Luton Rising
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Our community.
Our planet.

February 2023

London Luton Airport Expansion

Planning Inspectorate Scheme Ref: TR020001

Volume 7 Other Documents

7.02 Transport Assessment - Part 4 of 4 (Chapters 11-16)

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London Luton Airport Expansion Development Consent Order

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

London Luton Airport Expansion Development Consent Order 202x

7.02 TRANSPORT ASSESSMENT – PART 4 OF 4 (CHAPTERS 11-16)

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11 SUSTAINABLE TRANSPORT

11.1.1 The airport's evolving public transport access, future public transport offer, mode share forecasting and capacity analysis is summarised in the Public Transport Strategy Report included in **Appendix H**.

11.1.2 The following chapter includes the estimated sustainable transport trip generation, impact on public transport, and opportunities for improving the public transport offer.

11.1 Public transport trip generation

Passengers

11.1.1 The forecast public transport trips generated by passengers are shown in **Table 11.1**.

Table 11.1: Passenger public transport trip generation – 2027, 2039, 2043 AM and PM peak (increase from 2019 when the airport handled the permitted 18 mppa shown in brackets), person trips

Mode	Peak Hour	Landside movements	Existing	with Proposed Development		
			2019	2027 assessment Phase 1	2039 assessment Phase 2a	2043 Assessment Phase 2b
Rail	AM	Arrivals	151	204 (53)	346 (195)	411 (260)
		Departures	521	610 (89)	827 (306)	994 (473)
	PM	Arrivals	371	494 (123)	634 (263)	744 (373)
		Departures	212	300 (88)	409 (197)	477 (265)
Bus / Coach	AM	Arrivals	123	151 (28)	235 (112)	279 (156)
		Departures	424	451(27)	561 (137)	675 (251)
	PM	Arrivals	302	365 (63)	431 (129)	505 (203)
		Departures	173	222 (49)	278 (105)	324 (151)

Staff

11.1.2 The forecast public transport trips generated by staff are shown in **Table 11.2**.

Table 11.2: Staff public transport trip generation – 2027, 2039, 2043 AM and PM peak (increase from 2019 when the airport handled the consented 18 mppa shown in brackets), person trips

Mode	Peak Hour	Landside movements	Existing	with Proposed Development		
			2019	2027 assessment Phase 1	2039 assessment Phase 2a	2043 Assessment Phase 2b
Rail	AM	Arrivals	37	51 (14)	65 (28)	80 (43)
		Departures	0	0	0	0
	PM	Arrivals	0	0	0	0
		Departures	28	38 (10)	49 (21)	60 (32)
Bus / Coach	AM	Arrivals	73	102 (29)	142 (69)	186 (113)
		Departures	0	0	0	0
	PM	Arrivals	0	0	0	0
		Departures	55	77 (22)	106 (51)	140 (85)

* For the staff trip generation it is assumed that only office based staff arrive and depart in the highway peak hours.

11.2 Public transport impact

11.2.1 To get a broad view of the impact on rail and bus/coach services, the increase in passengers and staff resulting from the Proposed Development have been compared to the current provision of peak hour rail and bus/coach services.

11.2.2 On a weekday, there are nine southbound and ten northbound train services serving Luton Airport Parkway station in the AM and PM peak hours. These rail services are currently connected to the airport via a shuttle bus but will be connected by Luton DART - the announcement of an official opening date will be made in early 2023. There are 14 buses and 13 coach services that stop at the airport terminal in the weekday AM peak hour and 14 buses and eight coach services in the PM peak hour.

11.2.3 The number of additional rail and bus/coach users per service in the AM and PM peak hours are shown in **Table 11.3**.

Table 11.3: Number of additional air passengers and staff per train and per bus/coach – 2027, 2039, 2043 AM and PM peak (total peak hour increase in air passenger and staff rail users shown in brackets)

Mode	Peak Hour	Landside movements	with Proposed Development		
			2027 assessment Phase 1	2039 assessment Phase 2a	2043 assessment Phase 2b
Rail	AM	Arrivals	4 (67)	12 (223)	16 (303)
		Departures	5 (89)	16 (306)	25 (473)
		Total	9 (156)	28 (529)	41 (776)
	PM	Arrivals	6 (123)	14 (263)	20 (373)
		Departures	5 (98)	11 (209)	16 (297)
		Total	11 (221)	25 (472)	36 (670)
Bus/coach	AM	Arrivals	2 (54)	7 (177)	10 (269)
		Departures	1 (27)	5 (137)	9 (251)
		Total	3 (81)	12 (314)	19 (520)
	PM	Arrivals	3 (63)	6 (129)	9 (203)
		Departures	3 (71)	7 (156)	11 (236)
		Total	6 (134)	13 (285)	20 (439)

* Train services based on the May 2021 timetable

* Coach services based on those operating post pandemic

11.2.4 **Table 11.3** shows that there would be an average increase of between 9 (assessment Phase 1 - 2027) and 41 (assessment Phase 2b - 2043) rail users per service in the AM peak and between 11 (assessment Phase 1 - 2027) and 36 (assessment Phase 2b - 2043) additional rail users per service in the PM peak hour.

11.2.5 For buses and coaches there would be an average increase of between 3 (assessment Phase 1 - 2027) and 19 (assessment Phase 2b - 2043) bus/coach users per service in the AM peak and between 6 (assessment Phase 1 - 2027)

and 20 (assessment Phase 2b - 2043) additional bus/coach users per service in the PM peak hour.

11.2.6 The Proposed Development makes provision for larger bus station facilities at the airport, with the intention that additional services would be provided. This would lessen the average impact on each bus/coach service. Where demand on existing commercial services increases it would be expected that the bus operators would increase the frequency of services to support the demand.

11.3 Rail capacity assessment

11.3.1 In addition to the public transport impact analysis, a rail capacity assessment has been carried out. The rail capacity analysis has been based on the use of train loading data collected by GTR in 2018, in combination with the airport's passenger forecasts. The analysis assesses the time periods reflecting the morning and evening peak periods on the rail network. The airport has estimated that with an average annual growth in rail passenger demand of approximately 3% per annum along the entire line (pre-pandemic growth scenario based on 1999-2018 trends), the airport-related rail passenger demand (staff excluded) would represent 8-17% of the overall rail demand on board of the train services calling at Luton Airport Parkway station by 2043, as shown in **Table 11.4** and **Table 11.5**. The analysis shows that the additional airport-related rail passengers can be accommodated on trains serving Luton Airport Parkway station in 2027, 2039 and 2043.

Table 11.4**:** Air passengers as % of rail passengers travelling to London

Airport Annual Demand	Arriving Air Passengers (at LAP station or on the airport's road network between 06.00-09.30)	PT Mode share	Rail Mode Share	Air Passengers travelling S/B	Arriving Air Passengers by Rail (S/B) arriving at London St Pancras between 07.00-10.00	LAP Services Overall Rail Demand (S/B) arriving at London St Pancras between 07.00-10.00	Proportion of S/B rail passengers that are also air passengers
18mppa	3,480	38%	21%	80%	577	4,298	13%
21.5mppa (2027)	3,712	40%	23%	80%	683	5,847	12%
27mppa (2039)	5,396	45%	27%	80%	1,157	7,956	15%

Airport Annual Demand	Arriving Air Passengers (at LAP station or on the airport's road network between 06.00-09.30)	PT Mode share	Rail Mode Share	Air Passengers travelling S/B	Arriving Air Passengers by Rail (S/B) arriving at London St Pancras between 07.00-10.00	LAP Services Overall Rail Demand (S/B) arriving at London St Pancras between 07.00-10.00	Proportion of S/B rail passengers that are also air passengers
32mppa (2043)	7,261	45%	27%	80%	1,557	8,998	17%
Annual growth 2019-2043	3.1%	n/a	n/a	n/a	4.2%	3.1%	n/a

Table 11.5: 2043 Air passengers as % of rail passengers travelling from London

Airport Annual Demand	Departing Air Passengers (at LAP station or on the airport's road network between 16.30-19.30 approx.)	PT Mode share	Rail Mode Share	Air Passengers travelling from the south	Departing Air Passengers by Rail N/B) departing from St Pancras between 16.00-19.00	London St Pancras (LAP Services) Overall Rail Demand (N/B) departing between 16.00-19.00	Proportion of N/B rail passengers that are also air passengers
18mppa	4,314	38%	21%	80%	715	9,109	8%
21.5mppa (2027)	5,096	40%	23%	80%	938	12,393	8%
27mppa (2039)	5,917	45%	27%	80%	1,269	16,862	8%

Airport Annual Demand	Departing Air Passengers (at LAP station or on the airport's road network between 16.30-19.30 approx.)	PT Mode share	Rail Mode Share	Air Passengers travelling from the south	Departing Air Passengers by Rail N/B) departing from St Pancras between 16.00-19.00	London St Pancras (LAP Services) Overall Rail Demand (N/B) departing between 16.00-19.00	Proportion of N/B rail passengers that are also air passengers
32mppa (2043)	7,068	45%	27%	80%	1,515	19,072	8%
Annual growth 2019-2043	2.1%	n/a	n/a	n/a	3.2%	3.1%	n/a

11.3.2 Analysis of the seating capacity on GTR and EMR services in 2043 with the Proposed Development (see **Table 11.6**) shows that southbound services in the morning peak would have seating capacity available when trains call at Luton Airport Parkway station.

11.3.3 In a northbound direction (during the evening peak period 16.00-19.00), the demand would outstrip the available seating capacity at London St Pancras. However, the overall capacity (i.e. including standing) would be sufficient to meet the forecast demand.

11.3.4 The EMR London-Corby half hourly services have been assumed to provide an element of extra spare capacity (over and above GTR), which is equivalent to one full 8-car Class 360 train per direction or 556 seats plus 112 standing places.

Table 11.6: Peak period train demand vs total capacity including 50% of EMR Connect capacity

Luton Airport Parkway station 2043						
Thameslink services	**S/B Train (time of arrival at St Pancras)**	**Trains Demand (pax)**	**Standard Seating Capacity (+50% EMR)**	**Overall Train Capacity (+50% EMR)**	**Demand as % of standard seating capacity**	**Demand % of total capacity**
Dec 2018 May 2019 Timetable	0700-0759	2,267	4,032	10,632	56%	21%
	0800-0859	4,239	5,932	15,964	71%	27%
	0900-1000	2,492	5,039	13,377	49%	19%
	0700-1000	8,998	15,003	39,973	60%	23%
St Pancras station (All Trains) 2043						
Thameslink services	**N/B Train (time of departure from St Pancras)**	**Trains Demand (pax)**	**Standard Seating Capacity (+50% EMR)**	**Overall Train Capacity (+50% EMR)**	**Demand as % of standard seating capacity**	**Demand % of total capacity**
Dec 2018 May 2019 Timetable	1600-1659	8,889	7,564	20,742	118%	43%
	1700-1759	16,211	8,737	24,054	186%	67%
	1800-1900	13,590	8,364	22,950	162%	59%
	1600-1900	38,690	24,665	67,746	157%	57%
St Pancras (Only Trains Calling at Luton Airport Parkway) 2043						
Thameslink services	**N/B Train (time of departure from St Pancras)**	**Trains Demand (pax)**	**Standard Seating Capacity (+50% EMR)**	**Overall Train Capacity (+50% EMR)**	**Demand as % of standard seating capacity**	**Demand % of total capacity**
Dec 2018 May 2019 Timetable	1600-1659	5,835	5,087	13,639	115%	43%
	1700-1759	7,559	5,761	15,522	131%	49%

	1800-1900	5,678	5,241	14,037	108%	40%
	1600-1900	19,072	16,088	43,198	119%	44%

11.3.5 Table 11.6 shows that in the AM peak there are available seats to accommodate passengers at Luton Airport Parkway station. In the PM peak seats are forecast to be occupied but standing capacity would be available. Seats would become available as passengers alighted at intermediate stations between London St Pancras and Luton Airport Parkway.

11.3.6 As a result of the pandemic, passenger levels since April 2020 have been significantly lower across the national rail network. Data collected by the Office of Rail and Road (ORR) between April 2020 and March 2021 showed that passenger levels fell to 23% of the previous year. This fall was also observed at stations between Bedford and London (excluding London stations).

11.3.7 For London, demand at stations including St Pancras International, Farringdon and City Thameslink fell as low as 16% of pre-pandemic levels, whilst national rail demand fell on average to 23% in 2020-2021 and to 58% in 2021-2022. This can largely be attributed to a shift in service sector working patterns, with more home working. As of June 2022, rail passenger levels across Great Britain were reported to be around 80% of pre-pandemic levels (Ref. 11.1).

11.3.8 Recent passenger levels and rail demand statistics are slowly recovering. This is evident through Off Peak and Advance ticket sales being at or exceeding pre-pandemic levels. However, season ticket sales remain at only a third of pre-pandemic levels, and therefore reflect a change in demand whereby regular five-day commuting patterns are greatly reduced. This is resulting from a combination of home working or hybrid (office/home) working set-ups that have become widely accepted. The DfT Rail Factsheet for 2021 shows that travel is more evenly spread throughout the day in 2020-21 than it was in the previous year, with AM peak travel in particular being at a lower level. This observed fall in rail demand for regular commuters represents a significant rail capacity release for passengers travelling to and from the airport. It is likely that this trend represents a new normal for the short term, whilst it remains to be seen whether it will continue in the longer term. In the situation where travel is more evenly distributed over the day the peak hour available capacities are likely to increase for passengers travelling to/from Luton Airport Parkway.

11.4 Future public transport offer

Rail

11.4.1 The data in **Table 11.7** and **Table 11.8** shows a comparison of the planned Thameslink 20/20 level of service at stations taken from the GTR Timetable consultation Phase 2 and the subsequent level of service provided before the start of the pandemic. The comparison shows that the level of service, before the start of the pandemic, was approaching that planned for in the consultation. Some stations, including Luton Airport Parkway, were getting a better level of service than others.

Table 11.7: Service frequency at stations – GTR Thameslink 20/20 vs March 2019 (Southbound Bedford to London, AM Peak Period)

S/B service pattern (3 HOUR PM PEAK PERIOD) from GTR 20/20 Timetable consultation Phase 2 Arriving in St Pancras Intl between 07.00 and 10.00 hours	Thameslink 20/20 total trains in 3 hour period	March 2019 total trains in 3 hour period
Kentish Town	24	21
West Hampstead (Thameslink)	18	16
Cricketwood	12	12
Hendon	18	12
Mill Hill Broadway	36	32
Elstree & Borehamwood	24	22
Radlett	36	26
St. Albans City	48	44
Harpenden	24	-
Luton Airport Parkway	**24**	**22**
Luton	24	-
Leagrave	12	-
Harlington	12	-
Flitwick	24	23
Bedford Midland	12	12

Table 11.8: Service frequency at stations – GTR Thameslink 20/20 vs March 2019 (Northbound Bedford to London, PM Peak Period)

N/B service pattern (3 HOUR PM PEAK PERIOD) from GTR 20/20 Timetable consultation Phase 2 Leaving St Pancras Intl between 16.00 and 19.00 hours	Thameslink 20/20 total trains in 3 hour period	March 2019 total trains in 3 hour period
Kentish Town	12	14
West Hampstead (Thameslink)	24	25
Cricketwood	12	-
Hendon	12	-
Mill Hill Broadway	24	-
Elstree & Borehamwood	24	24
Radlett	24	-
St. Albans City	48	45

Harpenden	36	28
Luton Airport Parkway	**24**	**24**
Luton	36	33
Leagrave	18	12
Harlington	12	12
Flitwick	18	16
Bedford Midland	24	21

11.4.2 Despite the changes to commuting/working patterns as a result of the pandemic, it is expected that services will return to normal, especially in the medium to long term. Discussion with industry stakeholders has highlighted the fact that there are no long-term plans at the moment to alter the frequency of rail services to/from London as a consequence of changing commuter patterns.

11.4.3 Since May 2021, EMR has introduced new half hourly train services between Corby and London between the hours of 05:00 and 06:00 (first service) and 01:00 (last service). These services stop at Luton Airport Parkway station and provide interchange opportunities at Kettering with the intercity EMR services.

11.4.4 In addition to the above improvements to rail services, there are further opportunities to attract more rail mode share to the airport. Schemes expected to attract more airport-related rail users include:

a. Higher train frequencies on the GTR network at all stations, resulting in a further capacity relief effect on the line.

b. Use of transferrable train ticket to/from 'London terminals' giving passengers the option to choose freely between GTR and EMR services.

c. Luton DART - the announcement of an official opening date will be made in early 2023. The new integrated DART terminal, supported by integrated ticketing options and more predictable journey times, should result in a transfer solution which is likely to be perceived as 'seamless' and more akin to transfer services seen throughout many other airports

d. Crossrail having a positive impact on the airport's rail mode share due to the noticeable reduction in journey times into Central London, and the ability to interchange to GTR services at Farringdon.

11.4.5 It should be noted that the East West Rail scheme has been assumed not to make a significant contribution to the public transport mode share at the airport. Should a frequency of 4 trains per hour per direction (instead of 2) be implemented, this may prove to be a conservative assumption.

11.4.6 It has been shown that there are several rail infrastructure opportunities, including the Luton DART, that could improve rail access to the airport. The airport operator will work with the train operators to discuss opportunities for improving the services further and infilling any gaps in the timetable when there is substantial demand for travel to the airport. The operator would also explore other opportunities, which could include consideration of a direct bus connection

between the airport and other stations e.g. Hitchin for access to the East Coast Mainline.

Bus and Coach

11.4.7 As part of the application for development consent, the proposed new bus and coach facilities at T2 and improvements to existing facilities at T1 will approximately triple the number of operating bus/coach bays from the current 18. This would bring the capacity in line with that of Stansted Airport, allowing the expansion of bus service frequencies and routes which would be the likely response from bus operators to an increase in passenger levels.

11.4.8 The strategy adopted at Stansted Airport has been to work in close cooperation with local authorities, bus/coach service providers and airlines to promote the introduction of:

a. Increased frequencies on historic routes.
b. Expansion of bus and coach routes (including terminals within London).
c. Integrated ticketing and ticket purchasing facilities.
d. Better vehicles (e.g. Wi-Fi provision).
e. Promoting route planning facilities for smart technology.
f. Real time timetable information at bus stops.

11.4.9 The operator would work with the bus and coach operators and local authorities to explore the opportunities for increasing the frequencies of existing services and expanding routes where there is substantial airport demand. This could include initial funding of new services to get them established before they can operate on a commercial basis, along with the provision of infrastructure at the airport to enhance the bus travel experience. The future Travel Plans will be the place bus and coach improvements will be introduced in line with stretch targets that seek to better the mode share assumptions used in the transport modelling which form GCG Limits.

11.5 Summary

11.5.1 This section has considered the impact of a growing airport on the public transport network.

11.5.2 Analysis of pre-pandemic rail capacity has shown that there would be sufficient capacity to support the demands from the Proposed Development. In addition, changes to the way of working and travel patterns post pandemic have resulted in less peak time travel with demand more spread across the day, which would likely increase capacity for passengers travelling to/from Luton Airport Parkway. Schemes that could further improve rail access to the airport have been identified and the operator will work with the train operators to discuss these and will explore other opportunities to improve access to rail.

11.5.3 The Proposed Development makes provision for larger bus/coach station facilities at the airport, which will approximately triple the capacity from the current 18 bus/coach bays. This will enable bus service provision to be expanded to meet

increased airport demand. A potential strategy for improving bus service provision has been identified and the operator would work with the bus and coach operators and local authorities to explore the opportunities further.

11.5.4 It is the ambition of the airport to continue to improve the public transport mode share for travel to the airport as part of the Proposed Development. The approach to supporting sustainable transport is set out in the **FTP [TR020001/APP/7.13]**, which is discussed further in Chapter 12.

12 FRAMEWORK TRAVEL PLAN (FTP)

12.1.1 An FTP has been prepared in support of the application for development consent. The **FTP [TR020001/APP/7.13]** sets out the structure and approach for Travel Plans (TPs) that will be produced in accordance with the requirements of the **Draft DCO [TR020001/APP/2.01]**, to deliver upon the vision and objectives for surface access as the airport expands.

12.1.2 Whilst the **SAS [TR020001/APP/7.12]** covers a 20-year period and guides the long-term growth of the airport, the TPs are the implementation plans for this strategy. TPs will be produced every five years, with specific time-bound Targets for surface access during that shorter time period, supported by a package of interventions and measures to achieve them.

12.1.3 TPs will contain the results of ongoing monitoring and consider comments and views from stakeholders including the Airport Transport Forum (ATF) and the London Luton Airport Consultative Committee (LLACC) on their content and level of ambition. Each TP will set Targets for the next five-year period. They will also identify the interventions and measures to be implemented as part of the TP, including details on their delivery and how each will contribute towards achieving specific Targets.

12.1.4 The FTP provides the framework for the required content of future TPs including relevant policies, surface access context and travel patterns, the vision and objectives for the SAS which the TP strives to deliver upon, the surface access Targets for the TP, interventions and measures, surveys and monitoring against Targets and monitoring, management and governance of the TP.

12.1.5 The FTP sets out what TP Targets should include and the method by which the Targets should be set. These would be sub-divided into:

a. Management Targets – which relate directly to the surface access Vision and Objectives (e.g. mode share Targets); and

b. Monitoring Targets – which track the success of specific interventions and enable forward planning of future interventions (e.g. the utilisation of existing and subsequent need for additional EV charging).

12.1.6 The FTP states that each TP must include the two headline management Targets, consistent with the surface access related GCG Limits:

a. unsustainable passenger mode share (% of passengers using unsustainable travel modes of all passengers travelling to and from the airport); and

b. unsustainable staff travel mode share (% of staff using unsustainable travel modes of all staff travelling to and from the airport).

12.1.7 Each TP will also set monitoring Targets for other surface access-related indicators and the FTP sets out the required Targets, their purpose, application, survey method and frequency.

12.1.8 The FTP sets out the circumstances where Targets within each TP must be reviewed and updated. At the end of the five-year cycle, TPs will undergo a

detailed evaluation undertaken by a Travel Plan Coordinator (TPC) who will be appointed by the operator.

12.1.9 The FTP sets out a longlist of interventions and measures that the operator could draw upon when the TPC is developing a new TP. The longlist, or toolbox, will be deployed flexibly to respond to changing circumstances and the results of ongoing monitoring and stakeholder feedback, ensure Targets are achieved and have the greatest impact on travel behaviour and mode choice.

12.1.10 TPs will contain interventions and measures selected to support the achievement of the Targets, in support of the wider SAS vision and objectives, and to ensure that GCG Limits are not breached.

12.1.11 The purpose of the monitoring approach is to ensure that future growth at the airport takes place within clearly defined Targets that are measurable and timebound. The FTP establishes the monitoring approach that will support ongoing review of progress towards achieving Targets.

12.1.12 Day-to-day management of surface access at the airport is currently undertaken by the operator. The operator and the Applicant currently engage with representatives of local communities, local authorities and transport operators through two existing forums:

a. the LLACC, which is a statutory requirement for designated airports under the Civil Aviation Act 1982 (Ref. 12.1), and includes a dedicated Passenger Services Sub-Committee (PSSC), in addition to the main committee; and

b. the ATF, which is a requirement from the Department for Transport.

