

# Technical note:

## London Luton Airport –Public Inquiry

### Supporting Information

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## 1. Introduction

### 1.1 Purpose of the Technical Note

The purpose of this technical note is to provide supporting information requested during the public inquiry in relation to the planning application for the London Luton Airport expansion from 18mppa to 19mppa to supplement the Transport Assessment (TA) (CD1.12) and Travel Plan (TP) (CD1.13)<sup>1</sup> reports (41431-WOOD-XX-XX-RP-OT-0002\_S3\_P04 and 41431-WOOD-XX-XX-RP-OT-0001\_S3\_P04/P05) and the Proof of Evidence provided to the inquiry by Mr Ojeil.

### 1.2 Scope

The scope of this Technical Note (TN) is as follows:

- Section 2 – Transport Assessment junction location
- Section 3 – Trip Distribution
- Section 4 – Traffic Flow Diagrams
- Section 5 – Junction Capacity Analysis
- Section 6 - Car Parking
- Section 7- Additional Information

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## 2. TA Junction Location

### 2.1 Study Area

During the public inquiry the Panel asked that the location of the junctions assessed for current network performance in Chapter 6 of the TA be clarified by showing a wider context/ area of the road network. This information is shown in Figure 2-1- Figure 2-10 below.

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<sup>1</sup> Subject to updates to be submitted to the inquiry at the same time as this Technical Note

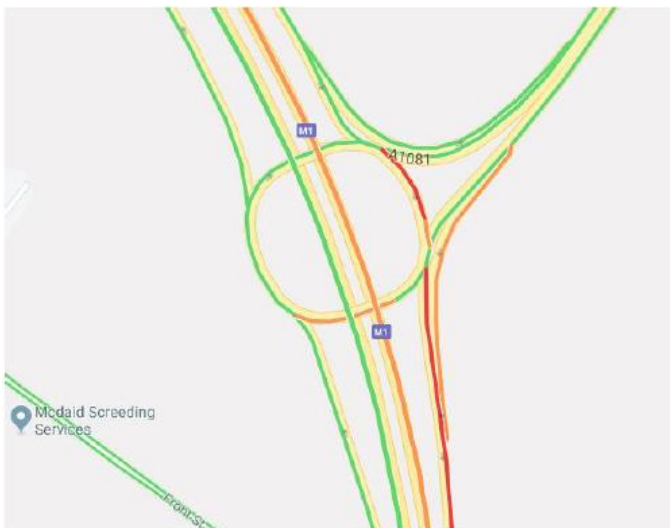
**Figure 2-1 TA Junction Location**



Source: Google Maps Traffic

Figures 2.2 to 2.8 show individual junctions assessed in the TA report.

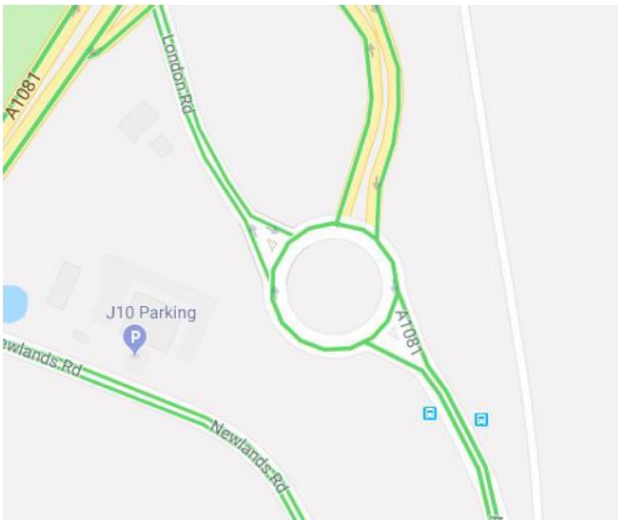
**Figure 2-2 Junction 1 (J1) - M1/A1081 roundabout junction (TA Figure 6.1)**



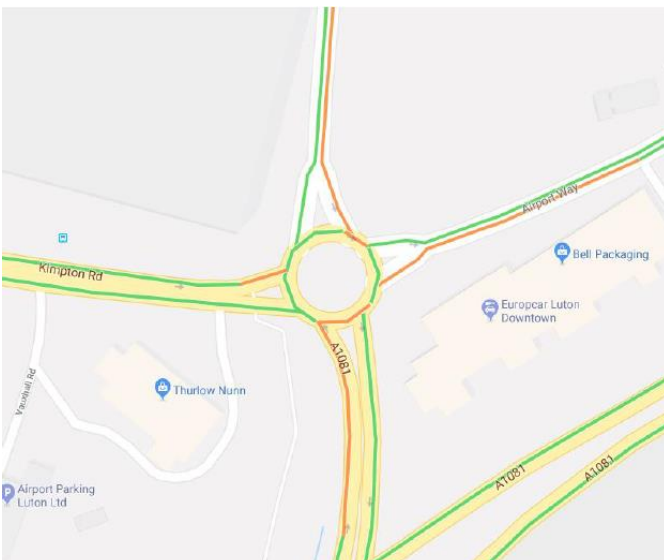
**Figure 2-3 Junction 2 (J2) – London Road North/A1081 junction (TA Figure 6.2)**



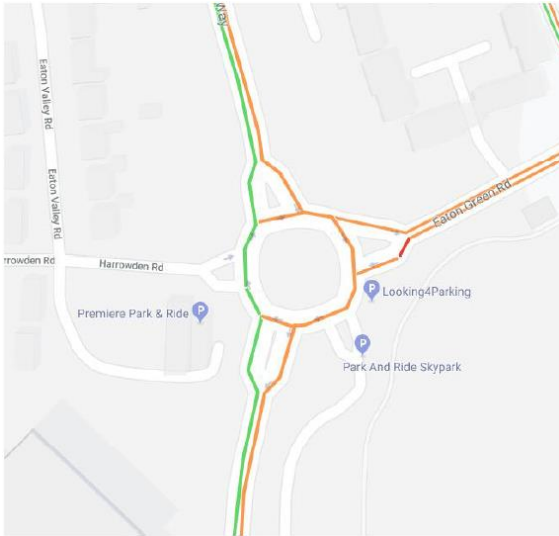
**Figure 2-4 Junction 3 (J3) – London Road South/A1081 junction (TA Figure 6.3)**



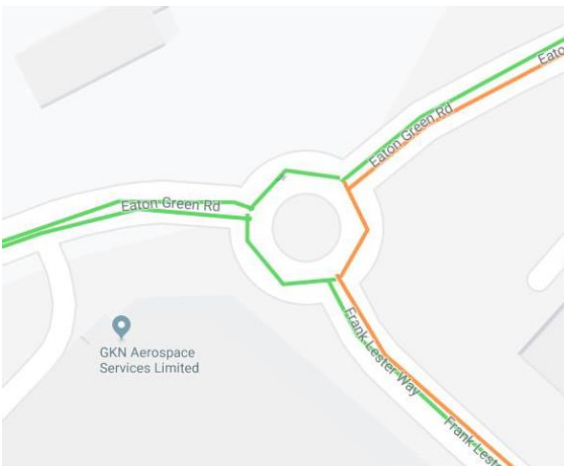
**Figure 2-5 Junction 12 (J12) – A505 Vauxhall Way/ A1081/ Airport Way junction (TA Figure 6.4)**



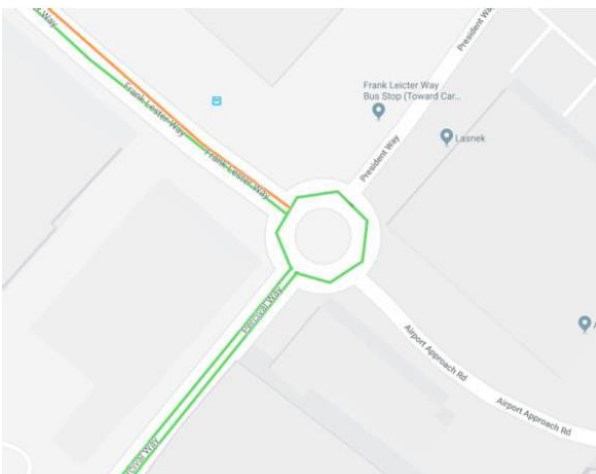
**Figure 2-6 Junction 13 (J13) – A505 Vauxhall Way/ Eaton Green junction (TA Figure 6.5)**



**Figure 2-7 Junction 14 (J14) – Eaton Green Road/ Frank Lester Way junction (TA Figure 6.6)**

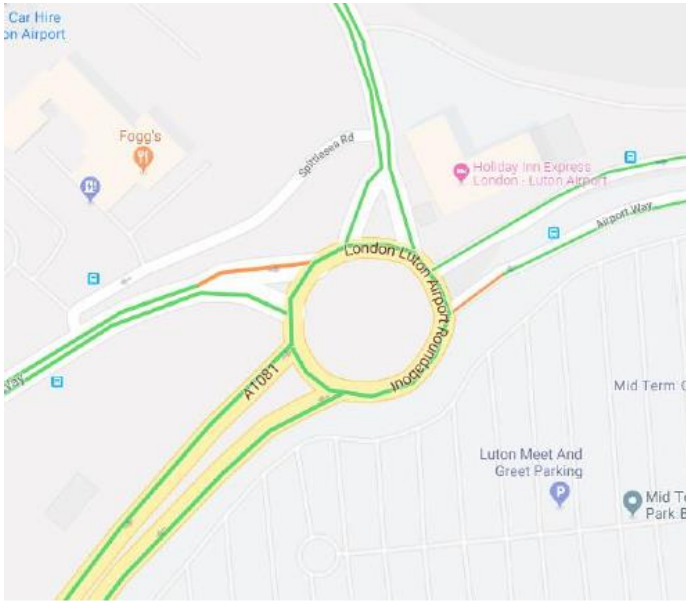


**Figure 2-8 Junction 15 (J15) – Frank Lester Way/ Percival/ President Way junction (TA Figure 6.5)**

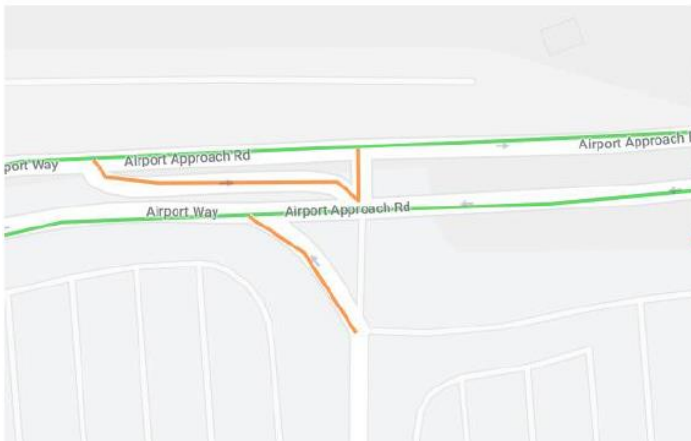




**Figure 2-9 Junction 21 (J21) – A1081/ A505/ Percival Way (TA Figure 6.8)**



**Figure 2-10 Junction 22 (J22) – Airport Way/ Mid-Stay Car Park junction (TA Figure 6.9)**



### 3. Trip Distribution

During the public inquiry, additional information was requested from the Panel about the methodology used to estimate airport passenger traffic distribution on the network, in particular in relation to the assumption used that 85% of traffic generated by the airport accesses the airport via the M1/A1081. The reasons why this assumption was used in the methodology agreed with the local highway authority is explained in section 3.1 below with a more detailed technical note provided at Appendix A.

