00.

18.5.29 To establish the changes, predicted traffic flows for the years 2027, 2039, and 2043 have been extracted from the CBLTM-LTN for both the 'Do Minimum' and 'Do Something' scenarios. The Study Area for the assessment of highway related effects covers an area more than 1,000 sq. km; it was therefore appropriate to screen the road links for further consideration for those that might be associated with an environmental effect. Information on traffic flows on 252 road links (219 two-way and 33 one-way) has been extracted from the CBLTM-LTN. This initial sift to reduce this selection of the road links for investigation was based on a knowledge of the operation of the local highway network. Once the data was available it was possible to confirm that this initial selection covered all roads where an environmental effect might occur. Data for this assessment has been provided for the following periods.

- a. AM Peak Hour (08:00 to 09:00);
- b. PM Peak Hour (17:00 to 18:00);
- c. AM Peak Period (07:00 to 10:00);
- d. Interpeak Period (10:00 to 16:00);
- e. PM Peak Period (16:00 to 19:00);
- f. Off Peak Period (19:00 to 06:00);
- g. Annual Average Daily Total (AADT);
- h. 24-hour AAWT (weekdays all day); and
- i. 18-hour AAWT (weekdays 06:00 to 24:00).

18.5.30 The flows for bullet points 'a' and 'c' have been taken directly from CBLTM-LTN. The interpeak period has been obtained by multiplying the average flow by six, the number of hours in the period. The remaining flows have been established using factors that have been calculated from the automatic traffic counters that were placed around the highway network and the traffic data for the motorways extracted from the WebTRIS database.

18.5.31 The links have been separated into seven categories:

- a. M1 and access route to/from the airport (12 two-way, 15 one-way);
- b. Access route to the A1(M) using the A505 and A602 (28 two-way, three one-way);
- c. Other 'A' roads (21 two-way);
- d. Other urban local roads (46 two-way);
- e. Rural roads to east and north of the airport (28-two-way);
- f. Rural roads to west and south of the airport (10 two-way); and
- g. Internal airport roads (14 two-way).

18.5.32 The traffic flow data for these selected links is provided in **Appendix 18.2**, of this ES [TR020001/APP/5.02]. In that appendix, **Tables 1.1 to 1.3** show the Annual Average Daily Traffic (AADT), AM Peak and PM Peak flows

respectively. The tables also show the change in flow between the 'Do Minimum' and 'Do Something' scenarios. The change is expressed as both a flow in vehicles and as a percentage.

- 18.5.33 For convenience, the percentage increases set out in those tables have been collated in Table 1.4 of **Appendix 18.2** of this ES [TR020001/APP/5.02] to show the changes, expressed as percentages, for each of the three periods for the years 2027, 2039, and 2043.

Public Transport

- 18.5.34 There are no established criteria for consideration of the effects on public transport, therefore it has been necessary to use professional judgement to determine whether effects are significant/or not significant. In the absence of these criteria, the reasoning behind the conclusion is set out in this **Section 18.9**.
- 18.5.35 The profile for air passengers arriving at and departing by train at Luton Airport Parkway station has been developed based on the October timetables which were prepared by York Aviation (reference **paragraph 18.5.10**). This has been compared against projections of future capacity of rail services between St Pancras International and Luton Airport Parkway stations that have been based on the timetables that were in operation during Autumn 2022.

18.6 Assumptions and limitations

18.6.1 This section provides a description of the assumptions and limitations to the Traffic and Transportation assessment.

Assumptions

18.6.2 The following assumptions have been included in the Strategic and VISSIM models that provide the predictions of future airport related trips:

- a. Implementation of the measures set out in the **SAS [TR020001/APP/7.12]** will achieve a maximum non-sustainable travel modal share for trips by air passengers of 60% for Assessment Phase 1 and 55% for Assessment Phases 2a and 2b.
- b. Implementation of the measures set out in the **SAS [TR020001/APP/7.12]** and the **FTP [TR020001/APP/7.13]** will achieve maximum non-sustainable travel mode share for employees of 60% by 2040.
- c. Increase in airport employees is based on 350 employees per 1 mppa based on future employment data as set out in the **TA [TR020001/APP/7.02]**.
- d. The assumption of the time gap for passengers arriving at the airport before departure/leaving after arrival time is based on previous similar projects and was made to represent the appearance of passengers on the transport network before their departure flight/after their arrival flight. Details of the time gaps that have been adopted are presented in **Section 9.5** of the **TA [TR020001/APP/7.02]**.
- e. A vehicle occupancy rate of 1.87 air passengers for taxis and private cars (notes to **Table 9.6** of the **TA [TR020001/APP/7.02]**).
- f. Public transport operators will provide increased capacity in response to the **SAS [TR020001/APP/7.12]**. This applies to bus, coach, and rail travel.
- g. East Luton highway improvement schemes to be implemented by LBC and it has been agreed with LBC that they should be included in the 'Do Minimum' and 'Do Something' scenarios for modelling purposes for all future assessment years.

18.6.3 In order to assess the effects of the additional trips on the railway network it has been necessary to assume that the timetables operated by Thameslink and EMR during the Autumn of 2022 will remain unchanged through the assessment years. However, as expressed in point (f) above, it is hoped that the operators will respond with additional capacity when warranted by the additional demand and where it is practicable.

Limitations

18.6.4 There have been no notable limitations regarding methodology or available data in the preparation of this chapter.

Reasonable Worst Case

- 18.6.5 **Chapter 5** of this ES [TR020001/APP/5.01] describes the general approach adopted to ensure that a reasonable worst case is assumed in this assessment including the use of parameters, accounting for uncertainty, and incorporating flexibility in design and demand forecasts.
- 18.6.6 Further relevant assumptions on the reasonable worst case specific to this assessment include:
- a. Mode shift had improved already, prior to the Covid-19 pandemic and the opening of Luton DART. Although the mode shift for public transport fell as people avoided public transport during the pandemic this demonstrates that the measures were effective in producing mode change.
 - b. Additional trips in the 'Do Something' scenario include new trips generated by Century Park (now Green Horizons Park) development, which do not form part of the application for development consent.
- 18.6.7 Because the Green Horizons Park development is dependent on the Airport Access Road (AAR) for access, it has not been appropriate to include the traffic associated with that development in the 'Do Minimum' scenario; however, this does distort the 'Do Something' scenario because the changes include the Green Horizons Park traffic as well as the additional airport related traffic, thereby exaggerating the increase in traffic on the highway network. Furthermore, the Proposed Development will include some of the land that was assumed to form part of the Green Horizons Park development, therefore the scale of development that will be delivered in practice is likely to be less than the total consented.

18.7 Baseline conditions

Existing conditions

- 18.7.1 The airport is located on the eastern side of Luton, four kilometres from the town centre. Landside access to the terminal is along Airport Way, which passes the mid-stay car park and beneath a taxiway to feed a public transport hub (PTH), drop-off zone, taxi rank, short-stay car park, and some staff car parking near the terminal building. Access to other parts of the airport that includes the long-stay car park, the two general aviation terminals is along Percival Way/President Way. In addition to the connection with New Airport Way, Frank Lester Way provides a connection with Eaton Green Road to the north of the airport.

Highway Network

- 18.7.2 The highway network is described in detail in **Section 5.1** of the **TA [TR020001/APP/7.02]**. The airport is well located with respect to the strategic highway network as shown in **Figure 18.1** of this ES **[TR020001/APP/5.03]**. The current terminal is 4.6km from Junction 10 of the M1 to which it is connected by the A1081 a dual carriageway road. The section of the M1 between Junction 10 and the crossing of the M25 at Junction 6A to the south has four lanes in each direction. South of Junction 6A the M1 is formed as a dual three lane carriageway. To the north of Junction 10 the M1 has three lanes in each direction with smart motorway incorporating hard shoulder running when additional capacity is needed.
- 18.7.3 Since 2006 there have been several major improvements to the A1081 with the most recent being the upgrading of the section of Airport Way between Percival Way and the terminal.
- 18.7.4 The section of the A1081 between the grade separated junction serving the Capability Green Business Park and the junction of Airport Way and Percival Way was realigned and dualled as part of the East Luton Corridor project (opened in 2008).
- 18.7.5 When the M1 was first constructed there was a short spur off the M1, constructed to motorway standards that terminated at a roundabout that was designated Junction 10A. The length of the link was approximately ¾km. There was no direct link to the airport, and airport related traffic had to pass through built-up areas of the town. Over the years the route to the airport has been upgraded so that there is now a direct dual carriageway connection between the airport and the M1 Junction 10. The roundabout that previously formed the western end of the motorway spur was replaced by a grade separated junction with the section of motorway between Junctions 10 and 10A being widened to a three-lane dual carriageway and removed from the motorway network, with the work being completed in 2015. As part of that work, the section of the A1081 between the new grade separated roundabout and the west facing slip roads serving the Capability Green Business Park was also widened to three lanes on each carriageway, although only two lanes are carried through the new junction between its slip roads.

- 18.7.6 The A505 provides a link to the A1 corridor in Hertfordshire. In the vicinity of the airport the A505 runs along Kimpton Way and Vauxhall Way. The link between the A505 and the airport is provided by Airport Way. Vauxhall Way is a single carriageway road with several roundabout junctions along it. At the northern end of Vauxhall Way, near Round Green, the A505 turns towards the north east. The road is then a dual carriageway which continues for approximately 9km before returning to a single carriageway layout just before entering Hitchin. From Hitchin the most direct route to the A1 corridor is along the A602, which crosses the A1(M) at Junction 8. Once the A602 is clear of Hitchin it becomes a dual carriageway as it forms the Little Wymondley Bypass. The A505 crosses the A1(M) at Junction 9 (Letchworth Gate) and continues across country for 37km before joining the A11 to the west of Pampisford.
- 18.7.7 The B653 to the south of Luton provides a link to Harpenden and an alternative route to the A1(M) at Junction 4. This route is only attractive for car travel to and from a limited area which is confined to Harpenden, villages along the B653 and parts of Welwyn Garden City and Hatfield.
- 18.7.8 The connection with Eaton Green Road, using Frank Lester Way, provides two alternative routes for connection with the A505 at Stopsley Green Roundabout further north. The first follows Lalleford Road, Crawley Green Road and then Ashcroft Road, while the second follows Wigmore Lane passing the Wigmore Hall Shopping Centre before crossing Crawley Green Road to then join with Ashcroft Road some 300m south east of Stopsley Green. The former is shorter, but Wigmore Lane is the more direct in terms of its characteristics and therefore tends to be the favoured route for employees and others with local knowledge seeking the employment areas at the airport and beyond. The area to the north of the airport is predominantly residential with many of the estate roads having a 20mph speed limit. This includes Lalleford Road and the short length of Crawley Green Road that provides the connection with Ashcroft Road.
- 18.7.9 There is a network of country lanes to the east of the airport that can be used for travel to the A1 corridor. Use of this network will involve using some roads on which passing traffic travelling in the opposite direction requires the use of passing bays.

Cycle and Pedestrian Networks

- 18.7.10 By the nature of the size of the catchment area for the airport and the need for many air passengers to travel with luggage, cycling and walking are only significant modes for employees. Facilities for cyclists, including National Cycle Route (NCR) 6 and pedestrians are described in **Chapter 5** of the **TA [TR020001/APP/7.02]**.

Public Transport

Rail

- 18.7.11 Unlike the other London airports, the airport is not served directly by a rail line; the nearest station is Luton Airport Parkway railway station.

- 18.7.12 In 2017 when the Strategic Model was being developed and the targets for the future mode share of air passengers travelling by public transport were being developed, Luton Airport Parkway station was served by Thameslink and East Midlands Trains (EMT). EMT was a train operating company, which operated the East Midlands franchise from November 2007 until August 2019 when it was replaced by EMR. The EMT service was hourly and typically operated by five coach Class 222 Meridian diesel-electric multiple unit trains serving the route between St Pancras International and Nottingham stations.
- 18.7.13 As demonstrated in the following paragraphs the accessibility of the airport by rail has been upgraded significantly since then and this is reflected in an increase in the proportion of air passengers travelling to and from the airport between 2017 and the start of the pandemic.
- 18.7.14 To enhance the attractiveness of rail as a means of travelling to the airport, the Applicant and LBC invested in the Luton DART, a new cable-hauled fast passenger transit connecting Luton Airport Parkway station to the airport terminal building, a distance of 2.2km. Construction of the Luton DART commenced in April 2018 and the date of opening will be announced in early 2023.
- 18.7.15 Prior to the commencement of services by the Luton DART, linkage between the station and the terminal is provided by a shuttle bus service operating at a ten minute frequency. The reliability and journey time of the bus service can be affected by traffic congestion, which is difficult to predict in advance. These issues lead to stressful and delayed journeys to the airport which in turn has in the past reduced the attractiveness of travel to and from the airport by rail.
- 18.7.16 The system comprises two trains, with each train featuring four cars. The trains are automatically operated with the journey from start to finish taking four minutes. Each train has the capacity to carry up to 170 passengers.
- 18.7.17 The core of the Thameslink service is a combination of trains operating a regional service between Bedford and Brighton (2 trains per hour) and Bedford and Gatwick Airport (2 trains per hour). Between Luton Airport Parkway station and St Pancras International station the trains additionally call at Harpenden and St Albans with approximately half of the trains also calling at West Hampstead station. The journey time for trains travelling towards Luton is on average 30 or 33 minutes depending on whether the service stops at West Hampstead station. In the opposite direction the corresponding average times are 33 and 35 minutes. At St Pancras International and other stations in London served by Thameslink services there is the opportunity to connect with the London Underground and services on the Southeastern network that provides commuter and regional services in South East London and Kent, and also serves parts of East Sussex. The available connections in Central London to other rail networks are listed below:
- a. St Pancras International – Metropolitan, Circle, Hammersmith and City, Northern (Bank branch), Piccadilly, Victoria lines, Southeastern high speed train service;

- b. Farringdon – Metropolitan, Circle, Hammersmith and City lines, and Elizabeth Line;
- c. Blackfriars – Circle and District lines; and
- d. London Bridge – Northern (Bank branch) and Jubilee lines, Southeastern rail services terminating at Canon Street and Charing Cross, Southern services terminating at London Bridge.

- 18.7.18 West Hampstead station provides an alternative location for residents of north London to connect with the Thameslink services to the airport. Stations that serve the London Overground and Jubilee line and are within a 150m and 250m walking distance respectively. Trains on this section of the London Overground operate between Stratford and Clapham Junction or Richmond.
- 18.7.19 The other part of the Thameslink service that also calls at Luton Airport Parkway station is a suburban stopping service running between Luton and Rainham (two trains per hour), with some peak period trains going to Orpington. These trains generally call at all stations between Luton Airport Parkway station and St Pancras International except for Hendon, Cricklewood, and Kentish Town although there are a few services that call at all stations, but these are mainly in the early hours of the morning or in the late evening. Bus stops on West End Lane close to the ticket hall of West Hampstead station are served by the following routes:
- a. 139 – Golders Green to/from Waterloo (24 hour service);
 - b. 328 – Chelsea to/from Golders Green; and
 - c. C11 – Archway to/from Brent Cross Shopping Centre.
- 18.7.20 With the incorporation of the services from Peterborough and Cambridge into the Thameslink network in 2018, the area which is served by Thameslink services with a single change of train without a change of platform has expanded; consequently, the area within which public transport is a realistic option for journeys to and from the airport has increased. The Class 700 electric multiple unit (EMU) trains that provide all services on the Thameslink service have been designed to be able to provide a metro-style service of up to 24 trains per hour running across Central London, between Blackfriars and St Pancras. In order to do this the number of seats per carriage has been reduced, corridors widened, and more standing room provided which help to reduce the dwell time needed for passengers to board and alight.
- 18.7.21 In May 2021, EMR introduced a new half-hourly service named EMR Connect following electrification of the line between Bedford and Corby. The trains run non-stop between Luton Airport Parkway and St Pancras International stations. The average travel time is around 24 minutes. To the north the trains call at Luton, Bedford, Wellingborough, and Corby. Any passenger wishing to travel to and from the East Midlands can change at Kettering.
- 18.7.22 Based on the timetable for Thameslink covering the period Sunday 4 September 2022 to Sunday 4 December 2022 (ref.18.25) and the EMR timetable covering the period Monday 16 May 2022 to Saturday 10 December 2022 (ref.18.26), the total number of services operating between Luton Airport

Parkway and St Pancras International stations on weekdays and at the weekend is set out in **Table 18.8**.

Table 18.8: Number of trains running between Luton Airport Parkway and St Pancras International stations

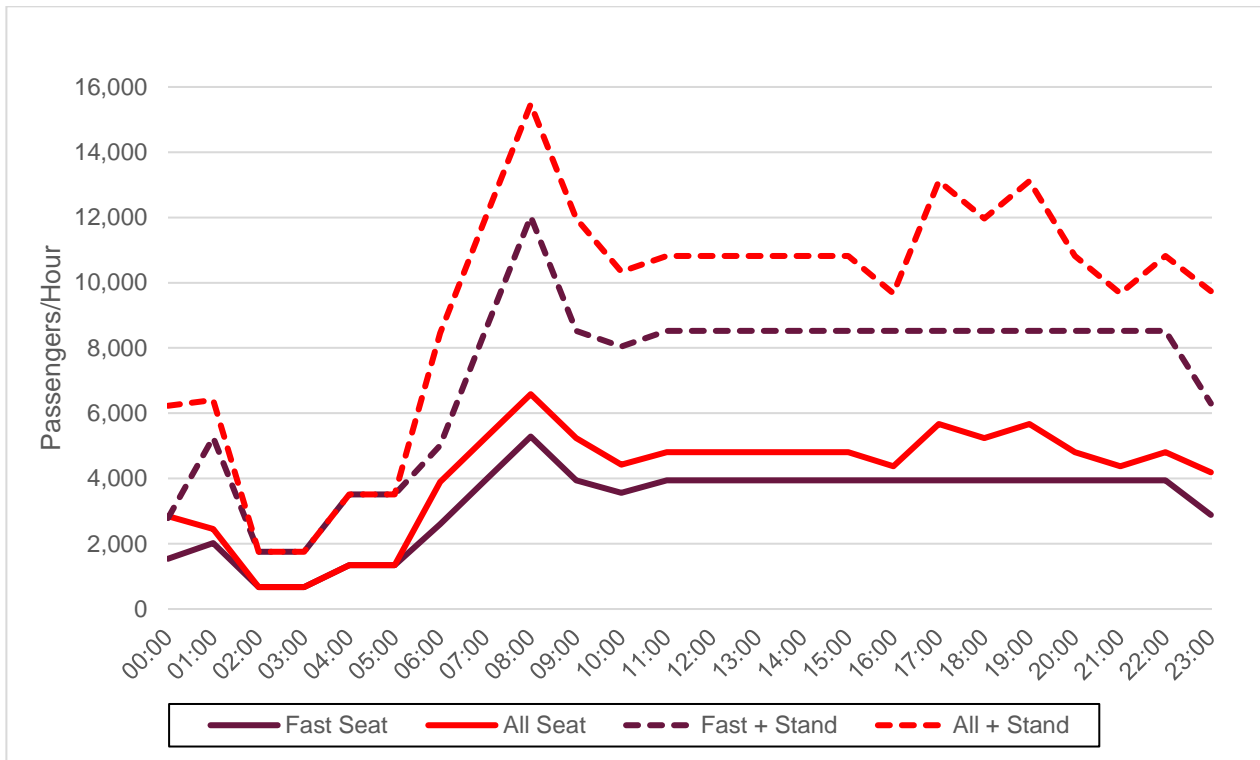
	Weekday			Saturday			Sunday		
	GTL ¹	EMR	Total	GTL	EMR	Total	GTL	EMR	Total
Southbound	123	36	159	117	34	151	91	29	120
Northbound	129	38	167	113	35	148	99	29	128

Notes

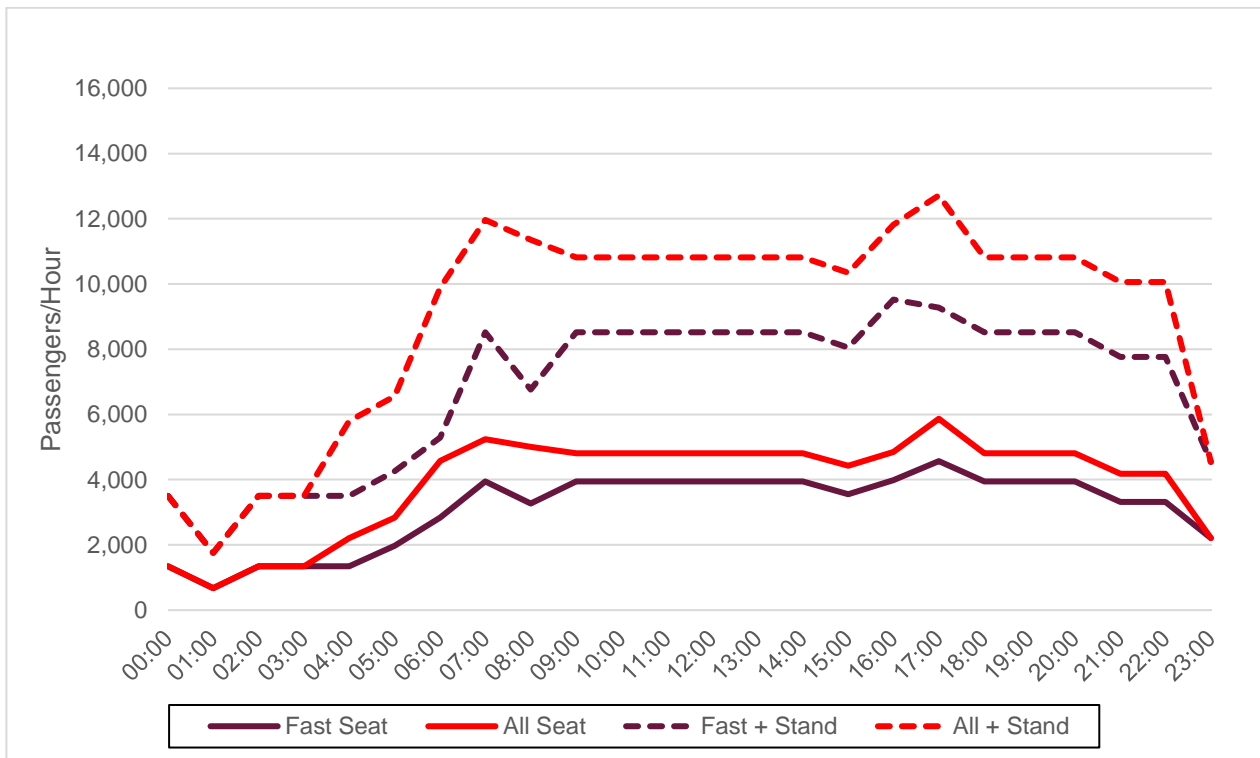
- 1) Govia Thameslink

18.7.23 **Inset 18.3** and **Inset 18.4** show the capacity of the train services that pass through Luton Airport Parkway station for both directions. Four levels of capacity are shown. The first is the number of seats provided on the EMR services and the Thameslink regional service, as described in **paragraph 18.7.17**, which provide the most attractive service to the great majority of air passengers travelling towards or from London ('Fast Seat'). The second capacity ('All Seat') shows all seats available which includes the Thameslink metro service, as described in **paragraph 18.7.19**. The third and fourth are the corresponding capacities with standing passengers included ('Fast' + Stand' and 'All + Stand'). The capacity of each type of train that is operating on the route is provided in Section 2.2 of **Appendix 18.1** of this ES **[TR020001/APP/5.02]**. For the purpose of this exercise, it has been assumed that all EMR Connect trains will be formed of three 4-car sets, although it is more likely that the formation would reflect demand. The two versions of the Class 700 trains operated by Thameslink are fixed so that there is no variation.