12.1.13 The operator will develop any new TP, which will involve engagement with the ATF, the LLACC and the Technical Panels or the Environmental Scrutiny Group (ESG) (subject to agreement). The relevant planning authority will have final approval of the TP and its Targets over its five-year duration, in accordance with the procedure for the discharge of requirements set out in Part 4 of **Schedule 2** of the Draft DCO **[TR020001/APP/2.01]**.

12.1.14 This process will be managed by the TPC, whose role should include:

a. to lead the implementation and development of the TP;

b. to have responsibility for the annual staff travel survey and employer survey;

c. to undertake or commission snapshot surveys, gathering information about how staff and passengers currently travel to the airport;

d. to implement and promote interventions and measures which aim to reduce the use of unsustainable modes;

e. to act as the point of contact within the organisation for anyone requiring transport advice or information;

f. to monitor the progress of the TP towards its Targets and to take action where appropriate to ensure the targets are met;

g. to be the point of contact for the TP to supply information when required;

h. to work in partnership with the Airport Employers Community Forum;

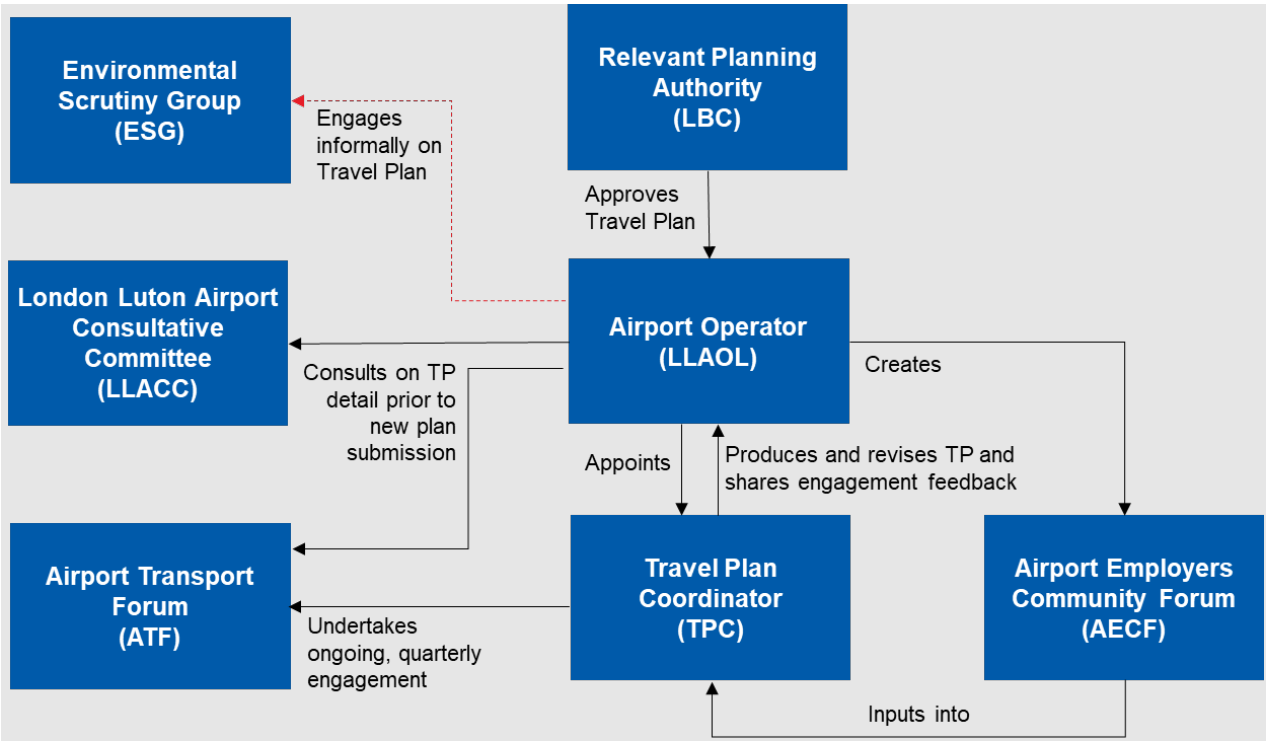
i. to be responsible for keeping the TP document up to date, including the action plan and monitoring reports; and

j. to keep up to date with issues and new initiatives that affect sustainable transport.

12.1.15 The overarching objective of the surface access governance structure is to ensure that growth at the airport is managed in a sustainable way.

12.1.16 The need to produce, regularly review and update the Travel Plan, based on the FTP, is secured through **Schedule 2** of the **Draft DCO [TR020001/APP/2.01]**. The governance process associated with this requirement, alongside the existing day-to-day management, is set out in **Figure 12.1.**

Figure 12.1: Travel Plan governance



12.1.17 There are several key roles and bodies/organisations that will be involved in the governance process for the TP. The roles and responsibility of each body/organisation are set out in the FTP.

13 CONSTRUCTION TRAFFIC

13.1 Supporting documents

13.1.1 To support the construction, the following documents will be provided:

a. Code of Construction Practice (CoCP) (**Appendix 4.2** of the ES **[TR020001/APP/5.02]**);

b. Construction Traffic Management Plan (CTMP) (**Appendix 18.3** of the ES **[TR020001/APP/5.02]**); and

c. Construction Workers Travel Plan (CWTP) (**Appendix 18.4** of the ES **[TR020001/APP/5.02]**).

13.2 Construction programme

13.2.1 The Proposed Development will be delivered in undefined increments that appropriately respond to demand over time.

13.2.2 For the purposes of this chapter and assessment of the impacts of the construction of the Proposed Development, the construction programme has been assumed to align with the assessment phases set out previously.

13.3 Hours of operation

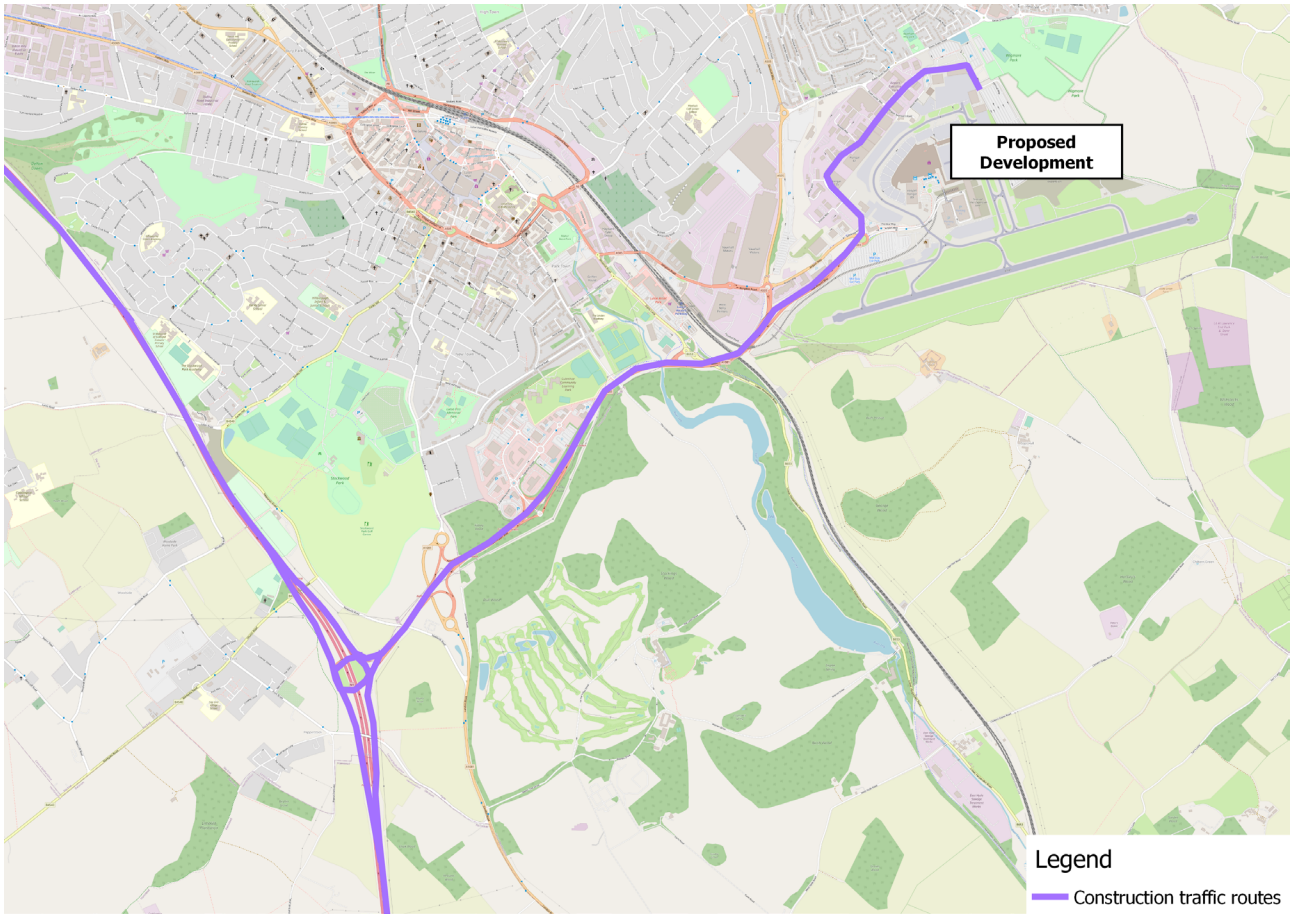
13.3.1 The hours of construction operation for the Proposed Development would generally be Monday to Friday 08:00 to 18:00 and Saturday 08:00 to 13:00. This allows the majority of the workforce to arrive and depart outside the highway peak hours.

13.3.2 There are certain exceptions to this, and these are outlined in the CoCP in **Appendix 4.2** of the **ES [TR020001/APP/5.02].**

13.4 Construction HGV routing

13.4.1 The lead contractors will consult with local highway authorities regarding local access routes that may be used to access the construction sites. However, the primary access route to the site is expected to be via Junction 10 (M1), along the A1081 (New Airport Way), then via President Way or the AAR, as shown in **Figure 13.1**.

Figure 13.1: Primary Construction Traffic Access Route



13.4.2 The consultation will cover timing restrictions on the use of roads, route signage and approvals or consents necessary.

13.4.3 Access routes for construction traffic will be limited, as far as reasonably practicable, to the trunk road network and main roads on the local road network.

13.4.4 Prior to the opening of T2 and the AAR, it would be proposed that the entrance to the respective sites would be via President Way. This location has been selected as it would allow for a separate entrance and exit to site whilst utilising existing infrastructure.

13.4.5 For later in the construction programme, the AAR would be used, dependent on timing and discussions with the local highway authority.

13.4.6 Traffic management measures would be implemented near the construction site to minimise congestion and these plans clearly communicated to affected parties. Closure of any local roads and footpaths would be minimised during construction planning. Adequate diversion routes and temporary access for site neighbours would be provided where required in consultation with affected parties, the local communities and other road users.

13.4.7 The volume of construction personnel and materials accessing the construction sites would initially lead to additional pressure on the local road network. Signed

dedicated construction access routes to the site would be identified and created, which all construction traffic would adhere to.

13.5 Number of workers/worker trips

13.5.1 **Table 13.1** shows a breakdown of the total number of workers estimated to be coming to the site by car and by public transport on both an annual and daily basis. For assessment purposes, it has been assumed that 60% of the workforce will arrive by private transport and 40% by public transport (including public transport links to T1 and other measures such as workforce shuttle buses to the construction work sites). The actual split for each construction phase will be dependent on the actual works required and will be set out in the Construction Workers Travel Plan to support each construction phase of development.

13.5.2 Those arriving by car will arrive outside of the highway peak hours (given the site hours of operation) and would be temporary in their nature so will have minimal impact on the existing highway network.

Table 13.1: Estimated Workers and Car Parking Requirements

Assessment Phase	Assessment Phase 1			Assessment Phase 2a				Assessment Phase 2b			
Year	2025	2026	2027	2033	2034	2035	2036	2037	2038	2039	2040
Total No works days per year	57,200	84,500	24,050	127,400	221,650	366,600	262,600	90,350	172,250	184,600	40,300
Average No. of site operatives per day	220	325	93	490	853	1,410	1,010	348	663	710	155
Car Parking Assumptions											
Parking on Site (60%)	132	195	56	94	512	846	606	209	398	426	93
Public Transport (40%)	88	130	37	196	341	564	404	139	265	284	62

13.6 Number of construction vehicles, HGVs and impact

13.6.1 **Table 13.2** provides information on average and total construction traffic activity for the assessment phases based on estimates prepared for the preparation of the application documents. The figures in brackets show the number of HGVs.

Table 13.2: Number of Construction Vehicles Associated with the Proposed Development

Assessment Phase	Duration (Quarters)	Total Vehicles (HGVs)	Average Vehicles per Quarter (HGVs)	Peak Vehicles in a Quarter (HGV)
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)**	

13.6.2 It is anticipated that at the peak of construction traffic activity there would be just over 230 vehicles per day arriving at and departing from the airport which would result in just over 460 two-way movements. For analysis purposes, it is assumed that up to three quarters of these vehicles would be HGVs which is considered to be a worst case. This is likely to result in a maximum hourly flow in the order of 70 vehicle movements. The movement of construction vehicles will be discouraged during the normal peak traffic periods and the greatest volumes of construction traffic will occur between 10:00 and 16:00. Utilising this time period will also reduce the impact construction vehicles have on airport passengers whose peak arrival and departure times lie outside of the highway peaks. The CTMP (**Appendix 18.3** of the **ES [TR020001/APP/5.02]**) sets out further measures to reduce the impacts of construction traffic.

13.6.3 Where reasonable and practicable, construction vehicles will avoid travelling in convoys on public roads, to further reduce the impact of construction traffic.

13.6.4 In terms of the impact on the highway network, the following tables indicate the impact on the A1081 corridor to the M1 junction for assessment Phases 1, 2a and 2b. It should be noted that two scenarios have been provided. All construction traffic is assumed to be routed via the M1, but in Alternative A it is assumed that 80% travels on the M1 south of J10 and 20% travels on the section to the north, whereas in Alternative B the directional split is reversed.

Table 13.3: Assessment Phase 1 construction traffic on the network[1]

Road link	2027 Do Minimum Interpeak Flow	Alternative A		Alternative B	
		Construction Flow	Increase	Construction Flow	Increase
President Way between Car Rental and Frank Lester Way	3,730	180	4.8%	180	4.8%
Percival Way between Prospect Way and AAR	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 Lower Harpenden Road and Airport Way	17,997	180	1.0%	180	1.0%
A1081 New Airport Way between Capability Green Estate and B653	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%
Junction 10 roundabout (southern overbridge)	5,273	36	0.7%	144	2.7%

[1] All flows are two-way; Interpeak construction traffic is 75% of daily construction traffic; Alternative A assumes that 80% travels on the M1 south of J10 and 20% travels on the section to the north. The directions split is reversed for Alternative B. All construction traffic is assumed to be routed via the M1.

Road link	2027 Do Minimum Interpeak Flow	Alternative A		Alternative B	
		Construction Flow	Increase	Construction Flow	Increase
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	7,193	144	2.0%	36	0.5%
M1 northbound off-slip	5,764	144	2.5%	36	0.6%
M1 southbound off-slip	5,148	36	0.7%	144	2.8%
M1 northbound on-slip	5,267	36	0.7%	144	2.7%
M1 between Junction 9 and 10	66,920	144	0.2%	36	0.1%
M1 between Junction 10 and 11	64,379	36	0.1%	144	0.2%

13.6.5 The table indicates that the maximum percentage increase in traffic on the assessed roads is under 6%.

Table 13.4: Assessment Phase 2a construction traffic on the network[2]

Road link	2027 'Do Something' Interpeak Flow	Alternative A		Alternative B	
		Construction Flow	Increase	Construction Flow	Increase
President Way between Car Rental and Frank Lester Way	4,733	337	7.1%	337	7.1%
Percival Way between Prospect Way and AAR	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 Lower	21,116	337	1.6%	337	1.6%

[2] All flows are two-way; Interpeak construction traffic is 75% of daily construction traffic; Alternative A assumes that 80% travels on the M1 south of J10 and 20% travels on the section to the north. The directions split is reversed for Alternative B. All construction traffic is assumed to be routed via the M1.

Road link	2027 'Do Something' Interpeak Flow	Alternative A		Alternative B	
		Construction Flow	Increase	Construction Flow	Increase
Harpenden Road and Airport Way					
A1081 New Airport Way between Capability Green Estate and B653	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%
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	7,907	270	3.4%	67	0.9%
M1 northbound off-slip	6,440	270	4.2%	67	1.0%
M1 southbound off-slip	5,686	67	1.2%	270	4.7%
M1 northbound on-slip	5,651	67	1.2%	270	4.8%
M1 between Junction 9 and 10	68,051	270	0.4%	67	0.1%
M1 between Junction 10 and 11	65,042	67	0.1%	270	0.4%

13.6.6 The table indicates that the maximum percentage increase in traffic on the assessed roads is just over 11%.

Table 13.5: Assessment Phase 2b construction traffic on the network[3]

Road link	2039 'Do Something' Interpeak Flow	Alternative A		Alternative B	
		Construction Flow	Increase	Construction Flow	Increase
President Way between Car Rental and Frank Lester Way	5,226	212	4.1%	212	4.1%
Percival Way between Prospect Way and AAR	5,520	212	3.8%	212	3.8%
Percival Way between Airport Way and Prospect 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 Lower Harpenden Road and Airport Way	22,744	212	0.9%	212	0.9%
A1081 New Airport Way between Capability Green Estate and B653	26,080	212	0.8%	212	0.8%
A1081 New Airport Way between Capability Green	22,456	212	0.9%	212	0.9%

[3] All flows are two-way; Interpeak construction traffic is 75% of daily construction traffic; Alternative A assumes that 80% travels on the M1 south of J10 and 20% travels on the section to the north. The directions split is reversed for Alternative B. All construction traffic is assumed to be routed via the M1.

Estate slip roads					
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	8,509	169	2.0%	42	0.5%
M1 northbound off-slip	7,059	169	2.4%	42	0.6%
M1 southbound off-slip	6,119	42	0.7%	169	2.8%
M1 northbound on-slip	6,016	42	0.7%	169	2.8%
M1 between Junction 9 and 10	75,567	169	0.2%	42	0.1%
M1 between Junction 10 and 11	72,134	42	0.1%	169	0.2%

13.6.7 The table indicates that the maximum percentage increase in traffic on the assessed roads is just over 4%.

14 SCENARIO TESTING

14.1 Introduction

14.1.1 This Transport Assessment has considered the impact of the Proposed Development on the transport network. The assessment has drawn on the scheme proposals and the forecast future transport demand in terms of both background growth and airport passenger demand associated with the Proposed Development. In order to provide some assessment of the uncertainties in forecasts methodologies, a number of sensitivity scenario tests have been undertaken. The tests undertaken which are of particular relevance to the transport network are summarised in **Table 14.1**.

Table 14.1: Scenario testing

Scenario	Description	Commentary
Slower Growth	Passenger demand rises more slowly than projected in the Core Planning forecast case either due to slower economic growth, higher carbon abatement costs or more additional runway capacity delivered across the London Airports. Given passenger throughputs are reached later than in the Core Planning Case.	Forecast passenger numbers are assumed as follows: - 21.5 mppa at 2030 (from 2027) - 27 mppa at 2046 (from 2039) - 32 mppa at 2049 (from 2043) Quantitative assessment has been undertaken of the 21.5 mppa, 27 mppa and 32 mppa scenarios. Transport impacts would be expected to worsen as background traffic levels would be higher. Strategic modelling undertaken for all years to support environmental appraisal. (Section 15.2)
Faster Growth	Passenger demand rises faster than projected in the Core Planning forecast.	Forecast passenger numbers are assumed as follows: - 21.5 mppa at 2026 (from 2027) - 23 mppa at 2027 - 27 mppa at 2038 (from 2039) - 32 mppa at 2042 (from 2043) Passenger forecasts for 21.5 mppa, 27 mppa and 32 mppa would be achieved earlier and mitigation measures associated with those milestones delivered earlier, if required. As a result, background traffic will be lower due to earlier years and mitigation measures will continue to provide the benefits from the Core Case.

		As a consequence, no further traffic modelling was undertaken for this scenario. No further assessment for the 23 mppa assessment Phase 1 in this Faster Growth scenario as the growth in passengers is achieved in the interpeak periods as set out in the **Need Case [TR020001/APP/7.04]** and does not impact on the transport network in the peak periods. Impacts are therefore in line with the 21.5 mppa Core Scenario in 2027.
M1 Corridor south of M1 Junction 10 without National Highways capacity improvements	National Highways do not deliver their upgrade capacity on the M1 south of Junction 10 as assumed in the Core Assessment.	Quantitative assessment has been undertaken of the 32 mppa in 2043 using the strategic model. The test assumes M1 Junction 10 existing configuration in the 2043 baseline with the assessment Phase 2a mitigation included in the with scheme scenario. (Section 15.3)
Strategic model growth applied to local model	This relates to different levels of demand in the strategic and local models. The local authorities have requested a sensitivity test where the growth from the strategic model is incorporated in to the local Vissim model to provide further confidence in the proposed mitigation measures.	Testing undertaken to further support the proposed mitigation measures. Testing undertaken for the 2043 Full Development end state using the Vissim model. (Section 15.4).

14.1.2 The following sections report the findings of the sensitivity scenario testing.

14.2 Slower airport growth

14.2.1 Traffic modelling for the scheme assessment has used air passenger forecasts developed by York Aviation which set the passenger level that would be achieved in each of the assessment years.

14.2.2 As part of the sensitivity testing consideration has been given to the potential that passenger growth occurs at a slower rate than assumed in the core scenario assessments. Sensitivity tests have been undertaken to reflect 21.5 mppa at 2030 (from 2027); 27 mppa at 2046 (from 2039) and 32 mppa at 2049 (from 2043).

14.2.3 Strategic modelling in the CBLTM-LTN SATURN model has been undertaken predominantly for environmental assessment purposes, i.e. rather than for surface access or transport impact assessment although network wide performance is summarised below. Operational Vissim modelling has been undertaken to consider the impact on the operational network and this is also reported below.

CBLTM-LTN modelling

14.2.4 There are a number of assumptions required when running the CBLTM-LTN in forecasting mode. These include inputs for highway and public transport networks, economic assumptions such as values of time and fuel costs, and future land-use assumptions. These have been updated in accordance with the Department for Transport's Transport Analysis Guidance (TAG) Unit M4 Forecasting and Uncertainty (Ref 14.1).

14.2.5 Total growth in population and employment has been controlled to the forecast growth contained within TEMPro 7.2 for the five internal districts within the model simulation area. For other forecasting assumptions, all parameters have been kept consistent with the central/core scenario.

Assessment Phase 1 (2027/2030)

14.2.6 **Table 14.2** shows the change in vehicle kilometres between the future baseline and with assessment Phase 1 of the Proposed Development in the core and sensitivity test for the five internal districts and the simulation network in the AM and PM peak hours. Vehicle kilometres provides a measure of total travel distance within the model and can provide an indication of any material changes in demand or route choice.