#### 3.1 ARUP's Airport Passenger Traffic Split Calculation Methodology

A summary of ARUP's methodology is provided as follows. The data used for establishing passenger traffic distribution was based on the 2016 CAA data from York Aviation. This provided passenger numbers, aggregated by postcode districts across the country and updated forecast passenger numbers for the do-something scenario. The 19mppa with development forecast was developed in January 2020. The data relating to postcode districts was converted into GIS, with the postcode areas assigned with the most likely route to the Airport identified. GIS software was then used to calculate the assignment which resulted in a dataset showing a list of postcode districts for each main route and which then provided the relevant arrival/departure profile used in the traffic modelling.

The data showed based on actual data for 2016 that the majority of passengers (85%) arrive via the M1/A1081 corridor. These passengers were then split 54% to/from the M1 South and 31% to/from the M1 North to reflect the actual catchment to passenger trips from the south. The full Airport Passenger Traffic Split Calculation Methodology is included in Appendix A to this note.

The Methodology that has been used is therefore considered robust and based upon an empirical evidence base and it has been approved by the local highway authority and National Highways.

#### 3.2 CAA/ JT Analysis (Google Maps)

Given the question from the Inspectors about the 85% assumption of traffic using the M1/A1081 WSP has carried out additional analysis using 2019 CAA data and google maps. During the round table hearing on transport, the Inspectors asked a question about the methodology in light of the fact that the M1 is west of the Airport and CAA data states that 33% of trips to the Airport are from the East of England. A query was raised by the Inspector as to whether there was any discrepancy between the 85% assumption and the 33% of trips originating from the East of England. There is no such discrepancy and the correctness of the 85% assumption is confirmed by the additional analysis summarised below.

The 2019 CAA data we refer to is summarised in Table 3-1.

**Table 3-1 2019 CAA Trip Distribution**

Region	Luton	
	000's	%
East Midlands	1,193	6.9
<b>East of England</b>	<b>5,598</b>	<b>32.6</b>

Northeast	23	0.1
Northwest	73	0.4
Scotland	21	0.1
Southeast	9,222	53.7
Southwest	352	2.1
Wales	68	0.4
West Midlands	488	2.8
Yorkshire and the Humber	125	0.7
Northern Ireland & Eire	0	0

Figure 3-1 illustrates the individual counties and districts which are contained within the East of England. *Error! Not a valid bookmark self-reference.*

**Figure 3-1 East of England counties and districts**

Map	Ceremonial county	Shire county / unitary	Districts
	Essex	1. Thurrock U.A.	
		2. Southend-on-Sea U.A.	
		3. Essex	a) Harlow, b) Epping Forest, c) Brentwood, d) Basildon, e) Castle Point, f) Rochford, g) Maldon, h) Chelmsford, i) Uttlesford, j) Braintree, k) Colchester, l) Tendring
	4. Hertfordshire		a) Three Rivers, b) Watford, c) Hertsmere, d) Welwyn Hatfield, e) Broxbourne, f) East Hertfordshire, g) Stevenage, h) North Hertfordshire, i) St Albans, j) Dacorum
	Bedfordshire	5. Luton U.A.	
		6. Bedford U.A.	
		7. Central Bedfordshire U.A.	
	Cambridgeshire	8. Cambridgeshire	a) Cambridge, b) South Cambridgeshire, c) Huntingdonshire, d) Fenland, e) East Cambridgeshire
		9. Peterborough U.A.	
	10. Norfolk		a) Norwich, b) South Norfolk, c) Great Yarmouth, d) Broadland, e) North Norfolk, f) Breckland, g) King's Lynn and West Norfolk
	11. Suffolk		a) Ipswich, b) East Suffolk, c) Babergh, d) Mid Suffolk, e) West Suffolk

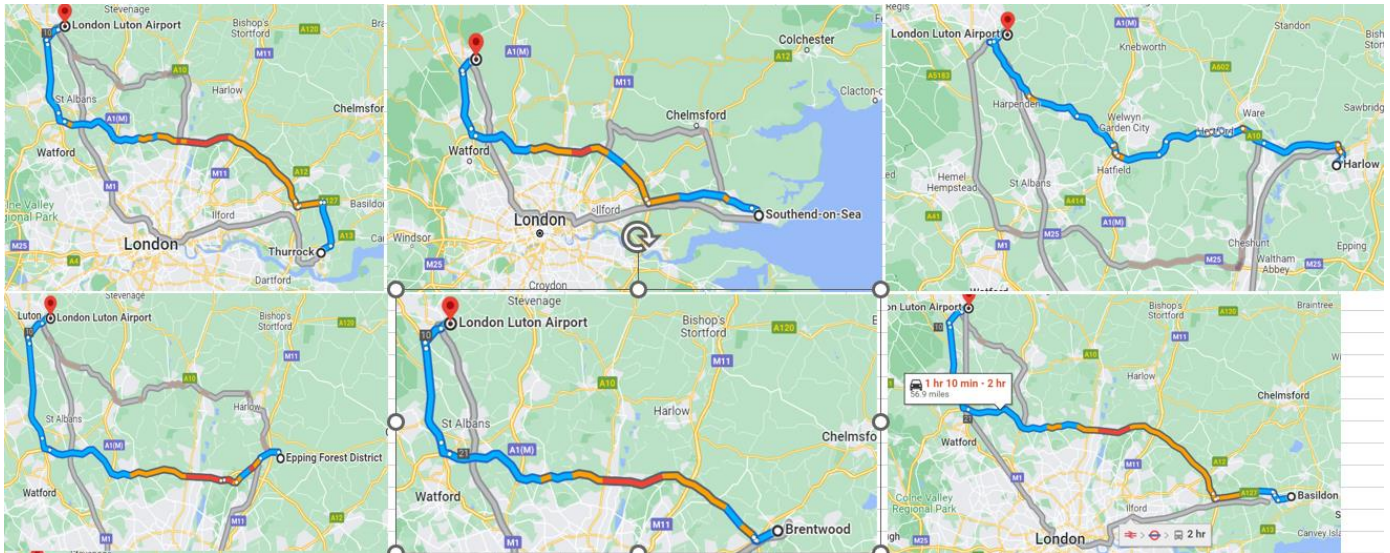
Source: Wikipedia

For each of the districts WSP has assessed the fastest route to the airport using google maps (7:30am, typical weekday). The extraction of the routings for Essex is shown in Figure 3-2- Figure 3-4. The same assessment was carried out for all counties in the East of England, as well as East Midlands, West Midlands, South- East and South-West<sup>2</sup>.

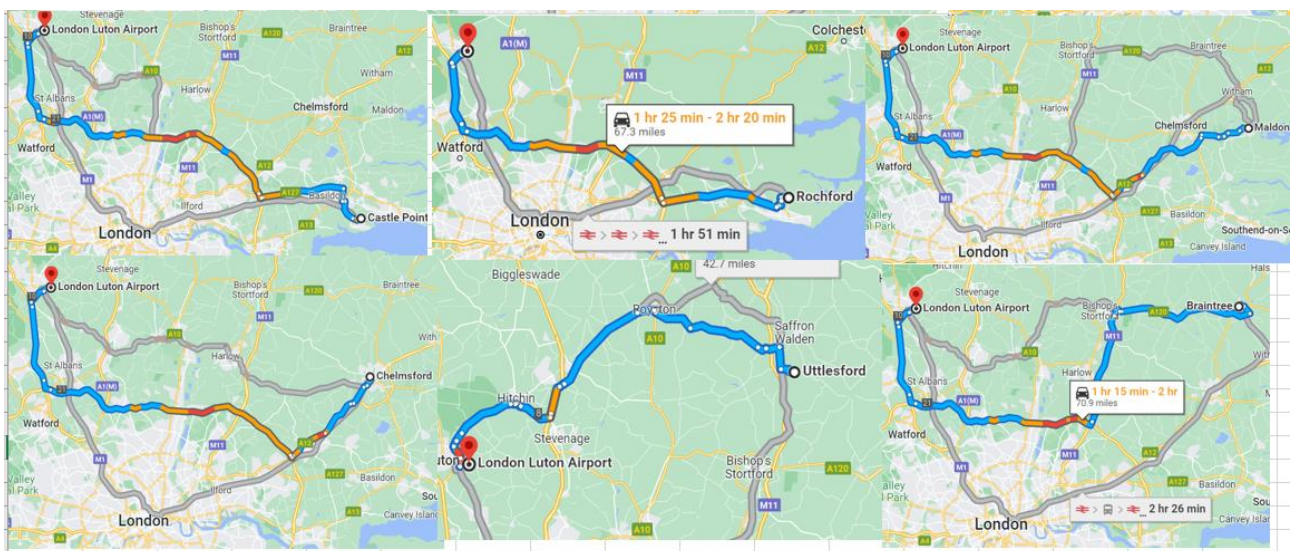
<sup>2</sup> The results of the Google Maps analysis run to over 80 pages of images and therefore it is disproportionate to put all of them before the Inquiry, but they can be provided if required.



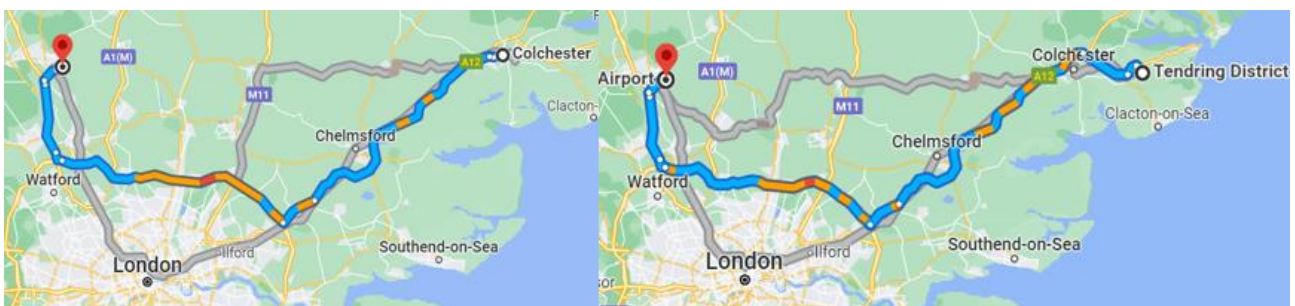
**Figure 3-2 East of England fastest routes to Luton Airport (Thurrock, Southend-on-Sea, Harlow, Epping Forest, Brentwood, Basildon)**



**Figure 3-3 East of England fastest routes to Luton Airport (Castle Point, Rochford, Maldon, Chelmsford, Uttlesford, Braintree)**



**Figure 3-4 East of England fastest routes to Luton Airport (Colchester, Tendring)**





**Table 3-2 CAA/ Google maps routing analysis**

Region	% Districts that use M1
East of England	51
East Midlands	100
South-East	100
South-West	100
West Midlands	100

A summary of the analysis that has been undertaken is shown in Table 3-2. It confirms that the vast majority of traffic travelling to Luton Airport would typically use the M1/ A1081 based on google map navigation during a typical peak period. For the East of England 51% of the trips (which represent 30% of overall trips) would be directed via the M1 despite the M1 being situated to the west of the Airport. On that basis the 85% figure used by ARUP and agreed by the local highway authority is confirmed to be appropriate and reflects the road network arrangements.

