Dover District Council

DOVER AND DEAL TRANSPORT MODEL

Modelling Appraisal Specification Report

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Dover District Council

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Dover District Council

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Modelling Appraisal Specification Report

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INTRODUCTION

1. INTRODUCTION

1.1. INTRODUCTION

1.1.1. WSP have been commissioned by Dover District Council (DDC) to enhance the 2015 Dover Transportation Model with traffic data from the Deal area as part of the North Deal Study. WSP will be working in close collaboration with Kent County Council (KCC) and Highways England (HE) on the project. The primary purpose this strategic transportation study is to support the development of the District Local Plan which will cover the period up to 2037.

1.2. BACKGROUND

Dover Transportation Model

1.2.1. The Dover Transportation Model (DTM) was created using VISUM software that was agreed by HE and KCC as being 'fit for purpose'. The DTM was used to inform and support the development of DDC's Adopted Core Strategy (2010) and Land Allocations Local Plan (2015).

1.2.2. In 2015 agreement was reached with DDC, HE and KCC to refresh the model with up-to-date traffic counts for the Dover area. Work on the DTM was then 'paused' until the distribution of development had been agreed with Dover District Council.

Local Plan Review

1.2.3. On the 1st March 2017 Dover District Council's Cabinet agreed that there was the need to commence with work on a Local Plan Review. Policy CP1 in the Council's existing Adopted Local Plan currently identifies Deal as a District Centre and a focus for urban scale development second only to Dover. Historically, Deal's ability to accommodate significant development has been constrained by transport, access and environmental considerations. At the time of writing the Core Strategy, the section regarding spatial issues in Deal (pages 48 to 50 in the Core Strategy), made a commitment to investigate these constraints, especially in and adjoining the northern area, to see whether solutions could be found for the benefit of existing residents and to create potential for further development.

1.2.4. Initial work was undertaken in 2011 by GVA/MVA Consultants as part of the work on the Council's Land Allocations Local Plan but unfortunately, this failed to identify a deliverable solution for the North Deal area and concluded that there was only limited development potential around the Albert Road area for new development https://www.dover.gov.uk/Planning/Planning-Policy-and-Regeneration/Evidence-Base/Flooding.aspx This work resulted in planning permission being granted and work is currently underway to create a new access road and a mixed use development on land at Albert Road (DOV/15/01290). Work on this study started by reviewing all of the information that was undertaken in 2011.

Modelling Appraisal Specification Report

1.2.5. This Modelling Appraisal Specification Report (ASR) sets out the methodology for enhancing the DTM in the Deal area to generate the DDTM as part of the North Deal Study. This document has been shared and agreed with DDC, Kent County Council (KCC) and Highways England.

1.3. EXISTING TRAFFIC MODEL

1.3.1. The existing 2015 Dover Transport Model (DTM) was developed in 2015/ 2016 by WSP. The Dover Transport Model and Local Model Validation Report (LMVR) was approved by both KCC and Highways England as fit for purpose in November 2016. Subsequently the 2015 DTM has not been used to develop any future scenarios as this was put on hold in February 2017 when DDC Local Plan was being developed. The 2015 DTM will be enhanced in the Deal area to generate a Dover and Deal Transport Model (DDTM).

2. MODEL SCOPE

2.1. OVERVIEW OF MODEL UPDATE

2.1.1. The 2015 DDTM model will be built within PTV VISUM 15, updating the highway element of the 2015 DTM. Given the dominance of car use in Dover District Council, the highway model will be the focus of our efforts to incorporate improvements.

2.2. HIGHWAY MODEL

NETWORK

2.2.1. The proposed study area showing the 2015 DTM area of simulation and the proposed Deal study area for enhancement is shown in Figure 1. All junctions within this area will be modelled in detail. Every junction in this area will use the Node Impedance Calculation (ICA) to calculate the Method of Impedance at Nodes. This is the PTV recommended method to be adopted on a small strategic model. ICA will provide a model suitable for long term horizon planning with the added value it could be used for operational planning. ICA is used for calculating junction delays.

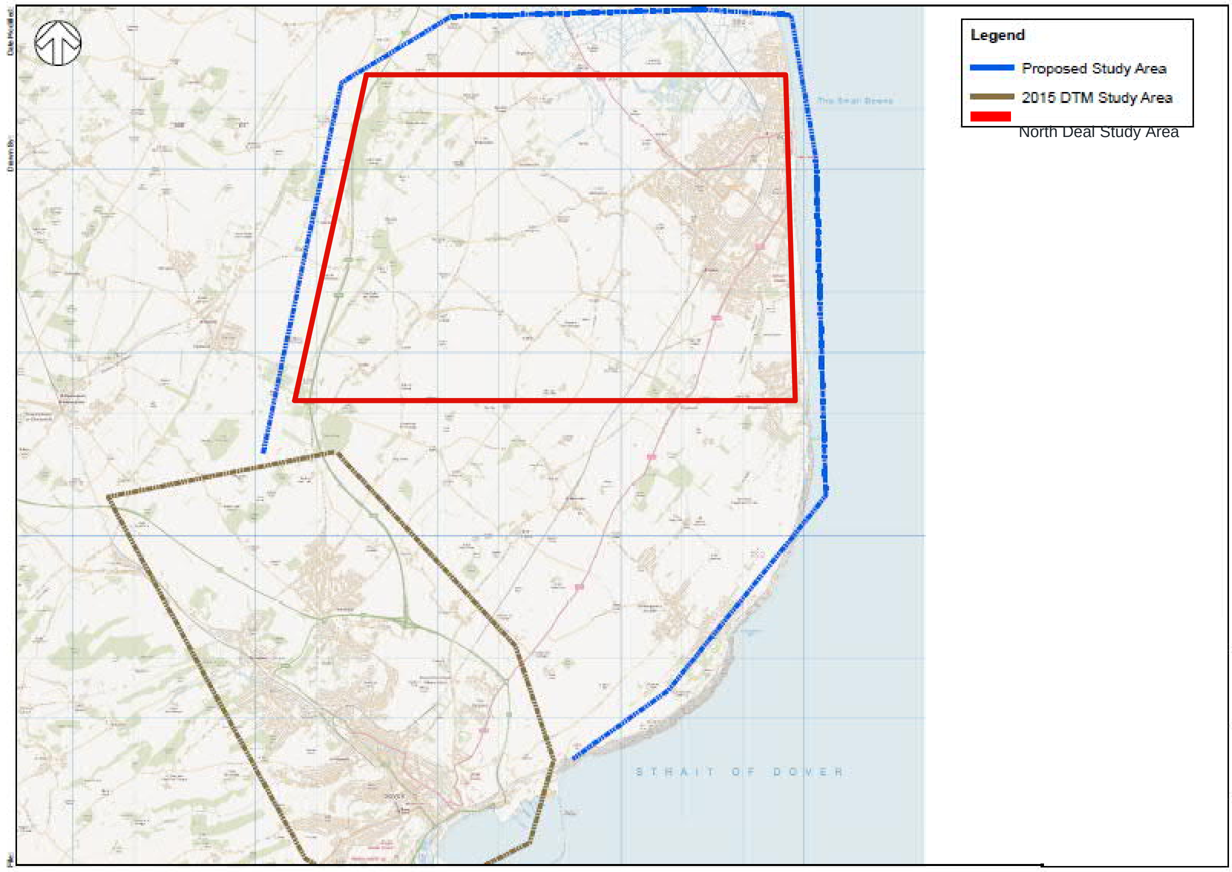


Figure 1: DDTM Study Area

2.2.2. Signal data for the signalised junctions in the Deal area was requested and received from KCC. The signalised junctions are listed below and illustrated in Figure 2:

- Albert Road with railway crossing
- Queen Street with West Street and Blenheim Road

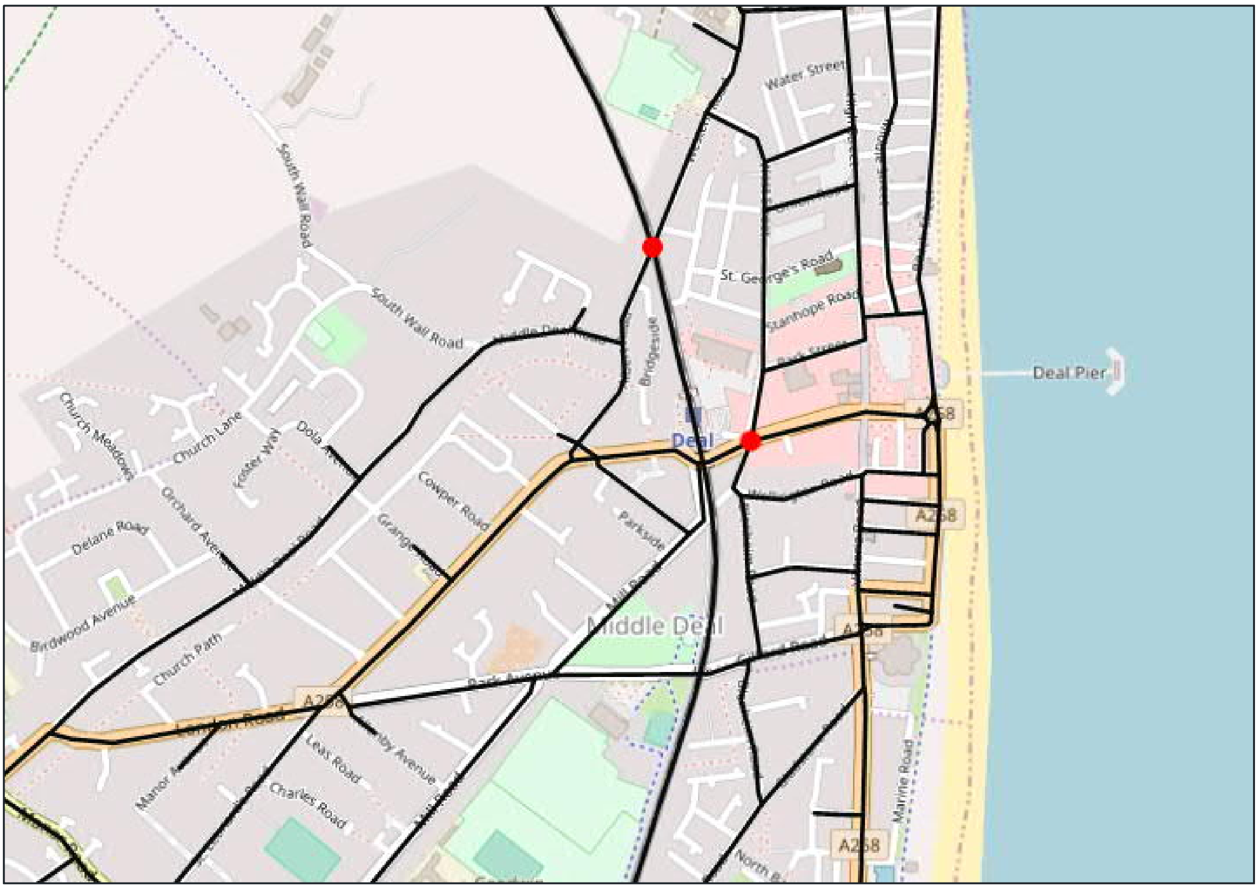


Figure 2: Signalised Junctions in Deal Area

2.2.3. Figure 3 shows the existing VISUM network (lines in pink) and the proposed new VISUM network (lines in green). All new proposed network encompasses all areas of the network where count data has been collected. More details about the count data collected can be found in the North Deal Study Data Collection Report February 2018.

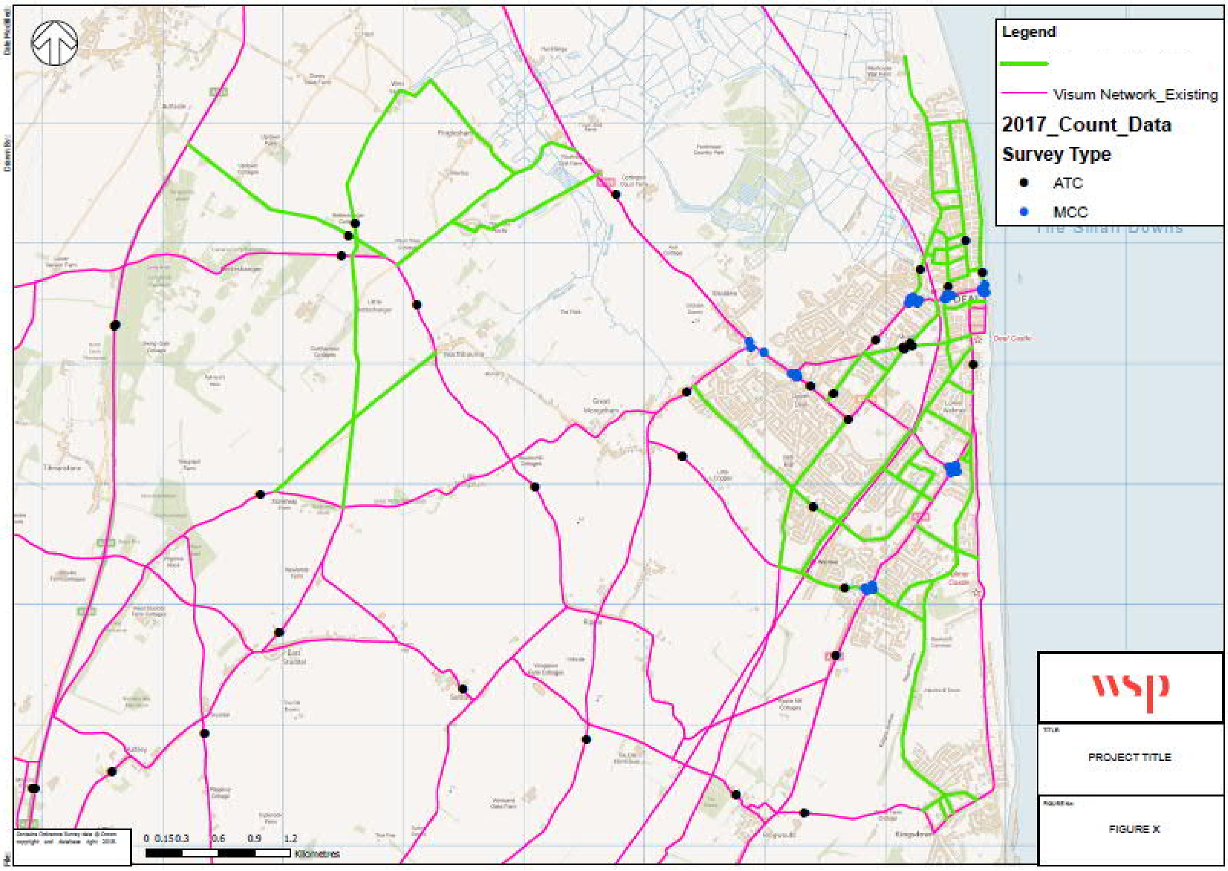


Figure 3: Additional Highway Network Deal Area

PCU FACTORS

2.2.4. Will remain the same as the 2015 DTM Cars and LGVs will have a PCU factor of 1.0 while buses and HGVs will have a PCU factor of 2.0.