Table 14.2: 2027/2030 Vehicle kilometres (million kms, future baseline and Proposed Development) core and slower growth sensitivity test – assessment Phase 1

Parameter	Future Baseline		with assessment Phase 1	
	Core (2027)	Sensitivity (2030)	Core (2027)	Sensitivity (2030)
AM Peak Hour				
Luton	0.163	0.166	0.162	0.165
Central Bedfordshire	0.804	0.826	0.806	0.828
North Hertfordshire	0.255	0.262	0.256	0.263
St Albans	0.449	0.459	0.450	0.459
Dacorum	0.315	0.322	0.316	0.323
Simulation Network	2.876	2.948	2.881	2.953
PM Peak Hour				
Luton	0.164	0.166	0.164	0.167
Central Bedfordshire	0.846	0.869	0.851	0.872
North Hertfordshire	0.256	0.262	0.258	0.264
St Albans	0.450	0.460	0.451	0.462
Dacorum	0.315	0.322	0.317	0.323
Simulation Network	2.959	3.034	2.970	3.043

14.2.7 The table shows that in the AM and PM peak hours, the slower growth sensitivity test does not materially change the impacts when comparing the without and with assessment Phase 1 scenarios.

14.2.8 **Table 14.3** shows the change in vehicle speeds between the future baseline and with assessment Phase 1 of the Proposed Development in the core and sensitivity test in the AM and PM peak hours.

Table 14.3: 2027/2030 Vehicle speeds (kph, future baseline and Proposed Development) core and slower growth sensitivity test – assessment Phase 1

Parameter	Future Baseline		with assessment Phase 1	
	Core (2027)	Sensitivity (2030)	Core (2027)	Sensitivity (2030)
AM Peak Hour				
Luton	31.0	30.9	30.9	30.4
Central Bedfordshire	56.2	55.8	56.2	55.8
North Hertfordshire	54.8	54.1	54.7	54.3
St Albans	48.7	48.1	48.7	48.0
Dacorum	51.8	51.1	51.8	51.2
Simulation Network	51.9	51.4	51.9	51.3
PM Peak Hour				
Luton	30.1	29.1	30.5	30.2
Central Bedfordshire	56.3	55.7	56.2	55.6
North Hertfordshire	56.1	55.0	55.8	54.9
St Albans	51.7	50.8	51.5	50.8
Dacorum	52.0	51.5	51.9	51.5
Simulation Network	52.8	51.9	52.8	52.1

14.2.9 The table shows that in the AM and PM peak hours, the slower growth sensitivity test does not materially change the impacts on average vehicle speeds when comparing the without and with assessment Phase 1 scenarios.

Assessment Phase 2a (2039/2046)

14.2.10 **Table 14.4** shows the change in vehicle kilometres between the future baseline and with assessment Phase 2a of the of the Proposed Development in the core

and sensitivity test for the five internal districts and the simulation network in the AM and PM peak hours.

Table 14.4: 2039/2046 Vehicle kilometres (million kms, future baseline and Proposed Development) core and slower growth sensitivity test – assessment Phase 2a

Parameter	Future Baseline		with assessment Phase 2a	
	Core (2039)	Sensitivity (2046)	Core (2039)	Sensitivity (2046)
AM Peak Hour				
Luton	0.173	0.179	0.175	0.181
Central Bedfordshire	0.892	0.932	0.895	0.936
North Hertfordshire	0.283	0.297	0.286	0.301
St Albans	0.483	0.493	0.483	0.494
Dacorum	0.343	0.356	0.345	0.356
Simulation Network	3.155	3.266	3.166	3.277
PM Peak Hour				
Luton	0.174	0.180	0.176	0.182
Central Bedfordshire	0.922	0.960	0.925	0.965
North Hertfordshire	0.281	0.294	0.284	0.297
St Albans	0.485	0.500	0.486	0.502
Dacorum	0.340	0.356	0.342	0.356
Simulation Network	3.217	3.339	3.226	3.350

14.2.11 The table shows that in the AM and PM peak hours, the slower growth sensitivity test does not materially change the impacts when comparing the without and with assessment Phase 2a scenarios.

14.2.12 **Table 14.5** shows the change in vehicle speeds between the future baseline and with assessment Phase 2a of the Proposed Development in the core and sensitivity test in the AM and PM peak hours.

Table 14.5: 2039/2046 Vehicle speeds (kph, future baseline and Proposed Development) core and slower growth sensitivity test - assessment Phase 2a

Parameter	Future Baseline		with assessment Phase 2a	
	Core (2039)	Sensitivity (2046)	Core (2039)	Sensitivity (2046)
AM Peak Hour				
Luton	30.5	29.6	29.5	28.9
Central Bedfordshire	54.1	52.4	54.1	52.4
North Hertfordshire	52.2	50.2	52.6	50.7
St Albans	45.6	43.1	45.5	43.0
Dacorum	49.2	48.2	49.3	48.3
Simulation Network	49.2	46.9	49.1	46.9
PM Peak Hour				
Luton	28.7	27.5	29.6	28.8
Central Bedfordshire	54.3	53.1	54.3	53.0
North Hertfordshire	53.4	51.9	53.4	51.8
St Albans	48.9	46.3	48.8	46.2
Dacorum	49.8	49.6	50.0	49.5
Simulation Network	50.2	48.2	50.4	48.4

14.2.13 The table shows that in the AM and PM peak hours, the slower growth sensitivity test does not materially change the impacts on average vehicle speeds when comparing the without and with the assessment Phase 2a scenarios.

Assessment Phase 2b - Full Development (2043/2049)

14.2.14 **Table 14.6** shows the change in vehicle kilometres between the future baseline and with assessment Phase 2b of the Proposed Development in the core and sensitivity test for the five internal districts and the simulation network in the AM and PM peak hours.

Table 14.6: 2039/2046 Vehicle kilometres (million kms, future baseline and Proposed Development) core and slower growth sensitivity test – assessment Phase 2b

Parameter	Future Baseline		with assessment Phase 2b	
	Core (2043)	Sensitivity (2049)	Core (2043)	Sensitivity (2049)
AM Peak Hour				
Luton	0.176	0.180	0.181	0.185
Central Bedfordshire	0.916	0.946	0.924	0.951
North Hertfordshire	0.291	0.300	0.297	0.306
St Albans	0.491	0.504	0.494	0.505
Dacorum	0.351	0.360	0.353	0.362
Simulation Network	3.229	3.317	3.255	3.337
PM Peak Hour				
Luton	0.178	0.182	0.182	0.185
Central Bedfordshire	0.946	0.974	0.953	0.980
North Hertfordshire	0.287	0.296	0.292	0.302
St Albans	0.496	0.508	0.500	0.510
Dacorum	0.352	0.361	0.353	0.363
Simulation Network	3.295	3.383	3.316	3.403

14.2.15 The table shows that in the AM and PM peak hours, the slower growth sensitivity test does not materially change the impacts when comparing the future baseline and the Proposed Development in assessment Phase 2b.

14.2.16 **Table 14.7** shows the change in vehicle speeds between the future baseline and with assessment Phase 2b of the Proposed Development in the core and sensitivity test in the AM and PM peak hours.

Table 14.7: 2043/2049 Vehicle speeds (kph, future baseline and Proposed Development) core and slower growth sensitivity test - assessment Phase 2b

Parameter	Future Baseline		with assessment Phase 2b	
	Core (2043)	Sensitivity (2049)	Core (2043)	Sensitivity (2049)
AM Peak Hour				
Luton	30.2	29.5	28.5	28.1
Central Bedfordshire	53.3	52.2	53.1	52.0
North Hertfordshire	51.2	49.8	51.4	49.9
St Albans	44.2	43.0	44.0	42.7
Dacorum	49.1	47.9	49.1	47.8
Simulation Network	48.1	46.5	47.8	46.2
PM Peak Hour				
Luton	28.1	27.4	29.0	28.5
Central Bedfordshire	53.7	52.7	54.3	52.4
North Hertfordshire	52.7	51.4	52.5	51.3
St Albans	47.8	45.9	47.5	45.5
Dacorum	50.0	48.9	49.9	48.9
Simulation Network	49.3	47.7	49.3	47.8

14.2.17 The table shows that in the AM and PM peak hours, the slower growth sensitivity test does not materially change the impacts on average vehicle speeds when comparing the future baseline and the Proposed Development in assessment Phase 2b.

Vissim modelling

14.2.18 Forecasting assumption and all parameters have been kept consistent with the central/core scenario. Mitigation measures have still been included at the associated assessment phase of development.

Assessment Phase 1 (2027/2030)

Network performance

14.2.19 **Table 14.8** summarises the core and slower growth sensitivity test network performance statistics for the AM peak future baseline and with assessment Phase 1 of the Proposed Development.

Table 14.8: 2027/2030 AM peak network statistics (future baseline and Proposed Development) core and slower growth sensitivity test - assessment Phase 1

Parameter	Future Baseline		with assessment Phase 1	
	Core (2027)	Sensitivity (2030)	Core (2027)	Sensitivity (2030)
Average Delay Time per Vehicle (seconds), All Vehicle Types	140	140	157	160
Average Number of Stops per Vehicles, All Vehicle Types	7	7	7	7
Average Speed (mph), All Vehicle Types	23	23	22	22
Average Stopped Delay per Vehicle (seconds), All Vehicle Types	49	47	60	60
Number of Unreleased Vehicles	298	404	559	631

14.2.20 The table shows that with the slower growth sensitivity test in the AM peak hour, there is a small increase in the average delays in the assessment Phase 1 when compared to the core scenario. Average speeds are unchanged from the future baseline to the assessment Phase 1 core scenarios. Overall, the findings of the core scenario network statistics are unchanged in the AM peak hour.

14.2.21 **Table 14.9** summarises the core and slower growth sensitivity test network performance statistics for the PM peak future baseline and with assessment Phase 1 of the Proposed Development.

Table 14.9: 2027/2030 PM peak network statistics (future baseline and Proposed Development) core and slower growth sensitivity test - assessment Phase 1

Parameter	Future Baseline		with assessment Phase 1	
	Core (2027)	Sensitivity (2030)	Core (2027)	Sensitivity (2030)
Average Delay Time per Vehicle (seconds), All Vehicle Types	838	835	100	110
Average Number of Stops per Vehicles, All Vehicle Types	9	9	4	4
Average Speed (mph), All Vehicle Types	7	7	29	28
Average Stopped Delay per Vehicle (seconds), All Vehicle Types	757	753	37	47
Number of Unreleased Vehicles	12,536	12,717	1,015	1,275

14.2.22 The table shows that with the slower growth sensitivity test in the PM peak hour, there is a small increase in the average delays in the assessment Phase 1 when compared to the core scenario. There is also a small reduction in the average speeds in the sensitivity test when compared to the core scenario. Importantly, when comparing the future baseline and Proposed Development in assessment Phase 1 for the slower growth sensitivity test, the results show that the Proposed Development provides significant improvements in network performance in the PM peak hour. Overall, the findings of the core scenario network statistics are unchanged in the PM peak hour.

Journey times

14.2.23 **Table 14.10** summarises the core and slower growth sensitivity test modelled journey times for the AM peak future baseline and with assessment Phase 1 of the Proposed Development.

Table 14.10: 2027/2030 AM peak journey times in seconds (future baseline and Proposed Development) core and slower growth sensitivity test - assessment Phase 1

Route	Future Baseline		with assessment Phase 1	
	Core (2027)	Sensitivity (2030)	Core (2027)	Sensitivity (2030)
Luton Town Centre (G) to Existing Terminal Area (I)	354	352	422	422
Existing Terminal Area (I) to Luton Town Centre (G)	457	470	489	493
Vauxhall Way north of Crawley Green Road (H) to Existing Terminal Area (I)	261	263	376	380
Existing Terminal Area (I) to Vauxhall Way north of Crawley Green Road (H)	277	277	339	337
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Existing Terminal Area (I)	178	177	208	212
Existing Terminal Area (I) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	523	543	481	488
A1081 London Road (E) close to Beech Tree Drive to Existing Terminal Area (I)	517	520	505	518
Existing Terminal Area (I) to A1081 London Road (E) close to Beech Tree Drive	427	428	462	458
M1 Junction 10 North off slip (B) to Existing Terminal Area (I)	293	285	297	298
Existing Terminal Area (I) to M1 Junction 10 North on slip (A)	529	512	531	529
M1 Junction 10 South off slip (C) to Existing Terminal Area (I)	355	349	358	359

Route	Future Baseline		with assessment Phase 1	
	Core (2027)	Sensitivity (2030)	Core (2027)	Sensitivity (2030)
Existing Terminal Area (I) to M1 Junction 10 South on slip (D)	760	740	781	790

14.2.24 The table shows that with the slower growth sensitivity test in the AM peak hour, there are only small changes in the journey times in both the future baseline and with assessment Phase 1 scenario and that the overall findings of the core scenario journey times are unchanged in the AM peak hour.

14.2.25 **Table 14.11** summarises the core and slower growth sensitivity test modelled journey times for the PM peak future baseline and with assessment Phase 1 of the Proposed Development.

Table 14.11: 2027/2030 PM peak journey times in seconds (future baseline and Proposed Development) core and slower growth sensitivity test - assessment Phase 1

Route	Future Baseline		with assessment Phase 1	
	Core (2027)	Sensitivity (2030)	Core (2027)	Sensitivity (2030)
Luton Town Centre (G) to Existing Terminal Area (I)	369	399	435	429
Existing Terminal Area (I) to Luton Town Centre (G)	685	665	459	459
Vauxhall Way north of Crawley Green Road (H) to Existing Terminal Area (I)	366	339	341	339
Existing Terminal Area (I) to Vauxhall Way north of Crawley Green Road (H)	441	472	360	365
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Existing Terminal Area (I)	370	426	224	222
Existing Terminal Area (I) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	689	764	454	452

Route	Future Baseline		with assessment Phase 1	
	Core (2027)	Sensitivity (2030)	Core (2027)	Sensitivity (2030)
A1081 London Road (E) close to Beech Tree Drive to Existing Terminal Area (I)	528	549	437	436
Existing Terminal Area (I) to A1081 London Road (E) close to Beech Tree Drive	1,108	1,017	372	370
M1 Junction 10 North off slip (B) to Existing Terminal Area (I)	661	657	307	306
Existing Terminal Area (I) to M1 Junction 10 North on slip (A)	1,321	1,320	376	376
M1 Junction 10 South off slip (C) to Existing Terminal Area (I)	667	697	384	381
Existing Terminal Area (I) to M1 Junction 10 South on slip (D)	1,187	1,205	406	404

14.2.26 The table shows that with the slower growth sensitivity test in the PM peak hour, there are only small changes in the journey times in both the future baseline and with assessment Phase 1 scenario and that the overall findings of the core scenario journey times are unchanged in the PM peak hour.

Assessment Phase 2a (2039/2046)

Network performance

14.2.27 **Table 14.12** summarises the core and slower growth sensitivity test network performance statistics for the AM peak future baseline and with assessment Phase 2a of the Proposed Development.

Table 14.12: 2039/2046 AM peak network statistics (future baseline and Proposed Development) core and slower growth sensitivity test - assessment Phase 2a

Parameter	Future Baseline		with assessment Phase 2a	
	Core (2039)	Sensitivity (2046)	Core (2039)	Sensitivity (2046)
Average Delay Time per Vehicle (seconds), All Vehicle Types	156	167	197	202
Average Number of Stops per Vehicles, All Vehicle Types	7	8	9	9
Average Speed (mph), All Vehicle Types	22	21	20	20
Average Stopped Delay per Vehicle (seconds), All Vehicle Types	52	59	79	80
Number of Unreleased Vehicles	860	1,204	1,826	2,285

14.2.28 The table shows that with the slower growth sensitivity test in the AM peak hour, there is a small increase in the average delays in the assessment Phase 2a scenario. There is also a small reduction in the average speeds in the future baseline and with assessment Phase 2a core scenarios. Overall, the differential between the future baseline and with assessment Phase 2a scenarios reduces in the sensitivity test indicating that the mitigation measures associated with the Proposed Development continue to perform as well or better in the AM peak hour.

14.2.29 **Table 14.13** summarises the core and slower growth sensitivity test network performance statistics for the PM peak future baseline and with assessment Phase 2a of the Proposed Development.

Table 14.13: 2039/2046 PM peak network statistics (future baseline and Proposed Development) core and slower growth sensitivity test - assessment Phase 2a

Parameter	Future Baseline		with assessment Phase 2a	
	Core (2039)	Sensitivity (2046)	Core (2039)	Sensitivity (2046)
Average Delay Time per Vehicle (seconds), All Vehicle Types	942	1,065	217	218

Parameter	Future Baseline		with assessment Phase 2a	
	Core (2039)	Sensitivity (2046)	Core (2039)	Sensitivity (2046)
Average Number of Stops per Vehicles, All Vehicle Types	9	9	9	8
Average Speed (mph), All Vehicle Types	6	5	21	21
Average Stopped Delay per Vehicle (seconds), All Vehicle Types	860	988	114	116
Number of Unreleased Vehicles	14,625	16,774	2,680	3,071

14.2.30 The table shows that with the slower growth sensitivity test in the PM peak hour, the results show that the Proposed Development continues to provide significant improvements in network performance with reduced delays and improved average speeds. This is as a consequence of the additional mitigation measures included at assessment Phase 2a, which build upon the assessment Phase 1 measures, and which improve the function of the network particularly around M1 Junction 10. Overall, the findings of the assessment Phase 2a core scenario network statistics are unchanged in the PM peak hour.

Journey times

14.2.31 **Table 14.14** summarises the core and slower growth sensitivity test modelled journey times for the AM peak future baseline and with assessment Phase 2a of the Proposed Development.

Table 14.14: 2039/2046 AM peak journey times in seconds (future baseline and Proposed Development) core and model growth sensitivity test- assessment Phase 2a

Route	Future Baseline		with assessment Phase 2a	
	Core (2039)	Sensitivity (2046)	Core (2039)	Sensitivity (2046)
Luton Town Centre (G) to Existing Terminal Area (I)	356	375	364	368
Existing Terminal Area (I) to Luton Town Centre (G)	429	428	423	423

Route	Future Baseline		with assessment Phase 2a	
	Core (2039)	Sensitivity (2046)	Core (2039)	Sensitivity (2046)
Vauxhall Way north of Crawley Green Road (H) to Existing Terminal Area (I)	286	286	319	319
Existing Terminal Area (I) to Vauxhall Way north of Crawley Green Road (H)	276	276	368	374
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Existing Terminal Area (I)	181	179	248	242
Existing Terminal Area (I) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	499	498	495	503
A1081 London Road (E) close to Beech Tree Drive to Existing Terminal Area (I)	509	509	411	409
Existing Terminal Area (I) to A1081 London Road (E) close to Beech Tree Drive	427	452	553	563
M1 Junction 10 North off slip (B) to Existing Terminal Area (I)	286	286	303	300
Existing Terminal Area (I) to M1 Junction 10 North on slip (A)	519	537	560	561
M1 Junction 10 South off slip (C) to Existing Terminal Area (I)	348	347	366	363
Existing Terminal Area (I) to M1 Junction 10 South on slip (D)	773	773	958	957
Luton Town Centre (G) to Proposed New Terminal Area (J)	-	-	444	449
Proposed New Terminal Area (J) to Luton Town Centre (G)	-	-	483	491

Route	Future Baseline		with assessment Phase 2a	
	Core (2039)	Sensitivity (2046)	Core (2039)	Sensitivity (2046)
Vauxhall Way north of Crawley Green Road (H) to Proposed New Terminal Area (J)	-	-	321	320
Proposed New Terminal Area (J) to Vauxhall Way north of Crawley Green Road (H)	-	-	279	281
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Proposed New Terminal Area (J)	-	-	429	449
Proposed New Terminal Area (J) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	-	-	639	635
A1081 London Road (E) close to Beech Tree Drive to Proposed New Terminal Area (J)	-	-	607	609
Proposed New Terminal Area (J) to A1081 London Road (E) close to Beech Tree Drive	-	-	782	782
M1 Junction 10 North off slip (B) to Proposed New Terminal Area (J)	-	-	479	475
Proposed New Terminal Area (J) to M1 Junction 10 North on slip (A)	-	-	754	754
M1 Junction 10 South off slip (C) to Proposed New Terminal Area (J)	-	-	554	548
Proposed New Terminal Area (J) to M1 Junction 10 South on slip (D)	-	-	1,146	1,144

14.2.32 The table shows that with the slower growth sensitivity test in the AM peak hour, there are only small changes in the journey times in both the future baseline and

with assessment Phase 2a development scenario and that the overall findings of the core scenario journey times are unchanged in the AM peak hour.

14.2.33 **Table 14.15** summarises the core and model growth sensitivity test modelled journey times for the PM peak future baseline and with assessment Phase 2a of the Proposed Development.

Table 14.15: 2039/2046 PM peak journey times in seconds (future baseline and Proposed Development) core and model growth sensitivity test - assessment Phase 2a

Route	Future Baseline		with assessment Phase 2a	
	Core (2039)	Sensitivity (2046)	Core (2039)	Sensitivity (2046)
Luton Town Centre (G) to Existing Terminal Area (I)	359	356	435	474
Existing Terminal Area (I) to Luton Town Centre (G)	560	501	455	486
Vauxhall Way north of Crawley Green Road (H) to Existing Terminal Area (I)	330	347	491	469
Existing Terminal Area (I) to Vauxhall Way north of Crawley Green Road (H)	757	743	345	344
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Existing Terminal Area (I)	520	305	396	366
Existing Terminal Area (I) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	613	596	745	835
A1081 London Road (E) close to Beech Tree Drive to Existing Terminal Area (I)	472	508	737	763
Existing Terminal Area (I) to A1081 London Road (E) close to Beech Tree Drive	1,154	1,059	784	712
M1 Junction 10 North off slip (B) to Existing Terminal Area (I)	640	765	327	335

Route	Future Baseline		with assessment Phase 2a	
	Core (2039)	Sensitivity (2046)	Core (2039)	Sensitivity (2046)
Existing Terminal Area (I) to M1 Junction 10 North on slip (A)	1,330	1,351	770	731
M1 Junction 10 South off slip (C) to Existing Terminal Area (I)	651	706	394	399
Existing Terminal Area (I) to M1 Junction 10 South on slip (D)	1,175	1,174	1,093	1,053
Luton Town Centre (G) to Proposed New Terminal Area (J)	-	-	480	489
Proposed New Terminal Area (J) to Luton Town Centre (G)	-	-	494	538
Vauxhall Way north of Crawley Green Road (H) to Proposed New Terminal Area (J)	-	-	350	345
Proposed New Terminal Area (J) to Vauxhall Way north of Crawley Green Road (H)	-	-	304	314
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Proposed New Terminal Area (J)	-	-	591	531
Proposed New Terminal Area (J) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	-	-	812	1,052
A1081 London Road (E) close to Beech Tree Drive to Proposed New Terminal Area (J)	-	-	890	900
Proposed New Terminal Area (J) to A1081 London Road (E) close to Beech Tree Drive	-	-	931	974

Route	Future Baseline		with assessment Phase 2a	
	Core (2039)	Sensitivity (2046)	Core (2039)	Sensitivity (2046)
M1 Junction 10 North off slip (B) to Proposed New Terminal Area (J)	-	-	501	501
Proposed New Terminal Area (J) to M1 Junction 10 North on slip (A)	-	-	970	922
M1 Junction 10 South off slip(C) to Proposed New Terminal Area (J)	-	-	569	569
Proposed New Terminal Area (J) to M1 Junction 10 South on slip (D)	-	-	1,038	1,007

14.2.34 The table shows that with the slower growth sensitivity test in the PM peak hour, there are generally only small changes in the journey times in both the future baseline and with the assessment Phase 2a scenario. There is a greater increase in the journey time between the terminal area and the B653 Lower Harpenden Road, however this is not considered to be a significant issue as this is only likely to discourage use of the local road network by airport related trips. Overall findings of the core scenario journey times are unchanged in the PM peak hour.

