Jacobs

Medway Transport Model

Data Collection Report

1.0 | 2.0

December 2023

Medway Council, Kent County Council

Document history and status

Revision	Date	Description	Author	Check	Review	Approved
1.0	November	Draft for Comment	PB/ES	JD	MS	CH
2.0	December	Final Version	PB/ES	JD	MS	CH

Distribution of copies

Revision	Issue approved	Date issued	Issued to	Comments
1.0	1.0	November 2023	Medway Council, Kent County Council, National Highways	First draft for review and comment
2.0	2.0	December 2023	Medway Council, Kent County Council, National Highways	Final version for issue

Medway Transport Model

Project No:	B2432001
Document Title:	Medway Data Collection Report
Document No.:	1.0
Revision:	2.0
Document Status:	Final
Date:	December 2023
Client Name:	Medway Council, Kent County Council
Client No:	KCC
Project Manager:	Charlotte Herridge
Author:	Emily Smith, Patricia Bastidas
File Name:	Medway Transport Model Data Collection Report

Jacobs U.K. Limited

Cottons Centre, Cottons Lane
London SE1 2QG
United Kingdom
T +44 (0)20 3980 2000

www.jacobs.com

Contents

Figures

Tables

Limitation Statement

The sole purpose of this technical report is to describe the collation, collection, and initial analysis of highway data upon which the Medway Transport Model, based on the Kent Countywide Strategic Transport Model, is built. The report should be read in full with no excerpts out of context deemed to be representative of the report and its findings as a whole. This report has been prepared exclusively for Jacobs and Jacobs' end clients (Kent County Council, Medway Council) and no liability is accepted for any use of, or reliance on, the report by third parties.

Several of the figures within this report have been generated in the PTV VISUM software using OpenStreetMap® open source data, licensed under the Open Data Commons Open Database License (ODbL) by the OpenStreetMap Foundation (OSMF). The data is available under the ODbL. For more information see http://www.openstreetmap.org/copyright.

1. Introduction

1.1 Purpose of this Document

As Kent Transport Model (KTM) custodian to Kent County Council (KCC), Jacobs have been asked to develop the required strategic modelling necessary to provide the evidence base for the Regulation 19 (Reg19) Local Plan consultation for Medway Council (MC). This warrants development of the Medway Transport Model based on an existing cordon of the KTM, developed to support the neighbouring Gravesham Transport Model. The Medway Transport Model needs to follow a standard sufficient for this purpose, with due regard to Transport Analysis Guidance (TAG).

The purpose of this Data Collection Report (DCR) is to provide a review of the existing data sources (including latest data) and report on the collection and initial analysis of the data upon which the Medway Transport Model has been developed.

1.2 Background Information

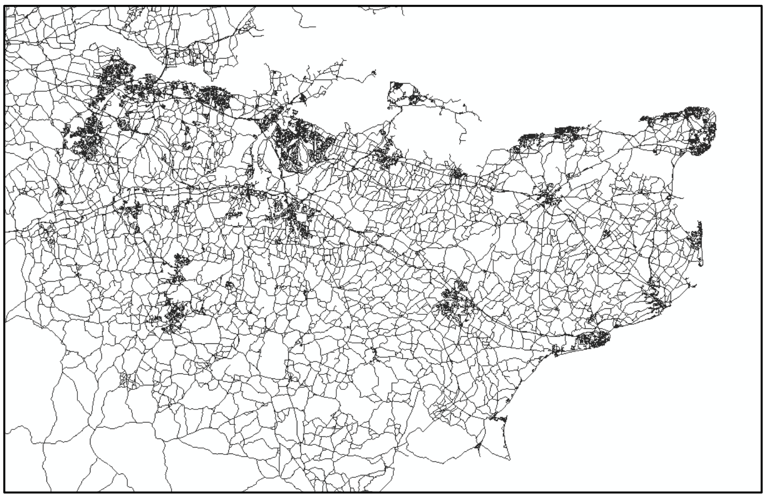
1.2.1 Model Background

KCC commissioned Jacobs to develop the Medway Transport Model, inherited from the KTM. The KTM was built to help KCC understand how people currently travel strategically around the region and how this might change with future growth and as major schemes and strategic interventions are implemented. The KTM was built with the following objectives:

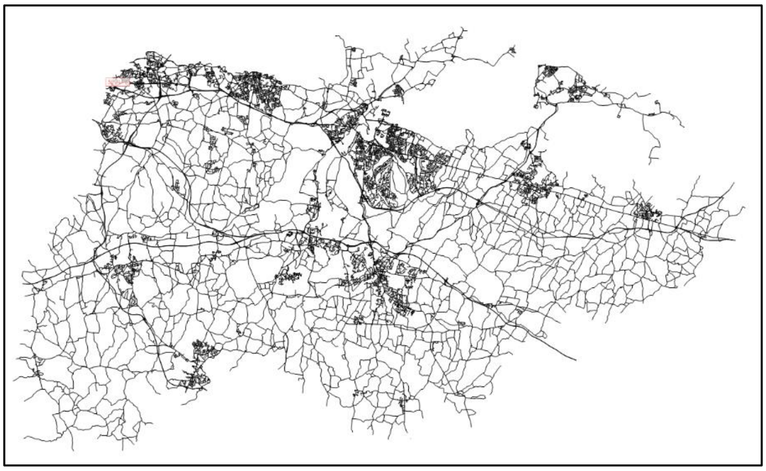
- To help to develop countywide transport strategies;
- To help to assess the combined strategic impact of major highway schemes;
- To help to provide evidence for early appraisal and sifting of strategic major scheme options and to support the development consent order and town and country planning process on key schemes;
- To help to assess the combined strategic impact of Local Plans on the network, including providing evidence for Local Plan development and hearings (and cumulative impacts once Local Plans are in place);
- To provide evidence and robust, responsive, and persuasive arguments to a range of internal and external stakeholders, including responses to Government department or company consultations;
- The ability to help understand and mitigate the impact of external influences, e.g. Brexit, Housing allocations, National Highways schemes;
- To help to understand suitable phasing of maintenance and utilities work to manage congestion impacts;
- To provide a potential platform for a suite of strategic town/sub-area models or scheme-specific models requiring greater detail;
- To provide a potential basis for highway corridor micro-simulation models in the PTV VISSIM software platform; and
- To provide a potential platform for future dynamic and/or real-time predictive modelling solutions that could help optimise the performance of the existing Kent transport network using technology.

The Medway Transport Model, based on the KTM and using the same model cordon area as the recently development Gravesham Transport Model, has been developed as the primary transport evidence base to inform the Regulation 19 consultation and mitigation development for the emerging Medway Local Plan and will be used to assess any future development planning / network management work in Medway over the next few years. The cordoning process to define the Medway Transport Model is shown in Figure 1-1.

Kent Transport Model (KTM)



Cordoned Model (covering Gravesham, Medway, Dartford, Sevenoaks, Maidstone and Tonbridge and Malling)



Medway Transport Model (MTM), Area of Detailed Modelling (AODM)

Figure 1-1: Medway Transport Model Development Process

The base year Medway Transport Model has been developed using the same cordon of the existing 2019 Base Kent Transport Model that was used to support the Gravesham Transport Model for Gravesham Local Plan transport evidence base. The network and zoning detail within Medway has been enhanced and refined as part of the local model revalidation process. Following initial engagement with National Highways, as shown in Figure 1-1 the Area of Detailed Modelling (AODM) has been defined, this includes the area contained within the Medway borough boundary, with a buffer area of approximately 2 miles to ensure that the next major strategic road network junction is included, as agreed with NH.

The Medway Transport Model will be used as the basis for developing a 2040 Reference Case ('Do Minimum' – e.g without the Local Plan) in which committed developments and infrastructure will be modelled, in addition to adjusted background growth. Subsequently a 2040 'Do Something' model (e.g with the Local Plan option) will be developed to assess the proposed Local Plan allocations, to be consulted on as part of Reg19.

1.2.2 Objectives of a Local Plan Detailed Assessment

The objectives of LP assessments are to:

1. Assess the quality and capacity of transport infrastructure across the borough and its ability to meet forecast demands – this can be developed through the traffic modelling proposed here.

2. Assess the cumulative impacts of the LP development options on the borough's transport network – this can be developed through the traffic modelling proposed here.

3. Identify proposals and potential measures to mitigate the impacts of development to inform the infrastructure requirements associated with the LP. This should include, but is not limited to:

    a. Identification of potential measures to enable and achieve higher levels of sustainable transport mode share across the borough.

    b. Identification of the potential barriers to the utilisation of sustainable transport modes across the borough.

    c. Identification of potential intervention measures on the transport network.

1.2.3 Medway Local Plan

MC are required to undertake traffic modelling assessments to inform decision making on the Medway Local Plan for Reg19 consultation, which is proposed for 2024. This Data Collection Report presents the various data sources (existing and new) which underpin the development of the Medway Transport Model and should be read in conjunction with the Local Model Validation Report (LMVR).

Using information on the consented growth in Medway and proposed Local Plan allocations, an Area of Detailed Modelled has been defined and agreed with National Highways; within this AODM, journey times, screenlines and link counts will be defined and used to inform the base model enhancement in this area.

1.2.4 Data Collection in Medway

This report sets out the existing available data in addition to data collection undertaken in June 2023 on several roads in and around Medway; the survey results collected will be fed into the calibration and validation of the Medway Transport Model.

The following data collection methods were employed as part of the surveys:

- Automatic Traffic Counts (ATC) from installed rubber tubes;
- Radar survey to collect vehicle volumes on high-speed roads; and,

- Manual Classified Counts (MCC) from video footage at key junctions.

Each of these methods is described in more detail within this report. A comparative analysis has been carried out between the ATCs and MCCs to understand the consistency of the data; the trend between 2019 and 2022 has also been analysed to ensure the travel patterns collected since the COVID-19 global pandemic are reflective of the 2019 Base Year.

1.3 Structure of this Report

The remainder of this report is set out as follows:

- **Section 2 –** The need for Traffic Data;
- **Section 3 -** Summary and review of Traffic Data;
- **Section 4 -** Use of Available Traffic Models;
- **Section 5 -** Final Volumetric Dataset;
- **Section 6 -** Final Trip Dataset;
- **Section 7 -** Journey Time Data;
- **Section 8 –** Traffic Signal Data; and,
- **Section 9 –** Summary.

2. The Need for Traffic Data

2.1 Overview of Data Requirements

For the purposes of the development of the Medway Transport Model, traffic data is primarily required to refine and improve the understanding of existing transport conditions across the borough, in particular those areas close to the planned development and in the wider area covered by the cordon model. It is therefore important that sufficient quantity and quality of data is available.

