

M25 junction 10/A3 Wisley interchange TR010030 9.13 Traffic Forecasting Report

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Infrastructure Planning (Examination Procedure) Rules 2010
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Infrastructure Planning

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

M25 junction 10/A3 Wisley interchange

The M25 junction 10/A3 Wisley interchange Development Consent Order 202[x]

9.13 TRAFFIC FORECASTING REPORT

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The purpose of the M25 junction 10 model is to assess the M25 junction 10 / A3 Wisley interchange scheme. The purpose of this document is to describe the approach to traffic forecasting and present results of those forecasts. It is not the purpose of this document to report the impacts of other developments or schemes contained in the forecast horizon which is described in Chapter 3. Traffic numbers contained in this report are to be used solely in support of the M25 junction 10 scheme and should not be used 'as is' by others for different purposes. Other possible users of this report would need to agree assumptions with HE Spatial Planning and develop a bespoke assessment to their needs.



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1. Study overview

1.1 Context

- 1.1.1 In December 2014, the Department for Transport (DfT) published the Road Investment Strategy (RIS) for 2015-2020. The RIS sets out the list of schemes that are to be delivered by Highways England over the period covered by the strategy (2015 2020).
- 1.1.2 The RIS identifies improvements to M25 junction 10/A3 Wisley interchange as one of the key investments in the Strategic Road Network (SRN) for the London and South-East region. The proposed improvements being as follows:

"Improvements to the Wisley interchange and the neighbouring Painshill interchange on the A3 to improve safety and congestion across the two sites"

- 1.1.3 This commitment to take forward the scheme for delivery in RIS 1 was confirmed within the Highways England Delivery Plan.
- 1.1.4 Planning and construction of the M25 junction 10 scheme will include works to convert the intra-junction mainline M25 at junction 10, from Dual Three Controlled Motorway (D3CM) to Dual 4 All Lane Running (D4ALR). This element was previously considered solely as an element of the M25 junction 10 junction 16 Smart Motorway Project (SMP).
- 1.1.5 Due to the inter-relationship of traffic impacts between the M25 junction 10 and the conversion of the intra-junction mainline to D4ALR, and the efficiencies provided through constructing them in tandem, the assessment of the M25 junction 10 scheme through statutory processes will therefore consider the impacts of both elements holistically.

1.2 Statement of scheme objectives

- 1.2.1 Without the intervention of measures to improve junction 10, congestion on the approaches to, and through the junction will continue. This will become exacerbated by future traffic growth and would serve to discourage economic growth in the immediate surrounding areas, and along the A3 corridor. It would hinder the aspirations of the Enterprise M3 Local Economic Partnership (LEP) as well as Surrey County Council and Guildford Borough Council. There are no real alternatives to meeting this volume of travel demand via means other than road-based improvements.
- 1.2.2 The Scheme objectives have been defined in line with addressing the problems and their consequences. They align closely with the business strategies for the Highways England, the LEP and for Local Government. The objective, desired outcome from each objective and measure for success have been considered and are shown in Table 1-1.



Table 1-1: Scheme objectives

Category	Objective
Route Operation	 Support any projected traffic increases from other committed schemes on the strategic road network and avoid or mitigate against causing adverse effects elsewhere on the Local Road Network.
Capacity	 Reduce the average delay (time lost per vehicle per mile) on the mainline A3 and on M25 through junction running. Smooth the flow of traffic by improving journey time reliability (Planning Time Index) on the mainline A3.
Safety	 Reduce annual collision frequency and severity ratio on the main line A3, slip roads and M25 junction 10 gyratory.
Social	 Support the projected population and economic growth in the area. Support walking and cycling by incorporating safe, convenient, accessible and attractive routes for pedestrians, cyclists and equestrians and improving crossing facilities
	 Take account of the concerns of local communities and other key stakeholders raised during consultations.
Environment	 Support compliance with the UK's legally binding limits and targets on air quality and water quality status and support targets to cut greenhouse gas emissions and objectives for local air quality management areas. Avoid, mitigate and compensate for adverse effects on the integrity of the Thames Basin Heaths Special Protection Area and other statutory designated nature conservation sites and promote opportunities. Recognise the significance of designated heritage assets close to the route of the Scheme, including at Painshill Park and at Wisley Gardens through incorporating suitable mitigation and/or design measures to avoid or reduce significant harm.
	 Improve the quality of life for nearby residents, through addressing the effects of noise on people in the declared noise important area's (IA's) and ensuring that significant noise effects are mitigated.
	 Ensure through good design, that an appropriate balance is achieved between functionality and the Scheme's contribution to the quality of the surrounding environment, addressing existing problems wherever feasible, avoiding, mitigating or compensating for significant adverse impacts and promoting opportunities to deliver positive environmental outcomes.

1.3 Description of the Scheme

- 1.3.1 An explanation of the Scheme objectives and a detailed description of the Scheme proposals can be found in the 'Introduction to the Application' (Application document TR010030/APP/1.2). In summary, the Scheme is needed to reduce congestion, improve safety, support planned housing and economic growth and improve walking and cycling provision. The key features of the Scheme include:
 - alteration and upgrading of the existing M25 junction 10 roundabout, including elongation and widening of the circulatory carriageway, realignment, lengthening and widening of the junction entry and exit slip roads and demolition of redundant bridge structures;
 - provision of four new dedicated free-flow slip lanes at M25 junction 10, to enable left-turning traffic to pass through the junction unimpeded by traffic signals;



- conversion of the existing hard shoulders on the M25 through junction 10, to provide an additional running lane for traffic in both directions, including emergency refuge areas and associated modifications to M25 gantries, signage and road markings;
- widening of the A3 to dual four lanes between the Ockham Park junction and the Painshill junction, except where the A3 crosses over M25 junction 10, which will remain two lanes in each direction as at present;
- widening of the A245 Byfleet Road to dual three lanes between the Painshill junction and Seven Hills Road to the west;
- provision of two new dedicated slip lanes at the Painshill junction, to enable traffic leaving the A3 northbound carriageway to join the westbound A245 Byfleet Road and traffic on the A245 eastbound carriageway to join the A3 northbound, without having to enter the signalised roundabout;
- improvement of the Ockham Park junction, including installation of traffic signals on and at the entries to the junction's gyratory carriageway and new crossing facilities for pedestrians and cyclists;
- modification of A3 side road junctions, including improvement of the Old Lane junction, closure of the Wisley Lane junction and construction of a new road, bridging over the A3. to connect Wisley Lane with the A3 at the Ockham Park junction; and closure of the Elm Lane junction and provision of an alternative access to Elm Corner via Old Lane and an improved section of Byway Open to All Traffic;
- closure of private accesses from the A3 mainline carriageways and the
 provision of substitute local access arrangements, including a substitute
 access for properties between Redhill Road and Seven Hills Road South via
 a new road running alongside the A3 northbound carriageway and connecting
 to Seven Hills Road South; a substitute access for properties on the edge of
 Painshill Park via the A3 southbound on-slip and a substitute access for
 properties at Wisley Common from Old Lane and crossing the A3 via the
 replacement Cockcrow Overbridge;
- provision of new and improved facilities for pedestrians, cyclists and horse riders, including a new 5.5km long route alongside the A3 between the Ockham Park and Painshill junctions, new and replacement bridges for the benefit of non-motorised users to cross both the M25 and the A3, and new and upgraded public rights of way in the vicinity of the M25 junction 10/A3 Wisley interchange; and
- extensive areas of habitat creation and enhancement and other environmental mitigation works, including measures to compensate for the impacts of the Scheme on the Thames Basin Heaths Special Protection Area and on Bolder Mere, the provision of replacement common land and public open space and the provision of a new wildlife crossing over the A3 as part of a replacement Cockcrow overbridge.
- 1.3.2 The current Scheme designs are in Appendix A. It should be noted that this report was prepared prior to the additional targeted consultation in April 2019 and does not, therefore, reflect subsequent changes to the Scheme at



the Painshill junction that included banning of some turns and associated traffic signal operational changes.

1.4 Details of previous economic assessments

- 1.4.1 At Highways England's Project Control Framework (PCF) Stage 0 an initial estimate of the economics for a fully free flow option was prepared as detailed in the Stage 0 report. Benefits were estimated by comparing the potential journey time improvements associated with free flow operation with existing journey times through the signalised roundabout. The estimate of benefits related only to present year flows passing through the junction in an opening year. A 60-year benefit of £763m was estimated, giving a BCR of 3.1 for an assumed construction cost of £250m.
- 1.4.2 At PCF Stage 1 an initial economic assessment used TUBA and COBALT to estimate travel time and vehicle operating cost benefits. The modelling assumed that the M25 junction 10 to 16 scheme would be provided in the do-minimum and do-something cases. The benefits were masked to only include benefits to traffic using junction 10 or the network in the immediate vicinity. All assessment processes and values were in line with WebTAG using the December 2015 databook, which has subsequently been superseded.
- 1.4.3 The analysis showed that all three options had BCRs which provided "very high" Value for Money as follows:
 - Option 9 8.320
 - Option 14 7.368
 - Option 16 (full grade separation) 5.229
- 1.4.4 Option 16 had all movements grade separated and generally smaller delays on most of the turn movements. However, the additional benefits in Option 16 over Option 9 due to reduction in delays were generally negated by the extra distance that needed to be travelled for most of the right turns. Hence, additional grade separation provided in Option 16 over and above Option 9 was not projected to provide additional benefits. Option 9 and Option 14 were taken forwards for further assessment.
- 1.4.5 At PCF Stage 2, the economic case and strategic case assessments show that Option 9 and Option 14 had a balance of strengths and weaknesses in terms of outcomes achieved and issues in relation to deliverability. User benefits (travel time and vehicle operating costs) account for the largest proportion of benefits and are 19% higher for Option 9 than Option 14. In addition, accident benefits are 26% higher for Option 9. The total level of benefit was 19% higher in Option 9 than Option 14.
- 1.4.6 However, the appraisal cost for Option 9 was 29% higher than that of Option 14. This imbalance between cost and benefit differential results in Option 14 showing the highest Benefit Cost Ratio (BCR) of the two options.
- 1.4.7 Both scheme options were classified as having a High Value for Money. Table 1-2 shows Option 9 has the higher total benefit, but Option 14 can be said to provide significant safety and traffic benefits and results in a higher return on investment in proportion to the cost.



Table 1-2 Summary of PCF Stage 2 PVB, PVC and BCR Core scenario, £000s (PV)

Category	Option 9	Option 14
Present Value of Benefits (PVB)	505,670	432,501
Present Value of Cost (PVC)	157,972	122,125
Benefit to Cost Ratio (BCR)	3.20	3.54

- 1.4.8 The preferred option recommended for taking to PCF Stage 3 was therefore Option 14.
- 1.4.9 In comparison to the PCF Stage 1 analysis the BCRs for the scheme options appeared to reduce considerably, and a number of reasons for this were identified:
 - Software changes (TUBA and TEMPRO)
 - Parameter changes (Values of Time, Vehicle Operating Costs, PPK and PPM values)
 - Comprehensive improvements to the base year calibration of network and flows
 - Improved accident analysis
 - Demand model changes
- 1.4.10 At both previous stages an assumption was made regarding the M25 junction 10 to 16 scheme which was included in the do minimum and do something scenarios from the opening year. Detailed plans or descriptions were not available for the scheme at PCF Stage 1 or the early stages of PCF Stage 2, therefore an assumed scheme (namely widening to the M25 intra-junction carriageway (junction 10 becomes D4ALR) and widening between junctions (between junctions 10 and 11 the mainline is widened D5CM) was agreed with Highways England Transport Planning Group.
- 1.4.11 In February 2017, Amey-Arup released a description of the draft recommendation of the M25 junction 10 to 16 scheme that excluded between junction widening between junction 10 and 15 and the model was updated to reflect this.



2. Local transport situation

2.1 Description of the local transport system

2.1.1 The M25 junction 10 lies in the south west quadrant of the M25 London Orbital Motorway. At M25 junction 10 the A3, a key radial route from London to Portsmouth, crosses the M25 motorway. In addition to M25 junction 10 itself, it has been recognised that the adjacent junction on the A3, Painshill interchange to the north, is also a pinch-point. Figure 2-1 provides an overview of junctions on the M25 and A3 within the study area.

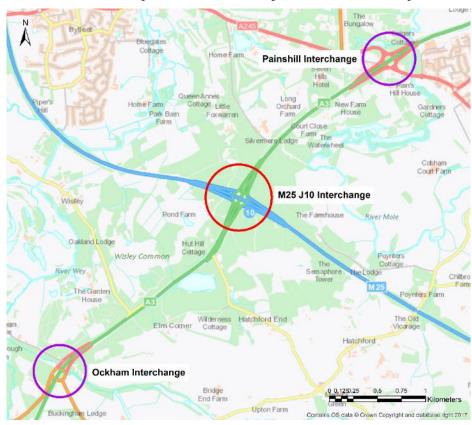


Figure 2-1: Location of junctions in M25 junction 10 vicinity

- 2.1.2 The interchange is situated in the south-west quadrant of the M25 London Orbital motorway, approximately 30km to the south-east of the City of London and 12km to the north-east of Guildford and forms the confluence of several radial routes between Surrey, Hampshire and Greater London with orbital routes between Kent, East and West Sussex, Surrey, Berkshire and beyond.
- 2.1.3 The built—up area of Cobham is approximately 3km to the north-east of M25 junction 10 (and closer to Painshill interchange), whilst Byfleet and St. George's Hill are just over 2km to the north-west. The villages of Ripley, Send and Burnt Common are situated between 3.5km and 5.5km to the south of the junction. South of the M25, the small hamlets of Elm Corner and Wisley are situated on either side of the A3, with Elm Corner being located just 320m to the east of the A3 and Wisley being approximately 1.4km to the west. The village of Ockham lies approximately to the south east of the A3 Ockham interchange. The popular visitor attractions of Painshill Park and the Royal Horticultural Society's Garden at Wisley are situated immediately alongside the A3, both to the north and south of M25 junction 10.



M25 junction 10 interchange

- 2.1.4 The M25 junction 10 interchange sits on the eastern edge of the Borough of Guildford and is also near the boroughs of Elmbridge and Woking. Together these boroughs have a population of over 375,000. These boroughs have strong and diverse economies, all containing offices of multi-national companies as well as local retail and business centres. Putting it in a broader context, the M25 junction 10/A3 Wisley interchange area is on the eastern side of the Enterprise M3 LEP area which has a population of 1.6 million and sustains 740,000 jobs. High levels of housing and employment growth are planned for this wider area.
- 2.1.5 The M25 is a D4M motorway (dual carriageway with 4 lanes in each direction) either side of M25 junction 10, although the section of the motorway between the slip-roads through the junction is of D3M standard (3 lanes in each direction). The A3 is a D3 road (dual carriage way with 3 lanes in each direction) either side of the junction, but only D2 between the slip-roads of M25 junction 10.
- 2.1.6 The junction itself is a signal controlled roundabout junction with no free-flow left-turn lanes. The roundabout has 3 lanes on the circulatory carriageway. All slip-roads have two lanes; with the A3 northbound off-slip and M25 westbound off-slip having four lanes at the stop-line, and the A3 southbound off-slip and M25 eastbound off-slip having three lanes at the stop-line
- 2.1.7 There are pedestrian, cycle and equestrian crossings on the roundabout.

Painshill interchange

- 2.1.8 Painshill interchange is approximately 2km to the north of M25 junction 10 on the A3, where it crosses the A245. This junction is the principle access point to the trunk road network for many surrounding settlements, including Cobham (via A245 east), Byfleet and Brooklands (via A245 west) and the southern parts of Weybridge and Walton-on-Thames via B365 Seven Hills Road.
- 2.1.9 The A3 is a D3 road (dual carriage way with 3 lanes in each direction) either side of, and through, the junction. The A245 has a two-lane approach from the west and a single lane approach from the east. The junction consists of a signalised two-lane roundabout with two lanes at each stop line.
- 2.1.10 To the west of Painshill, the A245 is a D2 dual carriageway for a short stretch until it crosses Seven Hills Road (Seven Hills Junction). Seven Hills Junction is a signalised junction. West of Seven Hills, both the A245 towards Byfleet and Seven Hills Road towards Weybridge are single carriageways.

Ockham interchange

- 2.1.11 Ockham Park junction is approximately 2.5km to the south of M25 junction 10 where it provides local access from Ripley, Ockham and surrounding areas. It has north facing slips only and the next junction to the south (Clandon) has only south facing slips. This junction is a non-signalised roundabout.
- 2.1.12 The A3 is a D3AP road (dual carriage way with 3 lanes in each direction) either side of, and through, the Ockham interchange. Between Ockham and M25 junction 10 the A3 is a D3 road (dual carriage way with 3 lanes in each direction).



Access Roads

- 2.1.13 There are a number of minor junctions along the A3 between M25 junction 10 and Ockham Park junction. Southbound from M25 junction 10, there is a junction with Old Lane on the A3 southbound on-slip road. Just before the turn-off into Old Lane is a layby. After the point of merging of the on-slip is the junction with Elm Lane. Elm Lane provides access to a small number of dwellings and is signed as a non-through route. There is access only between Elm Lane and the southbound A3. There is no diverging lane at Elm Lane, and turning traffic has to slow down on the main carriageway; there is also no merge lane onto the A3 from Elm Lane. Immediately after Elm Lane is a bus stop, presently served by Route 515 between Kingston and Guildford. Buses serving this stop must also decelerate and accelerate on the main carriageway.
- 2.1.14 On the northbound carriageway between Ockham Park junction and M25 junction 10 there is the junction with Wisley Lane, which leads to RHS Wisley Gardens. There is no access between Wisley Lane and the southbound A3. There is only a small length of diverging lane off the A3 into Wisley Lane. Traffic coming from Wisley Lane travels some 100m on a 'slip-road' before merging. This slip-road is also used as a bus stop and a layby. On the A3 northbound off-slip there is an access road to Pond Farm.
- 2.1.15 Between M25 junction 10 and Painshill interchange there are a number of residential accesses on to the A3 on both north and southbound carriageways in addition to access/egress from the San Domenico site.

2.2 The transport problem

The following problems and issues have been identified:

- There are no real alternatives that cater for the demands of orbital travel via other modes in this corridor
- The southwest quadrant of the M25, where M25 junction 10 sits, is one of the busiest sections of the motorway network and experiences severe congestion
- Queueing occurs on the mainline A3 daily on the approach to M25 junction 10, causing knock-on impacts to junctions to the south of M25 junction 10 and as far back as Ripley to the south and Painshill to the north and even further back during incidents
- Part of the queuing problem is caused by the difficulty accessing the M25 clockwise due to congestion on the M25 but this is being addressed through a separate M25 junction 10 to 16 scheme
- Traffic leaving the A3 at Painshill is often prevented from doing so because of local network congestion tails back from the A245 Seven Hills Road junction that is signal controlled
- The area around M25 junction 10 has one of the highest recorded collision rate across the M25. Between 2010 and 2015 there were approximately 30 Personal Injury Accidents per year on or around the junction
- The land around M25 junction 10 and the A3 is of high environmental value and include Special Protection Areas and Sites of Special Scientific Interest



- The facilities for walkers/cyclists along the A3 and at M25 junction 10 require improvement
- 2.2.1 Without appropriate intervention to improve the performance of M25 junction 10, each of these problems would be expected to deteriorate further in the future as traffic levels increase. This would result in significant consequences for the efficiency of traffic flow, road safety, network resilience, user satisfaction and environmental impact. Ultimately it will reduce the ability of the junction to perform its role in supporting local and regional aspirations for development and growth.

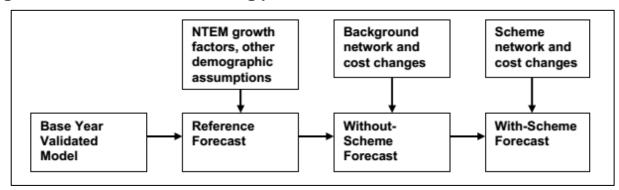


3. Traffic forecast assumptions and uncertainty

3.1 Forecasting summary approach

- 3.1.1 This section details the assumptions and inputs into the development of the forecast year traffic model. The forecasting approach applied draws on the guidance from WebTAG, in particular: TAG unit M2 variable demand modelling, March 2017; and TAG unit M4 forecasting and uncertainty, July 2017.
- 3.1.2 The overall approach to forecasting is to firstly create reference case travel demand which reflect changes in population, employment, car ownership and other demographic and economic factors. The reference case forecasts do not account for further induced changes in travel demand and patterns (in response to changes in future traffic conditions). However, they provide a useful indication of how traffic demand would be likely to grow if network conditions and travel costs were held constant into the future.
- 3.1.3 Changes in generalised cost between the base year and the reference case are then considered through the variable demand model (VDM). The VDM process modifies the reference case forecasts to reflect the impacts of increasing congestion on the road network by producing a without-scheme scenario (do minimum), and then, when required for scheme testing, capturing the relief of congestion by producing a with-scheme scenario (do something).
- 3.1.4 This overall forecasting approach is summarized in the flowchart in Figure 3-1 taken from WebTAG. The incremental VDM pivots off the base year cost changes and base year demand distribution and results in a feedback for the VDM process.

Figure 3-1: Overview of forecasting process – Core Scenario



- 3.1.5 All the aforementioned scenarios are part of an overarching core scenario forecast, for which forecast matrices were produced with National Trip End Model (NTEM 7.2) data, making any necessary adjustments to account for the local developments to be included.
- 3.1.6 DfT Road Traffic Forecasts (2015 RTF) were used for the growth of freight traffic.
- 3.1.7 Details of the planned network and developments are categorised in an uncertainty log in line with WebTAG. Infrastructure and development information in this log forms a basis for producing the core scenario travel demand.
- 3.1.8 High and low growth alternative scenarios, based on uncertainty in national growth in demand, are included in addition to the core scenario. Treatment of local uncertainty regarding planning is not included in the alternate scenarios.



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3.2 Description and justification of the forecast years

For PCF Stage 3, traffic forecasts were required for the following years:

- 2022 (year of opening)
- 2037 (design year)

The forecast years are consistent with those used in PCF Stage 1 and 2.

3.3 Core scenario and uncertainty log

- 3.3.1 The core scenario is intended to provide a sound basis for decision-making given current evidence. It must be robust and evidence-based taking on board different factors and uncertainties affecting travel demand in the future as listed in the uncertainty log. For this model, the core scenario was developed based on:
 - NTEM 7.2 forecasts on travel demand growth in the south east
 - sources of local uncertainty that are more likely to occur than not
 - appropriate modelling assumptions
- 3.3.2 The management of the uncertainties in formulating the core scenario follows relevant guidance in WebTAG, which recommends the establishment of an uncertainty log, and subsequently forming a core scenario based on the level of uncertainty identified.
- 3.3.3 In the uncertainty log, each likely change in the future was classified according to the likelihood that they will occur. The definition of each classification is summarised in Table 3-1: Uncertainty Log Classification of Future Inputs. Where a scheme or land use change is considered "near certain" or "more than likely", it will be included in the core scenario.

