Coventry City Council

LOCAL PLAN TRANSPORT MODELLING METHODOLOGY REPORT

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JUNE 2019

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Coventry City **Council**

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Coventry City **Council**

LOCAL PLAN TRANSPORT MODELLING METHODOLOGY REPORT

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INTRODUCTION

1 INTRODUCTION

1.1.1 WSP were commissioned by Coventry City Council (CCC) to support them with their Local Air Quality Plan submission to the Joint Air Quality unit (JAQU). WSP's support is focused on providing transport modelling services and outputs to assess the impacts of potential air quality proposals. We have provided traffic data from the transport model to feed into air quality modelling being undertaken by Atkins. The transport model which will be used is the strategic transport model, Coventry Area Strategic Model (CASM).

1.1.2 WSP developed the CASM to support CCC Local Plan and Highway England's (HE) M6 Junction 2 to 4 Smart Motorway scheme. CASM currently has a base year of 2013 and forecast years of 2021 and 2031 have been developed for the purposes of the air quality assessments.

1.1.3 As part of the JAQU Evidence Package there is a range of Transport Modelling Deliverables that are required to be prepared. These are listed below:

- Local Plan Transport Modelling Tracking Tables (T1)
- Local Plan Transport Model Validation Report (T2)
- Local Plan Transport Modelling Methodology Report (T3)
- Local Plan Transport Model Forecasting Report (T4)

1.1.4 This report is the Local Plan Transport Model Validation Repot (T3) and is structured into the following chapters:

- Chapter 2: An Overview of CASM
- Chapter 3: Forecast Model Methodology: CASM Inputs
- Chapter 4: Forecast Model Methodology: CASM Process
- Chapter 4: Forecast Model Methodology: CASM Outputs
- Appendix A: Updated Local Transport Modelling Tracking Tables (T1)
- Appendix B Uncertainty Logs

2

OVERVIEW OF CASM

2 OVERVIEW OF CASM

2.1 MODEL DEVELOPMENT

2.1.1 In 2015 WSP developed the Coventry Area Strategic Model (CASM) to support the Coventry Local Plan and Highways England Junction M6 2-4 Smart Motorway Project. The model covers the area shown in Figure 1.

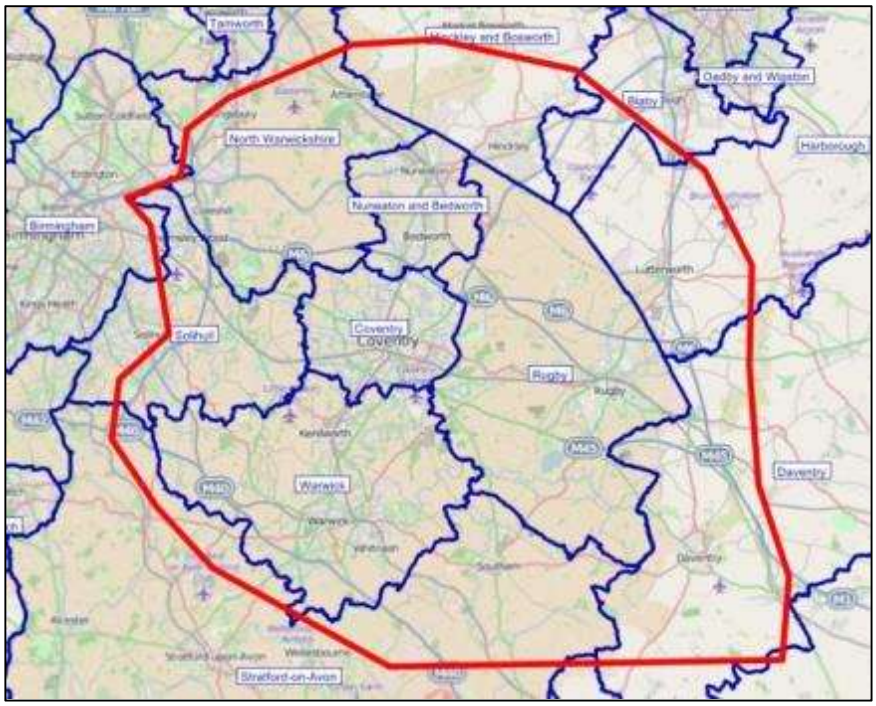


Figure 1: Coventry Area Strategic Model Area

2.1.2 CASM consists of the following models:

- CASM Transport Demand Model (TDM)
- CASM Highway Assignment Model (HAM)
- CASM Public Transport Assignment Model (PTAM).

2.1.3 All three models within the CASM suite contain the same zone system of 735 zones. All these also have a 2013 calibrated and validated base year model and the reports for this can be made available. The CASM TDM considers trips within the internal area (internal-internal), to the internal area from the rest of the UK (external-internal) and from the internal area to the rest of the UK (internal-external). External-external trips (some of which may cross the internal area) are not considered within the CASM TDM, but are included in the CASM HAM and PTAM.

2.1.4 Figure 2 provides a simplified overview of the CASM TDM; time of day choice is not illustrated in the figure but is part of the demand modelling process in CASM. The approach is a conventional absolute model, with a hierarchy which is in line with TAG (which is favoured by Mott MacDonald and RAND Europe who are the developers of the Policy Responsive Integrated Strategy Model (PRISM) Demand Model) from which CASM was developed.

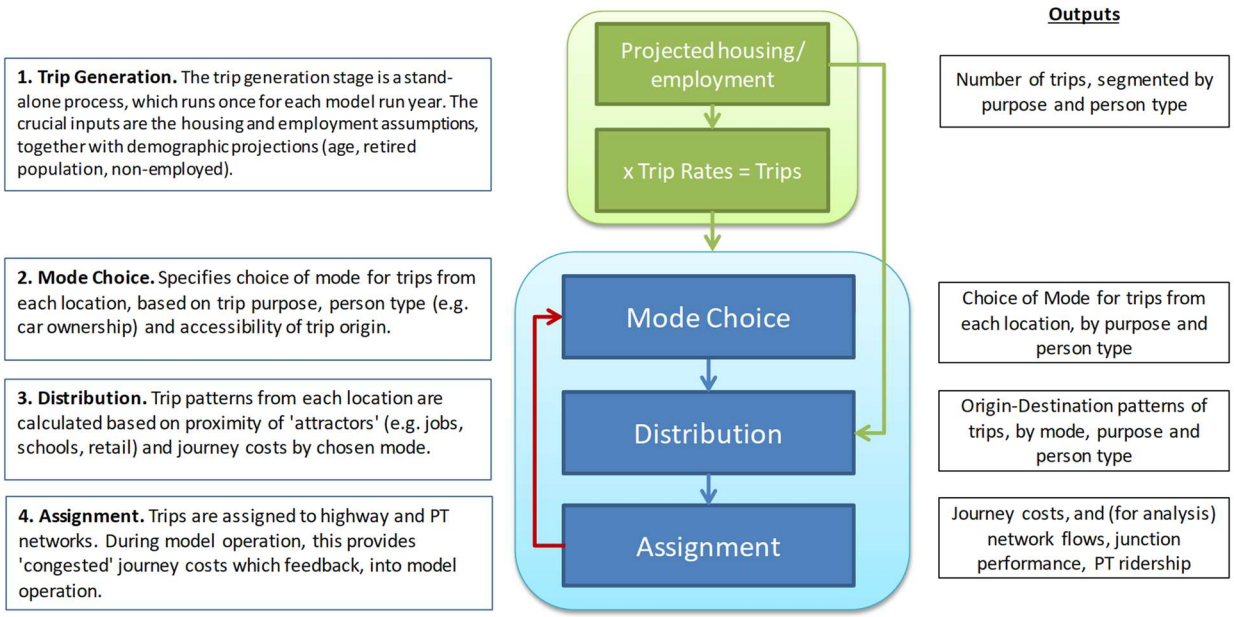


Figure 2: Overview of CASM Model Structure, using WebTAG Default Hierarchy

2.1.5 The CASM TDM calculates the Mode Choice for the following modes:

- Car – Car Driver, Car Passenger,
- Public Transport – Bus and Rail
- Cycle
- Walk

2.1.6 It is important to highlight that walk and cycle are included as separate modes in the main Mode Choice, and hence the model includes all personal trip-making, and does not ignore very short trips often neglected in other models.

2.1.7 The CASM TDM represents personal trips including commuting to work and employer business trips. However, it does not deal with trips by Heavy Goods Vehicles (HGV) and Light Goods Vehicles (LGV) e.g. supermarket delivery trips. The CASM LMVR provides more details on the representation of HGVs and LGVs.

2.1.8 The CASM TDM includes Time of Day Choice following the production of demand by mode. The CASM TDM has the following time periods:

- AM Peak: 07:00-10:00
- Inter Peak: 10:00-16:00
- PM Peak: 16:00-19:00.

For the trip distribution stage, attraction attributes have been defined by trip purpose and fed into the CASM TDM. They are outlined in Table 1.

Table 1: Trip Purpose Attraction Attributes

Trip Purpose	Attraction Attribute
HBW	Total Employment
HBEB and NHBEB	Combination of Employment and Population
HBEd	Primary Schools
	Secondary Schools
	University, Sixth Form, and Further Enrolment
HBSh	Retail Employment
HBO and NHBO	Combination of Population, Service, and Retail Employment

2.1.9 The CASM TDM at the end of the four-stage process produces 'Production-Attraction' demand matrices by:

- Demand Stratum (132)
- Modes (four)
- Time periods (three).

2.1.10 The CASM TDM assumes that all trips are by a single mode from Production to Attraction zone, except for the specific access, egress and interchange legs in the skims, which are assumed to be walk mode.

2.2 CONTINUING DEVELOPMENT

2.2.1 In 2016, the CASM forecast models were developed by WSP for use by Highway England's Consultants (Jacobs) to undertake an economic assessment of the M6 Junction 2 to Junction 4 Smart Motorway scheme proposals using the full CASM suite of models (TDM, HAM, and PTAM). Four forecast year models were produced: 2019, 2026, 2034 and 2041 with and without the M6 Junction 2 to 4 scheme proposals.

2.2.2 These forecasts contain all developments and infrastructure in the area which at the time were considered to have a high level of certainty of being realised, in line with Department for Transport (DfT) TAG Unit M4 Forecasting and Uncertainty, March 2014. Note that these forecasts were constrained to NTEM version 6.2; NTEM version 7.2 is the latest version but this was not available when the forecasting work was undertaken. Highways England reviewed all the modelling work undertaken and it was considered appropriate for use as a modelling tool.

2.2.3 Since the work undertaken in 2016, CASM has been used for numerous scheme and developer assessments which has required model updates in the local areas where assessments were being undertaken. The latest version of CASM which will be used for this assessment has been updated to include the following:

- Improvements in various areas in Coventry including around the A46 Stoneleigh Junction, Eastern Green, Kings Hill, Whitley and Baginton areas and Coventry City Centre

- Within the CASM HAM the Car Non-Work matrix has been split into Car Commute and Car Other
- Refined zone system around the A46 Stoneleigh Junction area
- Use of updated uncertainty logs for land use proposals for CCC, Warwickshire County Council (WCC) and Solihull Metropolitan Borough Council (SMBC)
- Use of NTEM 7.2

3

FORECAST METHODOLOGY: CASM INPUTS

3 FORECAST METHODOLOGY: CASM INPUTS

3.1 INTRODUCTION

3.1.1 This chapter outlines the key inputs used in the development of the CASM forecast years. This chapter covers the following:

- Inputs into CASM TDM
- Inputs into CASM HAM
- Inputs into CASM PTAM

3.1.2 The CASM model for the Air Quality Study has the following forecast years:

- 2021
- 2031

3.1.3 The CASM HAM has been split into 'compliant' and 'non-compliant' vehicle types using information derived from ANPR surveys and provided by the Atkins air quality team.

3.2 CASM TDM

3.2.1 The main CASM TDM inputs for the forecasts are the changes in population and employment which were collected from the following local authorities in the CASM area:

- Birmingham
- Blaby
- Coventry
- Daventry
- Harborough
- Hinckley & Bosworth
- North Warwickshire
- Nuneaton & Bedworth
- Rugby
- Solihull
- Warwick

3.2.2 Each development in the local area was then categorised in line with the probability of the development coming forward, using the uncertainty classification outlined in the DfT guidance TAG Unit M4, as set out in Table 2. The forecasts produced were for a Core Scenario which assumes all developments which are 'Near Certain' or 'More than Likely' are included in the future year CASM models.

Table 2: Classification of Future Inputs (TAG)

Probability of the Input	Status	Core Scenario Assumption
Near certain: The outcome will happen or there is a high probability that it will happen.	Intent announced by proponent to regulatory agencies. Approved development proposals. Projects under construction.	This should form part of the core scenario
More than likely: The outcome is likely to happen but there is some uncertainty.	Submission of planning or consent application imminent. Development application within the consent process.	This could form part of the core scenario [Refer to Section Developing the Core Scenario]
Reasonably foreseeable: The outcome may happen, but there is significant uncertainty	Identified within a development plan. Not directly associated with the transport strategy/scheme, but may occur if the strategy/scheme is implemented. Development conditional upon the transport strategy/scheme proceeding. Or, a committed policy goal, subject to tests (e.g. of deliverability) whose outcomes are subject to significant uncertainty	These should be excluded from the core scenario but may form part of the alternative scenarios
Hypothetical: There is considerable uncertainty whether the outcome will ever happen	Conjecture based upon currently available information. Discussed on a conceptual basis. One of a number of possible inputs in an initial consultation process. Or, a policy aspiration	These should be excluded from the core scenario but may form part of the alternative scenarios

3.2.3 Appendix B presents the detail within the uncertainty logs for each local authority by forecast year 2021 and 2031.