Assessment Phase 2b (2043/2049)

Network performance

14.2.35 **Table 14.16** summarises the core and slower growth sensitivity test network performance statistics for the AM peak future baseline and with assessment Phase 2b of the Proposed Development.

Table 14.16: 2043/2049 AM peak network statistics (future baseline and Proposed Development) core and slower growth sensitivity test - assessment Phase 2b

Parameter	Future Baseline		with assessment Phase 2b	
	Core (2043)	Sensitivity (2049)	Core (2043)	Sensitivity (2049)
Average Delay Time per Vehicle (seconds), All Vehicle Types	73	76	90	99

Parameter	Future Baseline		with assessment Phase 2b	
	Core (2043)	Sensitivity (2049)	Core (2043)	Sensitivity (2049)
Average Number of Stops per Vehicles, All Vehicle Types	3	3	3	3
Average Speed (mph), All Vehicle Types	35	34	33	32
Average Stopped Delay per Vehicle (seconds), All Vehicle Types	29	30	40	46
Number of Unreleased Vehicles	82	103	97	316

14.2.36 The table shows that with the slower growth sensitivity test in the AM peak hour, there is an increase in the average delays in the assessment Phase 2b scenario. There is also a small reduction in the average speeds however, overall, the differential between the future baseline and with assessment Phase 2b scenarios is similar in the sensitivity test as in the core scenario.

14.2.37 **Table 14.17** summarises the core and slower growth sensitivity test network performance statistics for the PM peak future baseline and with assessment Phase 2b of the Proposed Development.

Table 14.17: 2043/2049 PM peak network statistics (future baseline and Proposed Development) core and slower growth sensitivity test - assessment Phase 2b

Parameter	Future Baseline		with assessment Phase 2b	
	Core (2043)	Sensitivity (2049)	Core (2043)	Sensitivity (2049)
Average Delay Time per Vehicle (seconds), All Vehicle Types	102	110	70	72
Average Number of Stops per Vehicles, All Vehicle Types	4	5	2	2
Average Speed (mph), All Vehicle Types	32	31	36	36
Average Stopped Delay per Vehicle (seconds), All Vehicle Types	49	54	31	32

Parameter	Future Baseline		with assessment Phase 2b	
	Core (2043)	Sensitivity (2049)	Core (2043)	Sensitivity (2049)
Number of Unreleased Vehicles	843	888	529	524

14.2.38 The table shows that with the slower growth sensitivity test in the PM peak hour, the results show that the Proposed Development in assessment Phase 2b continues to provide significant improvements in network performance with reduced delays and improved average speeds. This is as a consequence of the mitigation measures which improve the function of the network particularly around M1 Junction 10. Overall, the findings of the core scenario network statistics are unchanged in the PM peak hour.

Journey times

14.2.39 **Table 14.18** summarises the core and slower growth sensitivity test modelled journey times for the AM peak future baseline and with assessment Phase 2b of the Proposed Development.

Table 14.18: 2043/2049 AM peak journey times in seconds (future baseline and Proposed Development) core and slower growth sensitivity test - assessment Phase 2b

Route	Future Baseline		with assessment Phase 2b	
	Core (2043)	Sensitivity (2049)	Core (2043)	Sensitivity (2049)
Luton Town Centre (G) to Existing Terminal Area (I)	338	337	369	370
Existing Terminal Area (I) to Luton Town Centre (G)	475	481	439	442
Vauxhall Way north of Crawley Green Road (H) to Existing Terminal Area (I)	264	271	299	308
Existing Terminal Area (I) to Vauxhall Way north of Crawley Green Road (H)	284	281	298	299
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Existing Terminal Area (I)	188	186	271	280

Route	Future Baseline		with assessment Phase 2b	
	Core (2043)	Sensitivity (2049)	Core (2043)	Sensitivity (2049)
Existing Terminal Area (I) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	506	526	490	514
A1081 London Road (E) close to Beech Tree Drive to Existing Terminal Area (I)	643	650	485	484
Existing Terminal Area (I) to A1081 London Road (E) close to Beech Tree Drive	372	377	374	369
M1 Junction 10 North off slip (B) to Existing Terminal Area (I)	340	354	408	413
Existing Terminal Area (I) to M1 Junction 10 North on slip (A)	341	346	356	354
M1 Junction 10 South off slip (C) to Existing Terminal Area (I)	362	374	432	440
Existing Terminal Area (I) to M1 Junction 10 South on slip (D)	318	322	312	310
Luton Town Centre (G) to Proposed New Terminal Area (J)	-	-	467	472
Proposed New Terminal Area (J) to Luton Town Centre (G)	-	-	586	586
Vauxhall Way north of Crawley Green Road (H) to Proposed New Terminal Area (J)	-	-	342	348
Proposed New Terminal Area (J) to Vauxhall Way north of Crawley Green Road (H)	-	-	353	352

Route	Future Baseline		with assessment Phase 2b	
	Core (2043)	Sensitivity (2049)	Core (2043)	Sensitivity (2049)
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Proposed New Terminal Area (J)	-	-	415	432
Proposed New Terminal Area (J) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	-	-	695	718
A1081 London Road (E) close to Beech Tree Drive to Proposed New Terminal Area (J)	-	-	629	636
Proposed New Terminal Area (J) to A1081 London Road (E) close to Beech Tree Drive	-	-	550	545
M1 Junction 10 North off slip (B) to Proposed New Terminal Area (J)	-	-	552	555
Proposed New Terminal Area (J) to M1 Junction 10 North on slip (A)	-	-	531	531
M1 Junction 10 South off slip (C) to Proposed New Terminal Area (J)	-	-	573	582
Proposed New Terminal Area (J) to M1 Junction 10 South on slip (D)	-	-	499	498

14.2.40 The table shows that with the slower growth sensitivity test, in the AM peak hour journey times are similar in both the core and sensitivity test and therefore the overall findings of the core scenario journey times are unchanged in the AM peak hour.

14.2.41 **Table 14.19** summarises the core and slower growth sensitivity test modelled journey times for the PM peak future baseline and with assessment Phase 2a of the Proposed Development.

Table 14.19: 2043/2049 PM peak journey times in seconds (future baseline and Proposed Development) core and slower growth sensitivity test - assessment Phase 2b

Route	Future Baseline		with assessment Phase 2b	
	Core (2043)	Sensitivity (2049)	Core (2043)	Sensitivity (2049)
Luton Town Centre (G) to Existing Terminal Area (I)	304	306	345	347
Existing Terminal Area (I) to Luton Town Centre (G)	401	403	386	383
Vauxhall Way north of Crawley Green Road (H) to Existing Terminal Area (I)	316	319	271	270
Existing Terminal Area (I) to Vauxhall Way north of Crawley Green Road (H)	326	318	301	299
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Existing Terminal Area (I)	199	202	226	225
Existing Terminal Area (I) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	380	374	411	413
A1081 London Road (E) close to Beech Tree Drive to Existing Terminal Area (I)	667	700	476	480
Existing Terminal Area (I) to A1081 London Road (E) close to Beech Tree Drive	338	336	380	385
M1 Junction 10 North off slip (B) to Existing Terminal Area (I)	594	638	341	342
Existing Terminal Area (I) to M1 Junction 10 North on slip (A)	331	335	364	365
M1 Junction 10 South off slip (C) to Existing Terminal Area (I)	620	660	374	376

Route	Future Baseline		with assessment Phase 2b	
	Core (2043)	Sensitivity (2049)	Core (2043)	Sensitivity (2049)
Existing Terminal Area (I) to M1 Junction 10 South on slip (D)	294	295	332	331
Luton Town Centre (G) to Proposed New Terminal Area (J)	-	-	516	511
Proposed New Terminal Area (J) to Luton Town Centre (G)	-	-	520	512
Vauxhall Way north of Crawley Green Road (H) to Proposed New Terminal Area (J)	-	-	331	330
Proposed New Terminal Area (J) to Vauxhall Way north of Crawley Green Road (H)	-	-	317	317
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Proposed New Terminal Area (J)	-	-	373	380
Proposed New Terminal Area (J) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	-	-	604	592
A1081 London Road (E) close to Beech Tree Drive to Proposed New Terminal Area (J)	-	-	610	619
Proposed New Terminal Area (J) to A1081 London Road (E) close to Beech Tree Drive	-	-	547	546
M1 Junction 10 North off slip (B) to Proposed New Terminal Area (J)	-	-	484	486
Proposed New Terminal Area (J) to M1 Junction 10 North on slip (A)	-	-	520	520

Route	Future Baseline		with assessment Phase 2b	
	Core (2043)	Sensitivity (2049)	Core (2043)	Sensitivity (2049)
M1 Junction 10 South off slip (C) to Proposed New Terminal Area (J)	-	-	518	519
Proposed New Terminal Area (J) to M1 Junction 10 South on slip (D)	-	-	487	485

14.2.42 The table shows that with the slower growth sensitivity test, the impact is greater in the future baseline than with assessment Phase 2b when compared against the core scenario. In the future baseline, there are greater increases in journey times. Overall, the findings of the core scenario journey times are unchanged in the PM peak hour.

Core and slower airport growth sensitivity test summary

14.2.43 This section of the report has considered the performance of the highway network for the core and slower growth sensitivity test without and with the Proposed Development across different assessment phases. The analysis has shown that the mitigation measures included as part of the Proposed Development continue to provide benefits even where the rate of growth of the airport traffic is slower than forecast. The benefits offered by the mitigation measures are in line with those set out for the core case. The Proposed Development and associated junction mitigations are not considered to have a significant adverse impact on the operation of the highway network even in the scenario where airport growth occurs later.

14.3 No capacity upgrade to the M1 corridor

14.3.1 The core assessment modelling has assumed that the M1 motorway corridor would require further improvement in the future even in the absence of any airport expansion. National Highways would likely need to consider measures to address the existing constraints on the corridor. Through discussions with National Highways, the 2043 modelling included an assumption that due to background congestion, mitigation measures in the form of additional capacity on the M1 corridor and associated improvement to M1 Junction 10 would have been implemented even in the absence of any airport expansion scheme.

14.3.2 In January 2022, the Government announced a pause in the rollout of new all lane running smart motorway schemes until five years of safety data is available. It is noted that there is no formal scheme planned in this location at present and that measures would still need to be implemented, which would be subject to the review and the emerging design environment at the time. As a consequence, National Highways requested a sensitivity test in which the 2043 modelling does not include any additional improvements in the baseline scenario.

14.3.3 The model test has been undertaken using the CBLTM-LTN strategic model and this section reports the findings of the test.

Model amendments

14.3.4 **Table 14.20** summarises the key differences in the CBLTM-LTN strategic model to reflect the sensitivity test.

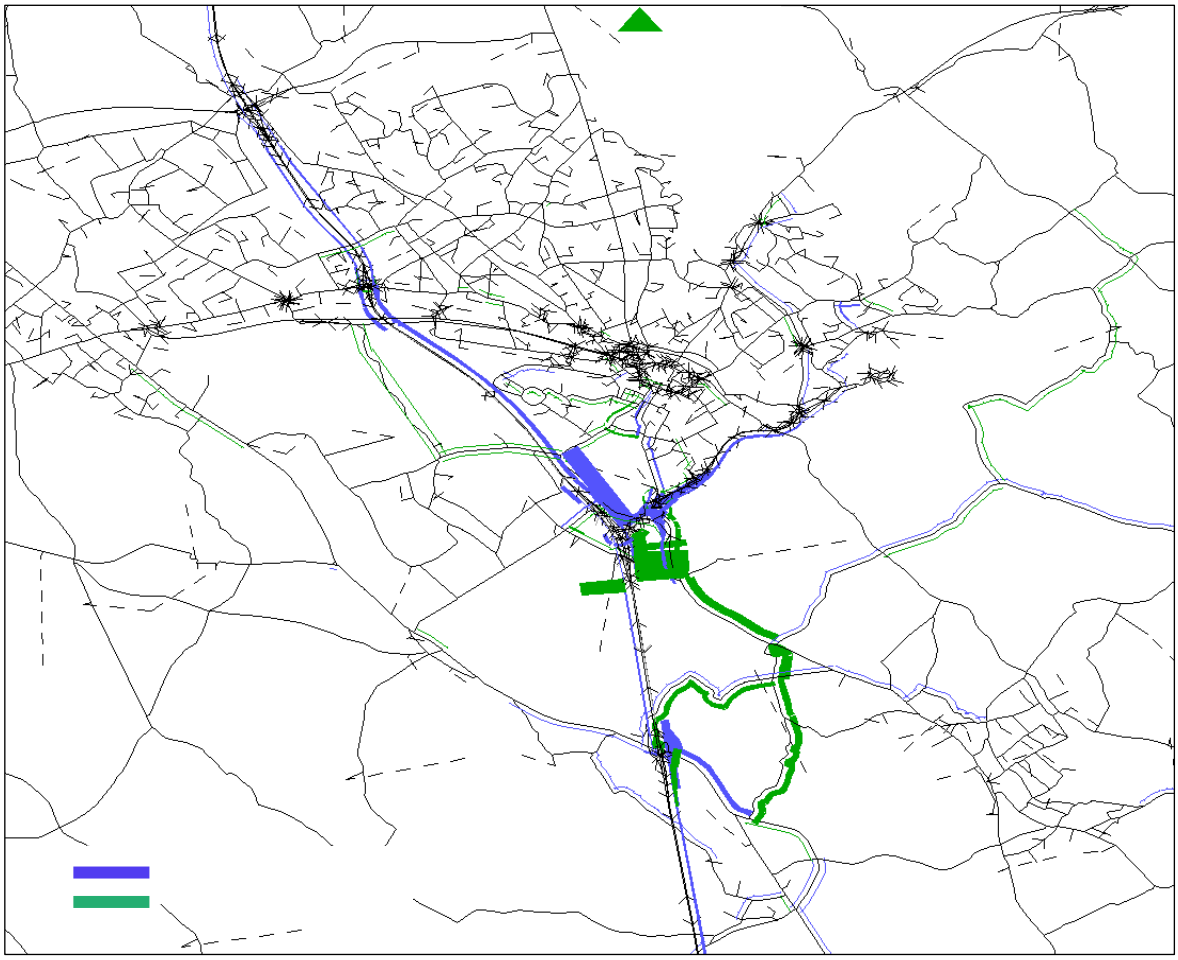
Table 14.20: M1 test scenario model configuration

Scenario	Airport Demand	M1 J9-J10 Configuration	J10 Configuration	Other Highway Improvements
Core Do-minimum	18mppa	5 lane (smart motorway)	M1 Junction 10 improvements and widening works (drawing **LLADCO-3C-ARP-SFA-HWM-DR-CE-00029** and **LLADCO-3C-ARP-SFA-HWM-DR-CE-00030**)	No
M1 Test Do-minimum	18mppa	4 lane (existing)	Existing (no improvement)	No
Core Do-something	32mppa	5 lane (smart motorway)	M1 Junction 10 improvements and widening works (drawing **LLADCO-3C-ARP-SFA-HWM-DR-CE-00029** and **LLADCO-3C-ARP-SFA-HWM-DR-CE-00030**)	Yes, as per Full Development Scenario
M1 Test Do-something	32mppa	4 lane (existing)	M1 Junction 10 improvements and widening works (drawing **LLADCO-3C-ARP-SFA-HWM-DR-CE-00024** and **LLADCO-3C-ARP-SFA-HWM-DR-CE-00025**)	Yes, as per Full Development Scenario

Strategic network impacts

14.3.5 **Figure 14.1** shows a comparison of the AM peak hour traffic flows in the do-minimum (future baseline) between the core and M1 test scenarios.

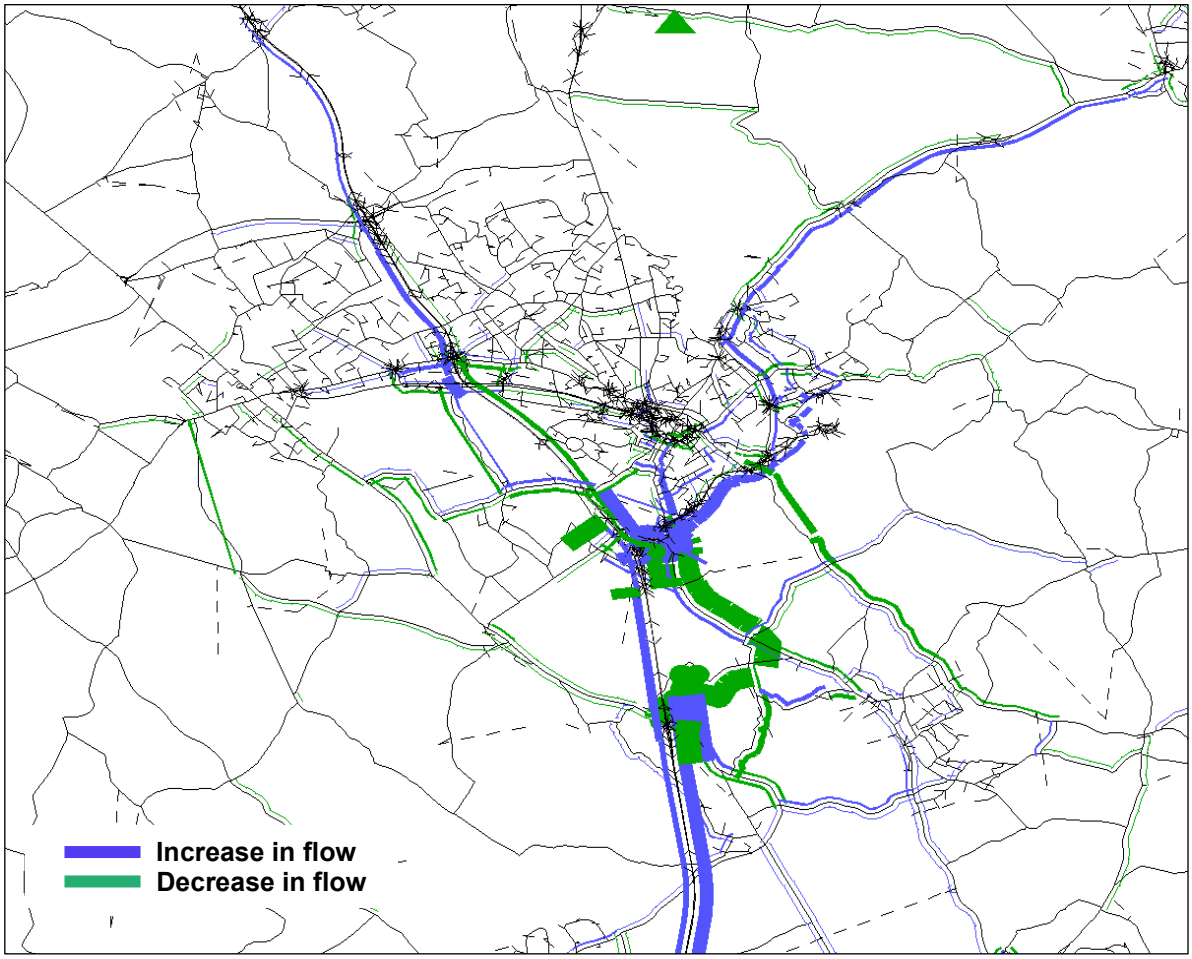
Figure 14.1: 2043 AM peak hour comparison of traffic flows (future baseline)



14.3.6 The figure shows that in the AM peak hour, in the absence of an improvement scheme for the M1 corridor, there would be an increase in flows on the local network (increase in flows shown in green, decrease in blue), particularly on local roads between Junction 9 and Junction 10, as traffic diverts from the M1 corridor to avoid future baseline congestion.

14.3.7 **Figure 14.2** shows a comparison of the PM peak hour traffic flows in the do-minimum (future baseline) between the core and M1 test scenarios.

Figure 14.2: 2043 PM peak hour comparison of traffic flows (future baseline)



14.3.8 The figure shows that in the PM peak hour, there is a similar pattern of change as in the AM peak hour although the magnitude of increases is greater.

14.3.9 **Table 14.21** summarises the flows on the M1 corridor in the AM peak hour and compares the core scenario flows with the sensitivity test flows.

Table 14.21: 2043 AM peak hour flow comparison (M1 corridor)

Link	Core		Sensitivity		Differences			
	Future Baseline	With assessment Phase 2b	Future Baseline	With assessment Phase 2b	Future Baseline Core vs Sensitivity	With assessment Phase 2b	assessment Phase 2b - Future Baseline	assessment Phase 2b - Future Baseline
J8 & J9 NB	6,725	6,870	6,722	6,872	-3	2	146	150
J8 & J9 SB	7,785	7,797	7,757	7,770	-28	-27	11	13

J9 & J10 NB	6,978	7,145	6,954	7,119	-24	-25	166	165
J9 & J10 SB	7,027	7,080	6,775	6,864	-251	-216	54	89
J10 & J11 NB	6,163	6,151	6,098	6,124	-65	-28	-12	26
J10 & J11 SB	7,304	7,339	7,236	7,218	-68	-121	35	-18

14.3.10 The table shows that in the absence of any baseline improvement scheme on the M1, the removal of the increased motorway capacity assumption reduces traffic on the M1 corridor particularly in the southbound direction between Junction 9 and Junction 10 with traffic diverting to other local routes. When comparing the future baseline with assessment Phase 2b of the Proposed Development impact in the final two columns, it is clear that the Proposed Development has a similar impact on flows under the sensitivity test as with the core scenario. The core scenario increases two-way traffic flows on the M1 between Junction 9 and Junction 10 by around 220 vehicles in the AM peak hour. Under the sensitivity test this increases to around 260 vehicles, however in the context of the overall flows on the M1 corridor over this section of the network the difference is not considered to be significant.

14.3.11 **Table 14.22** summarises the impact on the V/C ratios on the M1 corridor in the AM peak hour for the core scenario and the sensitivity test.

Table 14.22: 2043 AM peak hour V/C ratios (%, M1 corridor)

Link	Core		Sensitivity	
	Future Baseline	With assessment Phase 2b	Future Baseline	With assessment Phase 2b
J8 & J9 NB	85	87	85	87
J8 & J9 SB	97	97	96	96
J9 & J10 NB	70	72	88	90
J9 & J10 SB	71	71	85	86
J10 & J11 NB	81	81	80	80
J10 & J11 SB	92	93	92	91

14.3.13 The table shows that in the absence of any baseline improvement scheme on the M1, the baseline V/C ratios increase significantly between Junction 9 and

Junction 10. However, when comparing the future baseline and the assessment Phase 2b Proposed Development scenarios, it is clear that the Proposed Development has a similar impact under the sensitivity test as with the core scenario.

14.3.14 **Table 14.23** summarises the impact on average speeds on the M1 corridor in the AM peak hour for the core scenario and the sensitivity test.