Table 3-1: Uncertainty Log - Classification of Future Inputs

Probability of Input	Status	Core Scenario
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.	Included in 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	Included in the Core Scenario.
Reasonably foreseeable: The outcome may happen, but there is significant uncertainty	Conjecture based upon currently available information. Discussed on a conceptual basis. One of several possible inputs in an initial consultation process. Or a policy aspiration	Excluded from 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 several possible inputs in an initial consultation process. Or a policy aspiration	Excluded from Core Scenario but may form part of the alternative scenarios

Planning Inspectorate scheme reference: TR010030



- 3.3.4 There are two principal sources of forecast error in transport models:
 - uncertainty in the model inputs (e.g. assumption about national economic growth or assumptions about the size of new housing developments)
 - error in the model parameters and specification (how these inputs propagate through the model)
- 3.3.5 WebTAG recommends that all known assumptions and uncertainties in the modelling and forecasting approach should be set out in an uncertainty log. The log will also be the basis for developing a set of alternative scenarios. The alternative scenario is used to understand the possible impact of an error in assumptions on the model forecasts. Consideration of the impact of uncertainty around input assumptions on demand forecasts should be assessed using alternative scenarios.
- 3.3.6 The purpose of the uncertainty log is to record the central forecasting assumptions that underpin the core scenario and record the degree of uncertainty around these central assumptions. These assumptions could be the basis for developing a set of alternative scenarios.
- 3.3.7 WebTAG recommends that, where the analysis covers a wide geographical area, it is usually sufficient to focus the consideration of uncertainty on the area near the Scheme being considered.
- 3.3.8 The uncertainty log summarises all known uncertainties in the modelling and forecasting approach. As well as identifying each source of uncertainty, the uncertainty log lists the following information for each source:
 - the core assumptions describing the assumptions that have been made for the Core Scenario
 - the likelihood that the scheme or development will go ahead
 - the range of assumptions around each input or parameter and, if possible, information about the distribution (e.g. a 95% confidence interval)
- 3.3.9 The source of the assumptions and the reasoning behind the stated level of uncertainty and any major interactions and dependencies on other input assumptions is included. Most sources of forecasting uncertainty can be classified into one of five categories:
 - 1. Model parameter errors
 - 2. National uncertainty in travel demand
 - 3. National uncertainty in costs
 - 4. Local uncertainty in demand
 - 5. Local uncertainty in supply/costs

Model parameter errors

3.3.10 The model parameters are determined from the realism and sensitivity tests completed on the VDM, as described in the Traffic Validation report. The output from the exercise suggested that the parameters used within the VDM result in business trips being potentially over responsive to changes in fuel costs.



National uncertainty

- 3.3.11 National uncertainty involves national projections such as demographic data, GDP growth and fuel price trends. In the core scenario, the impact of changes in demographic data is assumed to be based on the NTEM dataset, while growth in other parameters is taken from the TAG Data book.
- 3.3.12 As is the case with most models, the SERTM model will not be able to reflect the uncertainty of national trends, therefore high and low growth scenarios are used. The change consists of forecasts based on a proportion of base year demand added to the core scenario demand (for more detail see Section 4.4). National uncertainty in travel cost is typically due to uncertainty in income growth, fuel prices or government policy. These values are based on values in the v1.8 (July 2017) WebTAG databook and are shown in Table 3-2.

Table 3-2: 2015, 2022 & 2037 VoT/PPM and VOC/PPK Values

Olean	А	М	IP A	Avg	Р	М
Class	PPM	PPK	PPM	PPK	PPM	PPK
			2015			
Car Business	29.81	12.72	30.54	12.72	30.24	12.72
Car Commute	19.99	6.28	20.31	6.28	20.06	6.28
Car Other	13.79	6.28	14.69	6.28	14.44	6.28
LGV	21.07	14.52	21.07	14.52	21.07	14.52
HGV	49.19	47.63	49.19	47.63	49.19	47.63
			2022			
Car Business	32.39	12.09	33.19	12.09	32.85	12.09
Car Commute	21.72	5.52	22.07	5.52	21.79	5.52
Car Other	14.98	5.52	15.96	5.52	15.69	5.52
LGV	22.89	13.51	22.89	13.51	22.89	13.51
HGV	53.45	48.28	53.45	48.28	53.45	48.28
			2037			
Car Business	42.32	11.90	43.37	11.90	42.93	11.90
Car Commute	28.38	5.27	28.84	5.27	28.48	5.27
Car Other	19.58	5.27	20.86	5.27	20.51	5.27
LGV	29.91	13.70	29.91	13.70	29.91	13.70
HGV	69.85	53.59	69.85	53.59	69.85	53.59

Sources: 1-WebTAG Values derived from July 2017 v1.8 Databook; 2- HGV Value is double as per guidance

Local uncertainty

3.3.13 Local uncertainty typically depends on whether planned schemes go ahead near the scheme being built.



- 3.3.14 Local uncertainty in travel supply/cost relates to uncertainty in schemes that will alter the cost or performance of travel, for example a public transport service or a tolling scheme.
- 3.3.15 Local uncertainty in travel demand is a result of uncertainty in whether proposed developments are built.
- 3.3.16 Local uncertainty can also be investigated in alternative scenarios, however for the M25 junction 10 Scheme, the size, nature, phasing and physical layout of each development was provided by local authorities and are deemed as near certain or more than likely.
- 3.3.17 The local developments included are shown in Table 3-3 and in Figure 3-2. The trip generation for each site, in production/attraction form was generated using locally calculated rates within the NTEM 7.2 dataset. The growth was then "balanced" so the total production/attraction within each local county area matched NTEM 7.2 growth.

Table 3-3: Major land use developments from Local Plans

Ref	Name	Residential ¹	Employment ²	Zone
E1	Land at Chippings Farm	500	0	80105
E2	Land at east Blundel Lane	500	0	80004
E3	and to north of Kingston Bypass	500	0	80003
E4	Walton Court	300	0	80009
E5	Molesey Combo	213	0	80002
	Elmbridge (Total)	2013	0	
G1	Slyfield Ind Es	1000	131	80028
G10	Burnt Common	400	137	80018
G11	Keens Lane Guildford	140	0	80027
G12	The paddocks	51	0	80026
G13	White Lane Ash Green	62	0	80032
G14	White Lane Ash Green	58	0	80032
G15	College Copse	15	0	80032
G16	The Billings, Guildford GU1 4JY	350	0	80023
G17	North Street Redevelopment	262	0	80022
G18	Ladymead GU1 1BZ	922	0	80022
G19	Pirbright Laboratory- Institute	0	1116	80026
G2	Ash and Tongham	1267	0	80032
G3	Gosden Hill Farm, Merrow Lane	2000	1150	96003
G4	Blackwell Farm	1800	919	80030
G5	Wisley Airfield	2000	753	80106
G6	Greater Normandy	1100	198	80026
G7	Waterloo Fm East Horsley	120	0	80019



Ref	Name	Residential ¹	Employment ²	Zone
G8	Land at Manor Farm East Lane,	180	0	80019
G9	East lane / Lollesworth Rd	122	0	80019
	Guildford (Total)	11849	4404	
W1	Land to the rear of Martyrs La	1200	0	80096
W10	2 - 24 Commercial Way	200	158	80094
W11	Albert Drive, Sheerwater	346	0	80097
W12	EFCO Forsyth Path, Shee	0	70	80097
W13	Mclaren	0	1390	80096
W14	Poole Rd Industrial	0	1293	80094
W15	Forsyth Road Industrial Estate	0	158	80097
W17	Broad Oaks Parvis Rd	0	1324	80110
W2	West Hall	592	0	80110
W3	Lovelace Rd	223	0	80112
W4	Coal Yard/Aggregates Yard	422	0	80099
W5	Aviary Road, Pyrford	200	0	80112
W6	Car park east Oriental Rd	250	0	80113
W7	Sheerwater Priority Place	250	0	80097
W8	30 - 32 Woking Railway and Ath	560	792	80094
W9	Church St West	393	868	80094
	Woking (Total)	4636	6053	
	Total	18498	10457	

Source: Elmbridge, Guildford, Woking local plans

¹⁾ Residential refers to the number of households, 2) Employment refers to the no. of FTE jobs



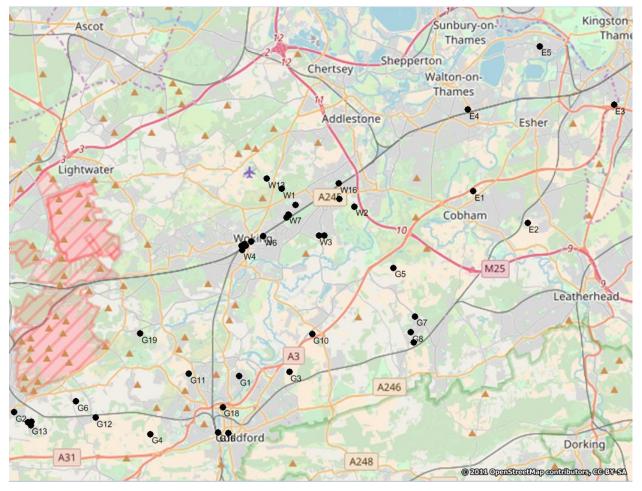


Figure 3-2: Major land use developments

3.4 Reference case forecast demand

- 3.4.1 This chapter provides a description of the derivation of the reference case forecast matrices, which are later input to the VDM in the creation of future year do minimum scenarios. The Reference Case matrices reflect the changes in demand from the base year, attributable to demographic variations such as the changes in number of jobs and residents in an area and the number of cars owned. They represent the travel demand that would arise if there were no changes in travel costs from the base year model.
- 3.4.2 The demand model then creates forecast assignments using the Reference Case matrices to extract travel costs which are pivoted off the base year assignment. Using this methodology, the do minimum forecast matrices are created accounting for:
 - Changes in the value of time resulting from changes in income (based on WebTAG values)
 - Changes in fuel efficiency and operating costs which change the cost of car travel
 - Transport interventions between the base year and the forecast year
 - Changes in levels of congestion arising from changes in car usage



3.4.3 The do minimum and do something scenarios are generated by using travel costs from the converged base year scenario as the pivot point. Both scenarios use consistent reference case demand matrices, changes in value of time and vehicle operating and wider transport interventions.

NTEM 7.2 planning data

- 3.4.4 The basis for developing the future year trip matrices was a combination of the NTEM 7.2 database for private trips and the National Transport Model (NTM) for freight vehicles.
- 3.4.5 NTEM 7.2 forecast trip ends use several data inputs, including:
 - Population forecasts based on the 2011 Census and using the Office for National Statistics (ONS) 2012-based forecasts
 - Dwellings updated using local authority annual monitoring reports
 - Employment updated using 2012-based employment projections
 - The distribution of employment and workers by region in the 2011 base year (and hence in all years) – updated using workforce jobs and the labour force survey
 - A comprehensive update and re-estimation of the National Car Ownership Model
 - A re-estimation of trip rates based on the National Travel Survey
- 3.4.6 NTEM 7.2 forecasts have been used inside the local council areas, to act as a control on the overall growth after applying the increases from local developments described above. Within the South East region, growth has been constrained at NTEM county level. Outside this area, growth has been controlled to balance to regional target values. The process to develop the growth accounts for car ownership.

Growth in car trip matrices

- 3.4.7 All matrix forecasting was prepared at the 24-hour average weekday level and in production/attraction format for home based trips, to maintain consistency with the requirements of the VDM.
- 3.4.8 The starting point for the application of NTEM 7.2 growth to the base year 2015 car trip matrices was through the identification of trip end factors by trip purpose and car availability.
- 3.4.9 The traffic generation assumed for the local development sites, was based on the information in Table 3-3 and allowed for a percentage completion in 2022 and 2037. The trip distribution was based on the Base Year 2015 trip distribution for the zone in which each development was located.
- 3.4.10 The car trip matrices containing trip making from specific developments within the Area of Detailed Modelling (AoDM, see Transport Model Package) were added to the 2015 Base Year matrices and then a process of balancing was applied to ensure that the trip end growth at the level of the local counties was consistent with NTEM7.2 in all forecast years. This adjustment is in accordance with WebTAG guidance.



3.4.11 After the VDM model was completed a further highway only assignment was undertaken which featured specific trip generation and distribution for RHS Wisley gardens and Wisley Airfield (see Section 3.6).

Growth in freight trips

- 3.4.12 WebTAG advises that when preparing forecasts for goods vehicles in highway models, growth factors from the NTM may be used. The NTM (published in March 2015) combines inputs from specialist freight models with passenger transport forecasts to produce a combined forecast of road traffic.
- 3.4.13 Growth factors are available in NTM for LGVs, articulated heavy vehicles and rigid heavy vehicles by region. The NTM growth forecasts for the South East region were used as the basis for calculating the HGV growth rates. The NTM provides forecast vehicle-miles for 2022 and 2037. The resulting factors are summarized in Table 3-4.

Table 3-4: Highway reference case matrix growth vs NTEM7.2/NTM

	2022 Core vs Base		2037 Core vs Base			
Trip Purpose	Core Ref Case	NTEM 7.2 (NTM₁)		Core Ref NTEM 7.2 (NTM Case		2 (NTM₁)
	Global	GB	SE	Global	GB	SE
HBEB	7.0%	7.0%	7.2%	17.0%	16.5%	15.1%
HBW	4.5%	4.3%	4.5%	13.2%	12.5%	11.4%
HBO	7.8%	7.5%	8.6%	23.6%	22.1%	25.2%
NHBEB	5.4%	5.2%	5.9%	14.6%	13.8%	14.4%
NHBO	6.6%	6.5%	7.4%	19.3%	18.5%	20.5%
Fixed (ports)	9.5%	-	-	20.2%	-	-
LGV	19.3%	19.5%	19.4%	57.3%	57.3%	57.5%
HGV	6.0%	6.0%	7.6%	18.7%	18.8%	19.4%
Car (HB)	6.7%	6.3%	7.0%	19.6%	18.1%	19.3%
Car (NHB)	6.3%	6.1%	7.0%	18.2%	17.2%	18.7%
Freight (All)	14.8%	-	-	44.3%	-	-
Total	7.7%	-	-	22.7%	-	-

¹⁾ The Core Reference Case change refers to the entire, i.e. Global matrix, which is predominantly in the South East but includes the whole of Great Britain. Hence a direct comparison with NTEM GB/SE is not possible

- 2) SE refers to South East region, GB refers to Great Britain as defined in NTEM 7.2
- 3) All NTEM 7.2 growth refers to Average Weekday Production/Attraction Trip End data. Non Home Based trips are growthed by Time period and Origin/Destination Trip Ends, hence NTEM 7.2 data is indicative only
 - 4) LGV and HGV growth is based on NTM 2015 Growth.
 - 5) NTEM 7.2 data was extracted using the TEMPRO 7.2 software



Overall growth in reference case matrices

3.4.14 The impact of applying the various growth factors is summarised in Table 3-5. This shows the reference case trip matrix demand totals.

Table 3-5: Reference case highway trip matrix totals

Trip Purpose	Format	2015 Base	2022 Core	2037 Core
HBEB	PA	4,398,029	4,707,695	5,147,773
HBW	PA	19,721,875	20,610,227	22,331,708
HBO	PA	34,536,884	37,241,862	42,698,202
NHBEB	OD	2,055,968	2,166,245	2,356,045
NHBO	OD	6,970,096	7,431,800	8,311,997
Fixed (ports)	OD	135,603	148,447	162,987
LGV	OD	6,712,819	8,005,053	10,557,873
HGV	OD	3,269,571	3,465,807	3,881,126
Car (HB)	-	58,656,788	62,559,785	70,177,683
Car (NHB)		9,026,064	9,598,045	10,668,042
Freight (All)	-	10,117,993	11,619,307	14,601,985
Total	-	77,800,845	83,777,137	95,447,711

Highway trip totals are based on average weekday in March for a 24-hour period

Home Based (PA) trip growth is based on NTEM 7.2 Production Attraction factors

Non-Home Based (OD) trips are based on NTEM 7.2 Origin Destination data by time period

The trip matrices were growthed, then Development Trips included, then the matrices were "balanced", for each NTEM 7.2 County within the SE region.

Outside the South East region, the matrix has been "balanced" by each NTEM 7.2 Region.

HEIDI 4.3 was used to create and balance the Forecast reference case demand. Default convergence criteria was utilised: a maximum of 20 iterations and a minimum of 5 for the Root Mean Square Error.

- 3.4.15 The percentage growth for each trip purpose is shown in Table 3-4. The forecast growth in the reference case matrices (7.7% 2015 to 2022 and 22.7% 2015 to 2037) for all trip purposes over the whole model.
- 3.4.16 The matrix covers the whole of GB but is predominantly focused on the SE region. The comparison with NTEM 7.2 here is with 24-hour production and attraction data. The matrix growth process considers car availability and treats non home-based trips differently, hence a direct comparison with NTEM is for indicative purposes only but considered a useful evaluation.
- 3.4.17 The Reference case matrix growth is shown to be broadly consistent with NTEM 7.2 and NTM growth.

3.5 Forecast year networks

Consistency with SERTM

3.5.1 Outside the AoDM (which is detailed in the validation report) the do minimum highway networks infrastructure changes are consistent with the SERTM. Each



- of the committed schemes are included on top of the validated base year network. The 2022 network uses coding assumptions from the 2021 SERTM and the 2037 network assumes the same infrastructure as the 2041 SERTM.
- 3.5.2 For a list of the committed infrastructure assumptions included in the forecast years see the associated forecasting report and uncertainty log.

Do Minimum network

- 3.5.3 The do minimum network comprises of the validated base network with the addition of the SERTM schemes outside the AoDM. The area around junction 10 is consistent with the base model. During the project it was found that there were various network issues, therefore, convergence fixes and traffic signalisation optimisation was undertaken. The localised changes made to the base network are shown in Table 3-6. A full list of the schemes is found in the SERTM traffic forecasting report.
- 3.5.4 It should be noted that in future year models, including the do-minimum, a version of the M25 junction 10 to 16 Smart Motorway scheme is incorporated. The scope of the junction 10-16 scheme is as defined by the M25 junction 10 to 16 team, namely widening to the M25 carriage within junctions (4 lanes at junction 11, junction 12 and junction 15) and no widening between junctions. Between junction 10 and junction 12 the mainline will remain as 4 lanes and widening to 5 lanes will only take place between junction 15 and junction 16. Previously the widening to 4 lanes of the M25 carriage within junction 10 was part of this scheme, however this has now been incorporated as part of the M25 junction 10/A3 Wisley interchange Scheme.

Table 3-6: Summary of major schemes on SRN in forecast year networks

Infrastructure	Description	Year
A3 widening Guildford	Widening of A3 between A31 and north of Guildford	2037
M25 junction 10 to junction 16	Four lanes through junctions 11, 12 and 13 with no widening of mainline between junction 10 and junction 15. M25 mainline between junction 15 and 16 to be widened to 5 lanes. RIS1 scheme assumed opening in same time frame as junction 10 scheme	2022
M4 junction 3 to 12	Provision of SM-ALR between junctions 3 and 12. This results in a lane gain along the entire scheme, except through the junctions at 4b and 10. As part of these improvements there are also changes to many of the slip roads to reflect the changed mainline carriageway layout.	2022
M4 junction 10 (M4/A329(M) interchange)	Merge slip roads from the M4 to A329(M) NB and SB one lane capacity. Improved slip road capacity by adding extra merge slips to A329(M) NB and SB to relieve congestion.	2022
M25 Cobham services	Accessed from both sides of the carriageway and permits U-turns between junction 9 and 10	2012
Wisley Airfield Development	As part of future year Wisley airfield development changes at Ockham roundabout (Signalising priority movements)	2037



Do Something network

- 3.5.5 A high-level design of the Scheme tested is illustrated in Figure 3-3. This shows the extents of the Scheme which is being tested. A full set of designs is found in Appendix A.
- 3.5.6 The coding was consistent between the future and forecast year networks. The Scheme was coded using Geographic Information System (GIS) formats (to ensure node locations and link lengths were representative) and the Regional Transport Model network coding manual. The consistency of the base and forecast networks allowed for transfer of data between traffic modelling and air and noise quality assessments and checks of operational and economic performance.
- 3.5.7 Prior to running the VDM, traffic signal information and operational timings were derived from previously issued models. To ensure the most efficient operation practicable at the junction, further optimisation and refinement (using localised signal software Paramics and LINSIG) was utilised and an additional assignment of the highway models was undertaken. This is discussed in Section 3.6.

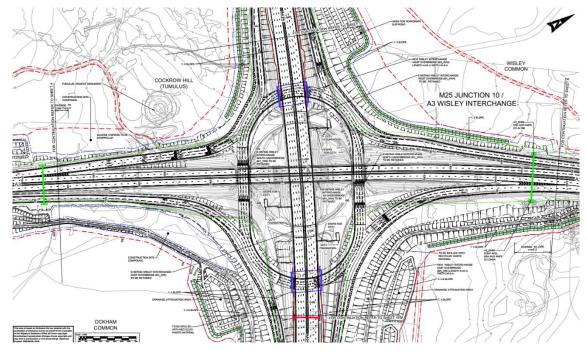


Figure 3-3: M25 junction 10 Improvement Scheme

3.6 VDM and post VDM highway adjustments

Guidance on highway assignment and VDM convergence

3.6.1 Convergence of the post VDM highway assignment model is important in providing consistent and robust model results. In particular, there needs to be confidence that any differences reported by the model between a 'do minimum' and a 'do something' scenario are real, rather than relating to differing degrees of model convergence.



- 3.6.2 Guidance on the degree of model convergence is given in WebTAG. This recommends a guideline target for a GAP value of 0.1% or less. In addition, WebTAG recommends that the proportion of links for which the changes in traffic volumes is less than 1% should be at least 98% for four consecutive iterations.
- 3.6.3 DIADEM software undertakes the variable demand modelling process in response to changing travel times or costs. The process is iterative and modifies the model demand matrices between SATURN assignments until a balance is achieved between demand and supply (the capacity of the road network). The success in achieving this balance or equilibrium is defined using convergence criteria such as the demand/supply gap, commonly termed '%Gap' (note this is different to the same term used in highway assignment).
- 3.6.4 The objective of this process is to achieve a well converged VDM with realistic demand responses, thereby improving the accuracy of the Scheme benefit calculations (e.g. in TUBA). The regional transport models utilised a criterion of a %Gap of less than 0.1% for the fully modelled area and 0.2% for the sub-area. This is retained for the analysis.

Convergence of the Diadem model

- 3.6.5 During the modelling analysis it was found that the highway assignment and also the VDM had issue regarding convergence, noise and model run times.
- 3.6.6 The computational time to complete a single loop of the VDM is substantial (approximately 2-3 days) which does not include time to set-up the process and then analyse the results afterwards.
- 3.6.7 Various tests were undertaken, using different scenarios and forecast years, to determine the optimum number of VDM loops required to meet an acceptable level of convergence. It was agreed, primarily due to time constraints but also after testing the optimal requirement for convergence, that the VDM process would terminate after 10 loops for each scenario.
- 3.6.8 The results achieved from the convergence of the variable demand model for the Core Scenarios are shown in Table 3-7. The results show that the variable demand model achieves, for the fully modelled area, the recommended demand/supply gap for the do minimum and the do something for the forecast years. The level of convergence within the sub area, whilst above the recommended values, was deemed acceptable as it was marginally just above 0.2%.

Table 3-7: DIADEM convergence statistics (Core Scenario)

Year	Scenario	Final Diadem	Gap	%
		Loop	Fully Modelled Area	Sub Area
2022	2 DM 10	10	0.04%	0.20%
	DS	10	0.04%	0.23%
2037	DM	10	0.06%	0.22%
	DS	10	0.05%	0.24%

3.6.9 The convergence of the highway assignment model (which had an impact on the DIADEM convergence) was continually an issue and various measures were



taken to improve the convergence and reduce model noise. Continually rerunning DIADEM with marginal localised convergence improvements was considered impractical given the long run times. It was therefore agreed that a stable VDM platform would be established and then subsequent model improvements would be undertaken with highway only assignment post VDM (Section 3.6).

Impact of VDM on forecasting

- 3.6.10 The output matrix resulting from VDM varies between the base; the do minimum and do something scenarios in respect of changes in the total number of trips. The differences between each matrix in terms of the VDM effects in 'global' (i.e. Great Britain) trips, by mode, and time period between the key scenarios for each modelled forecast year, is summarised in Table 3-8 (2022) and Table (2037).
- 3.6.11 The increase in trips between the base year and forecast do minimum is largely a result of 'demographic' traffic growth from the reference case demand. Slightly counteracting this is a modal shift response between car and public transport as people respond to changes in highway network congestion.
- 3.6.12 The difference in highway trips between the do minimum and do something in the forecast years captures the modal shift response that is predicted to result directly from the introduction of the junction 10 Scheme.
- 3.6.13 The demand model suppresses the reference case demand, even with the Scheme but the level of highway induced traffic, by time period, as a result of the Scheme is very small but is expected to see a small overall increase over 24 hours, with an increase of more than 900 vehicles in the 2037 AM peak period and 600 in the PM peak period.