3.2.4 The CASM forecasting process makes use of the National Trip End Model (NTEM) version 7.2 growth in population and employment. This approach is appropriate because the CASM Demand Model has been calibrated to produce realistic numbers of trips per mode in the Base Year, based (amongst other inputs) on the local population and employment in that year. The model design allows the number of trips by mode to be derived for any future year based on changes only in local population and employment.

3.2.5 NTEM 7.2 growth rates are applied only at an aggregate level, namely Local Authority Districts within the core model area and Regions outside this. All growth in population and employment is constrained to NTEM 7.2. More details about the CASM Forecasting process can be found in the CASM A46 Phase 1 Forecasting Report 2018.

3.3 CASM HAM

3.3.1 The CASM HAM incorporates all the highway schemes which were identified 'Near Certain' or 'More than Likely', see Table 2. Those schemes which have been incorporated for 2021 and 2031 are detailed in Appendix B.

3.4 ROUTE CHOICE COEFFICIENTS

3.4.1 The DfT TAG data book (May 2018 release v1.10) provides suitable values of time (VOT) and vehicle operating costs (VOC) to calculate cost function coefficients for different vehicle types. Within the 'Impedance' function in VISUM, the cost coefficients of time and distance for the different forecast years are input in seconds and metres respectively as shown in Table 3 and Table 4.

Table 3: 2021 Modelled Generalised Cost Parameters

Demand Segment	AM Peak		Inter Peak		PM Peak	
	Time	Distance	Time	Distance	Time	Distance
Car Work	0.5249	0.0114	0.5389	0.0114	0.5335	0.0114
Car Commute	0.3527	0.0093	0.3584	0.0093	0.3539	0.0093
Car Other	0.2433	0.0093	0.2592	0.0093	0.2548	0.0093
HGV	0.7547	0.0452	0.7547	0.0452	0.7547	0.0452
LGV	0.3717	0.0143	0.3717	0.0143	0.3717	0.0143

Table 4: 2031 Modelled Generalised Cost Parameters

Demand Segment	AM Peak		Inter Peak		PM Peak	
	Time	Distance	Time	Distance	Time	Distance
Car Work	0.6123	0.0109	0.6274	0.0109	0.6211	0.0109
Car Commute	0.4106	0.0089	0.4173	0.0089	0.4120	0.0089
Car Other	0.2833	0.0089	0.3018	0.0089	0.2967	0.0089
HGV	0.8787	0.0515	0.8787	0.0515	0.8787	0.0515
LGV	0.4328	0.0146	0.4328	0.0146	0.4328	0.0146

3.5 GROWTH IN LGVS AND HGVS

3.5.1 The growth in LGVs and HGVs has been taken from the 2018 National Road Traffic Forecasts for the West Midlands. Table 5 presents the growth factors applied to LGVs and HGVs for each forecast year.

Table 5: LGV and HGV Growth Factors

Year	LGV	HGV
2021	1.14	0.96
2031	1.28	0.97

3.6 CASM PTAM

3.6.1 This section outlines the public transport schemes coded into the CASM Future Year Public Transport Assignment Model (PTAM). It provides a summary of the schemes, opening years, CASM modelled years and details on how the schemes are represented in the model. All schemes are listed in Appendix B, including the Future Year PTAM models they have been incorporated in and the modelling method. Details on future year schemes have been informed by:

- Consultation with relevant transport authorities and local authorities (e.g. Coventry City, Transport for the West Midlands (TfWM) and Highways England)
- Review of published material on LEP priorities in order to identify schemes funded by Local Growth Fund
- Review of other planning documents such as Network Rail's Long-Distance Market Study, the West Midlands RUS and Midlands Connect

4

FORECASTING METHODOLOGY: CASM PROCESS

4 FORECASTING METHODOLOGY: CASM PROCESS

4.1 INTRODUCTION

4.1.1 This section gives an overview of how the CASM TDM forecast iteration process has been set up for the forecasting to allow for demand/supply convergence. In line with TAG Unit M2 Section 6.3 (Variable Demand Modelling, March 2017), the recommended criterion for measuring convergence between demand and supply models is the demand/supply gap. It is important to note that the convergence in CASM TDM operates on the synthetic demand and all modes contained within it.

4.1.2 The demand/supply gap has been calculated using the in-built 'Nested Demand Model Gap' procedure in VISUM where the gap is defined by the following formula:

$$\frac{\sum_a U_a \times (|D_a - PD_a|)}{\sum_a U_a \times PD_a} \times 100$$

Where:

PD_a is cell a in the synthetics of the previous iteration

U_a is cell a in the generalised costs resulting from assigning PD_a

D_a is cell a in the synthetics of the current iteration

a represents every combination of origin, destination, demand segment, time period, and mode

4.1.3 According to TAG, 'tests indicate that gap values of less than 0.1% can be achieved in many cases, although in more problematic systems this may be nearer to 0.2%'. The iteration process for the CASM TDM is set up so that when a demand/supply gap of 0.2% is achieved, the model stops iterating.

4.2 ITERATION PROCESS

4.2.1 The iteration process is illustrated in Figure 3.

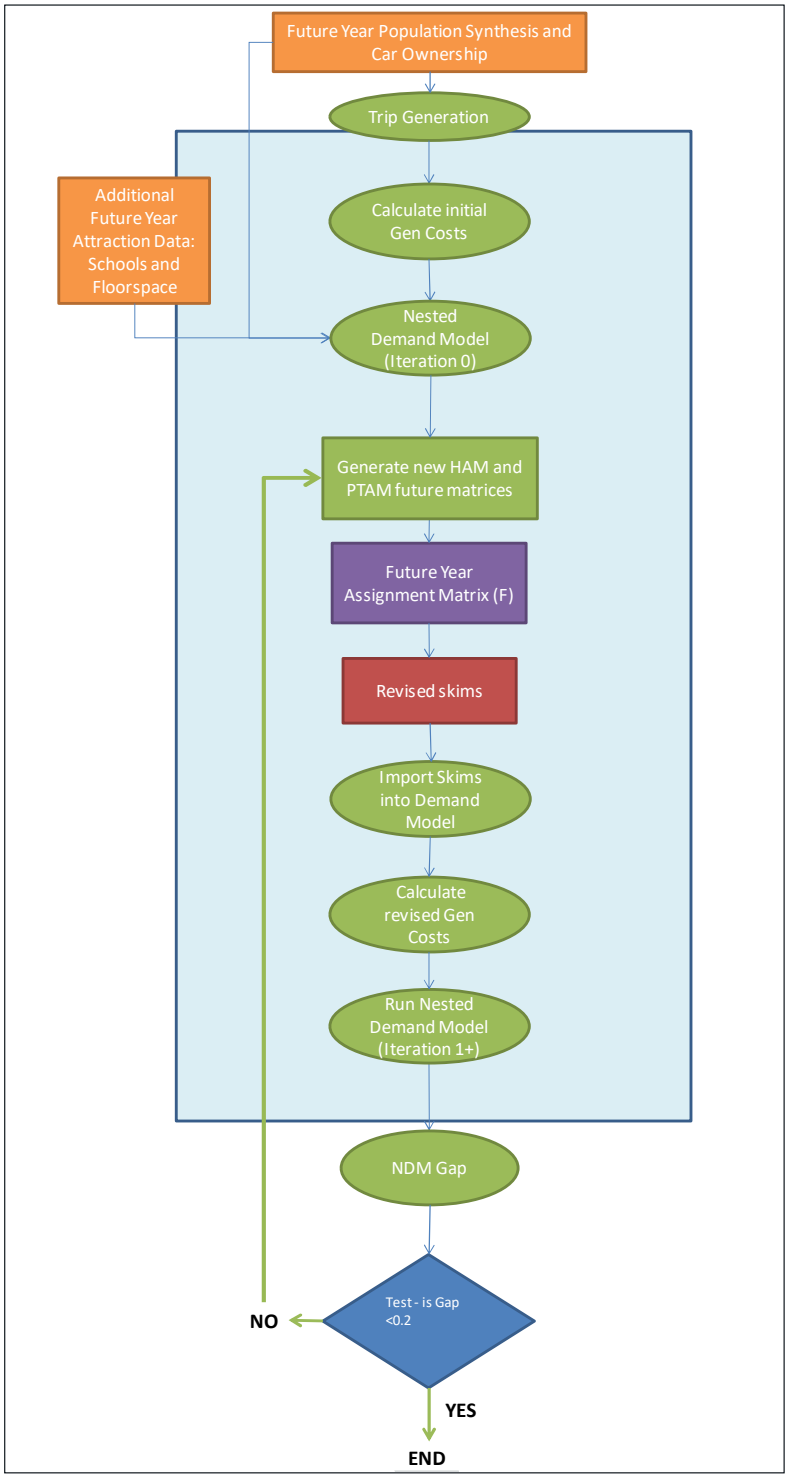


Figure 3: CASM Forecasting Iteration Process

4.2.2 Trip generation is only triggered once throughout the iteration process, before the loop is initiated.

4.2.3 The outputs from the trip generation procedure are total Future Year (FY) trip productions by zone origin and demand segment.

4.2.4 Skims from the CASM FY HAM are imported and generalised costs calculated prior to every Demand Model run. The Demand Model procedure is run once before the iteration loop is initiated (iteration 0) and then once at every iteration within the iteration loop. For iteration 0, Car, PT, skims for each year were as follows:

- Car
  - 2021 CASM HAM
    - Do Minimum: Base Year matrices + External to External (E-E) movements uplifted to 2021 levels
    - Do Something: 2021 DM It4
- Car
  - 2031 CASM HAM
    - Do Minimum: 2021 DM It4 + External to External (E-E) movements uplifted to 2031 levels
    - Do Something: not yet undertaken

4.2.5 Walking and Cycling skims remain the same as the base year.

4.2.6 The outputs from each Demand Model run are Future Year (FY) P-A demand matrices (D matrices) by demand segment, mode, and time period.

4.2.7 For each iteration i within the loop:

- The AM peak, Inter-peak, and PM peak FY HAM are assigned with the corresponding normalised assignment matrices ($\mathrm{nF_i}$ matrices) derived from the FY Demand Model run in iteration $(\mathrm{i}-1)$. Skims are then exported from these assignments and used for the FY Demand Model run in iteration i
- All PT, Walking, and Cycling skim matrices remain the same as in iteration 0. The PT and Active mode models do not need to be assigned at each iteration as they do not account for crowding and would thus not produce skims that are different to the ones in iteration 0
- Once the FY Demand Model procedure has been run for iteration i, the demand/supply gap is calculated and compared to the target gap of 0.2%. Unless the calculated gap is less than the target, the loop is restarted

4.3 CONVERSION OF DEMAND MODE FORECASTS FOR ASSIGNMENT MODEL

4.3.1 The nF_i matrices are produced in each iteration i by scaling the Base Year (BY) HAM assignment matrices based on the ratio of the synthetic FY demand from iteration i to the synthetic demand from the calibrated BY CASM TDM.

4.3.2 This process requires first the conversion of the FY synthetics into a form directly comparable to the assignment matrices. This means:

- Converting car person trips to car vehicle trips using the relevant FY occupancy rates for each demand strata and each time period
- Converting from P-A to O-D, except for NHB trips, by summing all outbound and return trips in each time period
- Summing across the relevant demand strata to produce matrices comparable with assignment ones:
  - Car Work assignment matrices are produced using only HBEB and NHBEB synthetics
  - Car Non-Work assignment matrices are produced using only HBEd, HBO, HBSh, HBW, and NHBO synthetics
  - Public Transport Fare and Non-Fare assignment matrices are produced using the synthetics for all the relevant strata.
- Converting from TDM time periods to HAM and PTAM time periods using the conversion factors described in section 2.8 of the DMVR.

4.4 MATRIX SCALING

4.4.1 There is a matrix scaling process that occurs once the CASM TDM is run, more details of this can be found in the CASM A46 Phase 1 Forecasting Report June 2018.

4.5 CASM PERFORMANCE FOR AIR QUALITY ASSESSMENT

4.5.1 Section 4.7 of the T2 report provides a summary of the levels of validation achieved for the transport model for the purposes of air quality assessment. In summary, 70% of count sites meet the TAG criteria for GEH or flow in the AM peak. The respective figures for the IP and PM peaks are 84% and 75%. The respective plots for the AM, IP and PM periods are shown below in Figures 4 to 6. The Do-Minimum status in terms of links with air quality exceedance issues is shown for comparison in Figure 7. This shows that the majority of links that have associated exceedances are satisfactorily represented in the traffic model, the main exception being the Walsgrave Road section of the A4600.