2.2 Use of Survey Data

A number of different types of data have been collected and collated as part of the model development process. The different types of data, a brief description of their source and uses are set out below in Table 2-1.

Table 2-1: Outline of Survey Data, Source and Uses

Type of Data	Source of Data	Overview of Key Uses
Volumetric data (link)	Collection from permanent traffic counters, and bespoke Automated Traffic Count (ATC) and Manual Classified Count (MCC) surveys on the local road network	Establish baseline link volume conditions including identification of peak hours Volumetric data for model calibration and validation
Vehicle classification data	Collected from new Manual Classified Count (MCC) surveys on the local road network	To provide data that is compatible with the vehicle types represented in the traffic model Classified volume data for model calibration and validation by vehicle type
Journey time data	Teletrac Data (Formerly Trafficmaster), which contains global positioning system (GPS) derived journey times of vehicles.	Model validation of journey times along selected routes
Mobile phone network data	Obtained from Citi Logik mobile phone network data (MND), which provides observed movements at a Census Middle Super Output Area (MSOA) disaggregation.	To develop observed Origin-Destination trip matrices representing highway demand in the transport model
Permanent Count Surveys	National Highways WebTRIS data, provides link count information at key locations	Establish key trends as large dataset in permanent locations along the strategic road networks

2.3 Use of Other Data

Other open source data was collected to inform model development. The different types of data and a brief description of their source and uses are set out below in Table 2-2.

Table 2-2: Outline of Other Data, Sources and Key Uses

Type of Data	Source of Data	Overview of Key Uses
Residential and workplace population at Output Area (OA) level	2011 UK Census, accessed via the Nomis data portal website	To identify zonal demographic data used when converting demand matrices from the Kent Transport Model zoning system to that of the Medway Transport Model.

The application of the census dataset in the matrix development process is summarised in Section 6 of this report and will be explained in detail in the Local Model Validation Report. The application of the census datasets is summarised in Section 6 of this report while the application of the NTEM and RTF data is discussed in Section 6.3.

3. Summary and Review of Traffic Data

3.1 Existing Traffic Data

Existing traffic count data was available from long-term traffic monitoring and existing surveys collected for other Kent County Council (KCC) studies/projects. The sources of data were available in varying types of data collection and varying formats. They cover the three survey collection methods detailed in Table 3-1.

Table 3-1: Types of Count Dataset Available

Short Name	Long Name	Classified?	Link or Junction?	Time Periods Covered	Sample Size/Survey Granularity
JCN MCC	Junction Manual Classified Turning Count	Yes	Junction (turning count)	Different sites for different weeks, months and years between 2016 and 2023	Average of 1 day
LNK MCC	Link Manual Classified Count		Link		Average of 1 day
WebTRIS	National Highways WebTRIS Data				1 week or 2 weeks
ATC	Automatic Traffic Count	2022-23 counts only			1 week or 2 weeks

The various data collection methods outlined in Table 3-1 provide different levels of detail and different levels of reliability for traffic volumes and vehicle classifications. Each dataset has therefore been used for a different purpose in order to cumulatively increase the robustness of the data used in the development of the Medway Transport Model. The JCN and LNK MCC data have been used for vehicle classifications by quantifying the percentage of each vehicle type (Car, LGV and HGV) on a per road type basis. For flows on the Strategic Road Network (SRN), WebTRIS data has been used, this contains details on vehicle classifications by quantifying the percentage of each vehicle type on each link.

Traffic data is suitable for use when it satisfies a set of conditions. Most importantly, surveys should be:

- Sufficiently recent (i.e. any surveys undertaken prior to 2016 are considered outdated and not suitable for the development of the model);
- Of a good quality (i.e. survey data should be accurate, valid, and consistent); and
- Of a sufficient duration and sample size (i.e. ATC data should be collected for at least two consecutive weeks during neutral months according to best practice set out in TAG guidance. This means that a large enough sample size can be available in order to determine volume profiles and have an understanding of day-to-day variability).

3.1.1 Existing Automatic Traffic Counts (ATCs)

ATCs are counts where flows are compiled automatically without constant human supervision. This allows for longer counts which are collected continuously over a period of one or two weeks, providing a more reliable estimate of average flow. The counts which are referred to as ATCs for the data in this model use two pneumatic tubes laid across the road to count traffic flows and to detect the direction in which the traffic is travelling. They can also count the number of axles on each vehicle, although there are limits to how accurate they are at this. ATCs are effective for counting total flows but are not reliable for providing vehicle type classifications.

ATCs can also produce inaccurate counts at locations where traffic is moving particularly slowly. The extent of this can be checked against classified link count data collected on days in which both are in use, and if necessary, a factor can be used to correct the ATC count.

Existing traffic count data is available from long-term traffic monitoring and existing surveys collected for other Kent County Council (KCC) studies/projects over the last six years (2016 to 2022), excluding data collected during the lockdowns associated with the COVID-19 global pandemic (data between March 2020 and May 2021 and November 2021 and January 2022) when travel patterns were not representative.

The location of all available existing ATC Medway-based data is shown below in Figure 3-1. A detailed table with the location and road ID of each existing site can be found in Appendix A.

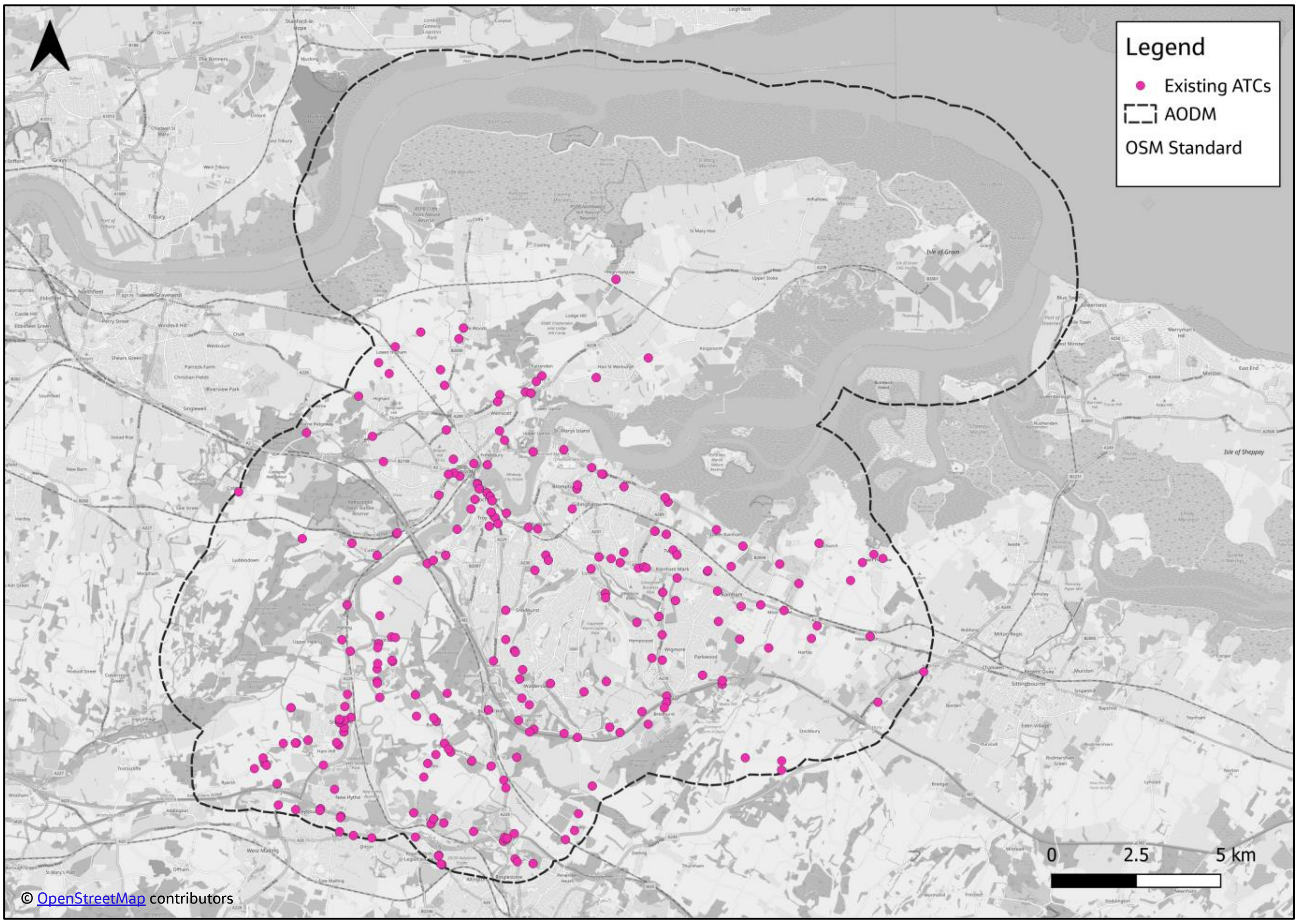


Figure 3-1: Existing ATC Data within the Medway AODM

3.1.2 Existing Manual Classified Counts (MCC)

MCCs are counts which are completed via video recording, usually over a period of one day, at locations which were considered particularly important for capturing key movements relevant to the study, such as the roundabout between the A289/Berwick Way and A228 /Frindsbury Hill. Enumeration from video is considered to be the most accurate, but also the most expensive method for collecting data on vehicle type. The classification percentages have been applied to the ATC counts (collected over a longer time period). Classified counts can come in the form of a Link Count (LNK) which counts vehicles travelling in each direction of a single road, or a Junction Count (JCT), which counts all turning movements at the junction.

The location of all available existing MCC Medway-based data is shown below in Figure 3-2. A detailed table with the location and road ID of each existing site can be found in Appendix A.