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## 4. Traffic Flow Diagrams

During the public inquiry additional information was requested by the Inspectors on link and junction traffic flows in the study area for 18mppa and 19mppa in the AM and PM peaks, as well as Annual Average Daily Traffic Flows (AADTs) to show the absolute and % difference in traffic flows between the with and without development scenarios and to supplement information provided by Mr Ojeil in his Proof of Evidence (APP-W5.1).

Traffic flows shown in the diagrams below were based on 2017 traffic flows and traffic flow distribution carried out by Arup. The flows were then factored up to reflect anticipated traffic flows in 2025. The AADT flows were estimated using a DfT conversion factor to allow for daily uplift. The reason to use this data set was to ensure that it is consistent with the traffic flows used in other EIA assessments and that the assessment is presented for the forecast year 2025.

Key:

- **Red value** – 18mppa flows (background)
- **Blue value** – 19mppa flows (background + traffic generated by airport)
- **Green value** – Absolute difference between 19mppa and 18mppa flows
- **Black value** – % difference between 19mppa and 18mppa flows

Where there is no % difference shown it is because there is no change in flows between 18mppa and 19mppa.

**Figure 4.2: Junction 1-M1/A1081 AM Peak**



**Figure 4.2: Junction 1-M1/A1081 PM Peak**





Figure 4.3: Junction 1-M1/A1081 AADT



Figure 4.4: Junction 2 - London Road North/A1081 AM peak