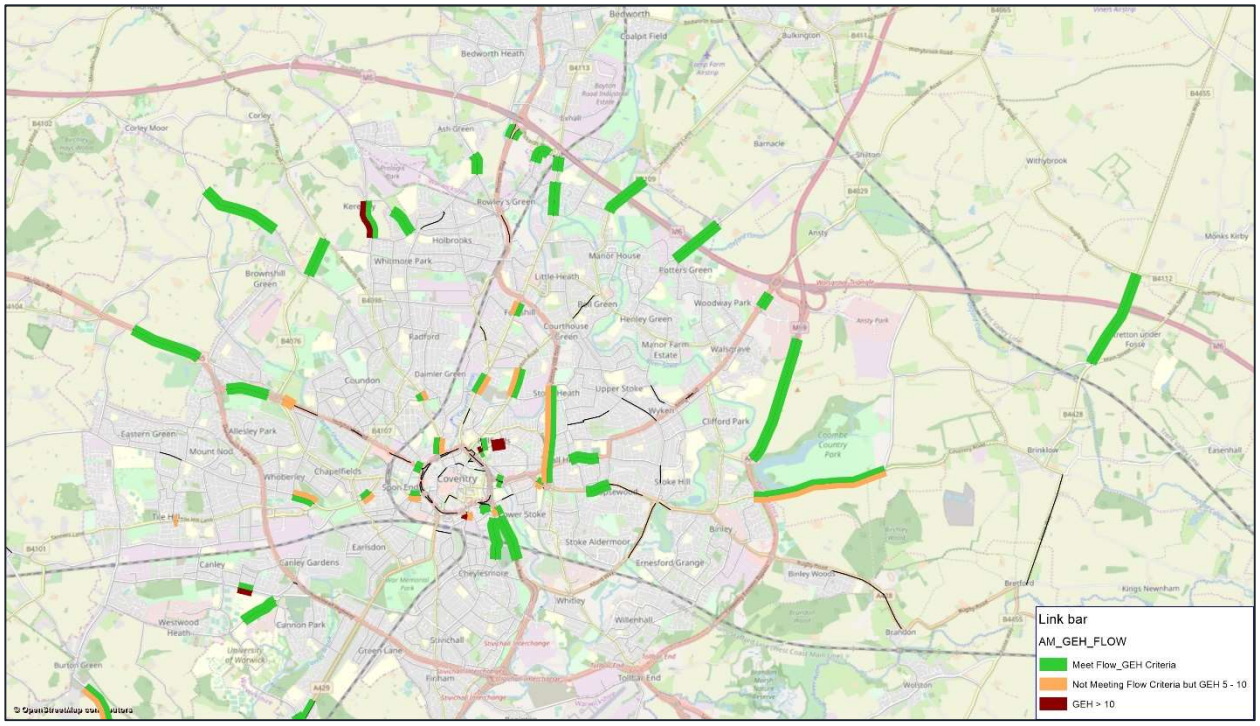


Figure 4: CASM HAM AM Peak Validation Performance

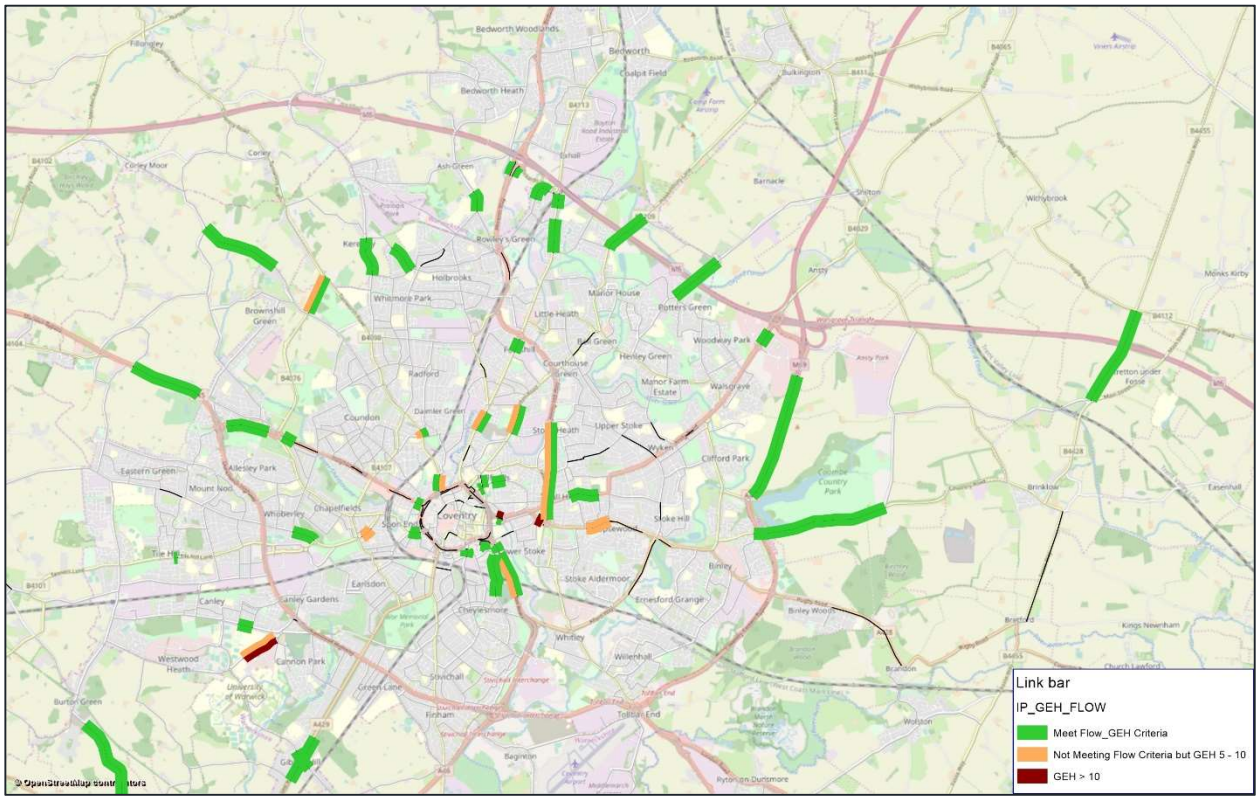


Figure 5: CASM HAM Inter Peak Validation Performance

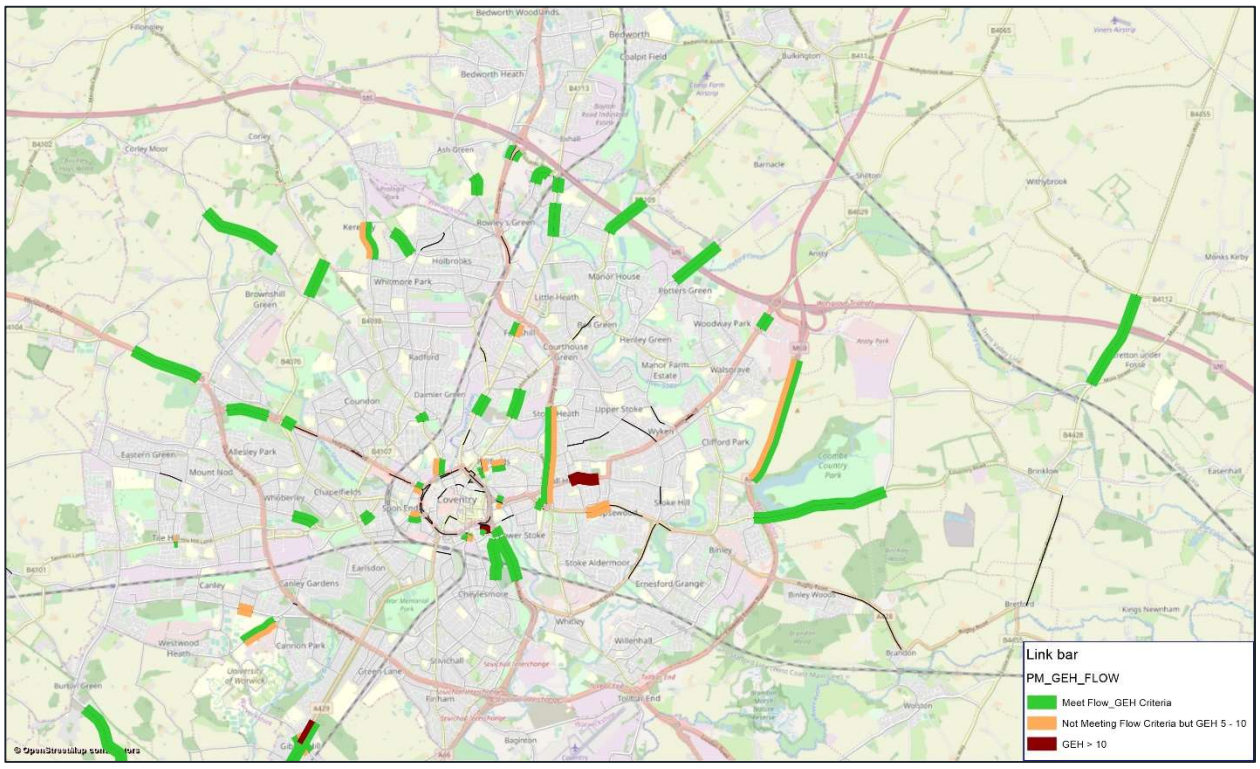


Figure 6: CASM HAM PM Peak Validation Performance

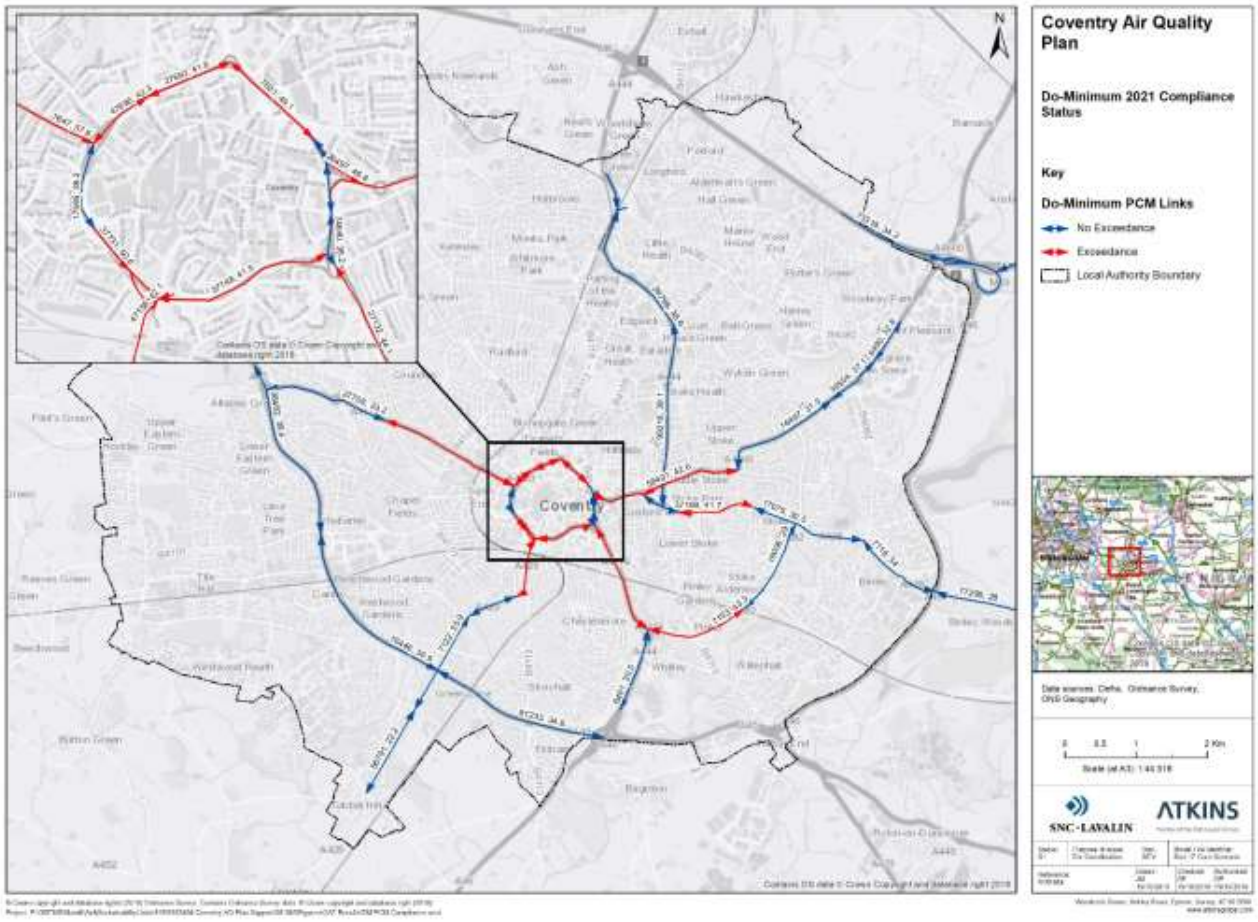


Figure 7: Do-Minimum Compliance Status

4.6 AIR QUALITY EARLY MEASURES

4.6.1 There is a range of 'Air Quality Early Measures' in Coventry that were required to be incorporated into the 2021 DM model. These early measures are focussed along the A4600 corridor and aim to encourage travellers to use more sustainable, environmentally friendly modes of travel instead of travelling by car. A summary of the schools, businesses and personalised travel plans which are proposed to be implemented as early measures is provided below.

4.6.2 The A4600 corridor forms a direct link from the M69 / M6 J2 Ansty Interchange into the city centre via Hinkley Road, Ansty Road and Walsgrave Road where it joins Sky Blue Way before its junction with the inner ring road. As such, the A4600 is an important traffic route in the Coventry highway network but is subject to air quality exceedance on the section of Walsgrave Road between Burns Road and Sky Blue Way. The location of the A4600 corridor in relation to the city is shown in Figure 4.

4.6.3 The traffic model has been shown to validate well in terms of flow during all modelled time periods at Ansty Interchange and in the AM and IP periods on the A4600 towards the inner ring road cordon. The model validates less well during the PM peak (GEH >10) at the inner cordon see also section 4.7 of the T2 report). In terms of journey times along the A4600, the modelled times are within the median range of observations during the AM and IP time periods and slightly outside the median time range in the PM peak when the modelled times are quicker than those observed.

School Engagement

4.6.4 A priority list of 14 target schools has been identified along the A4600 corridor and illustrated in Figure 8, with the target of at least 12 schools to receive support, of which at least 2 should be secondary schools.