Inset 18.3 Capacity of northbound rail service by hour of day



Inset 18.4 Capacity of southbound rail service by hour of day



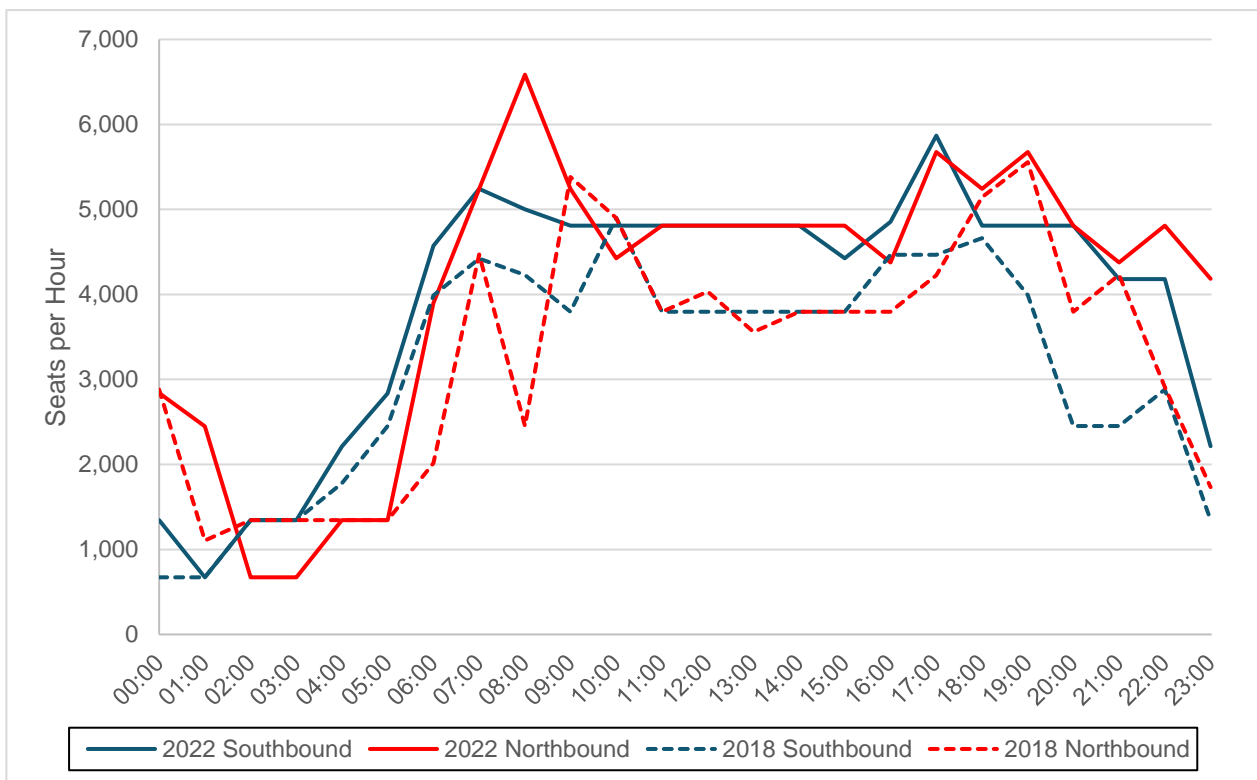
18.7.24 Although the EMR Connect service provides the shortest journey time to and from St Pancras International, a significant proportion of these passengers are travelling by train to West Hampstead or south of that station and for those

passengers it is likely to be more convenient to travel on the Thameslink regional service rather than change trains. This includes passengers who wish to interchange at Farringdon station with the Elizabeth Line.

18.7.25 The Elizabeth Line provides many London Boroughs with a greatly improved connection to Thameslink services, and consequently onward to the airport, by reducing journey times to/from Barking and Dagenham, City of London, Ealing, Greenwich, Havering, Hillingdon, Newham, Redbridge, Tower Hamlets, and Westminster. The anticipated impact will be to encourage an increasing proportion of air passengers currently travelling by car and taxi when accessing the airport from Greater London to switch to rail.

18.7.26 The revisions to the rail timetable that have taken place since 2018, principally the introduction of the EMR Connect service, have resulted in the provision of more than 19,000 additional seats on the route between Luton Airport Parkway and St Pancras International stations (in each direction) which is an increase of 24%. The profile of all seat provision over the course of a weekday is shown on **Inset 18.5** for both the 2018 and 2021 timetables to demonstrate the changes.

Inset 18.5 Seating capacity of trains serving Luton Airport Parkway station (2018 and 2022)



18.7.27 A contactless payment travel system has been introduced at Luton Airport Parkway station and will be extended to include the Luton DART service when it becomes operational.

Bus and Coach Services

- 18.7.28 The airport PTH, located adjacent to the terminal, is arranged to cater for the wide variety of services that the airport operations demand with 17 bus/coach stands allocated to specific services. Bus and coach operations are a prominent feature of the hub to serve the need for interchange with this important mode. Alongside coach and bus services, the dedicated PTH accommodates the regular rail-air shuttle and shuttle buses linking with the airport's long, medium and peripheral staff car parks and the car hire facility.
- 18.7.29 Coach and local bus services are detailed in **Section 5** of the **TA [TR020001/APP/7.02]**.

Future baseline

- 18.7.30 In the absence of the Proposed Development, there is likely to be a change to the future baseline conditions as a result of other factors and developments in proximity to the airport. These changes will be both physical, such as changes to the layout of a road, and changes in use, that is variations in car trips, passengers on public transport etc. These are the conditions that will prevail for the 'Do Minimum' scenario. The 'Do Minimum' scenario is used, where appropriate, as a comparator for the assessed case, to show the effect of the Proposed Development against an appropriate reference point. The approach to defining future baseline and the developments identified for consideration are described in **Section 5.4** of **Chapter 5** of this ES **[TR020001/APP/5.01]**.

Highway Network

- 18.7.31 A package of schemes was identified in the East Luton Study (Ref. 18.27) (carried out on behalf of LBC). These schemes were designed to address traffic pressures arising from planned growth in housing and employment identified in the Luton Borough Local Plan (Ref. 18.6) and growth in neighbouring districts.
- 18.7.32 A series of proposed East Luton highway improvements were identified from these studies. **Table 18.9** below summarises the junction locations where highway improvements were planned as part of the East Luton package of works. The first scheme in the table, the upgrade of the junction of Stopsley Way and Vauxhall Way, has been implemented and is now fully operational. For traffic modelling purposes it was agreed with LBC that the other East Luton improvements, as tabulated below, will be delivered by LBC and be in place by 2027 and will not form part of the application for development consent. These improvements are included in all of the 'Do Minimum' and 'Do Something' scenarios.

Table 18.9: East Luton highway improvements – non airport expansion related

Location	Summary of Improvements
A505 Stopsley Way/A505 Vauxhall Way	Upgrade from roundabout to signal controlled junction and amendments to the junction with Birchen Grove (implemented)
Hitchin Road/Ramridge Road	Upgrade from a roundabout to a signal-controlled junction
A505 Vauxhall Way/Crawley Green Road	Upgrade from a roundabout to a signal-controlled junction
A505 Vauxhall Way/Eaton Green Road	Improvements to the roundabout with signal introduction
Windmill Road/Manor Road/St Mary's Roundabout/Crawley Green Road	White line measures
A1081 New Airport Way/Kimpton Road/Vauxhall Way	Upgrade roundabout to signal controlled junction
A1081 New Airport Way/B653/Gipsy Lane	Improvements to existing roundabout
Windmill Road/Kimpton Road	Upgrade to mini roundabout
Vauxhall Way Corridor	Dualling from Stopsley Way to Airport Way/Kimpton Rd

18.7.33 From the transport modelling work undertaken, which includes M1 Junction 10, it is evident that:

- a. in the design year of 2039, in the 'Do Minimum' scenario, some form of motorway capacity improvement would be helpful in accommodating forecast background growth in the peak periods; and
- b. there is a need to consider the inclusion of such an improvement in the transport modelling to ensure that solutions for M1 Junction 10 and Airport Way are reasonably future proofed.

18.7.34 As such, and for modelling purposes only, it was deemed sensible to assume that the section of the M1 motorway between junctions 9 and 10 operates with an improved capacity that includes hard shoulder running. It is considered that hard shoulder running is the most likely scheme to improve motorway capacity should any scheme be considered by National Highways in the future.

18.7.35 This does not imply that there is an approved scheme for widening of the M1, or that hard shoulder running, or any other capacity improvement is programmed to be delivered. However, it was considered prudent to evaluate a scenario that allows more traffic to flow through M1 Junction 10 at peak times to assess a more robust, future-proofed set of potential schemes.

18.7.36 At the request of the highway authorities a sensitivity test has been undertaken to consider the issues that would arise were there to be no widening on the southbound carriageway of the M1 between Junction 9 and 10. The implications

of the absence of the widening on the environmental assessment is reported in **Appendix 18.5** of this ES [TR020001/APP/5.02].

Public Transport

- 18.7.37 East West Rail is a major infrastructure project which is proposed to deliver a much-needed connection to overcome the lack of east-west transport options between Oxford and Cambridge and the communities between them.
- 18.7.38 A consultation on the proposed routes for the extension between Bedford and Cambridge took place between March and June of 2021. According to the consultation document (Ref. 18.28), the East West Rail services will be introduced in three 'Connection Stages':
- a. Connection Stage 1 – Oxford to Milton Keynes. The aim is to start services by 2025. In the November 2020 spending review the government committed to investment for the Bicester-Bletchley section (under construction);
 - b. Connection Stage 2 – Oxford to Bedford. New proposals were included as part of the March-June 2021 consultation. Trains would operate at a typical frequency of four/five per hour; and
 - c. Connection Stage 3 – Oxford to Cambridge. The options for this section of route are being refined prior to going to statutory consultation. Trains would operate at a typical frequency of four per hour.
- 18.7.39 The line when built will share a new Bedford station with EMR and Thameslink services where there would be a convenient interchange for people to travel onward to the airport. Furthermore, the line would provide an interchange with services on both the West and East Coast Mainlines.
- 18.7.40 The South Central Hertfordshire Growth and Transport Plan (Ref. 18.29) that is being developed by HCC recognised, *inter alia*, there are good north-south public transport connections, in particular railways, but there are more limited fast and frequent public transport connections running east-west in that part of the county (Hertfordshire). Accordingly, one of the measures that was put out to consultation in early 2020 was Package 16 – Luton – Wheathampstead – Hatfield and Welwyn Garden City Corridor (Ref.18.29). The overarching aim of the package is:
- “To facilitate new and existing public transport connections between Luton, Hatfield and Welwyn Garden City, alongside improvements to interurban cycling infrastructure and selective highway upgrades in order to improve reliability on the corridor.”*

18.8 Embedded and good practice mitigation measures

18.8.1 This section describes the embedded and good practice mitigation for Traffic and Transportation that has been incorporated into the Proposed Development design or assumed to be in place before undertaking the assessment. A definition of these classifications of mitigation and how they are considered in the EIA is provided in **Chapter 5** of this ES [TR020001/APP/5.01].

Embedded

18.8.2 The following embedded mitigation measures are included.

- a. Extension of the Luton DART system to serve the new terminal, which is required to maintain the benefits in modal shift that are predicted to occur now that it is operational, and which form an important part of the **SAS** [TR020001/APP/7.12]; and
- b. Proposed Off-Site Highway Intervention works listed in **Table 4.4** in **Chapter 4** of this ES [TR020001/APP/5.01] to reduce the adverse impact of the additional traffic on other road users. Outline design drawings showing the proposed interventions are provided in the **TA** [TR020001/APP/7.12]. These interventions are included in the 'Do Something' modelling scenarios.

18.8.3 In addition to the Off-Site Highway Improvements referred to above there are major highway works proposed within the airport to provide adequate access to the new terminal and cater for the growth in road traffic within the airport perimeter.

18.8.4 In March 2021 LBC resolved that the planning application for New Century Park, now known as Green Horizons Park (GHP) and the dual carriageway Century Park Access Road (CPAR), now referred to as the AAR, be granted subject to referral to the Secretary of State and the satisfactory completion of a Section 106 Agreement. This access road would result in substantial changes to the internal airport highway network and links between the internal network and the external highway network. Consent was granted in June 2021.

18.8.5 At the time that the 2019 statutory consultation was undertaken it had been the intention that the western section of this new road between New Airport Way and Frank Lester Way be constructed as part of the GHP development but that the eastern section would be incorporated into the Proposed Development in order to accommodate design changes to facilitate access to Terminal 2.

18.8.6 The application for development consent now includes the full length of the new road providing access to the east of the airport but now to be called the AAR. The AAR will start at a new junction on New Airport Way which will be controlled by traffic signals. It will pass over Airport Way, with no direct connection, and provide an alternative route to Percival Way, the eastern end of which will be closed, and a new link provided for traffic to transfer to the AAR. Percival Way will continue to provide access to the existing buildings that front onto it. The junction of the AAR with the link to Percival Way will have a fourth arm that connects to the northern section of Provost Way. This junction will be traffic signal controlled.

- 18.8.7 AAR will meet Frank Lester Way at a new traffic signal junction that will replace the existing roundabout junction. The AAR will continue eastwards along the line of President Way for just over 200 metres before taking a more northerly route to a new roundabout that will provide access to car parking to the north, providing some 1,200 spaces and the section of President Way that presently provides the route to the long-stay car park. From this roundabout the AAR continues for a further 200 metres to a four-arm traffic signal junction whose other arms are the access to the new terminal building, the Eaton Green link road and the access to the new long stay car park. Footways will be provided along both sides of the AAR east of its junction with the road providing the link to Percival Way.
- 18.8.8 As part of the introduction of the AAR, there will be changes to Percival Way and Frank Lester Way. The roundabout at the junction of Airport Way, New Airport Way, and Percival Way will be replaced by a new arrangement that will be controlled by traffic signals. Percival Way will no longer feed into this junction and will be diverted onto the line of Spittlesea Road which presently provides access to the Ibis Hotel and operates one-way (southbound). Frank Lester Way will be one-way northbound only.
- 18.8.9 For assessment purposes it has been assumed that the AAR will be constructed during Assessment Phases 2a and 2b. During Assessment Phase 2a, the section of AAR from New Airport Way to the link connection with Percival Way will be provided together with the section to the east of the junction with Frank Lester Way. The link will be constructed as a dual carriageway and its junction with the AAR will be a roundabout and with Percival Way it will be a small roundabout. The junction of Percival Way and Provost Way will be closed and access to the section of Provost Way south of the AAR will be off the new link.
- 18.8.10 During Assessment Phase 2b, the section of the AAR between the link to Percival Way and the junction with Frank Lester Way has been assumed to be delivered, the link to Percival Way reduced to a single carriageway, and the roundabout junction on the AAR converted to a traffic signal-controlled junction. The roundabout on Percival Way will be removed and replaced by a priority junction. To the east of this junction Percival Way will be a cul-de-sac providing access to land along its frontage. Frank Lester Way will be converted to one-way operation northbound and the roundabout at its junction with Eaton Green Road replaced by traffic signals.

Good Practice

- 18.8.11 There are three key plans that are considered good practice mitigation that will be produced, and therefore considered in place; these are:
- a. **FTP [TR020001/APP/7.13]** (for the airport operations);
 - b. **CTMP** (Outline CTMP included at **Appendix 18.3** of this ES **[TR020001/APP/5.02]**); and
 - c. **CWTP** (Outline CWTP included at **Appendix 18.4** of this ES **[TR020001/APP/5.02]**).

- 18.8.12 The requirement for a Travel Plan to be associated with the operation of a new development is common practice. For the Proposed Development it is a very important element in the **SAS [TR020001/APP/7.12]** as it will set out targets for travel by non-car modes and describe the measures, both “carrot and stick” that will assist in the achievement of those targets. Accordingly, the implementation of the Travel Plan would reduce the magnitude of impacts on the highway network.
- 18.8.13 It is intended to introduce a mechanism called Green Controlled Growth as part of the application for development consent. Through the **GCGF [TR020001/APP/7.08]**, the Applicant is proposing a series of clearly specified ‘Limits’ for key environmental topics which are directly linked to the ongoing level of activity at the airport and, therefore, have the potential to change the level of impact on local communities as increasing numbers of flights and passengers use the airport over time. One of these topics is surface access. The GCG approach is introduced in **Section 7** of the **SAS [TR020001/APP/7.12]** and is set out in in the **GCGF [TR020001/APP/7.08]**.
- 18.8.14 A bus and coach strategy will be introduced that will be based on working in close cooperation with the local authorities that neighbour the airport, bus and coach service providers and airlines to consider the introduction of:
- a. increased frequencies on historic routes;
 - b. expansion of bus and coach routes (including terminals within London);
 - c. demand-responsive buses operating in the local area to transport employees to and from the airport that supplement existing services and designed to plug gaps in geographic or temporal provision;
 - d. integrated ticketing and ticket purchasing facilities;
 - e. better vehicles, including on-board wi-fi connectivity;
 - f. promoting route planning facilities for smart technology; and
 - g. real time timetable information at bus stops.
- 18.8.15 The Proposed Development would involve the expansion of the existing bus/coach facilities at Terminal 1 from 18 to 27 bays and the provision of new facilities at Terminal 2 that would together provide approximately eight bays for local and shuttle buses and 16 coach bays in total giving a total of 51 bays, which is close to a trebling of the provision. This will be a marked improvement when compared with present provision and would bring the airport into line with the provision at Stansted Airport (40 operational + 20 lay-over bays) which in 2018 and 2019 had an air passenger throughput in excess of 26 mppa with over half of those passengers travelling to and from that airport by public transport (Ref. 18.30).
- 18.8.16 As part of the strategy to reduce travel by car and encourage use of public transport, parking provision will not be increased on a pro rata basis. The current and proposed parking provision is presented in **Table 8.2** of the **TA [TR020001/APP/7.02]**. Prior to the start of the construction of Luton DART which reduced the capacity of the medium stay car park there were a total of 9,900 car parking spaces available for use by air passengers; these include

short, medium, and long stay parking. As part of the Proposed Development a further 6,100 spaces will be provided. Thus by 2043 while the air passenger throughput will have increased by 78% over 2019 levels the provision of parking spaces will have only increased by 62%.

- 18.8.17 The Outline CTMP (**Appendix 18.3** of this ES [TR02001/APP/5.02] sets out the measures that are to be undertaken by the lead contractor to minimise the impact of construction traffic on the highway network. It will cover vehicle routing, procedures to encourage road safety, minimisation of vehicle movements, monitoring and liaison with key stakeholders. Based on the outline document the lead contractor will be required to prepare a detailed CTMP that will be agreed with the relevant highway authorities and will ensure that there are measures in place to minimise the impact of construction traffic.
- 18.8.18 The CTMP will be accompanied by a CWTP that will set out the approach and commitment to sustainability along with the measures that are envisaged to be appropriate at this specific site to encourage responsible transport choices.
- 18.8.19 In addition to the above measures, as part of the design of the new highway layout within the airport there will be a traffic signing strategy so that the drivers of the vehicles have a clear indication of the route to their destination.

18.9 Assessment

18.9.1 This section presents the results of the assessment of likely significant effects with the embedded and good practice mitigation measures, described in the previous section, in place. The predicted airport related trips upon which the assessment described in this section are based, have been derived from the Core Planning Case. As previously described in **paragraph 18.1.1**, sensitivity tests in the form of qualitative assessments are presented in **paragraphs 18.9.160 to 18.9.167** for faster and slower growth assumptions.

18.9.2 A summary of the assessment of effects is provided in **Table 18.26** in **Section 18.14**. Significant effects are discussed in further detail in this section.

Assessment Phase 1

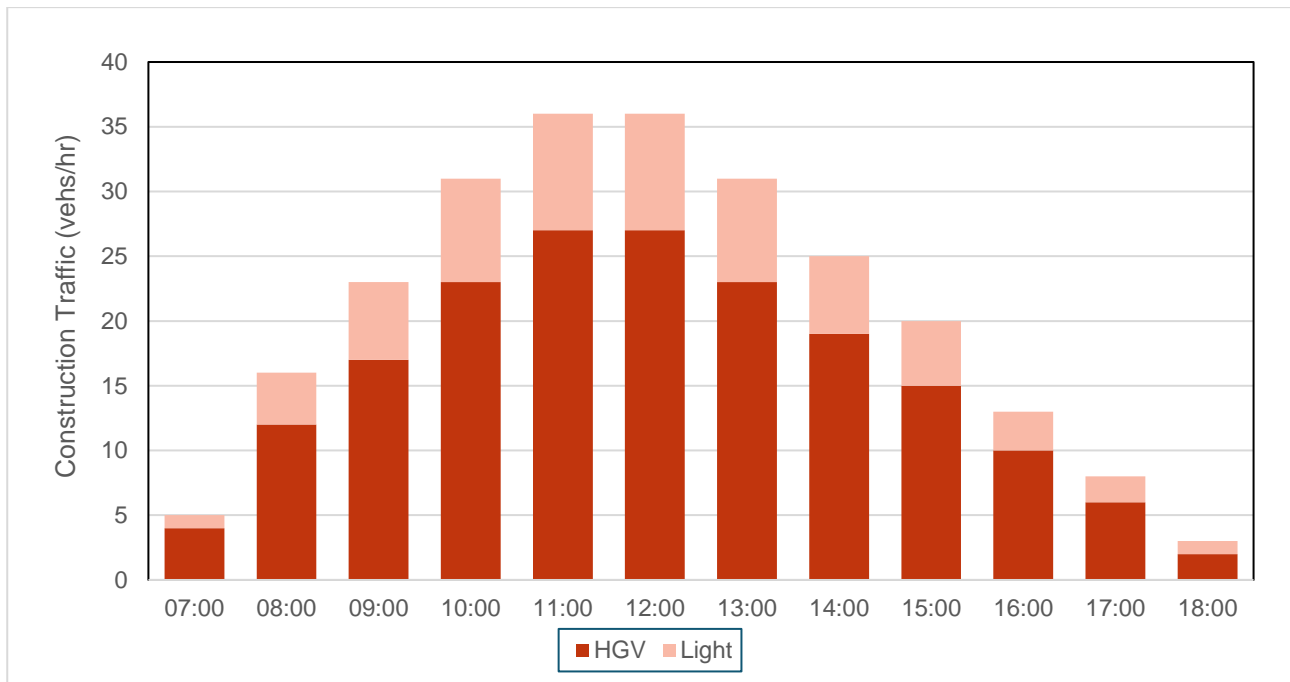
Construction effects

18.9.3 The volume of construction traffic is presented in **Section 9.16** of **Appendix 4.1** Construction Method Statement and Programme Report of this ES **[TR020001/APP/5.02]**. This shows that the greatest level of construction vehicle activity during this assessment phase occurs in 2026. Further analysis of the data has identified Q2 in that year as the busiest quarter.