Figure 4.5: Junction 2 - London Road North/A1081 PM peak



Figure 4.6: Junction 2 - London Road North/A1081 AADT





Figure 4.7: Junction 3 - London Road South/A1081 AM peak



Figure 4.8: Junction 3 - London Road South/A1081 PM peak





Figure 4.9: Junction 3 - London Road South/A1081 AADT



Figure 4.10: Junction 12 - A505 Vauxhall Way/ A1081/ Airport Way AM Peak

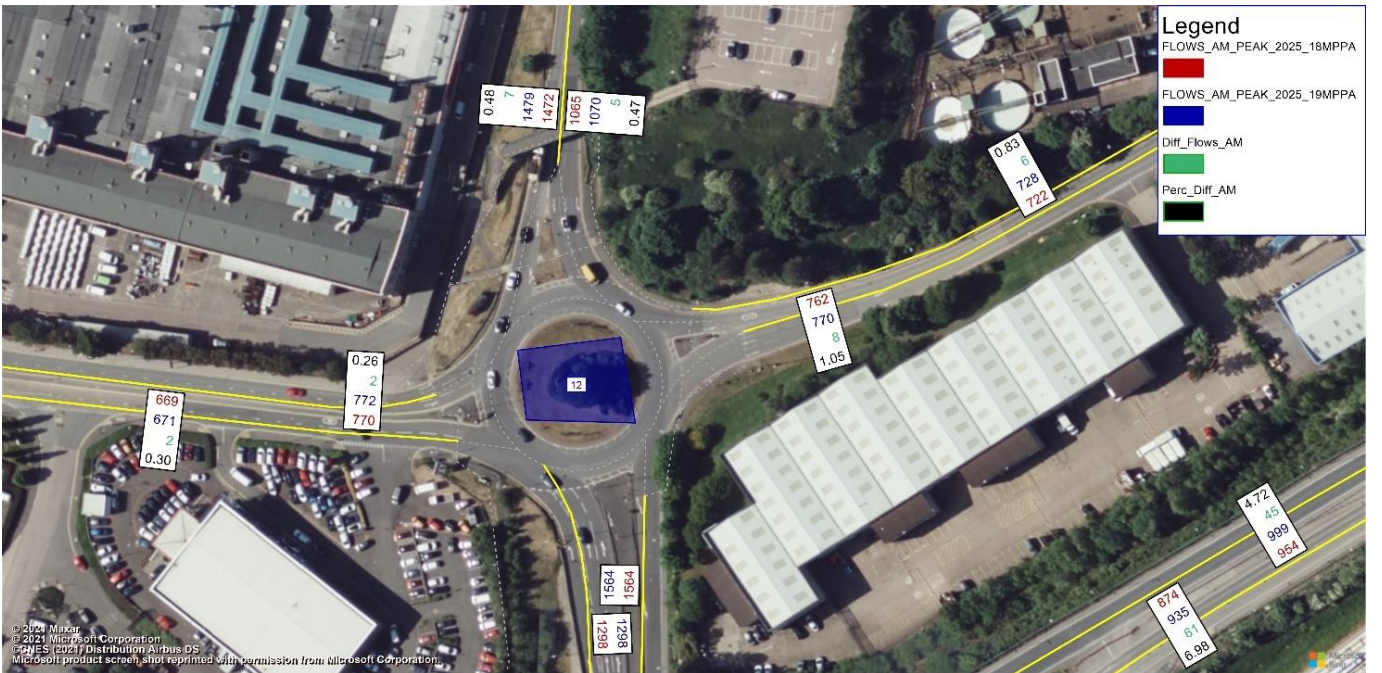




Figure 4.11: Junction 12 - A505 Vauxhall Way/ A1081/ Airport Way PM Peak

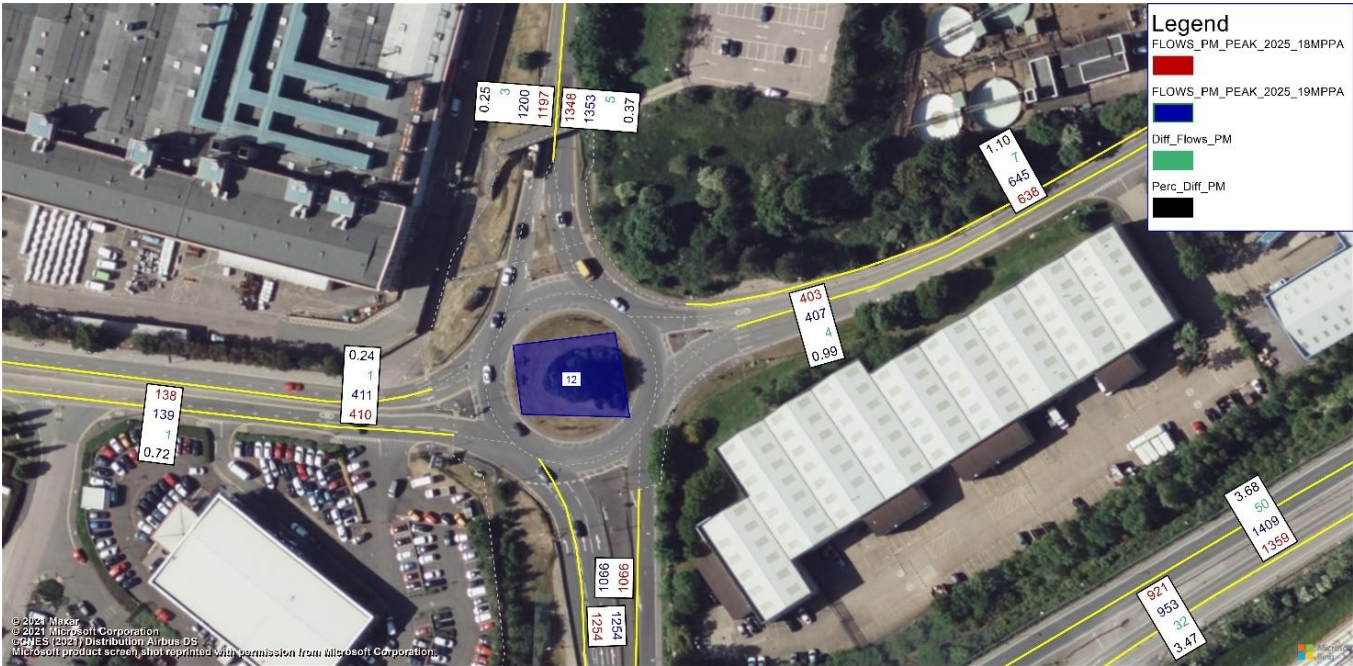


Figure 4.12: Junction 12 - A505 Vauxhall Way/ A1081/ Airport Way AADT





Figure 4.13: Junction 13 - A505 Vauxhall Way/ Eaton Green AM Peak

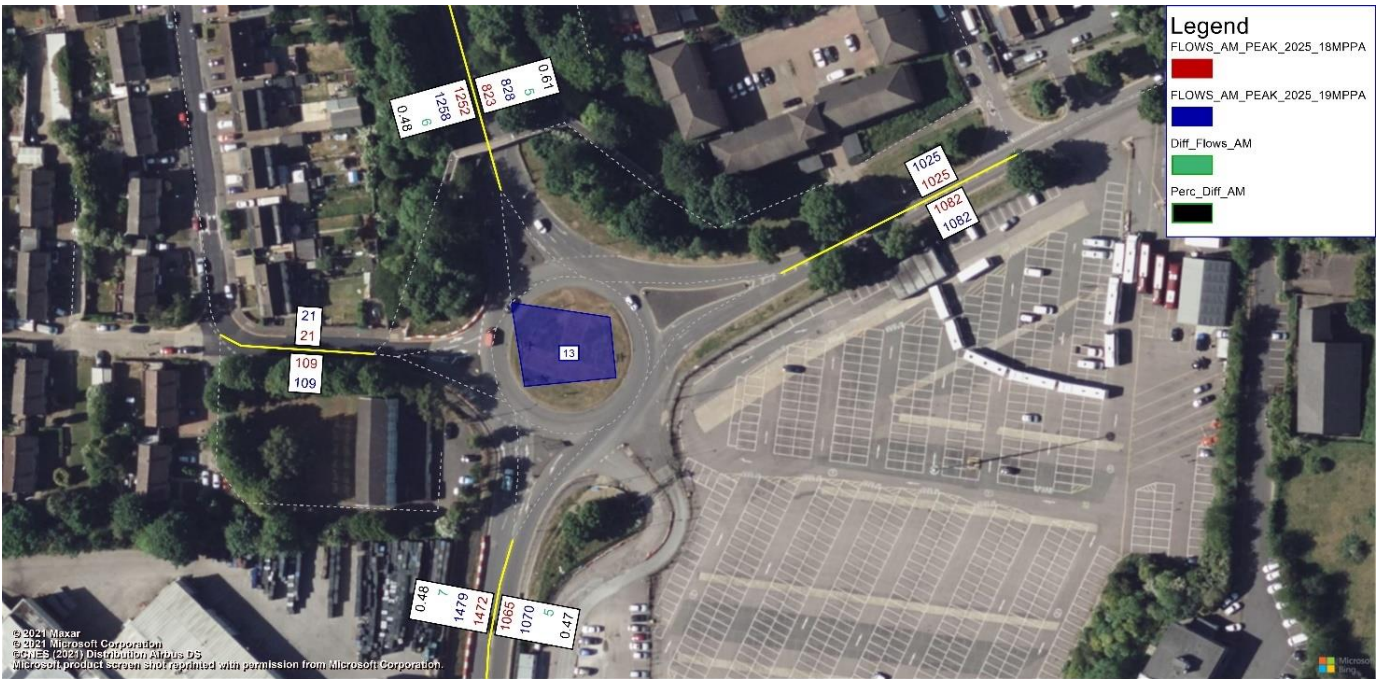


Figure 4.14: Junction 13 - A505 Vauxhall Way/ Eaton Green PM Peak

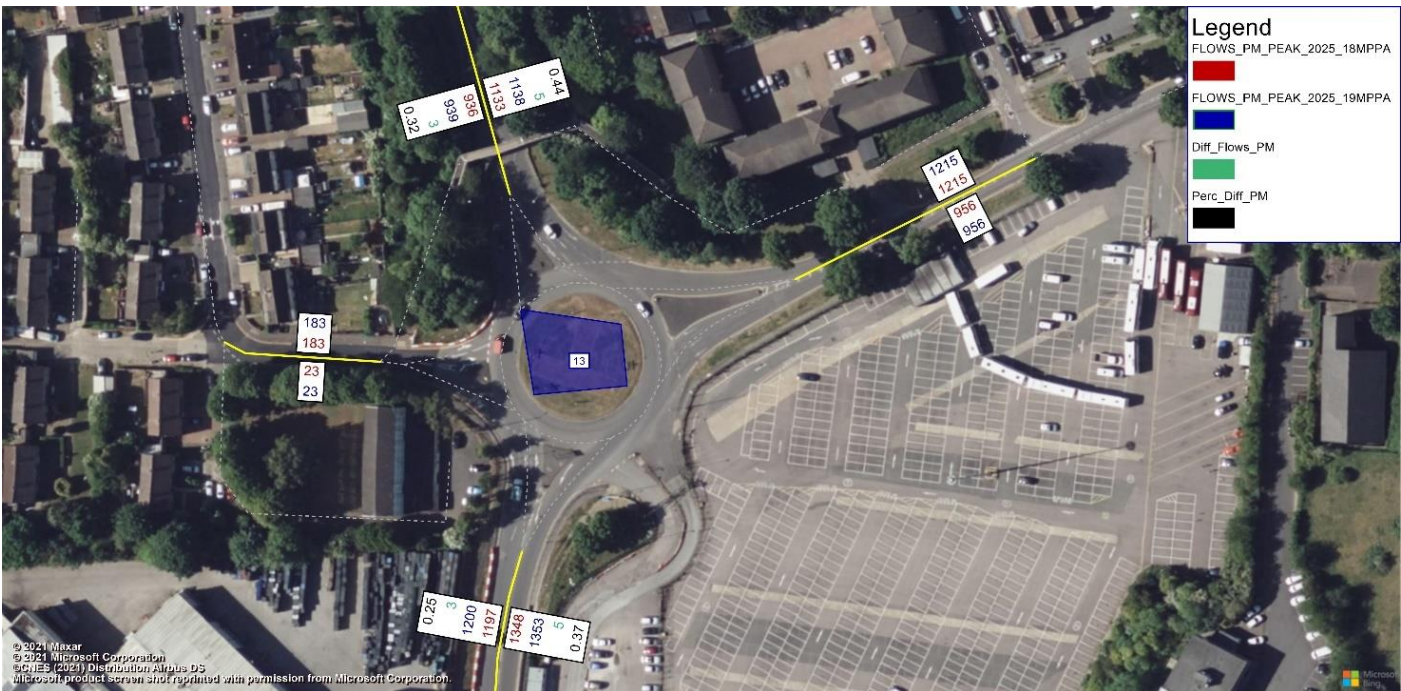




Figure 4.15: Junction 13 - A505 Vauxhall Way/ Eaton Green AADT

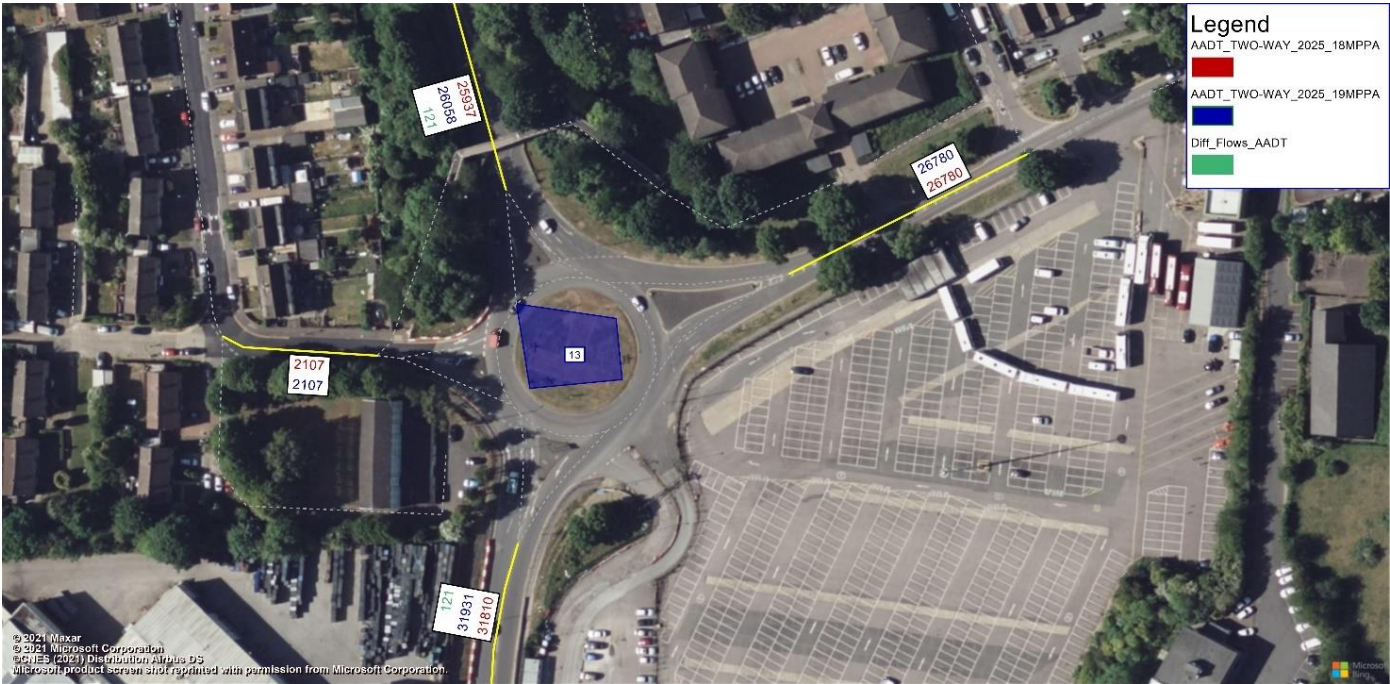


Figure 4.16: Junction 14 - Eaton Green Road/ Frank Lester Way AM peak

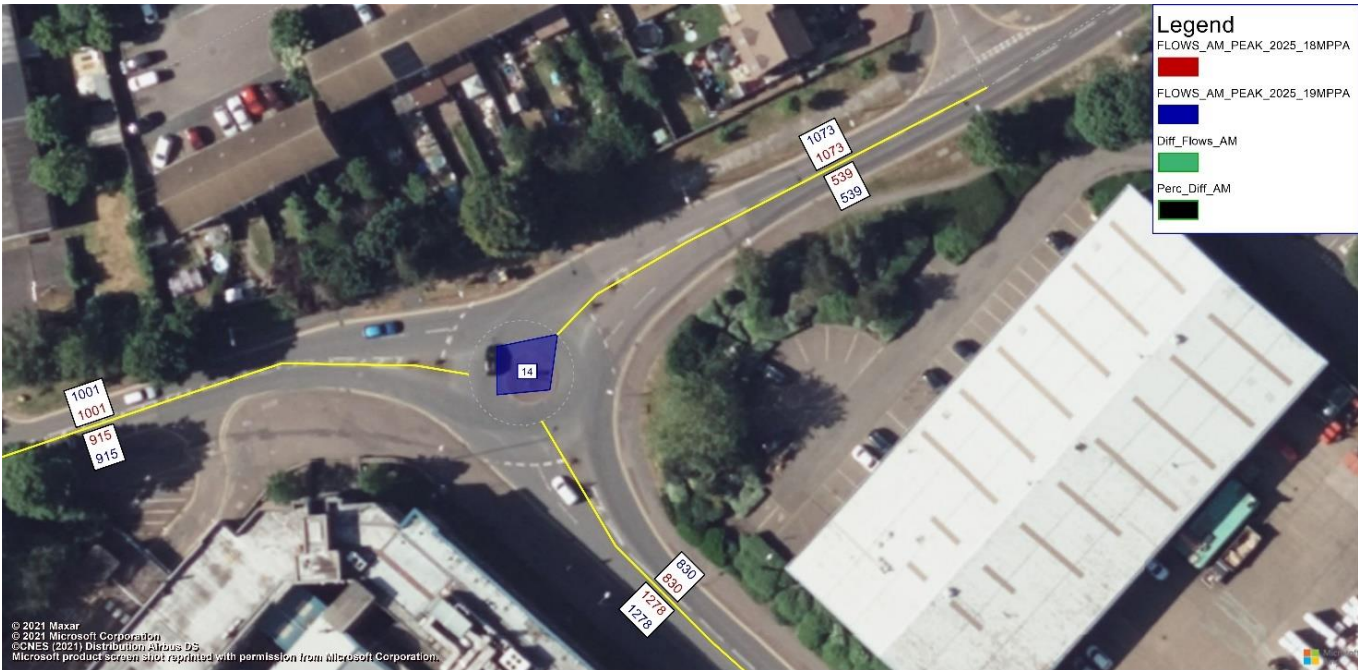




Figure 4.17: Junction 14 - Eaton Green Road/ Frank Lester Way PM peak

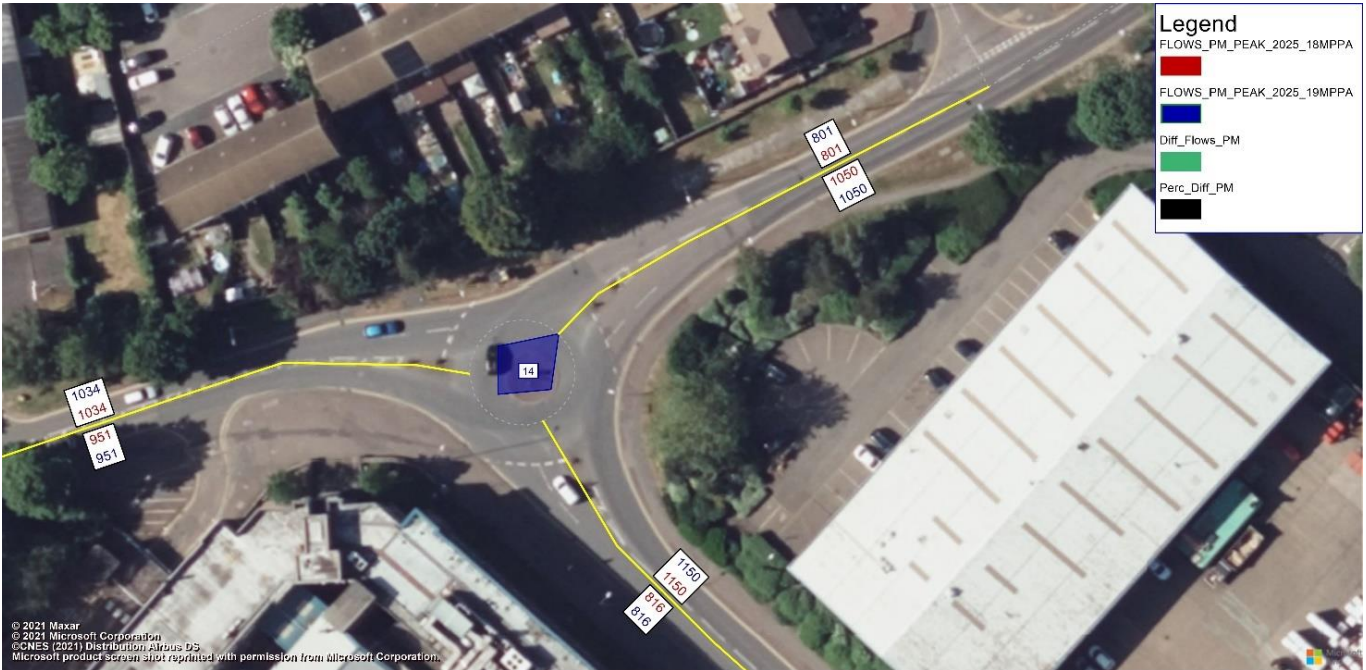
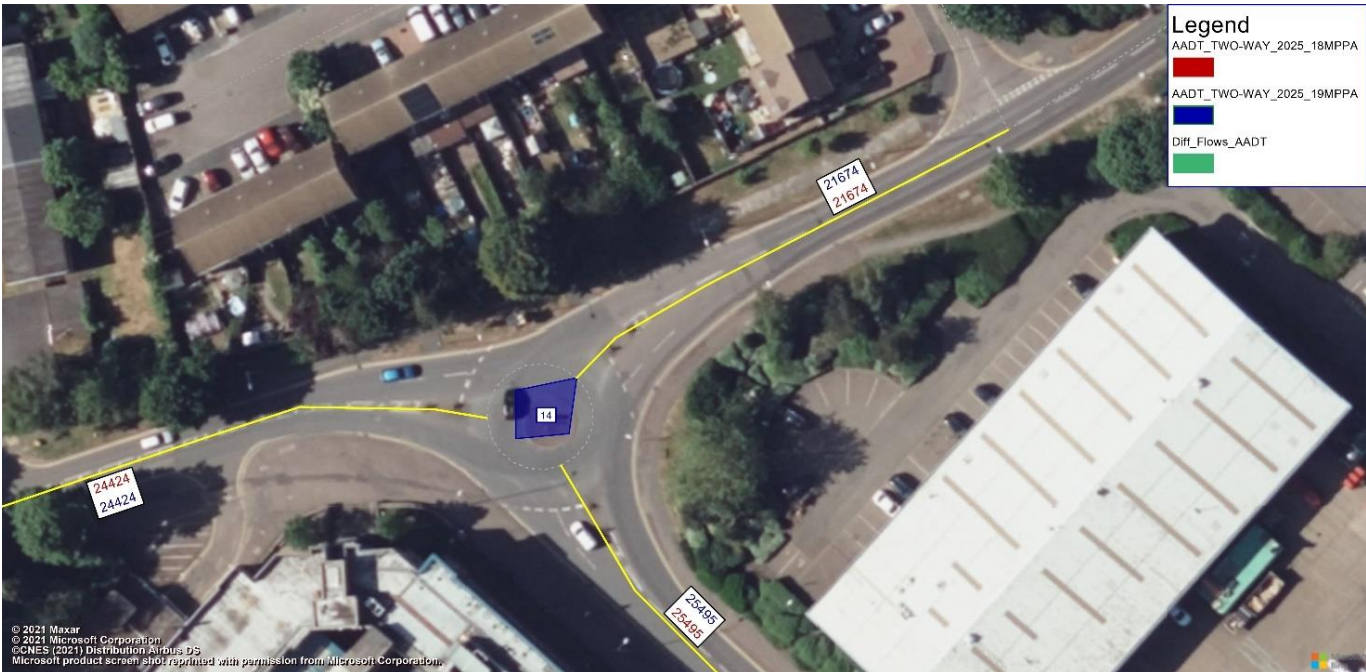


Figure 4.18: Junction 14 - Eaton Green Road/ Frank Lester Way AADT





Legend

- FLOWS\_AM\_PEAK\_2025\_18MPPA
- FLOWS\_AM\_PEAK\_2025\_19MPPA
- Diff\_Flows\_AM
- Perc\_Diff\_AM

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Figure 4.21: Junction 15 - Frank Lester Way/ Percival/ President Way AADT