4.6.5 5 in the western section along Walsgrave Road/Sky Blue Way:

- Stoke Primary School
- Sacred Heart Catholic Primary
- Stoke Park Secondary
- Southfields
- Gosford Park

4.6.6 5 in the central section along Ansty Rd:

- St John Fisher Catholic Primary School
- Wyken Croft Primary
- Ravensdale Primary School
- Pearl Hyde Primary School
- Caludon Castle Business & Enterprise School (Secondary)

4.6.7 4 in the eastern section along Hinckley Road:

- Whittle Academy
- SS Peter & Paul
- Walsgrave CofE Academy
- Seva School (Primary & Secondary)

4.6.8 A further 4 schools have been identified adjacent to the corridor which could also be engaged if necessary.

- Sidney Stringer (Secondary)*
- St Mary and St Benedict Catholic Primary
- Richard Lee Primary School
- St Gregory's Catholic Primary School

Business Engagement -

4.6.9 A list of 33 potential businesses has been identified along the corridor, but others may be identified through the project. The target is to support at least 12 businesses (at least 5 from the list of major businesses).

City Centre

- Coventry University (Staff and Students)
- Coventry City Council
- Severn Trent
- West Midlands Housing
- National Express Coventry

Ansty Road:

- University Hospital Coventry & Warwickshire
- Myton Hospice

Hinckley Road:

- Walsgrave Triangle
- Celesio, Double Tree by Hilton, Rhead Group (Costain), GF Machining Solutions, George Fischer Sales, Sainsburys Supermarkets, Denso Sales UK/Nippondenso UK
- Cross Point Business Park
- BSS Group, Evobus UK, SCSJ, Ipsos Mori, R E & B Hancock, TNT Business Solutions,
- The Proving Factory, Premier Inn, Brewers Fayre, Frankie & Benny's, Nando's, Showcase Cinemas, Brake Grocery, Fedex UK, Fyffes Group, Premier Group, Siegenia-Aubi, Batleys, Asda

Personalised Travel Planning

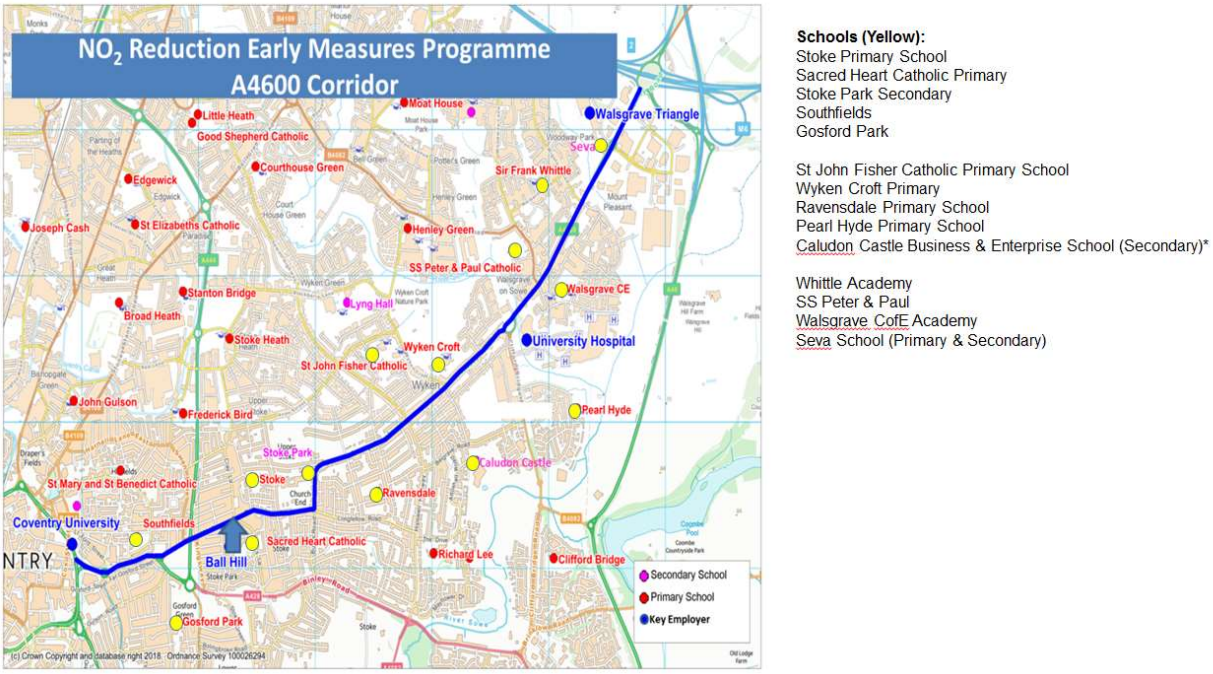
4.6.10 The personalised travel planning target is for 5,000 participants, which represents approximately 10% of residents living within 400m of the A4600 which forms a key bus corridor.

4.6.11 The impact of the proposed approaches was provided by CCC and based on post-implementation evaluation of similar local schemes. These changes were applied to the 2021 DM model along the A4600 corridor after the Demand Model run is presented in Table 6.

Table 6: Early Measures Assumed Impacts

	Reduction in Vehicles Achieved				Rationale (Provided by CCC)	WSP Action
	Estimated impact of measure*	AM Peak 8-9	Inter Peak 11-2	PM Peak 5-6		
Workplaces	1218	-225	0	-225	Logic: for each day 1200 trips reduced, assume 50% of these might be on the A4600, and assume that 75% of these travel in the two peak hours. Assume these are spread along A4600 – between Sky Blue Way and UHCW.	WSP have assumed there is a reduction of 225 one-way trips in each direction.
Schools	396	-50	0	0	Logic: this is a mix of Primary and Secondary schools. Assume 200 trips are in the AM peak, of which 25% might use the A4600 (given small catchment area for primary schools). Other time periods not capturing school traffic	WSP have assumed the reduction in trips going to the schools as highlighted in Figure 8 and just reduce short distance trips (under 2 miles).
PTP	400	-20	-40	-20	Logic: Assume 20% use the A4600 in key time periods this is spread along the corridor – for an average hour in the three time periods	Assume reduction evenly split by direction.

*not location/time specific



Schools (Yellow):
Stoke Primary School
Sacred Heart Catholic Primary
Stoke Park Secondary
Southfields
Gosford Park

St John Fisher Catholic Primary School
Wyken Croft Primary
Ravensdale Primary School
Pearl Hyde Primary School
Caludon Castle Business & Enterprise School (Secondary)*

Whittle Academy
SS Peter & Paul
Walsgrave CofE Academy
Seva School (Primary & Secondary)

Figure 8: NO2 Reduction Early Measures Programme A4600 Corridor

Approach

4.6.12 The CASM Highway Assignment Model comprises the following user classes:

- Car Work
- Car Non-Work – Commute
- Car Non-Work – Other
- Light Goods Vehicles (LGVs)
- Heavy Goods Vehicles (HGVs)

4.6.13 Development of the model for the air quality assessment comprised the following sequential steps:

- Run 2021 DM CASM Demand Model
- Apply early measures
- Create additional ‘compliant’ and ‘non-compliant’ demand segmentations within CASM (using the splits provided by Atkins air quality team)
- Split the existing 5-user class matrices into ‘compliant’ and ‘non-compliant’ vehicle types
- Assign matrices to revised networks (non-complaint vehicles have free access to the complete network in the Do Minimum).

4.7 CLEAN AIR ZONE

4.7.1 As part of the Air Quality study, an assessment the impact of a potential clean air zone (CAZ) was required. This section outlines the methodology adopted for assessing a CAZ within the CASM model.

Model Networks

4.7.2 The CASM model networks were the same as the Do Minimum models, the only change being the charge on the links covered by the CAZ. This charge was applied to the links.

4.7.3 For an initial assessment run, a daily 'toll' charge of £12.50 for cars and LGVs and £100 for HGVs was assumed as a one-way entry charge to links crossing the proposed CAZ cordon.

Model Matrices

4.7.4 The model matrices were split into compliant and non-compliant vehicles based on the proportions derived from the local ANPR survey data as shown in Table 7.

Table 7: 2021 Compliant/ Non-Compliant Vehicle Split

Vehicle Type	Compliant	Non-Compliant
Car	76%	24%
LGV	62%	38%
HGV	72%	28%
Bus	80%	20%

Forecast Future Compliance Rates

4.7.5 Potential demand responses from non-compliant vehicle owners are set out in Table 8 and highlights which responses the CASM demand model can make. Those reactions which the CASM demand model could not undertake, upgrading of vehicles and cancelling of trips, were applied manually to the CASM HAM assignment matrices.

Table 8: Potential Responses to Implementation of a CAZ

Non-Compliant Responses – City Centre Destinations	Approach within Transport Model
Upgrade vehicle to compliant (linked to trip frequency)*	Switch upgrades to compliant category in trip matrices
Cancel trip – do not make the journey	Exclude – not a valid response in demand model
Avoid charge – change mode	Valid response in demand model
Avoid charge – change destination	Valid response in demand model
Pay to enter city centre	Valid response in demand model
Non-Compliant Responses – through trips	
Avoid city centre for through trips	Valid response in demand model
Pay to travel through city centre	Valid response in demand model

* T-IRP Requirement: *"It is a priority that for charging CAZs, a scenario in which 0% upgrade occurs should be tested, to understand the effects of a worst-case situation"*

Behavioural Responses

4.7.6 The behavioural responses by car, LGV and HGV and buses are set out in Table 9 to Table 11. The tables present the responses provided by JAQU, those which Birmingham City Council adopted for their CAZ and what has been adopted within CASM. The pay charge and avoid responses for CASM have been derived from the CASM TDM, this is in line with the approach Birmingham took using the PRISM model. For cars the behavioural response for paying the charge in CASM presented is from the latest benchmark scenario, DS2b, presented in the June 2019 T4. This is for destinations to the CAZ during the AM peak.

Table 9: Behavioural Responses for Car

Response	Cars – Guidance	Cars – Birmingham	Cars - CASM
Pay Charge	**7.1%**	**12%**	**34%**
Avoid	**21.4%**	**41%**	**20%**
Cancel Trip	7.1%	14%	14%
Upgrade	64.3%	32%	32%
Upgrade (compliant)	48%	-	-
Upgrade (new)	16%	-	-

Source: Annex A Evidence Package Table 2 and CASM model non-compliant test response

Table 10: Behavioural Responses for LGV

Response	LGVs - Guidance	LGVs – Birmingham	LGVs - CASM
Pay Charge	20.3%	48%	48%
Avoid	10.0%	27%	27% Removed trips
Cancel Trip	6.0%	0%	0%
Upgrade	63.8%	25%	25%
Upgrade (compliant)	48%	-	-
Upgrade (new)	16%	-	-

Table 11: Behavioural Responses for HGV and Buses

Response	HGVs - Guidance	HGVs Birmingham	HGVs - CASM	Buses
Pay Charge	8.7%	11%	11%	0.0%
Avoid	4.3%	27%	27% Removed trips	0.0%
Cancel Trip	4.3%	0%	0%	6.4%
Upgrade	82.6%	62%	62%	93.6%
Upgrade (compliant)	62%	-	-	70%
Upgrade (new)	21%	-	-	23%

Application of CASM Model to a CAZ

4.7.7 A straightforward 3-step approach was devised for the modelling of a CAZ. The do-minimum networks were updated to include the various CAZ charges to enter the cordon. The full model matrices were put through the variable demand model to determine the response to the imposition of the charges for crossing the cordon. The do-minimum and do-something (with CAZ) outputs were then compared to determine a difference factor representing the demand response. Finally, following the removal of the early measure flows, the factors were applied to the non-compliant vehicle matrices for re-assignment alongside the unadjusted compliant vehicle matrices to determine the final assigned flows. The process is illustrated in Figure 9.

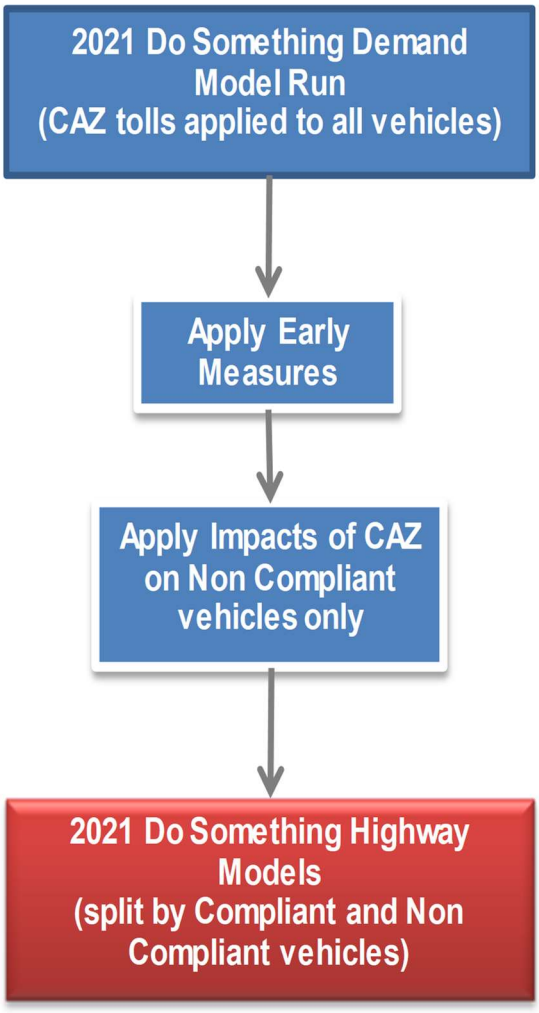


Figure 9: Do Something CAZ D Methodology

CAZ D

4.7.8 Two CAZ D zones have been assessed within the CASM model, these are illustrated in Figure 10 and Figure 11. On all the links highlighted in red a toll as outlined above has been applied to all inbound traffic.