LINK TYPES

2.2.5. The link types that currently exist within the 2015 DTM are shown in Table 1; these will be used for the DDTM.

Table 1: 2015 DTM Link Types

Link Type Number	Description	Capacity PCU per Lane	Free Flow Speed (KPH)
1	Motorway D3/4	2520	112
2	Motorway D2	2520	112
10	Primary A Road Rural	2260	108
11	Primary A Road Sub-Urban	1860	91
12	Primary A Road Urban	1720	78
20	A Road Dual Rural	2180	105
21	A Road Urban	1500	58
22	A Road Single Rural	1860	91
30	B Road Rural	1380	78
31	B Road Sub-Urban (Average 40mph)	1285	61
32	B Road Sub-Urban (Average 30mph)	1030	58
40	Minor Road Suburban	1500	58
41	Minor Road Urban	780	48
42	Minor Road Rural Village (40mph)	1300	66
43	Minor Road Rural Village (30mph)	880	87
44	Unclassified	500	20
50	Pedestrianised	99999	4

2.2.6. WebTAg unit M3:1, January 2014, says this about speed flow curves:

"Appendix D specifies the speed/flow relationships used in COBA (the DfT's link-based Cost Benefit Analysis software) and which may also be used in highway assignment models. However, the urban speed/flow relationships apply to networks rather than individual links and also include an allowance for junction delays. These urban relationships are therefore only suitable for the approximate modelling of capacity restraint effects in areas peripheral to the area over which the main impacts of the interventions being tested would be felt; they should not be used in conjunction with junction modelling. Generally, in urban areas within the Fully Modelled Area, the use of fixed cruise speeds is advised in conjunction with junction modelling, rather than using link-based speed/flow relationships. Cruise speeds should not be based on speed limits but should reflect mean speeds on a link"."

2.2.7. Therefore speed flow curves will only be allocated to links outside our simulation area, shown in Figure 1 and cruise speeds will be obtained from Trafficmaster data. The speed flow curves allocated to them are in Table 2 and graphs comparing the curves against COBA can be found in Appendix A.

Table 2: Speed Flow Curves

Link Type	Parametres		
	a	b	c
Motorway D3/4	0.8	3.5	1
Motorway D2	0.8	3	1
Primary and A Road Rural	0.5	3	0.9
A Road D2 Sub Urban A Road Single	1	3	1
B Road S2 Sub-Urban	0.5	4	1
Minor Urban Road	2	3	1.5
B Road Rural	1.7	2.5	1.7
Minor Road Rural Village	0.2	4	1
Country Lane	0.7	4	0.9

DEMAND

2.2.8. The DTM prior matrices were developed as outlined in the Dover Transport Model (DTM) Local Model Validation Report November 2016. This document was agreed by HE and KCC in November 2016.

2.2.9. The starting point for the DDTM prior matrices will be the 2015 DTM prior matrices.

PRIOR MATRIX DEVELOPMENT METHODOLOGY

2.2.10. To develop the DDTM prior trip matrices it is proposed that the first step would be to disaggregate the 2015 DTM prior matrices into the proposed zone system for Deal shown in Figure 10. This disaggregation will be undertaken using 2011 household population data at census output level.

2.2.11. At the start of the Deal project there was a requirement to supplement the existing origin and destination information with either Mobile Phone or Automatic Number Plate Registration (ANPR) data. In WSP's clarification letter, 24th July 2017, it was recommended using the Mobile Phone Data that Highways England have collected as part of the South East Regional Saturn Model.

2.2.12. WSP have requested access to the Highway England Trip Information System (TIS) but following correspondence this information can only be access for HE/DfT supported projects so it would not be possible to access the data for the Deal study.

2.2.13. Highways England have suggested using the matrix information from the South East Regional Transport Model (SERTM) to supplement the matrices. The SERTM were developed using mobile phone data collected in March 2015 The SERTM zone system shown in Figure 4 is very coarse in the Deal area with just one zone covering Deal, Kingsdown and St Margaret's at Cliffe. The SERTM data will be disaggregated using 2011 census data and used to supplement the matrices which has been agreed with both HE and KCC are in agreement.

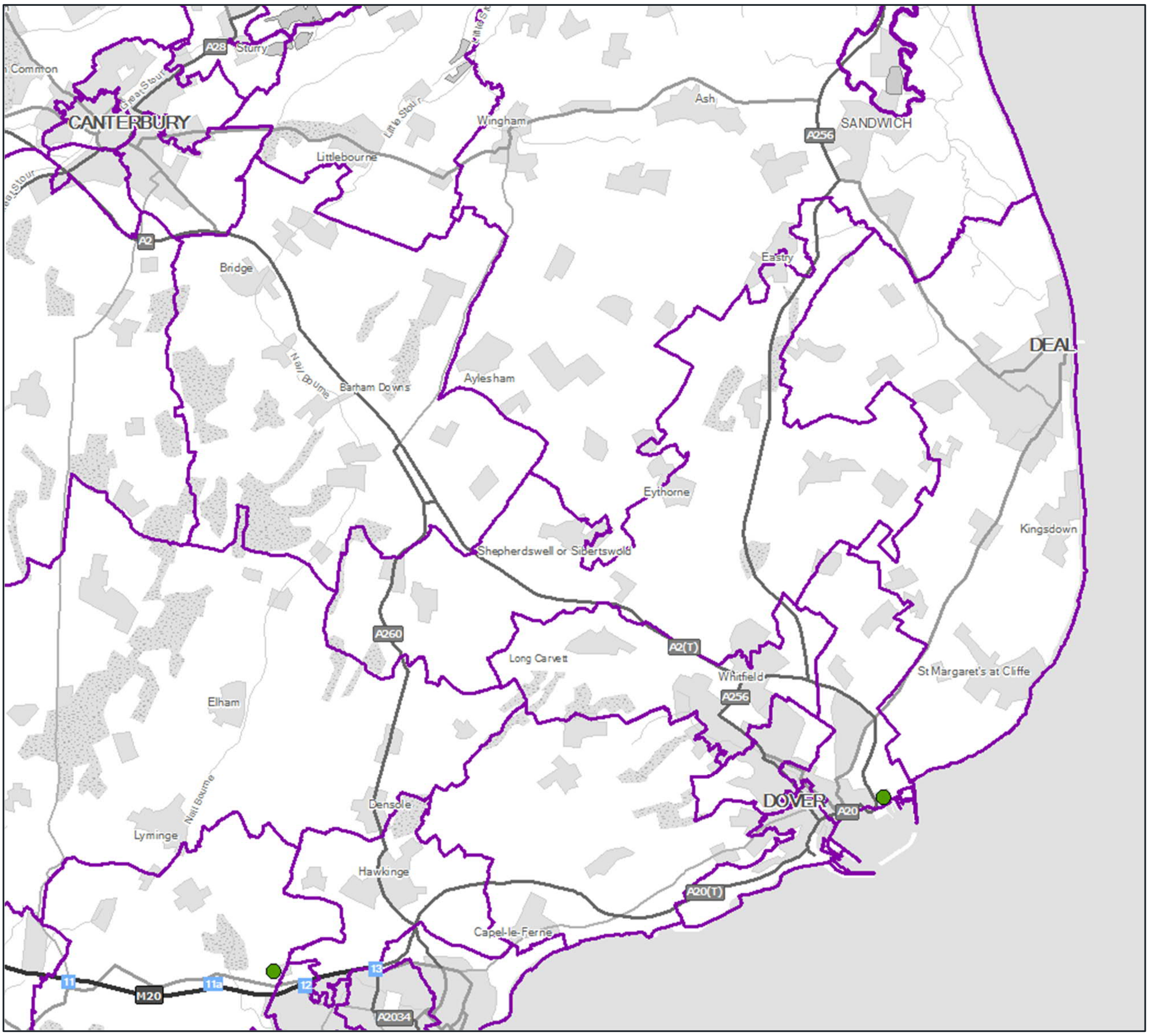


Figure 4: South East Regional Transport Model (SERTM)

During the development of the 2015 DTM it was necessary to include car trips which are made to schools across the town in the AM peak prior matrices. It is proposed that the same approach is adopted for educational trips in Deal, in the AM peak prior matrices. The education trips will be derived from identifying the schools within the DDTM study area and the number of pupils which attend these. This will be obtained from the Edubase government database which contains information on schools and pupil numbers across the UK. It is proposed that the same TRICS car trip rate will be used per pupil by type of school see Table 3.

Table 3: School Car Trip Rates

School	AM peak
Primary	0.285
Secondary	0.213

ASSIGNMENT

2.2.14. Consistent with the 2015 DTM Assignment with ICA will be used which is the latest assignment algorithm developed by PTV. It uses blocking back and volume-delay functions by lane and turn. These are permanently recalibrated taking into account lane geometry and interdependencies between the individual turns via a node.