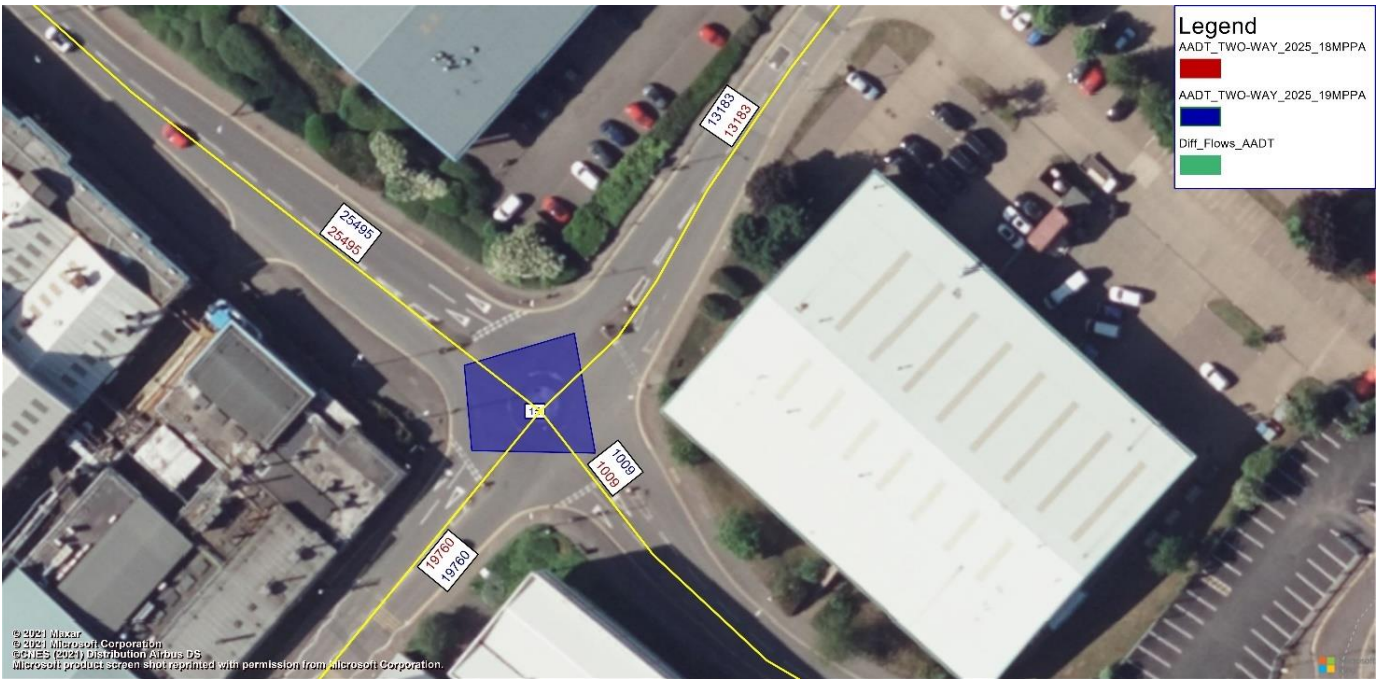


Figure 4.22: Junction 21- A1081/A505/Percival Way AM

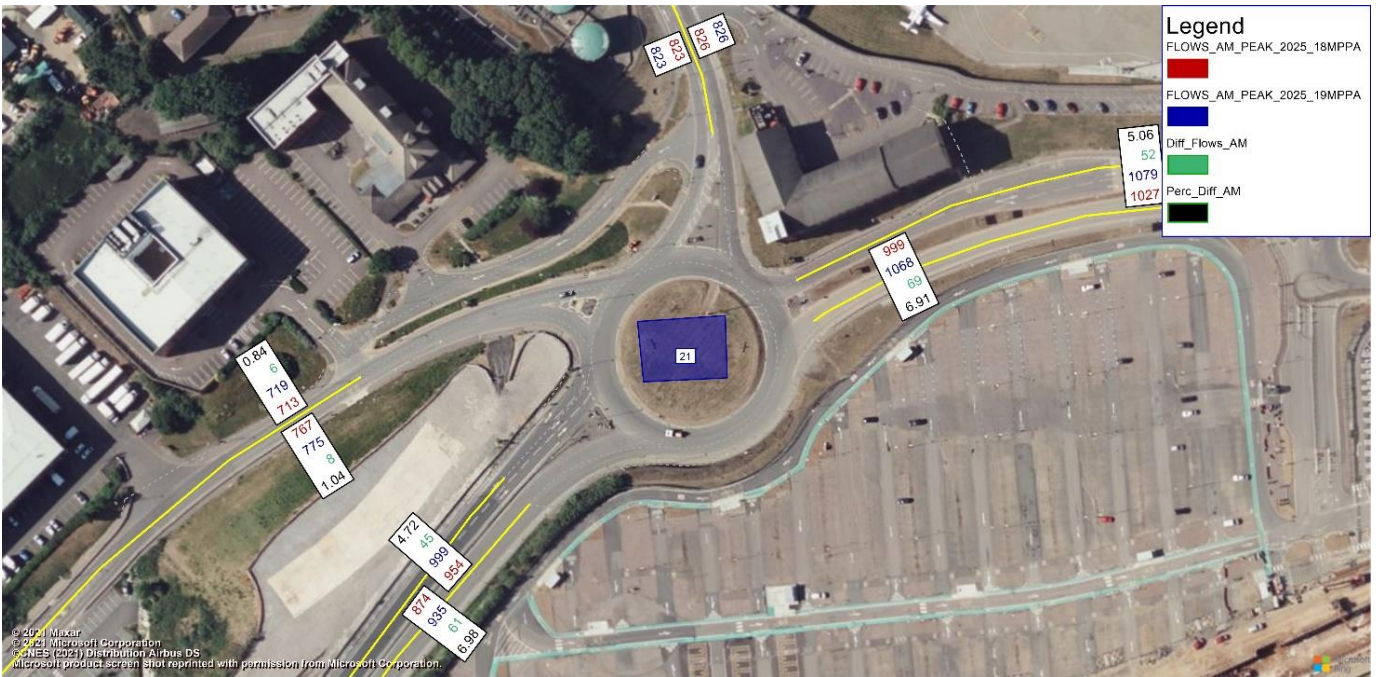




Figure 4.23: Junction 21- A1081/A505/Percival Way PM

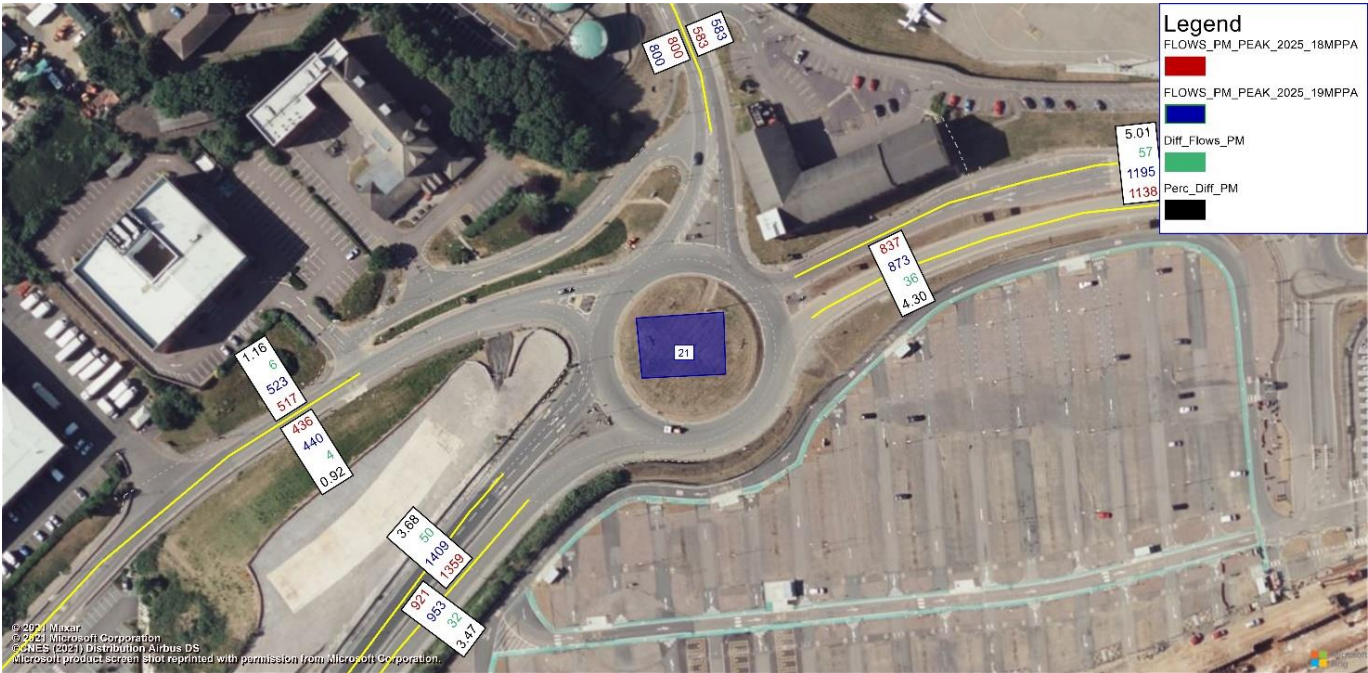


Figure 4.24: Junction 21- A1081/A505/Percival Way AADT

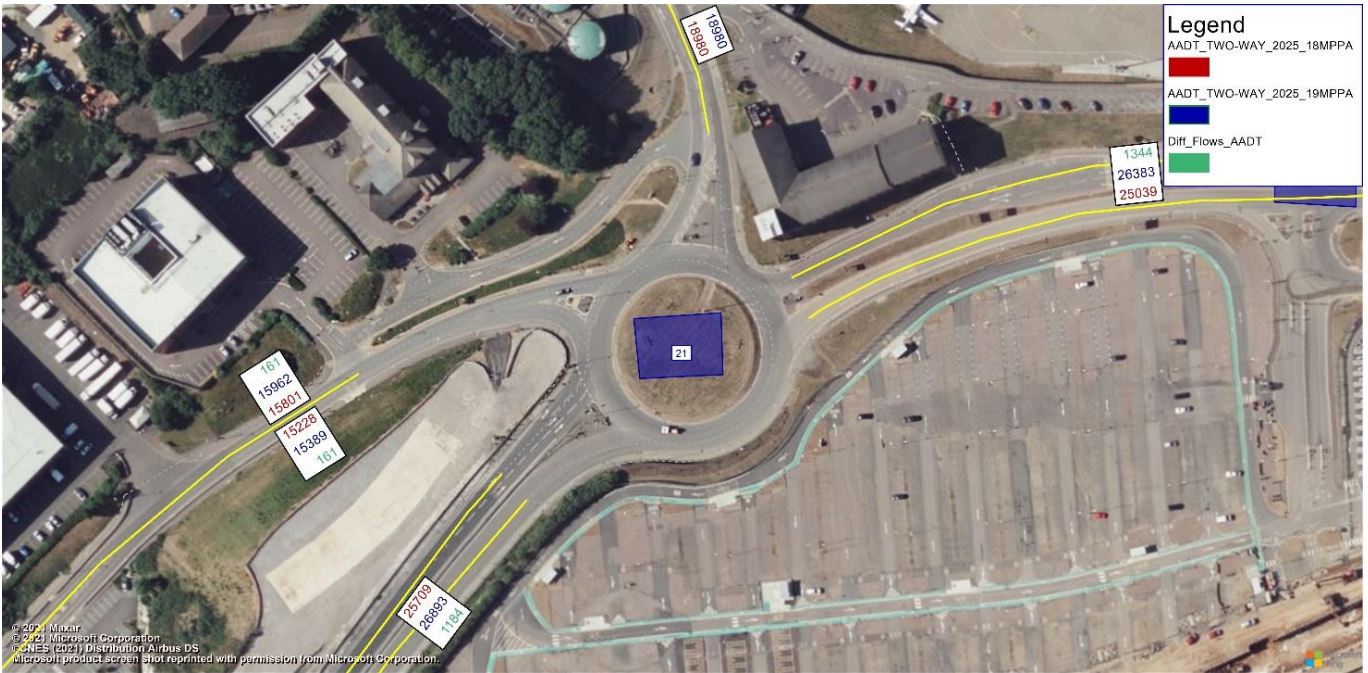




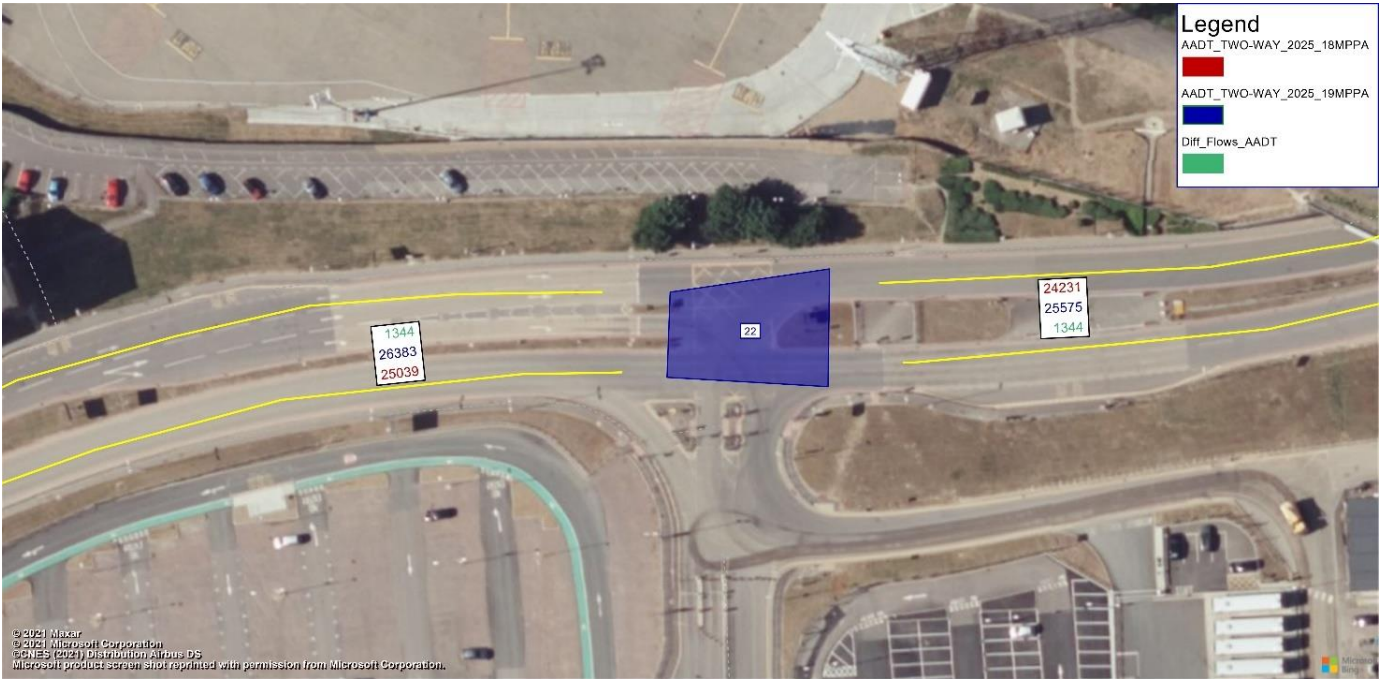
Figure 4.25: Junction 22 - Airport Way/ Mid-Stay Car Park AM peak



Figure 4.26: Junction 22 - Airport Way/ Mid-Stay Car Park PM peak



Figure 4.27: Junction 22 - Airport Way/ Mid-Stay Car Park AADT





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## **5. Junction Capacity Analysis**

### **5.1 Junction modelling results**

During the public inquiry a question was raised as to the absence of detailed junction modelling being carried out as part of the Transport Assessment.

As explained, it was not deemed necessary by the Applicant, the highway authority or National Highways to carry out that sort of detailed junction modelling due to the very low level of traffic flow increase resulting from the expansion to 19mppa. WSP liaised with National Highways and Luton Borough Council who provided their guidance on the level of analysis required which is in line with standard procedures adopted when negotiating and submitting a TA.

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## 6. Car Parking Capacity

### 6.1 Car Parking supply

During the public inquiry additional information was requested in relation to the Luton car parking capacity and occupancy.