Figure 10: CAZ D Inner Ring Road

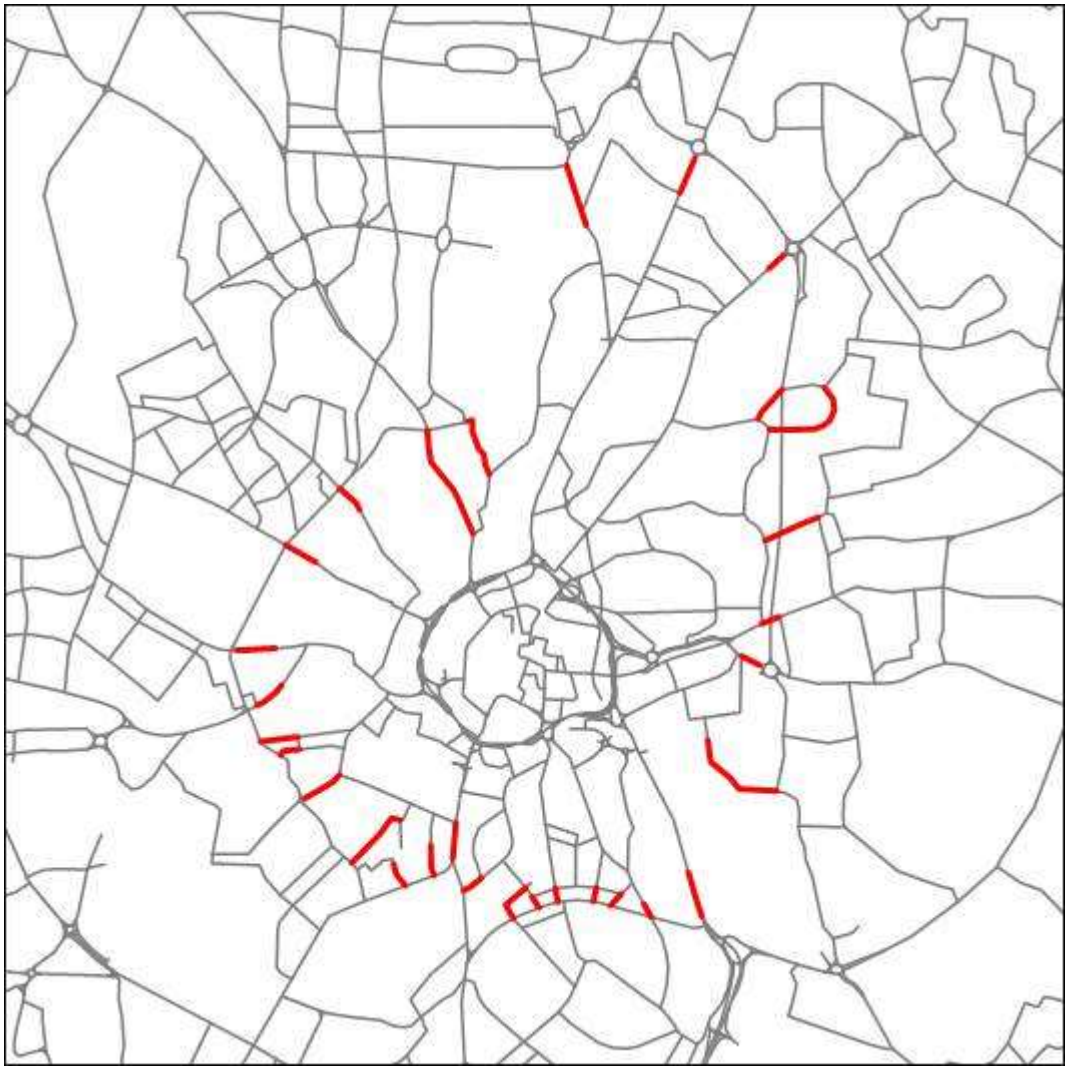


Figure 11: CAZ D Wider Coventry Area

Model Outputs

4.7.9 Plots showing the changes in traffic flow by time period for each option test have been provided to the client together with a short summary of results. In addition the results have been included within the Forecasting Report T4.

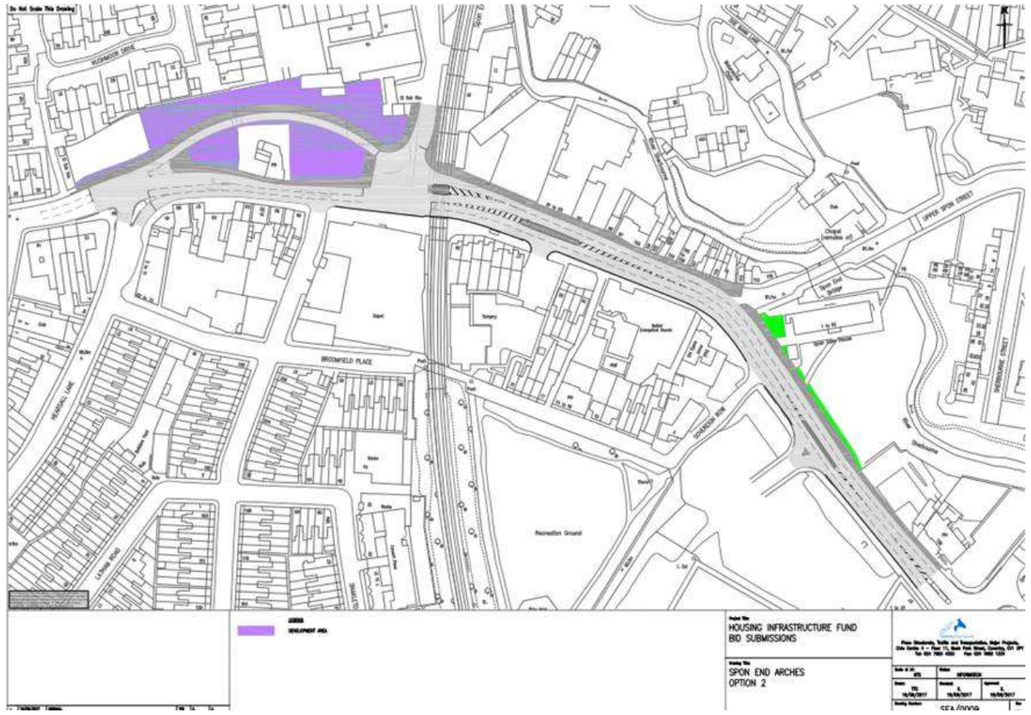
4.7.10 Data for environmental assessment (hourly, period, daily traffic volumes, HGV percentages and speed data by traffic model link), have been produced based on the application of appropriate factors to the model outputs for each option tested.

Modelling Assumptions

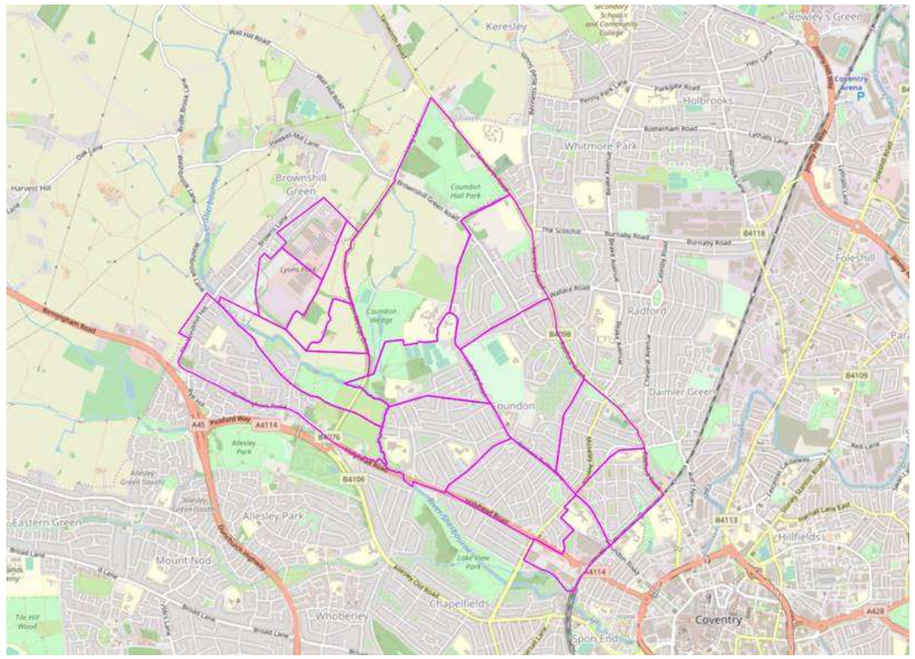
4.7.11 Table 12 presents the modelling assumptions assessed within the CASM Model.

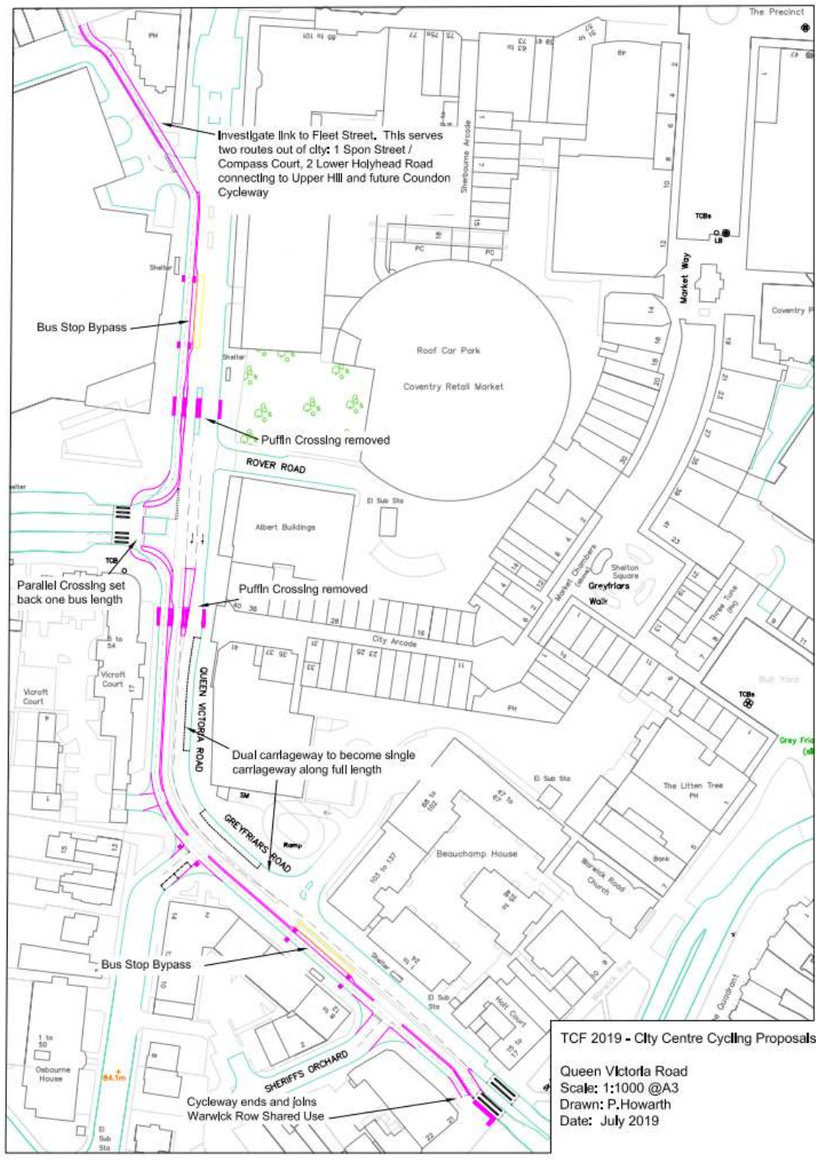
Table 12: Modelling Assumptions

Scenario Name	DS2b	DS13L	DS14
	Benchmark CAZ	**Preferred Option**	**JAQU Direction**
All Vehicle ban on peak direction along Holyhead Road (AM inbound, PM outbound) 1- CASM Model - AM Peak Hr (0800-0900) 2- CASM Model - PM Peak Hr (1700-1800)	×	✓	✓
All Vehicle ban on peak direction along Holyhead Road undertaken IP inbound (10:00-13:00) and Outbound (13:00-16:00)	×	✓	×
Barras Lane closure – Barras Lane closed in both direction between Holyhead Road and Coundon Road	×	✓	✓
Connecting Coundon Road via Hill Street onto inner ring road junction on slip (left in left out)	×	✓	✓
Spon End / Old Allesley Road Signal Optimisation – Increase green time at signalised junctions along Holyhead Road/Allesley Old Road/ Spon End to provide priority for traffic entering along the corridor.	×	✓	✓

Spon End scheme : Increase capacity by enabling two lanes of traffic in both directions (currently 1 lane in the Eastbound direction). Network coded based on drawings provided below: 	✗	✓	✓

Junction 7 improvements on the inner ring road incorporated, change of roundabout into a signalised junction. 	×	✓	✓
Wider CAZ D - Cars and LGVs	£8 inbound	×	£8 inbound
Wider CAZ D - HGVs	£50 inbound	×	£50 inbound
Behaviour Response Type	Birmingham CAZ D	×	Birmingham CAZ D

Cycling Intervention: Reduction within Coundon area (see figure below) trips provided by Atkins applied to AM departures and PM arrivals, in trips under 8km. 	×	✓	✓

Queen Victoria Public Realm Scheme – reducing highway capacity 	x	✓	x

HGV Ban on Foleshill Road – roads where HGV's are banned are highlighted in red 	×	✓	×
Right turn from Cash Lane to Foleshill Road SB closed. There is a signalised junction between Cash's Lane and Foleshill Road. Within the CASM model we have banned all traffic from being able to turn right from Cash's Lane to Foleshill Road in all time periods.	×	✓	×

5

FORECAST METHODOLOGY: CASM OUTPUTS

5 FORECAST METHODOLOGY: CASM OUTPUTS

5.1.1 The forecasting results for all scenarios have been presented to CCC providing outputs of each stage of the modelling process, including changes in mode choice and trip distribution if a CASM demand model run has been undertaken, as well as traffic flow difference plots and any other illustration of the results which would aid the understanding of the results.