18.9.4 **Figure 73** in that report shows a typical vehicle profile over the course of the peak day. For 2026 Q2 that would be 246 movements. It is estimated that HGV movements would be 75% of this traffic. This volume of construction traffic has been overlaid on the predicted flows for the 2027 'Do Minimum' scenario which is based on a throughput at the airport of 18 mppa and therefore reflects the level of air passenger related traffic before the facilities are available to cater for growth. The information provided is the profile of vehicles entering the construction compounds. In order to generate two-way flows, it has been assumed that vehicles stay for an average period of one hour. A review of this assumption has found that the conclusion of this assessment is not sensitive to this period.

18.9.5 The distribution through the day of this peak level of two-way construction traffic is shown in **Inset 18.6**. As can be seen from the graph the magnitude of the increase in traffic will be greatest during the inter-peak period (10:00 to 16:00). 73% of the construction movements occur during this period, with the average hourly flow of 30 vehicles being appreciably greater than the average flows of 16 and eight vehicles during the morning and evening peak periods respectively. In addition, the background flows against which the construction traffic is assessed will be lower in the inter-peak period which would give higher proportional increases.

Inset 18.6 Typical distribution of construction traffic movements during busiest quarter (Assessment Phase 1)



- 18.9.6 A CTMP will be in place, and this will secure a routing agreement for the construction HGVs.
- 18.9.7 It is expected that the great majority of construction HGVs use only motorways and ‘A’ roads, and this will be secured through the CTMP. In the vicinity of the airport this will be the A1081 and the M1. For the purpose of this assessment, it has been assumed that at the time of peak construction traffic activity all construction HGVs will use the A1081, and the M1.
- 18.9.8 It is possible that some construction traffic may use the A505/A602 route to connect with the A1 corridor, but this would be limited by the CTMP which will discourage any construction traffic, other than that which would have an unrealistic diversion, from using the route. Applying the IEMA guidelines (Ref. 18.19) to this route, the section where there is most likely to be a need to undertake further assessment is the section that when the applicable threshold level is applied to the ‘Do Minimum’ interpeak flow produces the lowest flow. That section is Upper Tilehouse Street in Hitchin between its junctions with Gray’s Lane and Park Way. The interpeak flow on this road is 6,243 vehicles and because of the presence of the Tilehouse Street Baptist Church there will be sensitive receptors. On that basis a change in flow of ±10% would apply which means that the flow would have to increase by 624 vehicles for there to be a need to undertake further assessment. Since this is considerably greater than the total number of construction vehicles, there is no need to undertake any further assessment of a small proportion of construction vehicles using the route between Junction 8 on the A1(M) and the airport. The CTMP discourages any construction traffic, other than that which would have an unrealistic diversion, to use the route.

18.9.9 **Table 18.10** shows the inter-peak period traffic flows for the 2027 'Do Minimum' scenario together with the predicted peak construction vehicle flows during that period. The table also sets out the increase in traffic as a percentage. This is the period when construction traffic is likely to be its highest proportion of all traffic on these roads.

Table 18.10: Peak Assessment Phase 1 construction traffic on highway network

Road Link	2027 'Do Minimum' Flow (Inter peak)	Alternative A		Alternative B	
		Construct- ion Traffic Flow	Increase (%)	Construct- ion Traffic Flow	Increase (%)
President Way between Car Rental and Frank Lester Way	3,730	180	4.8%	180	4.8%
Percival Way between Frank Lester Way and Prospect Way	3,215	180	5.6%	180	5.6%
Percival Way between Airport Way and Prospect Way	3,689	180	4.9%	180	4.9%
A1081 New Airport Way between A505 Airport Way and Percival Way	10,628	180	1.7%	180	1.7%
A1081 New Airport Way between link to Lower Harpenden Road and Airport Way	17,997	180	1.0%	180	1.0%
A1081 New Airport Way between Capability Green Estate and link to Lower Harpenden Road	21,190	180	0.8%	180	0.8%
A1081 New Airport Way between Capability Green Estate slip roads	17,839	180	1.0%	180	1.0%
A1081 New Airport Way between A1081 London Road and Capability Green Estate	21,967	180	0.8%	180	0.8%
A1081 New Airport Way between London Road slip roads	17,460	180	1.0%	180	1.0%
A1081 New Airport Way between M1 Jct. 10 and A1081 London Road	23,385	180	0.8%	180	0.8%

Road Link	2027 'Do Minimum' Flow (Inter peak)	Alternative A		Alternative B	
		Construct-ion Traffic Flow	Increase (%)	Construct-ion Traffic Flow	Increase (%)
Junction 10 Roundabout (southern overbridge)	5,273	36	0.7%	144	2.7%
Junction 10 Roundabout (western circulating carriageway)	11,038	180	1.6%	180	1.6%
Junction 10 Roundabout (northern overbridge)	5,771	144	2.5%	36	0.6%
M1 southbound on-slip road	7,193	144	2.0%	36	0.5%
M1 northbound off-slip road	5,764	144	2.5%	36	0.6%
M1 southbound off-slip road	5,148	36	0.7%	144	2.8%
M1 northbound on-slip road	5,267	36	0.7%	144	2.7%
M1 Between Jct. 9 and Jct. 10	66,920	144	0.2%	36	0.1%
M1 Between Jct. 10 and Jct. 11	64,379	36	0.1%	144	0.2%

- 18.9.10 As noted in the previous paragraph the two alternatives cover 80% of the construction traffic travelling in one or other direction. From the figures in **Table 18.10** it can be seen that even if all construction traffic travelled on the M1 either to the north or south of Junction 10, the increase in traffic flows on the M1 would still be very small.
- 18.9.11 The figures in **Table 18.10** show that on the main carriageway of the A1081 the increase in traffic is less than 2% while on the main carriageway of the M1 the increase is around 0.2%. The greatest increase that is predicted to occur on the circulating carriageway and slip roads at Junction 10 is 2.8% which would be on the southbound off-slip for Alternative B. The highest increase is predicted to be around 4.8% to 5.6% which occurs on internal airport roads.
- 18.9.12 Since none of the increases associated with the construction traffic exceed the IEMA Guidelines (Ref. 18.19) threshold of 30%, or 10% for sensitive links, there are **no significant effects** and no further assessment on these road links is required for this assessment phase.

Hazardous and Dangerous Loads

- 18.9.13 The nature of the construction work associated with Assessment Phase 1 should not require the carriage of any hazardous material and as a

consequence there will be **no significant effects** and no further assessment on those road links is required for this assessment phase.

Operational effects

- 18.9.14 In 2027 it has been assumed that the proportion of air passengers travelling by public transport will be the same for both 'Do Minimum' and 'Do Something' scenarios. This represents a conservative assumption for the purposes of this assessment, but mode share targets will be established through future Travel Plans which will aim to improve public transport mode share from when they are in place. Nevertheless, it will be higher than in the base year of 2017 because the public transport accessibility by train will have improved with the opening of Luton DART and the greater frequency and increased capacity of fast trains services between Luton Airport Parkway station and Central London. The flows from the CBLTM-LTN show an increase in airport related vehicles on the highway network of 12% for an increase in airport throughput of 19%.
- 18.9.15 The highway interventions in this assessment phase result in only minor differences in the network between the two scenarios which can be summarised as follows:
- a. A1081 New Airport Way/Percival Way: Remodelling of junction and introduction of traffic signal control;
 - b. M1 Junction 10: White lining amendments and widening to provide four circulatory lanes, allowing two northbound lanes onto M1 and three eastbound lanes onto A1081 from M1. Kerb realignment and marking to allow three lanes on northern overbridge merge into two before segregated left turn lane joins from M1 southbound;
 - c. New Airport Way/Gypsy Lane: Closure of bus only right turn lane and widening of approaches to traffic signals to increase number of approach lanes. Minor kerb realignment on roundabout;
 - d. A505 Vauxhall Way/Eaton Green Road: Signalisation of Vauxhall Way entry arms;
 - e. Kimpton Road/Windmill Road: Removal of existing roundabout and replacement with traffic signals;
 - f. Windmill Road/Osborne Road: Minor kerb realignment to increase junction capacity.
 - g. A1081/London Road (north): Partial signalisation of roundabout and kerb realignment to increase capacity; and
 - h. Eaton Green Road: Mini roundabout replaced by three arm signalised junction.
- 18.9.16 Taking into consideration the forecast flows from the CBLTM-LTN, just over three quarters of air passengers travelling to and from the airport by car over the course of a day use the M1. Those travelling south of Junction 10 account for 46% of all trips and those on the section to the north is 30%. This is a small increase on the 'Do Minimum' scenario. A further 4.4% use the A1(M).

- 18.9.17 An arc drawn from an area to the north east of the airport round to the south west of the airport which encompasses the A505 east of Offley to the A1081 south of the junction with Newlands Road covers just under 18% of the air passenger traffic. This percentage varies by only 0.2 percentage points between the two scenarios with the percentage being lower with the Proposed Development in place. For the 'Do Something' scenario the M1 and A505 west of Offley together carry 85% of the air passenger related traffic.
- 18.9.18 During discussions since the 2019 statutory consultation HCC has expressed a particular interest in conditions on the B653 Lower Harpenden Road. The forecast flows from CBLTM-LTN for daily traffic flows show a 2% increase in traffic between the 'Do Minimum' and 'Do Something' scenarios on the section of the road that passes under New Airport Way. The forecasts show that airport related traffic, both air passengers and staff, represent 8.4% of the total traffic on this section of the B653 for the 'Do Minimum' scenario increasing to 8.8% of the total traffic for the 'Do Something' scenario.

Severance

- 18.9.19 Using the criteria for the assessment of the effect of severance set out in **Appendix 18.1** of this ES [TR020001/APP/5.02], there were no road links that were identified as requiring further investigation. Therefore, there will be **no significant effects** due to severance.

Driver Stress and Delay

Driver Stress

- 18.9.20 On the basis of the guidance set out in **Section 2.2** of **Appendix 18.1** of this ES [TR020001/APP/5.02], the first sift of the changes in the level of driver stress identified one road link, Chalk Hill between its junctions with Brick Kiln Lane and Lilley Bottom, that required further consideration. Consideration of that road link found that for the magnitude of impact was 'no change' therefore there will be **no significant effect**.

Driver Delay

- 18.9.21 The effect of driver delay has been assessed at 22 of the 24 junctions that are listed in Section 2.2 of **Appendix 18.1** of this ES [TR020001/APP/5.02]. The two that have not been assessed would be constructed as part of the AAR works and so are not relevant for Assessment Phase 1. **Table 18.11** shows the magnitude of impact on the link that was identified for further assessment on the basis of the guidance set out in Section 1.3 of **Appendix 18.1** of this ES [TR020001/APP/5.02].
- 18.9.22 The only junction that warrants further consideration is the meeting of New Airport Way, Airport Way, and Percival Way. For the 'Do Something' scenario this junction has been remodelled, and traffic signal control has been introduced. Considering first the evening peak, a magnitude of impact of 'medium' combined with a sensitivity for drivers and other road users of 'medium' can result in an environmental effect that is either minor or moderate beneficial (see. Table 4.2 in **Appendix 18.1** of this ES [TR020001/APP/5.02]);

however, in the morning peak there is an adverse effect, albeit smaller where the magnitude of impact is 'low'. It is therefore considered more appropriate that the level of the effect is **minor** adverse and **not significant** rather than moderate.

Table 18.11: Magnitude of impact for driver delay (2027)

Road Link	AM Peak			Magnitude of Impact	PM Peak			Magnitude of Impact
	DM ¹ LOS	DS ² LOS	Add'n. Delay (secs)		DM LOS	DS LOS	Add'n. Delay (secs)	
A1081 New Airport Way/Percival Way	A ³	C	26	Low	F	C	-50	Medium

Notes

- 1) DM (Do Minimum)
- 2) DS (Do Something)
- 3) These are the Level of Service (LOS) values identified in Table 2.5 of **Appendix 18.1** of this ES [TR020001/APP/5.02].

Pedestrian Delay

- 18.9.23 The first review of the morning and evening peak hour flows identified six road links where the change in flow between the 'Do Minimum' and 'Do Something' scenarios is $\pm 30\%$, or $\pm 10\%$ where the pedestrian sensitivity is 'high'. Having calculated the average pedestrian delay for both scenarios in both peaks there are no road links that are identified for further investigation.
- 18.9.24 The conclusion that has been drawn from this part of the assessment is that there are **no significant effects** associated with pedestrian delay.

Pedestrian Fear and Intimidation

- 18.9.25 The assessment of this category of potential effect requires consideration of both changes in hourly average over an 18-hour day of all vehicles and the change in HGVs over the same period. The initial review of the changes identified 19 road links for the average flow of all vehicles and nine road links for the total 16-hour HGV flows that required further assessment on the basis of the change in flow. On seven of the links the further assessment was required to investigate both changes in hourly average over an 18-hour day of all vehicles and the change in HGVs over the same period.
- 18.9.26 When considering those road links that had been identified at the first level, it was found that the degree of hazard did not change on any of them, therefore there would be **no significant effects** associated with pedestrian fear and intimidation at the Assessment Phase 1 level of throughput at the airport.

Collisions and Safety

- 18.9.27 The inbound flows for all of the junctions identified in **Appendix 18.1** of this ES [TR020001/APP/5.02] have been calculated for the 'Do Minimum' and 'Do

Something' scenarios and it was found that there were no junctions where the increase in the inbound flow passed the threshold for further assessment, therefore there are **no significant effects**.

Hazardous and Dangerous Loads

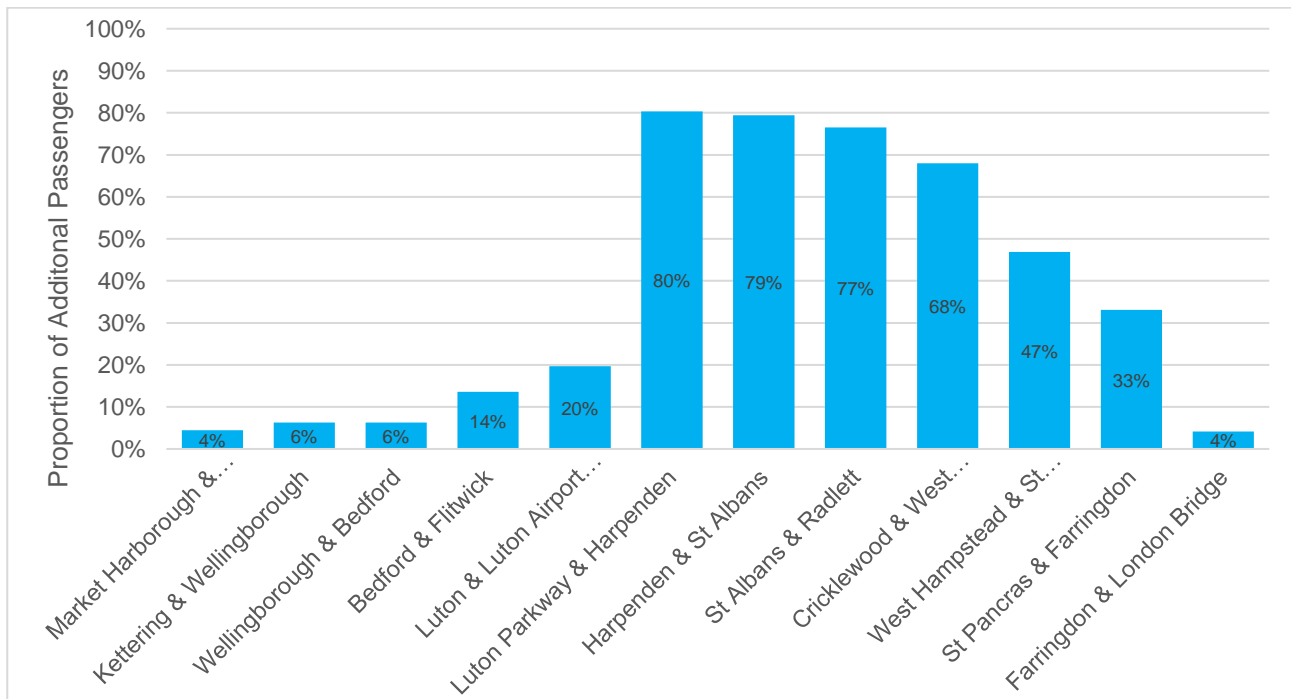
- 18.9.28 Aviation fuel is transported to the airport by road tanker and stored in the fuel farm that is located adjacent to Percival Way, 100m from its junction with Airport Way. It is then transferred when required to the aircraft using a bowser.
- 18.9.29 The increased probability of a major hazard incident during the intervening period has been calculated as recommended by the guidance provided in the 1993 IEMA Guidelines (Ref. 18.19) where the probability of a major hazard incident is equated to the probability of a personal injury collision, categorised as fatal or serious (KSI), and involving a tanker occurring has been calculated as described below.
- 18.9.30 Thirty-eight trips per day by tankers are required to deliver the volume of aviation fuel that is required to serve a throughput of 18 mppa, which is 76 movements per day. It has been assumed that the tankers would be bringing fuel in from the Buncefield Oil Depot which is a distance of 16.9km. A collision rate of 44 KSI per billion vehicle kilometres has been obtained from Department for Transport statistics (Ref. 18.31). The period over which the assessment for this assessment phase has been undertaken is fifteen years which covers the period from the start of the Assessment Phase 1 construction to the opening of Terminal 2. Assuming the current ratio of tankers to passenger throughput there will be approximately 34,000 additional deliveries of fuel in this period.
- 18.9.31 The probability of a tanker, laden with fuel, being involved in a KSI collision on any one trip while carrying fuel is calculated to be 7.5×10^{-7} which is the equivalent of odds of greater than 1.3 million to one of a collision occurring in which someone is either killed or seriously injured. When this probability is applied to the total distance travelled by the tankers while fully laden over the fifteen-year period, the risk of a KSI collision occurring for the 'Do Minimum' scenario is 0.021 and for the 'Do Something' scenario it rises to 0.025, an increase of 17%. A further consideration is the standard of the highway along the route that is being followed by the tanker. For over 90% of its journey, the tanker is traveling on roads that are dual carriageway and for over 60% the road is a motorway. It should be noted that this is not a detailed risk assessment as it does not take into account other factors that could affect the result such as the quality of the driver training and the use of KSI collisions as a proxy for a major hazard incident; its purpose is to guide the professional judgement that has been used to establish the significance of any effect.
- 18.9.32 It is considered that the additional tankers travelling along the route to the existing fuel farm the magnitude of impact is 'very low' which when combined with a 'high' sensitivity for other drivers along the motorway section of the route that is travelled there will be a **negligible** adverse effect, which is **not significant**.

Public Transport Users

Rail

- 18.9.33 The graph shown on **Inset 18.7** provides an indication of the distribution of additional rail travellers, both air passengers and employees, over the section of the rail line between Market Harborough and London Bridge stations associated with the increased throughput of 21.5 mppa, that is the difference in the loadings produced in the Strategic Model for the DM and DS. As identified in Section 2.2 of **Appendix 18.1** of this ES [TR020001/APP/5.02] the figures in the graph relate to activity in the period 07:00 and 19:00.
- 18.9.34 The shape of the graph clearly shows the greater use of the rail services to the south of Luton Airport Parkway station, accounting for four out of five additional rail journeys. It also shows that there is a three percentage point change on the sections between Luton Airport Parkway and St Albans stations. The figures show that there is a drop of nine percentage points in the additional loading between St Albans and West Hampstead followed by a further 21 percentage points on the section immediately south of West Hampstead, suggesting a number of airport related passengers interchange at this station. The remaining passengers then principally split between St Pancras International station and Farringdon station. To the south of Farringdon station only 4% of the additional loading is predicted.