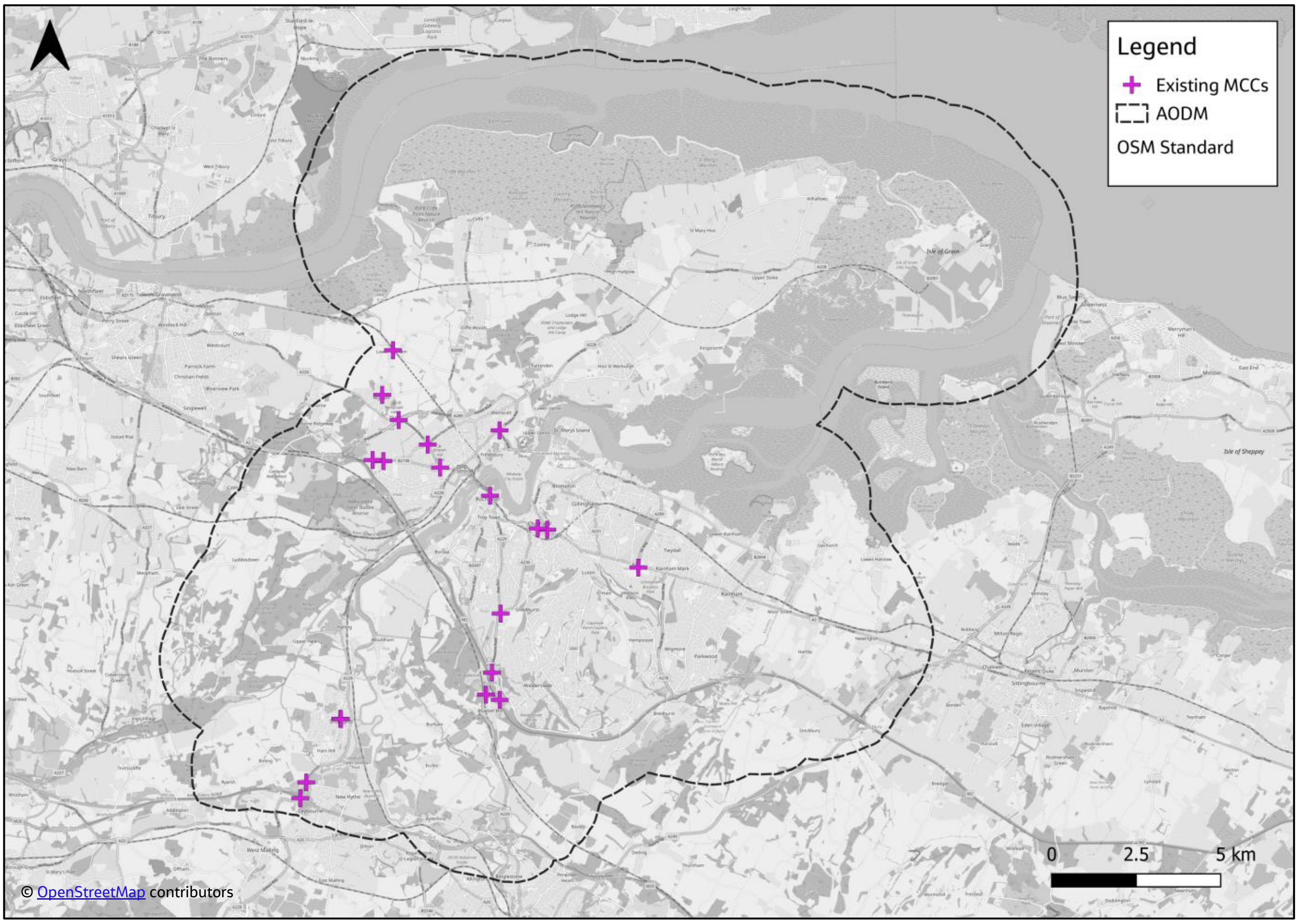


Figure 3-2: Existing MCC Data within the Medway AODM

The classification of vehicles provided by the MCCs is in Table 3-2.

Table 3-2: MCC Classification Identifiers

Vehicles	Classification Group	Length/Chassis Identifiers	Descriptive Identifiers
Cars	**CAR**	2-axle 4-tyre Rigid chassis Trailers included	Three or four wheeled vehicles, Non-commercial pick-ups Cars with trailers & caravans Light ambulances & caravanettes Non-commercial 4x4s
LGV1 (car-based)	**LGV1**	Under 1.5t 2-axle, 4-tyre Rigid chassis Trailers included	Car-size chassis Inc. Astra vans, Escort vans, etc Sign-written commercial pick-up vehicles
LGV2 (Transit-type)	**LGV2**	1.5t - 3.5t 2-axle, 4- or 6-tyre Rigid chassis Trailers included	Mercedes Sprinter, Ford Transit No reflective plates on rear
Medium goods	**MGV**	3.5t - 7.5t 2-axle, 6-tyre Rigid chassis Trailers included	Twin tyres on rear axle No reflective plates on rear Single or no support bar between axles Rigid chassis, deep-dish rear wheels
Heavy goods rigid	**HGV**	Over 7.5t 2-axle, 3-axle 6 or more tyres Rigid chassis No trailers	Twin tyres on rear axle(s) Reflective plates on rear Double support bar between axles Rigid chassis only
Heavy goods articulated		Over 7.5t 4-axle or more Rigid chassis (plus trailer) Articulated chassis	Twin tyres on rear axles Reflective plates on rear Double support bar between axles Rigid or articulated chassis
Buses & coaches	**PSV**	2-axle, 3-axle 6 or more tyres Rigid chassis	Single or double decker All coach-built passenger carriers All school & scheduled routes Inc. non-scheduled coaches

3.2 Supplementary Data Collection

Following the review of existing count data locations and their proximity to key highway links and proposed developments, a number of additional count locations were recommended for supplementary data collection to enhance validation across Medway and to support the introduction of new screenlines. Data collection was therefore undertaken at 26 link count locations and at 17 additional junctions; these locations were agreed with MC, KCC and NH following a review of the proposed Local Plan allocations and results of the initial high-level assessment.

3.2.1 Additional Automatic Traffic Counts (ATCs)

Additional ATCs were collected for two weeks and were fully classified by vehicle type, in 60-minute intervals.

26 additional ATC surveys were conducted for the purpose of the model update. A full list with each of the 26 locations are summarised in Table 3-3 and their locations are shown in

Figure 3-3.

Table 3-3: Additional ATC Count Locations

ID	Location
1	B2004 Medway Road near to Kyber Road
2	A228 Grain Road
3	A229 City Way between Onslow Road and The Fort
4	A230 Maidstone Road near to Southill Road
5	Maidstone Road between Woodpecker Glade and Drewery Drive
6	B2000 Bill Street Road between Randolph Cottages and Bingham Road
7	B2108 Hollywood Lane between Leigh Road and Greenfields Close
8	Ratcliffe Highway between Hall Road and Hoppers Lane
9	Oak Lane between Canterbury Lane and Chaffes Lane
10	B2097 Maidstone Road near to King’s Rochester Sports Centre
11	A231 Brompton Road near Medway Park Leisure Centre
12	A231 Dock Road near Brompton Barracks
13	Barnsole Road between Coulman Street and Sturdee Avenue
14	Richmond Road between Chatsworth Road and Cornwall Road
15	Church Street between Holly Close and Christmas Street
16	Woodlands Road between Hazlemere Drive and Grange Road
17	A2 New Road Avenue between Manor Road and Railway Street
18	B2097 Maidstone Road between Hoopers Road and Watts Avenue
19	A289 Ito Way between Sovereign Boulevard and Beechings Way
20	A228 Peninsula Way between Roper’s Lane and Bell’s Lane
21	A231 Nelson Road between Borough Road and Queens Road
22	North Dane Way between Shawstead Road and Lordswood Lane
23	Walderslade Road between Bradfields Avenue West and King George Road
24	Princes Avenue between Downland Walk and Wren Way
25	Magpie Hall Road between Whyman Avenue and Shipwrights Avenue
26	Frindsbury Road between Florence Street and Grove Road

Figure 3-3: Additional ATCs in Medway

3.2.2 Additional Manual Classified Counts (MCC)

Fully classified turning counts were collected on a neutral day (Tuesday, Wednesday, or Thursday) within the ATC 2-week data collection period. MCCs were collected between the hours of 07:00-19:00 (12-hour period) using high-level video cameras attached to street furniture. The data was fully classified by vehicle type and split into 15-minute intervals.

In total, 17 additional MCCs surveys were conducted for the purpose of the Medway Transport Model development and local validation. A full list with each of the locations are summarised in Table 3-4 below and presented in Figure 3-4.

Table 3-4: Additional MCC Count Locations

ID	Location	Junction Type
1	Magpie Hill Road /New Road	Roundabout
2	Union Street / New Road/ Best Street	Signalised
3	Four Elms Roundabout	Roundabout
4	Grange Roundabout	Roundabout
5	Lower Rochester Road/ Hollywood Lane/ Cooling Road/ Brompton Farm Road Mini Roundabouts*	Two Mini Roundabouts
6	M2/ A278 Roundabout	Roundabout
7	B2004 Medway Road / Medway Road	Signalised
8	A2 High Street/ Station Road	Signalised
9	Bowater Roundabout	Signalised Roundabout
10	A289 Hasted Road on/off slips**	Off slips/ on slips
11	Chatham Maritime Roundabout	Signalised Roundabout
12	A2 Watling Street/ Canterbury Street	Signalised
13	B2002 Station Road/ High Street	Signalised
14	A2 City Way/ A2 New Road/ Star Hill	Roundabout
15	M2 J2 Eastern Roundabout	Roundabout
16	M2 J2 Western Roundabout	Roundabout
17	Merrals Shaw Interchange	Roundabout

**Assumes MCC captures movements at both roundabouts at this location*
***Assumes all movements in this locality at on/off slips are captured*

Figure 3-4: Additional MCCs in Medway

3.3 Journey Time Information

Journey time data is used to check and compare the highway delays and travel times calculated by the model with observed data as part of the model validation process.

Journey time data for the Kent Transport Model and Medway Transport Model was sourced from the 2019 DfT Teletrac (previously Trafficmaster) data. This dataset is made available to local authorities and is based on data gathered using satellite navigation devices installed in vehicles. It specifies travel times for links in the Integrated Transport Network (ITN). Travel times along set routes have been collated by aggregating the times for each of the ITN links along the route. Google API journey time data has been used to verify the Teletrac data, further details of this can be found in the Medway Base Model Local Model Verification Report (November 2023).

4. Use of Available Traffic Models

4.1 Existing Traffic Models

As indicated, the Gravesham Transport Model cordon area was used as the basis for this work. The Gravesham Transport Model was developed by cordoning the KTM which included the following Local Authorities: Dartford, Gravesham, Swale, Sevenoaks, Tonbridge and Malling, Maidstone, and Medway. An Area of Detailed Modelling (AODM) has been defined, as displayed in Figure 1-1 in agreement with KCC and National Highways by applying an initial 2km buffer around the Medway district boundary and extending slightly to the south to include the M20 junctions; this was to ensure that it included major junctions beyond the boundary on the Strategic Road Network. Within the Area of Detailed Modelling, a full detailed network review will take place and will be described in detail within the Local Model Validation Report.

The prior matrices of the Gravesham Transport Model, with a base year of 2019, were used as the starting point for the base model enhancement to develop the Medway Transport Model. The Kent Transport Model was used as a basis for the demand of the Gravesham Transport Model due to its usage of mobile phone data. The prior matrices were obtained through the model cordon process by aggregating and disaggregating zones to match the boundaries of the Gravesham Transport Model. Output Areas boundaries were used in Medway where further zone disaggregation was needed in the AODM – this was primarily undertaken in areas close to significant planned or emerging growth.