5.1.2 Peak hour traffic flows have been extracted from the AM, IP and PM peak CASM HAMs and converted into Annual Average Daily Traffic (AADT) flows using factors derived from Coventry automatic traffic count (ATC) data.

Appendix A

LOCAL PLAN TRANSPORT MODELLING TRACKING TABLES (T1)

Local Plan Transport Modelling Tracking Table (T1)

Coventry City Council Version: T2.01 (05/10/2018)

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
1	**Transport model specification : Model Selection**						
1.1	Present year validation if the model is more than 5 years old (e.g. ANPR, journey times etc).	The Coventry Area Strategic Model (CASM) has a base year of 2013 and is therefore less than 5 years old.	Agreed				
1.2	The coverage of the transport model should be robust enough to capture if any route choice will be impacted due to the proposed measures.	The CASM model covers the whole of Coventry City Council area along with parts of Warwickshire County Council and Solihull Metropolitan Borough Council. It therefore covers a big enough area	Agreed				

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
		and network detail to capture route choice. The CASM model has been signed off by Highways England and their consultants as fit for purpose.					
1.3	Validation should be based on comparison between observed (i.e. from ANPR data) and modelled vehicle composition, flows (on links and across screenlines / cordons), traffic pattern and journey time within the study area (WebTAG Unit M3.1).	The current 2013 CASM model is validated to observed traffic counts, screenlines and journey time data (in accordance with WebTAG Unit M3.1).	OK, but it mentions potential update based on 2018 data.	Yes ATC data was collected alongside ANPR data in March 2018. It is proposed that the 2013 CASM model will be calibrated to the 2018 ATC counts in the local Coventry area. Comparisons between 2013	OK. Note that data collection for proposed model update covers February and March 2018. Also note DfT CP data for Coventry suggests 2013-2016 (last	The CASM model has been updated and local cordon data used to factor the 2018 counts back to 2013 levels. All details can be found within the T2 report.	Additional work has been undertaken to provide additional evidence as to why the DfT data has not been used but local data this can be found in the T2

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
				and 2018 ATC counts collected in January show that generally there are some reductions in traffic flow between 2013 and 2018 but this is not particularly significant.	available) growth of 16% and WebTRIS (SRN) sample site suggests growth of 20% from 2013 to 2017. Growth within urban area may be lower and final count data will confirm when processed.		report Appendix C.
1.4	For light and heavy goods vehicles, validation will need to be reported for short screenlines using	The CASM model represents LGV and HGVs separately and are part of the	Good, see above				

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
	grouped counts to ensure a larger sample size.	validation screenlines.					
1.5	The assignment convergence meets WebTAG convergence criteria (WebTAG unit M3.1, section 3.3, Convergence Measures and Acceptable Values).	The CASM model meets WebTAG convergence criteria.	Agreed				
1.6	Vehicle disaggregation: the transport model must split modes (e.g. HGV, LGV) to provide capability to distinguish the impact of measures that are targeting different vehicle types, such	CASM is split into the following modes, Car Commute, Car Work, Car Other, LGV and HGV. The ANPR surveys will be used to provide vehicle class / engine standard information that	Agreed.				

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
	as freight logistic or different classes or charging Clean Air Zones.	will then enable demand matrices to be manually adjusted to provide the necessary dis-aggregation.					
1.7	If modelling does not fully meet above requirements in the key study area, please provide mitigation measures / implications.	As noted in section 1.6 above we will derive user class information using the ANPR surveys.	OK – there is a process to check calibration				
2	**Overall model assessment**						
2.1	Base model fit.	The 2013 Base Year CASM highway model is calibrated in the Coventry area. When ANPR data is collected and	Sounds reasonable, but would be good to understand how 2018 model is proposed to be produced	See comments above about 2018 model. A 2021 and 2031 model will be	Response references the proposed data collection which is focused	See comments above about 2018 model. A 2021 and 2031 model	

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
		processed in 2018 comparisons will be made between the 2013 model flows and 2018 data to see the differences and take a view on any necessary re-calibration.	"Generation of 2018 (based on 2013 model) and 2021 (based on 2019 model) traffic flows for AM, Inter and PM peak." Does this mean interpolation? Then how will the 2018 model be assessed? • Comparing against individual counts? • High Level screenline validation? • ANPR trip distribution data?	generated using the CASM Demand Model.	(mainly) on the ring road. The comments earlier (1.3) refer to screenlines etc. which presumably cover a wider area (though not seen original CASM validation report). Again, some more information on extent of proposed assessment of 2018	will be generated using the CASM Demand Model.	

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
					model would be helpful. The reference to 2021 and 2026 model not relevant at this point.		
2.2	Model calibration/ validation.	The requirement for additional model calibration / validation will be taken once comparisons have been made between the 2013 CASM model flows and the 2018 ANPR data collection.	OK – see above.				
2.3	Present year validation (if relevant).	As above.	OK – see above				

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
3	**Transport Model Methodology**						
3.1	Baseline forecast (demand growth assumption as per WebTAG guidance) including the review of committed schemes and local development plan.	Currently the CASM model has the following forecast years 2019, 2026, 2034 and 2041. Which contain committed schemes and development which have been provided by the local authorities.	T3 report indicates that future year growth in line with WebTAG guidance. Committed schemes and developments included in future models documented in T3 report.				
3.2	An uncertainty log providing a clear description of the planning status of local developments.	We have uncertainty logs which contain the planning status which have been compiled in consultation with the local authorities.	T3 report provides this.				
3.3	Description of the future year	All scenarios generated to date	T3 report provides list of network				

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
	transport supply assumptions (i.e. planned road networks examined for the baseline, core scenario and variant scenarios).	of CASM assume a core scenario (WebTAG compliant) on a neutral weekday with no road works in place.	interventions for the core scenario.				
3.4	Description of the travel cost assumptions as per WebTAG guidance (e.g. fuel costs, PT fares, parking).	All travel cost assumptions in CASM are in line with WebTAG guidance. Noting that the CASM model does not take into account car parking costs at the moment.	OK. How will parking be modelled if an option?	The current CASM model does not take into account car parking costs if parking is defined to be an option required to be assessed a methodology will be developed and shared for agreement.	OK.		

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
3.5	Description on how the options are modelled in transport models (e.g. timeframes, eligibility etc.).	All air quality options where possible will be reflected in CASM, this will include the banning of some vehicle types to certain areas in the future. As the future options are understood the impacts of how to reflect these in the model will be considered.	Full demand model with HW, PT and walk/ cycle segments, so there should be functionality for testing a range of options. Would be useful to have some discussion to what extent a CAZ charging scheme can be modelled.	Yes the CASM model has a full demand model. The CAZ methodology adopted is presented in the T3 document.	OK.		
3.6	Description of forecasted vehicle composition assumptions, if deviating from EFT assumptions.	The future year CASM model will have the following user classes Car Work, Car Commute, Car Other, LGV and HGV. More detailed	OK				

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
		forecasted vehicle compositions will be investigated in the model to represent the more detailed breakdown required by JAQU guidance.					
3.7	What and how to interpret and implement behavioural responses to all measures: replacing vehicle for compliance, avoiding zone, cancelling journeys, mode shift and other	The CASM model will be able to represent the potential behavioural responses to measures which could be assessed in the future including the avoidance of certain vehicles, and mode choice.	Again a summary of how potential measures will be modelled would be useful.	Once the option selection process has narrowed down the likely measures required to be modelled these will be shared and agreed.	OK.		
3.8	Outline of methodology for user behaviour	ANPR data will be collected which will identify the	OK				

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
	research, if undertaken.	driving patterns people take around the city centre. Other than this no other user behaviour research is planned to be undertaken.					
3.9	Describe how the transport modelling implications are fed into the air quality modelling (e.g. speed, congestion etc.).	The air quality options will be represented in the CASM model once they have been defined and traffic volumes, percentage HGVs and speeds will be provided to the air quality team for their model.	OK				
4	**Overall forecasting methodology assessment**						

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
4.1	Forecasting assumptions.	Forecasts will be provided for 2019 which will be assumed to be a good proxy for 2020/2021.	Forecasts should be produced for 2021.	A 2021 scenario (using the Demand Model) has been developed.	Noted that 2021 forecast will be produced.		
4.2	Policy options and the implementation in the model.	These will be defined as the project progresses and suitable methods will be considered on how to represent the options within the CASM model.	More information on how this will be modelled is needed.	The methodology adopted for representing the early measures and the CAZ D is defined within the T3. Other implementation options are still being defined and once they are approaches to define how they are represented	Ok		

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
				within the model will be defined.			
4.3	Modelling vehicles behaviour change that are affected by measures.	We will be able to assess the impacts of vehicles re-routing in the model in the future as a result of the measures implemented.	There are more responses than rerouting that need to be modelled. E.g. mode choice/ vehicle upgrade etc.I think you have addressed some of these issues above.	The CASM model has the ability to assess the change in mode as a result of changing costs in journeys. So once a CAZ area has been identified a methodology of how to represent this in the model will be fully defined and agreed.	Ok though note that some responses likely to be outside of CASM capability (and therefore handled externally) e.g. vehicle upgrade.		

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
5	**Final Transport Forecasting Modelling**						
5.1	The detailed vehicle fleet composition for each policy scenario and the baseline (broken down by vehicle type and Euro standard) so that changes to the fleet are clear.	Fleet composition will be identified as part of the ANPR data collection process. Our air quality team will provide assumptions as to how fleet composition will change in the future and then how this can be reflected in the future year CASM.	OK				
5.2	Details of modelling methodology.	Future year CASM scenarios will be developed based on development and infrastructure improvements	OK				

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
		planned in the local authority areas in line with WebTAG criteria (uncertainty logs). A scenario will be developed which considers a future when no air quality proposals are implemented and then scenarios considered where air quality policies are implemented. The impacts of the air quality policies can then be assessed.					
5.3	Forecast assumptions: demand growth, network changes	These assumptions will be established using data provided by the	List of assumptions to be provided when modelling finalised.				

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
	and transport costs growth.	relevant local authorities.					
5.4	Baseline forecast.	Forecast scenario when there are no air quality proposals to be developed for specific years.	OK				
5.5	Scenario testing (policy options).	The air quality scenarios are yet to be defined as they are defined how to represent them in the CASM model will be considered and agreed. There may be limitations to what the CASM model may be able to assess which shall be raised once the options are defined.	OK – needs some thoughts on what CASM can and can't model.	Please see comments above.			

Ref	Requirement	LA Proposal Description	JAQU Review Comments	WSP Responses	JAQU 2nd Review Comments	WSP Updated Comments	WSP Updated Comments (November 2018)
5.6	What and how to implement transport modelling forecast to air quality modelling.	The air quality options will be represented in the CASM model once they have been defined and traffic volumes, percentage HGVs and speeds will be provided to the air quality team for their air quality model.	OK				

JAQU review

Green – Accepted – Information meets requirement

Grey – Accepted - JAQU to provide assistance in meeting requirement

Yellow – Requires further information or a response to a question to be provided either in the table or in the report

Red – Information provided does not meet the requirement

Transport modelling documents are complete when all listed requirements are Green or Grey and required additional information are provided in the report.