Table 3-8: VDM change in 2022 highway and PT trip demand

Time		High	ghway PT (Rail)			PT (Rail)		
Period	Base	Ref Case	Do Min	Do Some	Base	Ref Case	Do Min	Do Some
24 Hr	67,682,852	72,157,830	72,094,084	72,094,752	4,585,975	4,826,006	4,908,044	4,907,488
AM	13,865,242	14,709,705	14,679,391	14,680,214	1,550,371	1,625,009	1,644,375	1,644,155
IP	23,970,408	25,622,204	25,599,114	25,599,365	864,504	916,914	941,251	941,142
PM	16,118,817	17,152,153	17,108,330	17,108,872	1,303,236	1,366,984	1,386,810	1,386,696
OP	13,728,385	14,673,768	14,707,249	14,706,302	867,864	917,100	935,608	935,496
		RC vs Base	Do Min vs RC	Do Some vs Do Min		RC vs Base	Do Min vs RC	Do Some vs Do Min
24 Hr	-	6.6%	-0.1%	668	-	5.2%	1.7%	-555
AM	-	6.1%	-0.2%	824	-	4.8%	1.2%	-220
IP	-	6.9%	-0.1%	251	-	6.1%	2.7%	-109
PM	-	6.4%	-0.3%	541	-	4.9%	1.5%	-114
OP	-	6.9%	0.2%	-948	-	5.7%	2.0%	-111

1) The trip totals include all home and non-home base trips (excluding fixed ports and freight)



Table 3-9: VDM change in 2037 Highway and PT trip demand

Time						PT (Rail)			
Period	Base	Ref Case	Do Min	Do Some	Base	Ref Case	Do Min	Do Some	
24 Hr	67,682,852	80,845,726	80,294,171	80,295,204	4,585,975	5,249,089	5,766,565	5,765,598	
AM	13,865,242	16,334,322	16,211,104	16,212,048	1,550,371	1,758,868	1,883,961	1,883,578	
IP	23,970,408	28,846,356	28,673,847	28,674,226	864,504	1,005,445	1,170,067	1,169,877	
PM	16,118,817	19,148,943	18,971,602	18,972,204	1,303,236	1,484,413	1,599,470	1,599,271	
OP	13,728,385	16,516,105	16,437,618	16,436,725	867,864	1,000,364	1,113,066	1,112,872	
		RC vs Base	Do Min vs RC	Do Some vs Do Min		RC vs Base	Do Min vs RC	Do Some vs Do Min	
24 Hr	-	19.4%	-0.7%	1,033	-	14.5%	9.9%	-967	
AM	-	17.8%	-0.8%	944	-	13.4%	7.1%	-384	
IP	-	20.3%	-0.6%	379	-	16.3%	16.4%	-190	
PM	-	18.8%	-0.9%	602	-	13.9%	7.8%	-199	
OP	-	20.3%	-0.5%	-893	-	15.3%	11.3%	-194	

Post VDM adjustments

- 3.6.14 During the modelling process, several issues were found with the model: run times, convergence and noise resulted in some spurious results in scheme operational and economic appraisal. Measures to reduce this impact, along with more accurate representation of local demand were required. It was agreed that a number of changes, post VDM, were required to ensure a more stable, robust model. The following changes were made and a highway only assignment was undertaken. All the following outputs are based on this version of the model. The changes made include:
 - Network adjustments including: signal optimisation, network and capacity fixes and refinement of template coding outside the AoDM and signal optimisation using external software (Paramics/LINSIG) with the core area
 - Highway demand matrix changes to Wisley Gardens and Wisley Airfield, to ensure a more accurate representation of trip generation and distribution of these development sites and
 - Use of refined Fixed Cost Function area

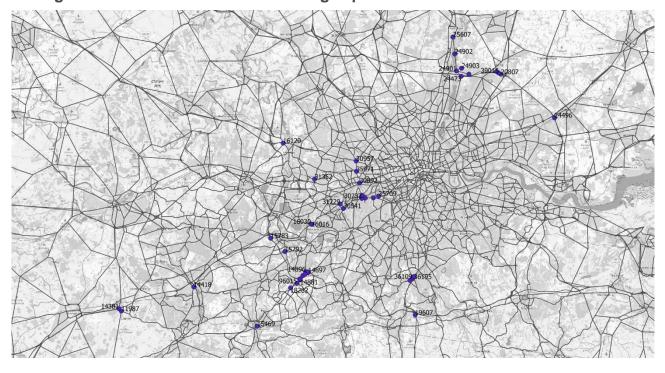
Post VDM: network adjustments

- 3.6.15 A summary of the steps for optimised scheme traffic signal timings are:
 - Do minimum and do something demand flows from the VDM output were used in signal timing optimisation software, LINSIG
 - The operational timings calculated by LINSIG were then utilised in the strategic model highway networks post VDM assignments



- Signal timings were optimised for junction 10, Painshill and Seven Hills scheme junctions
- 3.6.16 In all cases, the assignments were checked against the do minimum to ensure logical changes in demand were occurring. An additional sensitivity test, utilising signal timings from the base model (rather than optimised using LINSIG) has been and is presented in the Paramics Forecasting Report.
- 3.6.17 Outside the AoDM, for both the do minimum and do something networks, the following checks and changes were undertaken:
 - Traffic signal timings which were resulting in convergence issues were manually adjusted to ensure the most efficient operation practicable for each scenario and time period
 - Some updates to the SERTM template coding was also required to minimise issues with model convergence and noise and more accurately represent junction operation
 - It was ensured that other than scheme changes at junction 10 all other network adjustments are included in both the do minimum and do something to provide consistency for the economic analysis
- 3.6.18 In addition to the above, difference plots and further analysis between do minimum and do something networks were undertaken to assess the changes as a result of the Scheme and consistency of assignment between the Scheme. The location of the coding changes, post VDM is shown in Figure 3-4. This mainly focused on signal optimisation (in the Scheme area and the south-west of London), fixing noise with flares (in Guildford and around M25 junction 11) and other minor convergence fixes (in north-east London). All changes are consistent in the Do Minimum and Do Something models.

Figure 3-4: Location of network changes post VDM





Post VDM: Highway demand changes (Wisley Airfield and RHS Wisley Gardens)

3.6.19 The forecast highway trip generation and distribution for both Wisley Airfield and RHS Wisley Gardens are shown in **Table 3-10**. These were based on the respective Transport Assessments prepared in support of the planning applications, and in the case of RHS Wisley Gardens, represents a special event on a weekday rather than a typical day.

Table 3-10: Trip generation at RHS Gardens Wisley and Wisley Airfield (PCUs)

	R	HS Wisley G	ardens (PCU	Wisley Airfield (PCUs)				
Time Period	2022		2037		2022		2037	
	From	То	From	То	From	То	From	То
AM	198	240	234	277	110	92	1,033	350
IP	327	378	386	451	145	88	406	323
PM	344	388	238	290	126	97	451	802
OP	42	51	37	45	22	23	48	50
24 Hr	4,095	4,762	4,180	4,949	1,842	1,372	7,467	5,996

Post VDM: use of Fixed Cost Function

3.6.20 As discussed in the model validation report, the use of the fixed cost function within the SATURN software suite was employed to reduce run times and improve convergence. An area outside of the close proximity to the area affected by the Scheme was chosen. This is shown in Figure 3-5 as the area outside this region has fixed costs.



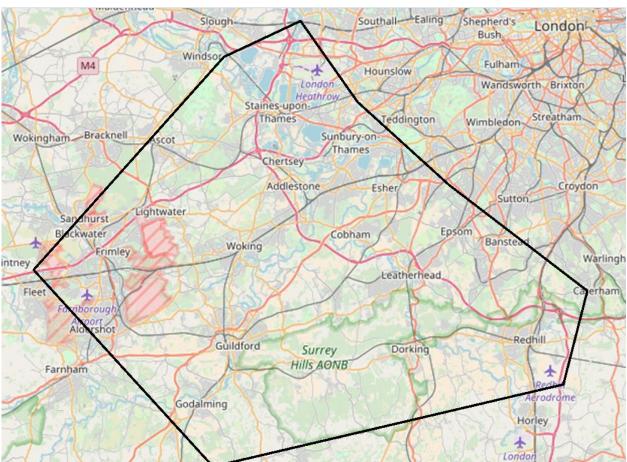


Figure 3-5: Fixed cost function region post VDM highway assignment



4. Forecast results

4.1 Introduction

- 4.1.1 The results presented are based on the outputs from the highway only assignment (post VDM) with the changes made to the network, localised demand adjustments and utilising the Fixed Cost Function. There are four aspects of the forecasts that are presented and discussed, as follows:
 - Historical trends and projected growth the historical trends on the key mainline links of the M25 and A3, through junction 10 are presented, alongside the projected traffic forecasts in the do minimum scenario
 - Cordon network statistics the impact, at a local area of the Scheme on travel behaviour expressed in terms of changes in number of trips and travel time
 - Junction 10 throughput and delays forecast traffic flows across local screenlines and junction 10 flows for the do minimum and do something
 - Travel times visualisation of changes in travel times between do minimum and do something schemes on journey time routes within the area of detailed modelling
- 4.1.2 A full set of tables, showing journey time, traffic flow and volume over capacity ratios is found in Appendix Appendix B.

4.2 Highway assignment model convergence

4.2.1 The highway assignment model convergence output is shown in Table 4-1. This shows that the model converges to WebTAG recommendations in 2022 and 2037.

Table 4-1: Core Global highway assignment convergence statistics

Criteria	2022			2037		
Criteria	AM	IP	PM	AM	IP	РМ
	Do Minimum					
Loops (N)	9	9	9	12	10	10
% flows	99.1	99.6	98.9	99.2	98.1	98.9
% GAP	0.021	0.012	0.025	0.034	0.033	0.039
	Do Something					
Loops (N)	10	9	10	11	11	11
% flows	99.3	99.4	99.1	98.4	98.2	98.9
% GAP	0.021	0.012	0.026	0.037	0.031	0.043
These numbers are based on the global output from the post VDM core highway only assignment						

These numbers are based on the global output from the post VDM core highway only assignment.

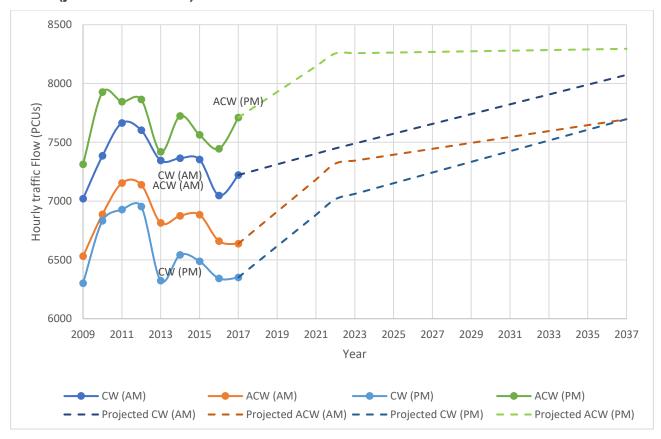


4.3 Core scenario forecast outputs

Historical trends and projected traffic flow in the do minimum

- 4.3.1 This output is based on information from the WebTRIS database, for data collected in March of each year. The modelled projections are based on information from the do minimum core scenario models. In each case the hourly flow refers to the average peak period.
- 4.3.2 For the M25, data for 2010 and 2011 has been estimated. The historical trends and projected changes on the M25 (junction 10 to 11) are shown in Figure 4-1 and are summarised as:
 - Traffic flow is greatest in the anti-clockwise (ACW) direction in the PM and clockwise (CW) in the AM. These flows are projected to grow very marginally as capacity and congestion is expected to constrain growth
 - By 2037 traffic in both directions and in all time periods is expected to reach between 7,500 - 8,200 PCUs per hour. This is close to the current maximum observed flows as traffic reaches four lane capacity

Figure 4-1: Historical trends and projected do minimum traffic flow: M25 (junction 10 to 11)

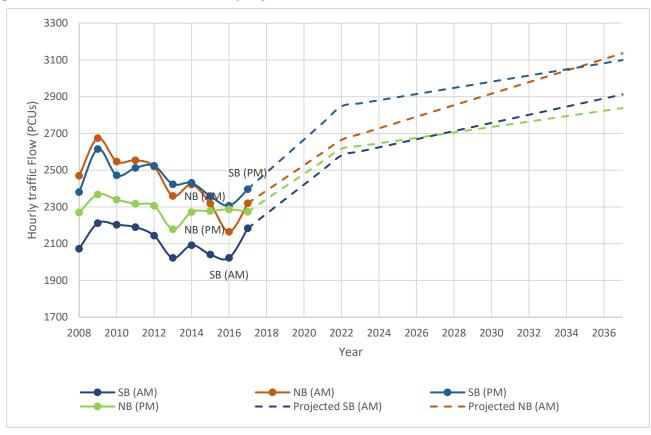


- 4.3.3 The historical trends and projected changes (shown in Figure 4-2) in the do minimum scenario on the A3 mainline (two lane) through junction 10 are:
 - Historical traffic trends in almost all-time periods and directions has generally shown flat or declining growth since 2009
 - Despite the lack of growth in traffic in recent years, levels of congestion on the SRN remain a persistent problem.



- The traffic forecast is generally projecting large growth of approximately 400-500 PCUs per hour. This is a result of growth projections provided by the DfT which include nearly 12,000 residential households and 4,400 FTE jobs being developed in Guilford and near to the A3 and over 2,000 households in Elmbridge. See Table 3-3 and Figure 3-2 for reference
- There are also network improvements which are expected to result in improved capacity on the A3
- 4.3.4 These infrastructure and land use developments are projected to result in the large increase shown in Figure 4-2.

Figure 4-2: Historical trends and projected do minimum traffic flow: A3



4.3.5 These comparisons with historical trends show that the do minimum forecasts are considered sufficiently robust to use to test the effects of the proposed junction 10 Scheme.

Cordon Network Statistics

4.3.6 Cordon network statistics are presented in Table 4-2. The cordon region, extracted from the full strategic model and consistent with the operational Paramics microsimulation, is shown in Figure 4-3.



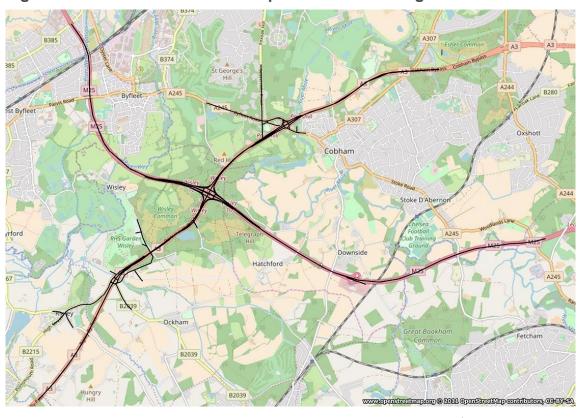


Figure 4-3: Extents of cordon for operational modelling

4.3.7 The outputs show increased demand into the cordoned area (the increase in trip demand resulting from the Scheme) of approximately 600-1000 PCUs in 2022, increasing to 800-1200 PCUS in 2037. This demand response is a result of the junction becoming more attractive due to reduced average travel time of up to 100 seconds.

Table 4-2: Core cordon network comparison statistics

Davamatar		2022		2037		
Parameter	AM	IP	РМ	AM	IP	РМ
	Do Minimum					
Total Demand (PCUs)	25873	23590	26233	29106	26994	28896
Av Travel Time (secs)	514	448	493	618	497	541
	Do Something					
Total Demand (PCUs)	26866	24183	26894	30293	27827	29703
Av Travel Time (secs)	423	371	393	526	412	445
		Do So	mething vs	Do Minimum		
Increased Demand (PCUs)	992	593	661	1187	833	808
Av Travel Time (secs)	-91 (-18%)	-77 (- 17%)	-100 (- 20%)	-92 (-15%)	-85 (- 17%)	-96 (- 18%)
These values are derived from global statistics output from the cordon of the full highway model						

Planning Inspectorate scheme reference: TR010030



Junction 10 throughput and delays

- 4.3.8 A summary comparison of the junction 10 throughput (total vehicles (PCUs) travelling through the junction) is shown in Table 4-3. This shows that the throughput is expected to decrease in the do minimum against the base in 2022 and increase in 2037 and delay to increase in both forecast years. This is due to the way that signal timings have been optimised in the future year do minimum scenario. This is to be consistent with the optimisation of the future year this is to cater for the increase in the circulatory traffic flows and aims to limit queues on the other off-slips.
- 4.3.9 The introduction of the Scheme is expected to result in a reduction in delay relative to the base, with a decrease of up to 61% in 2022, equivalent to a 70 second decrease.
- 4.3.10 The Scheme is expected to reduce travel time in Table 4-2 by a greater amount than the delay reduction in Table 4-3 as the Scheme introduces free flow slips and reducing congestion.

Table 4-3: Core junction 10 throughput and delay comparison

Scenario	Core	% change vs base	Core	% change vs base
АМ	Throughp	out (PCUs)	Av Dela	y (secs)
Base	7819	-	114	-
DM-2022	7436	-5%	128	12%
DS-2022	9012	15%	45	-61%
DM-2037	7511	-4%	159	39%
DS-2037	9628	23%	105	-8%
IP	Throughp	out (PCUs)	Av Dela	y (secs)
Base	6798	-	57	-
DM-2022	6788	0%	84	47%
DS-2022	7493	10%	36	-37%
DM-2037	7533	11%	98	72%
DS-2037	8401	24%	48	-16%
PM	Throughp	out (PCUs)	Av Dela	y (secs)
Base	7689	-	76	-
DM-2022	7374	-4%	92	21%
DS-2022	8342	8%	36	-53%
DM-2037	7981	4%	116	53%
DS-2037	8860	15%	45	-41%

Journey times

4.3.11 The changes in travel time, between the do minimum and the do something are shown in for the M25 junction 10 and in Table 4-4 for the M25 and Table 4-5 A3



mainlines. This can be seen visually, for 2037 only, in Figure 4-4 (AM) and Figure 4-5 (PM).

- 4.3.12 These journey time comparisons show that the Scheme option provides significant journey time savings throughput the local area (green). Where there are increases in travel time (red) these are isolated to:
 - Old Lane this is a very low flow turn
 - Painshill / A3 Junction southbound exit slip in the AM
 - The A307 in Cobham
 - Ripley village
- 4.3.13 Note, where there are new links, e.g. the new slip roads onto the M25 at junction 10, these show as travel time increases. Whilst there are expected to be increases in journey time through Ripley Village and particularly on the approach to the Ockham Park junction, the overall changes in journey times between Ripley village and Painshill as a result of the Scheme (as shown in Figure 4-5 are expected to show marginal decreases in all cases.

Figure 4-4: Journey time comparison 2037 AM DS vs DM



Note: red shows a travel time increase and green a decrease



Figure 4-5: Journey time comparison 2037 PM DS vs DM



Note: red shows a travel time increase and green a decrease



Table 4-4: M25 junction 10 Journey Times - Core Scenario DS vs DM

	Core S	cenario	DS vs	Core S	cenario	DS vs
M25 junction 10 Turns	DM 2022	DS 2022	DM (%)	DM 2037	DS 2037	DM (%)
			A	M		
Left turn for A3SB to M25	398	114	-71%	460	117	-75%
Right turn from A3SB to M25	502	211	-58%	607	357	-41%
Left turn from M25CW to A3SB	395	131	-67%	458	162	-65%
Right turn from M25CW to A3NB	301	178	-41%	294	276	-6%
Left turn from A3NB to M25	268	157	-42%	440	329	-25%
Right turn from A3NB to M25	267	231	-13%	402	362	-10%
Left turn from M25ACW to A3NB	122	94	-23%	143	98	-32%
Right turn from M25ACW to A3SB	313	211	-33%	398	277	-30%
			ı	P		
Left turn for A3SB to M25	264	113	-57%	297	117	-60%
Right turn from A3SB to M25	383	184	-52%	405	220	-46%
Left turn from M25CW to A3SB	219	110	-50%	280	135	-52%
Right turn from M25CW to A3NB	239	169	-29%	177	221	25%
Left turn from A3NB to M25	181	131	-28%	238	157	-34%
Right turn from A3NB to M25	206	206	0%	235	241	3%
Left turn from M25ACW to A3NB	104	92	-12%	134	94	-30%
Right turn from M25ACW to A3SB	223	174	-22%	332	203	-39%
			Р	M		
Left turn for A3SB to M25	324	124	-62%	212	136	-36%
Right turn from A3SB to M25	385	189	-51%	290	221	-24%
Left turn from M25CW to A3SB	318	134	-58%	417	164	-61%
Right turn from M25CW to A3NB	268	168	-37%	212	195	-8%
Left turn from A3NB to M25	197	133	-33%	275	155	-44%
Right turn from A3NB to M25	231	222	-4%	300	243	-19%
Left turn from M25ACW to A3NB	135	95	-30%	139	95	-32%
Right turn from M25ACW to A3SB	276	199	-28%	440	237	-46%

Application document reference: TR010030/APP/9.13 (Vol 9) Rev 0



Table 4-5: M25 and A3 Mainline Journey Times – Core Scenario DS vs DM

	Core S	cenario	De vo	Core S	cenario	DS va			
M25 junction 10 Turns	DM 2022	DS 2022	DS vs DM (%)	DM 2037	DS 2037	DS vs DM (%)			
	AM								
M25 CW J9 to J11	227	226	0%	239	236	-1%			
M25 ACW J11 to J9	683	670	-2%	732	715	-2%			
A3 NB Ripley Crossroads to Painshill	383	351	-8%	588	391	-33%			
A3 SB Painshill to Ripley Crossroads	332	338	2%	432	393	-9%			
			ll l	P					
M25 CW J9 to J11	224	224	0%	238	237	0%			
M25 ACW J11 to J9	678	660	-3%	751	726	-3%			
A3 NB Ripley Crossroads to Painshill	263	265	1%	316	291	-8%			
A3 SB Painshill to Ripley Crossroads	282	290	3%	363	339	-7%			
			Р	М					
M25 CW J9 to J11	220	222	1%	230	231	1%			
M25 ACW J11 to J9	810	771	-5%	842	795	-6%			
A3 NB Ripley Crossroads to Painshill	299	270	-10%	373	304	-18%			
A3 SB Painshill to Ripley Crossroads	330	332	0%	405	392	-3%			

- 4.3.14 Table 4-6 show the flows for the key turning movements on M25 junction 10 and for key links in the Scheme vicinity. These show significant increases in capacity and hence flow for most of the turning movements in the do something option when compared with the do-minimum.
- 4.3.15 There is a decrease in flow going through junction 10 in both directions, which can be attributed to an increase in vehicles using the A3 to join the M25 at junction 10, as opposed to joining at junction 9.
- 4.3.16 An increase in flow on some local roads is expected, however in the Scheme proximity an overall decrease of up to 0.5% is expected to be seen on the non-SRN network. This will result in a decrease in travel times of almost 1% on the same network.
- 4.3.17 Links flow changes on roads with low traffic volumes (700 vehicles) can be considered insignificant if the change is within ±100 vehicles. This is consistent with WebTAG/DMRB link traffic flow validation criteria and model standard error.
- 4.3.18 This is also presented visually, for 2037, in **Figure 4-6** (AM) and **Figure 4-7** (PM).