2.2.15. Figure 5 to Figure 8 show the chosen assignment procedure parameters.

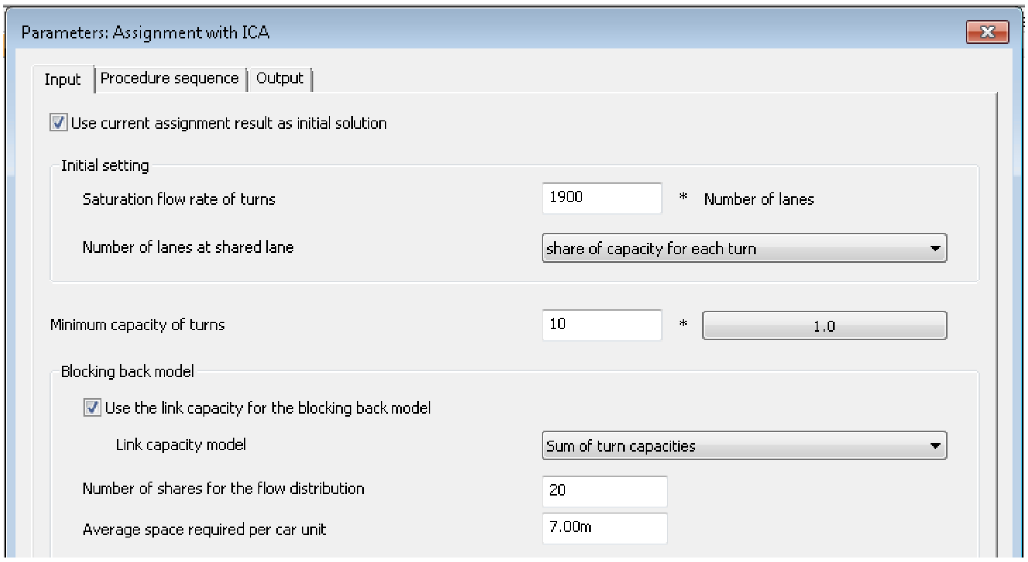


Figure 5: Assignment with ICA - Procedure Parameters

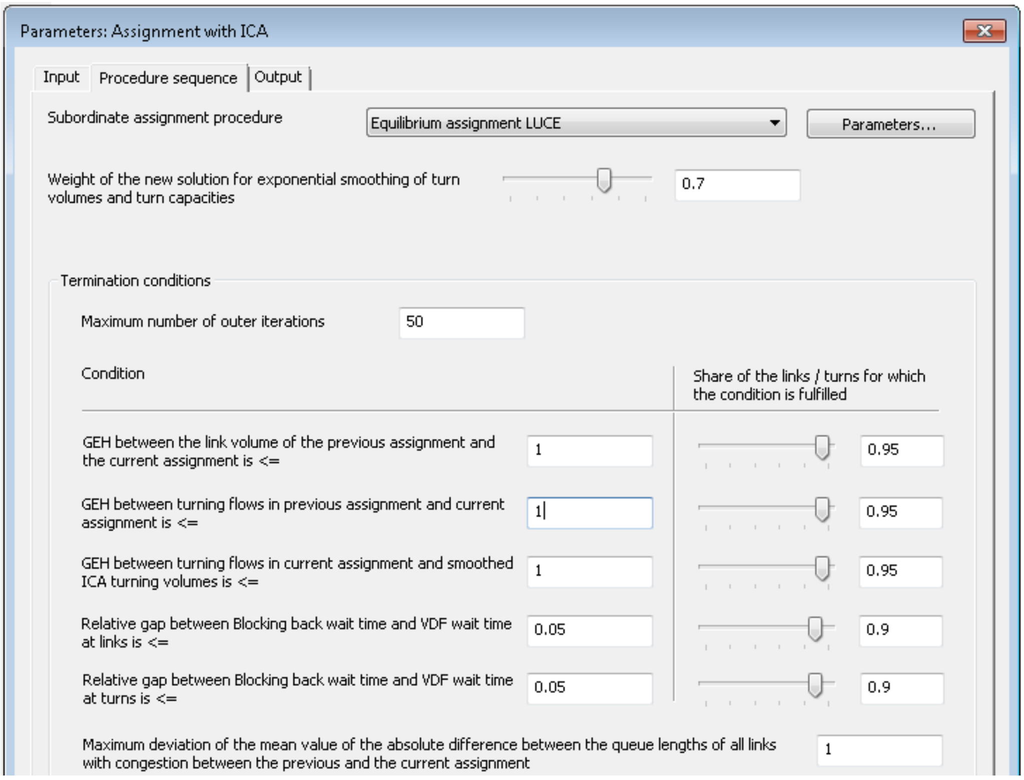


Figure 6: Assignment with ICA - Procedure Parameters

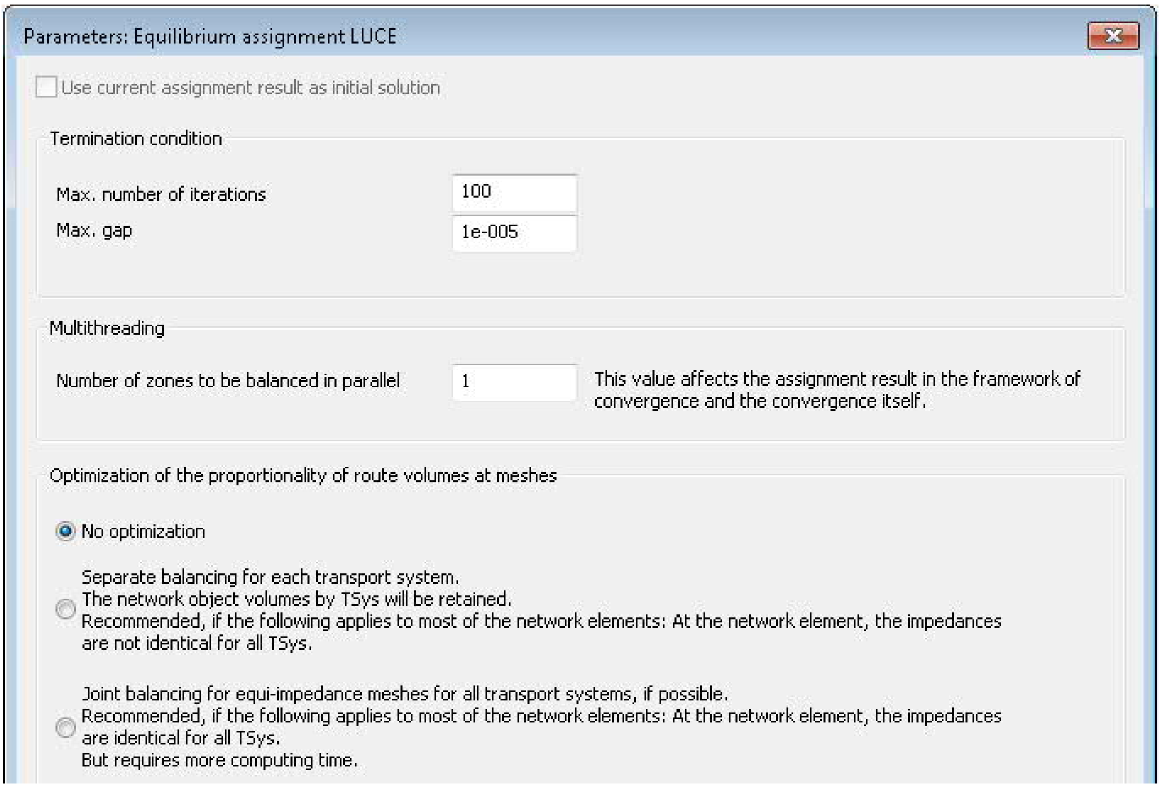


Figure 7: Equilibrium Assignment LUCE Parameters

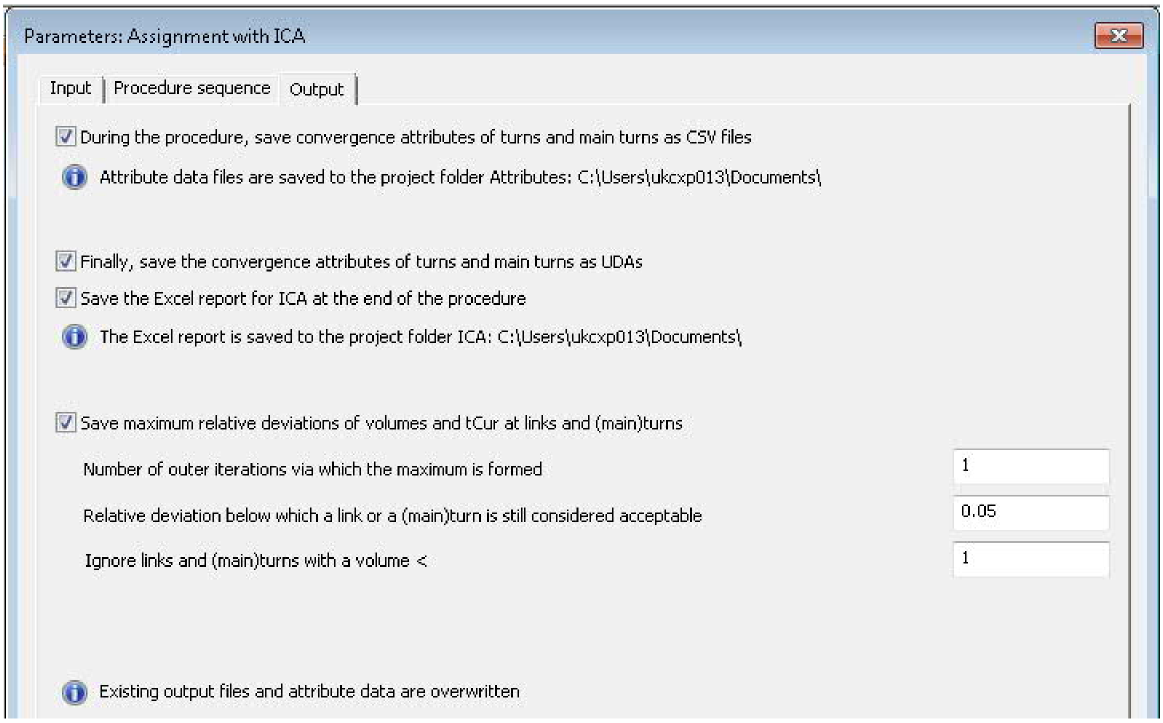


Figure 8: Assignment with ICA - Procedure Parameters

2.3. PUBLIC TRANSPORT MODEL

2.3.1. It is proposed that nothing will be changed in the public transport network as part of the enhancement in Deal.

2.4. ZONE SYSTEM

2.4.1. The DDTM zone system will be exactly the same as the DTM in the external area. The only changes to the DTM zone system are proposed in the Deal area. Figure 9 shows the Deal area in the DTM and Figure 10 the proposed zone system in Deal in the DDTM. As with the DTM the zone system is based on Census Output Areas (COAs) which allows straightforward incorporation of Census Journey to Work data into the prior matrices.

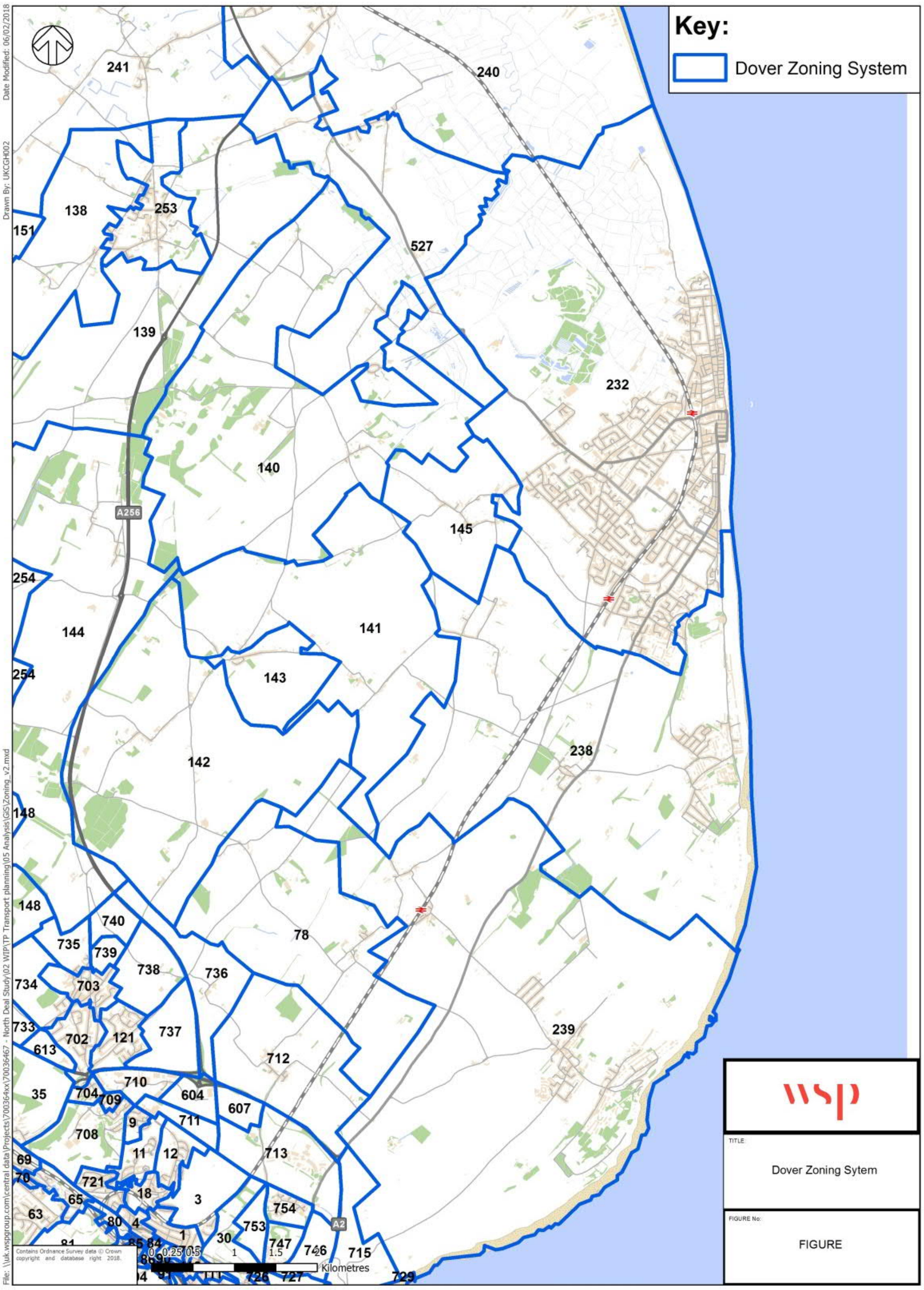


Figure 9: DTM Zone System in Deal Area

![wsp logo]