4.2 Use of Existing Model Information

Following a review of the network and zoning system of the Medway Transport Model, it was established that additional information was required in the Area of Detailed Modelling in order to ensure that the updated model would be suitable for its intended purposes. The risks associated with using the existing model as a basis for the new model were also considered; highlighted in Table 4-1 below are the general risks associated with using previous models and the mitigation methods that have been put in place for this project.

Table 4-1: Risks associated with the Medway Transport Model and Mitigation Methods put in place

Risk	Mitigation
Parts of the network might be outdated	Modelled network will be updated with information on changes in the highway network since 2019, to be provided by Kent County Council/Medway Council
Errors in the model carried forward	The network coding will be checked in detail
Zoning system might not be suitable	Review the zoning system and assess its suitability for the purposes to which the new model will be used. Identified areas in proximity to the schemes which lack sufficient detail in the zoning system in these areas and split the zones to provide the required level of spatial detail.
Traffic demand not sufficiently representative of trips in an area of the Gravesham Transport Model to the detail required by the model's intended uses	Rather than try to 'adjust' the demand in the existing model, it was decided to use the demand from the Kent Transport Model as a starting point for the trip matrices of the new model. These utilised recent mobile network data from 2019.
Signalised junctions in Medway were not modelled in the Kent Transport Model or Gravesham Transport Model	Detailed datasheet for all signalised junctions within Medway have been provided and signal junction layouts in addition to phase/stage/timing information has been incorporated into the base model.

5. Final Volumetric Dataset

5.1 Final Traffic Count Dataset

Following data processing and screenline generation, there were 311 unique surveys identified for use in the model. Figure 5-2 shows all link count locations (identified by the purple colour) that will be included in the Medway Transport Model base year calibration and validation, including counts on the Strategic Road Network (SRN) which have been obtained via National Highways WebTris count database. A detailed table with the location and road ID of all traffic counts can be found in Appendix A.

Figure 5-1: Counts used within the Medway Transport Model

5.2 Data Quality, Checking and Consistency Checks

Data obtained from the existing surveys was subject to a number of initial quality checks before the data was issued. A series of further checks were then undertaken on the data set provided by the survey company, and any data anomalies identified by the survey company, for example as a result of faulty equipment, resulted in the exclusion of that data from the dataset and the extension of the survey programme. It was reported that weather conditions were generally fine during the survey periods and no weather-related issues were reported that may have resulted in a significant issue for the validity of any particular count data.

Inter- junction checks were carried out between any nearby sites of either the same type or different survey type (JTCs, ATCs). The inter-junction check files highlight any large differences between sites, and where differences are found, files are annotated with comments showing reasons for differences, e.g., an accident, so that the user of the count data has full knowledge of noted data issues and the reason for those issues.

In addition to the checks that were carried out by the survey company, further or repeat checks were carried out by reviewing profiles to check inconsistencies in flow patterns, for instance to identify if an inter-peak count is greater than the count for the AM and PM peak hours, and to review the tidality of the data in order to establish if any of the data is incorrectly labelled.

Moreover, all of the data collected between Friday and Sunday (inclusive) was removed from the analysis to provide a Monday to Thursday (i.e. representative weekday) dataset.

5.2.1 Consistency Checks

Based on the count data received, further consistency checks were undertaken on the dataset. Across the study area, locations were identified where a MCC and a corresponding link count, or two nearby link counts were available. The purpose of the MCC check was to confirm that the traffic volumes recorded by the MCC were representative of the average one/two-week link volumes recorded by the corresponding link count for the comparable location. The check for two nearby counts were undertaken in order to determine whether the counts are close, securing the accuracy of the counts. The results of this check are presented in Table 5-1.

The comparison for the tests covered the AM, and PM peak hours. For the large majority of all count comparisons, the difference between the MCCs and ATCs or close by ATCs counts, is less than 15% or within a level of difference which can be considered related to count accuracy and/or daily variation. Where counts are identified to compare outside of a 15% tolerance level, these counts have been investigated further as part of the model validation/calibration process and the final count data used in the model validation/calibration, and their observed values, will be presented in the LMVR.

Table 5-1: Road Data Consistency Checks

Count 1 ID	Count 2 ID	Count 1 Type	Count 2 Type	Peak	Count 1		Count 2		Direction 1			Direction 2		
					Direction 1	Direction 2	Direction 1	Direction 2	Count 1	Count 2	%Change 1-2	Count 1	Count 2	%Change 1-2
26	**29**	ATC	MCC	AM	NB	SB	NB	SB	470	406	14%	333	338	-2%
				PM					455	393	14%	322	327	-2%
10037	**9**	ATC	MCC	AM	NB	SB	NB	SB	1203	1127	6%	1040	1115	-7%
				PM					1187	1092	8%	1057	1080	-2%
10881	**13**	ATC	MCC	AM	EB	WB	EB	WB	1150	1260	-10%	1264	1383	-9%
				PM					1369	1220	11%	1161	1340	-15%
10	**5**	MCC	MCC	AM	NB	SB	NB	SB	594	597	-1%	617	630	-2%
				PM					575	578	-1%	598	610	-2%
28	**7**	MCC	MCC	AM	NB	SB	NB	SB	396	405	-2%	553	557	-1%
				PM					384	392	-2%	536	539	-1%
30	**26**	MCC	ATC	AM	NB	SB	NB	SB	501	470	6%	347	333	4%
				PM					485	455	6%	336	322	4%
13	**25**	MCC	MCC	AM	WB	-	WB	-	1441	1420	1%			
				PM					1396	1375	2%			
13138	**10544**	MCC	ATC	AM	EB	WB	EB	WB	710	766	-8%	873	911	-4%
				PM					846	883	-4%	746	866	-16%
13131	**13133**	MCC	MCC	AM	NB	SB	NB	SB	1236	1233	0%	1781	1813	-2%
				PM					2116	1897	10%	1343	1278	5%
13142	**13143**	MCC	MCC	AM	EB	WB	EB	WB	1849	1864	-1%	2470	2421	2%
				PM					2237	2332	-4%	2102	2084	1%

6. Final Trip Dataset

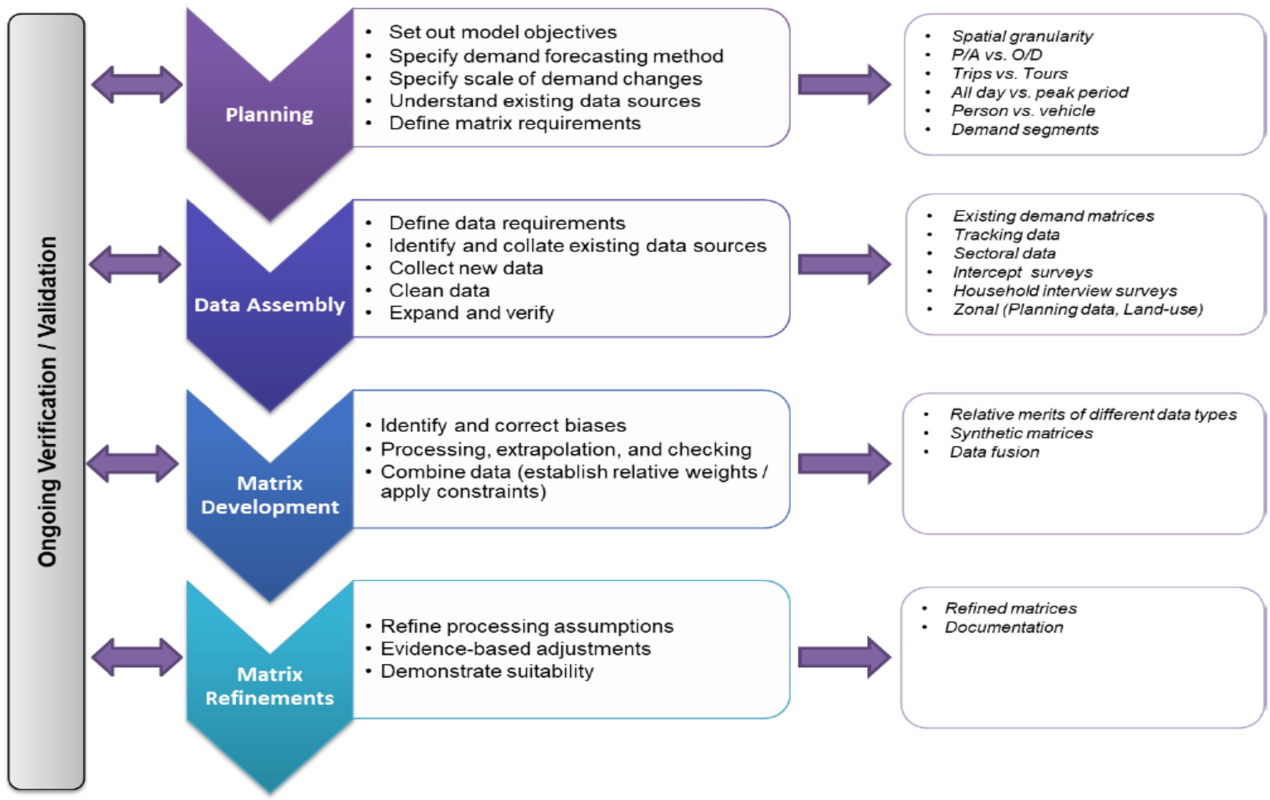
6.1 Introduction

The Medway Transport Model development approach makes use of previous work on the development of the Kent Countywide Strategic Model; that model used mobile network data (MND) to formulate the highway demand and will form the basis of the demand for the model update. The 2019 Kent Transport Model prior matrices were used as the starting point for the updated Medway Transport Model matrices. Using the matrices provides analytical consistency with other local models currently being developed for KCC and removes duplication of work, ensuring best value is extracted from the time and money invested in the 2019 Countywide dataset and subsequent processing.

6.2 The Kent Transport Model and Use of Mobile Phone Data

The 2019 Kent Transport Model, which is used as the basis for the development of demand matrices for this model, made use of aggregated and anonymised mobile network data (MND) provided specifically for that study by Citi Logik. The approach to the development of the Kent base year demand matrices followed best practice and the recommendations set out in TAG Unit M2-2 Base Year Demand Matrix Development. It followed distinct stages which covered Planning, Data Assembly, Matrix Development and Matrix Refinements. The process is depicted in Figure 6-1, reproduced from TAG Unit M2-2, and each stage is summarised below.