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Table 4-6: Traffic Flow Comparison AM – Core Scenario DS vs DM

		Core S	cenario	DS vs	Core S	cenario	DS vs
	Movement	DM 2022	DS 2022	DM (%)	DM 2037	DS 2037	DM (%)
	A3 SB junction 10 Off slip – left	295	364	23.4%	304	381	25.2%
	A3 SB junction 10 Off slip	723	1286	78.0%	745	1529	105.3%
0	M25 CW junction 10 Off slip – left	1016	1445	42.2%	1072	1372	28.0%
M25 junction 10	M25 CW junction 10 Off slip	405	366	-9.5%	400	359	-10.1%
125 jun	A3 NB junction 10 Off slip – left	1399	1651	17.9%	1461	1945	33.1%
2	A3 NB junction 10 Off slip	1101	1238	12.4%	1039	1352	30.1%
	M25 ACW junction 10 Off slip – left	1120	1158	3.4%	1109	1188	7.2%
	M25 ACW junction 10 Off slip	1376	1504	9.3%	1382	1503	8.7%
	M25 J9 – junction 10 (CW)	6816	6784	-0.5%	7479	7332	-2.0%
	M25 junction 10 (CW)	5395	4973	-7.8%	6008	5611	-6.6%
inline	M25 junction 10 – J11 (CW)	7448	7836	5.2%	8073	8338	3.3%
M25 Mainline	M25 J11 – junction 10 (ACW)	7319	7431	1.5%	7696	7800	1.4%
2	M25 junction 10 (ACW)	4823	4769	-1.1%	5205	5109	-1.8%
	M25 junction 10 – J9 (ACW)	6175	6316	2.3%	6553	6773	3.4%
	A3 South of junction 10 (NB)	5286	5492	3.9%	5928	6506	9.8%
ainline	A3 South of junction 10 (SB)	4680	5165	10.4%	5012	5881	17.3%
A3 Mainline	A3 North of junction 10 (NB)	4153	4136	-0.4%	4566	4777	4.6%
	A3 North of junction 10 (SB)	3598	3953	9.8%	3961	4558	15.1%
	Newark Lane (EB)	379	367	-3.1%	284	247	-13.0%
Ripley	Portsmouth Road (SB)	910	936	2.8%	1212	996	-17.9%
S. S.	Rose Lane (WB)	80	75	-6.0%	144	169	17.7%
	High Street (NB)	644	656	1.8%	804	994	23.6%
<u> </u>	Byfleet Road (EB)	1120	1165	4.0%	1231	1303	5.9%
Ξ	Seven Hills Road (SB)	702	725	3.3%	680	735	8.1%
Seven Hills	A3 – A245 (WB)	2023	2221	9.8%	2108	2231	5.8%
0)	Seven Hills Rd South (NB)	55	55	0.6%	63	64	1.2%



	Mayamant	Core So	cenario	DS vs	Core S	cenario	DS vs
	Movement	DM 2022	DS 2022	DM (%)	DM 2037	DS 2037	DM (%)
	A3 NB off-slip	1417	1400	-1.2%	1449	1637	13.0%
Painshill	A245 Byfleet Road slip	1645	1719	4.5%	1685	1816	7.8%
Pain	A3 SB off-slip	778	838	7.7%	924	697	-24.5%
	A245 Byfleet Road slip	1113	1169	5.0%	1131	1178	4.1%
	Byfleet Rd West of Seven Hills (EB)	1120	1165	4.0%	1231	1303	5.9%
	Byfleet Rd West of Seven Hills (WB)	1324	1360	2.7%	1338	1362	1.7%
pads	Byfleet Rd East of Seven Hills (WB)	2023	2221	9.8%	2108	2231	5.8%
Local Roads	Byfleet Rd East of Seven Hills (EB)	1645	1719	4.5%	1685	1816	7.7%
	Wisley Lane to A3	213	160	-25.1%	484	213	-55.9%
	A3 to RHS Wisley	164	156	-4.8%	197	230	17.2%
	Ockham Road North (NB)	551	584	6.1%	536	525	-2.0%
	Ockham Road North (SB)	139	102	-26.4%	174	196	12.4%

Legend Increase Decrease

Figure 4-6: Traffic flow comparison 2037 AM DS vs DM

Note: Green represents an increase in flow, red a decrease



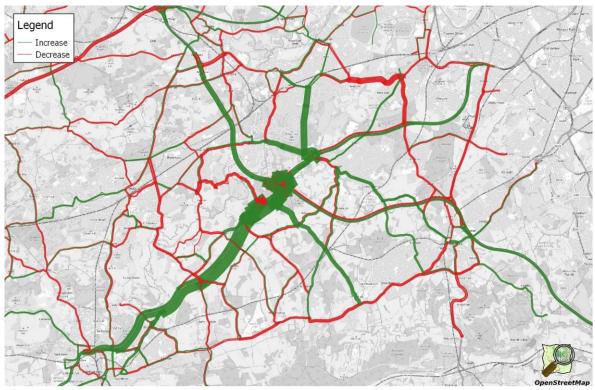
Table 4-7: Traffic flow comparison PM - Core Scenario DS vs DM

		Core So	cenario	DS vs	Core S	cenario	DS vs
	Movement	DM 2022	DS 2022	DM (%)	DM 2037	DS 2037	DM (%)
	A3 SB junction 10 Off slip – left	352	529	50.6%	457	570	24.8%
	A3 SB junction 10 Off slip	725	1045	44.1%	1058	1305	23.4%
0	M25 CW junction 10 Off slip – left	922	1326	43.8%	1087	1251	15.1%
M25 junction 10	M25 CW junction 10 Off slip	388	377	-2.7%	431	385	-10.7%
125 jun	A3 NB junction 10 Off slip – left	1319	1377	4.3%	1339	1463	9.2%
2	A3 NB junction 10 Off slip	1101	1008	-8.5%	1161	1205	3.7%
	M25 ACW junction 10 Off slip – left	1212	1238	2.1%	1121	1127	0.6%
	M25 ACW junction 10 Off slip	1354	1442	6.5%	1327	1553	17.0%
	M25 J9 – junction 10 (CW)	6333	6509	2.8%	6987	7063	1.1%
	M25 junction 10 (CW)	5023	4807	-4.3%	5469	5427	-0.8%
M25 Mainline	M25 junction 10 – J11 (CW)	7016	7159	2.0%	7697	7859	2.1%
	M25 J11 – junction 10 (ACW)	8255	8265	0.1%	8295	8306	0.1%
2	M25 junction 10 (ACW)	5688	5585	-1.8%	5847	5625	-3.8%
	M25 junction 10 – J9 (ACW)	7023	7070	0.7%	7342	7291	-0.7%
	A3 South of junction 10 (NB)	5037	5008	-0.6%	5415	5586	3.1%
A3 Mainline	A3 South of junction 10 (SB)	4947	5291	7.0%	5199	5943	14.3%
A3 M8	A3 North of junction 10 (NB)	4227	4249	0.5%	4386	4418	0.7%
	A3 North of junction 10 (SB)	3924	4216	7.5%	4614	4840	4.9%
	Newark Lane (EB)	354	357	0.9%	296	274	-7.6%
Ripley	Portsmouth Road (SB)	832	943	13.3%	1151	1179	2.4%
Rig	Rose Lane (WB)	37	24	-35.6%	95	93	-1.7%
	High Street (NB)	525	546	4.0%	787	827	5.0%
<u>S</u>	Byfleet Road (EB)	1119	1157	3.4%	1297	1458	12.4%
	Seven Hills Road (SB)	631	699	10.8%	615	736	19.7%
Seven Hills	A3 – A245 (WB)	1817	1891	4.0%	1565	1890	20.8%
0)	Seven Hills Rd South (NB)	0	0	0.0%	0	0	0.0%



	Marramant	Core S	cenario	DS vs	Core So	cenario	DS vs
	Movement	DM 2022	DS 2022	DM (%)	DM 2037	DS 2037	DM (%)
	A3 NB off-slip	1345	1330	-1.1%	1347	1466	8.9%
Painshill	A245 Byfleet Road slip	1653	1758	6.4%	1788	2065	15.5%
Pain	A3 SB off-slip	522	572	9.6%	416	474	14.0%
	A245 Byfleet Road slip	1146	1216	6.1%	1255	1196	-4.7%
	Byfleet Rd West of Seven Hills (EB)	1119	1157	3.4%	1297	1458	12.4%
	Byfleet Rd West of Seven Hills (WB)	1134	1142	0.7%	1028	1151	11.9%
oads	Byfleet Rd East of Seven Hills (WB)	1817	1891	4.0%	1565	1890	20.8%
Local Roads	Byfleet Rd East of Seven Hills (EB)	1653	1758	6.4%	1788	2065	15.5%
	Wisley Lane to A3	291	267	-8.5%	450	353	-21.5%
	A3 to RHS Wisley	167	166	-0.8%	190	183	-4.0%
	Ockham Road North (NB)	447	454	1.6%	566	505	-10.8%
	Ockham Road North (SB)	208	214	2.6%	228	227	-0.5%

Figure 4-7: Traffic flow comparison 2037 PM DS vs DM





4.3.19 Appendix C contains a complete set of traffic flow data from the Strategic traffic model for all links and time periods for both the Do-minimum and Do-something scenarios. It should be noted that this report was prepared prior to the additional targeted consultation in April 2019 and the traffic flows do not, therefore, reflect subsequent changes to the Scheme at the Painshill junction that included banning of some turns and associated traffic signal operational changes.

4.4 Sensitivity tests

Uncertainty with respect to traffic growth

- 4.4.1 The Core Scenario discussed earlier in this report, is intended to be the best basis for decision-making given current evidence. However, there is no guarantee that the outturn will match the assumptions. Therefore, sensitivity testing is undertaken to provide answers to questions such as:
 - under high traffic growth assumptions, is the intervention still effective in reducing congestion, or are there any adverse effects
 - under low traffic growth assumptions, is the intervention still economically viable
- 4.4.2 Most transport models will not be able to fully reflect the uncertainty of national trends such as GDP growth, fuel price trends and vehicle efficiency changes. This is because they will be relying on the national models underlying NTEM. Therefore, the DfT recommends that the impact of this uncertainty is quantified by using High and Low Growth scenarios.
- 4.4.3 High and Low Growth scenarios should be subject to a full appraisal in accordance with the guidance in the appraisal WebTAG Units, using the same modelling structure as the Core Scenario but with different demand assumptions.

Derivation of low and high growth

- 4.4.4 In accordance with WebTAG Unit M4 on Forecasting and Uncertainty, the Low and High growth traffic forecasts should be based on a proportion of base year demand added to, or taken away from, the demand for the reference case core scenario. The proportion of base year demand to be added or subtracted is based on a parameter p which varies by mode. The proportion is calculated as follows:
 - for one year after the base year, proportion p of base year demand added to or subtracted from the core scenario
 - for 36 or more years after the base year, proportion 6*p of base year demand added to or subtracted from the core scenario
 - between 1 and 36 years after the base year, the proportion of base year demand should rise from p to 6*p in proportion with the square root of the years. (So, for example, 16 years after the base year the proportion is 4*p)
- 4.4.5 For highway demand at the national level, the recommended value of p is 2.5%. This reflects uncertainty around annual forecasts from the NTM, based on the macro-economic variables that influence the main drivers of travel demand.



4.4.6 For this Scheme, forecasts were required at the opening year (2022) and the design year (2037). Therefore, appropriate low and high growth factors were required for each modelled year. The base proportion factors have been applied to each user class within the model. The factors utilised are shown in Table 4-8.

Table 4-8: Reference case matrices: Central, low and high growth factors

Time Period	Forecast Traffic Growth from 2015 base							
Time Period	Central	Low	High					
2022	6.5%	0%	13.1%					
2037	19.2%	7.6%	30.8%					

The matrix changes refer to the variable demand segments of the whole matrix only. Change have also been applied to fixed and freight traffic by the same proportions.

Summary low and high growth highway summary outputs

- 4.4.7 High and low growth was run for all years and time periods, however, for pragmatic reasons, only the lowest growth scenario (2022 low) and the highest growth scenario (2037 high) are presented.
- 4.4.8 The cordon network statistics and throughput and delay are shown in Table 4-9 and Table 4-10 respectively and as in the core scenario show the do minimum against the do something scenario. A consistent pattern can be seen where the lowest growth scenario still provides travel time benefits and the highest growth scenario is still effective in reducing congestion. The patterns presented are also broadly consistent with the core scenario.
- 4.4.9 Further sensitivity tests on the operational impact at junction 10 of different network assumptions have been presented in the Paramics Forecasting Report.

RTF18

- 4.4.10 In September 2018 the DfT released updated road traffic forecasts, using the National Transport Model (NTM), this is an update on the RTF15 forecasts used for the core scenario. These changes only affect growth in freight traffic. There is expected to be a reduction in growth of freight compared to the RTF15.
- 4.4.11 The results of each sensitivity test is presented below.

Table 4-9: 2022 Low, 2037 High growth & RTF18: Cordon network comparison statistics

Paramet		2022						2037					
er	AM	PM	AM	РМ	AM	PM	AM	РМ	AM	PM	AM	PM	
	Core Do Low Do Minimum Minimum				Core Do Minimum				RTF18 Do Minimum				
Total Demand (PCUs)	2587	2623	2520	2553	2561	2586	2910	2889	2969	2958	2840	2829	
Av Travel Time (secs)	514	448	528	506	509	484	618	541	606	528	574	527	

Application document reference: TR010030/APP/9.13 (Vol 9) Rev 0



Paramet		2022						2037					
er	AM	PM	AM	РМ	AM	PM	AM	РМ	AM	РМ	AM	PM	
		e Do ething		Do ething	RTF1	8 Do ething		e Do ething	Core			18 Do ething	
Total Demand (PCUs)	2686	2689	2592	2617	2656	2658	3029	2970	3069	3025	2940	2904	
Av Travel Time (secs)	423	393	439	404	419	383	526	445	519	437	492	431	
	Core D	DS vs M		OS vs M	RTF18	DS vs M		DS vs M	Core I			DS vs M	
Increase Demand (PCUs)	992	661	720	644	948	720	1187	808	994	673	994	747	
Av Travel Time (secs)	-91	-100	-89	-102	-90	-101	-92	-96	-87	-91	-82	-96	

These values are derived from global statistics output from the cordon of the full highway model for the High-Low growth scenarios. Total demand is presented in 10s of vehicles

Table 4-10: Low, high & RTF18 growth junction 10 throughput and delay comparison

Scenario	Low	RTF18	Core	High	Low	RTF18	Core	High	
AM		Throughp	ut (PCUs)	ut (PCUs) Av Delay (secs)					
Base	7819	7819	7819	7819	114	114	114	114	
DM 2022	7413	7428	7462	7472	121	127	141	143	
DS 2022	7550	7864	7778	7705	40	42	44	43	
DM 2037	7512	7525	7518	7563	145	149	157	171	
DS 2037	8249	8401	8319	8288	70	82	105	109	
IP		Throughp	ut (PCUs))	Av Delay (secs)				
Base	6798	6798	6798	6798	57	57	57	57	
DM 2022	6666	6735	6787	6855	78	80	84	87	
DS 2022	6202	6301	6370	6365	33	34	35	36	
DM 2037	7415	7463	7517	7600	98	98	111	115	
DS 2037	6999	7074	7152	7047	42	44	48	56	
PM		Throughp	ut (PCUs)			Av Dela	y (secs)		
Base	7689	7689	7689	7689	76	76	76	76	
DM 2022	7333	7365	7381	7399	88	88	92	96	
DS 2022	6748	6963	6978	6933	34	35	35	36	
DM 2037	7982	7991	8000	7933	105	106	115	125	



DS 2037	7475	7542	7549	7535	42	44	44	45

4.5 Outputs for other analysis

4.5.1 Modelling outputs are required to support the economic and environmental assessments. This chapter outlines the methodology and factors used to expand the three modelled peak hours to 12 hour/16 hour/18 hour/24 hour average annual weekly traffic (AAWT) or average annual daily traffic (AADT) flows.

Environmental

- 4.5.2 Flows from the DM and DS models were used to determine Annual Average Daily Traffic (AADT) for use in Air Quality modelling, and Annual Average Weekday Traffic (AAWT) for use in the Noise modelling.
- 4.5.3 Multiple links were identified as being in the Affected Road Network. AADT and AAWT factors were applied to each link, and the resulting flow calculations along with HGV percentage, and speeds were provided to the environmental assessment team.

Operational modelling

- 4.5.4 Cordoned flows from the DM and DS models were used to provide inputs to LINSIG, Paramics and Arcady modelling for use in the operational assessment of scheme options.
- 4.5.5 Operational assessment has taken place at M25 junction 10, Painshill interchange & Seven Hills Road/ Byfleet Road junction and Ockham interchange.

Economics

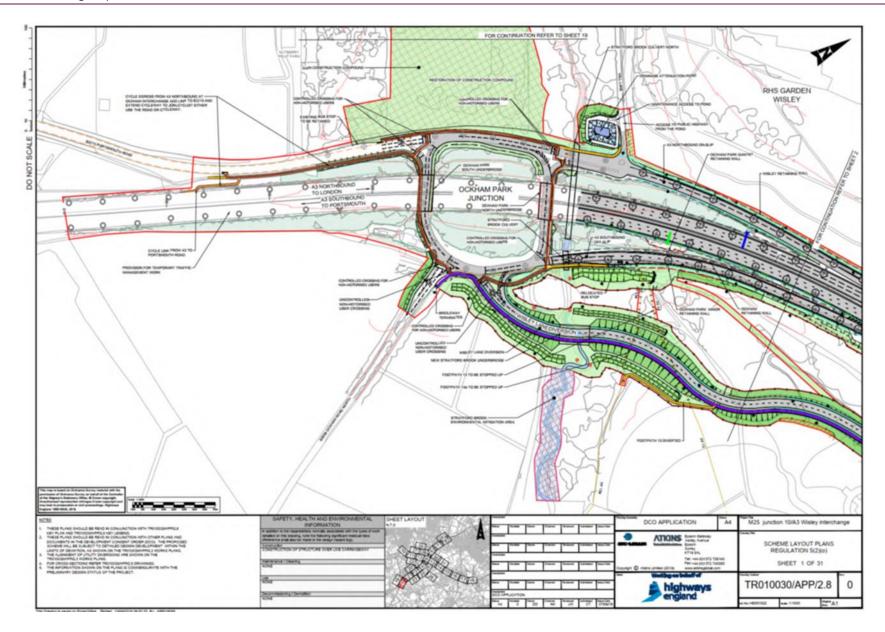
- 4.5.6 For the DM and DS scenarios, annualisation factors were used to convert estimates of demand related costs and benefits experienced during the modelled peak hours into estimates of total annual costs and benefits in 24 hour working week days for each modelled year.
- 4.5.7 The factors were based on an assumption of 253 working days per year and comparison of relative levels of demand in the shoulder periods around the main peak hours in the peak periods, identified from Highways England 2014 traffic count data at the junction.
- 4.5.8 These outputs formed the basis of preparing the Traffic User Benefit Appraisal (TUBA) inputs.