Appendix B

UNCERTAINTY LOG

BIRMINGHAM: DEVELOPMENT ASSUMPTIONS

Population

Ref	Name	Certainty	2021	2031
B1A	City Centre: Strategic Sites (Permissions/Allocations)	NC	544	2861
B2A	City Centre: Non-Strategic Sites (Permissions/Allocations)	NC	952	4994
B3A	Icknield Port Loop	NC	965	2896
B18	Nocks Brickworks, Holly Lane, Erdington	NC	0	630
B19	Land at Booths Lane/Sandy Lane, Great Barr	NC	118	627
Total			**2579**	**12008**

Employment

Ref	Name	Certainty	2021	2031
B1A	City Centre: Strategic Sites (Permissions/Allocations)	NC	6455	33890
B2A	City Centre: Non-Strategic Sites (Permissions/Allocations)	NC	3280	17220
B3A	Icknield Port Loop	NC	318	318
B6A	Aston RIS Phase 1 (Holte and Priory Site/Serpentine Site)	NC	0	2208
B6B	Aston RIS Phase 2 & 3 (Queens Road/Priory Road)	NC	0	2103
B7	Perry Barr Greyhound Stadium	NC	0	841
Total			**10053**	**56581**

BLABY: DEVELOPMENT ASSUMPTIONS

Population

Ref	Name	Certainty	2021	2031
BL1	SUE, Land W. of the M1	NC	2120	10009

Employment

Ref	Name	Certainty	2021	2031
BL1	SUE, Land W. of the M1	NC	0	323
BL2	SES, Land E. of the Warrens, S. of the M69	NC	0	3161
BL3	Glenfield Park Land at Kirby Road	NC	0	3116
BL4	Fosse Park Extension	NC	359	359
BL5	Carlton Park, Narborough	NC	0	2126
Total			**359**	**9084**

COVENTRY: DEVELOPMENT ASSUMPTIONS

Population

Ref	Name	Certainty	2021	2031
C2A	Manor Farm Regeneration Area	NC	593	593
C2B	Manor Farm Regeneration Area	NC	1435	1435
C3A	New Century Park (Under Construction)	NC	645	645
C3B	New Century Park	NC	954	954
C4A	Former Peugeot Site (Under Construction)	NC	100	100
C4B	Former Peugeot Site	NC	645	645
C5	Coventry College, The Butts	NC	626	626
C6	Evening Telegraph Site	NC	546	546
C7	Friargate Regeneration Scheme (The Business Quarter)	NC	0	830
C8A	Canley Regeneration Scheme (Under Construction)	NC	116	116
C8B		NC	1025	1025
C9	Acordis/Acetate, Foleshill Road	NC	816	816
C10	AXA Tower, Well Street (Under Construction)	NC	678	678
C11	Paragon Park	NC	1186	1661
C12	Central Shopping Area North	MTL	214	214
C13	Willenhall Triangle	NC	605	605
C14	Bishopgate	MTL	629	629
C15	Keresley	MTL	1186	1186
C21	Land W. of Cromwell Lane	MTL	569	569

C23	Whitemore Park	NC	1423	1732
C24	Parkside	MTL	712	712
C26A	Town Centre - The Cultural Quarter	NC	228	228
C26J	Town Centre - The Warwick Row Area	MTL	0	247
LP1	Land at Grange Hill Farm	MTL	249	249
LP3	Former Lyng Hall Playing Field	NC	439	439
LP7	Central Depot, Foleshill Road	NC	339	339
LP8	Former City College, Tile Hill Lane	NC	273	273
LP9	Land West of Banner Lane	NC	612	612
Total			**17,144**	**20,953**

Employment

Ref	Name	Certainty	2021	2031
C7	Friargate Regeneration Scheme (The Business Quarter)	NC	4000	13000
C16	Eastern Green	MTL	0	4250
C23	Whitemore Park	NC	100	100
A1	Lyons Park	NC	2000	2000
A6	Whitley South	NC	5000	5000
Total			**11,101**	**24,351**

DAVENTRY: DEVELOPMENT ASSUMPTIONS

Population

Ref	Name	Certainty	2021	2031
D2	Monksmoor, Daventry (SUE)	NC	1095	2518
D7	Micklewell Park	NC	332	1133
D8	Woodford, Byfield Road	NC	504	504
Total			**1931**	**4155**

Employment

Ref	Name	Certainty	2021	2031
D3A	Daventry International Rail Freight Terminal (DIRFT 2)	NC	2571	2571
D3B	Daventry International Rail Freight Terminal (DIRFT 3)	NC	3325	6650
D4	Weedon Depot	NC	182	363
D5	Daventry Town Centre	NC	227	227
D6	Apex Park	NC	350	700
D7	Micklewell Park	NC	0	0
D8	Woodford, Byfield Road	NC	0	0
Total			**6,655**	**10,511**

HARBOROUGH: DEVELOPMENT ASSUMPTIONS

Population

Ref	Name	Certainty	2021	2031
H1	Land E. and W. of Broughton Way	NC	235	728
H2	Land at Stretton Road, Great Glen	NC	0	660
H3	Land at Warwick Road, Kibworth	NC	1186	1550
H4	Land at Farndon Road, Market Harborough	NC	1280	1478
H5A	Land N. Luben Hill, Market Harborough	MTL	296	296
H5B	Land W. Leicester Road, Market Harborough	MTL	0	1057
H5C	Land at Airfield Farm, Market Harborough	MTL	752	2645
H6	Harborough Rubber Site	NC	580	672
Total			**4330**	**9087**

Employment

Ref	Name	Certainty	2021	2031
H5C	Land at Airfield Farm, Market Harborough	MTL	294	1118
Total			**294**	**1118**

HINCKLEY & BOSWORTH: DEVELOPMENT ASSUMPTIONS

Population

Ref	Name	Certainty	2021	2031
HB1	Barwell SUE	MTL	178	5567
HB4	Logix Park Phase 2	NC	303	835
HB6	Tungsten Park	NC	53	53
HB10	Flude House, Rugby Road	NC	120	120
HB13	Bosworth Road, Barlestone	MTL	251	752
HB14	Sketchley Brook Site, Burbage	NC	835	835
HB17	Land W. of Hinckley	MTL	401	1893
Total			**2141**	**10056**

Employment

Ref	Name	Certainty	2021	2031
HB1	Barwell SUE	MTL	0	2258
HB4	Logix Park Phase 2	NC	699	1923
HB6	Tungsten Park	NC	294	294
HB7	Former Nailstone Colliery	NC	760	3038
HB8	Caterpillar, Peckleton Lane	NC	748	748
HB9	MIRA Ltd, Watling Street	NC	4962	4962
HB10	Flude House, Rugby Road	NC	425	425
HB11	Jarvis Porter, Coventry Road	NC	153	153
HB12	Beveridge Lane, Interlink Distribution Park	NC	390	390
HB13	Bosworth Road, Barlestone	MTL	30	91
HB14	Sketchley Brook Site, Burbage	NC	396	396
HB16	North of Coventry Road	NC	477	477
Total			**9333**	**15153**

NORTH WARWICKSHIRE: DEVELOPMENT ASSUMPTIONS

Population

Ref	Name	Certainty	2021	2031
NW6	Land at Holly Lane, Atherstone	NC	628	628
NW8A	Land at St Helena Road	NC	221	330
NW10	Tamworth Golf Course	NC	239	2502
Total			**1087**	**3460**

Employment

Ref	Name	Certainty	2021	2031
NW4A	Hall End Farm & N. of Birch Coppice (Full Permission)	NC	0	1320
NW4B	Hall End Farm & N. of Birch Coppice	NC	0	1320
NW5	Centurion Park	NC	0	1279
Total			**0**	**3919**

NUNEATON & BEDWORTH: DEVELOPMENT ASSUMPTIONS

Population

Ref	Name	Certainty	2021	2031
NB1A	Camp Hill Phase 2	NC	535	535
NB1B	Camp Hill Phase 3 Tr2, Edinburgh Road	NC	324	324
NB1C	Edinburgh Road (Camp Hill)	NC	308	308
NB1D	Close Care Apts, Edinburgh Road	NC	145	145
NB1E	Edinburgh Road (Camp Hill)	NC	14	14
NB1F	Camp Hill Phase 3	NC	728	728
NB2A	Church Lane Phase 1	NC	278	278
NB2B	Church Lane Phase 2	NC	156	156
NB3A	'Longshoot, No.48-130	NC	122	152
NB3B	'Longshoot, No. 28-44	NC	230	287
NB3C	'Longshoot, Creswell Farm	NC	276	345
NB3D	Longshoot, No194-262	NC	276	276
NB3E	Land at Lower Farm	NC	460	919
NB3F	Bellway (Phase 2)	NC	287	574
NB5	Gipsy Lane	NC	432	1190
NB8	Bermuda Village	NC	402	402
Total			**4973**	**6634**

Employment: None

RUGBY: DEVELOPMENT ASSUMPTIONS

Population

Ref	Name	Certainty	2021	2031
R1A	Rugby Gateway Phase R1	NC	561	561
R1B	Rugby Gateway Phase R2	NC	529	529
R1C	Rugby Gateway Phase R4	NC	0	303
R2A	Cawston Extension	NC	690	1379
R2B	Cawston Lane	NC	384	575
R2C	Bilton Fields	NC	0	1379
R3	Rugby Radio Station	NC	0	10942
R8	Technology Drive, Leicester Road	NC	926	1159
Total			**3089**	**16826**

Employment

Ref	Name	Certainty	2021	2031
R3	Rugby Radio Station	NC	0	6185
R4A	Prologis Ryton (Site A)	NC	743	743
R4B	Prologis Ryton (Site B)	NC	1486	1486
R4C	Prologis Ryton - Future Phase (Site C)	NC	2055	2055
R5	HTA Precision Sheet Metal Ltd	NC	268	535
R6A	Ansty Park, MTC Academy (Zone 3/4)	NC	418	418
R6B	Ansty Park, MTC Aerospace (Zone 5)	NC	547	547
R6C	Ansty Park, MTC Aerospace (Zone 6)	NC	0	1373
R7	Elliot's Field	NC	628	628
R8	Technology Drive, Leicester Road	NC	98	98
R9	Junction 1 Expansion	NC	54	54
R10	Evreux Way	NC	0	394
R12A	Coton Park, Zone B	NC	289	289
R12B	Coton Park, Zone C	NC	903	1505
Total			**7487**	**16308**

SOLIHULL: DEVELOPMENT ASSUMPTIONS

Population

Ref	Certainty	2021	2031
S3	NC	372	2,024
S4	NC	0	789
S11	NC	465	465
S12	NC	0	465
S13	NC	465	465
Total		**1303**	**4208**

Employment

Ref	Certainty	2021	2031
S3	NC	1245	2490
S4	NC	0	627
S6	NC	0	903
S14	NC	1,100	1,100
S15	NC	1,500	1,500
S16	NC	1,460	1,460
Total		**5305**	**8080**

WARWICK: DEVELOPMENT ASSUMPTIONS

Population

Housing Allocation															
Uncertainty Log	Uncertainty Log Notes	Map ID	Name	Land Use	Total Commitments in Plan Period	Total Population in plan period	Total Dwellings broken down by 5 year Plan period increments			Total Population			Notes	Status	Source
							Total within 1 - 5 Years (End : 2020/21)	Total within 6 - 10 Years (End : 2025/26)	Total within 11 - 15 Years (End : 2030/30)	Total within 1 - 5 Years (End : 2020/21)	Total within 6 - 10 Years (End : 2025/26)	Total within 11 - 15 Years (End : 2030/30)			
NC	PP granted in discussion re conditions	WDC01	Land at Asps Farm - The Asps, Banbury Road	W/14/0300 - Housing	900	2036	200	500	200	452	1131	452	PP granted in discussion re conditions	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	RM submitted	WDC02	Land between Myton Road and Europa Way - Land between Myton Road & Europa Way, Warwick	W/15/0981 - Housing	735	1663	336	399	0	760	903	0	RM submitted	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction	WDC03	Grove Farm - Grove Farm, Harbury Lane, Bishops Tachbrook	W/15/0851 - Housing	520	1176	240	280	0	543	633	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	PP granted in discussion re conditions	WDC04	Land South of Gallows Hill - Land South of Gallows Hill / West of Europa Way	W/14/0681 - Housing	450	1018	260	190	0	588	430	0	PP granted in discussion re conditions	Comitted	WDC Local plan Housing Trajectory June 2016 Final
MTL	PP granted, awaiting discharge of conditions/RM	WDC05	North of Gallows Hill	W/14/0967 - Housing	425	961	165	260	0	373	588	0	PP granted, awaiting discharge of conditions/RM	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction	WDC03	Land at Lower Heathcote Farm - Land at Lower Heathcote Farm	W/15/1473 - Housing	435	984	269	166	0	608	375	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction (Halls of Residence)	WDC07	University of Warwick - University of Warwick	20150531 - Housing	167	378	167	0	0	378	0	0	under construction (Halls of Residence)	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	built (care village)	WDC08	Land at Earl Rivers Avenue	20130464 - Housing	150	339	150	0	0	339	0	0	built (care village)	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	RM application under construction	WDC03	Land at Lower Heathcote Farm - Land at Lower Heathcote Farm, Harbury Lane	W/15/1862 - Housing	350	792	250	100	0	566	226	0	RM application under construction (part of WDC03 above)	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	RM application under construction	WDC03	Harbury Gardens - Harbury Gardens, Harbury Lane, Bishops Tatchbrook	20140023 - Housing	110	249	110	0	0	249	0	0	RM application under construction (part of WDC03 above)	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	Under construction	WDC11	Woodside Farm - Woodside Farm	W/15/0305 - Housing	225	509	225	0	0	509	0	0	Under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
MTL	site viability issues	WDC12	Land North of - Land north of Common Lane, Kenilworth	20141340 - Housing	93	210	93	0	0	210	0	0	site viability issues	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction	WDC13	Land at - Land at Tachbrook Road, Leamington Spa	20140905 - Housing	81	183	81	0	0	183	0	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction	WDC14	Plot 8002 - Plot 8002, Tournament Fields, Edgehill Drive	20101564 - Housing	60	136	60	0	0	136	0	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
MTL	under construction	WDC15	Land north of - Land North of Oakley Wood Road, Bishops Tachbrook	W/15/1078 - Housing	150	339	150	0	0	339	0	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	complete	WDC12	Multilines Unit 1 - Multilines Unit 1, Common Lane, Kenilworth	20140845 - Housing	57	129	57	0	0	129	0	0	complete	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction	WDC17	Sydenham Industrial Estate - Sydenham Industrial Estate	W/14/1132 - Housing	143	323	143	0	0	323	0	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction	WDC18	Land at Station Approach - Station Approach, Leamington Spa	W/15/0905 - Housing	212	480	212	0	0	480	0	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction	WDC27	Land south of - Land south of St Fremund Way	20120027 - Housing	132	299	132	0	0	299	0	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction	WDC03	Land North of - Land North of Harbury Lane	20130607 - Housing	79	179	79	0	0	179	0	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction	WDC03	Harbury Gardens -	W/14/1865 - Housing	90	204	90	0	0	204	0	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction	WDC58	Opus 40 - Opus 40, Birmingham Road, Warwick	W/15/0646 - Housing	85	192	85	0	0	192	0	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	nearing completion	WDC53	Land to the South of - Land to the South of	20140775 - Housing	66	149	66	0	0	149	0	0	nearing completion	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction	WDC39	Land at - Land at Spring Lane, Radford Semele	W/15/2129 - Housing	65	147	65	0	0	147	0	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
NC	under construction	WDC55	Land East of Radford Semele - Land East of Radford Semele	W/15/0297 - Housing	60	136	60	0	0	136	0	0	under construction	Comitted	WDC Local plan Housing Trajectory June 2016 Final
MTL	Has PP. In Local Plan	WDC23	Land at Montague Road	H11 - Housing	140	317	140	0	0	317	0	0	Has PP. In Local Plan	Allocated Brownfield Site	WDC Local plan Housing Trajectory June 2016 Final
MTL	Application imminent	WDC48	Land at Westwood Heath	H42 - Housing	425	961	225	200	0	509	452	0	Application imminent	New Sllocated Site 2016	WDC Local plan Housing Trajectory June 2016 Final
MTL	Application imminent	WDC49	Land at Kings Hill Lane	H43 - Housing	1800	4072	200	1000	600	452	2262	1357	Application imminent	New Sllocated Site 2016	WDC Local plan Housing Trajectory June 2016 Final
NC	Discharging conditions	WDC55	Land to the South of Offchurch Lane, Radford Semele, CV31 1TN	W/16/0196 - Housing	150	339	150	0	0	339	0	0	Discharging conditions	Comitted Site as of April 2016	WDC Local plan Housing Trajectory June 2016 Final
NC	Under construction	WDC56	Land On The West Side Of, Southam Road, Radford Semele, Leamington Spa	W/15/1761 - Housing	25	57	25	0	0	57	0	0	Under construction	Comitted Site as of April 2016	WDC Local plan Housing Trajectory June 2016 Final
MTL	PP but lack of progress	WDC57	Land off, Seven Acre Close, Bishops Tachbrook	W/16/0279 - Housing	50	113	50	0	0	113	0	0	PP but lack of progress	Comitted Site as of April 2016	WDC Local plan Housing Trajectory June 2016 Final
MTL	OUT approved		Crackley Triangle, Common Lane, Kenwilworth		93	210									