Figure 6-1 summarises the methodology followed for developing the Kent Countywide matrices:



Source: TAG

Figure 6-1: Summary of Matrix Building Process for the Kent Transport Model

The trip matrix development for the Kent Transport Model, including the processing of raw MND and its verification, is discussed in detail in the Medway Transport Model LMVR and its appendices. The following summarises the highway matrix development:

- Car matrices were derived from MND as a primary source, with infilling of short distance trips through synthesised data; and
- LGV and HGV matrices were initially derived from the South East Regional Transport Model (SERTM) prior matrices.

6.3 Conversion from Kent Countywide Zoning System using Census Data

The conversion of the prior matrices from the Kent Transport Model zone system to the Medway Transport Model zone system is undertaken through a review and application of 2011 Census data, against the boundaries of the two model zone systems. It is to be noted that the prior matrices from Kent Transport Model were used - this was because, in anticipation of having to undertake matrix estimation for the Medway Transport Model, it was important not to 'correct' already estimated matrices, thereby distorting the underlying trip patterns significantly.

The matrices from the Kent Transport Model zone system were aggregated and disaggregated to match the boundaries of the Medway Transport Model zone system. Where the level of network detail in Medway Transport Model is lower and zones larger, the Kent Transport demand was taken directly and simply aggregated to fit the Medway Transport Model zoning system. However, around the Hoo Peninsula and Gillingham, where the level of network detail is highest in the Medway Transport Model, there was a need to disaggregate the Kent Countywide matrices. The permanent residential population and workplace population, at Output Area (OA) level, was used to translate the demand matrices for all user classes from the Kent Countywide to the Medway Transport Model zone system. This was facilitated by both zone systems being derived from OA boundaries, so there was a consistent spatial basis for the conversion. The Kent Countywide zoning system was based on MSOA boundaries, and therefore a selected number of zones were split by Output Area (OA) to form the new Medway Transport Model zone system.

The following table shows the census data sets that were used to control the disaggregation of each set of production attraction matrices:

Table 6-1: Conversion of Origin-Destination Matrices

User Class (UC)	Vehicle Type	AM Peak OD Matrices		PM Peak OD Matrices	
		Origins	Destinations	Origins	Destinations
UC1-UC3	Car	Residential Population	Workplace Population	Workplace Population	Residential Population
UC4	LGV	Workplace Population	Workplace Population	Workplace Population	Workplace Population
UC5	HGV	Workplace Population	Workplace Population	Workplace Population	Workplace Population

Home-based matrices were disaggregated based on the residential population census data for the origin trip end and workplace population dataset for the destination trip end. For non-home-based matrices, the matrix disaggregation for both origin and destination trip end was undertaken using the workplace population dataset.

For LGV and HGV matrices, the disaggregation of matrices was controlled by the workplace population dataset. For goods vehicles, both the origin and destination of a trip are likely to be linked to an employment site.

7. Journey Time Data

This section describes the journey time data that has been produced and analysed for the purposes of establishing baseline conditions to inform the transport model development in Medway. The journey time data is used to check and compare the delays and travel times calculated by the model as part of a model validation process.

A journey time dataset for Kent was purchased directly from Teletrac as the 2019 data set was not yet available from the DfT, which is the usual source. The data is collected from satellite navigation devices installed in cars and other vehicles. It details travel times for links defined within the Integrated Transport Network (ITN). Travel times along set routes have been collated by aggregating the Teletrac observed times for each of the ITN links along the route. The journey time data for use in the Medway Transport Model reflects Average Weekday Traffic (AWT) using Monday to Thursday data for neutral months from March 2019 to November 2019, excluding summer months and public holidays. The data was extracted for the modelled time periods. Data for cars and LGVs only were used.

7.1 Existing Traffic Performance

With the Teletrac data collated, it is possible to display observed traffic speeds as a percentage of the observed free flow speed. These maps therefore show congestion on the road network, details of the pattern and scale of traffic delay, and can be compared with results during the model calibration process in order to check locations experiencing significant modelled delays. Maps using this data have been produced for the AM (08:00 – 09:00) and PM (17:00 – 18:00) peak hours for the Medway area in Figure 7-1 and Figure 7-2:

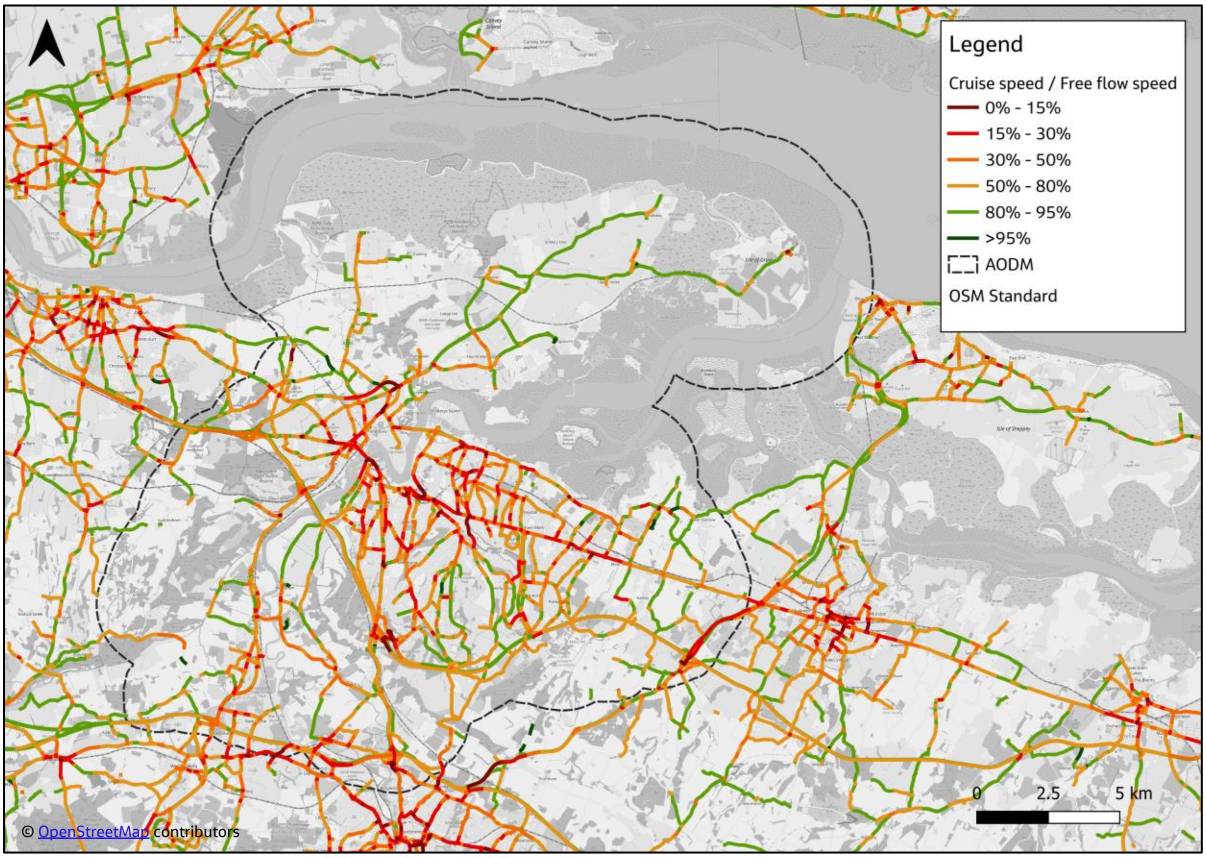


Figure 7-1: Medway Existing Traffic Delays (AM Peak, 08:00 – 09:00)

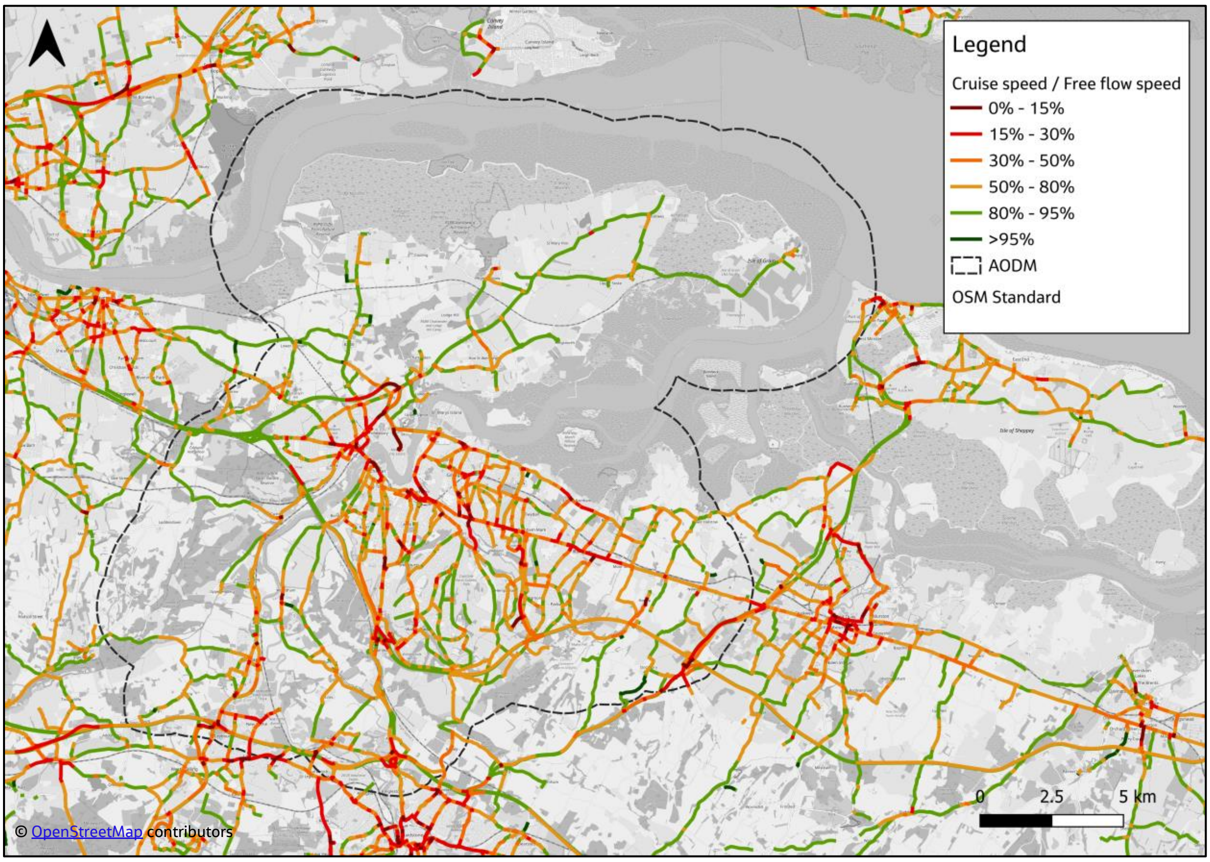


Figure 7-2: Medway Existing Traffic Delays (PM Peak, 17:00 – 18:00)

7.2 Journey Time Routes

The Teletrac data was collated and processed to form journey time routes specified for the Medway Transport Model validation process. These journey time validation routes have been chosen considering the guidance set out in TAG Unit M3-1 section 4.3.3. That is, ensuring that each route is neither excessively long (greater than 15 km) nor excessively short (less than 3 km) and that they should not take longer to travel than about 40 minutes so as to fit comfortably within the modelled peak hour.