Inset 18.7 Distribution of additional passenger loadings on the rail route between Market Harborough and London Bridge stations (2027) based on difference between DM and DS

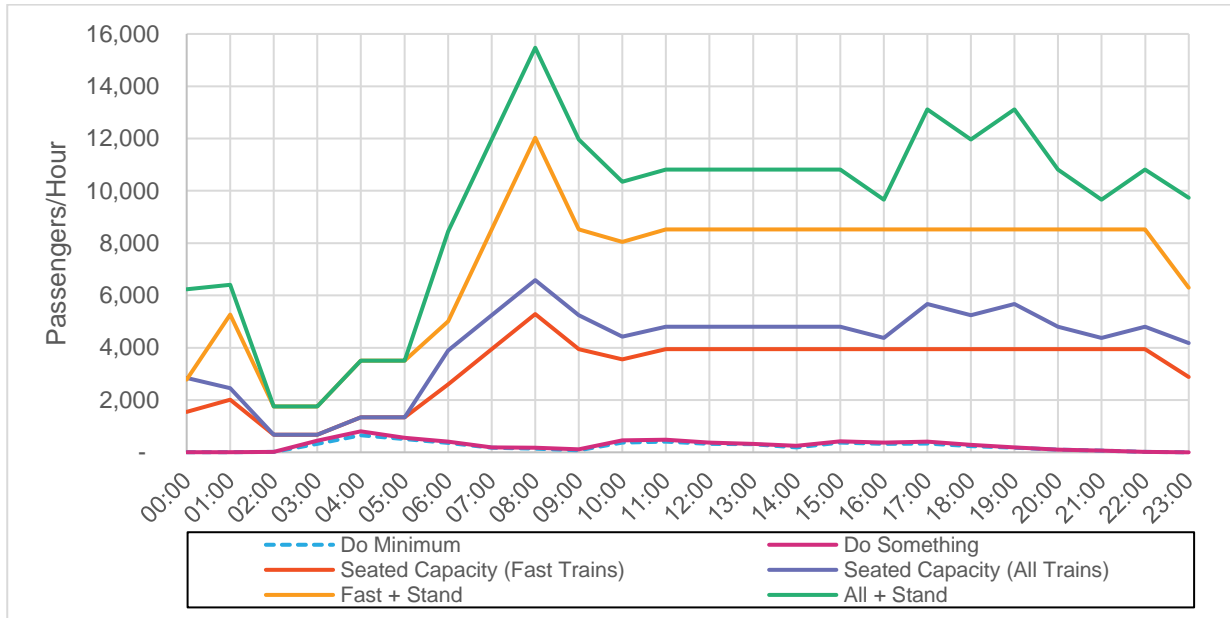


- 18.9.35 A comparison between the airport related rail passengers in the ‘Do Minimum’ and ‘Do Something’ scenarios on northbound and southbound services is shown below in **Insets 18.8** and **18.9** respectively. These insets also show the capacity available in terms of the number of seats. Two values are presented

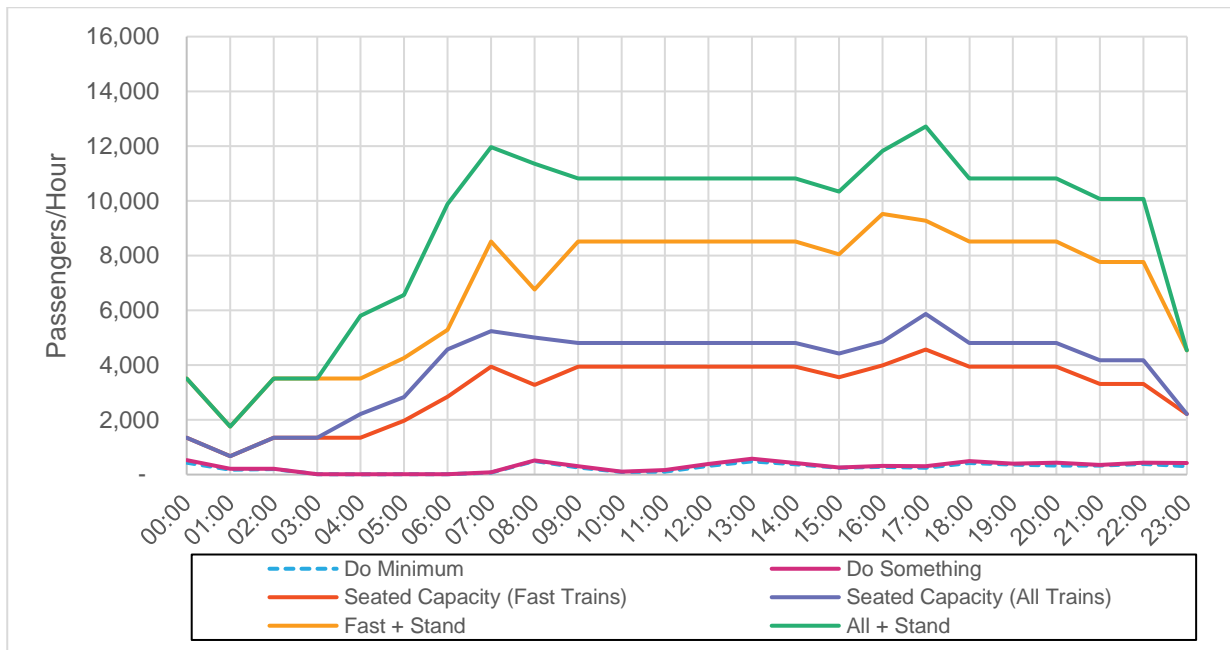
for the capacity. The first is the combined number of seats on the EMR Connect and Thameslink Regional services, referred to as 'fast trains' in the following text, on the basis that those services will be the most attractive to airport related travellers, and the second shows the addition to that value of the seats on the Thameslink Metro service.

- 18.9.36 The detailed analysis of the impact of the additional trips on the railway network has concentrated on services running to the south of Luton Airport Parkway station because the additional loadings are approximately four times greater than those on services to the north of the station. In addition, the existing loading on trains can be expected to be lower on the Thameslink services to the north of the station as the section is located towards the northern end of the services.
- 18.9.37 The diagrams in both **Inset 18.8** and **Inset 18.9** show that the additional number of people travelling on the rail services is low. These graphs and the equivalent graphs for Phases 2a and 2b show predicted loadings on the trains on the section of the route between Luton Airport Parkway and Harpenden stations.
- 18.9.38 Had data been available that would have made it possible to establish the number of passengers on trains calling at Luton Airport Parkway station for the 'Do Minimum' scenario, it would have been possible to identify the available capacity for the accommodation of the additional demand that would arise for the 'Do Something' scenario, However, as described in Section 2.2 of **Appendix 18.1** of this ES [TR020001/APP/5.02] this data is not available and therefore it has been necessary to base the assessment on the total capacity of the trains which is the sum of the seated capacity and the capacity for standing passengers. It is noted that on trains that are travelling from London towards the airport the number of seated passengers between 03:00 and 04:00 are approaching the seated capacity of the trains. However, regarding this assessment, it can be seen that the increase is small and the loading is well within the overall capacity of the service.
- 18.9.39 **Table 18.12** sets out the number of additional passengers by hour and direction and then provides the percentage increase in the use of the trains in the 'Do Minimum' scenario and also expresses that increase as a percentage of the capacity of the fast trains.

Inset 18.8 Comparison of airport related loadings and capacity on rail service south of Luton Airport Parkway station (northbound 2027)



Inset 18.9 Comparison of airport related loadings and capacity on rail service south of Luton Airport Parkway station (southbound 2027)



18.9.40 It is noted that on trains that are travelling from London towards the airport the number of seated passengers between 03:00 and 04:00 are approaching the seated capacity of the trains. However, regarding this assessment, it can be

seen that the increase is small and the loading is well within the overall capacity of the service.

Table 18.12: Additional passenger on MML south of Luton Airport Parkway station (2027)

Time	Northbound			Southbound		
	Additional Passengers	Increase in Airport Passengers	Proportion of Capacity (all trains)	Additional Passengers	Increase in Airport Passengers	Proportion of Capacity (all trains)
00:00	-	0%	0%	97	22%	3%
01:00	-	0%	0%	33	18%	2%
02:00	2	15%	0%	10	5%	0%
03:00	119	36%	7%	1	9%	0%
04:00	151	23%	4%	2	21%	0%
05:00	51	10%	1%	2	13%	0%
06:00	43	12%	1%	2	18%	0%
07:00	13	7%	0%	2	3%	0%
08:00	30	21%	0%	27	5%	0%
09:00	33	43%	0%	40	15%	0%
10:00	83	22%	1%	6	6%	0%
11:00	69	17%	1%	65	63%	1%
12:00	48	15%	0%	74	24%	1%
13:00	11	4%	0%	101	21%	1%
14:00	59	32%	1%	46	12%	0%
15:00	51	14%	0%	5	2%	0%
16:00	50	16%	1%	42	15%	0%
17:00	68	20%	1%	61	25%	0%
18:00	51	22%	0%	68	16%	1%
19:00	10	6%	0%	28	8%	0%
20:00	1	1%	0%	114	35%	1%
21:00	1	2%	0%	14	4%	0%
22:00	1	7%	0%	46	12%	0%
23:00	-	0%	0%	118	39%	3%

18.9.41 During the morning peak period (07:00 to 10:00) the increase in passengers in the southbound direction is 8%. The corresponding figure for northbound travel during the evening peak period (16:00 to 19:00) is 19%. The corresponding ratio of additional passengers to capacity is 0.2% and 0.5%. The higher proportions of additional passengers to capacity occurs at times, such as the early hours of the morning, when other demand will be low.

- 18.9.42 When the ratio of passengers to capacity is compared with the magnitude shown in Table 2.16 of **Appendix 18.1** of this ES [TR020001/APP/5.02] the highest level is 'very low' which occurs for only one hour in each direction. When combined with a degree of sensitivity of rail passengers of 'medium', there will be **minor** adverse effect, which is **not significant**.
- 18.9.43 The distribution of passengers shown on **Inset 18.7** shows that the airport related flows to the north of Luton Airport Parkway station are no more than a quarter of the number travelling on trains south of the station. On the basis of the findings for services south of Luton Airport Parkway station, it can be concluded that for loadings that are only one quarter of those already assessed, there will be **no significant effect** on services to the north of the station.

Coach and Buses

- 18.9.44 It is predicted that the number of journeys by coach or bus will be 19% higher for the 'Do Something' scenario than the 'Do Minimum' scenario. Since there will be an increase in the number of bays in the PTH from 18 to 27 any proportionate increase in coach provision could be catered for. As stated in Section 2.2 of **Appendix 18.1** of this ES [TR020001/APP/5.02] there is no detailed data on coach and bus loadings. An estimate of the average loading on coaches can be made on the basis of the number of coaches that call at the PTH identified in Table 5.2 of the **TA [TR020001/APP/7.02]** which is approximately 190 in each direction. If the same service frequency was to occur when the throughput of air passengers was 21.5 mppa the average would increase from around 22 passengers per coach, for the 'Do Minimum' scenario, to 26 passengers per coach, which is an occupancy of around one half. Three quarters of these services are dedicated routes between London and the airport and would therefore carry very few, if any other passengers. This would indicate that there is the capacity available to cater for the additional passengers and therefore it is considered that there will be **no significant effect**.

Assessment Phase 2a

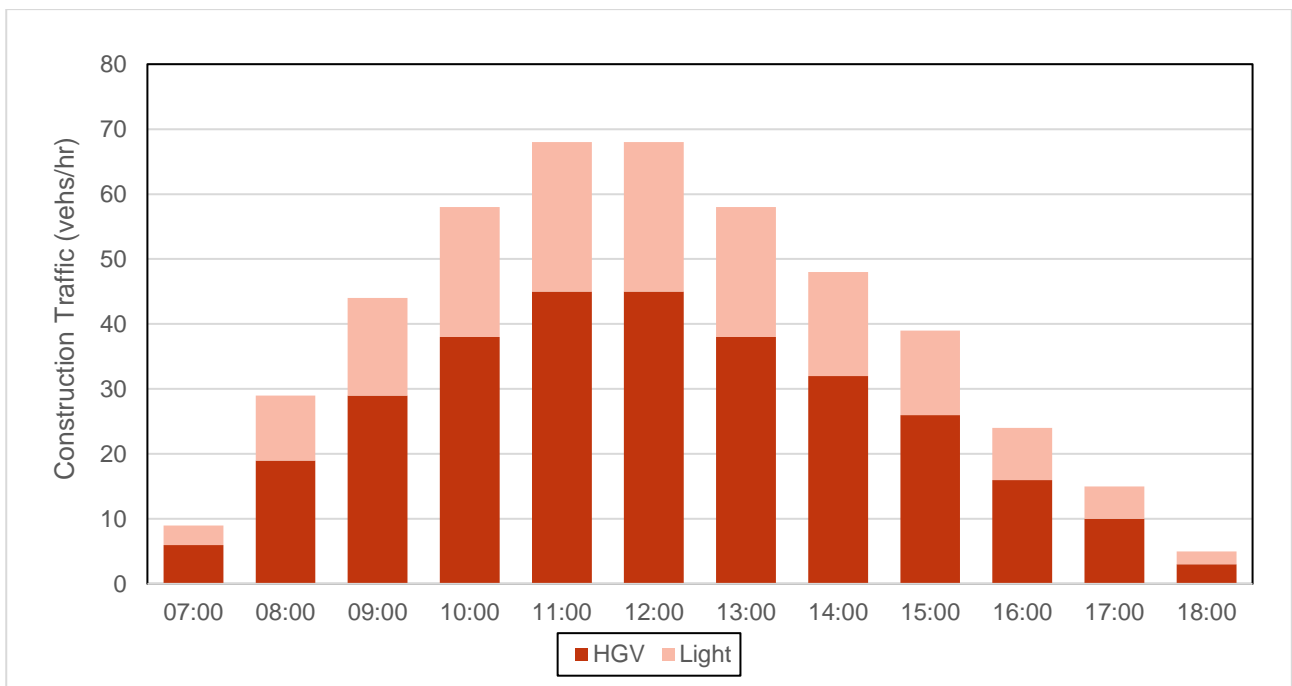
Construction effects

- 18.9.45 Based on the construction programme, the busiest quarter for construction traffic in this assessment phase is 2036 Q2 when it is predicted that 15,333 vehicles will visit the Application Site. This equates to an average daily rate of 231 vehicles of which 66% would be HGVs. This is also the busiest quarter within the full construction programme.
- 18.9.46 The effect of this traffic has been assessed against the 2027 'Do Something' forecast flows to reflect the level of air passenger movements predicted to be associated with Terminal 1 when at capacity since until Terminal 2 is open there will not be the facilities available to cope with any further increase. The non-airport related traffic will be higher than in this scenario but in terms of identifying whether there are any road links exceeding the IEMA guidelines (Ref. 18.19) this would not invalidate the exercise because the increase resulting from the construction traffic will be exaggerated to a small degree.

18.9.47 The provisional construction programme shows the AAR being completed in this period; therefore, construction traffic could be routed along it. However, for the purpose of this assessment it has been assumed that construction traffic will use the existing roads within the airport as that will be the case for nearly all of Assessment Phase 2a of construction.

18.9.48 The distribution through the day of the peak level of traffic construction traffic is shown in **Inset 18.10**.

Inset 18.10 Typical distribution of construction traffic movements during busiest quarter (Assessment Phase 2a)



18.9.49 As referred to in **paragraph 18.9.6**, a CTMP will secure a routing agreement for the construction HGVs. Any lessons learnt from construction of Assessment Phase 1 will be incorporated into the CTMP that will be prepared for this assessment phase of the construction works.

18.9.50 The approach to the uncertainty of the direction travelled on the M1 (**paragraph 18.9.7**) has also been used for this assessment phase.

18.9.51 **Table 18.13** shows the inter-peak period traffic flows for the 2027 'Do Something' scenario together with the predicted peak construction flows during that period. The table also sets out the increase in traffic as a percentage.

Table 18.13: Peak Assessment Phase 2a construction traffic on highway network

Road Link	2027 "Do Something" (Inter peak)	Alternative A		Alternative B	
		Construction Traffic Flow	Increase (%)	Construction Traffic Flow	Increase (%)
President Way between Car Rental and Frank Lester Way	4,733	337	7.1%	337	7.1%
Percival Way between Frank Lester Way and Prospect Way	3,026	337	11.1%	337	11.1%
Percival Way between Airport Way and Prospect Way	3,297	337	10.2%	337	10.2%
A1081 New Airport Way between A505 Airport Way and Percival Way	12,075	337	2.8%	337	2.8%
A1081 New Airport Way between link to Lower Harpenden Road and Airport Way	21,116	337	1.6%	337	1.6%
A1081 New Airport Way between Capability Green Estate and link to Lower Harpenden Road	23,989	337	1.4%	337	1.4%
A1081 New Airport Way between Capability Green Estate slip roads	20,614	337	1.6%	337	1.6%
A1081 New Airport Way between A1081 London Road and Capability Green Estate	24,724	337	1.4%	337	1.4%
A1081 New Airport Way between London Road slip roads	20,113	337	1.7%	337	1.7%
A1081 New Airport Way between M1 Jct. 10 and A1081 London Road	25,697	337	1.3%	337	1.3%
Junction 10 Roundabout (southern overbridge)	5,657	67	1.2%	270	4.8%

Road Link	2027 'Do Something' (Inter peak)	Alternative A		Alternative B	
		Construction Traffic Flow	Increase (%)	Construction Traffic Flow	Increase (%)
Junction 10 Roundabout (western circulating carriageway)	12,098	337	2.8%	337	2.8%
Junction 10 Roundabout (northern overbridge)	6,447	270	4.2%	67	1.0%
M1 southbound on-slip road	7,907	270	3.4%	67	0.9%
M1 northbound off-slip road	6,440	270	4.2%	67	1.0%
M1 southbound off-slip road	5,686	67	1.2%	270	4.7%
M1 northbound on-slip road	5,651	67	1.2%	270	4.8%
M1 Between Jct. 9 and Jct. 10	68,051	270	0.4%	67	0.1%
M1 Between Jct. 10 and Jct. 11	65,042	67	0.1%	270	0.4%

- 18.9.52 As noted previously, the two scenarios cover 80% of the construction HGVs travelling in one or other direction. From the figures it can be seen that even if all construction traffic travelled on the M1 either to the north or south of Junction 10, the increase in traffic flows on the M1 would still be very small.
- 18.9.53 The figures in **Table 18.13** show that on the main carriageway of the A1081 traffic is less than 3%, while on the main carriageway of the M1 the increase is no more than 0.4%. The greatest increase that is predicted to occur on the circulating carriageway and slip roads at Junction 10 is 4.8% which would be on the northbound on-slip and the southern overbridge for Alternative B. The highest increase is predicted to be around 11.1% which occurs on internal airport roads.
- 18.9.54 Since none of the increases associated with construction traffic exceed the IEMA 1993 Guidelines (Ref. 18.19) thresholds of 30%, or 10% for links with a sensitive receptor, no further assessment of effects on these road links is required for this assessment phase, and it can be concluded that there will be **no significant effect**.

Hazardous and Dangerous Loads

- 18.9.55 The potential need to remove hazardous material from the site during the construction for this assessment period has been identified. The materials concerned are contaminated waste from the landfill site and asbestos from some of the buildings that will be demolished. The volume of contaminated waste material from the landfill site in this assessment phase will be in the order

of 18,500m². No information is available on the volume of asbestos that may need to be removed from site.

- 18.9.56 The removal of 18,500m² of waste material would generate approximately 1,650 round trips. The material would be taken to a conveniently located licensed site that accepts the material. Assuming that the site that accepts the waste is within 50km, the vehicle-kilometres involved in the export of this material could be up to 82,500. Using the HGV driver casualty (fatal or serious (KSI)) rate per of 6.0 per billion kilometres quoted in paragraph 2.2.37 of **Appendix 18.1** of this ES [TR020001/APP/5.02] the probability of a HGV carrying hazardous material, being involved in a KSI collision on any one trip while carrying the material is calculated to be 3.0×10^{-7} ; a probability of less than one in three million. When this probability is applied to the total distance travelled by the HGV, while loaded, the risk of a KSI collision occurring is 0.0005. The volume of asbestos will be very much lower and therefore the overall probably will still be less than 0.001.
- 18.9.57 On the basis of this calculation, using a robust estimate of material, it is considered that the magnitude of impact is 'very low' for this construction which even if combined with a 'high' sensitivity for other drivers when travelling along sections of the motorway network there will be a **negligible** adverse effect, which is **not significant**.
- Operational effects**
- 18.9.58 For the modelling of the impact of the additional traffic associated with the Proposed Development it has been assumed that the proportion of airport passengers using non-sustainable modes of transport will not rise above 55%, taking into account the various changes in public transport provision identified in **Section 18.7** that will be taking place between the present time and 2039 in addition to the greater number of air passengers who will be living closer to the rail corridor through London and the connections to the Thameslink route. This will be supported by measures that form part of the Proposed Development such as improved bus and coach facilities (refer to **paragraph 18.8.15**) and a proportionate reduction in car parking spaces per passenger.
- 18.9.59 Predictions from CBLTM-LTN show an increase of airport related traffic entering and leaving the airport increasing by 24% over the 'Do Minimum' scenario, whereas the equivalent increase in air passengers is 50%.
- 18.9.60 A considerable volume of highway construction is associated with this assessment phase, most notably the AAR. In this assessment phase the full route will not be completed with the section between Provost Way and Frank Lester Way omitted. A temporary dual-carriageway link will be provided to give a connection back onto Percival Way.
- 18.9.61 A new traffic signal-controlled junction will be created with New Airport Way and near to Terminal 2, the latter providing connections to the terminal, a new long stay car park and a new dual carriageway link to Eaton Green Road. At the northern end of the link to Eaton Green Road a new traffic signal-controlled junction will be constructed and the existing roundabout at the junction of Eaton

Green Road and Wigmore Lane will be reconfigured and converted to traffic signal control.

- 18.9.62 Other works that have been considered in this assessment phase include:
- a. M1 Junction 10: Northbound off-slip widened to provide three lanes at stopline. White lining on circulatory carriageway between the northbound off and on-slips to provide five lanes;
 - b. Wigmore Lane: Replacement of roundabouts at the junctions with Crawley Green Road, Twyford Drive, and access to Wigmore Park District Centre with signalised junctions. Widening of road between Eaton Green Road and Crawley Green Road;
 - c. Frank Lester Way: Conversion to one-way working (northbound and the removal of the roundabout at the junction with Eaton Green Road and its replacement with a signalised junction);
 - d. Vauxhall Way/Kimpton Road: Extension of two lane approach on New Airport Way and provision of dedicated left turn lane into Kimpton Road;
 - e. A1081/London Road (south): Partial signalisation of roundabout (PM peak operation only) and adjustment to circulatory carriageway road markings;
 - f. Windmill Rd/St. Mary's Rd/Crawley Green Road Gyratory: Widening of circulatory carriageway to provide up to four lanes. Widening on St Mary's Road approach to provide additional entry lane. Widening to Windmill Road to provide two entry and exit lanes; and
 - g. Crawley Green Road/Lalleford Way: Removal of existing mini roundabout and replacement with traffic signals.
- 18.9.63 Taking into consideration the forecast flows from the Strategic Model for 2039, just under three quarters of air passengers travelling to and from the airport by car over the course of a day use the M1. Those travelling south of Junction 10 account for 50% of all trips and those on the section to the north is 32%. This is only a small increase in terms of the proportion on the 'Do Minimum' scenario. A further 5.1% use the A1(M) which is a very small fall from the proportion in the 'Do Minimum' scenario.
- 18.9.64 An arc drawn from an area to the north east of the airport round to the south west of the airport which encompasses the A505 east of Offley to the A1081 south of the junction with Newlands Road covers 18% of the air passenger traffic which represents an increase of just over one percentage point when compared the 'Do Minimum' scenario. For the 'Do Something' scenario the M1 and A505 west of Offley carry 83% of the air passenger traffic.
- 18.9.65 The forecast flows from CBLTM-LTN for daily traffic flows on the B653 show a three percent increase in traffic between the 'Do Minimum' and 'Do Something' scenarios. The forecasts show that airport related traffic, both air passengers and staff, represents 7.6% of the total traffic on this section of the B653 for the 'Do Minimum' scenario and 9.4% for the 'Do Something' scenario.

Severance

18.9.66 Using the criteria for the assessment of the effect of severance set out in **Appendix 18.1** of this ES [TR020001/APP/5.02], the following 11 road links were identified as requiring further investigation. Those road links where the traffic flow increase together with the magnitude of impact associated with that increase are set out below.

- a. High:
 - i. Airport Way between A505 Vauxhall Way and Percival Way;
- b. Medium:
 - i. AAR between A1081 New Airport Way and Provost Way;
 - ii. Percival Way between Provost Way and Frank Lester Way
 - iii. President Way between Car Rental and Frank Lester Way² (AAR in DS);
 - iv. AAR between Car Rental and Eaton Green Road link
 - v. Eaton Green Road link;
- c. Low:
 - i. Crawley Green Road between Wigmore Lane and Rochford Drive.

Those road links where the traffic flow decreased are listed below.

- a. High:
 - i. Percival Way between Airport Way and Prospect Way;
 - ii. Percival Way between Prospect Way and Provost Way;
- b. Medium:
 - i. Eaton Green Road between Mistletoe Hill and Frank Lester Way;
 - ii. Eaton Green Road between Frank Lester Way and Lalleford Road;
- c. Low:
 - i. Eaton Green Road between Lalleford Road and Eaton Green Road Link from the AAR.