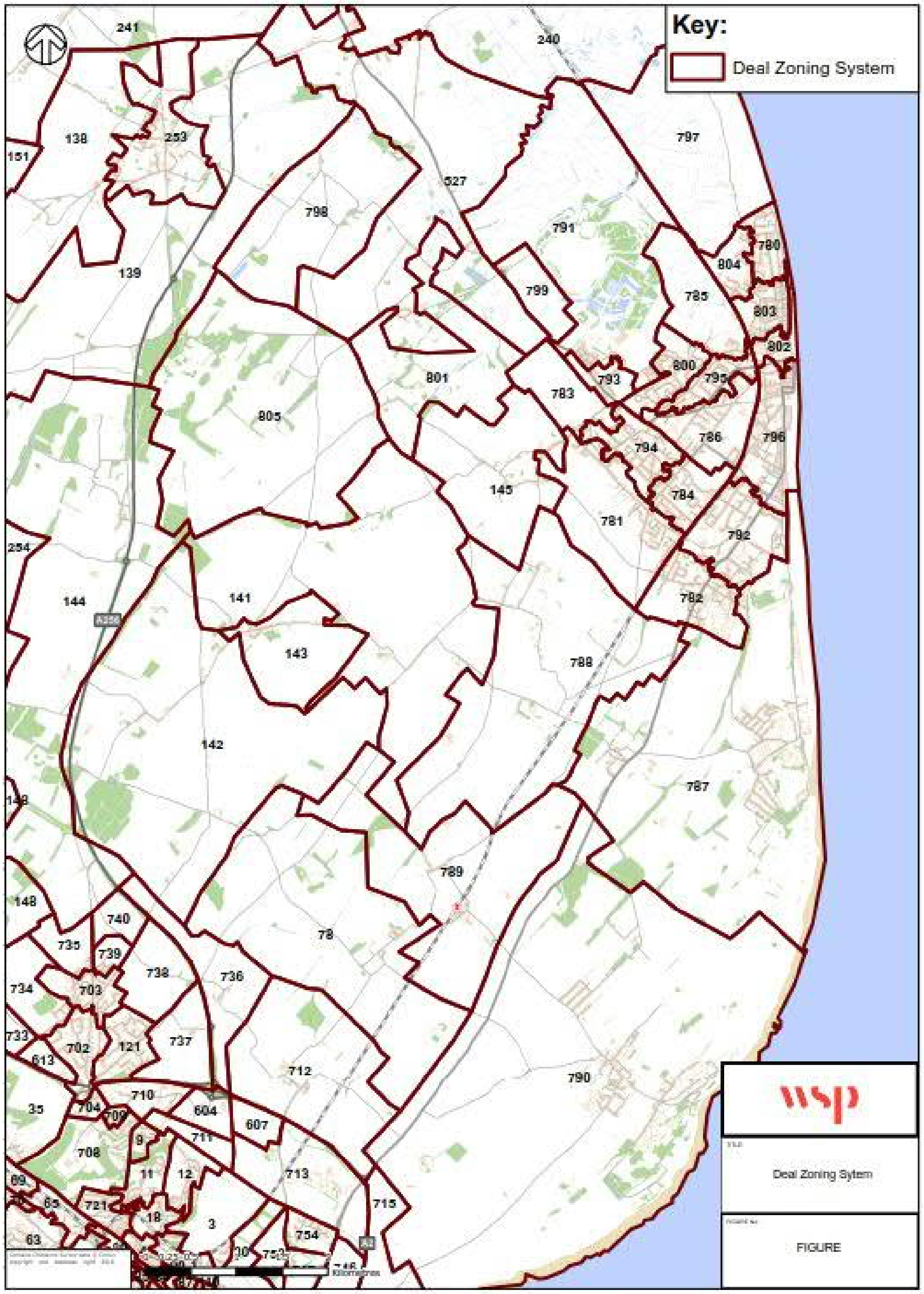


Figure 10: Proposed DDTM Zone System in Deal Area

2.5. TIME PERIODS

2.5.1. Consistent with the 2015 DTM the following modelled time periods will be used:

- AM peak hour (08:00-09:00)
- PM peak hour (17:00-18:00)

2.6. USER CLASSES

2.6.1. Consistent with the 2015 DTM, the following user classes will be modelled:

- Car
- LGV
- HGV

2.7. BASE YEAR

2.7.1. Count data was collected in a few similar locations in both 2015 and 2017. Detailed analysis between the two sets of data was undertaken and reported in the North Deal Study Data Collection Report February 2018. Generally traffic flows have not changed significantly between the two years. Table 4 shows the changes in traffic volumes which is just over a 6% change. This is similar to the daily variation of traffic volumes on roads. It is proposed that the updated model base year will be 2015.

Table 4: Change in Traffic Volumes 2015 and 2017

Time	2015	2017	% Change
8:00-9:00	10,050	10,679	6.26%
17:00-18:00	7,411	7,884	6.38%

2.8. PORT OF DOVER

2.8.1. It is assumed that the Port is operating without any incidents and that Dover TAP (Traffic Assessment Project) and Operation Stack are both not in operation.

3. TRAFFIC DATA

3.1. 2017 DATA COLLECTION

3.1.1. ATC and Manual Classified Count (MCC) data has also being collected in the Dover and Deal area during November/ December 2017 (see Figure 11 and Figure 12).

Figure 11: 2017 ATC Locations

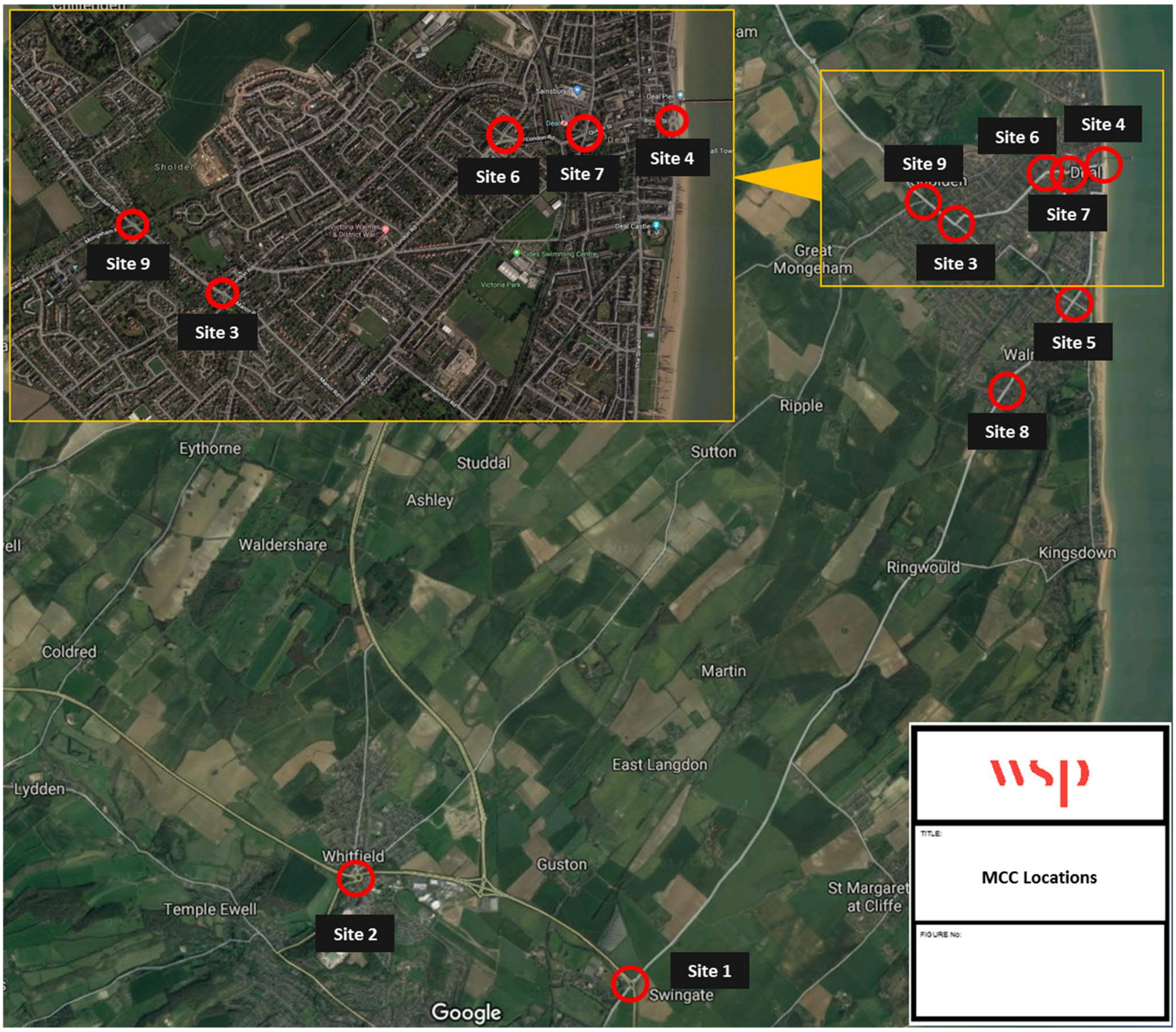


Figure 12: **2017 MCC Locations**

JOURNEY TIME DATA

3.1.2. Journey time data has been obtained through Trafficmaster via the Department for Transport for the period between September 2014 and August 2015 and will be used to derive travel times for key routes through the model. Information will be taken for an average weekday drawn from a month's worth of data, for the closest available period to the other traffic survey data. The accuracy of the observed data will be calculated and reported in the Local Model Validation Report (LMVR).

3.1.3. The following routes and sections in the Deal area are, illustrated in Figure 13 to Figure 17 will be created for use in validating the model. This will be in addition to the journey time routes presented in the Dover Transport Model and Local Model Validation Report November 2016.

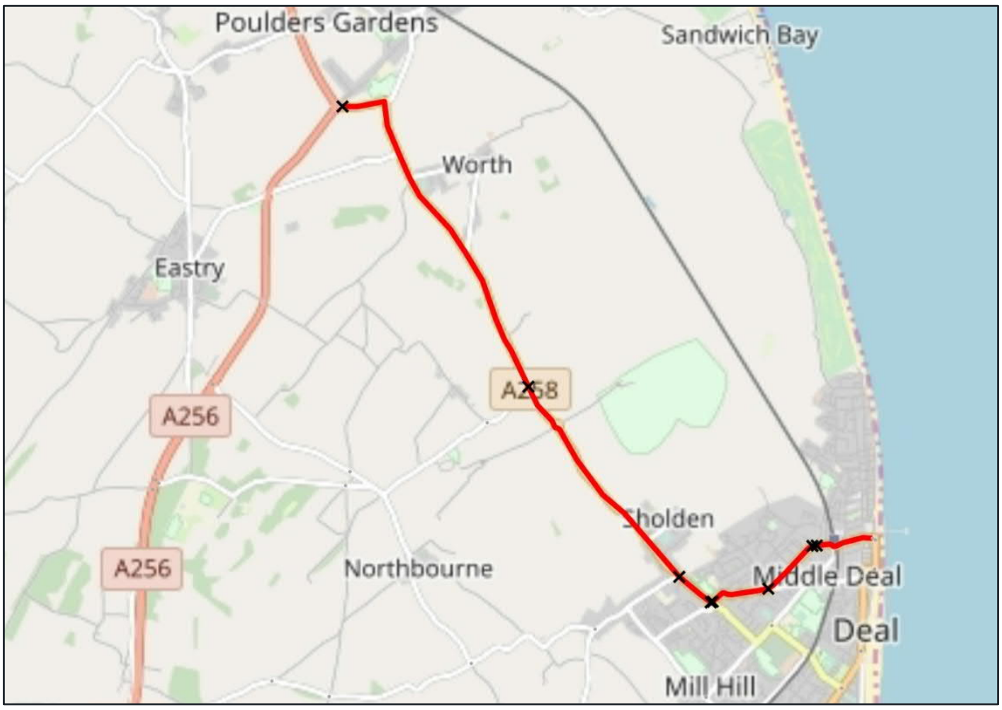


Figure 13: Journey Time Route 8 – A258 NB/SB

Figure 14: Journey Time Route 9 – Deal Town Centre (clockwise/ anti clockwise)