Table 14.23: 2043 AM peak hour average speeds (mph, M1 Corridor)

Link	Core		Sensitivity	
	Future Baseline	With assessment Phase 2b	Future Baseline	With assessment Phase 2b
J8 & J9 NB	55	55	55	55
J8 & J9 SB	50	50	51	51
J9 & J10 NB	52	51	46	46
J9 & J10 SB	43	43	40	40
J10 & J11 NB	49	49	49	49
J10 & J11 SB	38	38	38	38

14.3.16 The table shows that in the absence of any baseline improvement scheme on the M1, baseline speeds reduce particularly in the southbound direction between Junction 9 and Junction 10. When comparing the future baseline and assessment Phase 2a Proposed Development scenarios, it is clear that the Proposed Development has a similar impact under the sensitivity test as with the core scenario.

14.3.17 **Table 14.24** summarises the flows on the M1 corridor in the PM peak hour and compares the core scenario flows with the sensitivity test flows.

Table 14.24: 2043 PM peak hour flow comparison (M1 corridor)

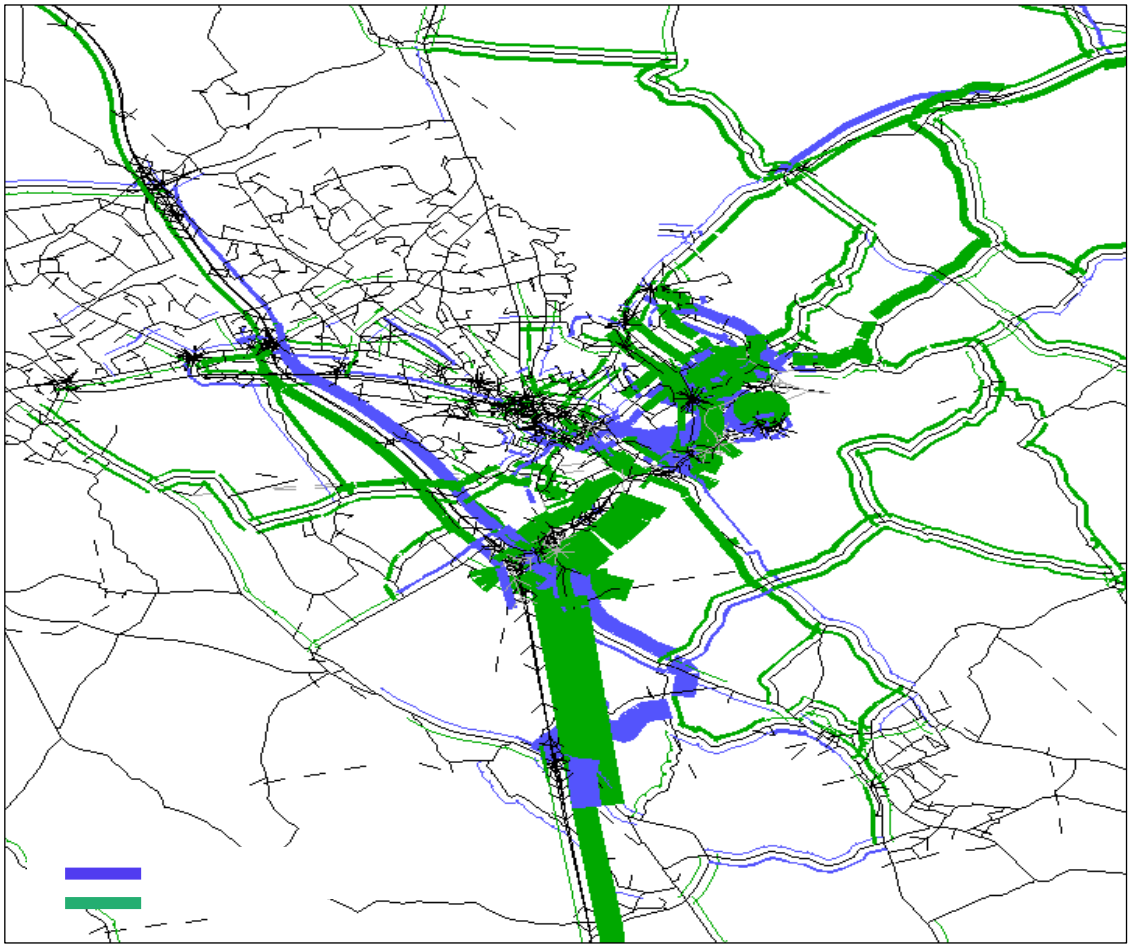
Link	Core		Sensitivity		Differences			
	Future Baseline	With assessment Phase 2b	Future Baseline	With assessment Phase 2b	Future Baseline Core vs Sensitivity	With assessment Phase 2b Core vs Sensitivity	assessment Phase 2b - Future Baseline Core	assessment Phase 2b - Future Baseline Sensitivity
J8 & J9 NB	7,486	7,494	7,391	7,401	-95	-93	8	10
J8 & J9 SB	7,850	8,024	7,603	7,902	-247	-122	174	298
J9 & J10 NB	7,637	7,678	7,460	7,457	-177	-221	42	-3
J9 & J10 SB	7,785	7,948	6,927	7,612	-858	-336	163	685
J10 & J11 NB	7,597	7,631	7,367	7,507	-230	-124	34	139
J10 & J11 SB	6,325	6,256	6,406	6,243	81	-13	-69	-163

14.3.19 The table shows that in the absence of any baseline improvement scheme on the M1, the removal of the additional motorway capacity assumption significantly reduces traffic on the M1. In the future baseline, there is a reduction in flow on the M1 between Junction 9 and Junction 10 of some 860 vehicles southbound and 180 vehicles northbound with traffic diverting to other local routes.

14.3.20 When comparing the assessment Phase 2b Proposed Development impact in the final two columns, the core scenario showed that the Proposed Development increased traffic on the M1 southbound by around 160 vehicles per hour. The sensitivity test shows that the Proposed Development would have a far greater impact in the PM peak hour with a substantial increase in southbound traffic south of Junction 10. This increase is a combination of traffic associated with the Proposed Development but also a function of the benefits the Proposed

Development brings through the highway mitigation works that are part of the scheme. These highway improvements draw traffic away from the local road network and back to the strategic road network. This can be seen in **Figure 14.3** which shows a comparison of the PM peak hour traffic flows for the sensitivity test comparing the future baseline and assessment Phase 2b Proposed Development scenarios.

Figure 14.3: 2043 PM peak hour sensitivity test comparison of traffic flows (future baseline and Proposed Development)



14.3.21 The figure shows that in the PM peak hour, there would be a significant increase in traffic on the M1 corridor (increase in flows shown in green, decrease in blue), particularly between Junction 9 and Junction 10. Conversely, there would be reductions in traffic on the local road network. Whilst the expansion of the airport generates additional traffic, the mitigation measures included as part of the Proposed Development scenario improve junctions particularly between the airport and the M1 corridor. These junction improvements result in the main routes becoming more attractive and drawing traffic out of the local road network. It is therefore clear that the Proposed Development would bring benefits to the road network in the PM peak hour even in the scenario where no improvement scheme is implemented on the M1 corridor to address background congestion.

14.3.22 **Table 14.25** summarises the impact on the V/C ratios on the M1 corridor in the PM peak hour for the core scenario and the sensitivity test.

Table 14.25: 2043 PM peak hour V/C ratios (%, M1 corridor)

Link	Core		Sensitivity	
	Future Baseline	With assessment Phase 2b	Future Baseline	With assessment Phase 2b
J8 & J9 NB	90	90	89	89
J8 & J9 SB	95	97	93	96
J9 & J10 NB	74	74	90	90
J9 & J10 SB	76	78	86	93
J10 & J11 NB	94	95	92	93
J10 & J11 SB	82	81	83	81

14.3.23 The table shows that in the absence of any baseline improvement scheme on the M1, the future baseline V/C ratios increase significantly between Junction 9 and Junction 10. However, when comparing the with Proposed Development scenarios in the sensitivity test, although the V/C ratio on the M1 southbound is increased, the link remains within capacity.

14.3.24 **Table 14.26** summarises the impact on average speeds on the M1 corridor in the PM peak hour for the core scenario and the sensitivity test.

Table 14.26: 2043 PM peak hour average speeds (mph, M1 corridor)

Link	Core		Sensitivity	
	Future Baseline	With assessment Phase 2b	Future Baseline	With assessment Phase 2b
J8 & J9 NB	39	39	39	39
J8 & J9 SB	51	50	52	51
J9 & J10 NB	51	51	39	39
J9 & J10 SB	42	42	47	45
J10 & J11 NB	38	37	38	38

Link	Core		Sensitivity	
	Future Baseline	With assessment Phase 2b	Future Baseline	With assessment Phase 2b
J10 & J11 SB	48	49	48	49

14.3.25 The table shows that in the absence of any baseline improvement scheme on the M1, baseline speeds reduce particularly in the southbound direction between Junction 9 and Junction 10. When comparing the Proposed Development scenarios, it is clear that the Proposed Development only has a small impact under the sensitivity test.

14.3.26 Consideration has also been given to the impact on the operation of M1 Junction 10 under the sensitivity test**. Table 14.27** summarises the impact on the flow and V/C ratios at the M1 Junction 10 in the core scenario and the sensitivity test.

Table 14.27: 2043 Flow and V/C ratios (%, M1 Junction 10)

Link	Core				Sensitivity			
	Future Baseline		With assessment Phase 2b		Future Baseline		With assessment Phase 2b	
AM Peak Hour								
	Flow	V/C	Flow	V/C	Flow	V/C	Flow	V/C
M1 North LT Free Flow	N/A	N/A	N/A	N/A	1,786	45	1,971	35
M1 North LT Gyratory	1,970	88	2,020	90	N/A	N/A	N/A	N/A
A1081 RT	1,025	26	1,132	28	975	31	1,146	29
A1081 LT Free Flow	1,747	48	1,815	49	1,285	89	1,666	73
A1081 LT Gyratory	N/A	N/A	N/A	N/A	238	31	N/A	N/A

Link	Core				Sensitivity			
	Future Baseline		With assessment Phase 2b		Future Baseline		With assessment Phase 2b	
M1 South RT	1,791	52	2,057	60	1,786	73	2,070	75
PM Peak Hour								
	Flow	V/C	Flow	V/C	Flow	V/C	Flow	V/C
M1 North LT Free Flow	N/A	N/A	N/A	N/A	1,330	33	1,398	27
M1 North LT Gyratory	1,320	63	1,302	62	N/A	N/A	N/A	N/A
A1081 RT	1,645	41	1,696	42	1,520	45	1,774	44
A1081 LT Free Flow	2,620	75	2,827	81	1,416	103	2,608	101
A1081 LT Gyratory	N/A	N/A	N/A	N/A	277	45	N/A	N/A
M1 South RT	1,571	63	1,633	65	1,500	73	1,610	84

14.3.28 The table shows that in AM peak hour, M1 Junction 10 is forecast to operate within capacity in both the core scenario and the sensitivity test. The table shows that in PM peak hour, M1 Junction 10 is forecast to operate within capacity in the core scenario. In the sensitivity test, the A1081 left turn to the M1 south merge is seen to operate over-capacity in the future baseline. In the with assessment Phase 2b Proposed Development scenario, whilst the movement is forecast to operate over-capacity, the improvements implemented as part of the Proposed Development at M1 Junction 10 improve the operation of the movement and merge to better than nil-detriment. It is also noted that not only is the operation of the network improved but that this is accompanied by a substantial improvement in throughput.

14.3.29 In summary, in the scenario where there are no future baseline improvements to the M1 corridor capacity, the Proposed Development analysis shows that any impact of the scheme would not be significant. Whilst there is an increase in the V/C ratios and a small reduction in speed on the motorway mainline, the

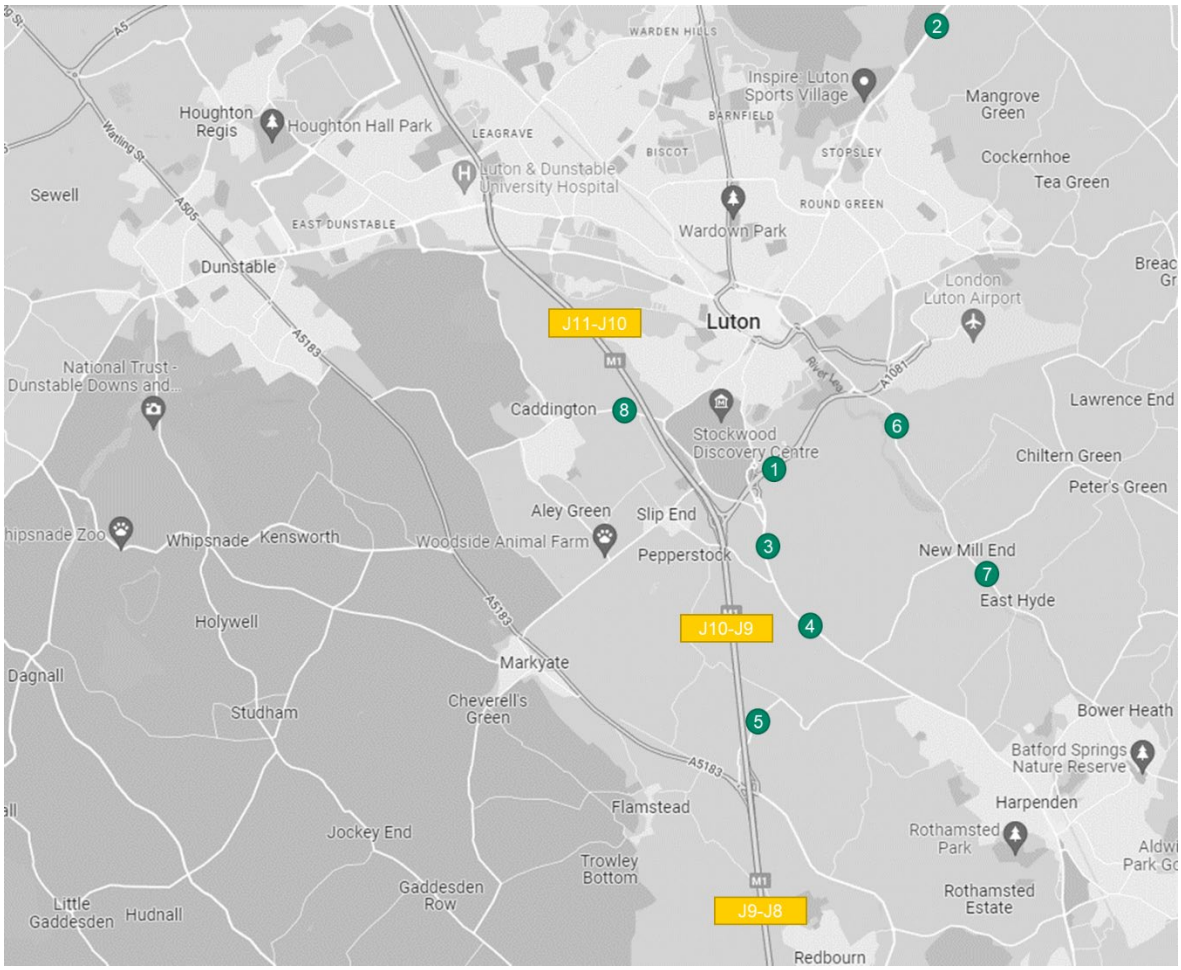
mitigation measures included as part of the Proposed Development at M1 Junction 10 significantly improve the throughput of the junction and, although the A1081 to M1 south merge continues to operate over capacity both the performance and throughput are improved against the baseline performance.

Local network impacts

14.3.30 Consideration has also been given to the impact of the sensitivity test on the local network.

14.3.31 **Table 14.28** summarises the AM peak hour link flows on the local road network on key parallel routes affected by the improvement of the M1 corridor (roads identified in **Figure 14.4**).

Figure 14.4: Local road network links



Note: Location references provided in Table 14.28.

Table 14.28: 2043 AM peak hour flow local road network

Link	Flows				Differences			
	Core		Sensitivity					
	with assessment Phase 2b	Future Baseline	with assessment Phase 2b	Future Baseline	Future Baseline (Sensitivity-Core)	with assessment Phase 2b (Sensitivity-Core)	Future Baseline – assessment Phase 2b	Future Baseline – assessment Phase 2b
(1) A1081, between Capability Green and B653 Eastbound (EB)	2,660	3,037	2,662	3,036	3	-1	377	374
(1) A1081, between Capability Green and B653 Westbound (WB)	2,932	3,100	2,901	3,101	-32	1	168	201
(2) A505, west of Lilley EB	983	999	983	998	0	-1	16	15
(2) A505, west of Lilley WB	1,702	1,759	1,700	1,753	-2	-6	58	53
(3) London Rd north of Half Moon Ln NB	953	971	903	932	-49	-39	18	29
(3) London Rd north of Half Moon Ln SB	957	959	1,041	1,013	83	54	2	-28
(4) London Rd south of Half Moon Ln NB	1,055	1,038	1,047	1,045	-7	7	-16	-2
(4) London Rd south of Half Moon Ln SB	994	1,031	1,138	1,149	144	119	36	11

Link	Flows				Differences			
	Core		Sensitivity					
	with assessment Phase 2b	Future Baseline	with assessment Phase 2b	Future Baseline	Future Baseline (Sensitivity-Core)	with assessment Phase 2b (Sensitivity-Core)	Future Baseline – assessment Phase 2b	Future Baseline – assessment Phase 2b
(5) Watery Lane, to and from M1 J9 EB	328	335	314	322	-14	-13	7	8
(5) Watery Lane, to and from M1 J9 WB	379	385	459	459	81	75	6	-0
(6) B653 Lower Harpenden Rd - north of Chiltern Green Rd NB	810	888	811	890	2	2	78	79
(6) B653 Lower Harpenden Rd - north of Chiltern Green Rd SB	823	743	830	745	7	2	-80	-85
(7) B653 Lower Harpenden Rd - south of Chiltern Green Rd NB	850	891	848	894	-2	3	41	46
(7) B653 Lower Harpenden Rd - south of Chiltern Green Rd SB	867	849	875	858	8	10	-18	-17
(8) Luton Rd (crossing M1 from Caddington) EB	1,165	1,229	1,185	1,257	20	28	64	72
(8) Luton Rd (crossing M1	517	556	531	569	14	12	40	38

Link	Flows				Differences			
	Core		Sensitivity					
	with assessment Phase 2b	Future Baseline	with assessment Phase 2b	Future Baseline	Future Baseline (Sensitivity-Core)	with assessment Phase 2b (Sensitivity-Core)	Future Baseline – assessment Phase 2b	Future Baseline – assessment Phase 2b
from Caddington) WB								

14.3.33 The table shows that in the AM peak hour, there is no material difference in the scheme impacts. The final two columns show the relative impact of the Proposed Development in the core and sensitivity test scenarios and show that the overall impact is similar in terms of increases traffic flows on the local road network.

14.3.34 **Table 14.29** summarises the impact of the above AM peak hour flows on the V/C ratios for the local road network in the core scenario and the sensitivity test.

Table 14.29: 2043 AM peak hour V/C ratios (%)

Link	Core		Sensitivity	
	Future Baseline	with assessment Phase 2b	Future Baseline	with assessment Phase 2b
(1) A1081, between Capability Green and B653 EB	83	67	83	67
(1) A1081, between Capability Green and B653 WB	90	64	89	64
(2) A505, west of Lilley EB	29	30	29	29
(2) A505, west of Lilley WB	50	52	50	52

Link	Core		Sensitivity	
	Future Baseline	with assessment Phase 2b	Future Baseline	with assessment Phase 2b
(3) London Rd north of Half Moon Ln NB	61	61	58	59
(3) London Rd north of Half Moon Ln SB	61	61	66	64
(4) London Rd south of Half Moon Ln NB	64	62	63	62
(4) London Rd south of Half Moon Ln SB	46	47	57	56
(5) Watery Lane, to and from M1 J9 EB	22	22	21	21
(5) Watery Lane, to and from M1 J9 WB	46	47	57	57
(6) B653 Lower Harpenden Rd - north of Chiltern Green Rd NB	50	56	50	56
(6) B653 Lower Harpenden Rd - north of Chiltern Green Rd SB	52	47	52	47
(7) B653 Lower Harpenden Rd - south of Chiltern Green Rd NB	54	56	54	56
(7) B653 Lower Harpenden Rd -	56	55	57	56

Link	Core		Sensitivity	
	Future Baseline	with assessment Phase 2b	Future Baseline	with assessment Phase 2b
south of Chiltern Green Rd SB				
(8) Luton Rd (crossing M1 from Caddington) EB	56	61	58	63
(8) Luton Rd (crossing M1 from Caddington) WB	31	33	32	34

14.3.35 The table shows that in the AM peak hour, the V/C ratio increases in the sensitivity test on a number of the local roads in the future baseline. This is as a consequence of traffic diverting to local roads due to the constrained capacity of the M1 corridor.

14.3.36 The final two columns show the relative impact of the Proposed Development in the sensitivity test scenarios and show that the overall impact on the local road network is similar in terms of change in V/C ratios as for the core scenario and therefore there is no material difference in the scheme impacts to that presented for the core case.

14.3.37 **Table 14.30** summarises the PM peak hour link flows on the local road network on key parallel routes affected by the widening of the M1 corridor.

Table 14.30: 2043 PM peak hour flows local road network

Link	Flows				Differences			
	Core		Sensitivity					
	with assessment	Future Baseline	with assessment	Future Baseline	Future Baseline (Sensitivity-Core)	with assessment Phase 2b (Sensitivity-Core)	Future Baseline – assessment Phase 2b	Future Baseline – assessment Phase 2b
(1) A1081, between Capability	2,626	2,855	2,636	2,894	10	39	229	258

Link	Flows				Differences			
	Core		Sensitivity					
	with assessment	Future Baseline	with assessment	Future Baseline	Future Baseline (Sensitivity-Core)	with assessment Phase 2b (Sensitivity-Core)	Future Baseline – assessment Phase 2b	Future Baseline – assessment Phase 2b
Green and B653 EB								
(1) A1081, between Capability Green and B653 WB	2,975	3,337	2,722	3,313	-253	-24	362	590
(2) A505, west of Lilley EB	1,519	1,532	1,540	1,527	21	-4	12	-13
(2) A505, west of Lilley WB	1,213	1,237	1,146	1,214	-67	-23	24	67
(3) London Rd north of Half Moon Ln NB	928	817	893	853	-35	36	-112	-41
(3) London Rd north of Half Moon Ln SB	856	903	1,229	1,001	373	99	47	-228
(4) London Rd south of Half Moon Ln NB	1,058	949	1,019	984	-39	35	-108	-35
(4) London Rd south of Half Moon Ln SB	1,007	1,093	1,424	1,207	417	113	86	-218
(5) Watery Lane, to and from M1 J9 EB	176	177	185	178	9	2	1	-6

Link	Flows				Differences			
	Core		Sensitivity					
	with assessment	Future Baseline	with assessment	Future Baseline	Future Baseline (Sensitivity-Core)	with assessment Phase 2b (Sensitivity-Core)	Future Baseline – assessment Phase 2b	Future Baseline – assessment Phase 2b
(5) Watery Lane, to and from M1 J9 WB	279	317	728	399	449	82	38	-328
(6) B653 Lower Harpenden Rd - north of Chiltern Green Rd NB	866	964	867	966	1	3	98	99
(6) B653 Lower Harpenden Rd - north of Chiltern Green Rd SB	734	758	846	814	112	56	24	-32
(7) B653 Lower Harpenden Rd - south of Chiltern Green Rd NB	802	844	788	851	-14	7	42	64
(7) B653 Lower Harpenden Rd - south of Chiltern Green Rd SB	722	727	782	766	60	40	4	-16
(8) Luton Rd (crossing M1 from Caddington) EB	864	980	820	958	-45	-22	115	138
(8) Luton Rd (crossing M1 from Caddington) WB	996	1,100	1,063	1,097	68	-3	105	34

14.3.39 The table shows that in the PM peak hour, there are some significant changes in flow when the M1 improvement is removed. In particular, traffic flows increase on the local road network around the London Road, Watery Lane and the B653

Lower Harpenden Road. This is consistent with the findings of the impacts of the sensitivity test on the M1 corridor which showed that when the M1 improvement is removed, traffic flows on the motorway corridor fall due to congestion as traffic uses the local road network. The final two columns show the relative impact of the Proposed Development in the core and sensitivity test scenarios.