A total of 12 bi-directional routes, have been selected for the Medway Transport Model and are shown in Figure 7-3. These routes have been defined to cover key strategic and local routes in and throughout Medway district, including town centres such as Rochester, Gillingham and Hoo.

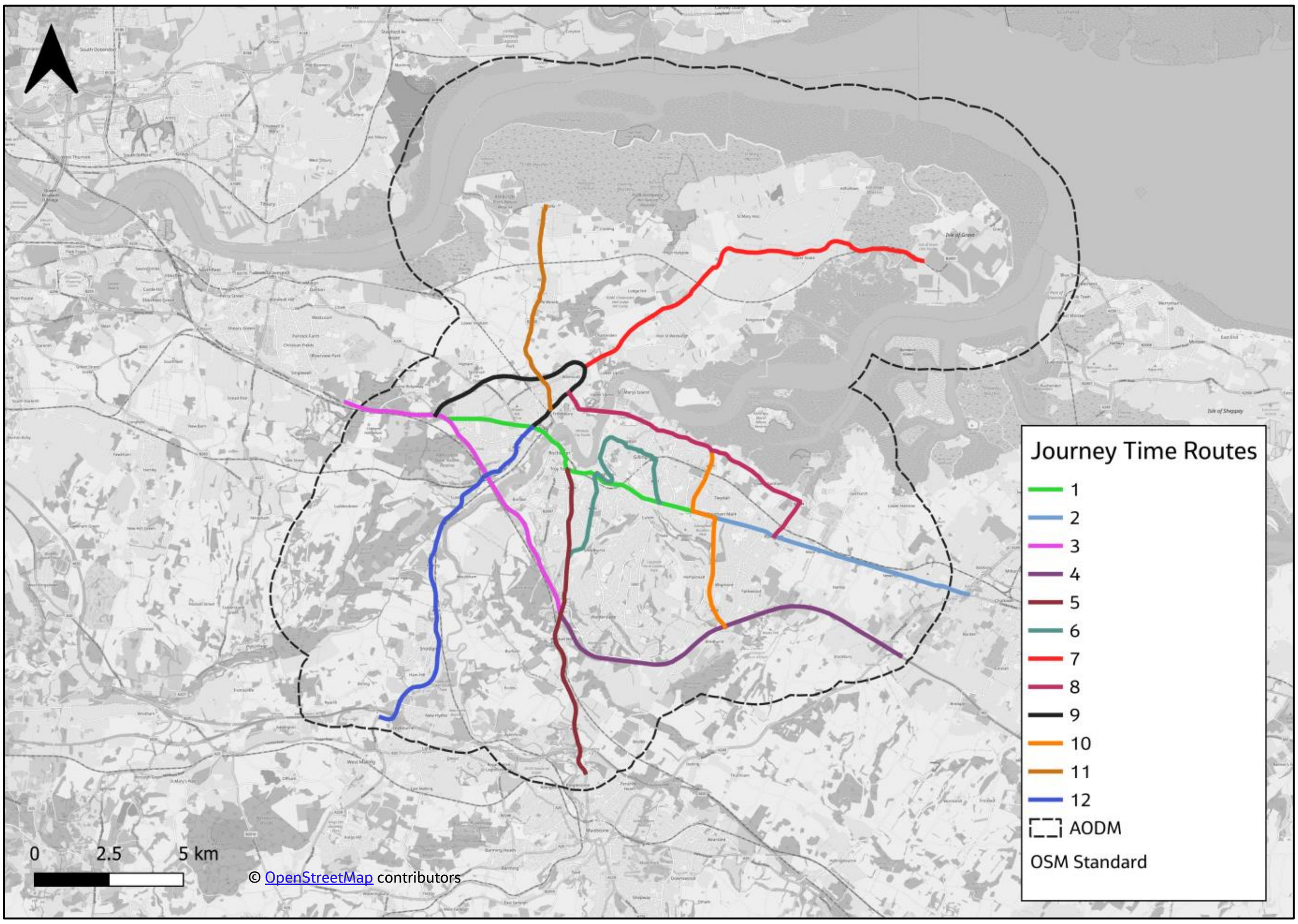


Figure 7-3: Journey Time Validation Routes in the Medway Transport Model

7.3 Existing Journey Time Conditions

The observed time for each peak hour for all journey time routes, as calculated from the Teletrac observed data are shown in Table 7-1.

Table 7-1: Teletrac Average Observed Journey Times

Route No.	Description	Direction	Length (km)	Observed time [min:sec]	
				AM	PM
1	A2 Watling Street → A2 Sovereign Boulevard	EB	9.14	22:04	23:06
	A2 Sovereign Boulevard → A2 Watling Street	WB	9.21	21:49	20:23
2	A2 Sovereign Boulevard → A249 Maidstone Raod	EB	9.57	17:10	17:30
	A249 Maidstone Road → A2 Sovereign Boulevard	WB	9.64	19:16	17:11
3	A2 Watling Street → A229 Maidstone Road	SB	10.99	05:48	05:43
	A229 Maidstone Road → A2 Watling Street	NB	10.96	05:46	05:31
4	A229 Maidstone Road → Stockbury Flyover	EB	12.03	06:33	07:26
	Stockbury Flyover → A229 Maidstone Road	WB	12.64	07:08	06:53
5	A229 City Way → A229 Royal Engineers Road	SB	10.77	11:29	13:25
	A229 Royal Engineers Road → A229 City Way	NB	10.77	12:42	14:39
6	A229 Maidstone Road → Canterbury Street	EB	9.26	19:17	18:39
	Canterbury Street → A229 Maidstone Road	WB	9.24	19:09	17:21
7	A228 Four Elms Hill → B2001 Grain Road	EB	13.30	12:38	12:07
	B2001 Grain Road → A228 Four Elms Hill	WB	13.20	13:18	12:21
8	A289 Berwick Way → B2004 Station Road	EB	10.35	16:05	17:04
	B2004 Station Road → A289 Berwick Way	WB	10.43	16:08	16:41
9	M2 Three Crutches → A228 Gun Lane	EB	8.00	09:40	10:52
	A228 Gun Lane → M2 Three Crutches	WB	7.92	08:55	08:15
10	A289 Yokosuka Way → A278 Hoath Way	SB	6.70	07:57	07:15
	A278 Hoath Way → A289 Yokosuka Way	NB	6.76	07:28	07:50
11	B2000 Church Street → Bill Street Road	SB	7.18	10:33	10:04
	Bill Street Road → B2000 Church Street	NB	7.18	10:48	10:36
12	A228 Cuxton Road → A228 Ashton Way	SB	13.15	17:52	19:16
	A228 Ashton Way → A228 Cuxton Road	NB	13.22	18:30	17:06

7.4 Summary of Journey Time Data

Upon reviewing journey time data along these routes, it was found that overall, there was no significant difference between AM/PM peaks. The routes had less than 2 minutes difference between AM and PM.

8. Traffic Signal Data

8.1 Junction Signal Timings

As part of the Kent Transport Model, which had a base year of 2019, signal timings were coded in the model based on data collected from local authorities. , The latest signal controller information was obtained from KCC and input into the network for signalised junctions, to help calibrate the network. Due to the variability in use of pedestrian crossings on ground, only signal groups with highway phasing have been included. The locations of these signalised junctions within the Medway AODM are shown in Figure 8-1.

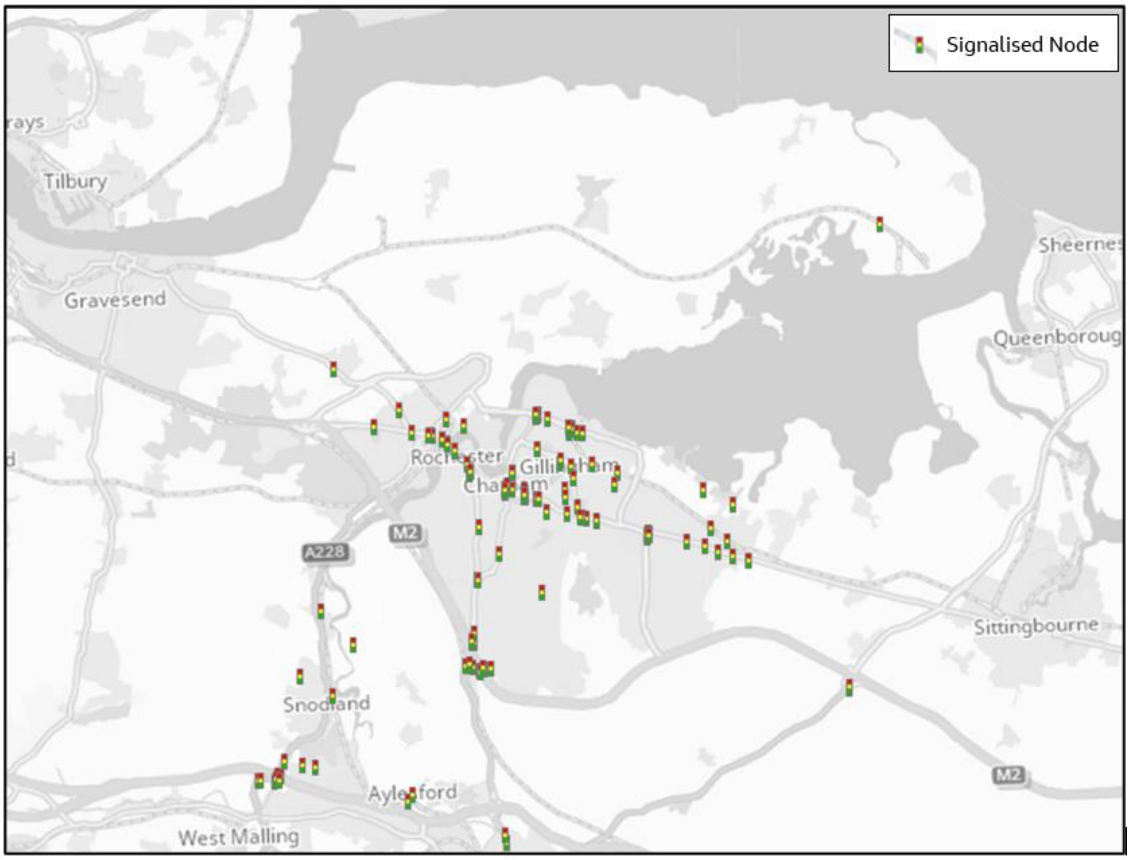


Figure 8-1: Signalised junctions within Medway AODM

An example of the coding of a signalised junction in the model is illustrated in Figure 8-2, where the actual junction is shown alongside the signalised junction modelled coding for where London Road meets Maidstone Road.