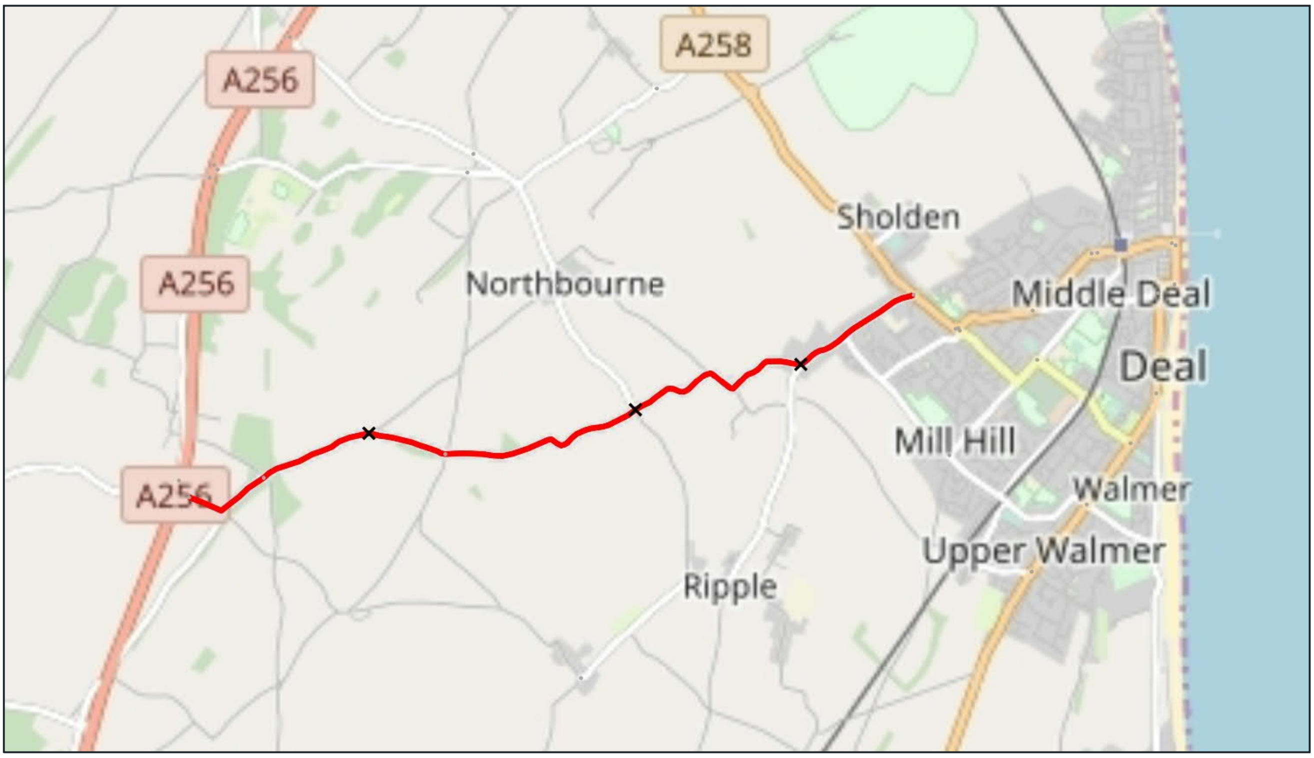


Figure 15: Journey Time Route 10 – Willow Road EB / WB

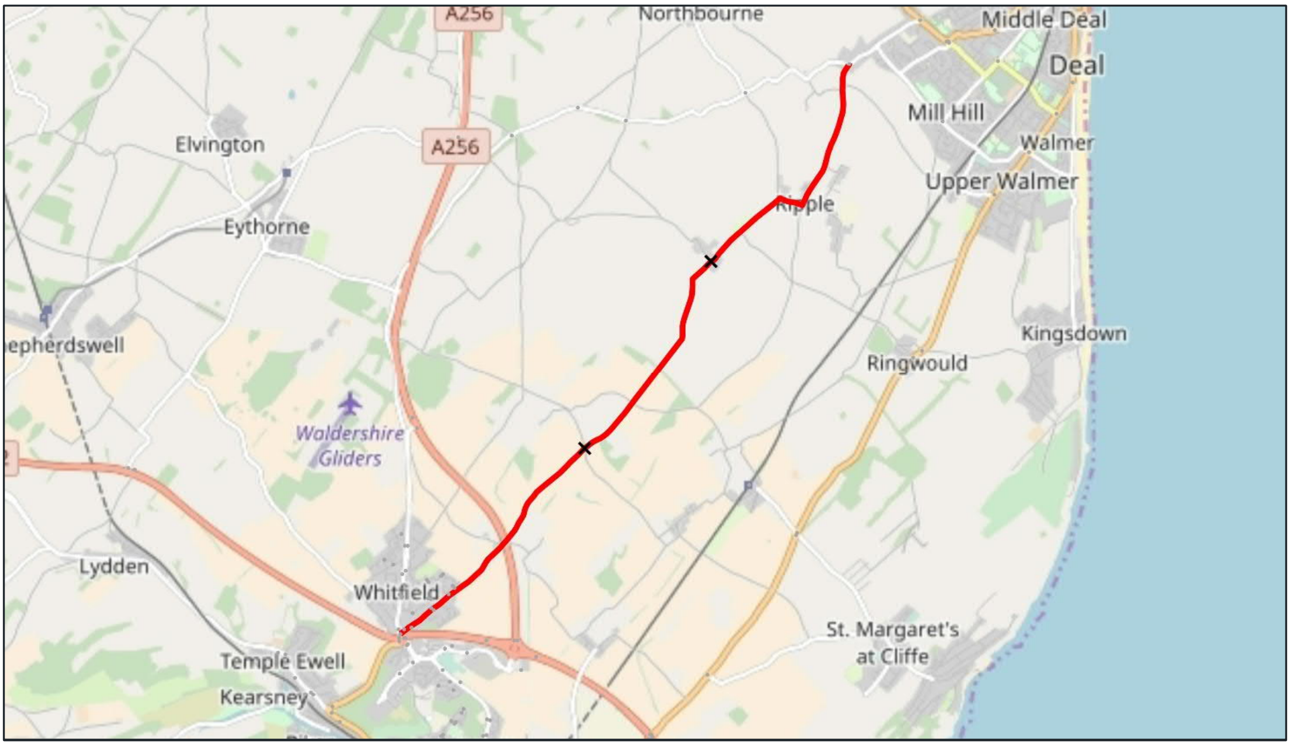


Figure 16: Journey Time Route 11 – Dover to Deal NB/SB

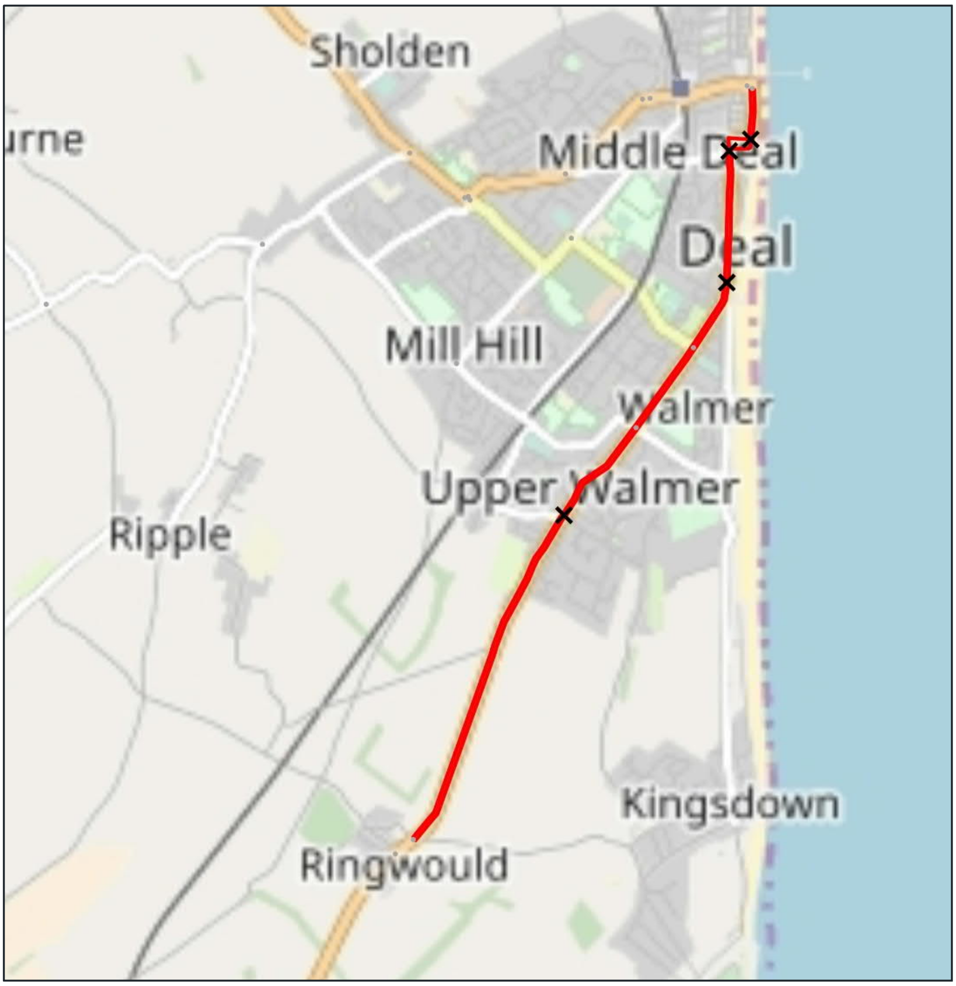


Figure 17: Journey Time Route 12 – A258 Deal Coast NB/SB

4. MODEL CALIBRATION AND VALIDATION

4.1. INTRODUCTION

4.1.1. Calibration of the 2015 DDTM VISUM model involves ensuring the model represents the on-site observed conditions by adjusting model inputs and parameters. The process involves examination of the network, checking for errors, and improving the performance of the model in terms of comparisons with observed data. Calibration statistics will be presented using the Department for Transport TAG criteria.

4.1.2. Model validation is a comparison of model output data with observed data to assess the accuracy of the model and is therefore very similar to model calibration. The difference between the two is that validation data is independent from model development data i.e. it is not used at any stage within the model development.

4.1.3. Calibration and validation is undertaken for the four main components of a model:

- Network calibration and validation
- Route choice calibration and validation
- Trip matrix calibration and validation
- Assignment calibration and validation

4.1.4. Each of the tasks above is linked with each other and it is often a combination of all that are required to address each problem identified by the calibration and validation process.

4.2. NETWORK CALIBRATION AND VALIDATION

NETWORK CALIBRATION

4.2.1. Following the creation of the network as outlined in section 2.1, an initial assignment will be carried out prior to any adjustment of the demand matrices. The results will then be compared against observed flows, speeds and delays to identify any further areas which may require adjustment to the network coding. In particular, the following instances will be checked:

- Turn / link capacity is less than observed count
- Calculated delays significantly greater than observed delays
- Modelled flows significantly above observed flows
- Modelled delays unacceptably lower than observed delays

4.2.2. If any of the above identify any issues remedial action needs to be undertaken on the network coding, changes will only be made that are in accordance with direct observations of actual network properties.

4.2.3. Network calibration will be confirmed through plots of selected origin-destination movements, as discussed in the following sections.

NETWORK VALIDATION

4.2.4. It is not possible to undertake validation of the final network in isolation of development of the final trip matrix, but a high level check will be undertaken following development of initial trip matrices to investigate modelled journey times on routes that differ from observed times by more than 25%.

4.2.5. Network validation will be confirmed through presentation of time/distance graphs for each modelled journey time route, as discussed below.

4.2.6. The network will also be stressed tested by applying a 10% uplift in demand onto the final base year network. This will help to identify any network issues which may occur in the future year.

4.3. ROUTE CHOICE CALIBRATION AND VALIDATION

ROUTE CHOICE CALIBRATION

4.3.1. At various stages of model development, the minimum cost routes for a range of selected O-D pairs will be plotted and checked for plausibility. Modelled route choice will depend on:

- Zone size
- Network structure
- Centroid connectors
- Trip matrix accuracy
- Representation of speeds and delays
- Junction coding accuracy

4.3.2. If routes are found to be implausible then this may indicate one or more of the above aspects need to be adjusted.

ROUTE CHOICE VALIDATION

4.3.3. Following calibration and validation of the model, information will be presented for a selected number of origin-destination pairs to demonstrate that the routing is logical. To some extent this is not true validation, as there is no empirical data to act as a benchmark, but selected routes plotted from VISUM will be compared to equivalent routes prepared using Google Maps, supported by a commentary discussing the feasibility of each route.

4.3.4. Routes selected will focus on important centres of population or employment, or through key intersections. Routes will:

- Relate to significant numbers of trips
- Be of significant length
- Pass through key areas of interest
- Include both directions of travel
- Link different compass areas
- Coincide with journey time routes, where appropriate

4.3.5. Routes will be plotted for all user classes. Guidance presented in section 7.3 of TAG Unit M3.1 (January 2014), with the number of OD pairs determined as follows:

Number of OD pairs = (number of zones)0.25 x number of user classes

4.3.6. Based on the initial proposed zoning system, this equates to 14 routes. These will be identified and circulated to the Technical Working Group at a later date for agreement.

4.4. TRIP MATRIX CALIBRATION AND VALIDATION

TRIP MATRIX CALIBRATION

4.4.1. Validation of the prior trip matrices is discussed in section 4.3. Following their development, it is likely that these will need to be refined further through the use of matrix estimation techniques. Guidance presented in section 8.3 of TAG Unit M3.1 (January 2014) will be followed. In particular:

- Counts used in matrix estimation will be derived from a minimum 2-week ATC
- Count constraints will be grouped at a screenline level
- Constraints will only apply to directly observed counts, e.g. all car user classes will be grouped to a single “car” constraint

4.4.2. To ensure that matrix estimation is a controlled process, due care and attention will be given to the requirements set out in TAG to monitor the impacts of matrix estimation. Information will therefore be presented on:

- Regression statistics at zonal and trip end level
- Trip length distributions with means and standard deviations
- Sector to sector matrices

TRIP MATRIX VALIDATION

4.4.3. Information will be presented for both the prior and post matrix estimation matrices on the following:

- Screenlines and cordons of counts used in matrix estimation
- Screenlines and cordons of counts retained for independent validation

4.4.4. In accordance with the requirements presented in section 3.2 of TAG Unit M3.1 (January 2014), screenline totals will be presented for each vehicle type. Total modelled flows across screenlines for each vehicle type should be within 5% of observed flows. TAG recommends that this should apply to “all, or nearly all” screenlines. We will apply a threshold of 85% of screenline totals to meet this criterion.

4.4.5. WSP propose the following screenlines and cordons are used for the DDTM in the Deal area in addition to those presented in the Dover Transport Model and Local Model Validation Report, these are illustrated in Figure 18:

- Deal Northern Screenline
- Deal Southern Screenline
- Deal Town Centre Cordon

4.4.6. Additional validation counts will be identified to ensure the number of validation counts is around 15% of all counts within the model. This will be shared with the Technical Working Group once they have been identified.