Appendices

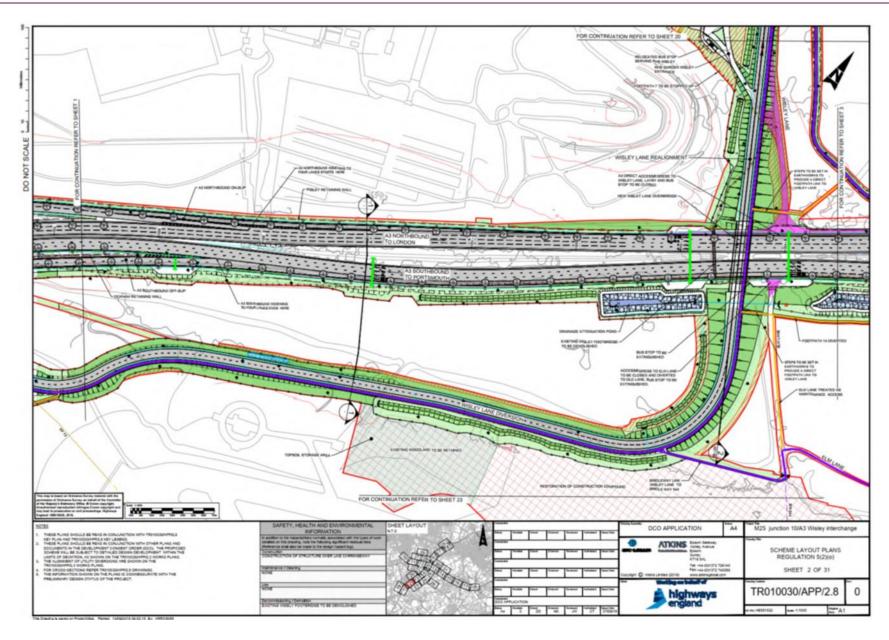


Appendix A Scheme designs

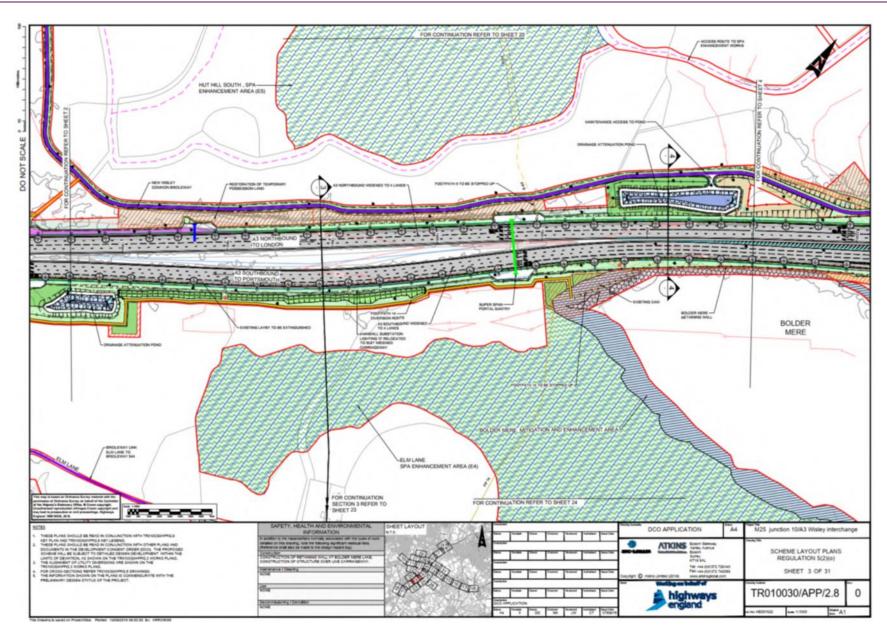




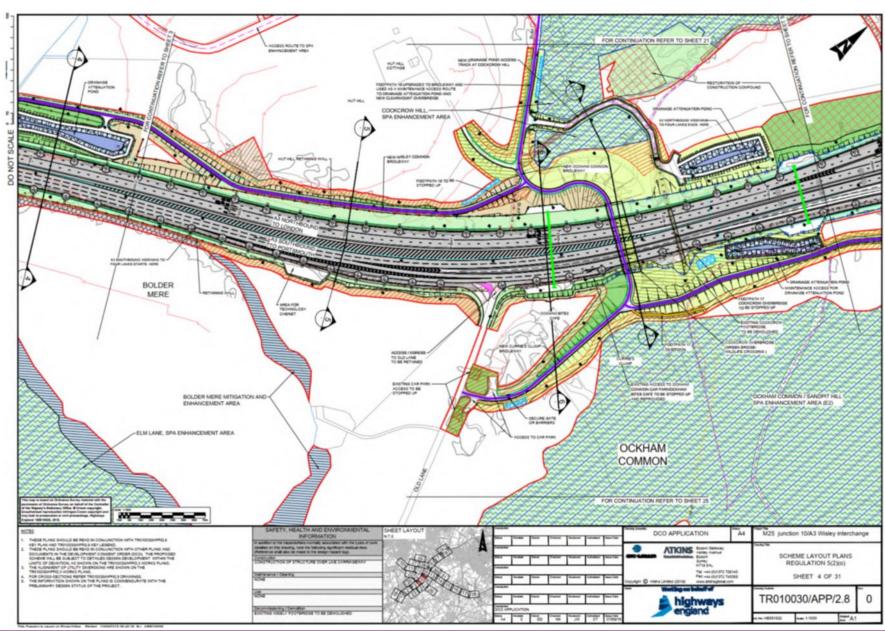




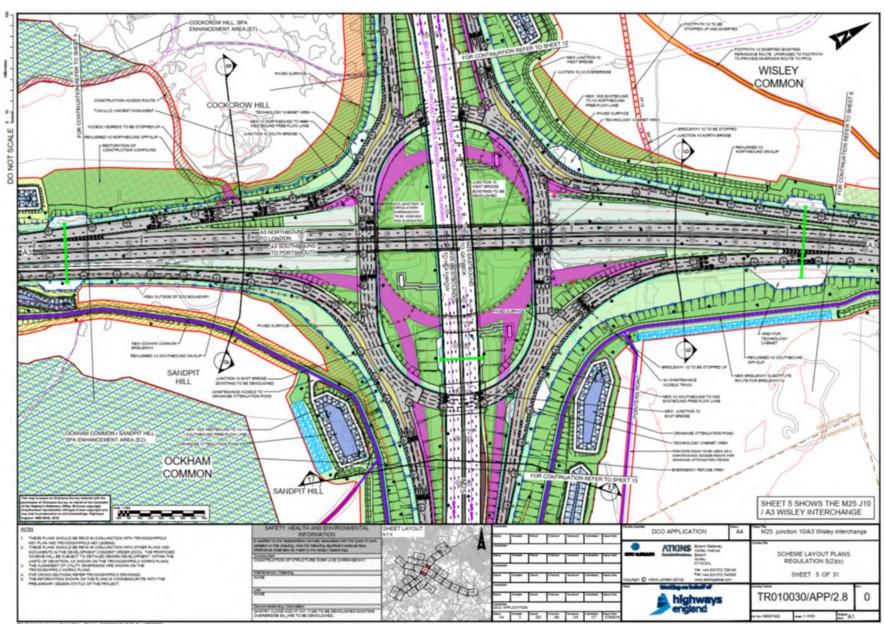




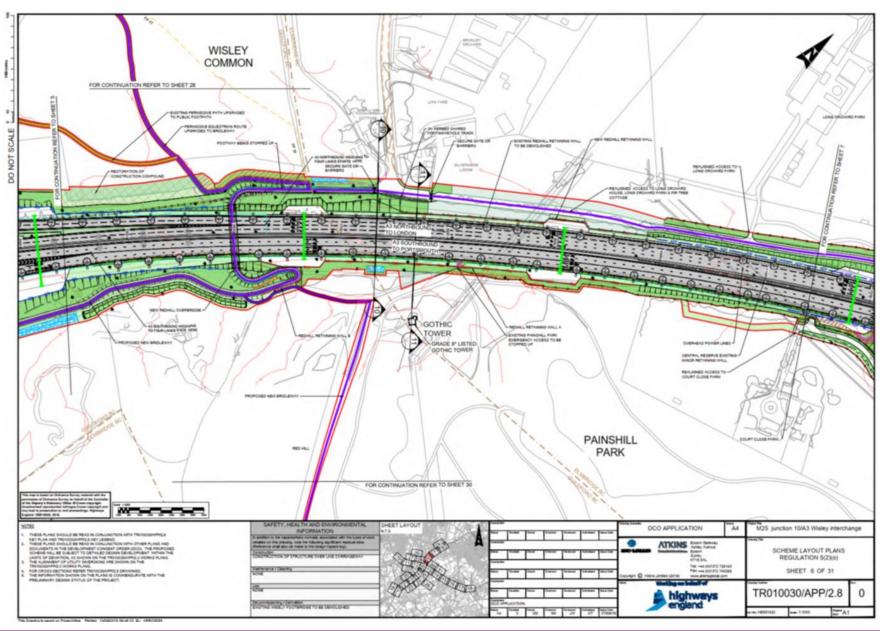




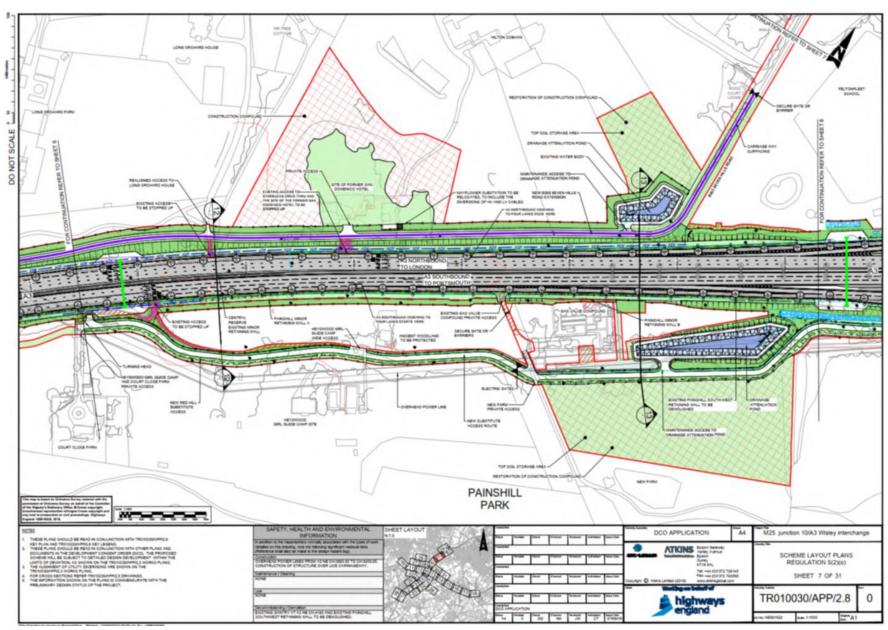




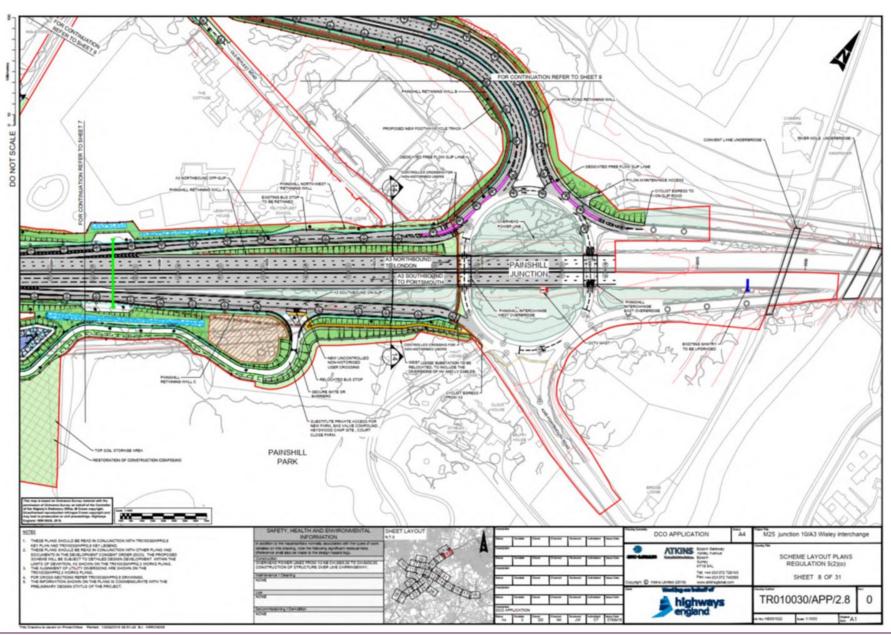




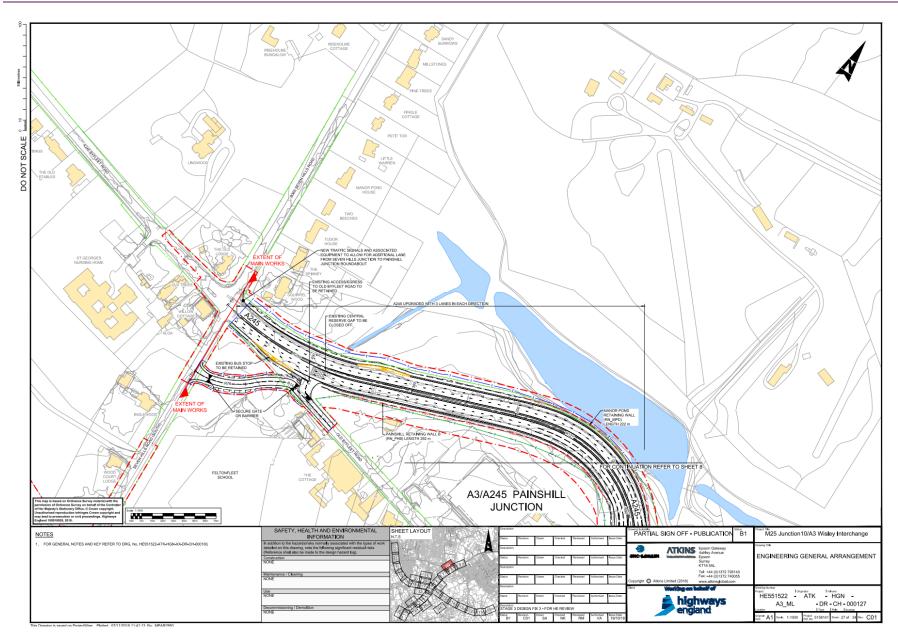














Appendix B Core comparison outputs

Global Network performance

Table B1 shows the assignment summary statistics for the do-minimum and dosomething for 2022 and 2037. The differences between scheme options at the overall model level are relatively small.

Table B-1 Network performance: 2022 & 2037

Description	Time		2022			2037	
		DM	DS	DS vs DM	DM	DS	DS vs DM
Transient	AM	62,110	62,111	0.0%	81,570	81,353	-0.3%
queue (pcus)	IP	40,338	40,277	0.2%	54,719	54,660	-0.1%
	PM	68,445	68,323	- 0.2%	87,290	87,209	-0.1%
Over	AM	73,286	73,437	0.2%	120,975	120,961	0.0%
capacity queue (pcus)	IP	19,973	19,994	0.1%	40,447	40,470	0.1%
	PM	80,839	81,035	0.2%	134,492	134,373	-0.1%
Link cruise	AM	1,628,932	1,629,181	0.0%	1,932,026	1,932,017	0.0%
time (pcu hrs)	IP	1,427,797	1,427,839	0.0%	1,712,944	1,712,977	0.0%
·	PM	1,827,263	1,827,392	0.0%	2,162,930	2,162,980	0.0%
Total travel	AM	1,764,327	1,764,729	0.0%	2,134,572	2,134,330	0.0%
time (pcu hrs)	IP	1,488,108	1,488,110	0.0%	1,808,110	1,808,106	0.0%
,	PM	1,976,547	1,976,751	0.0%	2,354,712	2,384,562	1.3%
Travel	AM	122,106,512	122,127,200	0.0%	141,467,136	141,486,160	0.0%
distance pcu-km/hr	IP	110,490,896	110,498,504	0.0%	129,487,184	129,498,648	0.0%
·	PM	135,088,768	135,103,952	0.0%	156,398,816	156,414,256	0.0%
Average	AM	69.2	69.2	0.0%	66.3	66.3	0.0%
speed (kph)	IP	74.2	74.3	0.1%	71.6	71.6	0.0%
	PM	68.3	68.3	0.0%	65.6	65.6	0.0%
Total trips	AM	2,687,939	2688279	0.0%	3,061,265	3,061,550	0.0%
loaded	IP	2,399,087	2399136	0.0%	2,758,565	2,758,702	0.0%
	PM	3,001,890	3002116	0.0%	3,403,013	3,403,212	0.0%



Appendix C Model link flows

Table C-1: Model total link flows (vehicles)

				Base	2015			DM 2	2022			DS 2	2022			DM 2	2037			DS 2	037	
Region	Road	Direction	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	РМ	AADT	AM	IP	РМ	AADT	AM	IP	PM
A3 NB	A3 NB Burnt Common to Ockham	A3 NB	49,520	3,452	2,760	3,464	51,533	3,576	2,831	3,616	52,350	3,756	2,842	3,647	59,680	3,823	3,308	3,743	61,385	4,188	3,339	3,916
A3 NB	A3 NB Burpham to Burnt Common	A3 NB	56,341	3,835	3,157	4,175	59,391	3,873	3,294	4,511	60,621	4,070	3,361	4,554	72,217	4,317	4,025	5,160	74,264	4,680	4,120	5,292
A3 NB	A3 NB M25 Junction 10	A3 NB	31,759	2,341	1,813	2,207	35,319	2,609	2,039	2,506	34,762	2,550	2,039	2,514	41,599	3,063	2,428	2,727	42,161	3,134	2,529	2,811
A3 NB	A3 NB M25 to Painshill	A3 NB	50,409	3,695	2,964	3,749	55,611	3,894	3,298	4,037	55,820	3,878	3,368	4,061	66,164	4,290	3,834	4,218	67,253	4,487	3,956	4,255
A3 NB	A3 NB Ockham to Wisley	A3 NB	61,376	4,550	3,461	4,387	66,556	4,971	3,767	4,628	67,301	5,216	3,782	4,721	78,446	5,493	4,509	4,861	81,726	6,183	4,616	5,284
A3 NB	A3 NB Oxshott	A3 NB	31,122	2,301	1,650	2,488	34,425	2,425	1,893	2,660	34,713	2,444	1,904	2,695	39,139	2,617	2,221	2,688	39,602	2,665	2,260	2,689
A3 NB	A3 NB Painshill	A3 NB	32,525	2,482	1,715	2,636	35,471	2,581	1,945	2,710	35,655	2,582	1,952	2,747	42,114	2,955	2,252	2,887	42,183	2,976	2,285	2,805
A3 NB	A3 NB Painshill to Oxshott	A3 NB	38,202	2,883	2,032	3,088	42,670	3,111	2,418	3,204	43,245	3,151	2,442	3,266	50,781	3,506	2,857	3,474	51,125	3,537	2,896	3,427
A3 NB	A3 NB Wisley	A3 NB	59,576	4,431	3,316	4,251	63,593	4,808	3,484	4,461	67,301	5,216	3,782	4,721	74,991	5,298	4,181	4,671	81,726	6,183	4,616	5,284
A3 NB	A3 NB Wisley to M25	A3 NB	61,683	4,583	3,506	4,369	67,176	5,020	3,783	4,751	67,301	5,216	3,782	4,721	80,012	5,654	4,562	5,117	81,725	6,183	4,616	5,284
A3 Ockham	A3 Northbound On Slip	NB	11,874	1,101	701	926	15,045	1,398	938	1,014	14,977	1,465	940	1,075	18,802	1,674	1,202	1,121	20,392	2,002	1,279	1,374
A3 Ockham	A3 Ockham East Circulatory	SB	9,843	771	614	926	12,114	906	779	948	12,807	910	887	1,018	15,170	920	989	1,289	17,391	1,141	1,157	1,376
A3 Ockham	A3 Ockham North Circulatory	SB	1,012	88	79	65	1,740	93	94	107	2,366	87	193	148	3,683	191	196	385	4,460	199	322	331
A3 Ockham	A3 Ockham South Circulatory	WB	12,060	1,031	694	974	15,676	1,316	946	1,182	16,306	1,393	1,011	1,356	22,241	1,863	1,373	1,646	22,538	1,841	1,435	1,797
A3 Ockham	A3 Ockham South East Circulatory	SB	9,843	771	614	926	12,114	906	779	948	12,993	914	859	1,119	17,765	1,518	1,131	1,312	19,409	1,517	1,240	1,523
A3 Ockham	A3 Ockham West Circulatory	NB	12,886	1,189	780	991	16,784	1,491	1,032	1,121	17,344	1,552	1,133	1,224	22,486	1,865	1,398	1,507	24,852	2,201	1,601	1,705
A3 Ockham	A3 Southbound Off Slip	SB	8,832	683	535	861	10,374	813	685	841	10,440	823	694	870	11,483	729	792	904	12,929	942	835	1,044
A3 Oxshott	A3 Northbound Off Slip	EB	7,080	582	382	600	8,245	686	525	544	8,532	707	538	571	11,642	888	636	786	11,522	872	636	738
A3 Oxshott	A3 Northbound On Slip	EB	2,001	247	54	262	2,349	303	64	247	2,273	288	63	238	5,322	260	73	231	5,361	232	69	246
A3 Oxshott	A3 Oxshott East Circulatory	SB	15,214	1,045	964	1,100	15,938	1,052	1,127	1,061	16,516	1,135	1,144	1,081	20,423	1,277	1,314	1,414	20,808	1,325	1,353	1,398
A3 Oxshott	A3 Oxshott North East Circulatory	EB	17,214	1,292	1,018	1,362	18,287	1,355	1,191	1,308	18,788	1,423	1,207	1,319	25,745	1,537	1,386	1,645	26,169	1,557	1,422	1,644
A3 Oxshott	A3 Oxshott North West Circulatory	NB	18,075	1,388	1,070	1,395	21,959	1,609	1,391	1,647	21,819	1,587	1,402	1,613	30,977	2,079	1,745	2,108	30,566	2,024	1,731	1,992
A3 Oxshott	A3 Oxshott South East Circulatory	WB	20,053	1,194	1,158	1,569	22,438	1,302	1,339	1,679	22,760	1,348	1,346	1,670	28,873	1,592	1,578	1,998	29,008	1,667	1,575	1,972
A3 Oxshott	A3 Oxshott South West Circulatory	WB	18,369	1,342	1,154	1,432	20,310	1,363	1,304	1,636	21,073	1,480	1,357	1,626	28,516	1,767	1,693	2,108	29,055	1,851	1,714	2,069
A3 Oxshott	A3 Oxshott West Circulatory	NB	10,990	805	687	795	13,711	923	866	1,103	13,283	879	864	1,042	19,324	1,189	1,109	1,321	19,035	1,151	1,095	1,253
A3 Oxshott	A3 Southbound Off Slip	WB	4,840	149	194	469	6,500	250	212	618	6,244	213	202	590	8,449	315	265	583	8,198	342	223	573
A3 Oxshott	A3 Southbound On Slip	WB	7,378	537	467	637	6,599	440	437	534	7,790	601	493	584	9,192	578	584	787	10,020	700	618	816
A3 Painshill	A245 Byfleet Road (A3 Painshill Approach)	EB	23,209	1,445	1,576	1,806	23,440	1,565	1,580	1,630	17,089	1,098	1,154	1,254	26,268	1,602	1,715	1,762	19,669	1,192	1,233	1,448
A3 Painshill	A245 Byfleet Road (A3 Painshill Exit)	NB	23,996	1,726	1,586	1,606	25,008	1,907	1,539	1,773	12,845	1,226	559	908	26,998	1,987	1,655	1,528	13,666	1,244	578	911
A3 Painshill	A245 Portsmouth Road (A3 Painshill Approach)	WB	15,278	995	1,064	1,097	16,040	1,081	1,089	1,125	17,048	1,136	1,132	1,194	17,560	1,100	1,087	1,233	18,148	1,138	1,112	1,175
A3 Painshill	A245 Portsmouth Road (A3 Painshill Exit)	SB	15,336	936	972	1,042	16,362	1,009	1,040	966	16,209	956	1,056	946	19,953	1,094	1,122	1,136	19,977	1,116	1,171	1,072
A3 Painshill	A3 Northbound Off Slip	EB	17,884	1,213	1,250	1,113	20,140	1,313	1,354	1,327	20,163	1,295	1,416	1,314	24,017	1,335	1,577	1,331	25,074	1,511	1,671	1,450
A3 Painshill	A3 Northbound On Slip	EB	5,677	401	318	451	7,199	531	472	494	7,591	570	489	519	8,666	551	604	589	8,941	562	609	624
A3 Painshill	A3 Painshill East Circulatory	SB	24,344	1,473	1,686	1,762	23,649	1,477	1,557	1,561	24,060	1,515	1,592	1,638	27,245	1,591	1,608	1,708	28,952	1,761	1,708	1,905
A3 Painshill	A3 Painshill North Circulatory	EB	6,816	430	428	407	7,417	443	451	426	7,510	447	463	424	9,661	540	500	534	9,817	594	501	492
A3 Painshill	A3 Painshill South Circulatory	WB	16,651	1,253	1,085	1,245	14,568	1,209	804	1,085	14,951	1,354	713	1,201	15,117	1,350	750	892	15,819	1,291	696	1,238
A3 Painshill	A3 Painshill West Circulatory	NB	13,089	997	764	900	12,414	1,078	636	875	13,532	1,258	592	952	13,577	1,298	634	835	14,314	1,270	601	949
A3 Painshill	A3 Southbound Off Slip	WB	7,736	731	371	542	7,305	742	291	490	7,266	796	191	537	8,355	887	305	388	7,277	669	202	445