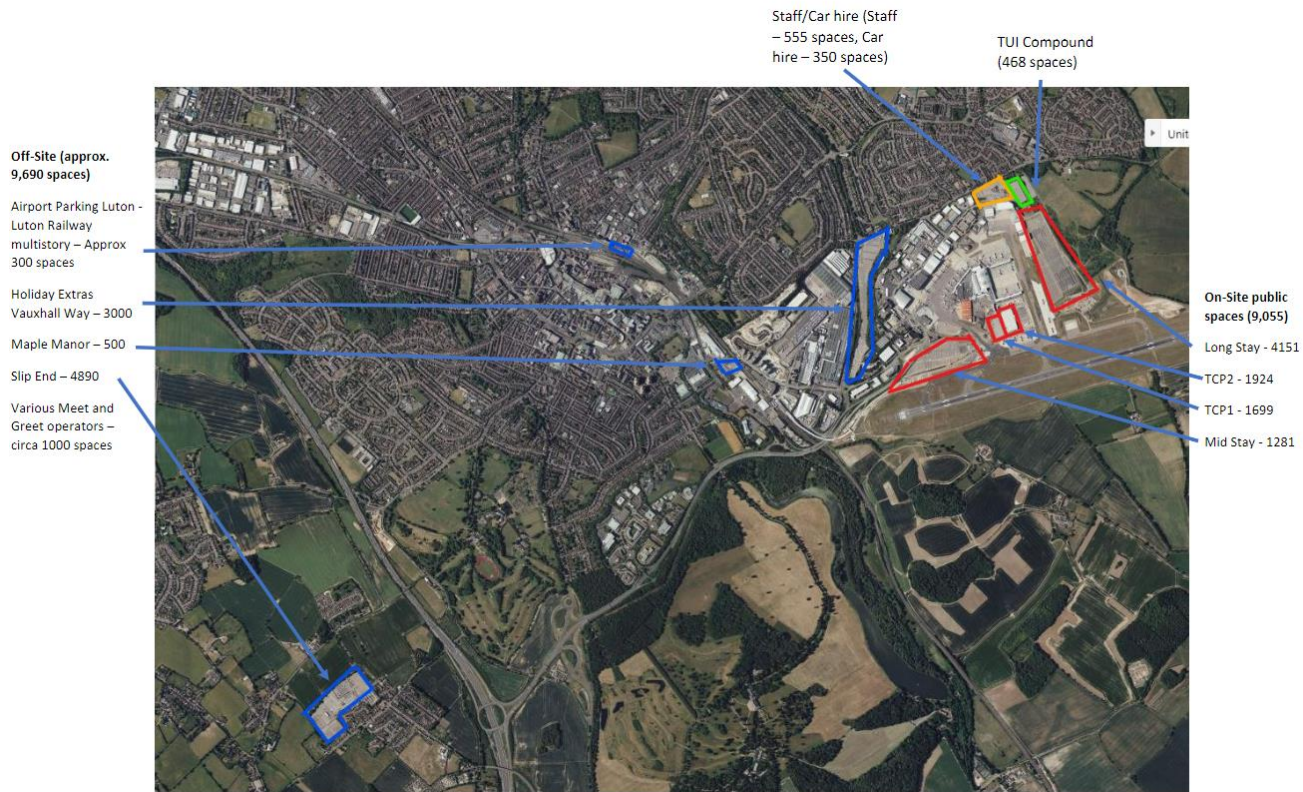
Public onsite car parking operated by LLAOL includes Long Stay (4,151 parking spaces), Mid-stay (1281), TCP1 (1,699), TCP2 (1,924). The total is 9,055 parking spaces. TCP2 opened in 2020 and created an additional 8% capacity.

Offsite there is public car parking which is operated by third parties. This totals around 9,690 spaces. Of these spaces, 1,500 have been added since 2019. These operators offer shuttle buses to and from the Airport. The car parks are:

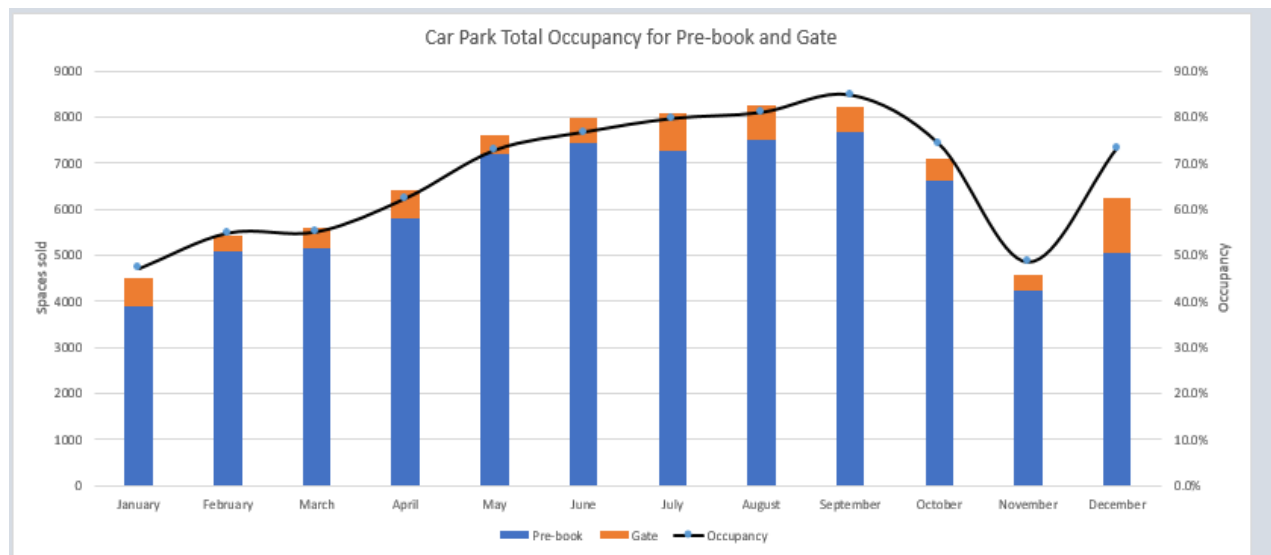
- Slip end – owned by Holiday extras. 4,890 spaces. No change since 2019
- Maple manor – 500 spaces.
- Vauxhall road – owned by Holiday extras circa 3,000 spaces. It is believed that this car park has added 1,200 spaces as of March 2021 as Holiday extras acquired the sub lease to a section of the Vauxhall car park.
- Various Meet and Greet operators – circa 1,000 spaces.
- Airport Parking Luton – self park and meet and greet. Opened in 2021 and has 300 spaces

Since 2019 total combined parking capacity has increased from 15,321 to 18,745 (+22.3%).

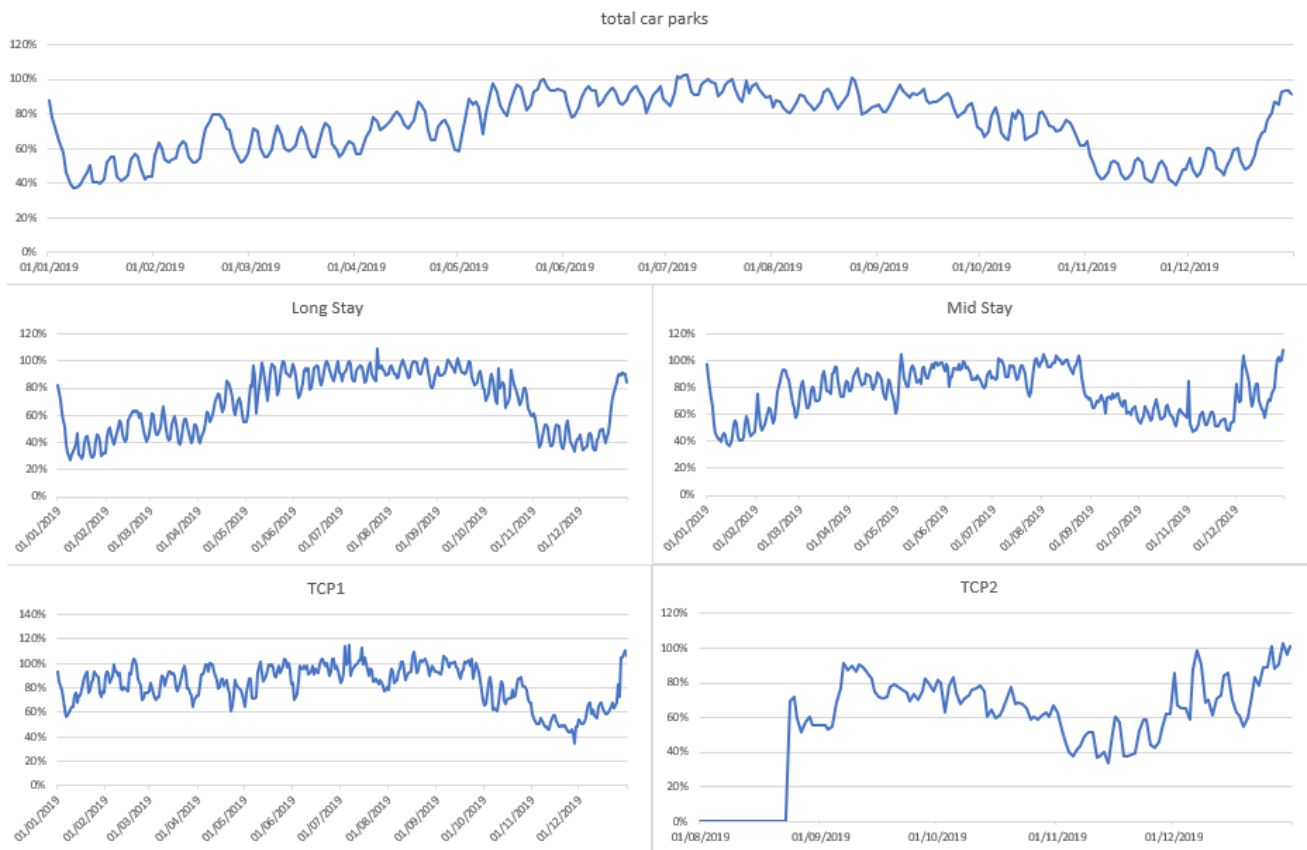
Of all passengers who drive, 37% typically park with off-site operators. Given the total capacity growth, and projected net reduction in car traffic the mode share targets will deliver, there is sufficient capacity to manage the remaining demand.



6.2 Parking Capacity

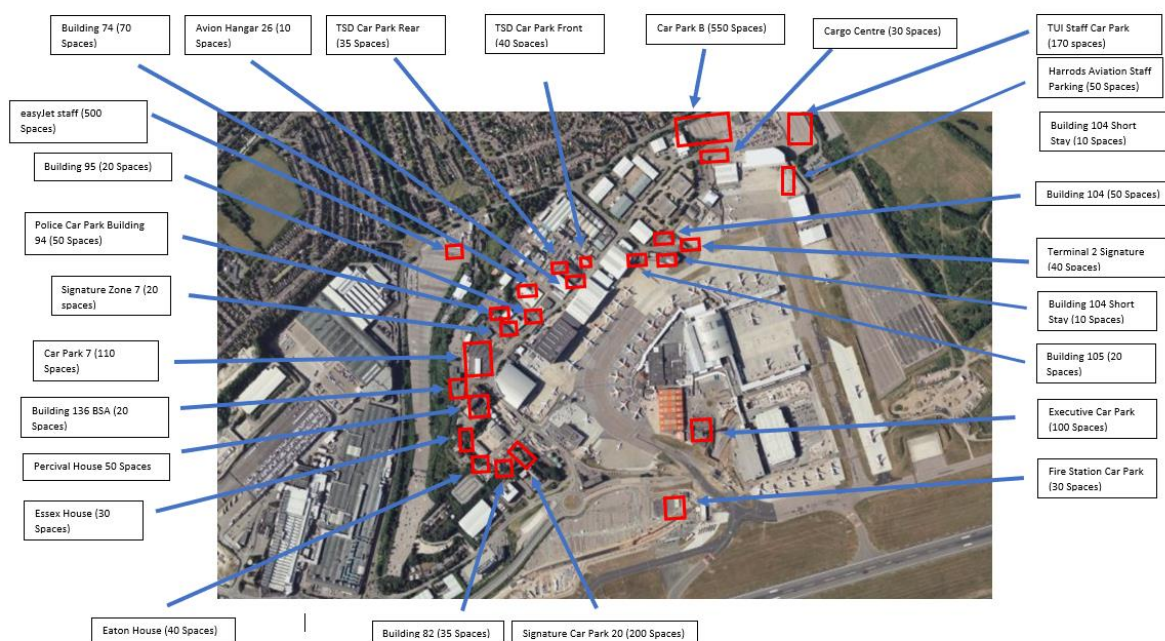






## 6.3 Staff parking

Below sets out a plan and narrative summary of the staff car parking which is available on-site at the Airport.