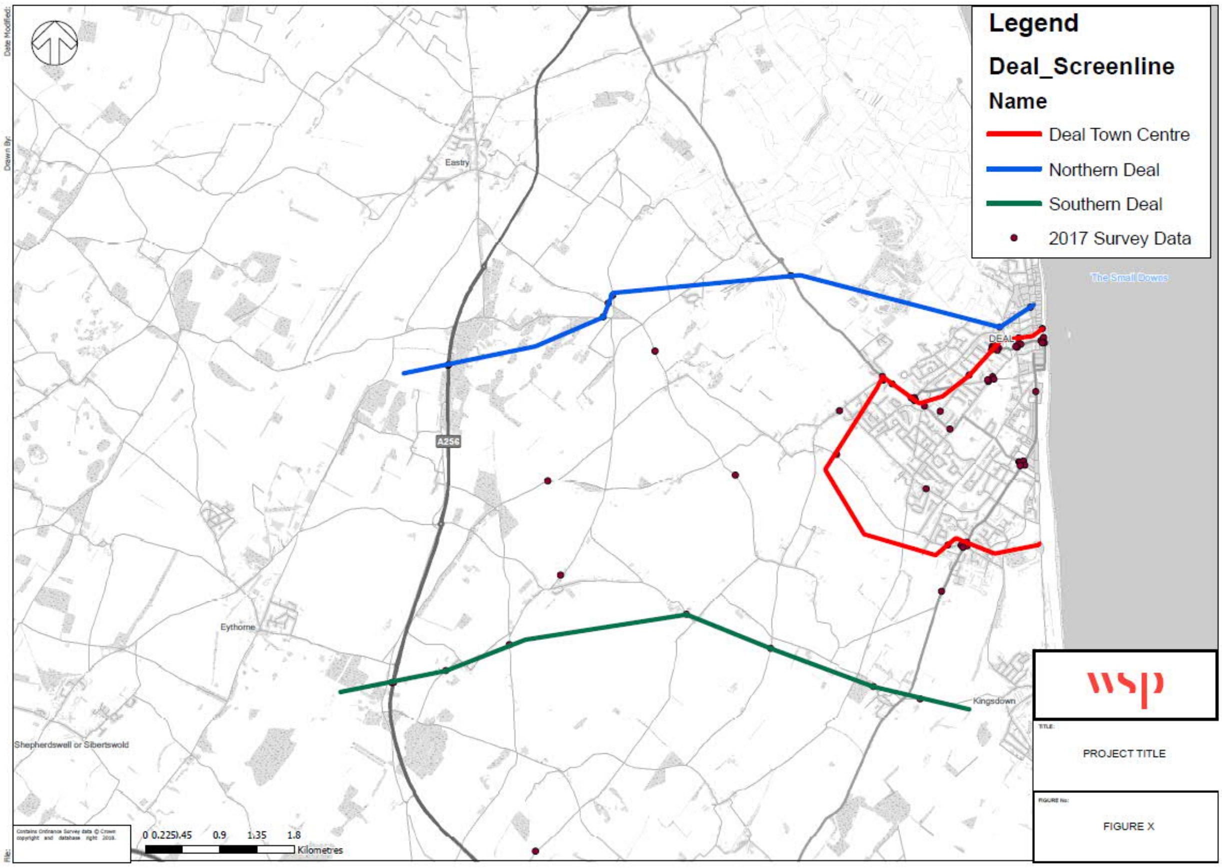


Figure 18: Deal Screenlines/ Cordons

MATRIX ESTIMATION

4.4.7. Matrix estimation will only be used once the prior matrix has been calibrated and validated as much as possible. Matrix estimation will initially be used at a screenline level to minimise the matrix changes. If required individual counts will be added to the matrix estimation process to achieve satisfactory levels of calibration. Parameters within the matrix estimation procedures within VISUM will be used to minimise the extent matrix estimation can change flows in the matrix. Once the model is calibrated comparisons will be undertaken between the prior and final matrix looking at trip length distribution and the gradient, intercept and R2 to ensure they meet TAG criteria.

4.5. ASSIGNMENT CALIBRATION AND VALIDATION

ASSIGNMENT CALIBRATION

4.5.1. Assignment calibration simply involves further steps to identify any issues that are preventing an acceptable level of calibration of the network, route choice and trip matrix, as outlined above. This will include:

- Checking appropriateness of centroid connectors
- Production of forests to understand nature of competing routes between OD pairs
- Checking representation of queues on surveyed journey time routes

4.5.2. This may identify additional changes required to signal times, saturation flows, lane use, etc.

ASSIGNMENT VALIDATION

4.5.3. In addition to the information presented above, final validation of the model will be confirmed through presentation of modelled and observed data for the following:

- Traffic flows on links – In addition to the screenline information presented above, flows will be presented on individual links for cars, and across short screenlines for LGVs and HGVs.
- Journey times – Information presented along whole routes, with means and 95% confidence intervals, supplemented with time/distance graphs
- Turning movements – Information presented for key junctions, aggregated across all vehicle types. Since these are obtained from single day MCC, they are unlikely to achieve the same standards as link flows derived from ATC.

4.5.4. Acceptability criteria are given in Table 11.

Table 5: Acceptability criteria

Criteria	Description of criteria	Acceptability Guideline
Links / Turns (1)	Individual flows within 100 veh/hr of counts for flows less than 700 veh/hr	> 85% of cases
	Individual flows within 15% of counts for flows from 700 veh/hr to 2,700 veh/hr	> 85% of cases
	Individual flows within 400 veh/hr of counts for flows more than 2,700 veh/hr	> 85% of cases
Links / Turns (2)	GEH < 5 for individual flows	> 85% of cases
Screenlines	Differences should be less than 5% of counts	All or nearly all screenlines
Journey Times	Modelled times along routes should be within 15% of surveyed times (or minute, if higher than 15%)	> 85% of routes

5. FORECASTING

5.1. FORECAST YEARS

5.1.1. One forecast year will be developed for the purpose of this scope of works which is will be agreed with DDC and stakeholders.

5.2. GROWTH SCENARIOS

5.2.1. TAG Unit M4 (November 2014) stipulates that a “Core Scenario” should be defined which is based on the most “unbiased and realistic set of assumptions” that will form the central case.

5.3. DEVELOPMENTS

5.3.1. In order to determine the content of these growth scenarios an Uncertainty Log will be created that identifies all potential developments or schemes within the study area, through close consultation with Dover District Council. Each potential development or scheme will be assessed according to one of four classifications as shown in Table 6. As a rule if the development is consented it will be assumed to be within the Reference Case scenario, if not it will be included for future scenarios.

Table 6: Uncertainty Definitions

PROBABILITY	DESCRIPTION	STATUS
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
More than likely	The outcome is likely to happen, but there is some uncertainty	→ Submissions of planning or consent application imminent → Development application within the consent process
Reasonably foreseeable	The outcome may happen, but there is significant uncertainty	→ Identified within a development plan → Not directly associated with the transport strategy/scheme, but may occur if the transport strategy/scheme is implemented → Development conditional on the transport strategy/scheme proceeding → A committed policy goal, subject to tests (e.g. of deliverability) whose outcomes are subject to significant uncertainty
Hypothetical	There is considerable uncertainty whether the outcome will ever happen	→ Conjecture based on currently available information → Discussed on a conceptual basis → One of a number of possible inputs in an initial consultation process → A policy aspiration

5.3.2. Only developments sufficiently large that they are required to be modelled explicitly will be included in the model will be included in the Uncertainty Log. Smaller developments are assumed to be included within overall National Trip End Model (NTEM) totals which are accessed through TEMPRO. We will ensure that developments that are explicitly modelled are not double counted by removing then from NTEM.

5.3.3. There is no guidance on what size of development should be modelled explicitly. So developments will be reviewed on a case by case basis to determine their likely impact, and this will be agreed with Dover District Council before proceeding.

5.3.4. Do Minimum networks will be developed based on the validated base year network, with relevant schemes from the Uncertainty Log coded in according to the best available information. Access points and supporting infrastructure for explicitly modelled developments will also be included.

5.3.5. For explicitly modelled developments, we will obtain appropriate trip rates from the relevant Transport Assessments for each site. Where no Transport Assessment exists, we will derive appropriate local trip rates by land use from the TRICS database of trip rates. Development trip distribution will be taken from nearby sites with a similar land use. Overall growth will be constrained to demand growth from the National Trip End Model, as described below.

5.4. BACKGROUND GROWTH

5.4.1. Background car growth will be obtained through the use of TEMPRO, a software tool that provides projections of growth over time for use in transport models based on outputs from the National Trip End Model (NTEM). The Alternative Planning Assumptions facility will be used to subtract details of explicitly modelled developments for the core scenario to avoid double counting. The process to be adopted to develop the core scenario matrices is as follows:

1. Output revised origin/destination growth factors by district
2. Apply to base year origin/destination totals to obtain forecast year origin/destination totals
3. Furness base year matrix to match forecast origin/destination totals
4. Add matrix of explicitly modelled development trips
5. Apply additional scaling factor to ensure overall growth is consistent with growth from TEMPRO

5.4.2. Background growth for LGV and HGV movements not going to the port will be obtained from the Regional Traffic Forecasts published by the DfT.

5.5. PORT GROWTH

5.5.1. Forecast growth for the Port will be provided by Dover Harbour Board in line with their latest forecasts. Port forecast suggest an increase in freight traffic by about 45-55% by 2031 in comparison to 2014 volumes and a 10-15% increase in cars. Final growth assumptions will be confirmed ahead of the forecasting process.

6. REPORTING

6.1.1. A LMVR will be produced, outlining all network parameters, full methodology, calibration statistics and validation statistics to be agreed with stakeholders prior to scenario model assessment.

6.1.2. The purpose of the LMVR is to demonstrate that the model has been constructed appropriately and that the model behaviour accurately reflects observations and therefore provide confidence in the models ability to be used as a forecasting tool to assess future development proposals.

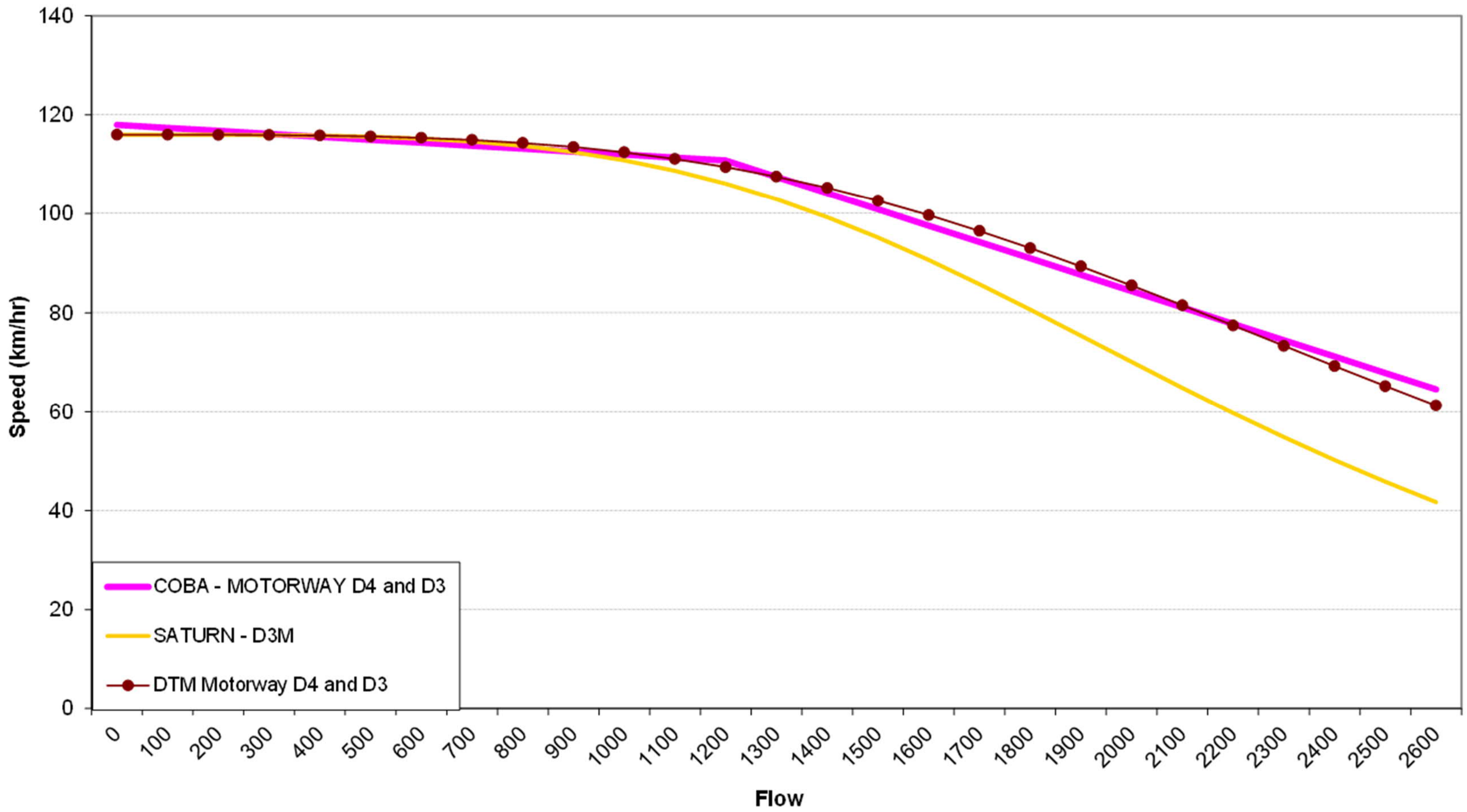
6.1.3. A Forecasting Report will also be produced documenting the construction of the Do Minimum forecast networks and matrices, and highlighting any key impacts of forecast traffic on the highway network.