		D:		Base	2015			DM 2	2022			DS 2	2022			DM 2	2037			DS 20	037	
Region	Road	Direction	AADT	AM	IP	PM																
A3 Painshill	A3 Southbound On Slip	WB	18,506	1,251	1,348	1,402	17,854	1,208	1,217	1,303	18,115	1,232	1,212	1,403	18,647	1,118	1,163	1,250	19,193	1,124	1,165	1,422
A3 Painshill	Free Flow Slip A245 Byfleet Road to A3 NB	EB	-	-	-	-	-	-	-	-	7,061	540	466	479	-	-	-	-	8,425	537	586	590
A3 Painshill	Free Flow Slip A3 NB to A245 Byfleet Road	NB	-	-	-	-	-	-	-	-	13,341	880	986	934	-	-	-	-	15,907	944	1,194	996
A3 SB	A3 SB Burnt Common to Burpham	A3 SB	55,171	3,776	3,537	4,094	57,911	4,031	3,641	4,355	61,258	4,469	3,867	4,600	70,915	4,911	4,466	4,908	74,980	5,292	4,743	5,344
A3 SB	A3 SB M25 Junction 10	A3 SB	30,622	2,151	1,908	2,562	33,585	2,492	2,137	2,706	31,756	2,223	2,073	2,519	39,232	2,822	2,653	2,948	36,802	2,564	2,424	2,824
A3 SB	A3 SB M25 to Ockham	A3 SB	58,704	3,981	3,798	4,553	61,970	4,294	4,018	4,668	65,170	4,733	4,202	5,006	70,504	4,603	4,541	4,919	77,591	5,415	4,965	5,641
A3 SB	A3 SB Ockham to Burnt Common	A3 SB	49,872	3,298	3,264	3,692	51,595	3,481	3,333	3,827	54,730	3,909	3,508	4,136	59,020	3,874	3,748	4,016	64,662	4,473	4,130	4,597
A3 SB	A3 SB Oxshott	A3 SB	31,714	2,472	1,806	2,400	33,025	2,519	1,849	2,376	35,336	2,734	2,017	2,568	40,283	2,976	2,295	2,731	42,377	3,207	2,496	2,821
A3 SB	A3 SB Oxshott to Painshill	A3 SB	39,093	3,009	2,274	3,037	39,623	2,960	2,286	2,909	43,125	3,335	2,509	3,151	49,471	3,554	2,879	3,517	52,393	3,907	3,114	3,637
A3 SB	A3 SB Painshill	A3 SB	31,356	2,278	1,903	2,495	32,318	2,217	1,995	2,420	35,859	2,539	2,319	2,614	41,116	2,667	2,574	3,129	45,116	3,238	2,913	3,192
A3 SB	A3 SB Painshill to M25	A3 SB	49,866	3,529	3,250	3,898	50,175	3,425	3,212	3,724	53,979	3,771	3,530	4,019	59,763	3,784	3,736	4,384	64,302	4,359	4,076	4,618
Byfleet	A245 Byfleet Road (B374 Brooklands Road to Seven Hills Road)	ЕВ	14,851	885	952	1,170	15,763	1,048	1,019	1,101	16,124	1,092	1,044	1,138	18,693	1,155	1,195	1,278	19,650	1,226	1,240	1,437
Byfleet	A245 Byfleet Road (B374 Brooklands Road to Seven Hills Road)	WB	16,059	1,275	977	1,058	16,307	1,226	1,002	1,098	16,559	1,259	992	1,102	17,481	1,238	1,041	998	18,367	1,256	1,106	1,117
Byfleet	A245 Byfleet Road (B374 Brooklands Road to Seven Hills Road)	Two-Way	30,909	2,160	1,929	2,228	32,070	2,274	2,021	2,199	32,683	2,351	2,036	2,240	36,174	2,393	2,235	2,275	38,017	2,482	2,346	2,555
Byfleet	A245 Byfleet Road (Seven Hills Road to A3)	EB	23,209	1,445	1,576	1,806	23,440	1,565	1,580	1,630	24,150	1,638	1,619	1,733	26,269	1,602	1,715	1,762	28,094	1,729	1,819	2,038
Byfleet	A245 Byfleet Road (Seven Hills Road to A3)	WB	23,996	1,726	1,586	1,606	25,008	1,907	1,539	1,773	26,160	2,097	1,545	1,842	26,998	1,987	1,655	1,528	29,151	2,102	1,772	1,848
Byfleet	A245 Byfleet Road (Seven Hills Road to A3)	Two-Way	47,204	3,171	3,162	3,412	48,448	3,472	3,119	3,403	50,310	3,735	3,164	3,576	53,267	3,589	3,370	3,290	57,244	3,831	3,591	3,886
Byfleet	Seven Hills Road	NB	9,054	547	672	603	10,202	778	639	771	10,994	907	653	836	11,262	857	725	645	12,559	947	791	837
Byfleet	Seven Hills Road	SB	10,066	723	718	755	9,388	693	656	625	9,692	716	668	693	9,654	672	622	609	10,616	725	698	729
Byfleet	Seven Hills Road	Two-Way	19,120	1,270	1,390	1,358	19,590	1,471	1,295	1,396	20,686	1,623	1,321	1,529	20,917	1,529	1,347	1,254	23,175	1,672	1,489	1,566
Byfleet	Seven Hills Road South	NB	919	49	73	49	829	54	74	0	834	54	75	0	950	61	79	0	958	62	80	0
Byfleet	Seven Hills Road South	SB	1,128	90	63	92	920	92	67	0	927	95	67	0	1,015	95	70	0	1,044	99	74	0
Byfleet	Seven Hills Road South	Two-Way	2,046	139	136	141	1,749	146	141	0	1,761	149	141	0	1,964	157	150	0	2,002	161	154	0
Clandon / Horsley	A247 Clandon Road (A3 to Clandon Station)	NB	6,644	568	420	475	7,261	642	454	522	7,182	632	451	510	12,384	1,007	767	817	12,453	1,020	775	814
Clandon / Horsley	A247 Clandon Road (A3 to Clandon Station)	SB	6,763	398	439	652	7,493	461	470	710	7,331	445	460	692	12,557	633	784	1,131	12,647	655	789	1,133
Clandon / Horsley	A247 Clandon Road (A3 to Clandon Station)	Two-Way	13,408	966	859	1,127	14,754	1,103	923	1,232	14,513	1,076	911	1,202	24,940	1,640	1,550	1,948	25,099	1,675	1,564	1,947
Clandon / Horsley	Hungry Hill Lane	NB	9	0	0	0	0	0	0	0	12	4	0	0	309	16	18	53	307	8	17	62
Clandon / Horsley	Hungry Hill Lane	SB	0	0	0	0	0	0	0	0	0	0	0	0	126	10	4	25	161	27	3	22
Clandon / Horsley	Hungry Hill Lane	Two-Way	9	0	0	0	0	0	0	0	12	4	0	0	435	26	22	78	468	35	20	84
Clandon / Horsley	Ripley Lane (Hungry Hill Lane to Guileshill Lane)	NB	464	69	17	41	502	79	23	36	432	74	20	23	646	96	35	42	603	93	35	31
Clandon / Horsley	Ripley Lane (Hungry Hill Lane to Guileshill Lane)	SB	191	16	14	14	311	38	16	28	386	64	16	28	591	58	36	63	690	72	38	77
Clandon / Horsley	Ripley Lane (Hungry Hill Lane to Guileshill Lane)	Two-Way	655	85	31	55	813	117	39	65	818	139	36	51	1,237	154	71	104	1,293	165	73	108



				Base	2015			DM 2	2022			DS 2	2022			DM 2	037			DS 20	037	
Region	Road	Direction	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	РМ	AADT	AM	IP	РМ
Clandon / Horsley	Ripley Road	NB	741	64	28	88	1,167	61	58	162	1,039	56	64	72	2,498	156	168	260	2,060	113	122	211
Clandon / Horsley	Ripley Road	SB	746	35	41	86	963	94	49	72	1,115	85	56	79	1,589	120	77	119	1,568	119	76	120
Clandon / Horsley	Ripley Road	Two-Way	1,487	99	69	174	2,130	155	107	233	2,154	141	121	151	4,087	275	245	380	3,629	232	198	331
Clandon / Horsley	Tithebarns Lane	EB	755	35	41	86	963	94	49	72	1,126	89	56	79	1,487	118	73	94	1,484	117	73	98
Clandon / Horsley	Tithebarns Lane	WB	741	64	28	88	1,167	61	58	162	1,039	56	64	72	2,214	148	150	208	1,828	131	104	149
Clandon / Horsley	Tithebarns Lane	Two-Way	1,496	99	69	174	2,130	155	107	233	2,165	145	121	151	3,702	266	223	302	3,312	248	177	247
Cobham	A245 Between Streets	EB	13,210	839	910	968	14,373	964	972	916	14,126	923	968	859	15,614	1,042	1,005	905	15,340	1,010	996	903
Cobham	A245 Between Streets	WB	12,405	918	832	864	12,741	953	838	899	13,037	933	836	889	14,223	1,051	888	973	14,369	1,015	866	935
Cobham	A245 Between Streets	Two-Way	25,615	1,757	1,742	1,832	27,114	1,918	1,810	1,815	27,163	1,856	1,804	1,748	29,837	2,092	1,893	1,878	29,709	2,025	1,863	1,838
Cobham	A245 Portsmouth Road (A3 to A307 Portsmouth Road)	EB	15,336	936	972	1,042	16,362	1,009	1,040	966	16,209	956	1,056	946	19,953	1,094	1,122	1,136	19,977	1,116	1,171	1,072
Cobham	A245 Portsmouth Road (A3 to A307 Portsmouth Road)	WB	15,278	995	1,064	1,097	16,040	1,081	1,089	1,125	17,048	1,136	1,132	1,194	17,560	1,100	1,087	1,233	18,148	1,138	1,112	1,175
Cobham	A245 Portsmouth Road (A3 to A307 Portsmouth Road)	Two-Way	30,615	1,931	2,036	2,139	32,402	2,090	2,129	2,092	33,257	2,091	2,188	2,139	37,513	2,194	2,210	2,370	38,125	2,253	2,283	2,247
Cobham	A307 Portsmouth Road	NB	9,996	684	565	619	10,594	669	572	659	9,927	597	539	591	12,894	661	610	656	12,779	627	611	656
Cobham	A307 Portsmouth Road	SB	10,815	686	735	780	12,352	814	783	868	12,575	834	804	876	14,005	868	833	916	14,135	891	838	923
Cobham	A307 Portsmouth Road	Two-Way	20,810	1,370	1,299	1,398	22,947	1,483	1,356	1,527	22,502	1,430	1,343	1,467	26,899	1,530	1,443	1,572	26,914	1,518	1,449	1,579
Esher	A244 Copsem Lane (A307 Portsmouth Road to A3)	NB	12,225	846	797	800	15,169	971	1,009	1,119	15,043	961	1,012	1,092	19,955	1,470	1,354	1,555	19,445	1,446	1,336	1,420
Esher	A244 Copsem Lane (A307 Portsmouth Road to A3)	SB	11,362	750	745	767	11,494	716	808	779	12,009	797	818	797	14,717	926	994	1,092	15,043	978	1,027	1,072
Esher	A244 Copsem Lane (A307 Portsmouth Road to A3)	Two-Way	23,587	1,596	1,543	1,567	26,664	1,686	1,817	1,898	27,052	1,758	1,830	1,889	34,673	2,396	2,348	2,647	34,489	2,424	2,363	2,492
M25 ACW	M25 Anti-Clockwise A3 to Cobham Services	M25 ACW	74,760	5,121	4,950	5,816	81,805	5,275	5,240	6,331	82,398	5,416	5,254	6,369	92,746	5,575	5,767	6,579	93,338	5,780	5,790	6,547
M25 ACW	M25 Anti-Clockwise Junction 10	M25 ACW	56,870	3,905	3,810	4,469	64,365	4,073	4,148	5,069	63,906	4,027	4,150	4,965	71,701	4,354	4,477	5,172	70,845	4,292	4,462	4,975
M25 ACW	M25 Anti-Clockwise St Peter's Way to A3	M25 ACW	85,589	5,959	5,567	6,745	96,872	6,298	6,096	7,449	97,817	6,406	6,184	7,464	108,623	6,561	6,497	7,486	110,671	6,689	6,715	7,507
M25 CW	M25 Clockwise A3 to St Peter's Way	M25 CW	82,923	5,956	5,477	5,734	94,399	6,542	5,915	6,125	97,146	6,924	6,092	6,262	111,980	7,072	6,520	6,711	114,516	7,349	6,753	6,859
M25 CW	M25 Clockwise Cobham Services to A3	M25 CW	72,208	5,022	4,974	5,037	83,529	5,801	5,544	5,552	84,015	5,777	5,540	5,721	100,013	6,361	6,193	6,116	99,466	6,219	6,170	6,186
M25 CW	M25 Clockwise Junction 10	M25 CW	53,201	3,700	3,694	3,695	65,331	4,617	4,302	4,293	62,287	4,228	4,091	4,083	77,369	5,133	4,746	4,652	75,336	4,746	4,657	4,609
M25 Junction 10	A3 Northbound Off Slip	NB	29,924	2,241	1,693	2,162	31,534	2,300	1,744	2,245	32,539	2,666	1,742	2,206	37,418	2,320	2,134	2,319	39,565	3,049	2,087	2,473
M25 Junction 10	A3 Northbound On Slip	NB	18,664	1,356	1,153	1,541	20,333	1,291	1,262	1,531	21,092	1,332	1,332	1,547	24,653	1,236	1,416	1,491	25,173	1,360	1,435	1,443
M25 Junction 10	A3 Southbound Off Slip	SB	19,243	1,378	1,342	1,337	16,590	933	1,075	1,018	22,223	1,548	1,457	1,500	20,531	962	1,083	1,436	27,500	1,795	1,652	1,793
M25 Junction 10	A3 Southbound On Slip Post Old Lane	WB	28,543	1,914	1,897	2,050	28,702	1,887	1,883	1,979	33,444	2,516	2,130	2,488	32,230	1,879	1,962	2,050	40,829	2,859	2,543	2,817
M25 Junction 10	A3 Southbound On Slip Pre Old Lane	SB	30,289	2,071	1,992	2,183	31,016	2,083	1,988	2,192	35,887	2,712	2,245	2,706	36,305	2,123	2,158	2,556	42,569	2,721	2,647	3,098
M25 Junction 10	Free Flow Slip A3 NB to M25 CW	WB	-	-	-	-	-	-	-	-	18,368	1,470	920	1,214	-	-	-	-	21,941	1,742	1,021	1,290



		D:		Base	2015			DM 2	2022			DS 2	2022			DM 2	2037			DS 2	037	
Region	Road	Direction	AADT	AM	IP	PM	AADT	AM	IP	РМ												
M25 Junction 10	Free Flow Slip A3 SB to M25 ACW	SB	-	-	-	-	-	-	-	-	5,419	320	336	520	-	-	-	-	6,413	331	365	559
M25 Junction 10	Free Flow Slip M25 ACW to A3 NB	EB	-	-	-	-	-	-	-	-	15,365	949	902	1,109	-	-	-	-	18,319	1,018	966	1,059
M25 Junction 10	Free Flow Slip M25 CW to A3 SB	WB	-	-	-	-	-	-	-	-	16,077	1,139	1,035	1,220	-	-	-	-	16,240	1,028	1,001	1,023
M25 Junction 10	M25 Anti-Clockwise Off Slip 1	EB	-	-	-	-	-	-	-	-	17,160	1,163	1,024	1,271	-	-	-	-	20,044	1,138	1,089	1,287
M25 Junction 10	M25 Anti-Clockwise Off Slip 2	EB	28,720	2,054	1,756	2,276	32,507	2,225	1,948	2,380	16,752	1,215	1,010	1,229	36,922	2,206	2,020	2,314	19,781	1,259	1,164	1,245
M25 Junction 10	M25 Anti-Clockwise On Slip	EB	17,906	1,217	1,140	1,349	17,453	1,203	1,092	1,264	18,515	1,391	1,105	1,408	21,082	1,222	1,292	1,412	22,545	1,492	1,330	1,580
M25 Junction 10	M25 Clockwise Off Slip	WB	19,007	1,323	1,280	1,342	18,198	1,184	1,242	1,259	21,728	1,550	1,449	1,638	22,644	1,228	1,447	1,464	24,130	1,473	1,513	1,577
M25 Junction 10	M25 Clockwise On Slip 1	WB	6,552	787	422	621	3,257	359	193	370	16,529	1,233	1,083	968	3,456	254	226	471	18,642	1,340	1,077	962
M25 Junction 10	M25 Clockwise On Slip 2	WB	23,219	1,476	1,364	1,422	25,816	1,564	1,420	1,465	18,368	1,470	920	1,214	31,280	1,728	1,549	1,587	21,941	1,742	1,021	1,290
M25 Junction 10	M25 Junction 10 East Circulatory	SB	29,852	2,217	1,987	2,070	29,453	1,912	1,826	1,975	18,854	1,436	1,200	1,318	34,828	1,887	1,908	2,355	23,564	1,539	1,460	1,512
M25 Junction 10	M25 Junction 10 North Circulatory	EB	28,521	2,057	1,785	2,083	30,938	2,267	1,886	2,264	31,686	2,483	1,905	2,269	35,981	2,251	2,168	2,333	38,189	2,552	2,285	2,600
M25 Junction 10	M25 Junction 10 South Circulatory	WB	18,395	1,410	1,274	1,229	16,297	955	1,067	1,007	21,210	1,473	1,461	1,293	20,991	941	1,198	1,250	24,581	1,572	1,472	1,290
M25 Junction 10	M25 Junction 10 West Circulatory	NB	18,459	1,358	1,181	1,348	18,756	1,332	1,198	1,418	35,376	2,638	2,256	2,360	23,674	1,280	1,558	1,511	43,034	2,824	2,606	2,810
Martyr's Green	Ockham Lane (Hatch Lane to Old Lane)	EB	0	0	0	0	0	0	0	0	79	3	0	23	31	0	3	4	145	15	4	26
Martyr's Green	Ockham Lane (Hatch Lane to Old Lane)	WB	819	62	64	66	612	99	22	43	771	153	22	61	1,306	119	82	153	930	124	55	83
Martyr's Green	Ockham Lane (Hatch Lane to Old Lane)	Two-Way	819	62	64	66	612	99	22	43	850	156	22	85	1,337	119	85	158	1,075	139	60	108
Martyr's Green	Ockham Lane (Old Lane to Downside Road)	NB	65	6	4	4	54	2	4	5	55	2	4	4	110	7	7	9	86	7	4	5
Martyr's Green	Ockham Lane (Old Lane to Downside Road)	SB	29	2	2	3	96	16	7	2	265	62	2	23	905	66	50	141	1,727	142	116	212
Martyr's Green	Ockham Lane (Old Lane to Downside Road)	Two-Way	94	8	6	7	150	18	11	7	319	64	6	28	1,015	73	56	150	1,813	149	120	218
Martyr's Green	Old Lane (A3 to Hatch Lane)	NB	535	37	41	43	375	25	26	28	482	58	27	29	484	69	3	39	3,860	532	202	335
Martyr's Green	Old Lane (A3 to Hatch Lane)	SB	2,209	170	136	177	2,686	221	131	241	2,922	253	142	246	4,251	276	199	477	5,573	389	306	613
Martyr's Green	Old Lane (A3 to Hatch Lane)	Two-Way	2,744	207	177	220	3,061	245	157	269	3,404	311	168	275	4,735	345	203	516	9,433	921	508	947
Martyr's Green	Old Lane (Hatch Lane to Ockham Lane)	EB	1,808	141	108	144	2,431	210	116	219	2,305	215	102	207	3,077	218	160	266	3,687	290	203	326
Martyr's Green	Old Lane (Hatch Lane to Ockham Lane)	WB	0	0	0	0	0	0	0	0	99	33	0	0	38	12	0	1	1,915	249	101	201
Martyr's Green	Old Lane (Hatch Lane to Ockham Lane)	Two-Way	1,808	141	108	144	2,431	210	116	219	2,404	249	102	207	3,116	230	160	267	5,603	539	303	527
Martyr's Green	Old Lane (Martyr's Green to Effingham Junction)	EB	1,115	83	47	81	2,574	218	127	231	2,527	227	112	242	3,667	312	194	295	4,442	394	242	388
Martyr's Green	Old Lane (Martyr's Green to Effingham Junction)	WB	99	3	1	2	637	92	26	48	691	130	26	45	1,109	90	70	135	1,725	243	72	190



				Base	2015 _			DM 2	2022			DS 2	022			DM 2	037			DS 20	37	
Region	Road	Direction	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM
Martyr's Green	Old Lane (Martyr's Green to Effingham Junction)	Two-Way	1,214	86	48	83	3,211	310	153	279	3,218	357	139	287	4,776	402	264	429	6,167	636	313	578
Ockham	Alms Heath	NB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	1	0	8
Ockham	Alms Heath	SB	749	62	64	66	0	0	0	0	0	0	0	0	230	41	2	35	137	36	1	10
Ockham	Alms Heath	Two-Way	749	62	64	66	0	0	0	0	0	0	0	0	230	41	2	35	164	37	1	18
Ockham	B2039 Ockham Road North (A3 to Guileshill Lane)	NB	4,767	441	271	314	6,176	545	333	442	5,587	579	312	450	7,121	530	409	561	6,031	520	372	500
Ockham	B2039 Ockham Road North (A3 to Guileshill Lane)	SB	2,548	179	191	266	2,612	135	166	208	2,271	100	160	213	2,607	174	167	227	2,900	195	177	227
Ockham	B2039 Ockham Road North (A3 to Guileshill Lane)	Two-Way	7,315	620	462	581	8,788	680	500	650	7,857	679	472	663	9,727	704	576	788	8,931	715	549	727
Ockham	B2039 Ockham Road North (Alms Heath to East Lane)	NB	3,655	339	188	263	4,494	388	217	330	3,761	368	196	323	6,156	490	328	443	5,452	496	318	436
Ockham	B2039 Ockham Road North (Alms Heath to East Lane)	SB	3,340	199	244	307	1,901	91	120	159	1,827	84	132	161	2,806	214	166	257	2,836	188	173	219
Ockham	B2039 Ockham Road North (Alms Heath to East Lane)	Two-Way	6,995	538	431	570	6,395	479	337	489	5,588	451	328	484	8,962	704	494	700	8,288	684	491	655
Ockham	B2039 Ockham Road North (Guileshill Lane to Ockham Lane)	EB	2,437	132	159	237	1,901	91	120	159	1,906	87	133	184	2,607	174	167	227	2,817	166	177	227
Ockham	B2039 Ockham Road North (Guileshill Lane to Ockham Lane)	WB	3,686	337	185	260	5,105	487	239	373	4,532	521	218	385	7,232	568	409	561	6,218	583	372	500
Ockham	B2039 Ockham Road North (Guileshill Lane to Ockham Lane)	Two-Way	6,123	469	344	497	7,006	578	358	532	6,438	608	350	569	9,839	742	576	788	9,034	750	549	727
Ockham	B2039 Ockham Road North (Ockham Lane to Alms Heath)	EB	2,591	137	180	241	1,901	91	120	159	1,827	84	132	161	2,576	174	164	223	2,699	152	173	209
Ockham	B2039 Ockham Road North (Ockham Lane to Alms Heath)	WB	3,655	339	188	263	4,494	388	217	330	3,761	368	196	323	6,157	490	328	443	5,425	495	318	427
Ockham	B2039 Ockham Road North (Ockham Lane to Alms Heath)	Two-Way	6,246	476	368	504	6,395	479	337	489	5,588	451	328	484	8,733	663	492	665	8,124	648	490	637
Ockham	Guileshill Lane	EB	434	0	0	0	0	0	0	0	23	8	0	0	0	0	0	0	0	0	0	0
Ockham	Guileshill Lane	WB	0	0	0	0	0	0	0	0	0	0	0	0	111	38	0	0	269	92	0	0
Ockham	Guileshill Lane	Two-Way	434	0	0	0	0	0	0	0	23	8	0	0	112	38	0	0	269	92	0	0
Ockham	Ockham Lane (Alms Heath to Hatch Lane)	ЕВ	0	0	0	0	0	0	0	0	79	3	0	23	31	0	3	4	145	15	4	26
Ockham	Ockham Lane (Alms Heath to Hatch Lane)	WB	819	62	64	66	612	99	22	43	771	153	22	61	1,306	119	82	153	930	124	55	83
Ockham	Ockham Lane (Alms Heath to Hatch Lane)	Two-Way	819	62	64	66	612	99	22	43	850	156	22	85	1,337	119	85	158	1,075	139	60	108
Ockham	Ockham Lane (B2039 Ockham Road North to Alms Heath)	ЕВ	0	0	0	0	0	0	0	0	79	3	0	23	31	0	3	4	118	14	4	18
Ockham	Ockham Lane (B2039 Ockham Road North to Alms Heath)	WB	71	0	0	0	611	99	22	43	771	153	22	61	1,076	79	81	119	793	88	55	73
Ockham	Ockham Lane (B2039 Ockham Road North to Alms Heath)	Two-Way	71	0	0	0	612	99	22	43	850	156	22	85	1,107	79	84	123	911	102	59	90
Oxshott	A244 Copsem Lane (A3 to Fairoak Lane)	NB	13,752	1,044	914	926	15,185	1,094	1,004	1,056	15,546	1,136	1,051	1,057	20,326	1,264	1,228	1,268	20,610	1,284	1,239	1,241
Oxshott	A244 Copsem Lane (A3 to Fairoak Lane)	SB	15,436	896	917	1,063	17,314	1,033	1,039	1,099	17,234	1,004	1,041	1,102	20,678	1,087	1,114	1,158	20,531	1,089	1,100	1,144
Oxshott	A244 Copsem Lane (A3 to Fairoak Lane)	Two-Way	29,188	1,940	1,831	1,990	32,499	2,127	2,043	2,155	32,780	2,141	2,092	2,159	41,003	2,351	2,342	2,427	41,141	2,373	2,340	2,385
Pyrford	B367 Newark Lane (Upshot Lane to Papercourt Lane)	NB	3,719	343	170	336	5,004	480	288	376	4,899	440	290	415	5,721	498	316	441	5,393	431	317	429
Pyrford	B367 Newark Lane (Upshot Lane to Papercourt Lane)	SB	3,541	252	186	280	4,212	272	233	337	4,348	298	258	344	5,922	276	392	463	6,288	378	417	446