14.3.40 The table shows that there is an increased relative impact on the A1081, between Capability Green and B653. This increased impact is a function of the lower flows on the M1 with the improvement removed in the future baseline. The overall flows in the Proposed Development are similar in both the core and sensitivity scenarios. The table also shows that on the London Road the Proposed Development would have greater benefits in the M1 improvement removed scenario as the mitigation measures included as part of the Proposed Development improve local junctions, particularly between the airport and the M1 corridor and draw traffic away from the local network and back towards the M1 corridor. There is a similar picture on Watery Lane particularly in the westbound direction.

14.3.41 **Table 14.31** summarises the impact of the PM peak hour flows on the V/C ratios for the local road network in the core scenario and the sensitivity test.

Table 14.31: 2043 PM peak hour V/C ratios (%)

Link	Core		Sensitivity	
	Future Baseline	with assessment Phase 2b	Future Baseline	with assessment Phase 2b
(1) A1081, between Capability Green and B653 EB	79	60	80	61
(1) A1081, between Capability Green and B653 WB	89	67	82	66
(2) A505, west of Lilley EB	44	45	45	45
(2) A505, west of Lilley WB	35	36	33	35
(3) London Rd north of Half Moon Ln NB	59	51	56	54
(3) London Rd north of Half Moon Ln SB	53	56	76	62
(4) London Rd south of Half Moon Ln NB	63	56	60	58
(4) London Rd south of Half Moon Ln SB	45	51	79	59
(5) Watery Lane, to and from M1 J9 EB	12	2	12	12
(5) Watery Lane, to and from M1 J9 WB	26	29	67	37
(6) B653 Lower Harpenden Rd - north of Chiltern Green Rd NB	53	59	53	59
(6) B653 Lower Harpenden Rd - north of Chiltern Green Rd SB	45	47	52	50
(7) B653 Lower Harpenden Rd - south of Chiltern Green Rd NB	50	53	50	54

Link	Core		Sensitivity	
	Future Baseline	with assessment Phase 2b	Future Baseline	with assessment Phase 2b
(7) B653 Lower Harpenden Rd - south of Chiltern Green Rd SB	45	45	48	47
(8) Luton Rd (crossing M1 from Caddington) EB	37	44	35	42
(8) Luton Rd (crossing M1 from Caddington) WB	59	65	63	65

14.3.42 The table shows that in the PM peak hour, the V/C ratio increases in the sensitivity test on a number of the local roads in the future baseline, in particular London Road southbound and Water Lane westbound. This is as a consequence of traffic diverting to local roads due to the constrained capacity of the M1 corridor. The final two shows impact of the Proposed Development in the sensitivity test scenarios and shows that the Proposed Development would reduce the V/C ratios on both London Road southbound and Water Lane westbound and none of the V/C ratios are considered to be at or close to capacity.

No motorway capacity upgrade M1 corridor core and sensitivity test summary

14.3.43 This section of the report has considered the impact on the highway network for the core and no M1 corridor motorway capacity upgrade sensitivity test. The analysis has shown that in the case when the M1 improvement is removed, the future baseline modelling shows that traffic conditions on the local network worsen as traffic looks for alternative routes. This is particularly the case in the PM peak hour. The test has also shown that when the Proposed Development is added to the no M1 improvement models, the scheme continues to provide benefits and mitigate its own impacts. The sensitivity test shows that the mitigation measures included as part of the Proposed Development not only address airport related traffic but also enable other traffic to be drawn back from the local network onto the main road network.

14.3.44 This test shows that the scale of impact of the development remains very similar on the motorway whether or not additional capacity is provided, but that if additional capacity is not provided there will be significant impacts for surrounding roads even in the absence of the Proposed Development. The test confirms the need for additional capacity on the M1 motorway corridor irrespective of the Proposed Development.

14.3.45 In summary, the no M1 corridor motorway capacity upgrade sensitivity test shows that the Proposed Development could be accommodated even in the absence of

an M1 improvement scheme. As such whether or not the M1 gains additional capacity should not be considered to be a constraint on our ability to grow the airport.

14.4 Strategic model growth in operational model

14.4.1 The CBLTM-LTN strategic SATURN and the Vissim microsimulation traffic models have been used to assess the impacts of the Proposed Development on the highway network. As noted earlier in the report, the two models utilise different base model years due to the time at which the original models were developed. This is not uncommon with traffic models and not a material issue since both models are validated to observed conditions at the time and are WebTAG complaint as demonstrated through the validation reports in **Appendix D** and **E**.

14.4.2 In developing the future baseline and the with Proposed Development models, the Vissim model included traffic growth associated with committed developments, committed and planned transport schemes, and wider or background growth. Developments to be included are usually those that are 'certain' or 'near certain.' Additional growth was included as a percentage uplift to background traffic applied on an annual basis. The approach to the development of the Vissim model forecasts was presented to the highway authorities including the local authorities and National Highways at the scoping stage and it is considered that the Vissim model has robustly assessed the operational impact of the Proposed Development on the highway network around the airport where it is expected to have the greatest impact.

14.4.3 The strategic model has a wider geographic coverage, and therefore different and/or additional growth assumptions and assumptions on transport infrastructure. In addition, the strategic model also has a wider network coverage which enables traffic to vary routes over a wider area.

14.4.4 As a consequence, the forecasts produced by the two models will differ on the local road network. The host authorities have requested a sensitivity test in which the forecast growth in the CBLTM-LTN SATURN model is applied in the Vissim microsimulation models to confirm that the proposed highway mitigation strategy remains valid.

14.4.5 The test has been undertaken for the 2043 Full Development scenario as this reflects the end state of the Proposed Development and enables the impact on the highway mitigation measures to be confirmed and is reported in this section.

14.4.6 Baseline and forecast year cordon matrices were extracted from the CBLTM-LTN SATURN model to determine the growth in the strategic model for the Vissim model area. This growth was then applied to the non-airport and non-committed development related movements in the baseline year Vissim model matrix on a zone by zone basis to derive the forecast year Vissim model matrix. The process was undertaken for the future baseline and with Proposed Development scenarios. **Table 14.32** summarises the Vissim model matrix total for the core assessment scenario and also for the sensitivity test scenario.

Table 14.32: Vissim matrix totals

Scenario	AM Peak	PM Peak
2017 Base Matrix Total	24,710	26,589
2043 Baseline Matrix Total (Core Scenario)	29,302	31,590
2043 Baseline Matrix Sensitivity Test Total (SATURN Growth Scenario)	31,230	33,217
Change	+6.6%	+5.2%
2043 with Proposed Development Matrix Total (Core Scenario)	31,610	33,581
2043 with Proposed Development Matrix Sensitivity Test Total (SATURN Growth Scenario)	33,627	35,030
Change	+6.4%	+4.3%

14.4.7 The table shows that with the sensitivity test to incorporate the CBLTM-LTN SATURN model growth in to the Vissim model, the forecast demand matrices are increased by between 4.3% and 6.6%. The updated matrices have been run in the Vissim model and the results of the sensitivity test are provided below.

Network performance

14.4.8 **Table 14.33** summarises the core and model growth sensitivity test network performance statistics for the AM peak for the future baseline and with the Proposed Development.

Table 14.33: 2043 AM peak network statistics (future baseline and with the Proposed Development) core and model growth sensitivity test

Parameter	Future Baseline		with assessment Phase 2b	
	Core	Sensitivity	Core	Sensitivity
Average Delay Time per Vehicle (seconds), All Vehicle Types	73	78	90	95
Average Number of Stops per Vehicles, All Vehicle Types	3	3	3	3

Parameter	Future Baseline		with assessment Phase 2b	
	Core	Sensitivity	Core	Sensitivity
Average Speed (mph), All Vehicle Types	35	35	33	33
Average Stopped Delay per Vehicle (seconds), All Vehicle Types	29	32	40	41
Number of Unreleased Vehicles	82	149	97	354

14.4.9 The table shows that with the model growth sensitivity test there is a small increase in the average delays, although the change is the same in both the future baseline and with the Proposed Development core scenarios. Average speeds are unchanged from the future baseline and with the Proposed Development core scenarios. Overall, the findings of the core scenario network statistics are unchanged in the AM peak hour.

14.4.10 **Table 14.34** summarises the core and model growth sensitivity test network performance statistics for the PM peak for the future baseline and with the Proposed Development.

Table 14.34: 2043 PM peak network statistics (future baseline and with the Proposed Development) core and model growth sensitivity test

Parameter	Future Baseline		with assessment Phase 2b	
	Core	Sensitivity	Core	Sensitivity
Average Delay Time per Vehicle (seconds), All Vehicle Types	102	200	70	79
Average Number of Stops per Vehicles, All Vehicle Types	4	13	2	3
Average Speed (mph), All Vehicle Types	32	23	36	35
Average Stopped Delay per Vehicle (seconds), All Vehicle Types	49	96	31	38
Number of Unreleased Vehicles	843	2,314	529	734

14.4.11 The table shows that with the model growth sensitivity test, the impact is greater in the future baseline than the Proposed Development when compared against

the core scenario. In the future baseline, average delays almost double and average speeds decrease by around 9mph. In the with Proposed Development scenario, there is a small increase in the average delays and a small reduction in the average speeds. Importantly, when comparing the future baseline and Proposed Development for the model growth sensitivity test, the results show that the proposed scheme provides significant improvements in network performance. This is as a consequence of the additional mitigation measures included with the Proposed Development scenario.

Journey times

14.4.12 **Table 14.35** summarises the core and model growth sensitivity test modelled journey times for the AM peak for the future baseline and with the Proposed Development.

Table 14.35: 2043 AM peak journey times (future baseline and with the Proposed Development) core and model growth sensitivity test

Route	Future Baseline		with assessment Phase 2b	
	Core	Sensitivity	Core	Sensitivity
Luton Town Centre (G) to Existing Terminal Area (I)	338	387	369	376
Existing Terminal Area (I) to Luton Town Centre (G)	475	591	439	495
Vauxhall Way north of Crawley Green Road (H) to Existing Terminal Area (I)	264	288	299	276
Existing Terminal Area (I) to Vauxhall Way north of Crawley Green Road (H)	284	338	298	324
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Existing Terminal Area (I)	188	181	271	271
Existing Terminal Area (I) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	506	661	490	614
A1081 London Road (E) close to Beech Tree Drive to Existing Terminal Area (I)	643	625	485	485

Route	Future Baseline		with assessment Phase 2b	
	Core	Sensitivity	Core	Sensitivity
Existing Terminal Area (I) to A1081 London Road (E) close to Beech Tree Drive	372	446	374	359
M1 Junction 10 North off slip (B) to Existing Terminal Area (I)	340	324	408	382
Existing Terminal Area (I) to M1 Junction 10 North on slip (A)	341	359	356	347
M1 Junction 10 South off slip (C) to Existing Terminal Area (I)	362	360	432	397
Existing Terminal Area (I) to M1 Junction 10 South on slip (D)	318	312	312	301
Luton Town Centre (G) to Proposed New Terminal Area (J)	-	-	467	509
Proposed New Terminal Area (J) to Luton Town Centre (G)	-	-	586	614
Vauxhall Way north of Crawley Green Road (H) to Proposed New Terminal Area (J)	-	-	342	343
Proposed New Terminal Area (J) to Vauxhall Way north of Crawley Green Road (H)	-	-	353	312
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Proposed New Terminal Area (J)	-	-	415	418
Proposed New Terminal Area (J) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	-	-	695	776

Route	Future Baseline		with assessment Phase 2b	
	Core	Sensitivity	Core	Sensitivity
A1081 London Road (E) close to Beech Tree Drive to Proposed New Terminal Area (J)	-	-	629	634
Proposed New Terminal Area (J) to A1081 London Road (E) close to Beech Tree Drive	-	-	550	547
M1 Junction 10 North off slip (B) to Proposed New Terminal Area (J)	-	-	552	528
Proposed New Terminal Area (J) to M1 Junction 10 North on slip (A)	-	-	531	533
M1 Junction 10 South off slip (C) to Proposed New Terminal Area (J)	-	-	573	543
Proposed New Terminal Area (J) to M1 Junction 10 South on slip (D)	-	-	499	486

14.4.13 The table shows that with the model growth sensitivity test, the impact is greater in the future baseline than with the Proposed Development when compared against the core scenario. In the future baseline, there are greater increases in journey times. Overall, the findings of the core scenario journey times are unchanged in the AM peak hour.

14.4.14 **Table 14.36** summarises the core and model growth sensitivity test modelled journey times for the PM peak for the future baseline and with the Proposed Development.

Table 14.36: 2043 PM peak journey times (future baseline and with the Proposed Development) core and model growth sensitivity test

Route	Future Baseline		with assessment Phase 2b	
	Core	Sensitivity	Core	Sensitivity
Luton Town Centre (G) to Existing Terminal Area (I)	304	326	345	396

Route	Future Baseline		with assessment Phase 2b	
	Core	Sensitivity	Core	Sensitivity
Existing Terminal Area (I) to Luton Town Centre (G)	401	518	386	442
Vauxhall Way north of Crawley Green Road (H) to Existing Terminal Area (I)	316	375	271	332
Existing Terminal Area (I) to Vauxhall Way north of Crawley Green Road (H)	326	344	301	349
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Existing Terminal Area (I)	199	225	226	253
Existing Terminal Area (I) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	380	542	411	484
A1081 London Road (E) close to Beech Tree Drive to Existing Terminal Area (I)	667	734	476	504
Existing Terminal Area (I) to A1081 London Road (E) close to Beech Tree Drive	338	412	380	346
M1 Junction 10 North off slip (B) to Existing Terminal Area (I)	594	662	341	340
Existing Terminal Area (I) to M1 Junction 10 North on slip (A)	331	493	364	331
M1 Junction 10 South off slip (C) to Existing Terminal Area (I)	620	956	374	371
Existing Terminal Area (I) to M1 Junction 10 South on slip (D)	294	379	332	300
Luton Town Centre (G) to Proposed New Terminal Area (J)	-	-	516	551

Route	Future Baseline		with assessment Phase 2b	
	Core	Sensitivity	Core	Sensitivity
Proposed New Terminal Area (J) to Luton Town Centre (G)	-	-	520	613
Vauxhall Way north of Crawley Green Road (H) to Proposed New Terminal Area (J)	-	-	331	339
Proposed New Terminal Area (J) to Vauxhall Way north of Crawley Green Road (H)	-	-	317	387
B653 Lower Harpenden Road (F) south of the A1081 New Airport Way to Proposed New Terminal Area (J)	-	-	373	405
Proposed New Terminal Area (J) to B653 Lower Harpenden Road (F) south of the A1081 New Airport Way	-	-	604	676
A1081 London Road (E) close to Beech Tree Drive to Proposed New Terminal Area (J)	-	-	610	656
Proposed New Terminal Area (J) to A1081 London Road (E) close to Beech Tree Drive	-	-	547	641
M1 Junction 10 North off slip (B) to Proposed New Terminal Area (J)	-	-	484	484
Proposed New Terminal Area (J) to M1 Junction 10 North on slip (A)	-	-	520	526
M1 Junction 10 South off slip (C) to Proposed New Terminal Area (J)	-	-	518	516
Proposed New Terminal Area (J) to M1 Junction 10 South on slip (D)	-	-	487	466

14.4.15 The table shows that with the model growth sensitivity test, the impact is greater in the future baseline than the Proposed Development when compared against the core scenario. In the future baseline, there are greater increases in journey times. Overall, the findings of the core scenario journey times are unchanged in the PM peak hour.

Junction modelling

14.4.16 **Table 14.37** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for M1 Junction 10 in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.37: 2043 M1 Junction 10 (1)[4] junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
M1 southbound off-slip	1,914 (1,719)	20 (17)	91 (79)	2,043 (1,955)	49 (69)	194 (302)
A1081 New Airport Way	2,572 (2,344)	(0) (0)	(8) (5)	3,071 (2,885)	0 (0)	8 (6)
M1 northbound off-slip	2,285 (2,307)	38 (39)	162 (158)	2,755 (2,755)	23 (60)	192 (368)
Average delay (seconds)	7 (7)			11 (15)		
LoS	A (A)			B (B)		
PM Peak						
M1 southbound off-slip	1,078 (1,204)	931 (90)	1,933 (534)	1,510 (1,481)	18 (18)	83 (84)
A1081 New Airport Way	4,068	330	971	4,804	0	2

[4] Location reference shown on Figure 14.4.

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
	(3,981)	(14)	(158)	(4,682)	(0)	(3)
M1 northbound off-slip	1,064 (1,785)	1,478 (156)	2,012 (894)	2,271 (2,431)	32 (40)	144 (177)
Average delay (seconds)	73 (16)			7 (7)		
LoS	E (B)			A (A)		

14.4.17 The table shows that with core and model growth sensitivity test, in the AM peak hour the performance of the junction is similar in both scenarios with similar levels of delay and level of service. In PM peak hour, model growth sensitivity test shows a significant increase in average delay and a worsening level of service (LoS E) in the future baseline. The overall performance of the junction is similar in the with Proposed Development scenario and therefore shows a significant improvement against the future baseline.

14.4.18 The sensitivity test is not considered to have a significant adverse impact on the operation of M1 Junction 10.

14.4.19 **Table 14.38** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the A1081 New Airport Way/London Road (north) roundabout in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.38: 2043 A1081 New Airport Way/London Road (north) roundabout (2) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
London Road (north)	982 (950)	23 (20)	195 (189)	1,006 (957)	5 (5)	124 (110)

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
A1081 New Airport Way	1,318 (1,207)	20 (13)	223 (185)	1,247 (1,168)	69 (74)	248 (322)
London Road (south)	701 (763)	366 (444)	610 (612)	794 (895)	11 (15)	142 (183)
Newlands Park Access	66 (66)	0 (0)	14 (11)	66 (65)	5 (5)	32 (32)
Average delay (seconds)	25 (24)			27 (26)		
LoS	C (C)			C (C)		
PM Peak						
London Road (north)	911 (860)	71 (13)	204 (162)	918 (862)	1 (2)	41 (52)
A1081 New Airport Way	863 (1,254)	1,041 (224)	1,365 (838)	1,323 (1,460)	29 (61)	176 (301)
London Road (south)	572 (639)	7 (19)	125 (182)	572 (653)	8 (18)	63 (134)
Newlands Park Access	376 (377)	2 (5)	36 (65)	374 (375)	35 (36)	126 (124)
Average delay (seconds)	50 (15)			25 (29)		
LoS	E (B)			C (C)		

14.4.20 The table shows that with core and model growth sensitivity test, in the AM peak hour the performance of the junction is similar in both scenarios with similar levels of delay and level of service. In PM peak hour, model growth sensitivity test

shows a significant increase in average delay and a worsening level of service (LoS E) in the future baseline. The overall performance of the junction is similar in the with Proposed Development scenario and therefore shows a significant improvement against the future baseline.

14.4.21 The sensitivity test is not considered to have a significant adverse impact on the operation of the A1081 New Airport Way/London Road (north) roundabout.

14.4.22 **Table 14.39** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the A1081 New Airport Way/A1081 London Road (south) roundabout in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.39: 2043 A1081 New Airport Way/A1081 London Road (south) roundabout (3) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
London Road (north)	921 (820)	18 (2)	146 (45)	894 (816)	3 (1)	55 (48)
A1081 New Airport Way	773 (805)	4 (4)	89 (99)	792 (824)	4 (6)	98 (108)
London Road (south)	1,040 (941)	51 (124)	306 (330)	1,061 (1,083)	0 (0)	9 (10)
Average delay (seconds)	25 (32)			5 (5)		
LoS	C (D)			A (A)		
PM Peak						
London Road (north)	893 (879)	457 (49)	631 (280)	945 (905)	21 (13)	191 (124)
A1081 New Airport Way	871	1	56	914	2	77

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
	(931)	(1)	(65)	(955)	(4)	(129)
London Road (south)	1,215 (1,184)	0 (0)	45 (41)	1,138 (1,182)	0 (0)	18 (22)
Average delay (seconds)	29 (12)			8 (7)		
LoS	D (B)			A (A)		

14.4.23 The table shows that with core and model growth sensitivity test, in the AM peak hour the performance of the junction is similar in both scenarios with similar levels of delay and level of service. In PM peak hour, model growth sensitivity test shows an increase in average delay and a worsening level of service (LoS D) in the future baseline. The overall performance of the junction is similar in the with Proposed Development scenario and therefore shows a significant improvement against the future baseline.

14.4.24 The sensitivity test is not considered to have a significant adverse impact on the operation of the A1081 New Airport Way/A1081 London Road (south) roundabout.

14.4.25 **Table 14.40** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the A1081 New Airport Way/B653/Gipsy Lane network of junctions in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.40: 2043 A1081 New Airport Way/B653/Gipsy Lane junctions (4) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
Gipsy Lane	922 (942)	14 (10)	134 (113)	1,085 (1,027)	132 (44)	281 (263)

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
Parkway Road	96 (97)	1 (0)	20 (20)	129 (130)	1 (0)	26 (24)
B653 Lower Harpenden Road	662 (662)	2 (0)	53 (32)	734 (689)	13 (6)	136 (85)
A1081 New Airport Way (east)	2,507 (2,512)	252 (253)	543 (552)	3,024 (3,072)	85 (127)	523 (528)
A1081 New Airport Way (west)	2,723 (2,720)	195 (130)	992 (790)	3,420 (3,460)	149 (178)	1,060 (1,109)
Average delay (seconds)	24 (23)			35 (33)		
LoS	C (C)			C (C)		
PM Peak						
Gipsy Lane	1,053 (929)	7 (2)	115 (55)	1,117 (961)	14 (6)	162 (96)
Parkway Road	212 (214)	1 (0)	28 (27)	351 (350)	2 (1)	43 (36)
B653 Lower Harpenden Road	858 (863)	21 (11)	157 (122)	884 (880)	99 (24)	176 (170)
A1081 New Airport Way (east)	2,100 (2,121)	280 (77)	546 (368)	2,802 (2,848)	48 (40)	324 (232)

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
A1081 New Airport Way (west)	2,195 (2,293)	239 (710)	1,052 (1,118)	3,293 (3,316)	44 (58)	534 (712)
Average delay (seconds)	38 (34)			32 (25)		
LoS	D (C)			C (C)		

14.4.26 The table shows that with core and model growth sensitivity test, in the AM peak hour the performance of the junction is similar in both scenarios with similar levels of delay and level of service. In PM peak hour, model growth sensitivity test shows a small increase in average delay and a worsening level of service (LoS D) in the future baseline. The overall performance of the junction is similar in the with Proposed Development scenario and therefore shows an improvement against the future baseline.