6.1.4. Additional technical notes may be produced as needed during the course of model development.

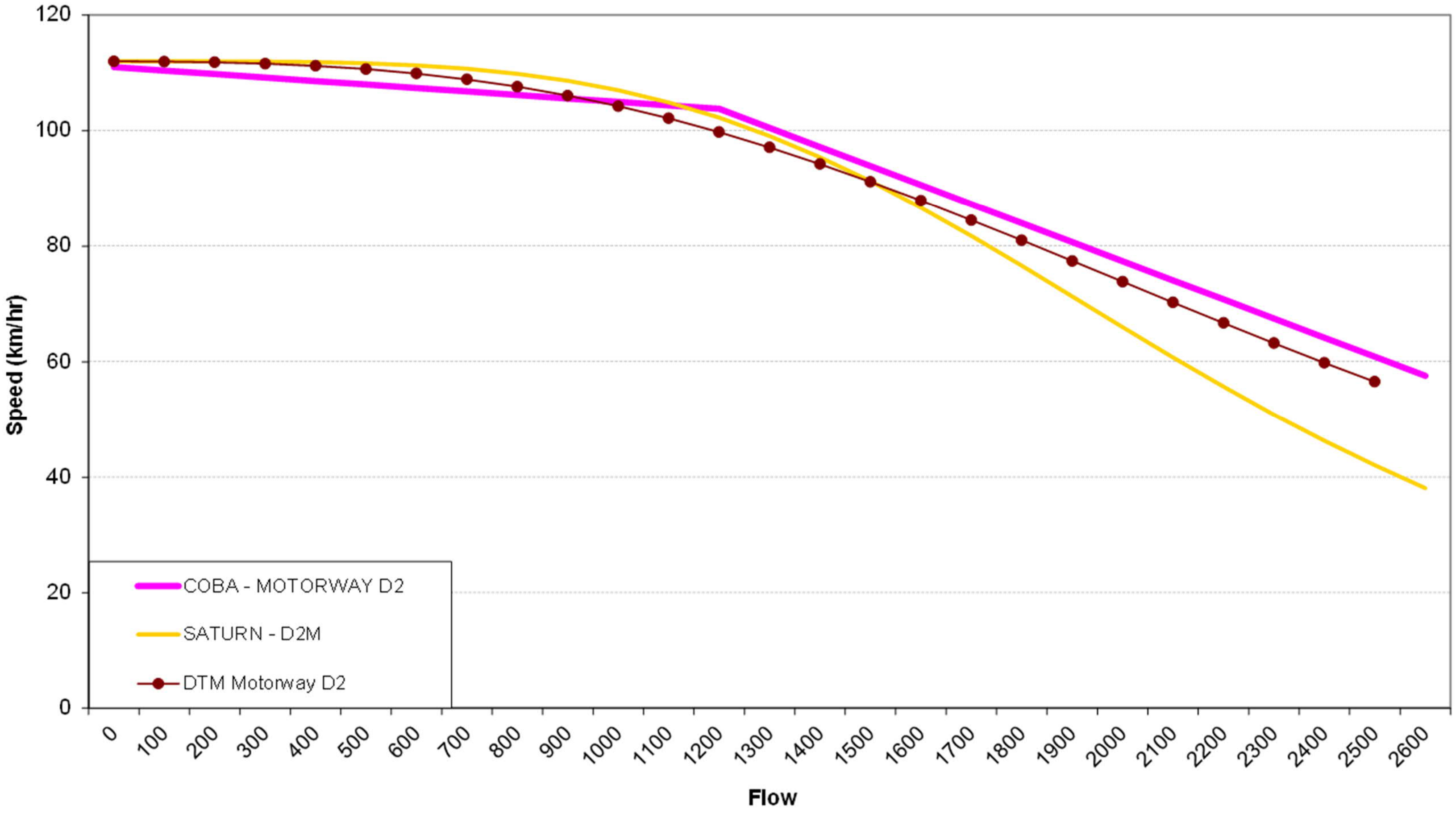
Appendix A

DOVER TRANSPORT MODEL SPEED FLOW CURVES

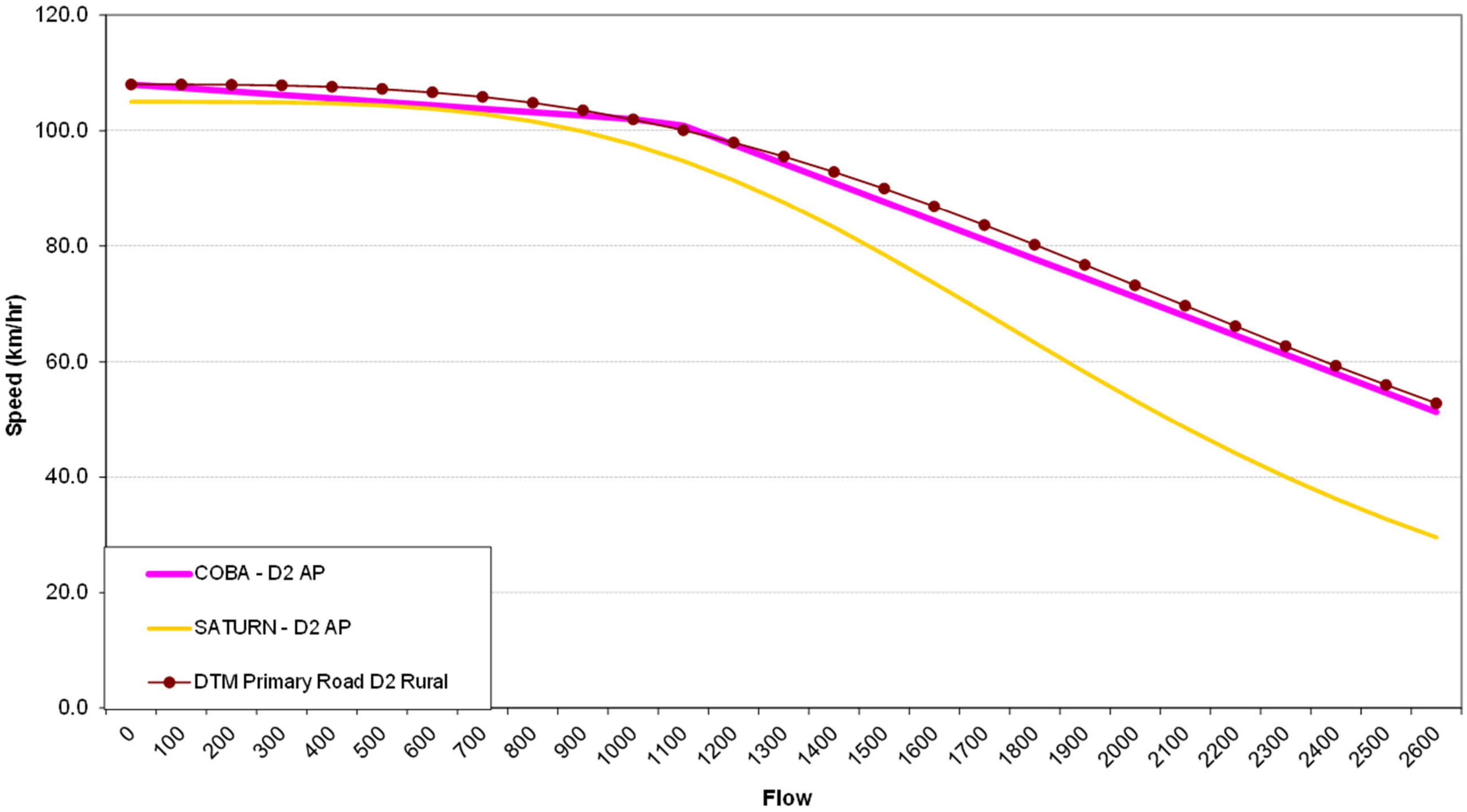
Motorway D4/3 Speedflow Curves



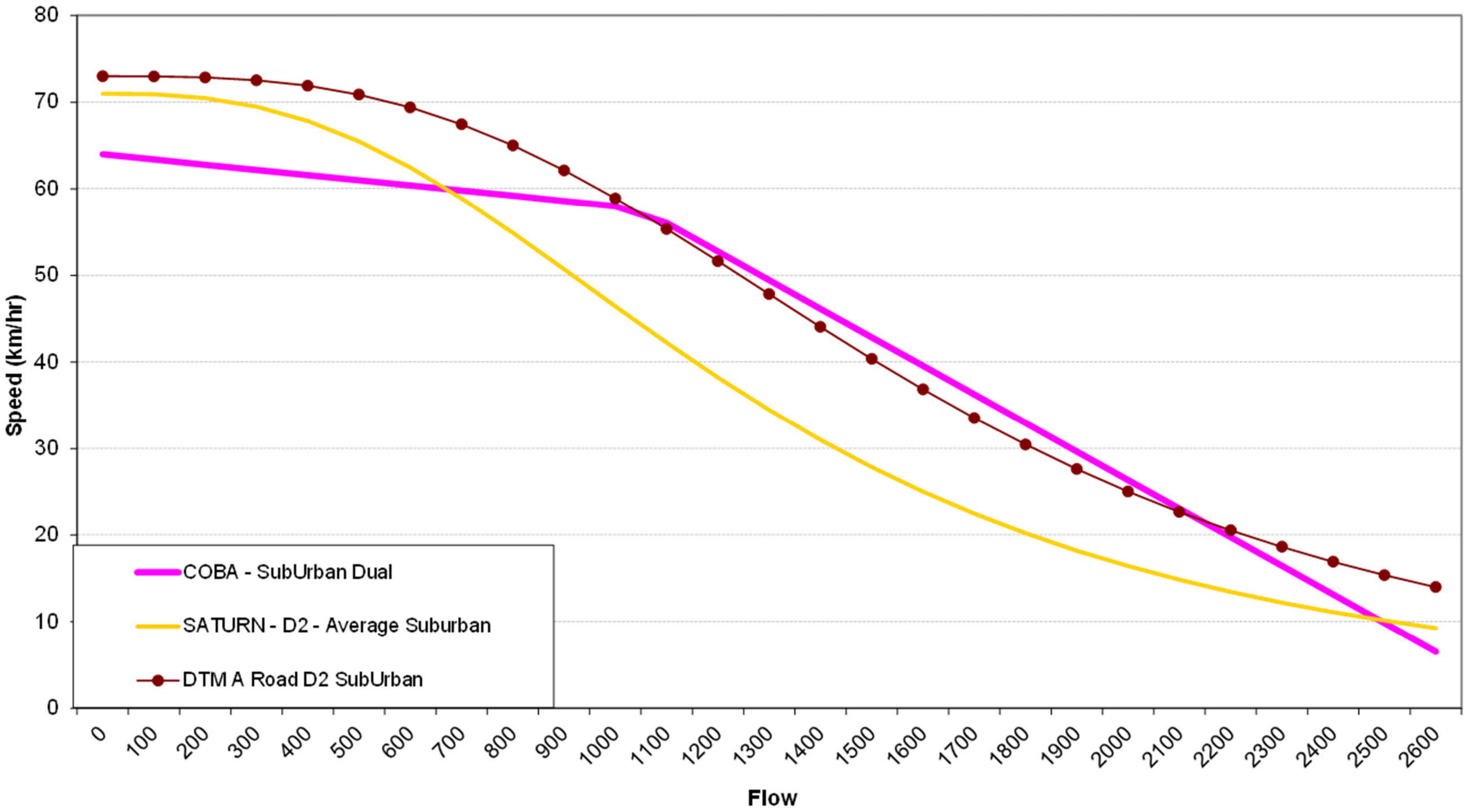
Motorway D2 Speedflow Curves



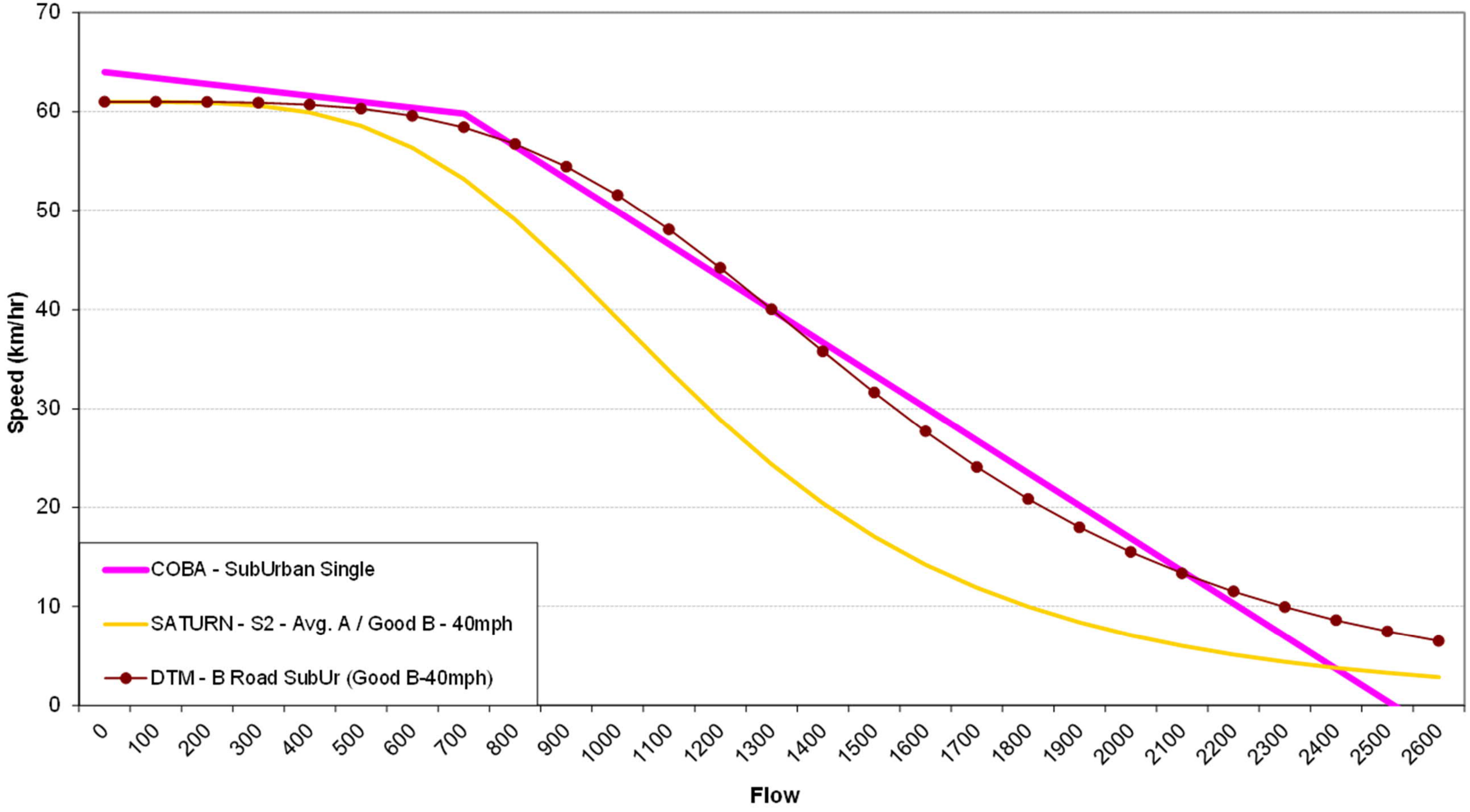
Primary and A Road Rural