				Base	2015			DM 2	2022			DS 2	022			DM 2	037			DS 2	037	
Region	Road	Direction	AADT	AM	IP	PM																
Pyrford	B367 Newark Lane (Upshot Lane to Papercourt Lane)	Two-Way	7,260	595	356	616	9,216	752	520	713	9,247	738	549	759	11,643	774	708	904	11,681	809	733	876
Ripley	B2215 Portsmouth Road (B367 Newark Lane to A3)	EB	9,115	841	562	705	11,286	1,059	667	761	11,787	1,052	755	803	14,585	1,147	902	1,000	16,387	1,308	1,076	1,076
Ripley	B2215 Portsmouth Road (B367 Newark Lane to A3)	WB	8,289	683	476	687	10,177	884	582	821	10,749	893	633	935	14,340	1,144	877	1,139	14,073	948	911	1,167
Ripley	B2215 Portsmouth Road (B367 Newark Lane to A3)	Two-Way	17,404	1,524	1,037	1,392	21,463	1,944	1,249	1,582	22,536	1,946	1,387	1,738	28,925	2,291	1,779	2,139	30,460	2,256	1,987	2,243
Ripley	B2215 Portsmouth Road (B368 Send Marsh Road to B367 Newark Lane)	NB	6,160	491	421	418	7,372	633	478	518	7,763	644	521	538	10,300	789	638	780	11,595	979	722	819
Ripley	B2215 Portsmouth Road (B368 Send Marsh Road to B367 Newark Lane)	SB	4,165	307	273	401	5,047	401	302	500	5,474	422	331	543	8,584	710	547	758	8,327	623	530	753
Ripley	B2215 Portsmouth Road (B368 Send Marsh Road to B367 Newark Lane)	Two-Way	10,325	798	694	819	12,419	1,034	780	1,018	13,237	1,065	852	1,080	18,884	1,499	1,185	1,538	19,922	1,602	1,252	1,572
Ripley	B367 Newark Lane (Papercourt Lane to B2215 Portsmouth Road)	EB	3,199	304	168	256	4,163	374	230	352	4,145	363	253	355	4,450	284	313	294	4,367	243	336	271
Ripley	B367 Newark Lane (Papercourt Lane to B2215 Portsmouth Road)	WB	4,654	436	238	368	5,744	528	332	427	5,618	489	329	468	6,497	505	398	459	5,873	395	379	420
Ripley	B367 Newark Lane (Papercourt Lane to B2215 Portsmouth Road)	Two-Way	7,852	739	406	623	9,906	903	562	779	9,763	851	581	823	10,946	788	711	753	10,240	637	714	692
Ripley	Rose Lane	EB	299	16	14	14	311	38	16	28	397	68	16	28	693	60	39	88	775	73	41	99
Ripley	Rose Lane	WB	464	69	17	41	502	79	23	36	433	75	20	23	1,042	142	53	95	1,104	166	52	93
Ripley	Rose Lane	Two-Way	763	85	31	55	813	117	39	65	830	143	36	51	1,735	201	92	183	1,879	240	93	192
Send	A247 Clandon Road (B2215 London Road to A3)	NB	6,238	511	414	445	6,873	573	461	476	6,985	556	465	483	10,639	860	659	694	10,708	853	664	682
Send	A247 Clandon Road (B2215 London Road to A3)	SB	11,682	793	719	1,023	13,235	978	776	1,104	13,762	964	826	1,137	22,033	1,503	1,319	1,790	20,904	1,297	1,260	1,698
Send	A247 Clandon Road (B2215 London Road to A3)	Two-Way	17,920	1,304	1,133	1,467	20,108	1,551	1,237	1,580	20,748	1,520	1,291	1,620	32,673	2,364	1,977	2,484	31,611	2,150	1,924	2,380
Send	A247 Ripley Bypass	SB	612	64	28	45	797	59	58	38	947	55	64	42	968	97	39	56	1,090	105	41	50
Send	A247 Ripley Bypass (A3 Approach)	NB	5,937	515	315	445	6,927	645	357	477	7,576	649	415	514	12,178	1,110	682	838	11,091	914	624	748
Send	A247 Send Barns Lane (B368 Send March Road to B2215 Portsmouth Road)	EB	5,144	337	328	423	5,468	389	339	414	5,550	363	346	415	8,631	526	537	608	8,505	511	540	582
Send	A247 Send Barns Lane (B368 Send March Road to B2215 Portsmouth Road)	WB	4,195	310	244	342	4,646	328	273	376	4,823	345	276	387	7,815	538	440	623	7,810	522	441	609
Send	A247 Send Barns Lane (B368 Send March Road to B2215 Portsmouth Road)	Two-Way	9,339	648	572	764	10,114	716	611	789	10,373	708	621	802	16,446	1,064	976	1,231	16,316	1,032	981	1,190
Send	A247 Send Road (B368 Send Marsh Road to Tannery Lane)	EB	7,608	471	491	611	9,216	615	583	703	9,368	610	591	707	12,709	752	816	899	12,891	835	813	892
Send	A247 Send Road (B368 Send Marsh Road to Tannery Lane)	WB	5,812	468	369	402	7,104	588	457	455	7,238	599	457	464	10,920	883	664	727	11,050	881	683	710
Send	A247 Send Road (B368 Send Marsh Road to Tannery Lane)	Two-Way	13,421	939	859	1,013	16,320	1,203	1,040	1,159	16,606	1,208	1,049	1,171	23,629	1,635	1,480	1,626	23,942	1,716	1,496	1,601
Send	A247 Send Road (Tannery Lane to B382 High Street)	NB	7,172	587	458	468	8,341	680	523	542	8,464	691	519	550	12,258	940	768	778	12,103	907	766	729
Send	A247 Send Road (Tannery Lane to B382 High Street)	SB	7,802	546	504	635	9,749	739	619	764	9,757	695	623	766	12,054	786	786	811	11,846	747	779	798



D	Bull	D'		Base	2015			DM 2	2022			DS 2	2022			DM 2	037			DS 2	037	
Region	Road	Direction	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM
Send	A247 Send Road (Tannery Lane to B382 High Street)	Two-Way	14,975	1,133	962	1,103	18,090	1,418	1,142	1,306	18,221	1,386	1,142	1,316	24,312	1,726	1,555	1,589	23,950	1,654	1,546	1,526
Send	A3 Northbound Off Slip	NB	6,821	384	397	711	7,858	297	464	895	8,270	315	519	906	12,538	494	717	1,417	12,879	492	781	1,376
Send	A3 Southbound On Slip	WB	5,310	480	274	403	6,334	554	308	529	6,541	562	359	465	11,938	1,043	720	896	10,346	823	615	749
Send	B2215 London Road (A3 to A247 Clandon Road)	NB	6,821	384	397	711	7,858	297	464	895	8,270	315	519	906	12,538	494	717	1,417	12,879	492	781	1,376
Send	B2215 Portsmouth Road (A247 Clandon Road to B368 Send Marsh Road)	EB	5,652	409	387	467	6,075	388	422	552	6,393	383	464	565	9,043	564	585	797	9,684	611	657	786
Send	B2215 Portsmouth Road (A247 Clandon Road to B368 Send Marsh Road)	WB	3,544	252	227	317	3,900	329	225	339	4,376	344	269	374	7,217	598	447	603	6,441	447	390	563
Send	B2215 Portsmouth Road (A247 Clandon Road to B368 Send Marsh Road)	Two-Way	9,196	661	614	784	9,975	717	647	892	10,769	727	732	940	16,260	1,163	1,032	1,400	16,124	1,058	1,047	1,349
Send	B368 Send Marsh Road	EB	681	33	28	29	978	111	29	28	1,037	130	29	29	937	86	34	22	1,352	188	36	55
Send	B368 Send Marsh Road	WB	353	45	21	16	526	70	40	13	467	54	38	13	852	128	58	26	1,075	152	83	28
Send	B368 Send Marsh Road	Two-Way	1,035	79	49	46	1,504	181	69	42	1,504	184	67	42	1,789	214	92	48	2,427	340	119	83
Send	Tannery Lane / Papercourt Lane	EB	1,172	164	70	93	1,895	219	126	171	1,953	198	141	183	2,166	196	160	189	2,024	97	187	187
Send	Tannery Lane / Papercourt Lane	WB	2,337	207	146	135	2,598	187	157	197	2,790	205	171	211	4,159	219	295	329	4,121	210	303	300
Send	Tannery Lane / Papercourt Lane	Two-Way	3,509	371	216	228	4,493	407	283	368	4,743	404	312	393	6,325	416	455	518	6,145	306	490	486
Wisley	A3 Northbound Off Slip	NB	1,800	120	145	136	2,963	163	283	167	-	-	-	-	3,456	195	328	190	-	-	-	-
Wisley	A3 Northbound On Slip	EB	2,111	152	190	119	3,591	213	300	290	-	-	-	-	5,385	476	382	449	-	-	-	-
Wisley	Lock Lane	EB	616	21	66	46	1,716	127	161	100	1,129	86	101	63	3,172	367	218	234	1,689	121	133	145
Wisley	Lock Lane	WB	215	16	15	16	1,163	58	95	100	1,021	61	80	86	1,378	81	109	112	1,385	124	95	107
Wisley	Lock Lane	Two-Way	831	37	80	62	2,879	184	255	200	2,149	147	181	149	4,550	448	327	346	3,074	245	228	252
Wisley	Wisley Lane (North of RHS Wisley)	NB	0	0	0	0	0	0	0	0	33	11	0	0	33	11	0	0	220	60	3	10
Wisley	Wisley Lane (North of RHS Wisley)	SB	419	7	52	30	750	72	69	46	119	10	10	10	2,076	307	114	173	458	36	29	61
Wisley	Wisley Lane (North of RHS Wisley)	Two-Way	419	7	52	30	750	72	69	46	152	21	10	10	2,109	318	114	173	677	96	32	70
Wisley	Wisley Lane (South of RHS Wisley)	NB	1,800	120	145	136	2,963	163	283	167	-	-	-	-	3,456	195	328	190	-	-	-	-
Wisley	Wisley Lane (South of RHS Wisley)		2,111	152	190	119	3,591	213	300	290	-	-	-	-	5,385	476	382	449	-	-	-	-
Wisley	Wisley Lane (South of RHS Wisley)	Two-Way	3,912	272	335	256	6,553	376	583	457	0	0	0	0	8,841	671	710	639	0	0	0	0
Wisley	WPIL Development Road (East)	NB	-	-	-	-	-	-	-	-	2,878	155	277	166	-	-	-	-	3,505	228	325	182
Wisley	WPIL Development Road (East)	SB	-	_	-	-	-	-	-	-	3,066	160	249	267	-	-	-	_	3,913	213	309	353
Wisley	WPIL Development Road (East)	Two-Way	0	0	0	0	0	0	0	0	5,944	315	525	432	0	0	0	0	7,418	441	634	535
Wisley	WPIL Development Road (West)	EB	-	-	-	-	-	-	-	-	2,878	155	277	166	-	-	-	-	5,548	298	458	414
Wisley	WPIL Development Road (West)	WB	-	-	-	-	-	-	-	-	3,066	160	249	267	-	-	-	-	7,562	672	541	562
Wisley	WPIL Development Road (West)	Two-Way	0	0	0	0	0	0	0	0		315	525	432	0	0	0	0		970	999	976



Table C-2: Model HGV link flows (vehicles)

				Base	2015			DM 2	2022			DS 2	2022			DM 2	037			DS 20	037	
Region	Road	Direction	AADT	AM	ΙP	РМ	AADT	AM	IP	РМ	AADT	AM	IP	PM	AADT	AM	IP	РМ	AADT	AM	IP	РМ
A3 NB	A3 NB Burnt Common to Ockham	A3 NB	2,667	243	262	267	2,840	245	292	270	2,873	256	293	271	3,091	225	345	279	3,239	269	350	283
A3 NB	A3 NB Burpham to Burnt Common	A3 NB	2,728	245	272	268	2,909	252	301	271	2,947	262	303	272	3,254	243	366	283	3,398	285	371	287
A3 NB	A3 NB M25 Junction 10	A3 NB	710	66	43	127	656	56	45	111	649	54	45	109	740	73	53	111	742	75	54	107
A3 NB	A3 NB M25 to Painshill	A3 NB	2,305	276	222	186	2,356	259	238	190	2,336	259	236	188	2,464	275	262	168	2,475	290	259	163
A3 NB	A3 NB Ockham to Wisley	A3 NB	2,830	263	275	284	3,011	265	307	285	3,042	276	307	287	3,372	272	368	295	3,546	323	374	301
A3 NB	A3 NB Oxshott	A3 NB	1,517	171	124	175	1,592	168	133	190	1,575	168	130	189	1,581	172	140	168	1,577	175	141	160
A3 NB	A3 NB Painshill	A3 NB	1,293	160	101	148	1,365	155	105	172	1,343	154	101	172	1,349	161	108	153	1,346	165	109	147
A3 NB	A3 NB Painshill to Oxshott	A3 NB	1,541	177	125	176	1,739	175	155	195	1,720	175	153	191	1,726	183	160	172	1,748	186	165	166
A3 NB	A3 NB Wisley	A3 NB	2,805	260	273	281	2,993	264	305	285	3,042	276	307	287	3,355	270	366	294	3,546	323	374	301
A3 NB	A3 NB Wisley to M25	A3 NB	2,819	261	275	282	3,013	265	307	287	3,042	276	307	287	3,401	273	372	298	3,546	323	374	301
A3 Ockham	A3 Northbound On Slip	NB	150	18	13	15	154	16	15	13	149	16	14	14	254	43	22	12	268	47	22	13
A3 Ockham	A3 Ockham East Circulatory	SB	198	31	14	18	194	29	17	10	231	44	18	8	235	28	24	13	263	38	25	13
A3 Ockham	A3 Ockham North Circulatory	SB	14	1	2	0	21	3	2	0	26	3	3	1	93	9	12	3	98	9	13	3
A3 Ockham	A3 Ockham South Circulatory	WB	189	31	12	18	213	31	18	15	245	47	18	12	451	104	27	17	378	84	23	17
A3 Ockham	A3 Ockham South East Circulatory	SB	198	31	14	18	194	29	17	10	221	43	17	8	413	98	25	14	337	79	20	12
A3 Ockham	A3 Ockham West Circulatory	NB	164	19	15	15	175	20	17	14	175	19	17	15	347	52	35	15	366	56	36	15
A3 Ockham	A3 Southbound Off Slip	SB	184	30	11	17	173	26	15	10	204	41	15	7	145	19	12	11	167	29	12	10
A3 Oxshott	A3 Northbound Off Slip	EB	24	6	1	0	148	7	22	4	145	7	23	2	145	11	20	5	171	11	24	6
A3 Oxshott	A3 Northbound On Slip	EB	6	2	0	0	6	2	0	0	6	2	0	0	4	1	0	0	4	1	0	0
A3 Oxshott	A3 Oxshott East Circulatory	SB	302	45	25	20	476	47	53	30	472	47	54	25	547	59	59	32	577	58	64	34
A3 Oxshott	A3 Oxshott North East Circulatory	EB	308	47	25	20	482	49	53	30	478	48	55	25	551	59	59	32	581	59	64	35
A3 Oxshott	A3 Oxshott North West Circulatory	NB	387	44	40	22	568	46	70	31	544	40	70	28	707	55	87	40	721	52	92	39
A3 Oxshott	A3 Oxshott South East Circulatory	WB	307	46	26	20	481	48	53	30	477	48	55	25	554	60	60	32	585	59	65	34
A3 Oxshott	A3 Oxshott South West Circulatory	WB	421	40	41	38	597	62	58	51	526	59	51	38	811	67	90	64	701	56	79	53
A3 Oxshott	A3 Oxshott West Circulatory	NB	367	39	40	22	424	40	48	27	402	33	47	27	571	45	68	37	557	41	68	34
A3 Oxshott	A3 Southbound Off Slip	WB	5	1	0	0	5	1	0	0	5	1	0	0	8	1	1	0	9	1	1	0
A3 Oxshott	A3 Southbound On Slip	WB	53	2	1	16	174	22	10	24	124	26	4	12	240	21	22	27	144	15	11	19
A3 Painshill	A245 Byfleet Road (A3 Painshill Approach)	EB	678	83	70	37	664	80	75	23	335	62	27	13	719	83	83	25	374	68	30	16
A3 Painshill	A245 Byfleet Road (A3 Painshill Exit)	NB	985	114	111	45	978	116	110	45	407	49	35	38	1,029	121	121	38	371	42	34	33
A3 Painshill	A245 Portsmouth Road (A3 Painshill Approach)	WB	518	35	71	24	526	32	76	21	536	34	77	22	515	31	74	22	580	40	82	21
A3 Painshill	A245 Portsmouth Road (A3 Painshill Exit)	SB	511	62	62	13	501	36	74	11	503	37	75	9	542	39	82	9	550	40	82	10
A3 Painshill	A3 Northbound Off Slip	EB	1,013	116	121	38	991	104	133	18	993	104	135	16	1,112	114	153	15	1,130	125	150	16
A3 Painshill	A3 Northbound On Slip	EB	248	17	24	28	374	19	51	22	376	20	53	18	377	21	52	18	403	20	58	18
A3 Painshill	A3 Painshill East Circulatory	SB	820	101	95	27	717	91	87	14	743	93	89	19	801	95	99	18	813	101	97	22
A3 Painshill	A3 Painshill North Circulatory	EB	387	35	50	17	421	30	61	13	425	31	62	12	446	32	66	11	450	33	66	11
A3 Painshill	A3 Painshill South Circulatory	WB	574	78	61	22	524	91	39	35	551	98	36	43	547	93	43	35	502	87	33	40
A3 Painshill	A3 Painshill West Circulatory	NB	364	36	40	24	413	43	38	41	434	50	36	45	404	45	38	36	395	42	36	40
A3 Painshill	A3 Southbound Off Slip	WB	267	40	27	9	309	36	26	32	319	42	23	35	312	37	28	28	257	28	21	29
A3 Painshill	A3 Southbound On Slip	WB	714	78	89	22	622	80	74	14	639	81	74	20	636	76	76	19	664	82	78	21
A3 Painshill	Free Flow Slip A245 Byfleet Road to A3 NB	EB	-	-	-	-	-	-	-	-	352	20	52	11	-	-	-	-	379	19	57	11
A3 Painshill	Free Flow Slip A3 NB to A245 Byfleet Road	NB	-	-	-	-	-	-	-	-	594	74	74	11	-	-	-	-	703	92	86	11



				Base	2015			DM 2	2022			DS 2	2022			DM 2	037			DS 20	037	
Region	Road	Direction	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM
A3 SB	A3 SB Burnt Common to Burpham	A3 SB	2,907	313	269	256	3,154	367	282	271	3,306	396	293	279	3,508	430	314	275	3,675	448	328	295
A3 SB	A3 SB M25 Junction 10	A3 SB	935	65	65	163	998	88	78	141	888	79	70	123	1,130	90	97	151	1,010	84	83	140
A3 SB	A3 SB M25 to Ockham	A3 SB	3,034	335	275	272	3,266	386	289	279	3,453	433	300	285	3,449	409	310	279	3,753	466	329	301
A3 SB	A3 SB Ockham to Burnt Common	A3 SB	2,850	305	263	255	3,093	360	274	269	3,249	391	285	277	3,304	390	297	269	3,586	437	317	291
A3 SB	A3 SB Oxshott	A3 SB	1,559	124	141	199	1,462	106	134	194	1,573	116	147	203	1,538	115	134	215	1,711	127	162	214
A3 SB	A3 SB Oxshott to Painshill	A3 SB	1,612	125	142	215	1,637	128	145	218	1,698	142	151	215	1,781	136	156	243	1,858	142	173	234
A3 SB	A3 SB Painshill	A3 SB	1,345	85	115	206	1,328	92	118	186	1,379	100	128	180	1,469	99	128	215	1,602	114	152	205
A3 SB	A3 SB Painshill to M25	A3 SB	2,056	163	205	226	1,948	173	193	199	2,014	182	202	197	2,104	177	205	230	2,271	199	231	223
Byfleet	A245 Byfleet Road (B374 Brooklands Road to Seven Hills Road)	EB	571	74	59	27	571	71	65	17	584	72	67	19	622	75	71	20	651	77	76	21
Byfleet	A245 Byfleet Road (B374 Brooklands Road to Seven Hills Road)	WB	857	101	99	35	855	98	100	36	858	101	98	39	889	100	108	31	904	106	107	33
Byfleet	A245 Byfleet Road (B374 Brooklands Road to Seven Hills Road)	Two-Way	1,428	175	158	61	1,426	170	165	54	1,443	173	164	58	1,511	176	180	50	1,555	183	182	54
Byfleet	A245 Byfleet Road (Seven Hills Road to A3)	EB	678	83	70	37	664	80	75	23	687	81	78	25	719	83	83	25	753	87	86	27
Byfleet	A245 Byfleet Road (Seven Hills Road to A3)	WB	985	114	111	45	978	116	110	45	1,001	124	109	48	1,029	121	121	38	1,057	129	120	42
Byfleet	A245 Byfleet Road (Seven Hills Road to A3)	Two-Way	1,663	197	181	82	1,642	196	186	68	1,688	206	187	73	1,749	205	204	63	1,810	217	206	70
Byfleet	Seven Hills Road	NB	116	13	11	9	115	15	10	9	129	19	11	9	129	17	13	7	141	19	13	9
Byfleet	Seven Hills Road	SB	110	9	11	10	92	9	10	5	99	9	11	6	97	8	11	6	101	10	11	7
Byfleet	Seven Hills Road	Two-Way	225	22	22	19	207	23	20	14	228	27	22	15	226	25	24	13	242	28	24	16
Byfleet	Seven Hills Road South	NB	12	1	1	1	10	1	1	0	10	1	1	0	12	2	1	0	12	2	1	0
Byfleet	Seven Hills Road South	SB	13	1	1	1	11	1	1	0	11	1	1	0	12	2	2	0	13	2	2	0
Byfleet	Seven Hills Road South	Two-Way	25	3	2	3	22	3	3	0	22	3	3	0	24	3	3	0	24	3	3	0
Clandon / Horsley	A247 Clandon Road (A3 to Clandon Station)	NB	98	9	9	10	96	4	10	13	100	5	10	14	94	3	11	12	97	3	11	11
Clandon / Horsley	A247 Clandon Road (A3 to Clandon Station)	SB	90	11	8	7	81	6	10	5	82	7	9	5	61	6	6	3	64	6	7	4
Clandon / Horsley	A247 Clandon Road (A3 to Clandon Station)	Two-Way	189	20	17	18	177	11	19	18	181	12	19	19	155	9	17	15	160	9	18	15
Clandon / Horsley	Hungry Hill Lane	NB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clandon / Horsley	Hungry Hill Lane	SB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Clandon / Horsley	Hungry Hill Lane	Two-Way	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
Clandon / Horsley	Ripley Lane (Hungry Hill Lane to Guileshill Lane)	NB	5	1	0	0	3	0	0	0	2	0	0	0	8	2	1	0	7	2	0	0
Clandon / Horsley	Ripley Lane (Hungry Hill Lane to Guileshill Lane)	SB	1	0	0	0	1	0	0	0	1	0	0	0	3	0	0	0	3	0	0	0
Clandon / Horsley	Ripley Lane (Hungry Hill Lane to Guileshill Lane)	Two-Way	5	2	0	0	4	0	0	0	4	0	0	0	11	2	1	1	10	2	1	1
Clandon / Horsley	Ripley Road	NB	2	0	0	0	20	7	0	0	6	2	0	0	38	14	0	1	22	7	0	1
Clandon / Horsley	Ripley Road	SB	1	0	0	0	2	0	0	0	2	0	0	0	4	1	0	0	3	0	0	0