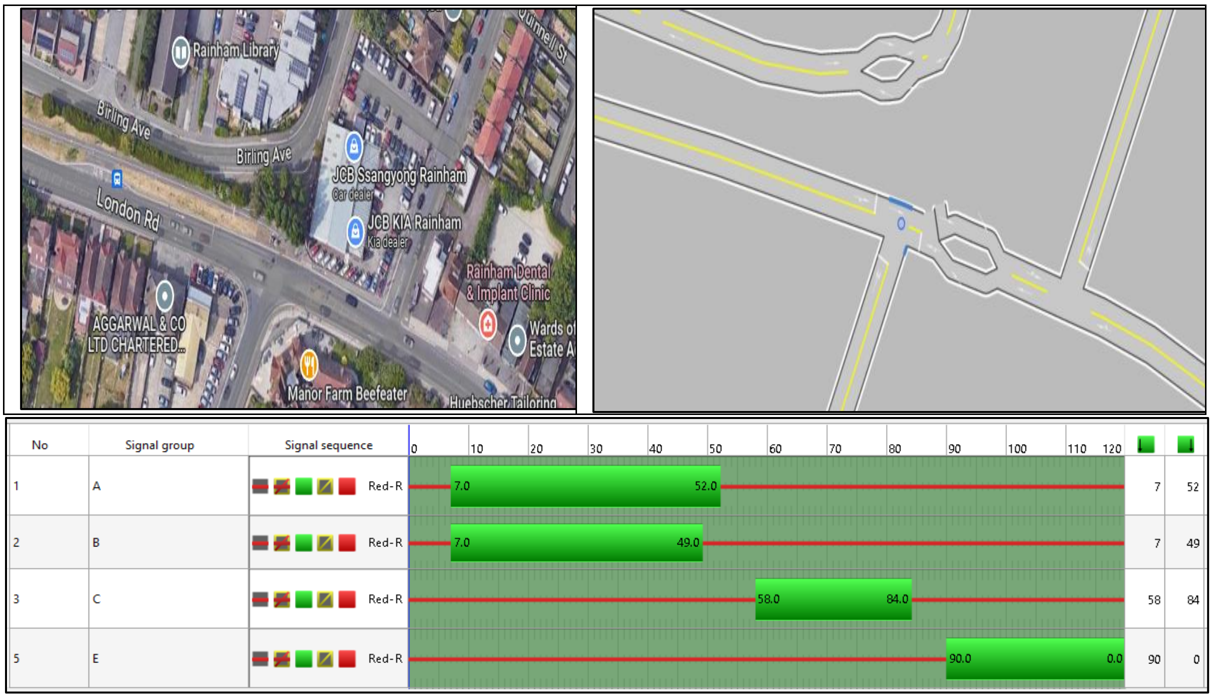


Figure 8-2: Actual Junction and the Equivalent Modelled Signalised Junction

8.2 Level Crossing Timings

Level crossings were coded into the model as a signalised junction to represent the delays caused by traffic stopping to let trains cross the railway. These delays have been modelled with a single phase/ signal group and the green time has been determined by the number of trains per hour at that location (information provided by timetables).

These are usually coded using two stages where traffic enters all-red phase to represent trains crossing the railway. An example of a level crossing junction is illustrated in Figure 8-3, which shows the junction in Woodlands Road alongside the modelled junction.

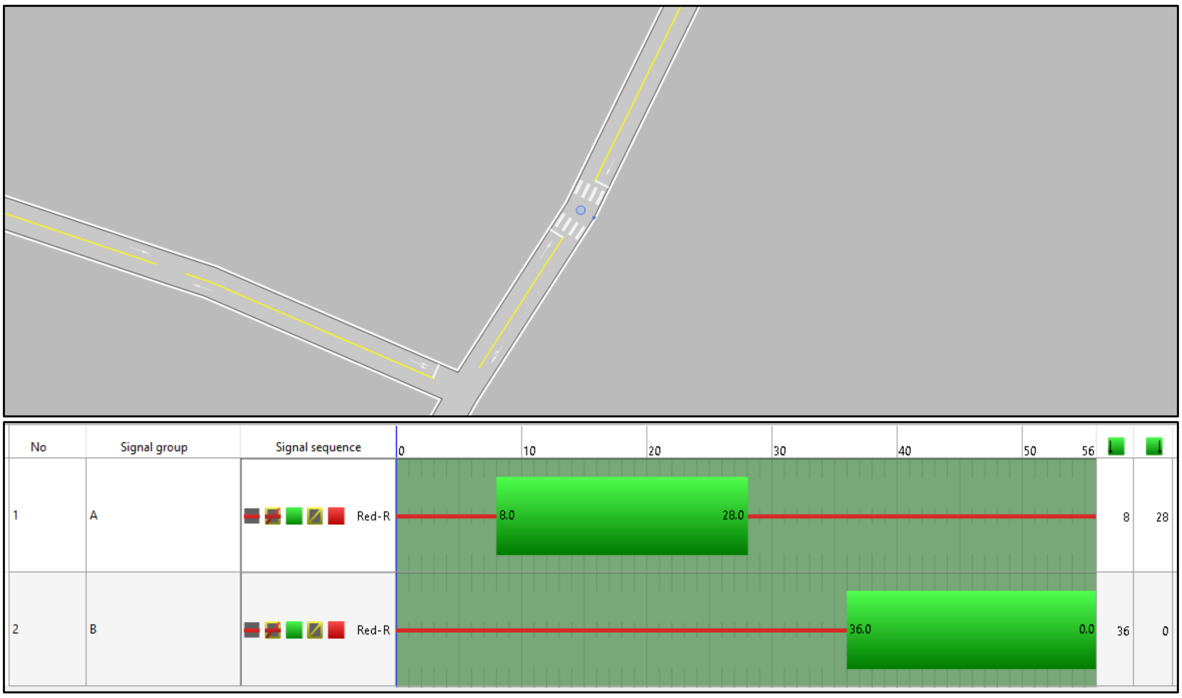


Figure 8-3: Actual Level Crossing and the Equivalent Modelled Level Crossing

9. Summary

9.1 Data Management

A substantial volume of traffic data from various sources has been collated for the purpose of the Medway Transport Model development.

Internal quality checks were applied to the data during the processing stage before its use was considered appropriate for model building purposes. This ensured consistency, reliability, and accuracy throughout the model building process, and for subsequent use in the processing of model outputs.

9.2 Summary of Adequacy of Data

This report has identified and described the traffic survey data collected and collated to assess and quantify baseline conditions and to develop the Medway Transport Model. The survey data has provided the necessary information for the model building process such as building trip matrices and for the calibration and validation of the model.

Each of the surveys undertaken has been described explaining its purpose, as well as showing the locations and individual survey dates. Analysis has been carried out for each of the survey types and the results are presented.

The traffic data for this study has been obtained from credible sources such as data collected and provided by Medway Council and Kent County Council, data from National Highways, Teletrac journey time data, and the 2011 UK Census. A check and review process has been undertaken for removing invalid or non-representative data before the cleaned data was taken forward for use in developing the model.

Further operational data such as traffic signal controller information has been collected in order to provide more detailed modelling to support and inform the development of the updated Medway Transport Model.

Overall, it is considered that the new and existing data collected as part of the updated Medway Transport Model development, forms a suitable and comprehensive database, sufficiently detailed to establish principal traffic movements and characteristics within the Medway Transport Model and the surrounding area for the model build.

Appendix A

Final Traffic Count Dataset					
CalValID	Name	Year	Direction	X	Y
9500	B2004 Prince Arthur Road	2023	EB	0.540	51.392
9509	A228 Grain Road	2023	EB	0.644	51.451
9516	A229 City Way	2023	NB	0.511	51.378
9517	A230 Maidstone Road	2023	NB	0.522	51.375
9518	Maidstone Road	2023	NB	0.590	51.351
9519	B2000 Bill Street Road	2023	NB	0.500	51.404
9520	B2108 Hollywood Lane	2023	EB	0.509	51.412
9521	Ratcliffe Highway	2023	EB	0.599	51.456
9522	Oak Lane	2023	NB	0.643	51.371
9501	B2097 Maidstone Road	2023	NB	0.497	51.360
9502	A231 Brompton Road	2023	EB	0.540	51.390
9503	A231 Dock Road	2023	NB	0.526	51.390
9504	Barnsole Road	2023	NB	0.556	51.383
9505	Richmond Road	2023	NB	0.549	51.392
9506	Church Street	2023	NB	0.561	51.391
9507	Woodlands Road	2023	NB	0.570	51.387
9508	New Road Avenue	2023	EB	0.520	51.382
9530	B2097 Maidstone Road	2023	NB	0.503	51.383
9510	A231 Nelson Road	2023	NB	0.551	51.381
9511	N Dane Way	2023	NB	0.544	51.355
9512	Walderslade Road	2023	NB	0.523	51.351
9513	Princes Avenue	2023	NB	0.535	51.351
9514	Magpie Hall Road	2023	NB	0.532	51.369
9515	A228 Frindsbury Road	2023	EB	0.497	51.399
9508	New Road Avenue	2023	WB	0.520	51.382
9531	A229 Peninsula Way	2023	NB		
9600	High Street	2023	WB	0.534	51.379
9601	A2 Chatham Hill	2023	EB	0.534	51.379
9602	A2 New Road	2023	WB	0.534	51.379
9603	Magpie Hall Road	2023	EB	0.534	51.379
9604	Union Street	2023	NB	0.530	51.380
9605	A2 New Road East	2023	EB	0.530	51.379
9606	A2 New Road West	2023	WB	0.529	51.379
9607	Four Elms Hill	2023	EB	0.518	51.415
9608	Wulfere Way	2023	SB	0.517	51.413
9609	Hoo Road	2023	WB	0.516	51.414
9610	A289 Hasted Road	2023	WB	0.516	51.414
9611	Gads Hill	2023	NB	0.578	51.389
9612	Lower Rainham Road East	2023	EB	0.579	51.389
9613	A289 Yokosuka Way	2023	SB	0.578	51.389
9614	Lower Rainham Road West	2023	WB	0.578	51.389
9615	Lower Rochester Road	2023	NB	0.498	51.409
9616	Hollywood Lane	2023	EB	0.499	51.409
9617	Cooling Road	2023	SB	0.499	51.409
9618	Brompton Farm Road	2023	WB	0.498	51.409