18.9.67 The details of the flows in the 'Do Something' and 'Do Minimum' scenarios and the sensitivity of occupants for these links is set out in **Table 18.14** below.

² This road link is President Way in the 'Do Minimum' scenario and follows a similar alignment on this section to the AAR, therefore those who might experience severance in this assessment phase are similar for the two scenarios.

Table 18.14: Details of road links for further assessment for severance (2039)

Road Link	DM AADT Flow (vehs)	DS AADT Flow (vehs)	Change (vehs)	Change (%)	Mag. of Impact	Sensitivity	Effect
Airport Way between A505 Vauxhall Way and Percival Way	4,223	8,541	4,318	102.2%	High	Low	Adverse Minor or Moderate
AAR between A1081 New Airport Way and Provost Way	-	15,305	15,305	n/a	Medium	Low	Adverse Minor
Percival Way between Provost Way and Frank Lester Way	10,913	15,238	4,325	39.6%	Medium	Low	Adverse Minor
President Way between Car Rental and Frank Lester Way (AAR in DS)	10,058	15,555	5,497	54.7%	Medium	Low	Adverse Minor
AAR between Car Rental and Eaton Green Road link	-	13,728	13,728	n/a	Medium	Low	Adverse Minor
Eaton Green Road link	-	8,250	8,250	n/a	Medium	Low	Adverse Minor
Crawley Green Road between Wigmore Lane and Rochford Drive	5,851	8,100	2,250	38.5%	Low	High	Adverse Negligible or Minor
Percival Way between Airport Way and Prospect Way	12,718	1,147	-11,571	-91.0%	High	Low	Beneficial Minor or Moderate
Percival Way between Prospect Way and Provost Way	10,913	1,176	-9,737	-89.2%	High	Low	Beneficial Minor or Moderate
Eaton Green Road between Brendon Avenue and Mistletoe Hill	17,602	10,609	-6,994	-40%	Medium	Medium	Beneficial Minor or Moderate
Eaton Green Road between Mistletoe Hill and Frank Lester Way	14,237	6,530	-7,706	-54.1%	Medium	Medium	Beneficial Minor or Moderate

Road Link	DM AADT Flow (vehs)	DS AADT Flow (vehs)	Change (vehs)	Change (%)	Mag. of Impact	Sensitivity	Effect
Eaton Green Road between Frank Lester Way and Lalleford Road	13,134	4,821	-8,314	-63.3%	Low	Medium	Beneficial Negligible or Minor
Eaton Green Road between Lalleford Road and Eaton Green Road Link (AAR)	12,723	4,236	-8,488	-66.7%	Low	High	Beneficial Negligible or Minor

- 18.9.68 Considering first those links on which there would be an adverse effect, only the section of Airport Way between A505 Vauxhall Way and Percival Way has a magnitude of impact that is high. The traffic on this road increases from a low level of daily traffic flow of just over 4,200 vehicles per day to around 8,500 vehicles per day. As can be seen in the final column of **Table 18.14** there is a need to determine whether the effect is minor or moderate. Because this is an existing road the magnitude of impact has been calculated using the criteria set out in Table 2.1 of **Appendix 18.1** of this ES [TR020001/APP/5.02]. When the level of increase in severance is 'substantial', an increase in flow of 120%, which is twice the lower limit of 60% for a built up area, has been adopted to determine the point at which the higher level of effect should be chosen. On that basis there will be a **minor** adverse effect on this link, which is **not significant**.
- 18.9.69 The four links that form the AAR and the link to Eaton Green Road all have a magnitude of impact that is rated 'medium' and it can be seen from the table above that this results in an effect on these road links that will be **minor** adverse and **not significant**.
- 18.9.70 The final road link that will experience an adverse effect is Crawley Green Road between Wigmore Lane and Rochford Drive. This road link has required special consideration because it has only one location where there is a demand for pedestrians to cross and that is towards the eastern end where there is an entrance to Richmond School East. At this location there is a short section of footway on the southern side of the road which also provides a connection to a footway/cycleway that serves a residential area. Crossing of the road is facilitated by a pedestrian refuge that includes a wide area in the centre of the carriageway for pedestrians to wait if it is not possible to cross in one uninterrupted movement. Because of the very limited need, in terms of location, to cross and the quality of the facility in place, a judgement was made that a magnitude of impact of 'Low' would be more appropriate than the value of 'Moderate' that would be obtained from Table 2.1 in **Appendix 18.1** of this ES [TR020001/APP/5.02] based on the increase in the traffic flow. When combined with the level of sensitivity the effect could be either 'Negligible' or 'Minor' as shown in **Table 18.14**. The land uses on either side of the section of Crawley Green Lane are such that this crossing will not be on a major pedestrian desire line other than for journeys to and from the school. By their nature the volume of

these pedestrian trips can be quite high but occurring over a very short period within the day and are also limited to term time, therefore a further judgement has been made that there would be a **negligible** adverse effect which is **not significant**.

- 18.9.71 Five links have been assessed for a beneficial effect. Two of the links combine to form a continuous section of Percival Way between its junctions with Airport Way and Provost Way. With the opening of the AAR the traffic flow falls by around 90%. The effect on these two links is considered to be **minor** beneficial and **not significant**.
- 18.9.72 The effect on Eaton Green Road between Mistletoe Hill and Frank Lester Way is also judged to be **minor** beneficial and **not significant**. The effect on the two links on Eaton Green Road between Frank Lester Way and the Eaton Green Road Link could be either negligible or minor. The southern side of this road is bordered by the airport and there is no frontage activity. There is a footway running along the south side between the junctions of Lalleford Road and Frank Lester Way with refuges provided to assist pedestrians crossing the road. As part of the Proposed Development the junctions of Eaton Green Road with both Frank Lester Way will be converted to traffic signal control. There is considered to be **negligible** beneficial and **not significant**.

Driver Stress and Delay

Driver Stress

- 18.9.73 The first sift of the changes in the level of driver stress identified 25 road links that required further consideration. On 19 of these links there is no change in the level of driver stress on the basis of the assessment methodology presented in **Appendix 18.1** of this ES [TR020001/APP/5.02]. The changes in driver stress on the remaining six road links are set out in **Table 18.15**.

Table 18.15: Road links assessed for change in driver stress (2039)

Road Link	Level of Driver Stress		Magnitude of Impact of Change	Driver Sensitivity	Effect
	Do Minimum'	Do Something			
Slip road from A1081 London Road to A1081 New Airport Way WB	Moderate	High	Low	Medium	Negligible or Minor
Eaton Green Road between Frank Lester Way and Lalleford Road	High	Moderate	Very Low	Medium	No effect or Negligible

Road Link	Level of Driver Stress		Magnitude of Impact of Change	Driver Sensitivity	Effect
	Do Minimum'	Do Something			
Eaton Green Road between Lalleford Road and Eaton Green Road Link (AAR)	High	Moderate	Very Low	Medium	No effect or Negligible
Eaton Green Road between Eaton Green Road Link (AAR) and Wigmore Lane	High	Moderate	Very Low	Medium	No effect or Negligible
Percival Way between Airport Way and Prospect Way	High	Moderate	Very Low	Medium	No effect or Negligible
Percival Way between Prospect Way and Provost Way	High	Moderate	Very Low	Medium	No effect or Negligible

18.9.74 The combination of the ‘magnitude of impact’ and sensitivity on the A1081 slip road produces the result that the effect that will be adverse could either be negligible or minor. On the basis that the flow on the link increases by more than 50% it is considered that that the effect is **minor** adverse and **not significant**.

18.9.75 The three links on Eaton Green Road combine to form a continuous section between its junctions with Frank Lester Way and Wigmore Lane and the two links on Percival Way also form a continuous section. On both roads, the predicted flows fall between the ‘Do Minimum’ and ‘Do Something’ scenarios with the introduction of the AAR. The resulting change, which would be beneficial will either be no effect or a **negligible** effect, which is **not significant**.

Driver Delay

18.9.76 The initial sift of the junctions identified nine for further analysis. The changes in delay at these junctions together with the Level of Service (LOS) value for the ‘Do Minimum’ and ‘Do Something’ scenarios, are set out in **Table 18.16** for those junctions where the magnitude of impact is greater than ‘no change’. The table also shows the change in the average delay and the magnitude of impact that has been derived for each peak hour. For two of the junctions on the AAR there are no values for the LOS in the ‘Do Minimum’ scenario as the road would not exist. There are values for the LOS in the ‘Do Minimum’ and ‘Do Something’ scenarios for the junctions of the AAR with Frank Lester Way and Eaton Green

Road as the construction of the AAR will result in modification to two existing junctions.

Table 18.16: Magnitude of impact for driver delay (2039)

Road Link	AM Peak			PM Peak			Magnitude of Impact
	DM LOS	DS LOS	Add'n. Delay (secs)	DM LOS	DS LOS	Add'n. Delay (secs)	
Wigmore Lane/Wigmore Hall Shopping Centre	A	B	10	A	C	15	Very Low
Crawley Green Road/Lalleford Road	A	A	5	A	C	19	Very Low
Eaton Green Road/Wigmore Lane	A	C	28	A	D	31	Low
Eaton Green Road/Lalleford Road	B	C	9	A	D	31	Very Low
A505 Vauxhall Way/Airport Way	C	D	7	F	C	-51	Very Low
President Way (AAR in DS)/Frank Lester Way	A	B	4	E	A	-31	Very Low
AAR/Eaton Green Road Link/T2 Access Road		C	28		C	22	Low
A1081 New Airport Way/Airport Way	A	A	1	F	A	-65	Medium
A1081 New Airport Way/AAR		B	18		B	14	Very Low

18.9.77 In the light of the lower flows at the junction of New Airport Way and Airport Way and the smaller time saving the effect has been classified as **minor** beneficial, which is **not significant**.

Pedestrian Delay

- 18.9.78 The first review of the morning and evening peak hour flows identified 50 road links where the change in flow between the 'Do Minimum' and 'Do Something' scenarios is $\pm 30\%$, or $\pm 10\%$ where the pedestrian sensitivity is 'high'. Having calculated the average pedestrian delay for both scenarios in both peaks for those road links there are no road links that have been identified for further investigation.
- 18.9.79 The conclusion that has been drawn is that there are **no significant effects** associated with pedestrian delay.

Pedestrian Fear and Intimidation

- 18.9.80 The assessment of this category of potential effect requires consideration of both changes in hourly average over an 18-hour day of all vehicles and the change in HGVs over the same period. The initial review of the changes identified 36 road links for the average flow of all vehicles and 38 road links for the total 16-hour HGV flows that required further assessment on the basis of the change in flow.
- 18.9.81 When considering those road links that had been identified at the first level, it was found that the degree of hazard did not change on 30 road links for changes in the flow of all traffic and on all road links for the change of HGV flows. There are seven road links where there is a change for which the 'magnitude of impact' is classified as 'low'. Four of these links make up the new AAR for which a pedestrian sensitivity was given a level of 'low' for the section to the east of its junction with Prospect Way and 'very low' for the section to the west. Assigning the value shown in Table 2.3 in **Appendix 18.1** of this ES [TR020001/APP/5.02] there is **no significant effect**.
- 18.9.82 Two of the other links have a high level of sensitivity for pedestrians, and these are on the sections of Crawley Green Road between Ashcroft Road and Lalleford Road, and St Mary's Road between Park Viaduct and Church Street. On both of these links the requirement for further assessment is related to the hourly average over an 18-hour day and the change from below 600 vehicles in the 'Do Minimum' scenario which is below the threshold for the 'Degree of Hazard' to a classification of 'moderate' in the 'Do Something' scenario. When considering the combination of these values in **Table 2.9** and **Table 4.2** in **Appendix 18.1** of this ES [TR020001/APP/5.02] the effect which would be adverse for both roads could be classified as either 'no effect' or 'minor', which requires professional judgement to determine which is more appropriate. The predicted flow on Crawley Green Road in the 'Do Minimum' scenario is only seven vehicles below the threshold at which point the 'Degree of Hazard' would be classed as 'moderate'. The predicted flow in the 'Do Something' scenario is within the lower third of the range for a classification of 'moderate', therefore the conclusion has been drawn that the level of effect in this instance is **negligible** adverse, which is **not significant**. A very similar situation occurs on St Mary's Road with a lower increase in the flow. Accordingly for this link the conclusion is also that that the level of effect is **negligible** adverse, which is **not significant**.

18.9.83 The final link is the M1 southbound on-slip at Junction 10. This link is included in this further assessment because the degree of hazard rises from being classified as ‘moderate’ to ‘great’ which then gives a magnitude of impact which is ‘low’. Because the pedestrian sensitivity is deemed to be ‘very low’ because there should be no pedestrian in the vicinity there is **no effect**.

Collisions and Safety

18.9.84 Three junctions passed the threshold for further assessment and the predicted annual PIC rates for 2039 are presented in the table below. The table also includes the details on the changes between the ‘Do Minimum’ and ‘Do Something’ for both the predicted PIC rates and junction traffic flows together with the calculated ‘magnitude of impact’.

Table 18.17: Review of change in PICS (2039)

Junction Name	2039 DM Rate (PICs/Year)	2039 DS Rate (PICs/Year)	Change in 2039 PIC Rate	Change in Flow Thru' Jct.	Magnitude of Impact
Eaton Green Road/ Frank Lester Way	0.99	0.16	-0.84	-59.7%	Low
Crawley Green Road/ Ashcroft Road	0.47	0.25	-0.46	22.4%	Very Low
Crawley Green Road/ Lalleford Road	0.18	0.21	0.18	27.8%	No Change

18.9.85 Using the criteria set out in **Table 4.2** of **Appendix 18.1** of this ES **[TR020001/APP/5.02]** for the junction of Eaton Green Road with Frank Lester Way, the magnitude of impact of ‘low’ together with a sensitivity of ‘medium’ produces an effect that can be either ‘negligible’ or ‘minor’. The magnitude of impact for this junction is close to the next level in the matrix that is shown in **Table 4.2** of **Appendix 18.1** of this ES **[TR020001/APP/5.02]**; therefore, it has been determined that the environmental effect is **minor** beneficial, which is **not significant**.

18.9.86 Following the same process, the effect at the junction of Crawley Green Road and Ashcroft Road is found to be **negligible** beneficial, and for the junction of Crawley Road and Lalleford Road the environmental effect is classified as no effect. Therefore, for these two junctions there is **no significant** effect.

Hazardous and Dangerous Loads

18.9.87 As part of the assessment for Assessment Phase 2a consideration has been given to the potential impact of the new fuel farm to be constructed to the east of the airport with the capacity to supply the expanded airport. The intention is that fuel would be delivered using a dedicated pipeline connection to an existing fuel main. Fuel would then be distributed to aircraft on the new apron by a hydrant system, while aircraft using the existing apron would continue to be served by bowsers bringing fuel from the existing fuel farm. The existing fuel

farm will be retained but fuel would be transferred from the new fuel farm rather than being brought in from a fuel storage facility away from the airport, such as the Buncefield Oil Depot in Hemel Hempstead. This would have the benefit of removing fuel tankers from the wider highway network.

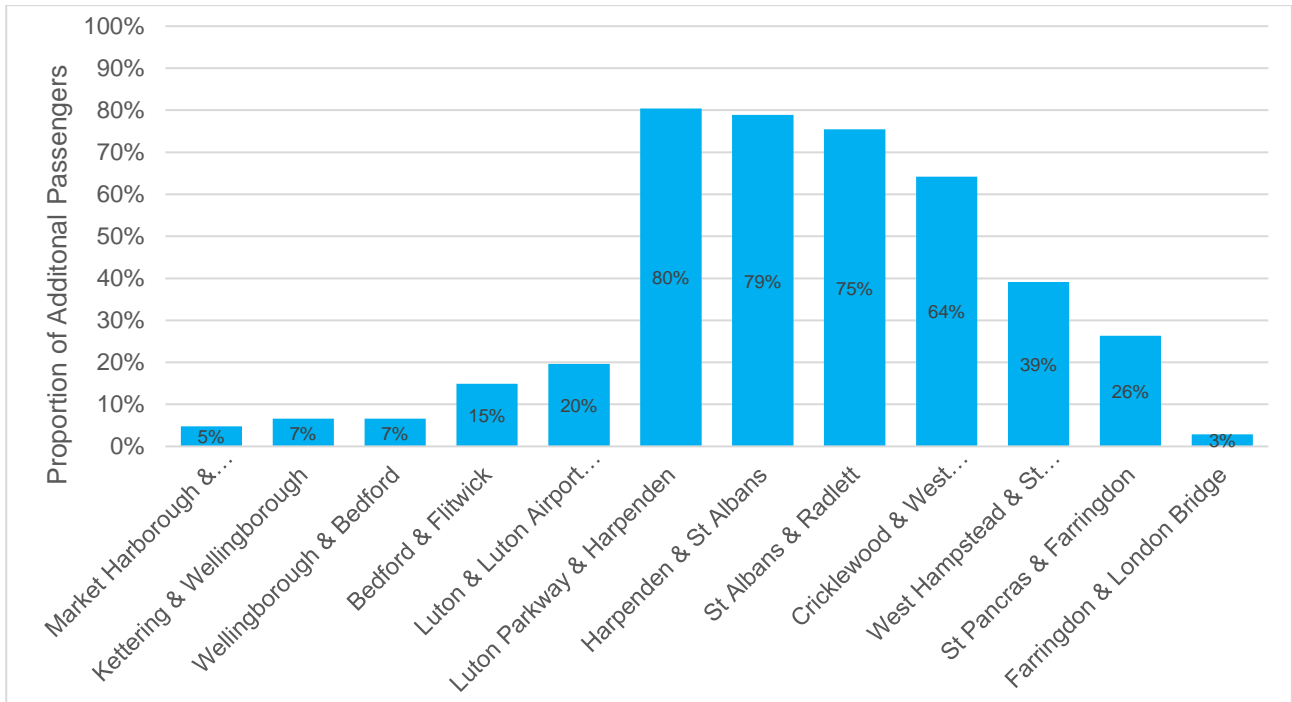
- 18.9.88 The introduction of the new fuel farm and the removal of fuel tankers from the wider highway network would be beneficial as a result of the risk associated with the carriage of a hazardous material removed.
- 18.9.89 However, there is the possibility that fuel cannot be supplied from the existing fuel main. The assessment in this chapter therefore considers the worst case in which all fuel continues to be brought in from a fuel storage facility away from the airport. Using the methodology described in the sub-section starting at **paragraph 18.9.28** the probability of a tanker, laden with fuel, being involved in a KSI collision on any one trip while carrying fuel is calculated to be 1.01×10^{-7} . When this probability is applied to the total distance travelled by the tankers while fully laden over the period between Terminal 2 first coming on-stream, until the works associated with Assessment Phase 2b are complete, a period of approximately four years, the risk of a KSI collision occurring is calculated to be 0.001.
- 18.9.90 It is considered that the additional tankers using the route into the airport is adverse but that the magnitude of impact for the increased danger is 'no change'. When combined with a 'high' sensitivity for other drivers along the motorway section of the route that is travelled there is **no significant** environmental effect.
- 18.9.91 The nature of the Proposed Development is such that with the exception of aviation fuel there is unlikely to be any other hazardous or dangerous loads brought to or taken from the Proposed Development when fully operational.

Public Transport Users

Rail

- 18.9.92 The equivalent figures and table to those prepared for Assessment Phase 1 are presented below for this assessment phase. The graph shown on **Inset 18.11** provides an indication of the impact of the additional passengers, both air passengers and employees, on overall passenger loadings over the section of the rail line between Market Harborough and London Bridge stations. for the period between 07:00 and 19:00.

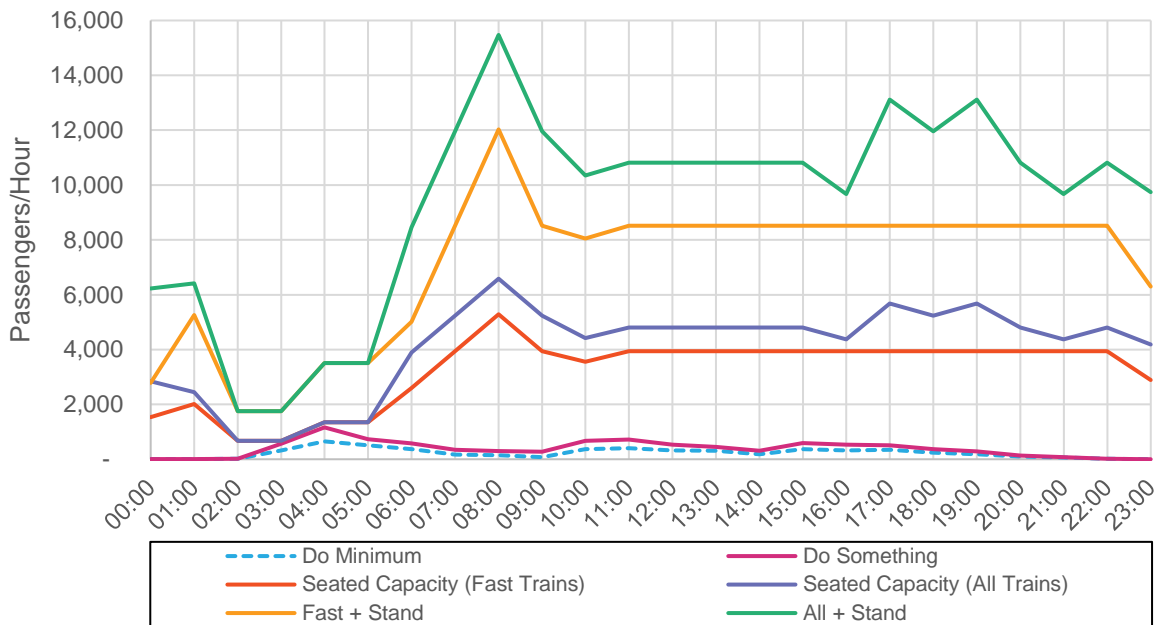
Inset 18.11 Additional Passenger Loadings on the Rail Route between Market Harborough and London Bridge Stations (2039) based on difference between DM and DS



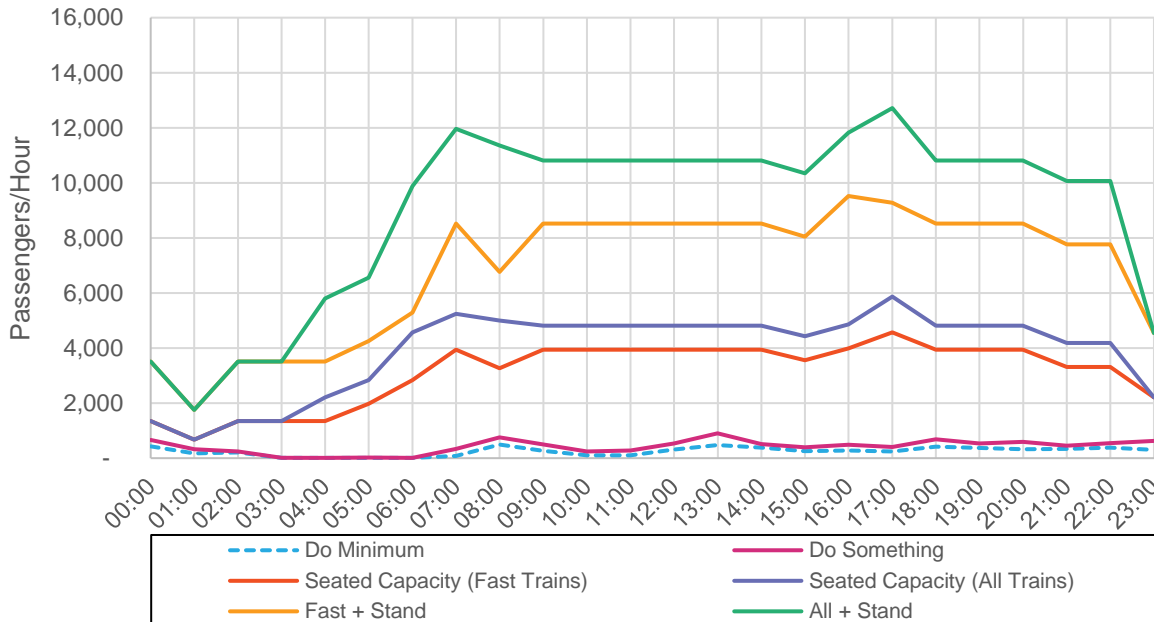
18.9.93 The shape of the distribution is very similar to that shown for Assessment Phase 1. As for the previous assessment phase the shape of the graph clearly shows the greater use of the rail services to the south of Luton Airport Parkway station. It also shows that the airport related passengers join and leave the trains at a number of stations along the route.