				Base	2015			DM 2	2022			DS 2	2022			DM 2	2037			DS 20	037	
Region	Road	Direction	AADT	AM	IP	PM	AADT	АМ	IP	PM	AADT	АМ	IP	РМ	AADT	AM	IP	РМ	AADT	AM	IP	РМ
Clandon / Horsley	Ripley Road	Two-Way	3	0	0	0	22	8	0	0	8	2	0	0	41	14	0	1	25	7	1	1
Clandon / Horsley	Tithebarns Lane	EB	1	0	0	0	2	0	0	0	2	0	0	0	3	1	0	0	3	0	0	0
Clandon / Horsley	Tithebarns Lane	WB	2	0	0	0	20	7	0	0	6	2	0	0	37	14	0	1	22	7	0	1
Clandon / Horsley	Tithebarns Lane	Two-Way	3	0	0	0	22	8	0	0	8	2	0	0	40	14	0	1	25	7	1	1
Cobham	A245 Between Streets	EB	452	57	55	9	446	31	68	8	443	31	67	7	483	33	74	7	481	33	74	7
Cobham	A245 Between Streets	WB	468	31	66	20	488	30	71	19	501	31	73	20	551	34	80	21	595	42	85	21
Cobham	A245 Between Streets	Two-Way	920	88	121	29	934	60	139	26	944	62	140	27	1,034	68	154	28	1,076	75	159	28
Cobham	A245 Portsmouth Road (A3 to A307 Portsmouth Road)	EB	511	62	62	13	501	36	74	11	503	37	75	9	542	39	82	9	550	40	82	10
Cobham	A245 Portsmouth Road (A3 to A307 Portsmouth Road)	WB	518	35	71	24	526	32	76	21	536	34	77	22	515	31	74	22	580	40	82	21
Cobham	A245 Portsmouth Road (A3 to A307 Portsmouth Road)	Two-Way	1,028	98	133	38	1,027	68	150	32	1,040	71	152	32	1,058	70	156	31	1,130	80	165	31
Cobham	A307 Portsmouth Road	NB	70	7	7	5	67	7	7	6	70	7	8	4	67	7	7	4	72	8	7	4
Cobham	A307 Portsmouth Road	SB	61	6	6	5	61	5	7	4	67	6	8	5	30	2	2	5	63	6	7	5
Cobham	A307 Portsmouth Road	Two-Way	131	13	13	10	129	12	14	10	137	13	15	9	96	9	9	9	134	14	14	9
Esher	A244 Copsem Lane (A307 Portsmouth Road to A3)	NB	357	36	39	22	420	38	48	26	397	32	46	28	580	46	69	38	564	42	69	36
Esher	A244 Copsem Lane (A307 Portsmouth Road to A3)	SB	280	39	25	20	336	41	31	25	333	41	31	25	429	51	41	31	428	50	41	32
Esher	A244 Copsem Lane (A307 Portsmouth Road to A3)	Two-Way	637	75	64	41	757	80	79	52	731	73	77	52	1,009	97	110	69	993	92	110	68
M25 ACW	M25 Anti-Clockwise A3 to Cobham Services	M25 ACW	8,618	846	909	667	9,029	900	948	691	9,041	900	946	700	9,904	978	1,039	763	9,885	993	1,038	744
M25 ACW	M25 Anti-Clockwise Junction 10	M25 ACW	7,245	707	745	601	7,611	750	784	619	7,586	742	783	621	8,348	851	845	675	8,212	817	848	650
M25 ACW	M25 Anti-Clockwise St Peter's Way to A3	M25 ACW	9,162	941	944	712	9,912	1,021	1,000	806	9,910	1,026	1,000	802	10,533	1,135	1,056	809	10,520	1,111	1,071	799
M25 CW	M25 Clockwise A3 to St Peter's Way	M25 CW	9,602	851	1,033	792	10,548	906	1,135	891	10,640	912	1,147	897	11,733	1,000	1,264	986	11,935	988	1,303	1,000
M25 CW	M25 Clockwise Cobham Services to A3	M25 CW	9,515	945	1,012	695	10,460	1,015	1,115	781	10,481	1,007	1,120	788	11,674	1,117	1,247	871	11,696	1,124	1,245	877
M25 CW	M25 Clockwise Junction 10	M25 CW	7,738	697	826	635	8,734	778	929	730	8,592	745	921	723	9,785	875	1,036	817	9,783	866	1,040	818
M25 Junction 10	A3 Northbound Off Slip	NB	2,109	195	232	156	2,333	200	262	176	2,393	222	262	178	2,594	180	319	181	2,804	248	320	194
M25 Junction 10	A3 Northbound On Slip	NB	1,585	208	178	59	1,669	198	190	79	1,662	200	188	79	1,657	194	200	57	1,671	209	196	56
M25 Junction 10	A3 Southbound Off Slip	SB	1,121	99	140	63	950	85	115	59	1,126	103	132	74	974	87	107	79	1,261	115	148	83
M25 Junction 10	A3 Southbound On Slip Post Old Lane	WB	2,096	266	209	113	2,234	289	209	138	2,542	347	229	161	2,288	301	213	131	2,712	374	245	161
M25 Junction 10	A3 Southbound On Slip Pre Old Lane	SB	2,146	280	212	114	2,330	299	212	160	2,621	358	233	174	2,381	317	219	140	2,702	364	246	165
M25 Junction 10	Free Flow Slip A3 NB to M25 CW	WB	-	-	-	-	-	-	-	-	1,046	102	97	106	-	-	-	-	1,223	112	122	112
M25 Junction 10	Free Flow Slip A3 SB to M25 ACW	SB	-	-	-	-	-	-	-	-	142	44	1	10	-	-	-	-	165	49	2	11
M25 Junction 10	Free Flow Slip M25 ACW to A3 NB	EB	-	-	-	-	-	-	-	-	1,123	128	122	71	-	-	-	-	1,120	140	125	50



				Base	2015			DM 2	2022			DS 2	2022			DM 2	037			DS 20	37	
Region	Road	Direction	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	РМ
M25 Junction 10	Free Flow Slip M25 CW to A3 SB	WB	-	-	-	-	-	-	-	-	1,321	182	130	59	-	-	-	-	1,217	168	120	47
M25 Junction 10	M25 Anti-Clockwise Off Slip 1	EB	-	-	-	-	-	-	-	-	1,279	152	133	84	-	-	-	-	1,251	154	136	66
M25 Junction 10	M25 Anti-Clockwise Off Slip 2	EB	1,918	235	199	111	2,302	271	216	187	1,045	132	84	96	2,185	284	211	134	1,057	140	87	83
M25 Junction 10	M25 Anti-Clockwise On Slip	EB	1,361	138	164	63	1,409	149	163	70	1,437	156	163	76	1,528	126	192	83	1,632	172	188	86
M25 Junction 10	M25 Clockwise Off Slip	WB	1,777	248	187	60	1,726	237	186	51	1,890	262	199	65	1,888	243	211	54	1,913	258	205	59
M25 Junction 10	M25 Clockwise On Slip 1	WB	415	46	40	39	147	15	13	17	974	59	129	65	211	13	19	32	1,042	61	139	69
M25 Junction 10	M25 Clockwise On Slip 2	WB	1,411	102	166	114	1,662	114	193	142	1,046	102	97	106	1,763	125	207	139	1,223	112	122	112
M25 Junction 10	M25 Junction 10 East Circulatory	SB	1,781	166	203	119	1,909	169	198	169	1,809	179	227	72	1,851	179	187	154	2,069	196	263	82
M25 Junction 10	M25 Junction 10 North Circulatory	EB	2,017	205	226	119	2,412	241	251	183	2,463	262	254	176	2,447	226	276	157	2,664	277	284	176
M25 Junction 10	M25 Junction 10 South Circulatory	WB	1,411	133	179	64	1,261	97	170	57	1,437	118	190	66	1,327	94	178	68	1,531	120	205	69
M25 Junction 10	M25 Junction 10 West Circulatory	NB	1,689	178	206	67	1,785	168	226	74	2,163	212	224	175	1,948	136	271	79	2,309	222	246	175
Martyr's Green	Ockham Lane (Hatch Lane to Old Lane)	EB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Martyr's Green	Ockham Lane (Hatch Lane to Old Lane)	WB	15	3	1	0	16	2	1	1	16	2	1	1	23	3	2	2	20	4	2	1
Martyr's Green	Ockham Lane (Hatch Lane to Old Lane)	Two-Way	0	3	1	0	16	2	1	1	16	2	1	1	23	3	2	2	21	4	2	1
Martyr's Green	Ockham Lane (Old Lane to Downside Road)	NB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Martyr's Green	Ockham Lane (Old Lane to Downside Road)	SB	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	7	1	0	1
Martyr's Green	Ockham Lane (Old Lane to Downside Road)	Two-Way	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	7	1	0	1
Martyr's Green	Old Lane (A3 to Hatch Lane)	NB	0	0	0	0	1	0	0	0	1	0	0	0	2	1	0	0	123	34	6	2
Martyr's Green	Old Lane (A3 to Hatch Lane)	SB	45	11	3	1	99	10	3	22	82	12	4	13	79	14	6	5	134	28	8	9
Martyr's Green	Old Lane (A3 to Hatch Lane)	Two-Way	46	11	3	1	100	10	3	22	83	12	4	13	81	14	6	5	258	62	14	12
Martyr's Green	Old Lane (Hatch Lane to Ockham Lane)	EB	32	7	2	1	91	9	2	22	71	10	2	13	45	10	2	3	60	10	3	7
Martyr's Green	Old Lane (Hatch Lane to Ockham Lane)	WB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	0	1
Martyr's Green	Old Lane (Hatch Lane to Ockham Lane)	Two-Way	32	7	2	1	91	9	2	22	71	10	2	13	45	10	2	3	67	12	3	8
Martyr's Green	Old Lane (Martyr's Green to Effingham Junction)	EB	18	4	1	0	92	9	2	22	72	10	2	13	76	19	4	3	94	20	5	8
Martyr's Green	Old Lane (Martyr's Green to Effingham Junction)	WB	1	0	0	0	17	3	1	1	16	2	1	1	65	19	2	2	41	7	3	3
Martyr's Green	Old Lane (Martyr's Green to Effingham Junction)	Two-Way	19	4	1	1	109	12	3	23	88	12	4	14	141	37	6	5	134	27	8	10
Ockham	Alms Heath	NB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ockham	Alms Heath	SB	15	3	1	0	0	0	0	0	0	0	0	0	4	1	0	1	3	1	0	0



	Pond		Base 2015					DM 2	2022		D\$ 2022					DM 2	037		DS 2037			
Region	Road	Direction	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM
Ockham	Alms Heath	Two-Way	0	3	1	0	0	0	0	0	0	0	0	0	4	1	0	1	3	1	0	0
Ockham	B2039 Ockham Road North (A3 to Guileshill Lane)	NB	41	7	3	4	43	6	3	5	41	5	3	4	46	5	4	5	44	5	4	5
Ockham	B2039 Ockham Road North (A3 to Guileshill Lane)	SB	52	7	5	4	26	4	3	0	19	2	2	0	11	0	1	1	6	1	1	0
Ockham	B2039 Ockham Road North (A3 to Guileshill Lane)	Two-Way	94	14	7	8	69	10	6	5	59	7	5	5	56	6	5	6	51	6	4	5
Ockham	B2039 Ockham Road North (Alms Heath to East Lane)	NB	39	6	2	4	25	3	2	3	23	3	2	3	26	3	2	4	27	3	2	4
Ockham	B2039 Ockham Road North (Alms Heath to East Lane)	SB	58	9	4	4	7	0	1	0	4	0	1	0	14	1	1	2	7	1	1	0
Ockham	B2039 Ockham Road North (Alms Heath to East Lane)	Two-Way	97	15	7	9	31	3	3	4	27	3	2	3	41	4	3	6	34	4	2	4
Ockham	B2039 Ockham Road North (Guileshill Lane to Ockham Lane)	EB	43	6	3	4	7	0	1	0	4	0	1	0	11	0	1	1	4	0	1	0
Ockham	B2039 Ockham Road North (Guileshill Lane to Ockham Lane)	WB	39	6	2	4	41	5	3	4	39	5	3	4	46	5	4	5	45	5	4	5
Ockham	B2039 Ockham Road North (Guileshill Lane to Ockham Lane)	Two-Way	82	12	6	8	48	5	4	5	43	5	3	4	56	6	5	6	49	6	4	5
Ockham	B2039 Ockham Road North (Ockham Lane to Alms Heath)	EB	43	6	3	4	7	0	1	0	4	0	1	0	11	0	1	1	4	0	1	0
Ockham	B2039 Ockham Road North (Ockham Lane to Alms Heath)	WB	39	6	2	4	25	3	2	3	23	3	2	3	26	3	2	4	27	3	2	4
Ockham	B2039 Ockham Road North (Ockham Lane to Alms Heath)	Two-Way	82	12	6	8	31	3	3	4	27	3	2	3	37	3	3	5	31	3	2	4
Ockham	Guileshill Lane	EB	1	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0
Ockham	Guileshill Lane	WB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0
Ockham	Guileshill Lane	Two-Way	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	3	1	0	0
Ockham	Ockham Lane (Alms Heath to Hatch Lane)	EB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Ockham	Ockham Lane (Alms Heath to Hatch Lane)	WB	15	3	1	0	16	2	1	1	16	2	1	1	23	3	2	2	20	4	2	1
Ockham	Ockham Lane (Alms Heath to Hatch Lane)	Two-Way	0	3	1	0	16	2	1	1	16	2	1	1	23	3	2	2	21	4	2	1
Ockham	Ockham Lane (B2039 Ockham Road North to Alms Heath)	EB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Ockham	Ockham Lane (B2039 Ockham Road North to Alms Heath)	WB	0	0	0	0	16	2	1	1	16	2	1	1	19	3	2	1	17	3	2	1
Ockham	Ockham Lane (B2039 Ockham Road North to Alms Heath)	Two-Way	0	0	0	0	16	2	1	1	16	2	1	1	19	3	2	1	18	3	2	1
Oxshott	A244 Copsem Lane (A3 to Fairoak Lane)	NB	399	39	40	32	575	61	57	46	506	58	50	33	780	65	89	57	674	55	78	47
Oxshott	A244 Copsem Lane (A3 to Fairoak Lane)	SB	285	45	25	13	459	47	52	25	457	47	54	20	524	59	58	25	557	58	63	28
Oxshott	A244 Copsem Lane (A3 to Fairoak Lane)	Two-Way	684	84	65	45	1,034	107	109	70	962	104	104	54	1,304	124	147	83	1,232	113	142	74
Pyrford	B367 Newark Lane (Upshot Lane to Papercourt Lane)	NB	30	2	3	2	65	7	6	5	84	17	6	3	81	14	5	7	101	16	7	8
Pyrford	B367 Newark Lane (Upshot Lane to Papercourt Lane)	SB	41	3	5	3	56	6	7	2	55	6	7	2	63	4	9	2	75	9	9	3
Pyrford	B367 Newark Lane (Upshot Lane to Papercourt Lane)	Two-Way	71	5	8	5	121	13	13	8	140	23	13	5	144	18	13	10	176	25	16	10
Ripley	B2215 Portsmouth Road (B367 Newark Lane to A3)	EB	104	9	11	8	128	15	13	9	134	15	13	11	187	16	24	9	208	20	26	10



			Base 2015				DM 2022				DS 2022				DM 2037				DS 2037			
Region	Road	Direction	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM	AADT	AM	IP	PM
Ripley	B2215 Portsmouth Road (B367 Newark Lane to A3)	WB	129	22	8	11	166	26	13	10	204	43	14	8	292	68	17	12	220	48	12	11
Ripley	B2215 Portsmouth Road (B367 Newark Lane to A3)	Two-Way	233	31	19	19	294	41	26	19	338	57	27	18	479	83	41	21	428	68	38	21
Ripley	B2215 Portsmouth Road (B368 Send Marsh Road to B367 Newark Lane)	NB	67	7	8	4	86	11	8	7	95	12	9	8	151	15	18	7	157	15	19	8
Ripley	B2215 Portsmouth Road (B368 Send Marsh Road to B367 Newark Lane)	SB	84	17	4	7	80	13	7	4	97	19	7	4	173	44	10	4	95	24	5	3
Ripley	B2215 Portsmouth Road (B368 Send Marsh Road to B367 Newark Lane)	Two-Way	151	24	12	11	167	24	15	11	192	31	16	12	324	59	28	11	252	39	24	11
Ripley	B367 Newark Lane (Papercourt Lane to B2215 Portsmouth Road)	EB	36	2	4	3	45	4	5	2	44	4	5	2	42	1	6	2	53	5	7	2
Ripley	B367 Newark Lane (Papercourt Lane to B2215 Portsmouth Road)	WB	42	3	4	4	78	10	7	6	99	20	7	4	112	19	8	8	115	19	8	8
Ripley	B367 Newark Lane (Papercourt Lane to B2215 Portsmouth Road)	Two-Way	77	5	8	7	123	14	12	8	143	24	12	6	154	20	14	10	168	23	15	11
Ripley	Rose Lane	EB	1	0	0	0	1	0	0	0	3	1	0	0	3	0	0	1	3	0	0	1
Ripley	Rose Lane	WB	5	1	0	0	3	0	0	0	2	0	0	0	9	2	1	0	9	3	0	0
Ripley	Rose Lane	Two-Way	6	2	0	0	4	0	0	0	6	1	0	0	12	2	1	1	13	3	1	1
Send	A247 Clandon Road (B2215 London Road to A3)	NB	88	8	8	10	107	12	8	13	96	7	8	14	119	16	9	12	104	9	10	11
Send	A247 Clandon Road (B2215 London Road to A3)	SB	126	16	12	8	119	9	15	6	121	10	15	6	222	42	19	6	118	12	14	5
Send	A247 Clandon Road (B2215 London Road to A3)	Two-Way	214	24	20	19	226	21	23	19	217	17	23	20	341	58	28	18	222	21	24	16
Send	A247 Ripley Bypass	SB	2	0	0	0	20	7	0	0	6	2	0	0	37	14	0	0	20	7	0	0
Send	A247 Ripley Bypass (A3 Approach)	NB	49	6	6	1	49	3	7	1	49	3	8	1	173	36	15	3	67	7	9	2
Send	A247 Send Barns Lane (B368 Send March Road to B2215 Portsmouth Road)	EB	48	6	5	3	46	4	5	3	45	4	5	3	59	8	6	3	56	7	6	3
Send	A247 Send Barns Lane (B368 Send March Road to B2215 Portsmouth Road)	WB	52	5	4	8	47	3	4	8	45	2	4	7	74	10	5	8	65	7	5	8
Send	A247 Send Barns Lane (B368 Send March Road to B2215 Portsmouth Road)	Two-Way	100	11	8	11	93	7	9	10	91	7	9	10	133	18	11	11	121	14	11	11
Send	A247 Send Road (B368 Send Marsh Road to Tannery Lane)	EB	54	8	5	3	54	7	5	3	53	7	5	3	69	11	6	3	67	10	6	3
Send	A247 Send Road (B368 Send Marsh Road to Tannery Lane)	WB	54	5	4	8	49	3	4	8	47	2	4	7	77	10	5	9	71	9	5	8
Send	A247 Send Road (B368 Send Marsh Road to Tannery Lane)	Two-Way	108	13	9	11	103	10	9	11	100	9	9	11	146	21	11	12	138	18	11	12
Send	A247 Send Road (Tannery Lane to B382 High Street)	NB	66	6	5	10	63	6	5	9	62	5	5	8	109	15	8	10	86	11	6	9
Send	A247 Send Road (Tannery Lane to B382 High Street)	SB	50	7	4	3	44	6	4	3	44	5	4	3	49	7	4	3	46	6	4	3
Send	A247 Send Road (Tannery Lane to B382 High Street)	Two-Way	116	13	9	13	108	11	9	12	106	11	9	12	158	22	12	13	132	17	10	12
Send	A3 Northbound Off Slip	NB	61	2	10	1	69	6	10	1	73	7	10	1	164	18	21	4	159	15	21	4
Send	A3 Southbound On Slip	WB	48	6	6	1	47	3	7	1	48	3	8	1	171	35	15	3	67	7	9	2



Region	Road		Base 2015					DM	2022			DS 2	2022			DM 2	2037		DS 2037				
	Road	Direction	AADT	AM	IP	РМ	AADT	AM	IP	РМ	AADT	AM	IP	РМ	AADT	AM	IP	РМ	AADT	АМ	IP	PM	
Send	B2215 London Road (A3 to A247 Clandon Road)	NB	61	2	10	1	69	6	10	1	73	7	10	1	164	18	21	4	159	15	21	4	
Send	B2215 Portsmouth Road (A247 Clandon Road to B368 Send Marsh Road)	EB	63	4	9	3	78	7	9	6	87	8	9	7	141	11	19	6	147	11	20	6	
Send	B2215 Portsmouth Road (A247 Clandon Road to B368 Send Marsh Road)	WB	51	8	3	5	48	3	6	3	50	4	6	3	132	32	9	3	31	3	4	2	
Send	B2215 Portsmouth Road (A247 Clandon Road to B368 Send Marsh Road)	Two-Way	114	12	12	8	126	11	15	9	137	13	15	10	273	43	28	8	178	14	24	8	
Send	B368 Send Marsh Road	EB	4	2	0	0	6	2	0	0	6	2	0	0	7	2	0	0	7	2	0	0	
Send	B368 Send Marsh Road	WB	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	2	0	0	
Send	B368 Send Marsh Road	Two-Way	4	2	0	0	6	2	0	0	6	2	0	0	7	2	0	0	12	4	0	1	
Send	Tannery Lane / Papercourt Lane	EB	4	0	0	1	7	0	1	1	7	0	1	1	6	0	1	0	7	0	1	0	
Send	Tannery Lane / Papercourt Lane	WB	20	3	2	2	30	4	3	1	32	4	3	1	57	9	6	2	42	7	4	1	
Send	Tannery Lane / Papercourt Lane	Two-Way	24	3	2	3	37	4	4	2	39	4	5	2	64	9	7	2	48	7	5	1	
Wisley	A3 Northbound Off Slip	NB	24	4	2	3	17	1	3	0	-	-	-	-	17	1	2	0	-	-	-	-	
Wisley	A3 Northbound On Slip	EB	10	1	2	0	14	1	2	1	-	-	-	-	47	7	5	1	-	-	-	-	
Wisley	Lock Lane	EB	8	0	1	0	14	1	2	1	6	1	1	0	46	7	5	1	7	1	1	0	
Wisley	Lock Lane	WB	1	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	5	1	0	0	
Wisley	Lock Lane	Two-Way	8	0	1	0	16	1	2	1	8	1	1	0	48	7	5	1	11	2	1	0	
Wisley	Wisley Lane (North of RHS Wisley)	NB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	
Wisley	Wisley Lane (North of RHS Wisley)	SB	6	0	1	0	8	0	1	1	0	0	0	0	40	7	4	1	1	0	0	0	
Wisley	Wisley Lane (North of RHS Wisley)	Two-Way	0	0	1	0	8	0	1	1	0	0	0	0	40	7	4	1	3	1	0	0	
Wisley	Wisley Lane (South of RHS Wisley)	NB	24	4	2	3	17	1	3	0	-	-	-	-	17	1	2	0	-	-	-	-	
Wisley	Wisley Lane (South of RHS Wisley)	SB	10	1	2	0	14	1	2	1	-	-	-	-	47	7	5	1	-	-	-	-	
Wisley	Wisley Lane (South of RHS Wisley)	Two-Way	35	5	3	3	31	2	5	1	0	0	0	0	64	9	7	1	0	0	0	0	
Wisley	WPIL Development Road (East)	NB	-	-	-	-	-	-	-	-	17	1	3	0	-	-	-	-	19	2	2	0	
Wisley	WPIL Development Road (East)	SB	-	-	-	-	-	-	-	-	6	0	1	0	-	-	-	-	7	1	1	0	
Wisley	WPIL Development Road (East)	Two-Way	0	0	0	0	0	0	0	0	23	1	4	0	0	0	0	0	26	3	4	0	
Wisley	WPIL Development Road (West)	EB	-	-	-	-	-	-	-	-	17	1	3	0	-	-	-	-	101	9	14	3	
Wisley	WPIL Development Road (West)	WB	-	-	-	-	-	-	-	-	6	0	1	0	-	-	-	-	178	52	8	1	
Wisley	WPIL Development Road (West)	Two-Way	0	0	0	0	0	0	0	0	23	1	4	0	0	0	0	0	278	62	22	4	

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