14.4.27 The sensitivity test is not considered to have a significant adverse impact on the operation of the A1081 New Airport Way/B653/Gipsy Lane junctions.

14.4.28 **Table 14.41** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the Kimpton Road A505 Vauxhall Way roundabout in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.41: 2043 Kimpton Road/A505 Vauxhall Way signalised junction (5) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
A505 Vauxhall Way (north)	1,547 (1,595)	79 (61)	438 (367)	1,818 (1,979)	28 (217)	295 (714)
Airport Way (east)	532 (320)	104 (11)	330 (75)	527 (372)	64 (19)	257 (88)
A505 Vauxhall Way (south)	997 (1,278)	17 (36)	91 (151)	845 (875)	14 (15)	75 (76)
Kimpton Way (west)	520 (544)	28 (15)	93 (80)	557 (541)	38 (19)	111 (88)
Average delay (seconds)	39 (31)			31 (27)		
LoS	D (C)			C (C)		
PM Peak						
A505 Vauxhall Way (north)	1,243 (1,329)	58 (25)	368 (154)	1,484 (1,383)	317 (69)	673 (357)
Airport Way (east)	598 (515)	74 (34)	367 (179)	733 (397)	93 (18)	340 (83)
A505 Vauxhall Way (south)	1,389 (1,455)	31 (30)	170 (172)	1,122 (1,049)	21 (19)	103 (94)
Kimpton Way (west)	614	18	93	666	21	103

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
	(608)	(14)	(78)	(750)	(17)	(102)
Average delay (seconds)	35 (30)			45 (30)		
LoS	C (C)			D (C)		

14.4.29 The table shows that with core and model growth sensitivity test, in the AM peak hour, model growth sensitivity test shows an increase in average delay and a worsening level of service (LoS D) in the future baseline however the Proposed Development performs at a similar level as the core scenario. In the PM peak hour, conditions are broadly similar in the future baseline but there is an increase in the average delays and a worsening level of service (LoS D) however average queues generally remain short and do not extend back to upstream junctions.

14.4.30 The sensitivity test is not considered to have a significant adverse impact on the operation of the Kimpton Road/A505 Vauxhall Way signalised junction.

14.4.31 **Table 14.42** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the A1081 New Airport Way/Percival Way roundabout in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.42: 2043 A1081 New Airport Way/Percival Way revised signalised junction (7) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
Percival Way	870 (754)	10 (7)	182 (133)	-	-	-
Airport Way (east)	956 (956)	11 (7)	99 (90)	962 (962)	7 (7)	81 (88)

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
A1081 New Airport Way	1,206 (955)	9 (2)	88 (40)	998 (809)	4 (3)	41 (34)
Airport Way (west)	185 (546)	1 (3)	22 (62)	324 (325)	5 (4)	39 (32)
Average delay (seconds)	12 (9)			8 (8)		
LoS	B (A)			A (A)		
PM Peak						
Percival Way	803 (636)	2 (2)	80 (59)	-	-	-
Airport Way (east)	828 (827)	6 (4)	81 (74)	853 (854)	6 (6)	79 (78)
A1081 New Airport Way	724 (659)	2 (1)	43 (31)	1,027 (691)	2 (2)	59 (27)
Airport Way (west)	284 (342)	1 (1)	23 (26)	301 (261)	5 (3)	38 (32)
Average delay (seconds)	8 (6)			7 (7)		
LoS	A (A)			A (A)		

14.4.32 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar in both scenarios with similar levels of delay and level of service.

14.4.33 The sensitivity test is not considered to have a significant adverse impact on the operation of the A1081 New Airport Way/Percival Way revised signalised junction.

14.4.34 **Table 14.43** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the Percival Way/ Frank Lester Way/President Way revised signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.43: 2043 Percival Way/Frank Lester Way/President Way revised signalised junction (8) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
Frank Lester Way	906 (914)	13 (16)	122 (127)	-	-	-
President Way	264 (264)	1 (1)	26 (25)	1,233 (1,258)	6 (19)	77 (108)
Airport Approach Road	30 (30)	0 (0)	11 (11)	42 (42)	1 (1)	23 (22)
Percival Way	668 (759)	5 (12)	124 (178)	1,508 (1,514)	34 (35)	126 (128)
Average delay (seconds)	9 (11)			17 (19)		
LoS	A (B)			B (B)		
PM Peak						
Frank Lester Way	434 (554)	1 (2)	34 (35)	-	-	-
President Way	632 (632)	1 (1)	32 (37)	1,482 (1,541)	16 (15)	107 (108)
Airport Approach Road	57	0	11	60	2	27

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
	(56)	(0)	(11)	(61)	(2)	(27)
Percival Way	445 (409)	2 (2)	67 (68)	1,423 (1,436)	33 (32)	153 (145)
Average delay (seconds)	4 (5)			16 (16)		
LoS	A (A)			B (B)		

14.4.35 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar in both scenarios with similar levels of delay and level of service.

14.4.36 The sensitivity test is not considered to have a significant adverse impact on the operation of the Percival Way/Frank Lester Way/President Way revised signalised junction.

14.4.37 **Table 14.44** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the A505 Vauxhall Way/Eaton Green Road revised roundabout in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.44: 2043 A505 Vauxhall Way/Eaton Green Road revised roundabout (10) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
A505 Vauxhall Way (north)	1,327 (1,296)	12 (8)	119 (89)	1,466 (1,502)	25 (29)	201 (217)
Eaton Green Road	655 (711)	2 (3)	37 (43)	951 (1,005)	5 (11)	88 (197)

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
A505 Vauxhall Way (south)	1,236 (1,202)	5 (4)	109 (97)	1,053 (1,078)	6 (6)	93 (97)
Harrowden Road	105 (105)	1 (1)	17 (16)	106 (106)	1 (1)	18 (19)
Average delay (seconds)	8 (7)			12 (13)		
LoS	A (A)			B (B)		
PM Peak						
A505 Vauxhall Way (north)	907 (662)	109 (6)	305 (67)	1,173 (1,098)	17 (14)	111 (98)
Eaton Green Road	916 (1,108)	2 (1)	49 (42)	1,252 (1,129)	5 (5)	96 (98)
A505 Vauxhall Way (south)	1,766 (1,724)	52 (20)	251 (173)	1,515 (1,503)	29 (21)	166 (140)
Harrowden Road	23 (25)	0 (0)	11 (11)	25 (26)	0 (0)	11 (11)
Average delay (seconds)	26 (10)			15 (12)		
LoS	D (A)			B (B)		

14.4.38 The table shows that with core and model growth sensitivity test, in the AM peak hour the performance of the junction is similar in both scenarios with similar levels of delay and level of service. In PM peak hour, model growth sensitivity test shows an increase in average delay and a worsening level of service (LoS D) in the future baseline. The overall performance of the junction is similar in the with Proposed Development scenario and therefore shows a significant improvement against the future baseline.

14.4.39 The sensitivity test is not considered to have a significant adverse impact on the operation of the A505 Vauxhall Way/Eaton Green Road revised roundabout.

14.4.40 **Table 14.45** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the Eaton Green Road/Frank Lester Way signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.45: 2043 Eaton Green Road/Frank Lester Way signalised junction (11) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
Eaton Green Rd (west)	650 (544)	2 (3)	61 (63)	568 (528)	14 (12)	117 (123)
Eaton Green Rd (east)	1,080 (1,105)	7 (3)	126 (79)	642 (559)	5 (4)	89 (80)
Frank Lester Way	197 (378)	1 (1)	28 (36)	373 (534)	12 (26)	62 (91)
Average delay (seconds)	6 (6)			13 (16)		
LoS	A (A)			B (B)		
PM Peak						
Eaton Green Rd (west)	715 (573)	179 (7)	444 (102)	533 (497)	42 (21)	215 (131)
Eaton Green Rd (east)	870 (902)	7 (6)	130 (120)	576 (431)	25 (14)	131 (79)
Frank Lester Way	606 (771)	6 (7)	104 (126)	977 (988)	15 (10)	119 (108)

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
Average delay (seconds)	22 (9)			22 (16)		
LoS	C (A)			C (B)		

14.4.41 The table shows that with core and model growth sensitivity test, in the AM peak hour the performance of the junction is similar in both scenarios with similar levels of delay and level of service. In PM peak hour, model growth sensitivity test shows an increase in average delay and a worsening level of service (LoS C) in both the future baseline and with the Proposed Development however, overall, the junction is still considered to operate with an acceptable level of service.

14.4.42 The sensitivity test is not considered to have a significant adverse impact on the operation of the Eaton Green Road/Frank Lester Way signalised junction.

14.4.43 **Table 14.46** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the Eaton Green Road/Wigmore Road signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.46: 2043 Eaton Green Road/Wigmore Road signalised junction (12) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
Wigmore Lane	647 (578)	4 (2)	92 (57)	845 (814)	27 (25)	132 (130)
Wigmore Place	55 (55)	0 (0)	12 (10)	56 (55)	2 (2)	25 (26)
Eaton Green Road (east)	447 (441)	2 (1)	45 (36)	428 (457)	12 (14)	73 (83)

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
Eaton Green Road (west)	435 (405)	1 (1)	56 (47)	775 (752)	39 (37)	232 (239)
AAR Link	-	-	-	204 (239)	10 (13)	43 (52)
Average delay (seconds)	5 (4)			34 (35)		
LoS	A (A)			C (C)		
PM Peak						
Wigmore Lane	646 (625)	6 (4)	100 (76)	445 (419)	20 (20)	94 (95)
Wigmore Place	193 (194)	3 (3)	42 (42)	194 (195)	3 (3)	44 (43)
Eaton Green Road (east)	393 (401)	2 (2)	47 (46)	338 (402)	16 (22)	68 (92)
Eaton Green Road (west)	714 (575)	8 (4)	117 (81)	583 (537)	24 (22)	156 (135)
AAR Link	-	-	-	668 (601)	41 (25)	127 (92)
Average delay (seconds)	9 (8)			44 (43)		
LoS	A (A)			D (D)		

14.4.44 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar in both scenarios with similar levels of delay and level of service.

14.4.45 The sensitivity test is not considered to have a significant adverse impact on the operation of the Eaton Green Road/Wigmore Road signalised junction.

14.4.46 **Table 14.47** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the A505 Vauxhall Way/Crawley Green Road signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.47: 2043 A505 Vauxhall Way/Crawley Green Road signalised junction (13) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
A505 Vauxhall Way (north)	1,002 (967)	26 (20)	110 (96)	1,319 (1,333)	55 (40)	214 (159)
Crawley Green Road (east)	734 (701)	27 (24)	165 (146)	790 (836)	125 (111)	252 (233)
A505 Vauxhall Way (south)	826 (912)	12 (18)	59 (68)	935 (908)	16 (17)	73 (76)
Crawley Green Road (west)	1,017 (922)	80 (87)	227 (226)	1,090 (1,054)	74 (68)	226 (226)
Saywell Road	60 (59)	2 (2)	31 (29)	72 (58)	1 (1)	23 (20)
Average delay (seconds)	30 (32)			44 (40)		
LoS	C (C)			D (D)		
PM Peak						
A505 Vauxhall Way (north)	1,203 (1,058)	59 (21)	209 (82)	1,301 (1,145)	45 (18)	169 (97)

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
Crawley Green Road (east)	504 (484)	28 (18)	168 (124)	851 (866)	44 (35)	236 (216)
A505 Vauxhall Way (south)	1,400 (1,380)	43 (75)	173 (288)	1,682 (1,613)	49 (29)	203 (135)
Crawley Green Road (west)	689 (741)	27 (39)	179 (208)	754 (740)	65 (56)	219 (217)
Saywell Road	22 (22)	0 (0)	12 (12)	23 (22)	0 (0)	13 (14)
Average delay (seconds)	36 (35)			36 (28)		
LoS	D (C)			D (C)		

14.4.47 The table shows that with core and model growth sensitivity test, in the AM peak hour the performance of the junction is similar in both scenarios with similar levels of delay and level of service. In PM peak hour, the model growth sensitivity test shows a small increase in average delay and a worsening level of service (LoS D) in both the future baseline and with the Proposed Development.

14.4.48 The sensitivity test is not considered to have a significant adverse impact on the operation of the A505 Vauxhall Way/Crawley Green Road signalised junction.

14.4.49 **Table 14.48** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the Crawley Green Road/Wigmore Lane signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.48: 2043 Crawley Green Road/Wigmore Lane signalised junction (14) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
Wigmore Lane (north)	926 (871)	2 (2)	91 (76)	973 (957)	52 (30)	307 (229)
Crawley Green Lane (east)	424 (413)	5 (5)	74 (72)	447 (419)	11 (8)	119 (88)
Wigmore Lane (south)	248 (284)	1 (1)	29 (36)	371 (393)	5 (3)	54 (39)
Crawley Green Lane (west)	480 (494)	0 (0)	29 (28)	776 (827)	21 (29)	143 (165)
Average delay (seconds)	6 (6)			22 (21)		
LoS	A (A)			C (C)		
PM Peak						
Wigmore Lane (north)	597 (535)	1 (2)	42 (44)	544 (555)	15 (14)	82 (64)
Crawley Green Lane (east)	309 (279)	1 (1)	38 (36)	322 (285)	6 (3)	66 (44)
Wigmore Lane (south)	661 (655)	1 (1)	56 (48)	884 (998)	20 (19)	125 (110)
Crawley Green Lane (west)	815	6	133	930	3	47

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
	(959)	(9)	(174)	(1,022)	(3)	(49)
Average delay (seconds)	7 (8)			13 (13)		
LoS	A (A)			B (B)		

14.4.50 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar in both scenarios with similar levels of delay and level of service.

14.4.51 The sensitivity test is not considered to have a significant adverse impact on the operation of the Crawley Green Road/Wigmore Lane signalised junction.

14.4.52 **Table 14.49** summarises the core and model growth sensitivity test with Proposed Development junction performance for the A1081 New Airport Way/AAR signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.49: 2043 A1081 New Airport Way/AAR signalised junction (6) junction performance (with Proposed Development) core and model growth sensitivity test

Arm	AM Peak			PM Peak		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
with assessment Phase 2b						
AAR	1,008 (829)	26 (23)	141 (128)	971 (1,104)	14 (33)	93 (159)
A1081 Airport Way (east)	945 (941)	8 (7)	63 (63)	873 (810)	10 (7)	71 (59)
A1081 Airport Way (west)	2,057 (2,071)	25 (24)	97 (91)	1,985 (2,044)	22 (21)	91 (95)
Average delay (seconds)	16 (15)			14 (17)		

Arm	AM Peak			PM Peak		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
LoS	B (B)			B (B)		

14.4.53 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar with similar levels of delay and level of service.

14.4.54 The sensitivity test is not considered to have a significant adverse impact on the operation of the A1081 New Airport Way/AAR signalised junction.

14.4.55 **Table 14.50** summarises the core and model growth sensitivity test with Proposed Development junction performance for the Eaton Green Road Link/AAR signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.50: 2043 Eaton Green Road Link/AAR signalised junction (9) junction performance (with Proposed Development) core and model growth sensitivity test

Arm	AM Peak			PM Peak		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
With Assessment Phase 2b						
Eaton Green Road Link	1,150 (1,202)	26 (26)	111 (117)	419 (397)	12 (11)	51 (49)
AAR (east)	242 (242)	10 (11)	53 (65)	716 (711)	69 (77)	191 (207)
Terminal 2 Link	456 (457)	10 (10)	59 (57)	386 (387)	7 (8)	45 (50)
AAR (west)	863 (873)	35 (32)	157 (139)	813 (800)	15 (14)	72 (62)
Average delay (seconds)	33 (32)			32 (31)		

Arm	AM Peak			PM Peak		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
LoS	C (C)			C (C)		

14.4.56 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar with similar levels of delay and level of service.

14.4.57 The sensitivity test is not considered to have a significant adverse impact on the operation of the A1081 New Airport Way/AAR signalised junction.

14.4.58 **Table 14.51** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the Windmill Road/Kimpton Road signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.51: 2043 Windmill Road/Kimpton Road signalised junction (15) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
Windmill Road (north)	881 (1,037)	280 (134)	607 (527)	970 (1,042)	205 (222)	498 (482)
Kimpton Road	675 (706)	49 (43)	74 (74)	778 (782)	42 (40)	73 (72)
Windmill Road (south)	699 (660)	23 (40)	144 (172)	648 (731)	20 (26)	141 (152)
Average delay (seconds)	24 (23)			21 (19)		
LoS	C (C)			C (B)		

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
PM Peak						
Windmill Road (north)	1,015 (1,022)	69 (10)	450 (203)	1,129 (1,102)	291 (158)	554 (499)
Kimpton Road	777 (780)	39 (16)	74 (68)	668 (588)	45 (37)	73 (73)
Windmill Road (south)	832 (863)	23 (77)	160 (197)	954 (989)	32 (35)	173 (178)
Average delay (seconds)	16 (18)			18 (17)		
LoS	C (C)			B (B)		

14.4.59 The table shows that with core and model growth sensitivity test, in the AM peak hour the performance of the junction shows a worsening level of service (LoS C) in the with Proposed Development scenario however the overall performance of the junction is similar in the future baseline and with Proposed Development scenarios. In PM peak hour, the performance of the junction is similar in both scenarios with similar levels of delay and level of service.

14.4.60 The sensitivity test is not considered to have a significant adverse impact on the operation of the Windmill Road/Kimpton Road signalised junction.

14.4.61 **Table 14.52** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the Eaton Green Road/Lalleford Road signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.52: 2043 Eaton Green Road/Lalleford Road signalised junction (16) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
Lalleford Road	481 (581)	3 (9)	59 (99)	539 (503)	134 (45)	247 (189)
Eaton Green Road (east)	712 (630)	63 (136)	299 (406)	294 (245)	4 (3)	63 (52)
Eaton Green Road (west)	451 (465)	9 (31)	116 (177)	706 (681)	13 (13)	132 (138)
Average delay (seconds)	17 (28)			31 (21)		
LoS	C (D)			C (C)		
PM Peak						
Lalleford Road	231 (309)	1 (1)	29 (36)	166 (128)	5 (4)	48 (39)
Eaton Green Road (east)	782 (744)	9 (15)	151 (168)	564 (415)	10 (5)	124 (85)
Eaton Green Road (west)	1,021 (801)	105 (33)	269 (216)	1,046 (1,020)	67 (46)	225 (218)
Average delay (seconds)	16 (13)			16 (15)		
LoS	C (B)			B (B)		

14.4.62 The table shows that with core and model growth sensitivity test, in the AM peak hour the performance of the junction shows a worsening delay in the with

Proposed Development scenario however the level of service of the junction is similar in the future baseline and with Proposed Development scenarios. In PM peak hour, the performance of the junction is similar in both scenarios with similar levels of delay and level of service.

14.4.63 The sensitivity test is not considered to have a significant adverse impact on the operation of the Eaton Green Road/Lalleford Road signalised junction.

14.4.64 **Table 14.53** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the Wigmore Lane/Raynham Way signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.53: 2043 Wigmore Lane/Raynham Way signalised junction (17) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
Wigmore Lane (north)	736 (715)	4 (4)	84 (90)	1,006 (1,042)	15 (18)	161 (167)
Twyford Drive	111 (110)	1 (1)	26 (23)	109 (109)	4 (4)	35 (38)
Wigmore Lane (south)	212 (239)	0 (0)	21 (21)	303 (311)	1 (1)	23 (24)
Raynham Way	125 (124)	0 (0)	11 (15)	125 (124)	5 (5)	42 (41)
Average delay (seconds)	5 (4)			10 (10)		
LoS	A (A)			A (A)		
PM Peak						
Wigmore Lane (north)	680	7	115	612	7	74

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
	(753)	(10)	(139)	(695)	(10)	(99)
Twyford Drive	77 (77)	0 (1)	18 (19)	76 (78)	3 (3)	28 (29)
Wigmore Lane (south)	657 (648)	1 (2)	47 (57)	866 (964)	4 (4)	53 (47)
Raynham Way	142 (143)	0 (0)	23 (21)	143 (144)	6 (6)	48 (46)
Average delay (seconds)	5 (6)			9 (9)		
LoS	A (A)			A (A)		

14.4.65 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar in both scenarios with similar levels of delay and level of service.

14.4.66 The sensitivity test is not considered to have a significant adverse impact on the operation of the Wigmore Lane/Raynham Way signalised junction.

14.4.67 **Table 14.54** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the Wigmore Lane/Asda access signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.54: 2043 Wigmore Lane/Asda access signalised junction (18) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
Wigmore Lane (north)	714 (684)	7 (5)	127 (91)	951 (970)	15 (15)	64 (63)
Asda Access	260 (261)	1 (1)	35 (33)	262 (262)	4 (4)	38 (39)
Wigmore Lane (south)	310 (297)	0 (0)	19 (16)	363 (320)	6 (5)	54 (45)
Average delay (seconds)	5 (4)			16 (16)		
LoS	A (A)			B (B)		
PM Peak						
Wigmore Lane (north)	676 (745)	20 (10)	163 (135)	593 (659)	18 (20)	88 (88)
Asda Access	655 (655)	7 (7)	43 (43)	655 (659)	18 (26)	62 (62)
Wigmore Lane (south)	618 (496)	6 (3)	96 (65)	726 (737)	31 (29)	141 (135)
Average delay (seconds)	10 (7)			26 (29)		
LoS	A (A)			C (C)		

14.4.68 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar in both scenarios with similar levels of delay and level of service.

14.4.69 The sensitivity test is not considered to have a significant adverse impact on the operation of the Wigmore Lane/Asda access signalised junction.

14.4.70 **Table 14.55** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the Windmill Road/ St Mary's Road/Crawley Green Road roundabout in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.55: 2043 Windmill Road/St Mary's Road/Crawley Green Road roundabout (19) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
St Mary's Road	385 (337)	20 (8)	109 (67)	565 (378)	8 (5)	64 (38)
Crawley Green Road	936 (1,069)	64 (56)	105 (104)	1,071 (1,071)	62 (56)	105 (105)
Windmill Road	850 (867)	144 (195)	400 (408)	890 (970)	25 (22)	196 (181)
A505 Park Viaduct	779 (870)	29 (12)	158 (77)	778 (877)	13 (11)	101 (79)
Average delay (seconds)	49 (43)			35 (31)		
LoS	D (D)			C (C)		
PM Peak						
St Mary's Road	544	17	97	660	13	71

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
	(483)	(14)	(87)	(522)	(10)	(56)
Crawley Green Road	810 (812)	26 (24)	98 (98)	902 (900)	61 (40)	105 (102)
Windmill Road	977 (1,088)	109 (195)	384 (401)	1,026 (1,050)	21 (20)	182 (175)
A505 Park Viaduct	998 (997)	345 (446)	470 (472)	1,135 (1,168)	146 (144)	321 (331)
Average delay (seconds)	63 (62)			52 (80)		
LoS	E (E)			D (D)		

14.4.71 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar in both scenarios with similar levels of delay and level of service.

14.4.72 The sensitivity test is not considered to have a significant adverse impact on the operation of the Windmill Road/St Mary's Road/Crawley Green Road roundabout.