18.9.94 A comparison between the airport related rail passengers in both the ‘Do Minimum’ and ‘Do Something’ scenarios on northbound and southbound services are shown below in **Inset 18.12** and **Inset 18.13** respectively. These insets also show the capacity available in terms of the number of seats. On these graphs the difference between the hourly flows of airport related rail passengers for the ‘Do Minimum’ and ‘Do Something’ is more readily discernible that was the case for the analysis for Assessment Phase 1. It can be seen that the airport related rail passengers would still remain a small proportion of the capacity provided by the current timetable.

Inset 18.12 Comparison of airport related loadings and capacity on rail service south of Luton Airport Parkway station (northbound 2039)



Inset 18.13 Comparison of airport related loadings and capacity on rail service south of Luton Airport Parkway station (southbound 2039)



18.9.95 The factor most relevant to the comfort and convenience of rail passengers is the amount of capacity that the additional passengers take up. It can be seen that on trains travelling towards Luton Airport Parkway station between 03:00 and 05:00 the number of airport related passengers is close to the number of seats provided. However, because of the design of the Thameslink trains the actual capacity is 161% higher, which means that the demand is well within the overall capacity at

a time that non-airport demand will be low. Furthermore, this is a time of the day at which there is unlikely to be much demand other than related to the airport, as reflected in the level of service provision. This situation is sixteen years in the future by which time there could have been many adjustments to the timetables to reflect the changes in demand for rail travel. The annual growth in the additional rail passengers will not be great, therefore there is no reason to consider that the appropriate capacity will not be available to those wishing to use the service.

18.9.96 **Table 18.18** sets out the number of additional passengers by hour and direction and then provides the percentage increase in the use of the trains in the ‘Do Minimum’ scenario and also expresses that increase as a percentage of the capacity of the fast trains.

Table 18.18: Additional passengers on MML south of Luton Airport Parkway station (2039)

Time	Northbound			Southbound		
	Additional Passengers	Increase in Airport Passengers	Proportion of Capacity (all trains)	Additional Passengers	Increase in Airport Passengers	Proportion of Capacity (all trains)
00:00	1	41%	0%	229	53%	7%
01:00	1	65%	0%	145	81%	8%
02:00	6	46%	0%	45	22%	1%
03:00	242	74%	14%	3	28%	0%
04:00	510	78%	15%	4	42%	0%
05:00	231	46%	7%	7	45%	0%
06:00	217	59%	3%	5	45%	0%
07:00	170	97%	1%	262	344%	2%
08:00	149	103%	1%	260	53%	2%
09:00	203	267%	2%	240	91%	2%
10:00	306	83%	3%	149	151%	1%
11:00	314	77%	3%	175	169%	2%
12:00	213	66%	2%	228	73%	2%
13:00	149	49%	1%	423	88%	4%
14:00	123	67%	1%	137	36%	1%
15:00	224	60%	2%	148	59%	1%
16:00	211	66%	2%	210	75%	2%
17:00	170	50%	1%	158	65%	1%
18:00	132	56%	1%	267	63%	2%
19:00	103	57%	1%	161	44%	1%
20:00	34	33%	0%	263	81%	2%
21:00	13	20%	0%	112	33%	1%

Time	Northbound			Southbound		
	Additional Passengers	Increase in Airport Passengers	Proportion of Capacity (all trains)	Additional Passengers	Increase in Airport Passengers	Proportion of Capacity (all trains)
22:00	3	21%	0%	160	42%	2%
23:00	-	0%	0%	327	108%	7%

18.9.97 During the morning peak period (07:00 to 10:00) the increase in passengers in the southbound direction is 91%. The corresponding figure for northbound travel during the evening peak period (16:00 to 19:00) is 57%. The corresponding use of capacity is 2.2% and 1.5%.

18.9.98 When the ratio of passengers to capacity is compared with the magnitude shown in **Table 2.16** of **Appendix 18.1** of this ES [TR020001/APP/5.02] the highest level is 'low' which occurs for two hours northbound and one hour southbound. When combined with a degree of sensitivity of rail passengers of 'medium', there will be a **minor** adverse effect, which is a **not significant**.

18.9.99 On the basis of the findings for services south of Luton Airport Parkway station, it can be concluded that for loadings that are only one quarter of those already assessed, there will be **no significant** effect on services to the north of the station.

Coach and Bus

18.9.100 The prediction of travel by coach and bus in 2039 with Terminal 2 operational gives an increase of 61% when compared with the 'Do Minimum' scenario. Coach and local bus service operators have the flexibility to respond quickly to increases in and changes to the pattern of passenger demand. To enable the operators to do this, it is necessary to provide the facilities at the airport that facilitate this. In 2039 the number of coach and bus bays will have increased to 50 which is considerably more than double the provision presently provided and the number in the 'Do Minimum' scenario. With measures that will be in place to encourage travel by public transport the likelihood is that the frequency of coach services will increase to match demand and additional services introduced to satisfy demand along routes where the provision of a service is not currently viable. It is concluded that there will be **no significant** effect on coach and local bus services.

Assessment Phase 2b

18.9.101 With the completion of the AAR, the number of road links that have been included in the assessment is 176.

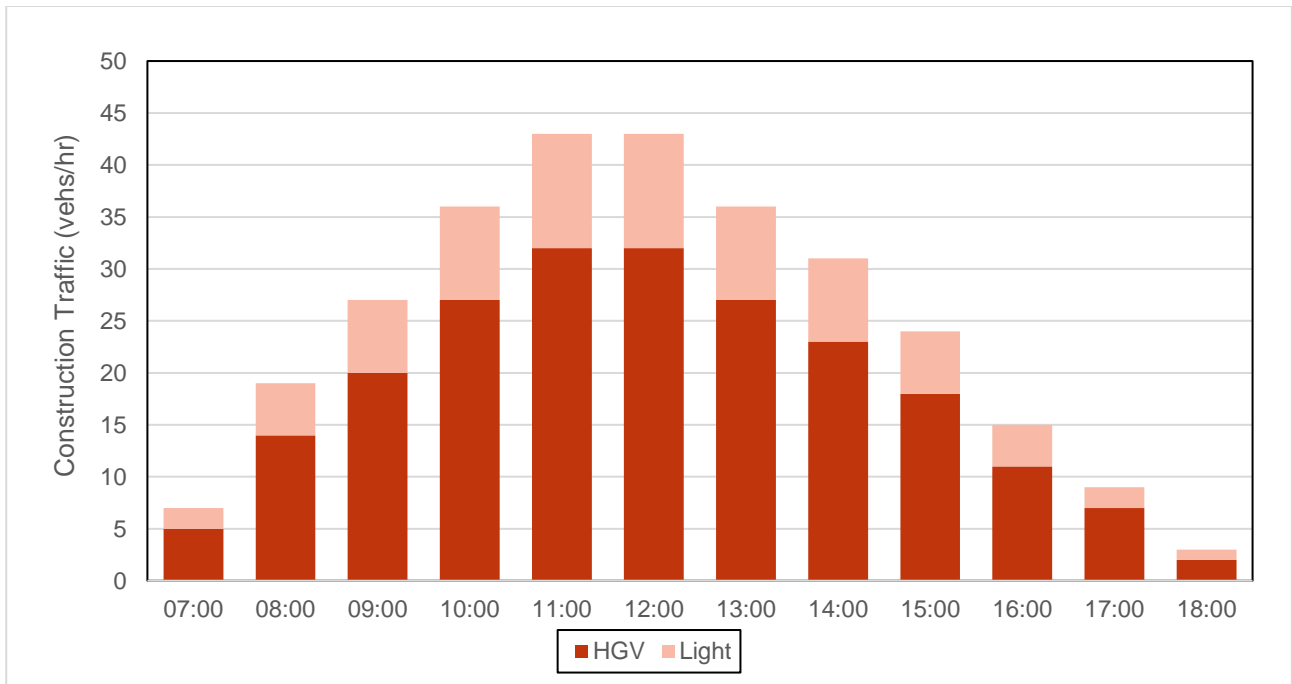
Construction effects

18.9.102 Based on the construction programme, there are two quarters that have the highest volume of construction traffic in this assessment phase; these are 2036 Q2 and Q3 when it is predicted that 9,987 vehicles will visit the Application Site

in each quarter. This equates to an average daily rate of 148 vehicles of which 74% would be HGVs.

- 18.9.103 The effect of this traffic has been assessed against the 2039 ‘Do Something’ forecast flows.
- 18.9.104 The distribution through the day of the peak level of construction traffic is shown in **Inset 18.14**.

Inset 18.14 Typical distribution of construction traffic movements during busiest quarter (Assessment Phase 2b)



- 18.9.105 The approach to the uncertainty of the direction travelled on the M1 (**paragraph 18.9.7**) has also been used for this assessment phase.
- 18.9.106 **Table 18.19** shows the inter-peak period traffic flows for the 2039 ‘Do Something’ scenario together with the predicted peak construction flows during that period. The table also sets out the increase in traffic as a percentage.

Table 18.19: Peak Assessment Phase 2b construction traffic on highway network

Road Link	2039 ‘Do Something’ (Inter peak)	Alternative A		Alternative B	
		Construct- ion Traffic Flow	Increase (%)	Construct- ion Traffic Flow	Increase (%)
AAR between President Way and Eaton Green Road link	5,226	212	4.1%	212	4.1%

Road Link	2039 'Do Something' (Inter peak)	Alternative A		Alternative B	
		Construct-ion Traffic Flow	Increase (%)	Construct-ion Traffic Flow	Increase (%)
AAR between Provost Way and Frank Lester Way	5,520	212	3.8%	212	3.8%
AAR between A1081 and Provost Way	5,400	212	3.9%	212	3.9%
A1081 New Airport Way between A505 Airport Way and Percival Way	12,510	212	1.7%	212	1.7%
A1081 New Airport Way between link to Lower Harpenden Road and Airport Way	22,744	212	0.9%	212	0.9%
A1081 New Airport Way between Capability Green Estate and link to Lower Harpenden Road	26,080	212	0.8%	212	0.8%
A1081 New Airport Way between Capability Green Estate slip roads	22,456	212	0.9%	212	0.9%
A1081 New Airport Way between A1081 London Road and Capability Green Estate	26,849	212	0.8%	212	0.8%
A1081 New Airport Way between London Road slip roads	21,893	212	1.0%	212	1.0%
A1081 New Airport Way between M1 Jct. 10 and A1081 London Road	27,728	212	0.8%	212	0.8%
Junction 10 Roundabout (southern overbridge)	6,027	42	0.7%	169	2.8%
Junction 10 Roundabout (western circulating carriageway)	13,088	212	1.6%	212	1.6%
Junction 10 Roundabout (northern overbridge)	7,072	169	2.4%	42	0.6%
M1 southbound on-slip road	8,509	169	2.0%	42	0.5%
M1 northbound off-slip road	7,059	169	2.4%	42	0.6%

Road Link	2039 'Do Something' (Inter peak)	Alternative A		Alternative B	
		Construction Traffic Flow	Increase (%)	Construction Traffic Flow	Increase (%)
M1 southbound off-slip road	6,119	42	0.7%	169	2.8%
M1 northbound on-slip road	6,016	42	0.7%	169	2.8%
M1 Between Jct. 9 and Jct. 10	75,567	169	0.2%	42	0.1%
M1 Between Jct. 10 and Jct. 11	72,134	42	0.1%	169	0.2%

- 18.9.107 As noted previously, the two scenarios cover 80% of the construction vehicles travelling in one or other direction. From the figures it can be seen that even if all construction traffic travelled on the M1 either to the north or south of Junction 10, the increase in traffic flows on the M1 would still be very small.
- 18.9.108 The figures in **Table 18.19** show that on the main carriageway of the A1081, while on the main carriageway of the M1 the increase in traffic is about 0.2%. The greatest increase that is predicted to occur on the circulating carriageway and slip roads at Junction 10 is 2.8% which would be on the northbound on-slip for Alternative B. The highest increase is predicted to be around 4.1% which occurs on internal airport roads.
- 18.9.109 Since none of the increases associated with construction traffic exceed the IEMA Guidelines (Ref. 18.19), any adverse effect is highly unlikely. The highest increase is predicted to be around 4% which occurs on the AAR to the east of Frank Lester Way.
- 18.9.110 Since none of the roads on which the construction traffic travels have been identified as having any sensitive receptors nearby, the IEMA Guidelines (Ref. 18.19) thresholds of 30%, or 10% for links with a sensitive receptor, no further assessment of effects on these road links is required for this assessment phase, and it can be concluded that there will be **no significant effect**.

Hazardous and Dangerous Loads

- 18.9.111 The current estimate is that the construction work associated with Assessment Phase 2b would require 410 HGV round trips to remove 3,700m² of contaminated material from the landfill site. This is 25% of the volume that was considered for Assessment Phase 2a and based on the conclusions for that assessment phase it is considered that there will be **no significant effects** associated with the Assessment Phase 2b period.

Operational effects

- 18.9.112 For the modelling of the impact of the additional traffic associated with the Proposed Development it has been assumed that the proportion of airport passengers using non-sustainable modes of transport would not rise above 55%. Predictions from CBLTM-LTN show an increase of airport related traffic entering and leaving the airport increasing by 39% over the 'Do Minimum' scenario while the increase in air passengers is 78%.
- 18.9.113 The main highway improvement associated with this assessment phase is the construction of the missing section of the AAR. The works include the following:
- a. construction of the dual carriageway section of the AAR between its junctions with Provost Way and Frank Lester Way;
 - b. replacement of the ARR/Provost Way roundabout by a traffic signal controlled four arm junction;
 - c. realignment of link between the AAR and Percival Way and reduction to single carriageway and removal of roundabout at southern end;
 - d. closure of Percival Way east of Provost Way as a through route, with provision provided to access building fronting the road; and
 - e. widening of the AAR entry arm to Frank Lester Way junction from the east to provide dedicated right turn lane.
- 18.9.114 Taking into consideration the forecast flows from the CBLTM-LTN for 2043, 82% of air passengers travelling to and from the airport by car over the course of a day use the M1. Those travelling south of Junction 10 account for 51% of all trips and those on the section to the north is 31%. This is only a small increase in terms of the proportion on the 'Do Minimum' scenario. A further 5.5% use the A1(M) which is an increase on the 4.9% in the 'Do Minimum' scenario.
- 18.9.115 An arc drawn from an area to the north east of the airport round to the south west of the airport which encompasses the A505 east of Offley to the A1081 south of the junction with Newlands Road covers 20% of the air passenger traffic with the Proposed Development. This represents a change of just over one percentage point when compared with the 'Do Minimum' scenario. For the 'Do Something' scenario the M1 and A505 west of Offley carry 91% of the air passenger traffic.
- 18.9.116 The forecast flows from CBLTM-LTN for daily traffic flows on the B653 show a 4% increase in traffic between the 'Do Minimum' and 'Do Something' scenarios. The forecasts show that airport related traffic, both air passengers and staff, represents 7.6% of the total traffic on this section of the B653 for the 'Do Minimum' scenario and 9.7% for the 'Do Something' scenario.

Severance

- 18.9.117 Using the criteria for the assessment of the effect of severance set out in **Appendix 18.1** of this ES [TR020001/APP/5.02], the following 14 road links were identified as requiring further investigation. Those road links where the

traffic flow increase together with the magnitude of impact associated with that increase are set out below.

- a. High:
 - i. Airport Way between A505 Vauxhall Way and Percival Way;
 - ii. AAR between A1081 New Airport Way and Provost Way;
 - iii. AAR between Provost Way and Frank Lester Way³;
 - iv. AAR between Car Rental and Frank Lester Way⁴ (President Way AAR in DS); and
 - v. AAR Link between President Way and Eaton Green Road link;
- b. Medium:
 - i. Access road to Terminal 2 from the AAR; and
 - ii. Eaton Green Road link.
- c. Low:
 - i. Crawley Green Road between Wigmore Lane and Rochford Drive.

18.9.118 Those road links where the traffic flow decreased are listed below.

- a. High:
 - i. Eaton Green Road between Frank Lester Way and Lalleford Road;
 - ii. Eaton Green Road between Lalleford Road and Eaton Green Road Link from the AAR;
 - iii. Percival Way between Airport Way and Prospect Way; and
 - iv. Percival Way between Prospect Way and Frank Lester Way.
- b. Medium:
 - i. Eaton Green Road between Mistletoe Hill and Frank Lester Way.
- c. Low
 - i. Eaton Green Road between Frank Lester Way and Lalleford Road; and
 - ii. Eaton Green Road between Lalleford Road and Eaton Green Road Link (AAR).

18.9.119 The details of the flows 'Do Something' and 'Do Minimum' scenarios, and the sensitivity of occupants for these links is set out in **Table 18.20** below.

Table 18.20: Details of road links for further assessment for severance (2043)

³ This road link is Percival Way in the 'Do Minimum' scenario and follows a similar alignment on this section to the AAR with regard to the potential for severance, therefore those who might experience severance in this assessment phase are similar for the two scenarios.

⁴ This road link is President Way in the 'Do Minimum' scenario and follows a similar alignment on this section to the AAR, therefore those who might experience severance in this assessment phase are similar for the two scenarios.

Road Link	DM AADT Flow (vehs)	'DS AADT Flow (vehs)	Change (vehs)	Change (%)	Mag. Of Impact	Sensitivity	Effect
Airport Way between A505 Vauxhall Way and Percival Way	4,326	9,765	5,439	126%	High	Low	Adverse Minor or Moderate
AAR between A1081 New Airport Way and Provost Way	-	21,174	21,174	n/a	High	Low	Adverse Minor or Moderate
Percival Way between Provost Way and Frank Lester Way (AAR in DS)	11,398	21,215	9,817	86%	High	Low	Adverse Minor or Moderate
President Way between Car Rental and Frank Lester Way (AAR in DS)	10,064	22,941	12,878	128%	High	Low	Adverse Minor or Moderate
AAR between President Way and Eaton Green Road link	-	22,941	22,941	n/a	High	Low	Adverse Minor or Moderate
Access road to Terminal 2 from AAR	-	11,767	11,767	n/a	Medium	Low	Adverse Minor
Eaton Green Road link	-	12,142	12,142	n/a	Medium	Low	Adverse Minor
Crawley Green Road between Wigmore Lane and Rochford Drive	6,020	8,583	2,563	43%	Low	High	Adverse Negligible or Minor
Percival Way between Airport Way and Prospect Way	13,200	1,389	-11,811	-89%	High	Low	Beneficial Minor or Moderate
Percival Way between Prospect Way and Provost Way	11,398	1,070	-10,329	-91%	High	Low	Beneficial Minor or Moderate
Eaton Green Road between Brendon Avenue and Mistletoe Hill	17,268	11,279	-5,989	-35%	Medium	Medium	Beneficial Minor or Moderate
Eaton Green Road between Mistletoe Hill and Frank Lester Way	13,888	6,888	-7,000	-50%	Medium	Medium	Beneficial Minor or Moderate

Road Link	DM AADT Flow (vehs)	'DS AADT Flow (vehs)	Change (vehs)	Change (%)	Mag. Of Impact	Sensitivity	Effect
Eaton Green Road between Frank Lester Way and Lalleford Road	13,681	4,054	-9,628	-70%	Low	Medium	Beneficial Negligible or Minor
Eaton Green Road between Lalleford Road and Eaton Green Road Link (AAR)	13,108	3,919	-9,189	-70%	Low	High	Beneficial Negligible or Minor

- 18.9.120 Following the format used for describing the effects associated with severance for Assessment Phase 2a, the reporting of the results will start with those links that experience an adverse effect.
- 18.9.121 The traffic on Airport Way increases from a low level of daily traffic flow of just over 4,300 to just under 9,800 vehicles per day. As can be seen in the final column of **Table 18.20** in common with Assessment Phase 2a for this link there is a need to determine whether the effect is minor or moderate. Using the guidance referred to before, the judgment is that there will be a **minor** adverse effect on this link which is **not significant**.
- 18.9.122 The four links that form the AAR have a 'high' magnitude of impact. The sections of the AAR between Provost Way and the entrance to the car rental car park need to be reviewed separately because they exist in the 'Do Minimum' scenario as Percival Way and President Way. For the 'Do Something' scenario the road is upgraded from single to dual carriageway with pedestrian crossings incorporated into the signal control of the junctions of the AAR with both Lester Way and Provost Way and a controlled crossing just to the west of the roundabout that provides access to the car rental car park and retained section of President Way. Most buildings adjacent to the road on the east side will be hangars which will mean that there will be very little pedestrian demand across these road links. Having considered the contribution of these two features it is considered that there will be a **minor** adverse effect on this link which is **not significant**.
- 18.9.123 The AAR links to the west of Provost Way and the east of the entrance to the car rental car park are new links. The combination of these magnitudes of severity and sensitivity of pedestrians as defined in Section 3 and **Table 3.1** of **Appendix 18.1** of this ES [TR020001/APP/5.02] gives the effect of 'minor or moderate' which requires professional judgement to be used to ascertain whether there is a significant effect or not. At this stage the classification of the magnitude of severity being 'high' has been established solely on the basis of the flow along the AAR. However, if one considers the guidance that had been included in DMRB volume 11.3.8 (Ref. 18.32) that is referenced in paragraph 2.2.4 of **Appendix 18.1** of this ES [TR020001/APP/5.02] it can be seen that in terms of the impediments to movement listed these will be closer to the situation

associated with a slight magnitude of impact. Accordingly, the conclusion that has been drawn is that the effect is **minor** adverse which is **not significant**. The effect on the access to Terminal 2 and the Eaton Road Link are similarly judged to be **minor** adverse which is **not significant**.