LLAOL staff car parking consists of 755 spaces:

- The main staff car parks for those that work within and around the terminal are:
- Staff Car Park B (550 spaces) and
- The executive car park (100 spaces).
- LLAOL support buildings (105 spaces). (Technical services x 2, fire station x 1)
- The number of spaces has not increased since 2019 and 18m passengers. However, the cost of a one-year permit in 2019 was £775 and £2,315 for Staff car park B and the Executive car park respectively and has increased to £992 and £2,951 for 2023 (+28%).
- The rule of thumb is that three permits can be sold for every space. The purpose of price increases for the permits is to encourage staff to naturally move to public transport or to car share within the Staff car park.
- A car sharing pass is priced at £466 for the year and allows a greater number of passes to be sold. Should the car park reach capacity, a waiting list system will be introduced.

In addition to LLAOL staff parking, there are a further 1,657 staff parking spaces associated with buildings leased by companies / organisations whose work is associated with airport operations

The aim of providing the above information on the total available staff parking (LLAOL and other leased sites operated by others) was to demonstrate greater supply than the circa 600 staff spaces that were originally listed. It should also be recognised that:

- Not all the additional staff will park, or would require parking at the same time (shift workers); and
- Of those who drive, a proportion will park with their employer and not at the LLAOL staff sites.



## 7. Additional Information

The tables below set out additional information relating to: (a) airport cycle facilities, (b) participating organisations in committees and forums relating to sustainable transport and (c) car occupancy.

**Table 7-1 Airport Cycle Facilities**

Company	Cycle Parking	Lockers	Showers	Location
<b>Tui</b>	25	250	2	Tui building
<b>Signature Flight Support</b>	Yes	60	7	Terminal 1
	Nil	Nil	7	Terminal 2
	Yes	Nil	1	Hanger 125
	Nil	Nil	1	Hanger 7 & 8
	Yes	Nil	1	Hanger 219
<b>Harrods Aviation</b>	Stored in building	Yes	Yes	Hanger 201
	Stored in building	Yes	Yes	FBO Terminal
<b>easyJet</b>	Still waiting information			
<b>LLA / Airport</b>	30	82	3	Main Terminal
<b>LLA Technical Dept</b>	4	Nil	2	Hanger 24
<b>LLA</b>	Stored in building	7	1	Percival House
<b>LLA Fire Station</b>	Stored in building	61	5	Fire Station

**Table 7-2 Forums**

Forum	Frequency	Attendee organisations
<b>Airport Transport Forum</b>		Coach & Bus operators: National Express, Arriva, Greenline, Stagecoach
		Car Rental Operators: Europcar, Avis, Enterprise
		Rail Operators: Thameslink, GTR, Network rail
		Luton Rising - DART

On-site car parking management company Apcoa		
LLA Sustainability		
LLA Surface Access operations		
Local Council Representatives: North Herts, Luton Borough Council, St Albans, England Economic Heartland		
<b>Other Forums where transport can also be discussed</b>		
<b>London Luton Airport Consultative Committee</b>	Quarterly	Attended by Luton Rising and LLAOL
<b>Passenger Services Sub Committee</b>	Quarterly	Attended by LLAOL and representatives from passenger user groups & associations
<b>Airline Operators Committee</b>		Airlines and ground-handlers operating at London Luton Airport
<b>Airport Operators Association</b>		Industry-wide representation of UK airports
<b>Sustainability Committee</b>	Quarterly	LLAOL & Luton Rising



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**Issued by**Bipin Muley  
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**Approved by**Monika Crouse  
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**Document revisions**

No.	Details	Date
1	Version 1	17/11/2022

# Appendix A Traffic Flow Distribution Methodology (Arup)

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## Technical Note

<b>Project title</b>	Luton Airport Surface Access
<b>Job number</b>	259393-09
<b>File reference</b>	Airport Passenger Traffic Split Calculation Methodology
<b>cc</b>	Neil Scott, Jagjit Riat
<b>Prepared by</b>	Matyas Lember
<b>Date</b>	31 October 2022
<b>Subject</b>	Airport Passenger Traffic Split Calculation Methodology

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### 1. Introduction

This technical note sets out the calculation methodology for the Luton Airport passenger distribution, which have been used for modelling to support the Luton Airport transport appraisal.

### 2. Data Source

Arup received the 2016 Luton Airport Catchment Civil Aviation Authority (CAA) data from York Aviation via LLAL (now Luton Rising). The data is collected via on-going passenger questionnaire surveys which are undertaken by the CAA. The data provided Luton Airport passenger numbers, aggregated by postcode districts across the country. The data also included the percentage split for each postcode district derived from the actual passenger numbers.

### 3. Calculation Methodology

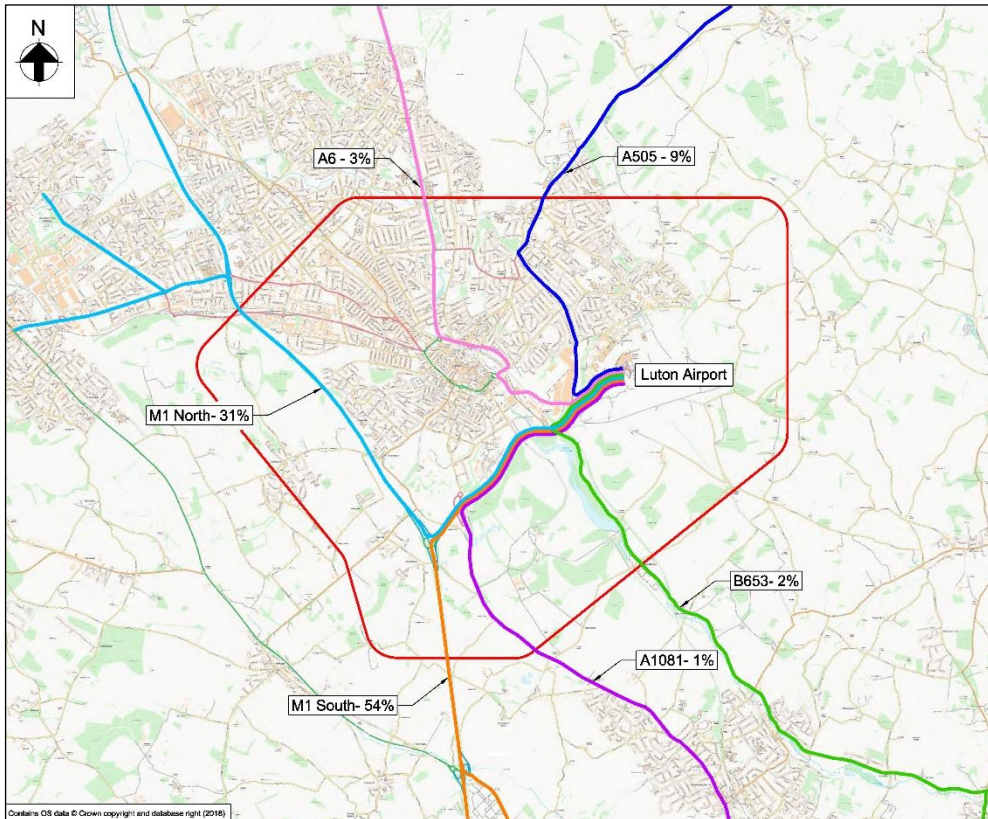
#### 3.1 Do Minimum Profile

The data relating to postcode districts was converted into GIS, with the postcode areas assigned with the most likely route to the Airport. GIS software was used to calculate the assignment which resulted in a dataset showing a list of postcode districts for each main route and which then provided the arrival/departure profile used in the traffic modelling.

The data showed that based on the actual data for 2016, the majority of passengers (85%) were assumed to arrive via the M1/A1081 corridor. These passengers were split 54% to/from the M1 South and 31% to/from the M1 North showing the clear bias in the actual catchment to passenger trips from the south.

Job number 259393-09  
Date 31 October 2022

**Figure 3-1: 2016 CAA Distribution**



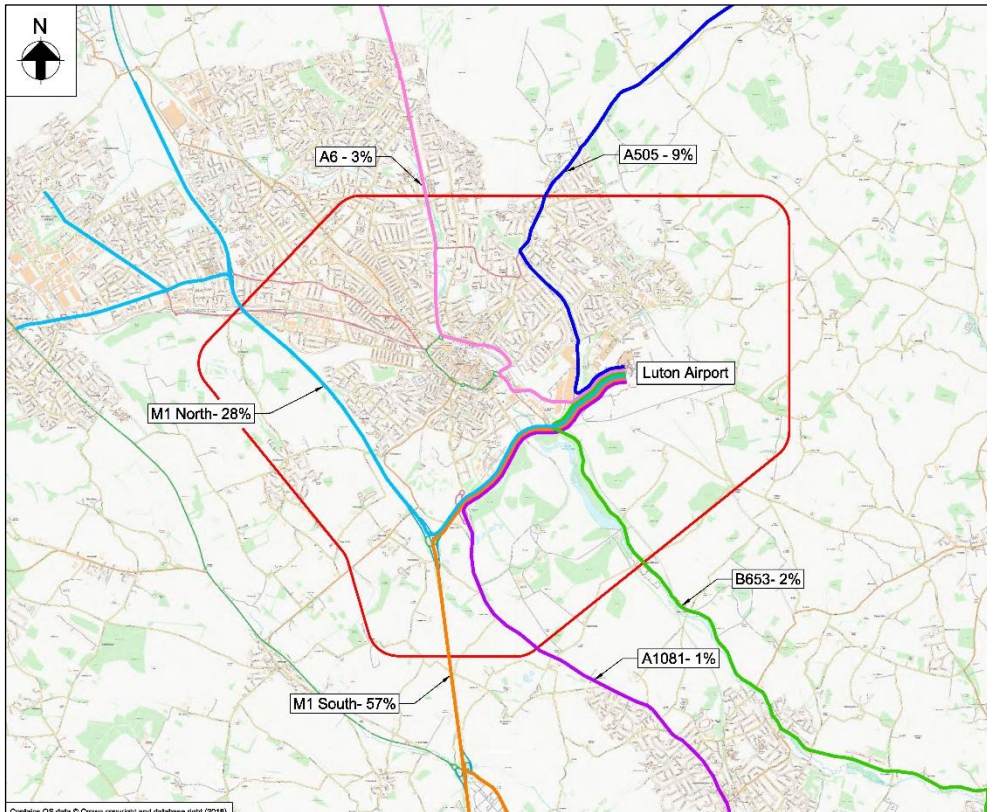
### 3.2 Do Something Profile

To address passenger distribution for the expansion of the Airport, York Aviation provided updated forecast passenger numbers, by district. This data was analysed on the same basis as the actual or do-minimum data. The analysis of that data showed that there were no material changes to local road traffic distribution, and the proportion of passengers assumed to arrive via the M1/A1081 corridor remained unchanged although there was a slight change to the bias with an increased proportion via the M1 South (57%) and a reduced proportion via the M1 North (28%).



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**Figure 3-2: Do Something Passenger Distribution**



These distributional assumptions have been shared with the relevant highway authorities, including National Highways, and have been adopted in the traffic modelling, which has supported the statutory consultation and inform the appraisal for the forthcoming application Luton Airport Development Consent Order (DCO) Application. The information has also been shared with London Luton Airport Operations Limited (LLAOL) to inform the appraisal of the P19 Application.

## DOCUMENT CHECKING

	Prepared by	Checked by	Approved by
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Signature	