14.4.73 **Table 14.56** summarises the core and model growth sensitivity test for the future baseline and with the Proposed Development junction performance for the Crawley Green Road/Lalleford Road signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.56: 2043 Crawley Green Road/Lalleford Road signalised junction (20) junction performance (future baseline and with the Proposed Development) core and model growth sensitivity test

Arm	Future Baseline			with assessment Phase 2b		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
AM Peak						
Crawley Green Road (east)	570 (617)	0 (0)	20 (27)	728 (808)	15 (18)	104 (113)
Lalleford Road	222 (209)	0 (0)	17 (18)	171 (236)	7 (11)	53 (65)
Crawley Green Road (west)	496 (562)	0 (0)	13 (17)	811 (800)	15 (14)	139 (133)
Average delay (seconds)	2 (2)			17 (18)		
LoS	A (A)			B (B)		
PM Peak						
Crawley Green Road (east)	355 (361)	0 (1)	28 (32)	604 (729)	23 (37)	126 (191)
Lalleford Road	494 (454)	1 (1)	52 (45)	628 (617)	40 (26)	213 (155)
Crawley Green Road (west)	692 (986)	1 (1)	26 (37)	628 (659)	19 (22)	137 (136)
Average delay (seconds)	3 (3)			21 (23)		
LoS	A (A)			C (C)		

14.4.74 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar in both scenarios with similar levels of delay and level of service.

14.4.75 The sensitivity test is not considered to have a significant adverse impact on the operation of the Crawley Green Road/Lalleford Road signalised junction.

14.4.76 **Table 14.57** summarises the core and model growth sensitivity test with Proposed Development junction performance for the Provost/AAR roundabout in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.57: 2043 Provost Way/AAR signalised junction (21) junction performance (with Proposed Development) core and model growth sensitivity test

Arm	AM Peak			PM Peak		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
with assessment Phase 2b						
Provost Way (north)	288 (288)	8 (8)	60 (60)	129 (128)	3 (3)	29 (29)
AAR (east)	1,085 (963)	22 (16)	136 (108)	1,129 (1,178)	17 (17)	105 (97)
AAR Provost Way (south)	108 (117)	3 (4)	38 (41)	256 (259)	8 (8)	61 (69)
AAR (west)	1,485 (1,469)	15 (14)	93 (89)	1,534 (1,560)	21 (20)	129 (119)
Average delay (seconds)	16 (14)			16 (16)		
LoS	B (B)			B (B)		

14.4.77 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar with similar levels of delay and level of service.

14.4.78 The sensitivity test is not considered to have a significant adverse impact on the operation of the Provost Way/AAR signalised junction.

14.4.79 **Table 14.58** summarises the core and model growth sensitivity test with Proposed Development junction performance for the Provost Way Link Road/Percival Way signalised junction in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.58: 2043 Provost Way Link Road/Percival Way signalised junction (22) junction performance (with Proposed Development) core and model growth sensitivity test

Arm	AM Peak			PM Peak		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
with assessment Phase 2b						
Provost Way Link Road	371 (417)	0 (0)	0 (0)	379 (309)	0 (0)	0 (1)
Percival Way (east)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Percival Way (west)	107 (117)	0 (0)	0 (0)	256 (259)	0 (0)	0 (0)
Average delay (seconds)	1 (1)			1 (1)		
Level of Service (LoS)	A (A)			A (A)		

14.4.80 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar with similar levels of delay and level of service.

14.4.81 The sensitivity test is not considered to have a significant adverse impact on the operation of the Provost Way Link Road/Percival Way signalised junction.

14.4.82 **Table 14.59** summarises the core and model growth sensitivity test with Proposed Development junction performance for the President Way/AAR roundabout in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.59: 2043 President Way/AAR roundabout (23) junction performance (with Proposed Development) core and model growth sensitivity test

Arm	AM Peak			PM Peak		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
With assessment Phase 2b						
Car park access	138 (139)	2 (1)	45 (41)	375 (374)	3 (3)	66 (71)
AAR (east)	1,292 (1,332)	13 (13)	113 (110)	1,075 (1,111)	7 (9)	72 (75)
President Way	15 (15)	0 (0)	9 (9)	47 (25)	0 (0)	19 (13)
AAR (west)	1,250 (1,238)	13 (13)	104 (106)	833 (847)	2 (2)	57 (59)
Average delay (seconds)	10 (9)			6 (7)		
LoS	A (A)			A (A)		

14.4.83 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar with similar levels of delay and level of service.

14.4.84 The sensitivity test is not considered to have a significant adverse impact on the operation of the President Way/AAR roundabout.

14.4.85 **Table 14.60** summarises the core and model growth sensitivity test with Proposed Development junction performance for the Terminal 2 access roundabout in the AM and PM peak hours. Figures in brackets are for the core scenario.

Table 14.60: 2043 Terminal 2 access roundabout (24) junction performance (with Proposed Development) core and model growth sensitivity test

Arm	AM Peak			PM Peak		
	Demand (Veh)	Average Queue (m)	Max Queue (m)	Demand (Veh)	Average Queue (m)	Max Queue (m)
with assessment Phase 2b						
AAR Link Road (north)	406 (402)	0 (0)	5 (4)	391 (388)	0 (0)	3 (5)
Terminal 2 Short Stay Access (South)	42 (42)	0 (0)	0 (0)	21 (21)	0 (0)	0 (0)
Terminal 2 Drop Off Access (South)	415 (415)	0 (0)	13 (13)	367 (367)	0 (0)	11 (8)
President Way (west)	0 (1)	0 (0)	0 (2)	1 (0)	0 (0)	1 (0)
Average delay (seconds)	1 (1)			1 (1)		
LoS	A (A)			A (A)		

14.4.86 The table shows that with core and model growth sensitivity test, in the AM and PM peak hours the performance of the junction is similar with similar levels of delay and level of service.

14.4.87 The sensitivity test is not considered to have a significant adverse impact on the operation of the Terminal 2 access roundabout.

Strategic model growth in operational model sensitivity test summary

14.4.88 This section of the report has considered the operational performance of the highway network for the core and model growth sensitivity test for the future baseline and with the Proposed Development.

14.4.89 **Table 14.61** summarises the future baseline and with the Proposed Development junction level of service for the core case and the model growth sensitivity scenario.

Table 14.61: 2043 Junction performance summary (level of service, without and with Full Development) core case and model growth scenario

Junction	Core				Sensitivity			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Future Baseline	with assessment Phase 2b	Future Baseline	With assessment Phase 2b	Future Baseline	with assessment Phase 2b	Future Baseline	with assessment Phase 2b
M1 Junction 10 (1)	A	B	B	A	A	B	E	A
A1081 New Airport Way / London Road (north) roundabout (2)	C	C	B	C	C	C	E	C
A1081 New Airport Way / A1081 London Road (south) roundabout (3)	D	A	B	A	C	A	D	A
A1081 New Airport Way / B653 / Gipsy Lane junctions (4)	C	C	C	C	C	C	D	C
Kimpton Road / A505 Vauxhall Way signalised junction (5)	C	C	C	C	D	C	C	D
A1081 New Airport Way / Percival Way signalised junction (7)	A	A	A	A	B	A	A	A
Percival Way / Frank Lester Way / President Way signalised junction (8)	B	B	A	B	A	B	A	B

Junction	Core				Sensitivity			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Future Baseline	with assessment Phase 2b	Future Baseline	With assessment Phase 2b	Future Baseline	with assessment Phase 2b	Future Baseline	with assessment Phase 2b
A505 Vauxhall Way / Eaton Green Road revised roundabout (10)	A	B	A	B	A	B	D	B
Eaton Green Road / Frank Lester Way signalised junction (11)	A	B	A	B	A	B	C	C
Eaton Green Road / Wigmore Road signalised junction (12)	A	C	A	D	A	C	A	D
Vauxhall Way / Crawley Green Road signalised junction (13)	C	D	C	D	C	D	D	D
Crawley Green Road / Wigmore Lane signalised junction (14)	A	C	A	B	A	C	A	B
A1081 New Airport Way / AAR signalised junction (6)	-	B	-	B	-	B	-	B
Eaton Green Road Link / AAR signalised junction (9)	-	C	-	C	-	C	-	C

Junction	Core				Sensitivity			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Future Baseline	with assessment Phase 2b	Future Baseline	With assessment Phase 2b	Future Baseline	with assessment Phase 2b	Future Baseline	with assessment Phase 2b
Windmill Road / Kimpton Road signalised junction (15)	C	B	C	B	C	C	C	B
Eaton Green Road / Lalleford Road signalised junction (16)	D	C	B	B	C	C	C	B
Wigmore Lane / Raynham Way signalised junction (17)	A	A	A	A	A	A	A	A
Wigmore Lane / Asda access signalised junction (18)	A	B	A	C	A	B	A	C
Windmill Road / St Mary's Road / Crawley Green Road roundabout (19)	D	C	E	D	D	C	E	D
Crawley Green Road / Lalleford Road signalised junction (20)	A	B	A	C	A	B	A	C
Provost Way / AAR signalised junction (21)	-	B	-	B	-	B	-	B

Junction	Core				Sensitivity			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Future Baseline	with assessment Phase 2b	Future Baseline	With assessment Phase 2b	Future Baseline	with assessment Phase 2b	Future Baseline	with assessment Phase 2b
Provost Way / Percival Way signalised junction (22)	-	A	-	A	-	A	-	A
President Way / AAR roundabout (23)	-	A	-	A	-	A	-	A
Terminal 2 access roundabout (24)	-	A	-	A	-	A	-	A

Notes: LoS (A): free flow; (B): stable flow, slight delays; (C): stable flow, acceptable delays; (D): approaching unstable flow, tolerable delays; (E): unstable flow, intolerable delay and long queues; (F): congested, long delays and queues fail to clear.

14.4.90 The table shows that even with the strategic model growth applied to the baseline Vissim model flows, the operational performance of the network is not materially affected. The Proposed Development and associated junction mitigations are not considered to have a significant adverse impact on the operation of the highway network.

15 RESIDUAL IMPACTS AND FURTHER MITIGATION

15.1.1 This Transport Assessment has set out the highway mitigation strategy (see Section 8.3) to support the Proposed Development. It has been shown that the mitigation strategy addresses the main impacts of the Proposed Development, which have been based on both the forecast changes to background transport use and also the expected growth of the airport. As has been shown in the scenario testing (see Chapter 14), even if there are differences in the traffic forecasts, the package of mitigation measures is likely to continue to mitigate the impacts of the Proposed Development.

15.1.2 These improvements will be delivered over the duration of this strategy, informed by the rate of passenger growth, mode share and local monitoring. The **FTP [TR020001/APP/7.13]** and **SAS [TR020001/APP/7.12]** will be the basis for prioritising the delivery of these improvements alongside sustainable transport improvements and identifying when they need to be implemented.

15.2 Residual impacts

15.2.1 Whilst this Transport Assessment has shown how the mitigation strategy would address the impact of the Proposed Development on the road network, the Applicant is also proposing mechanisms to monitor the highway network and manage any unforeseen consequences of the Proposed Development. Through the on-going discussions with stakeholders, the Applicant is committed to investigating, and if necessary provide assistance towards, measures such as parking controls, traffic management and calming measures. In particular, the Applicant would:

a. Work with the local highway authorities to monitor and consider the need for parking restrictions in residential areas in the event of impacts from the airport. One such area of potential concern is shown on drawing **LLADCO-3C-ARP-SFA-SWI-DR-CE-0003**.

b. Work with the local highway authorities to manage traffic through Slip End and/or Caddington and reduce airport related impacts on the junctions assessed within this report.

c. Work with the local highway authorities to monitor and consider the need for traffic management measures to address airport related impacts in residential or rural areas including Great Offley, Tea Green, Breachwood Green and Whitwell as shown on drawing **LLADCO-3C-ARP-SFA-SWI-DR-CE-0002**.

15.2.2 The Applicant will work proactively with the authorities to continue to monitor airport related impacts in these and other areas of concern as the airport grows. Where it is reasonably demonstrated that local issues are associated with airport related trips, the Applicant will seek to reduce car borne trips by implementing further measures as set out in the **FTP [TR020001/APP/7.13]** to address such impacts. Alternatively, the Applicant may contribute towards the local authorities' costs in implementing measures to address the impacts.

15.3 On-going monitoring

15.3.1 It is acknowledged that with a development of this scale, which is delivered over a long period of time, there may be residual impacts as a consequence of changing conditions which may not be known at this stage. These could be through new third-party development or infrastructure proposals, technological changes, changes in travel behaviour from exceptional events (such as has been seen by the Covid-19 pandemic), or other factors which could not have been reasonably foreseen at the time the application for development consent was prepared.

15.3.2 As such, it will be important to continue to monitor both the performance and impacts of the airport against the baseline, Limits and Targets set out in **GCG Framework [GC020001/APP/7.08]**, this Transport Assessment, the **FTP [TR020001/APP/7.13]** and the **SAS [TR020001/APP/7.12]** for both passengers and employees.

15.3.3 The need for monitoring will be managed through the ATF and make use of the dedicated Travel Plan Co-ordinator role to be established as part of the **FTP [TR020001/APP/7.13]** and future Travel Plans.

15.3.4 To deal with potential uncertainty around future transport conditions, it is proposed to implement a monitoring regime with triggers to determine when each intervention is required. More detail is provided in **Appendix I** which sets out the Outline Transport Related Impacts Monitoring and Mitigation Approach (Outline TRIMMA) which establishes the Applicant's approach to monitoring of traffic information to inform the need and delivery programme for the highway mitigation proposed.

15.4 Further mitigation

15.4.1 In the event that the monitoring identifies any residual impact, a number of tools and controls to enable the impact of the airport to be controlled or mitigated have been proposed.

Green Controlled Growth Framework

15.4.2 Through the **GCG Framework [TR020001/APP/7.08]** proposals, the Applicant is committed to a series of clearly specified 'Limits' for the lifetime operation of the airport. By enshrining these Limits within the DCO, 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 GCG Framework 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.

Surface Access Strategy

15.4.3 The **SAS [TR020001/APP/7.12]** sets the 20-year framework by which increased travel demand to and from the airport will be carefully managed in order to reduce the impact on surrounding communities and the environment. The SAS

recognises the need for changes in travel behaviour and investment in sustainable transport solutions. The Applicant is committed to the strategic vision, objectives and priorities of the SAS.

Framework Travel Plan

15.4.4 An **FTP [TR020001/APP/7.13]** has been prepared to support the application for development consent. The FTP adopts the principles and vision of the SAS and sets out the approach for developing future Travel Plans which will act as an implementation plan for surface access for the first five years of the Proposed Development and the forthcoming 5-year periods that comprise the 20-year period of the SAS. It also establishes the commitment to produce new Travel Plans every 5-years into the future. As such the new 5-yearly Travel Plans will take the place of the existing ASAS, act as the ASAS in the future will meet the guidance of the ANPS which recommends the production of a new ASAS every 5 years.

15.4.5 The FTP shows how the operator intends to deal with the increased demand in travel associated with a growing airport without leading to unacceptable impacts on the transport network or on the environment through the production of 5-yearly Travel Plans, the aim of which are to achieve the SAS objectives.

15.4.6 The FTP consists of a toolbox of interventions and measures that can be drawn upon and scaled up or down as and when required, in response to meeting the vision and objectives, changing circumstances, and through the results of ongoing monitoring and stakeholder feedback.

15.4.7 The success of the FTP, and consequently the management of travel demand, will require a strong commitment from the operator. This will be achieved through ensuring appropriate governance of the FTP. The FTP therefore includes commitments to reengage with stakeholders through a reinvigoration of the ATF and the appointment of a Framework Travel Plan Co-ordinator, both of which will play a key role in the success of future Travel Plans.

16 CONCLUSIONS

16.1.1 This Transport Assessment has been prepared to support the proposed expansion of London Luton Airport which will take the overall passenger capacity from 18 mppa to 32 mppa.

16.1.2 The Transport Assessment forms part of a suit of documents alongside the **SAS [TR020001/APP/7.12]**, the **FTP [TR020001/APP/7.13]** and **Green Controlled Growth Framework [TR020001/APP/7.08]** which consider how the airport can grow to meet forecast passenger demand whilst at the same time limiting its impacts on both the local community and wider surface access network.

16.1.3 The rate of growth of the airport as well as changes in background travel demand cannot be known with certainty at this moment in time, particularly when taking into account the impact of the Covid-19 pandemic, the subsequent on-going recovery and associated changes in travel behaviour which have yet to establish any normal or new normal patterns. As such, this Transport Assessment has considered the infrastructure required to meet the phased expansion of the airport to meet different levels of passenger throughputs assumed to be achieved at fixed points in time. To ensure that the impacts of the Proposed Development have been robustly tested, conservative estimates of the growth in sustainable transport have been assumed. In reality, the airport will grow, and this growth will be continuously monitored through the mechanisms set out within the **SAS [TR020001/APP/7.12]**, the **FTP [TR020001/APP/7.13]** and **Green Controlled Growth Framework [TR020001/APP/7.08]** and mitigation measures implemented as and when required.

16.1.4 The growth of the airport will require the construction of a second terminal building and substantial supporting infrastructure including new terminal airport forecourt area, additional car parking and the construction of the AAR. Whilst the construction of these works will generate additional temporary traffic movements, the construction will be managed through the implementation of:

a. Code of Construction Practice (**Appendix 4.2** of the ES **[TR020001/APP/5.02]**);

b. Construction Traffic Management Plan (**Appendix 18.3** of the ES **[TR020001/APP/5.02]**); and

c. Construction Workers Travel Plan (**Appendix 18.4** of the ES **[TR020001/APP/5.02]**).

16.1.5 The main access route for construction will be via the M1 motorway and this Transport Assessment has shown that the construction of these works will have an impact on the surrounding highway network however this is not expected to be substantial.

16.1.6 The Transport Assessment has also considered the future baseline conditions on the transport network. Extensive traffic modelling has been undertaken using both strategic transport modelling in the form of the CBLTM-LTN, which considers the traffic and transport conditions on the wider transport network and operational modelling in and around the airport, where the impacts are expected to be the

greatest, and in localised areas where localised issues have been identified by the local highway authorities.

16.1.7 The Transport Assessment has shown that, even in the absence of the Proposed Development, traffic growth in and around the area will result in an increase in congestion and delay and the need for additional transport infrastructure including on the Vauxhall Way corridor and on the M1 motorway and M1 Junction 10.

16.1.8 Whilst it is the ambition to grow the airport with an ever increasing focus on sustainable travel through the **SAS [TR020001/APP/7.12]**, the **FTP [TR020001/APP/7.13]** and **Green Controlled Growth Framework [TR020001/APP/7.08]**, the Proposed Development will increase passenger demand for surface access travel over and above the future baseline conditions. The Transport Assessment has shown that whilst passenger throughput at the airport will increase by 77.8% (from 18 mppa to 32 mppa), the network peak hour surface access vehicle trips will increase by 50.5% in the AM peak hour (from 1,800 vehicles an hour to 2,709 vehicles an hour) and 51.1% in the AM peak hour (from 1,579 vehicles an hour to 2,386 vehicles an hour).

16.1.9 In the absence of any associated mitigation measures, this increase in traffic demand would further add to the future baseline congestion and delay on the transport network. The Proposed Development therefore includes a package of off-site highway mitigation measures which have been developed and comprehensively tested in both the strategic and operation modelling for three assessment phases of the development. The assessment has shown that the impacts from the Proposed Development and mitigations included would not have a significant adverse impact on the operation of the highway network in the local or wider area.

16.1.10 Whilst a comprehensive approach to modelling has been undertaken, it is recognised that there can be some uncertainties in forecasts methodologies. As such, a number of sensitivity scenario tests have been undertaken. These sensitivity tests have further shown that the mitigation strategy which supports the Proposed Development continues to successfully mitigate the impacts of the Proposed Development even when accounting for forecasting uncertainties.

16.1.11 It has been demonstrated in **Appendix I** that the mitigation strategy addresses the main impacts of the Proposed Development, which have been based on both the forecast changes to background transport use and also the expected growth of the airport and that the Proposed Development would not have a significant adverse impact on the safe operation of the highway network in the local or wider area.

GLOSSARY AND ABBREVIATIONS

Term	Definition
AAR	Airport Access Road
ACC	Airport Consultative Committees
AECF	Airport Employers Community Forum
AMR	Annual Monitoring Reports
ANPR	Automatic Number Plate Recognition
AONB	Area of Outstanding Natural Beauty
APF	Aviation Policy Framework
ARCADY	Assessment of Roundabout Capacity And DelaY
ASAS	Airport Surface Access Strategy
ATF	Airport Transport Forum
ATM	Air Transport Movements
BW	Bridleway
CAA	Civil Aviation Authority
CBC	Central Bedfordshire Council
CBLTM	Central Bedfordshire and Luton Transport Model
CBLTM-LTN	Central Bedfordshire and Luton Transport Model-Luton Airport
CoCP	Code of Construction Practice
CPAR	Century Park Access Road
CTMP	Construction Traffic Management Plan
CWS	County Wildlife Site
CWTP	Construction Workers Travel Plan
DCO	Development Consent Order
DfT	Department for Transport
DLR	Docklands Light Railway
EB	Eastbound
EIA	Environmental Impact Assessment
EMR	East Midlands Railway
ES	Environmental Statement
ESG	Environmental Scrutiny Group
EV	Electric Vehicle
EWR	East West Rail
FP	Footpath
FTP	Framework Travel Plan
Full TRIMMA	Full Transport Related Impacts Monitoring and Mitigation Approach

GCG	Green Controlled Growth
GHG	Greenhouse Gases
GHP	Green Horizons Park
GTR	Govia Thameslink Railway
HCC	Hertfordshire County Council
HGV	Heavy Goods Vehicle
HLTP	Hertfordshire Local Transport Plan
KPI	Key Performance Indicator
LBC	Luton Borough Council
LGV	Light Goods Vehicle
LLACC	London Luton Airport Consultative Committee
LLAOL	London Luton Airport Operations Limited
LMVR	Local Model Validation Report
LoS	Level of Service
LT	Left Turn
LTP	Local Transport Plan
Luton DART	Luton Direct Air to Rail Transit
mppa	million passengers per annum
mph	Miles per Hour
MSCP	Multi Storey Car Park
MTCP	Mid Term Car Park
NB	Northbound
NCN	National Cycle Network
NCP	New Century Park
NH	National Highways (formerly Highways England)
NPPF	National Planning Policy Framework
NPSNN	National Policy Statement for National Networks
NSIP	Nationally Significant Infrastructure Project
ORR	Office of Rail and Road
Outline TRIMMA	Outline Transport Related Impacts Monitoring and Mitigation Approach
PEIR	Preliminary Environmental Information Report
PICADY	Priority Intersection Capacity and Delay
PHV	Private Hire Vehicle
PIC	Personal Injury Collisions
PPG	Planning Practice Guidance
PRoW	Public Rights of Way

PT	Public Transport
PTH	Public Transport Hub
PCU	Passenger Car Unit
Queue (m)	Queue (metres)
RFC	Ratio of Flow to Capacity
RIS2	Road Investment Strategy 2
RT	Right Turn
SAS	Surface Access Strategy
SB	Southbound
SEMLEP	South East Midlands Local Enterprise Partnership
SRN	Strategic Road Network
STCP	Short Term Car Park
T1	Existing Terminal
T2	New Terminal
TAG	Transport Analysis Guidance
TEMPro	Trip End Model Presentation Program
TP	Travel Plan
TPC	Travel Plan Coordinator
V/C	Volume to Capacity Ratios
Veh	Vehicle
WB	Westbound
YA	York Aviation

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