- 18.9.124 The final road link that will experience an adverse effect is Crawley Green Road between Wigmore Lane and Rochford Drive. For the reasons set out in **paragraph 18.9.70** there would be a **negligible** adverse effect which is **not significant**.
- 18.9.125 Five links have been assessed for a beneficial effect. As described for Assessment Phase 2a, two of the links combine to form a continuous section of Percival Way between its junctions with Airport Way and Provost Way. The effect on these two links remains the same as determined for Assessment Phase 2a (**paragraph 18.9.71**) and is **minor** beneficial which is **not significant**.
- 18.9.126 The effect on Eaton Green Road between Mistletoe Hill and Frank Lester Way also remains as **minor** beneficial while the effect on the two links on Eaton Green Road between Frank Lester Way and the Eaton Green Road Link is considered as in Assessment Phase 2a to be a **negligible** beneficial which is **not significant**.

Driver Stress and Delay

Driver Stress

- 18.9.127 The first sift of the changes in the level of driver stress identified 32 road links that required further consideration. On 28 of those links there is no change in the level of driver stress. The change in driver stress on the remaining four road links are set out in **Table 18.21**.

Table 18.21: Road links assessed for change in driver stress (2043)

Road Link	Level of Driver Stress		Magnitude of Impact of Change	Driver Sensitivity	Effect
	Do Minimum	Do Something			
Eaton Green Road between Frank Lester Way and Lalleford Road	High	Moderate	Very Low	Medium	No effect or Negligible
Eaton Green Road between Lalleford Road and Eaton Green Road Link (AAR)	High	Moderate	Very Low	Medium	No effect or Negligible
Percival Way between Airport Way and Prospect Way	High	Moderate	Very Low	Medium	No effect or Negligible

Road Link	Level of Driver Stress		Magnitude of Impact of Change	Driver Sensitivity	Effect
	Do Minimum	Do Something			
Percival Way between Prospect Way and Provost Way	High	Moderate	Very Low	Medium	No effect or Negligible

18.9.128 Since the effect for all four links has been identified as 'No effect or Negligible' it can be concluded that there will be **no significant** effect.

Driver Delay

18.9.129 The initial sift of the junctions identified twelve for further analysis. The changes in delay at these junctions together with the LOS value for the 'Do Minimum' and 'Do Something' scenarios, are set out in **Table 18.22** for those junctions where the magnitude of impact is greater than 'no change'. The table also shows the change in the average delay and the magnitude of impact that has been derived for each peak hour. For two of the junctions on the AAR there are no values for the LOS in the 'Do Minimum' scenario as the road would not exist. There are values for the LOS in the 'Do Minimum' and 'Do Something' scenarios for the junctions of the AAR with Frank Lester Way and Eaton Green Road as the construction of the AAR will result in modification to two existing junctions.

Table 18.22: Magnitude of impact for driver delay (2043)

Road Link	AM Peak			PM Peak			Magnitude of Impact
	DM LOS	DS LOS	Add'n. Delay (secs)	DM LOS	DS LOS	Add'n. Delay (secs)	
Wigmore Lane/Wigmore Hall Shopping Centre	A	B	11	A	C	26	Very Low
Crawley Green Road/Lalleford Road	A	B	15	A	B	12	Very Low
Eaton Green Road/Wigmore Lane	A	C	30	A	D	36	Low
AAR/Eaton Green Road Link/T2 Access Road		C	35		C	31	Low
A1081 New Airport Way/AAR		B	15		B	16	Very Low

- 18.9.130 Using **Table 4.2** in **Appendix 18.1** of this ES [TR020001/APP/5.02] to establish the level of effects when the magnitude of impact and level of driver delay are considered together the outcome is that there are **no significant effects**.

Pedestrian Delay

- 18.9.131 The first review of the morning and evening peak hour flows identified 42 road links where the change in flow between the 'Do Minimum' and 'Do Something' scenarios is $\pm 30\%$, or $\pm 10\%$ where the pedestrian sensitivity is 'high'. Having calculated the average pedestrian delay for both scenarios in both peaks for those road links only two have been identified for further investigation.
- 18.9.132 The first section that was identified as having an increased delay to pedestrians that was greater than ten seconds is the western section of the AAR, between New Airport Way and Provost Way. Reflecting the proximity of this section to the airport boundary which means that there will be very little demand from pedestrians wanting to cross has led to the pedestrian sensitivity being set at 'very low'. With a delay in both peaks of 11 seconds a 'magnitude of impact' of 'very low' has been assigned to this link which results in there being no effect; therefore, there is **no significant effect**.
- 18.9.133 The other road link is the section of the AAR between the roundabout that provides access to the car parking area to the north of the road and the junction with the link to Eaton Green Road. As a new section of highway this is a new delay that would be experienced by pedestrians. The delays in the morning and evening peak hours are calculated to be 12 and 13 seconds respectively. With these levels of delay a 'magnitude of impact' of 'very low' has been assigned to this link which results there being no effect; therefore, there is **no significant effect**.

Pedestrian Fear and Intimidation

- 18.9.134 The assessment of this category of potential effect requires consideration of both changes in hourly average over an 18-hour day of all vehicles and the change in HGVs over the same period. The initial review of the changes identified 54 links on which there was a need to assess the 'magnitude of impact' for either the pedestrian fear associated with the general level of traffic, the number of HGVs or both; the number of links where both applied is 32.
- 18.9.135 When considering those road links that had been identified at the first level, it was found that the degree of hazard did not change on 34 road links for changes in the flow of all traffic and on all road links for the change of HGV flows.
- 18.9.136 There are four road links where there is a change in the magnitude of impact that is classified as 'medium' and three road links where there is a change in the magnitude of impact that is classified as 'low'. Details of the 'degree of hazard' for the 'Do Minimum' and 'Do Something' scenarios, together with the resultant magnitude of impact and the resulting effect are set out in **Table 18.23**. In this table there are no entries in the second column apart for the section of the AAR between Provost Way and Frank Lester Road. Where the column is blank this is

because the link does not exist in the 'Do Something' network or the flow is less than 600 vehicles.

Table 18.23: Road links requiring further assessment

Road Section	Degree of Hazard		Magnitude of Impact	Sensitivity	Effect
	Do Minimum	Do Something			
AAR between A1081 New Airport Way and Provost Way	-	Great	Medium	Very Low	No effect or negligible
President Way between Provost Way and Frank Lester Way (AAR in DS)	Moderate	Great	Low	Low	No effect or negligible
President Way between Car Rental and Frank Lester Way (AAR in DS)	-	Great	Medium	Low	Minor
AAR between President Way and Eaton Green Road link	-	Great	Medium	Low	Minor
Crawley Green Road between Ashcroft Road and Lalleford Road	-	Moderate	Low	High	Negligible or minor
Access road to Terminal 2 from AAR	-	Moderate	Low	Low	No effect or negligible
Eaton Green Road link	-	Moderate	Low	Low	No effect or negligible

18.9.137 The first four links are those that make up the new AAR for which the pedestrian sensitivity was given a level of 'low' for the section to the east of its junction with Prospect Way and 'very low' for the section to the west. Assigning the value shown in **Table 4.2** in **Appendix 18.1** of this ES [TR020001/APP/5.02] for the section to the west of Provost Way there would be an environmental effect that would be **negligible** adverse. There is a need to make a choice for the section of the AAR between Provost Way and Frank Lester Road and decision is that there is **no effect** because the degree of hazard changes in steps of 600 vehicles. The environmental effect on the section of the AAR to the east of Frank Lester Way will be **minor** adverse and **not significant**.

18.9.138 The increase in the flow on Crawley Green Road between Ashcroft Road and Lalleford Road is only 153 vehicles, therefore the lower-level effect is more appropriate, hence the decision that the environmental effect on this section of that road will be **negligible** adverse. The flow on the links from the AAR to Terminal 2 and Eaton Green Road are of the order of 700 vehicles and fall into the lower level for the degree of hazard categorised as 'moderate'. As a

consequence, the environmental effect on these two links is classified as **no effect**.

Collisions and Safety

- 18.9.139 Four junctions passed the threshold for further assessment and the predicted annual PIC rates for 2043 together with the calculated rate for 2016 are presented in the table below. The table also includes the details on the changes between the 'Do Minimum' and 'Do Something' for both the predicted PIC rates and junction traffic flows together with the calculated 'magnitude of impact'.

Table 18.24: Review of change in PICS (2043)

Junction Name	2043 DM Rate (PICs/Year)	2043 DS Rate (PICs/Year)	Change in 2043 PIC Rate	Change in Flow Thru' Jct.	Magnitude of Impact
Eaton Green Road/Frank Lester Way	1.01	0.15	-85.1%	-63.0%	Medium
Crawley Green Road/Ashcroft Road	0.48	0.25	-47.5%	23.2%	Very Low
Crawley Green Road/Lalleford Road	0.18	0.20	14.0%	26.8%	No Change
Crawley Green Road/Wigmore Lane	1.53	1.83	19.5%	10.4%	No Change

- 18.9.140 Using the criteria set out in **Table 4.2 of Appendix 18.1** of this ES [TR020001/APP/5.02] the junction of Eaton Green Road with Frank Lester Way which has a magnitude of impact of 'medium'; when combined with a sensitivity of medium this produces an effect that can be either 'minor' or 'moderate'. The magnitude of impact is close to next level in the matrix, so it has been determined that there will be a **moderate** beneficial effect, which is **significant**.
- 18.9.141 The effect at the junction of Crawley Green Road and Ashcroft Road will be **negligible** beneficial. And at the other two junctions listed in the above table there will be **no effect**.

Hazardous and Dangerous Loads

- 18.9.142 The assessment of this environmental effect of the possibility of reliance on the importation of fuel by road has been described for Assessment Phase 2a in **paragraphs 18.9.87 to 18.9.90**. For Assessment Phase 2b a further calculation has been undertaken to determine the full risk of a KSI collision occurring over a 30-year period from the opening of Terminal 2. That exercise has calculated the risk of a KSI collision occurring to be 0.029. It has been considered that the 'magnitude of impact' for this level of risk would be 'low'; from this an environmental effect of **negligible** adverse has been determined which is **not significant**.

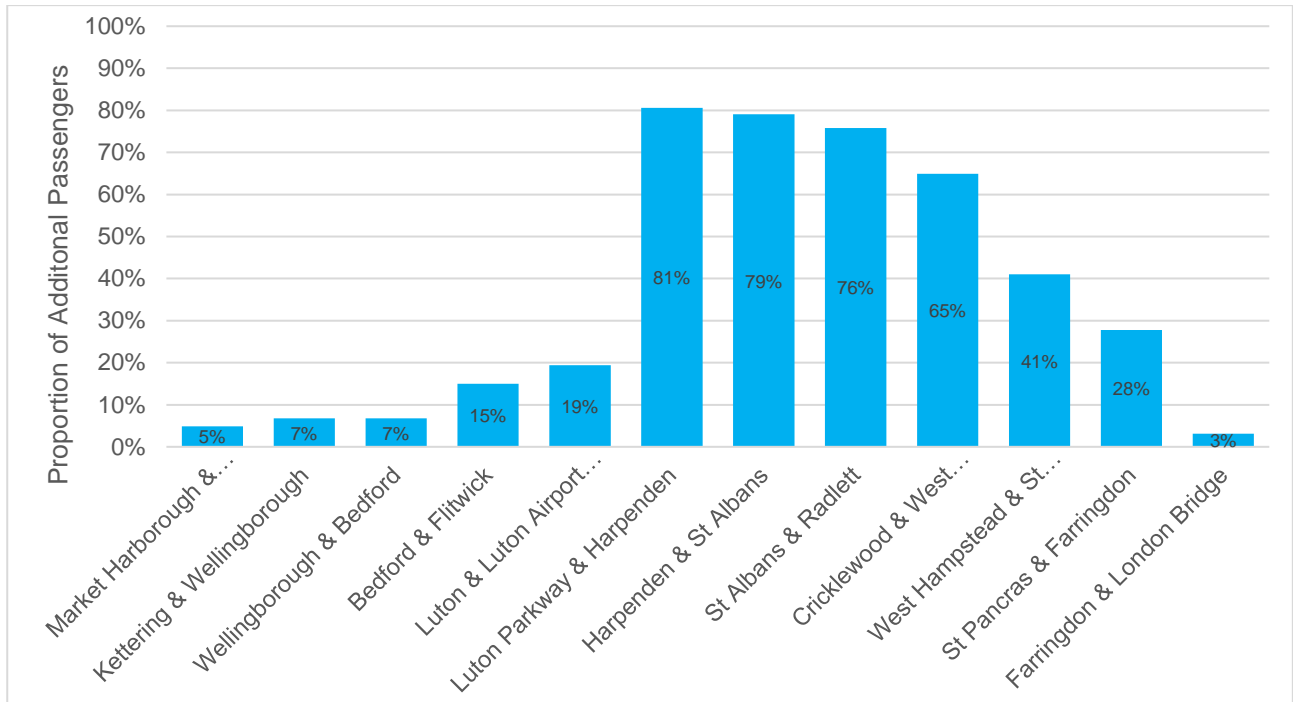
- 18.9.143 A similar exercise has been carried out for the scenario where fuel could be brought in through the fuel main and there would be no need for the fuel being carried on the Strategic Highway Network. There would be a benefit that would result from the removal of the existing tanker movements associated with the existing farm. The risk over a 30-year period associated with that activity continuing that is calculated to be 0.042.

Public Transport Users

Rail

- 18.9.144 The equivalent figures and table to those prepared for Phases 1 and 2a are presented below for this assessment phase.
- 18.9.145 The graph shown on **Inset 18.15** provides an indication of the distribution of the additional passengers, both air passengers and employees, on overall passenger loadings over the section of the rail line between Market Harborough and London Bridge stations for the period between 07:00 and 19:00.

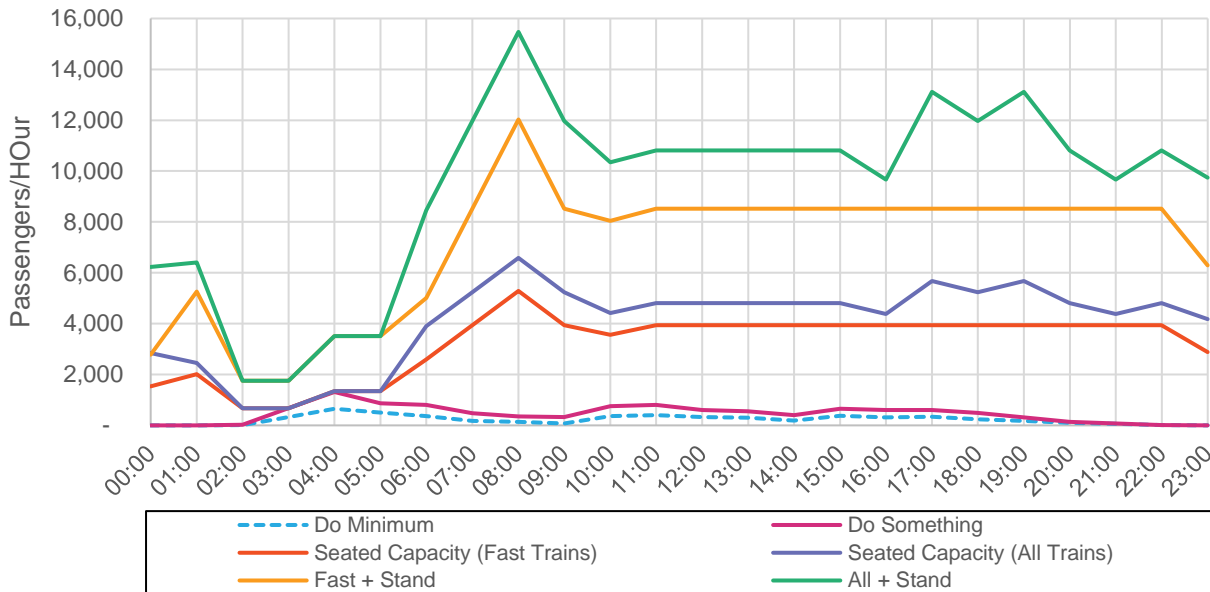
Inset 18.15 Additional Passenger Loadings on the Rail Route between Market Harborough and London Bridge Stations (2043) based on difference between DM and DS



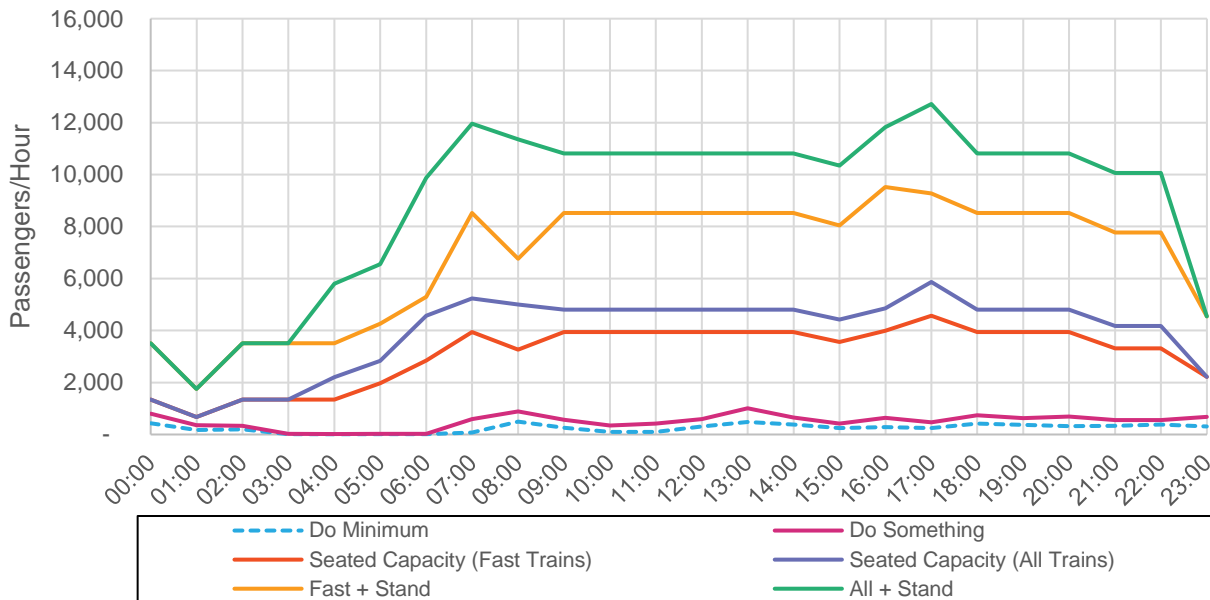
18.9.146 The shape of the distribution is very similar to that shown for Phases 1 and 2a. As for earlier assessment phases the shape of the graph clearly shows the greater use of the rail services to the south of Luton Airport Parkway station. It also shows that the airport related passengers join and leave the trains at a number of stations along the route.

18.9.147 A comparison between the airport related rail passengers in both the ‘Do Minimum’ and ‘Do Something’ immediately south of Luton Airport Parkway station scenarios on northbound and southbound services are shown below in **Inset 18.16** and **Inset 18.17** respectively. These insets also show the capacity available in terms of the number of seats and overall capacity.

Inset 18.16 Comparison of airport related loadings and capacity on rail service south of Luton Airport Parkway station (northbound 2043)



Inset 18.17 Comparison of airport related loadings and capacity on rail service south of Luton Airport Parkway station (southbound 2043)



18.9.148 The factor most relevant to the comfort and convenience of rail passengers is the amount of capacity that the additional passengers take up. It can be seen in **Inset 18.16** that during the period 03:00 to 05:00 the number of airport related trips on the northbound trains running along the section of the line between Harpenden and Luton Airport Parkway stations is about the same as the seating capacity of the service. The observations made in **paragraph 18.9.95** regarding

demand and capacity in the early hours of the morning apply equally for 2043 which is twenty years in the future.

18.9.149 **Table 18.25** sets out the number of additional passengers by hour and direction and then provides the percentage increase in the use of the trains in the 'Do Minimum' scenario and also expresses that increase as a percentage of the capacity of the fast trains.

Table 18.25: Additional passengers on MML south of Luton Airport Parkway station (2043)

Time	Northbound			Southbound		
	Additional Passengers	Increase in Airport Passengers	Proportion of Capacity (fast trains)	Additional Passengers	Increase in Airport Passengers	Proportion of Capacity (fast trains)
00:00	2	82%	0%	363	84%	10%
01:00	1	65%	0%	183	103%	10%
02:00	10	76%	1%	126	62%	4%
03:00	356	109%	20%	13	121%	0%
04:00	661	101%	19%	7	74%	0%
05:00	363	72%	10%	12	77%	0%
06:00	438	120%	9%	8	72%	0%
07:00	298	169%	3%	517	678%	6%
08:00	210	146%	2%	392	79%	6%
09:00	257	339%	3%	302	115%	4%
10:00	378	102%	5%	242	245%	3%
11:00	402	99%	5%	313	302%	4%
12:00	280	87%	3%	279	90%	3%
13:00	246	81%	3%	530	111%	6%
14:00	223	121%	3%	280	74%	3%
15:00	280	75%	3%	165	66%	2%
16:00	287	90%	3%	364	129%	4%
17:00	264	78%	3%	228	94%	2%
18:00	249	106%	3%	322	76%	4%
19:00	128	70%	2%	260	71%	3%
20:00	37	36%	0%	362	111%	4%
21:00	14	21%	0%	215	64%	3%
22:00	4	28%	0%	175	46%	2%
23:00	-	0%	0%	369	122%	8%

18.9.150 During the morning peak period (07:00 to 10:00) the increase in passengers in the southbound direction is 145%. The corresponding figure for northbound

travel during the evening peak period (16:00 to 19:00) is 90%. The corresponding use of capacity is 3.5% and 2.3%.