Employment

Employment Allocation																											
Uncertainty Log	Uncertainty Log Notes	Zone ID	Name	Dev Type	Site Area (ha)	Gross Floor Area	Total B1 (ha) in the plan period (With	Total B2 (ha) in the plan period	Total B8 (ha) in the plan period	Total Jobs in Plan Period	Build out in Phase 2 (2021-2026) Permissions				Build out in Phase 3 (2021-2026)				Build out in Phase 4 (2026-2031)				Notes and assumptions	Status	Source
											B1 (ha)	B2 (ha)	B8 (ha)	Total Jobs	B1 (ha)	B2 (ha)	B8 (ha)	Total Jobs	B1 (ha)	B2 (ha)	B8 (ha)	Total Jobs			
NC	Under Construction		Honiley Airfield (JLR)							300															
NC	Under Construction		Tata, Europa Way Leamington							200															
NC	Under Construction		Vitsoe, Princes Drive Leamington							50															

Uncertainty Log	Uncertainty Log Notes	Map ID	Name	Land Use	Total Additional ha (GFA)	Additional ha to be installed by 2026 (Net)	Additional employment by 2026				Additional ha to be installed by 2034 (Net)	Additional employment by 2034				Notes and assumptions	Source
							B1 ha	B2 ha	B8 ha	Total Jobs		B1 ha	B2 ha	B8 ha	Total Jobs		
NC (by 20	Discharging Conditions	WDC303	Whitley South/Cov	Whitley South/Coventry and Warwickshire Gateway - Employment						4,000 jobs					10,000 jobs		High growth forecasts supplied by WCC. Only number of Jobs supplied.

HIGHWAY SCHEMES INCLUDED

2021 Schemes in Birmingham

ID	Strategic Scheme	Coded
16	Chester Road	✓

2021 Schemes in Coventry

ID	Strategic Scheme	Coded
1	A444 Whitley Interchange / Leaf Lane	✓
3	A46/A428 Junction Signalisation	✓
7	Friargate IRR	✓
9	Broad Hill / Tile Hill Junctions	✓
10	Stoneleigh Road/Kenilworth Road	✓
11	A4600 Hospital	✓
	A46 Phase One (Stoneleigh Junction)	✓
	Coventry Station Masterplan	✓
	Eastern Green Junction	✓
	A4600 Ball Hill Junction	✓

2021 Coventry Highway Schemes Under Construction / Completed

Strategic Scheme	Coded
A45 / Kenilworth Road (lane marking)	✓
A45 Sir Henry Parkes Road	✓
Hinckley Road/Brade Drive & Hinckley Road/ Woodway Lane	✓

2021 Schemes in Daventry

ID	Strategic Scheme	Coded
2	A45 Daventry to Northampton	✓

2021 Highways England Schemes

ID	Strategic Scheme	Coded
3	M6 Junctions 5-8	✓
11	M1 Junction 19	✓
21	A45/A46 Tollbar End	✓
33	M42 Junction 6	✓
55	A5 Northern Access to DIRFT III	✓
56	A5 Southern Access to DIRFT III	✓
58	A5/A428 Halfway House Roundabout	✓
66	A45/A5 Weedon Crossroads	✓
73	Daventry Development Link	✓
	Smart Motorways Scheme M6 J2 to J4	✓

2021 Schemes in Nuneaton and Bedworth

ID	Strategic Scheme	Coded
3	A444 Coton Arches	✓
	A4254 Eastboroway/ A47 P1	✓
	A4254 Eastboroway/ A47 P2	✓

2021 Schemes in Rugby

ID	Strategic Scheme	Coded
1	Russell Heim Way Gyratory	✓
4	Rugby Western Relief Road	✓
6	A426 Leicester Road/Technology Drive/Retail Park Access	✓
8	A426 Leicester Road/Newton Manor Lane	✓
9	Junction One Retail Park Access	✓
12	D3060 Hunters Lane	✓

2021 Schemes in Warwick

ID	Strategic Scheme	Coded
10	Myton Road/Banbury Road Roundabout	✓
17	A46/A452/A4177 Birmingham Road	✓
WDC004	Emscote Road/Greville Road	✓
WDC005	Princes Drive/Warwick New Road	✓
WDC010	Dormer Place/Adelaide Road	✓
WDC011	Sydenham Drive/Radford Road	✓
WDC012	Gallows Hill 2 Lanes	✓
WDC013	Banbury Road 2 Lanes	✓
WDC026	Warwick Town Centre Proposals - Area Wide	✓
WDC028	Whitley South Mitigation	✓
WDC029	Gallows Hill Tech Park entrance	✓
WDC016	A46/Birmingham Road 'Stanks Island'	✓

WDC018	Stoneleigh Road/A46 Junction & Dalehouse Lane	✓

2031 Schemes in Birmingham

ID	Strategic Scheme	Coded
1	Dudley Road/Spring Hill Corridor Improvements	×
2	Perry Barr Highway Improvement Works	×

2031 Schemes in Blaby

ID	Strategic Scheme	Coded
2	M69 Bridge	×

2031 Schemes in Coventry

ID	Strategic Scheme	Coded
5	North-West Link Road	×
12	Coventry SW	✓
4	Burnaby Road	×
9	Broad Hill / Tile Hill Junctions	×

2031 Highways England Schemes

ID	Strategic Scheme	Coded
4	M6 Junction 10	✓
10	M1 Junctions 13-16	×
13	M1 Junctions 23a-24	×
33	M42 Junction 6	✓
A5R2A	A5 Longshoot to Dodwells dualling (if not completed in RIS1)	✓
A46R2B	A46 Coventry Eastern Bypass Junctions (Binley)	✓
A46R2B	A46 Coventry Eastern Bypass Junctions (Walsgrave)	✓
41	Birch Coppice	×
50	M1 Junction 21	×

2031 Schemes in N.Warwickshire

ID	Strategic Scheme	Coded
NWBC007	B5000/Mercian Way roundabout widening	✓
NWBC011	A5/B5000 Link Road/Site Access	✓
NWBC014	B5000 Canal Bridge Widening x 2	×
ID	Strategic Scheme	Coded
NWBC007	B5000/Mercian Way roundabout widening	✓
NWBC011	A5/B5000 Link Road/Site Access	✓
NWBC014	B5000 Canal Bridge Widening x 2	×

2031 Schemes in Nuneaton and Bedworth

ID	Strategic Scheme	Coded
4	A444/B4112 College St	✓
5	A444/Eliot Way	✓
7	B4112 Heath End Road/Greenmoor Road	✓
9	A444 Ring Road/Vicarage Street	✓
13	Lutterworth Road/Leyland Road/Wanhoe Ave	×
14	Donnithorne Ave/Coventry Road	×
15	Weddin Road/Weddington Terrace	×
16	Weddington Road/Shanklin Drive	×
18	Ansley Road/Anstley Lane	×
19	A444/Walshingham Drive	×
20	Griff/Gipsy Lane	×
21	Croft Road/The Raywoods	×
22	A425/Crownhill Road	×
23	King Edward Rd/Church St	×
24	A4254/B4114 Roundabout	✓
25	School Road/Coventry Road Exhall/Bayton Road	✓
26	Rye Piece Ringway/King Street	×
27	Woodford Lane/Nuneaton Road	×
28	Griff Roundabout	×
30	Eastboroway Dualling	✓
NBBC003	College Street / A444	✓
NBBC004	College Street / Bull Ring	✓
NBBC005	Greenmoor Road / Heath End Road	✓
NBBC019	A4254 / Crowhill Road	✓
1	Northern Relief Road	✓
2	Higham Lane/A47 Old Hinckley Road	×
6	Croft Rd/Greenmoor Rd	×
10	A4254 Eastern Corridor Improvements	×
12	Arbury Road - A444 Link Road	✓
29	Bedworth Triangle	✓
NBBC019	Coventry Road / Gipsy Lane (NC / MTL)	✓

2031 Schemes in Rugby

ID	Strategic Scheme	Coded
5	A426 Leicester Road/Central Park Drive	✗
7	A426 Leicester Road/Boughton Road/Brownsover Road	✓
15	A428 Hillmorton Road/Whitehall Road/Bruce Williams Way	✓
21	A428 Crick Road Western Traffic Signalised Junction	✓
RBC001	A5/A426 Gibbet Lane Roundabout (NC/MTL)	✓
RBC022	A5 (Northern) Roundabout Access to Rugby Radio Station site (NC / MTL)	✓
RBC023	A5 (Southern) Roundabout Access to Rugby Radio Station site(NC/MTL)	✓
RBC028	M1 Junction 18 (NC/MTL)	✓

2031 Schemes in Warwick

ID	Strategic Scheme	Coded
1	A452 Kenilworth Gyratory	✓
2	A452/Beicote Roundabout	✓
3	A452/B4113 Blackdown Roundabout	✓
4	A452 Spinney Hill Roundabout	×
5	Emscote Road/Greville Road	×
6	Princess Drive/Warwick New Road	×
7	Bath Street/High Street	×
8	Adelaide Road/Avenue Road	×
9	Dormer Place/Adelaide Road	×
11	Priory Road/Smith Street/St Nicholas Church St	×
12	Castle Hill/St Nicholas Church St/Banbury Road	×
13	A452 Europa Way/Myton Road Roundabout	✓
14	A452 Shires Retail Park Roundabout	✓
15	A452 Heathcote Roundabout	✓
16	Grey's Mallory Roundabout	✓
18	Bericote Road/Stoneleigh Road	✓
19	Kenilworth Road/Westhill Road	✓
20	Europa Way Corridor - Part 1	✓
21	Europa Way Corridor - Part 2	✓
22	Warwick Tech Park Roundabout	×
23	Banbury Road, Warwick	✓
24	Transport Infrastructure Associated with Sub-regional employment site	×
WDC001	Europa Way Dualling & Banbury Spur Dualling, Shires Retail Park Roundabout Hamburger, Europa Way Roundabout widening and signalisation, Greys Mallory signalisation	✓
WDC004	Emscote Road/Greville Road	✓
WDC006	A445/Lillington Avenue/Lillington Road	✓
WDC007	Princes Drive/Park Road	×
WDC008	Bath St Gyratory	✓
WDC012	Gallows Hill 2 Lanes	✓
WDC013	Banbury Road 2 Lanes	✓
WDC014	Myton Road Roundabout	✓
WDC015	Coventry Road/Spinney Hill Roundabout	✓

WDC019	A429/Stoneleigh Road/Gibbet Hill Road	✓
WDC024	A445/Sandy Lane	✗
WDC025	Stoneleigh Rd/B4113	✓
WDC028	Whitley South / Gateway Dev Access	✓
WDC009	Adelaide Road/Avenue Road (NC/MTL)	✓

Public Transport Schemes

Scheme Name	Delivery Year	2021	2031	Modelling Method
Midland Metro Extension to Stephenson Street	2015	✓	✓	Full
NUCKLE Phase 1: Coventry to Nuneaton	2015	✓	✓	Full
Birmingham New Street Gateway	2015	✓	✓	Full
Walsall to Rugeley Trent Valley Electrification	2017	✓	✓	Full
Cross City Line Service Extensions and Enhancements	2016	✓	✓	Full
Bromsgrove Station Enhancement	2016	✓	✓	Full
Stratford Parkway	2014	✓	✓	Full
Leamington-Coventry NUCKLE (Shuttle Train)	2026	×	✓	Full
Leamington-Coventry NUCKLE (Cross Country Route Alteration)	2026	×	✓	Full
Worcester Parkway	2019	✓	✓	Full
Coventry Railway Station Expansion	2019	✓	✓	Full
X12	2015	✓	✓	Full
DIRFT III	2019	✓	✓	Connectors Only
Lubbesthorpe SUE	2019	✓	✓	Connectors Only
Rugby Radio Station SUE	2019	✓	✓	Connectors Only
Northern Sites SUE	2019	✓	✓	Connectors Only

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