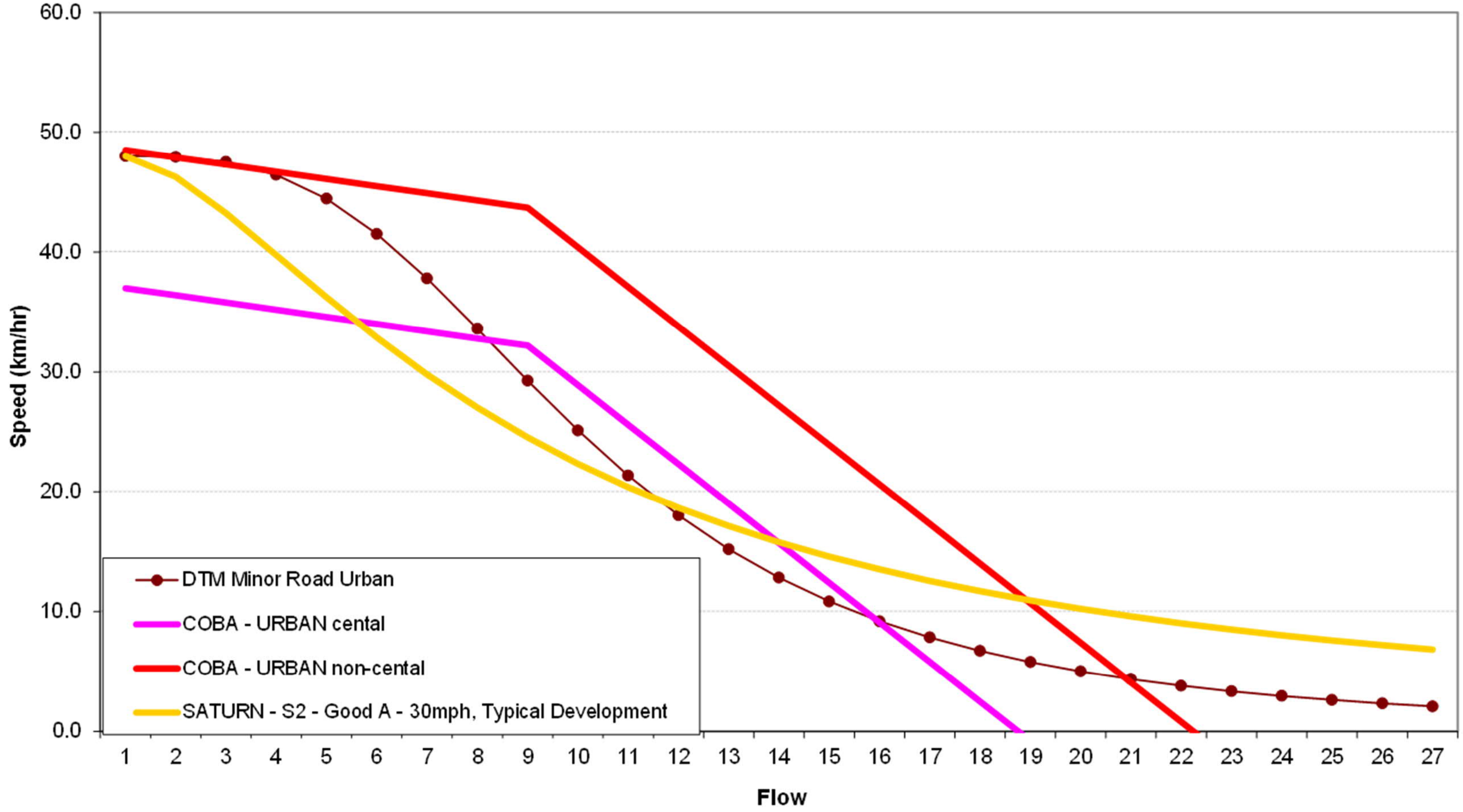
A Road Suburban/ Single



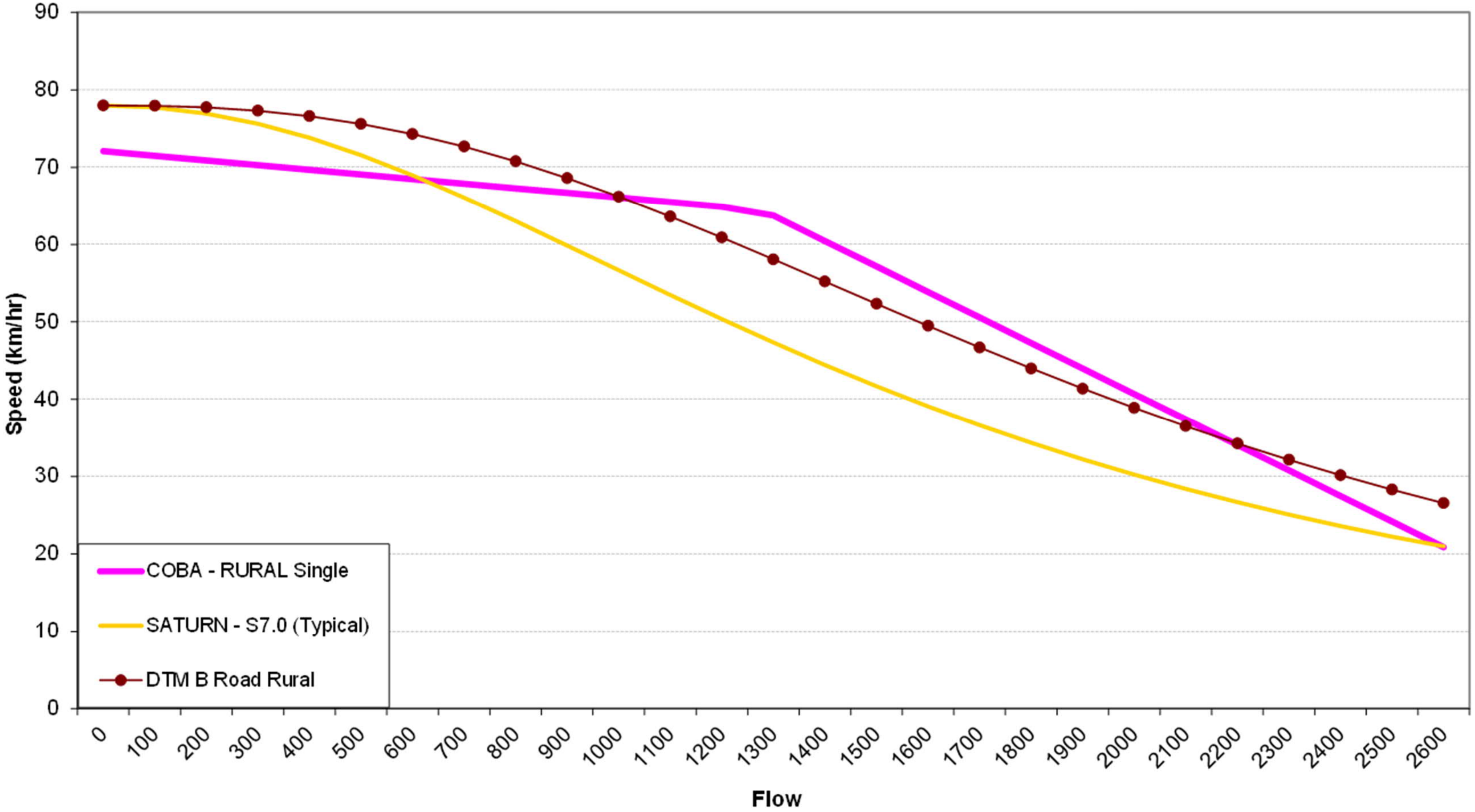
B Road Suburban



Minor Urban Road

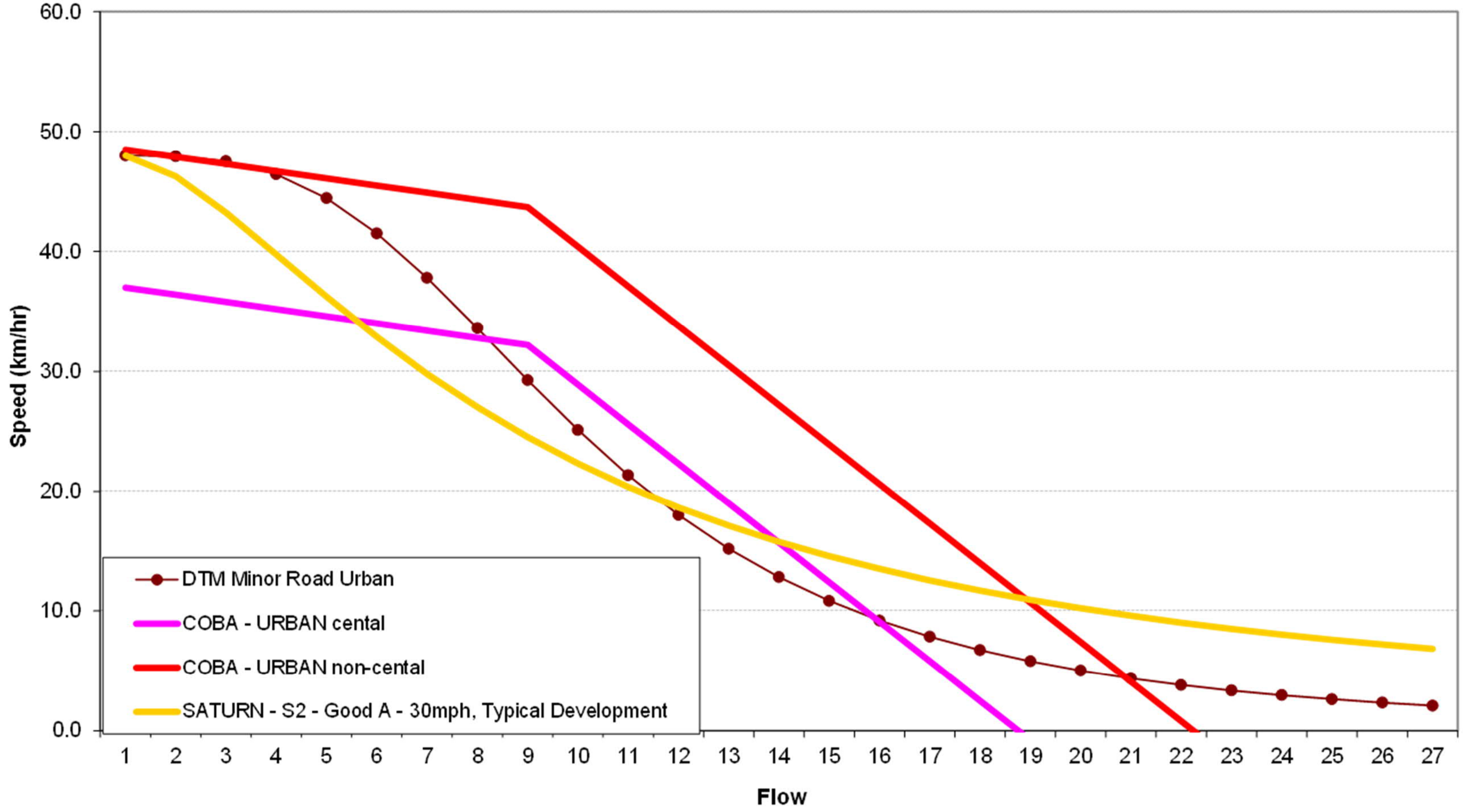


B Road Rural



90
80
70
60
50
40
30
20
10
0
Speed (km/hr)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
Flow
COBA - RURAL Single
SATURN - S7.0 (Typical)
DTM B Road Rural

Minor Rural Village



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