- 18.9.151 When the ratio of passengers to capacity for northbound travel is compared with the ranges of magnitude shown in **Table 2.16** of **Appendix 18.1** of this ES **[TR020001/APP/5.02]** a magnitude of impact of 'medium' is predicted to occur for one hour (northbound 03:00 to 04:00) and a level of 'low' is experienced for three hourly periods for northbound travel and for six hours for southbound travel.
- 18.9.152 The combination of a 'medium' level of magnitude of impact and a receptor sensitivity of 'medium' could result in effect that is either 'minor' or 'moderate' therefore it is necessary to give greater consideration to the values in order to make a professional judgement as to which of these categories the effect should fall.
- 18.9.153 In the northbound direction the ratio of passengers to capacity that is 20.3% gives a magnitude of impact of 'medium'. For the time period this comes in a range of above 20% and no more than 50%, therefore that calculated value is very close to the lower level of this magnitude. In the southbound direction at the ratio is 5.1% and the range for 'medium' at this time is above 5% to 10%. Since the level of medium only occurs for one hour in each direction and in both cases the value is very much at the low end of the range it is considered that the effect is **minor** adverse, which is **not significant**.
- 18.9.154 To the north of Luton Airport Parkway station the period for southbound trains when the ratio of passengers to capacity is greatest is also in the early morning but with the number of additional passengers less than one quarter of those arriving from south of the station and when the capacity on southbound trains is greater than on northbound trains, as can be seen by comparing the graph in **Inset 18.17** with that in **Inset 18.16**, the increase is less than 5% and therefore the magnitude of impact is 'no change'. Similarly, when comparing northbound trains with the equivalent southbound trains south of the station, the magnitude of impact is also 'no change', therefore there will be **no significant effect** on rail services to the north of the station.

Coach and Bus

- 18.9.155 The prediction of travel by coach and bus in 2043 gives an increase of 90% when compared with the 'Do Minimum' scenario. The ratio of bays to the air passenger throughput in the 'Do Minimum' scenario is one bay per mppa. This increases to 1.59 bays per mppa for the 'Do Something' scenario. This demonstrates that the provision of facilities still remains better 'Do Something', therefore it is concluded that there will be **no significant effect** on coach and local bus services.

Sensitivity Analysis

- 18.9.156 There are certain known scenarios or risks that may occur that could influence the conclusions of the assessment of the Core Planning Case. These scenarios and the general approach to considering them in this assessment are described in Section 5.4 of **Chapter 5** of this ES **[TR020001/APP/5.01]**.

- 18.9.157 For the consideration of effects associated with traffic and transportation, the following three different scenarios have been considered in this sensitivity analysis:
- slower growth in passenger demand than assumed in the Core Planning Case;
 - faster growth in passenger demand than assumed in the Core Planning Case; and
 - the absence of widening on the southbound carriageway of the M1 between Junctions 10 and 9 that has been assumed in the 2043 in the Core Planning Case.

18.9.158 The first two tests have been undertaken to demonstrate that the project has addressed potential variation in the passenger demand forecasts and the date by which the throughput of 32 mppa might be reached. The third test has been undertaken at the request of a number of the stakeholders with whom there has been close liaison during the development and assessment of the Proposed Development.

18.9.159 The conclusions from the assessment of these sensitivity scenarios are summarised below and described in more detail in **Appendix 18.5** of this ES [TR020001/APP/5.02].

Slower Growth

21.5 mppa (2030)

18.9.160 In the Slower Growth scenario, the assessment year has moved back by three years to 2030; this means that as a general observation the background traffic in the 'Do Minimum' scenario is higher than that used to assess the Core Planning Case and as a consequence the additional airport traffic will be a marginally lower component of traffic on the highway network in the 'Do Something' scenario. Slower growth is shown not to introduce any additional environmental effects when compared with the findings for this level of throughput for the Core Planning Case.

27 mppa (2046)

18.9.161 The analysis presented in **Appendix 18.5** of this ES [TR020001/APP/5.02] shows that there are some minor changes in the environmental effects. However, the overall conclusion is that for slower growth pushing back the achievement of 27 mppa by seven years does not introduce any significant environmental effects.

32 mppa (2049)

18.9.162 The delay by six years of a throughput of 32 mppa being achieved has little effect on the classification of the environment effects; therefore, with the exception of a beneficial **significant** effect being identified for pedestrians crossing Windmill Road at its junction with Kimpton Road; therefore the conclusion drawn for the Core Planning Case at this level of passenger throughput applies equally to slower growth at Assessment Phase 2b.

Faster Growth

- 18.9.163 The highway interventions that form part of the Proposed Development are linked to the passenger throughput rather than a specific date. Thus, if the increase in traffic associated with a higher throughput traffic occurs warrants any of the interventions earlier than expected, they will be provided at that time.

21.5 mppa (2026)

- 18.9.164 Although, in general, the additional airport related traffic associated with the increase in throughput of airport passengers from 18 mppa to 21.5 mppa represents a higher proportion of traffic on roads in the vicinity of the airport it does not change the findings reported for the Core Planning Case that demonstrate that there would be no significant effects.

23 mppa (2027)

- 18.9.165 Although, in general, the additional airport related traffic associated with the increase in throughput of airport passengers from 18 mppa to 23 mppa in 2027 represents a higher proportion of traffic on roads in the vicinity of the airport it does not change the findings reported for the Core Planning Case that there would be no significant effects.

27mppa (2038)

- 18.9.166 As described in the **Appendix 18.5** of this ES [TR020001/APP/5.02] there are some minor changes in the environmental effects when considering 'severance' and 'collisions and safety'. However, the overall conclusion for faster growth bringing forward the achievement of 27 mppa by one year does not introduce any significant environmental effects.

32 mppa (2043)

- 18.9.167 It is shown that the advancement by one year of a throughput of 32 mppa being achieved has little effect on the classification of the environment effects; therefore, the conclusion drawn for the Core Planning Case applies equally to slow growth at Assessment Phase 2b.

No M1 Widening

- 18.9.168 In January 2022 in a written statement to Parliament (Ref. 18.33), the Transport Secretary announced a pause in the rollout of all lane running motorways until a full five years' worth of safety data is available. In response to requests by stakeholders, a sensitivity test has been undertaken to ascertain whether there would be any changes to the conclusion of the assessment if there were by 2043 no change to the southbound carriageway of the M1 between Junctions 10 and 9.

- 18.9.169 The review described in **Appendix 18.5** of this ES [TR020001/APP/5.02] has demonstrated that the changes in the pattern of traffic that would result from there being no widening on the southbound carriageway of the M1 between Junctions 10 and 9 does not justify any further assessment of the environmental effects therefore there will be no significant environmental effects.

18.9.170 In addition, the provision of the improvements at Junction 10 that form part of the Proposed Development will reduce the diversion away from this stretch of the M1 for non-airport related traffic.

18.10 Additional mitigation

- 18.10.1 This investigation of the likely impacts of the Proposed Development together with a depth of experience of previous work on the earlier planning applications that have allowed the airport to grow to a throughput of 18 mppa have made it possible to identify and then incorporate a considerable scale of mitigation measures into the design, together with the introduction of measures in the **SAS [TR020001/APP/7.12]**. This, when supported by the **FTP [TR020001/APP/7.13]**, that forms the delivery plan of the **SAS [TR020001/APP/7.12]**, containing the longlist of interventions and measures, and targets, has resulted in this assessment concluding that no additional mitigation is required. This has been assisted by close liaison with LBC and National Highways who are the responsible authorities for the roads that will carry the majority of the additional traffic.
- 18.10.2 Surface access is also incorporated in the **GCGF [TR020001/APP/7.08]** that sets out processes for monitoring and mitigating environmental effects in four environmental topics over ongoing operation of the airport, based on defined legally binding Limits and Thresholds. The GCG Framework proposals ensure that the actual effects of the airport as they manifest over time are monitored and timely measures are taken to ensure that those limits are not exceeded. Surface access monitoring and controls form one of the key components of the **GCGF [TR020001/APP/7.08]** proposals and breaches of these Limits could result in the airport's ability to grow being limited in the event that appropriate and reasonable actions are not implemented.

18.11 Residual effects

Assessment Phase 1

Construction effects

- 18.11.1 No additional mitigation has been proposed with respect to construction Traffic and Transportation effects. As such the effects would be as reported in **Section 18.9**.

Operational effects

- 18.11.2 No additional mitigation has been proposed with respect to operational Traffic and Transportation effects. As such the effects would be as reported in **Section 18.9**.

Assessment Phase 2a

Construction effects

- 18.11.3 No additional mitigation has been proposed with respect to construction Traffic and Transportation effects. As such the effects would be as reported in **Section 18.9**.

Operational effects

- 18.11.4 No additional mitigation has been proposed with respect to operational Traffic and Transportation effects. As such the effects would be as reported in **Section 18.9**.

Assessment Phase 2b

Construction effects

- 18.11.5 No additional mitigation has been proposed with respect to construction Traffic and Transportation effects. As such the effects would be as reported in **Section 18.9**.

Operational effects

- 18.11.6 No additional mitigation has been proposed with respect to operational Traffic and Transportation effects. As such the effects would be as reported in **Section 18.9**.

18.12 In-combination climate change effects

- 18.12.1 The effects that have been assessed and reported in **Section 18.9** of this chapter have been reviewed to consider potential changes as a result of predicted future conditions due to climate change, known as In-combination Climate Change Impacts (ICCI), as described in **Chapter 9** Climate Change Resilience of this ES [TR020001/APP/5.01]. It has been determined that the assessment findings would not alter as a result of climate change and therefore remain as reported in **Section 18.9** of this chapter.

18.13 Monitoring

18.13.1 A Monitoring Plan for surface access has been submitted as part of the proposed **GCGF [TR020001/APP/7.08]**. It is intended that this Monitoring Plan will be approved as part of the application for development consent, and paragraph 21 of Schedule 2 to the **Draft Development Consent Order [TR020001/APP/2.01]** will require the airport operator to undertake monitoring and reporting in accordance with this Monitoring Plan as part of their Green Controlled Growth responsibilities.

18.13.2 As such, this document will establish monitoring and reporting requirements for surface access within the **GCGF [TR020001/APP/7.08]**. Failure to carry out monitoring and reporting in line with this document will constitute a breach of the Development Consent Order and may result in enforcement action as detailed in the **GCGF [TR020001/APP/7.08]**.

Construction monitoring

18.13.3 It will be a requirement that the appointed lead contractor undertakes regular reviews of the effectiveness of the CTMP (Outline CTMP included at **Appendix 18.3** of this ES **[TR020001/APP/5.02]**) to ensure that the requirements are being achieved and any revisions undertaken.

18.13.4 It will also be a requirement that a list of indicators is agreed to monitor site targets. These monitors may include:

- a. total numbers of vehicle movement in set time periods – i.e., day, week, month;
- b. type of vehicle movement – i.e., waste, plant, material deliveries;
- c. distance travelled; and
- d. effectiveness of logistic management.

18.13.5 The results of this monitoring exercise should be combined with the results of the monitoring of the CWTP (Outline CTMP included at **Appendix 18.4** of this ES **[TR020001/APP/5.02]**) to gain an overview of the construction traffic impact of the Proposed Development.

Operational monitoring

18.13.6 **Chapter 11** of the **FTP [TR020001/APP/7.13]** provides a description of the proposed Delivery and Monitoring processes for this **FTP [TR020001/APP/7.13]**. It also outlines a programme of the proposed surveys and audits that are developed to inform and support the **FTP** Delivery and Monitoring framework. In **Section 11.2** the key roles of monitoring in the overall process of implementing the proposed **FTP [TR020001/APP/7.13]** measures are listed as follows:

- a. collecting travel and traffic data that is used to calculate necessary indicators to understand travel patterns of the air passengers and airport staff;
- b. reviewing progress towards set Targets;

- c. highlighting stories of success;
- d. identifying areas for improvement;
- e. adjusting measures and initiatives or changing them if needed;
- f. providing information to all affected stakeholders to ensure transparency and openness to their views and comments; and
- g. informing further strategic decision-making and spending.

18.13.7 The objectives that have been adopted in developing a robust monitoring approach are that it will be able to:

- a. effectively track the applicant's progress in continually improving sustainable access for passengers and staff to access the airport;
- b. determine any impacts on surrounding communities, the surrounding road network and public transport networks;
- c. understand any impact that may require traffic management measures to be adjusted including access / parking charges;
- d. assess if mode specific data collected aligns and supports the annual staff surveys collected by the airport; and
- e. contribute towards a greener airport.

18.13.8 **Tables 11.2 to 11.7** in that document set out a series of long lists identifying proposed surveys for six priority areas that have been identified in the **FTP [TR020001/APP/7.13]**.

18.14 Assessment summary

18.14.1 **Table 18.26** provides a summary of the identified impacts, mitigation and likely effects of the Proposed Development on Traffic and Transportation.

Table 18.26: Traffic and Transportation assessment summary

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
Construction						
Screening shows that no impact identified requires further assessment as they are below the thresholds in the IEMA Guidelines and therefore not likely to be significant.	CoCP CTMP	n/a	n/a	n/a	n/a	Not significant
Operation						
Severance Assessment Phase 2a and 2b): Airport Way between Vauxhall Way and A0181 New Airport Way	Aspects of infrastructure incorporated into the Proposed Development that mitigate impacts on traffic and transport include: a. Luton DART extension;	High	Occupant: Very Low	Minor Adverse, not significant	None required	Effect unchanged

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
Severance (Assessment Phase 2a): AAR between A1081 New Airport Way and Eaton Road Link	b. highway interventions; c. Framework Travel Plan; and d. bus and coach station.	Medium	Pedestrian: Low	Minor Adverse, not significant	None required	Effect unchanged
Severance (Assessment Phase 2b): AAR between A1081 New Airport Way and Eaton Road Link		High	Pedestrian: Low	Minor Adverse, not significant	None required	Effect unchanged
Severance (Assessment Phases 2a and 2b): Eaton Green Road Link		Medium	Pedestrian: Low	Minor Adverse, not significant	None required	Effect unchanged
Severance (Assessment Phase 2b): Access road to Terminal 2 from AAR		Medium	Pedestrian: Low	Minor Adverse, not significant	None required	Effect unchanged

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
Severance (Assessment Phases 2a and 2b): Percival Way between Airport Way and Provost Way		High	Pedestrian: Low	Minor Beneficial, not significant	None required	Effect unchanged
Severance (Assessment Phases 2a and 2b): Eaton Green Road between Brendon Avenue and Frank Lester Way		Medium	Pedestrian: Medium	Minor Beneficial, not significant	None required	Effect unchanged

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
Driver Stress (Assessment Phase 2a): Slip road from A1081 London Road to A1081 New Airport Way WB	Aspects of infrastructure incorporated into the Proposed Development that mitigate impacts on traffic and transport include: <ul style="list-style-type: none"> a. Luton DART extension; b. highway interventions; c. Framework Travel Plan; and, d. bus and coach station. 	Low	Driver: Medium	Minor Adverse, not significant	None required	Effect unchanged
Driver Delay (Assessment Phase 2a): A1081 New Airport Way/Airport Way	Aspects of infrastructure incorporated into the Proposed Development that mitigate impacts on traffic and transport include: <ul style="list-style-type: none"> a. Luton DART extension; b. highway interventions; c. Framework Travel Plan; and d. bus and coach station. 	Low	Driver: Medium	Minor Adverse, not significant	None required	Effect unchanged

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
Pedestrian Fear and Intimidation (Assessment Phase 2b): AAR between Frank Lester Way and Eaton Green Road Link	Aspects of infrastructure incorporated into the Proposed Development that mitigate impacts on traffic and transport include: <ul style="list-style-type: none"> a. Luton DART extension; b. highway interventions; c. Framework Travel Plan; and d. bus and coach station 	Medium	Pedestrian: Low	Minor Adverse, not significant	None required	Effect unchanged
Collisions and Safety (Assessment Phase 2a): Eaton Green Road/Frank Lester Way		Low	Driver and other road user: Medium	Moderate Beneficial, significant	None required	Effect unchanged
Collisions and Safety (Assessment Phase 2b): Eaton Green Road/Frank Lester Way		Medium	Driver and other road user: Medium	Moderate Beneficial, significant	None required	Effect unchanged

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
Rail (Assessment Phase 2a): MML south of Luton Airport Parkway station (northbound direction)	None required	Low	Rail passengers: Medium	Minor Adverse, not significant	None required	Effect unchanged
Rail (Assessment Phase 2a): MML south of Luton Airport Parkway station (southbound direction)		Low	Rail passengers: Medium	Minor Adverse, not significant	None required	Effect unchanged
Rail (Assessment Phase 2b): MML south of Luton Airport Parkway station (northbound direction)		Medium	Rail passengers: Medium	Minor Adverse, not significant	None required	Effect unchanged

Impact	Embedded/ Good Practice Mitigation	Magnitude	Receptor Sensitivity	Description of effect and significance	Additional Mitigation	Residual Effect
Rail (Assessment Phase 2b): MML south of Luton Airport Parkway station (southbound direction)		Medium	Rail passengers: Medium	Minor Adverse, not significant	None required	Effect unchanged

COMPETENT EXPERTS

Topic	Role	Company	Qualifications/competencies/experience of author
Traffic and Transportation	Author	AECOM	BSc(Eng) Experience Transport Planning/Traffic Engineering – 50 years Environmental Assessments – 32 years Chartered Engineer (CEng) Member of the Institution of Civil Engineers (MICE) Member of the Chartered Institute of Highways and Transportation (MCIHT)

GLOSSARY AND ABBREVIATIONS

Term	Definition
AADT	Annual Average Daily Traffic - the average daily flow over the full year and includes traffic volumes at the weekend in the calculation
AAR	Airport Access Road
AAWT	Annual Average Weekday Traffic – as for AADT but excluding traffic at the weekend
ANPS	Airports National Policy Statement
ASAS	Airport Surface Access Strategy prepared by the Airport Operator
BCC	Buckinghamshire County Council
CAA	Civil Aviation Authority
CBC	Central Bedfordshire Council
CBLTM	Central Bedfordshire and Luton Traffic Model
CBLTM-LTN	Expanded version of the CBLTM developed to assess the impact of the Proposed Development
CoCP	Construction Code of Practice
COMET	Hertfordshire County Model of Transport
CPAR	Century Park Access Road
CTA	Central Terminal Area
CTMP	Construction Traffic Management Plan
DART	Direct Air-Rail Transit – a new rail link providing a direct connection between Luton Airport Parkway station and the airport terminal
DCO	Development Consent Order
DfT	Department for Transport
DM	Do Minimum – Used in table headings to denote ‘Without Expansion’ scenario.
DMU	Diesel Multiple Unit
DS	Do Something – Used in table headings to denote ‘With Expansion’ scenario.
EIA	Environmental Impact Assessment
EMR	East Midlands Railway
EMT	East Midlands Trains
EMU	Electric multiple unit train
ES	Environmental Statement

FTP	Framework Travel Plan [TR020001/APP/7.14]
GCGF	Green Controlled Growth Framework [TR020001/APP/7.08]
Hazardous load	The transport of substances that could harm human health or the environment.
HCC	Hertfordshire County Council
HGV	Heavy goods vehicle
IEMA	The Institute of Environmental Management and Assessment
LBC	Luton Borough Council
LLAOL	London Luton Airport Operations Limited
LOS	Level of Service - a quantitative stratification, developed in the United States, of a performance measure or measures that represent quality of service along a highway link or at a junction.
LTP	Local Transport Plan
MPPA	Million passengers per annum
NPSNN	National Planning Statement for National Networks
PROW	Public right of way
PTH	Public transport hub
SAETS	Getting to and from the airport – our emerging transport strategy
SAS	Surface Access Strategy [TR020001/APP/7.13]
TA	Transport Assessment [TR020001/APP/7.02]
TAG	Transport analysis guidelines
TfL	Transport for London
VISSIM	Verkehr In Städten - SIMulationsmodell (Traffic in cities - simulation model) – microsimulation traffic modelling software
WebTRIS	National Highways Traffic Information System containing traffic flow and journey time data from 1,500 roadside inductive loops on the strategic highway network

REFERENCES

- Ref. 18.1. Ministry of Housing Communities and Local Government; (2021); National Planning Policy Framework
- Ref. 18.2. Department for Transport; (2013); Aviation policy framework
- Ref. 18.3. Department for Transport; (2018); Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England
- Ref. 18.4. Department for Transport; (2014); National Policy Statement for National Networks. HMSO, UK
- Ref. 18.5. Department for Transport; (2013); Circular 02/2013, The Strategic Road Network and the delivery of sustainable development
- Ref. 18.6. Luton Borough Council; (2017); Luton Borough Council Local Plan 2011-2031
- Ref. 18.7. Luton Borough Council; (2011); Luton Local Transport Plan 2011-2026
- Ref. 18.8. Hertfordshire County Council; (2018); Hertfordshire's Local Transport Plan (2018-2031)
- Ref. 18.9. Central Bedfordshire Council; (2021); Central Bedfordshire Local Plan 2015-2035
- Ref. 18.10. North Hertfordshire District Council (2016); Local Plan 2011-2031 (Proposed Submission)
- Ref. 18.11. Dacorum Borough Council: (2013); Core Strategy 2006-2031
- Ref. 18.12. London Luton Airport; (2012); Airport Surface Access Strategy 2012-2017
- Ref. 18.13. London Luton Airport; (2018); Airport Surface Access Strategy 2018-2022
- Ref. 18.14. London Luton Airport; (2019); Airport Surface Access Strategy 2018-2022, 2019 reissue
- Ref. 18.15. Civil Aviation Authority; (2016); Passenger Survey Report
- Ref. 18.16. Department for Transport; (2018); Beyond the Horizon, The Future of UK Aviation, Making best use of existing runways
- Ref. 18.17. Department for Transport; (2022); Flightpath to the Future
- Ref. 18.18. Department for Transport; (2018); Beyond the horizon, The future of UK aviation, Making best use of existing runways, June 2018. Available at: <https://www.gov.uk/government/publications/aviation-strategy-making-best-use-of-existing-runways> [Accessed: November 2022].
- Ref. 18.19. Institute of Environmental Assessment (IEA, now Institute of Environmental Management (IEMA)); (1993); Guidance Notes No. 1, Guidelines for the Environmental Assessment of Road Traffic
- Ref. 18.20. Department for Transport; (2013); Government Website – 'Transport analysis guidance'
- Ref. 18.21. Arup; (2019); Transport Assessment Scoping Report
- Ref. 18.22. AECOM; (2019); Strategic Modelling: Highway Local Model Validation Report
- Ref. 18.23. AECOM; (2019); Strategic Public Transport Model Validation Report
- Ref. 18.24. Arup; (2018); VISSIM Model LMVR
- Ref. 18.25. Thameslink; (2022); Company website (Accessed: August 2022)
- Ref. 18.26. East Midlands Railway; (2022); Company website [Accessed: August 2022]
- Ref. 18.27. Arup; (2018); East Luton Study Report
- Ref. 18.28. East West Rail: (2021); Making Meaningful Connections, Consultation Document
- Ref. 18.29. Hertfordshire County Council; (2019); South Central Hertfordshire Growth and Transport Plan Stage 3 Interventions Paper, Consultation Draft
- Ref. 18.30. Civil Aviation Authority; (2019); Passenger Survey Report
- Ref. 18.31. Department for Transport; (2020); Reported Road Casualties Great Britain: 2019
- Ref. 18.32. Highways England, Transport Scotland, Welsh Government and Department for Infrastructure, Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 8.
- Ref. 18.33. Department for Transport; (2022); Written statement "Government to pause rollout of all lane running motorways"