Final Traffic Count Dataset					
CalValID	**Name**	**Year**	**Direction**	**X**	**Y**
9619	Heath Way	2023	NB	0.584	51.337
9620	M2 East	2023	WB	0.586	51.336
9621	M2 West	2023	EB	0.583	51.336
9622	Medway Road North	2023	NB	0.549	51.396
9623	Medway Road East	2023	EB	0.549	51.395
9624	Medway Road West	2023	EB	0.548	51.395
9625	Station Road	2023	NB	0.609	51.364
9626	High Street East	2023	EB	0.609	51.363
9627	Car Park Access	2023	SB	0.608	51.363
9628	High Street West	2023	WB	0.608	51.363
9629	Twydall Lane	2023	NB	0.580	51.369
9630	A2 London Road	2023	EB	0.582	51.369
9631	Courteney Road	2023	SB	0.581	51.368
9632	Hoath Way	2023	SB	0.580	51.368
9633	A2 Sovereign Blvd	2023	WB	0.579	51.369
9634	Lower Rochester Road North	2023	NB	0.495	51.411
9635	Lower Rochester Road South	2023	SB	0.496	51.410
9636	A289 Hasted Road	2023	WB	0.495	51.411
9637	Maritime Way North	2023	NB	0.537	51.401
9638	Pier Road East	2023	EB	0.537	51.400
9639	Maritime Way South	2023	SB	0.536	51.399
9640	Pier Road West	2023	WB	0.535	51.400
9641	Canterbury Street	2023	NB	0.553	51.374
9642	A2 Watling Street	2023	EB	0.554	51.373
9643	Rainham Road	2023		0.553	51.373
9644	A2 Rainham Road	2023	WB	0.553	51.373
9645	Station Road	2023	NB	0.497	51.395
9646	High Street East	2023	EB	0.497	51.395
9647	Commercial Road	2023	WB	0.496	51.395
9648	High Street West	2023	EB	0.497	51.395
9649	A2 Star Hill	2023	NB	0.509	51.383
9650	A2 New Road	2023	EB	0.509	51.383
9651	A229 City Way	2023	SB	0.509	51.383
9652	M2 Off Slip	2023	SB	0.468	51.385
9653	M2 On Slip	2023	SB	0.469	51.384
9654	Unnamed Road	2023	WB	0.468	51.384
9655	M2 On Slip	2023	NB	0.467	51.384
9656	Unnamed Road East	2023	EB	0.468	51.384
9657	M2 On and Off Slip	2023	NB	0.468	51.383
9658	Unnamed Road South	2023	SB	0.467	51.383
9659	A228 North Downs Way	2023	EB	0.469	51.381
9660	Sundridge Hill	2023	WB	0.468	51.380
9688	Sundridge Hill N	2023	EB	0.468	51.380
9661	A229 (N)	2023	NB	0.514	51.301

Final Traffic Count Dataset					
CalValID	Name	Year	Direction	X	Y
9662	M20 Onslip	2023	SB	0.514	51.301
9663	A229 (S)	2023	NB	0.514	51.301
9664	A229 On slip	2023	EB	0.514	51.301
9665	Car Park Access	2023		0.493	51.395
9666	A2 Commercial Road East	2023	WB	0.494	51.395
9667	A228 Knight Road	2023	SB	0.493	51.395
9668	A2 Commercial Road West	2023	WB	0.493	51.395
9669	High Street West	2023	EB	0.619	51.361
9670	Moor Park Close	2023	SB	0.619	51.361
9671	Otterham Quay Lane	2023	NB	0.621	51.361
9672	A2 Moor Street	2023	WB	0.621	51.361
9673	Meresborough Road	2023	SB	0.621	51.361
9674	Car Park Access	2023		0.620	51.361
9675	Gillingham Gate Road	2023	NB	0.549	51.397
9676	Car Park Access	2023	NB	0.550	51.397
9677	A289 Pier Road East	2023	EB	0.550	51.397
9678	Medway Road	2023	SB	0.549	51.396
9679	Purser Way	2023	WB	0.549	51.396
9680	A289 Pier Road West	2023	WB	0.548	51.397
9681	A228 Frindsbury Road North	2023	NB	0.499	51.400
9682	Station Road	2023	EB	0.499	51.400
9683	A228 Frindsbury Road South	2023	SB	0.499	51.400
9684	Wykeham Street	2023	WB	0.495	51.398
9700	A228 Frindsbury Road	2023	NB	0.496	51.398
9686	A207 North Street	2023	SB	0.496	51.398
9687	A228 Gun Lane	2023	EB	0.495	51.398
9000	Islingham Farm Road Medway	2016	NB	0.509	51.416
9001	Stoke Road, Medway Stoke Roa	2016	EB	0.613	51.437
9002	Mill Road South of Saunders Str	2016	NB	0.543	51.391
9003	Mill Road South of Trinity Road	2016	NB	0.543	51.392
9004	12726 Medway	2016	NB	-0.967	51.458
9005	Brake Avenue	2017	EB	0.516	51.348
9006	Medway Tunnel	2017	EB	0.536	51.400
9006	Medway Tunnel	2017	WB	0.536	51.400
9007	Rochester Corporation Street	2017	SB	0.506	51.389
9007	Rochester Corporation Street	2017	NB	0.506	51.389
9008	Hawthorne Avenue	2017	NB	0.593	51.372
9009	A228 Cuxton A228 Sundridge H	2017	NB	0.459	51.376
9110	A228 Cuxton A228 Sundridge H	#N/A	NB	0.458	51.375
9010	A228 Cuxton A228 Rochester R	2017	NB	0.456	51.372
9111	A228 Cuxton A228 Rochester R	#N/A	NB	0.451	51.369
9011	A228 Cuxton A228 Formby Roa	2017	NB	0.446	51.363
9012	Maritime Way	2017	NB	0.537	51.401
9013	Hempstead Road, Medway	2017	EB	0.578	51.357

Final Traffic Count Dataset					
CalValID	Name	Year	Direction	X	Y
9014	Main Road, Hoo Main Road	2017	EB	0.557	51.421
9015	Robin Hood Lane	2017	NB	0.525	51.339
9015	Robin Hood Lane, Walderslade	2017	NB	0.525	51.339
9016	Robin Hood Lane, Walderslade	2017	NB	0.524	51.338
9017	our Elms Hill, Chattenden Main	2018	EB	0.527	51.418
9017	our Elms Hill, Chattenden Main	2018	WB	0.528	51.418
9018	Meresborough Road Meresbor	2018	NB	0.611	51.347
9019	Meresborough Road Meresbor	2018	NB	0.608	51.344
9020	A289 Gillingham Gate, Chathan	2018	EB	0.550	51.396
9021	A228, Rochester A228 Rocheste	2018	NB	0.443	51.355
9022	Rochester, Kent Borstal Street	2018	EB	0.485	51.373
9023	Rochester, Kent Esplanade	2018	NB	0.492	51.380
9024	Rochester, Kent Esplanade (Tu	2018	NB	0.498	51.387
9025	Medway Fenn Street, Rocheste	2018	NB	0.587	51.450
9026	Medway Avery Way, Rochester	2018	NB	0.647	51.472
9027	Medway Doust Way, Rocheste	2018	NB	0.513	51.385
9028	Medway Grange Road, Rochest	2018	EB	0.499	51.398
9029	Medway Christmas Street, Gilli	2018	EB	0.561	51.392
9030	Medway King Street, Wainscott	2018	EB	0.506	51.384
9031	Medway Higham Road, Roches	2018	EB	0.509	51.414
9032	Medway Lower Rainham Road,	2018	EB	0.588	51.386
9033	Medway Palmerston Road, Cha	2018	NB	0.525	51.370
9034	Medway Symons Avenue, Chat	2018	NB	0.531	51.372
9035	Medway Glencoe Road, Chatha	2018	NB	0.530	51.374
9036	Lonsdale Drive, Rainham Lonsd	2019	NB	0.604	51.357
9037	Hempstead Valley Drive Hemps	2019	NB	0.574	51.344
9038	Rochester Avenue	2019	EB	0.505	51.381
9039	Lambourn Way	2019	NB	0.546	51.337
9040	King George Road, Walderslade	2019	EB	0.514	51.343
9041	York Avenue, Walderslade	2019	NB	0.518	51.342
9042	Chestnut Avenue, Walderslade	2019	EB	0.517	51.343
9043	First Avenue, Walderslade	2019	EB	0.563	51.374
9044	Medway Dargets Road, Walder	2019	NB	0.533	51.339
9045	Medway Capstone Road, Walde	2019	NB	0.559	51.357
9046	Medway Durham Road, Rainha	2019	EB	0.588	51.356
9047	Medway Edwin Road	2019	NB	0.585	51.362
9048	Medway Tunnel Medway Tunn	2019	WB	0.519	51.401
9048	Medway Tunnel Medway Tunn	2019	EB	0.519	51.401
9049	Eastcourt Lane, Medway Eastcc	2019	NB	0.578	51.373
9050	Pear Tree Lane, Hempstead Pea	2019	NB	0.560	51.360
9051	Pear Tree Lane, Hempstead Pea	2019	NB	0.562	51.358
9052	Halling, Medway High Street	2021	NB	0.447	51.348
9113	Halling, Medway High Street	#N/A	NB	0.447	51.348
9053	Deanwood Drive, Medway Dea	2020	NB	0.585	51.337

Final Traffic Count Dataset					
CalValID	**Name**	**Year**	**Direction**	**X**	**Y**
9053	Deanwood Drive, Medway Dea	2020	EB	0.585	51.337
9054	Medway Berengrave Road	2020	NB	0.608	51.371
9055	Medway Station Road	2020	NB	0.618	51.371
9056	Medway Brompton Farm Road	2020	EB	0.495	51.409
9057	Hempstead Road, Gillingham H	2021	NB	0.578	51.357
9058	Borstral Street, Rochester Borst	2021	EB	0.493	51.378
9059	Gillingham, Medway Marlborou	2021	NB	0.541	51.387
9060	Gillingham, Medway Bloors Lar	2021	NB	0.597	51.368
9061	Strood, Medway Bryant Road	2022	NB	0.489	51.399
9062	Strood, Medway Gordon Road	2022	NB	0.489	51.399
9063	Medway Berber Road	2022	EB	0.493	51.401
9064	Medway Weston Road	2022	NB	0.489	51.398
9065	Medway Jersey Road	2022	NB	0.487	51.400
9066	Brompton Lane	2022	NB	0.489	51.408
9066	Medway Brompton Lane	2022	NB	0.489	51.408
9068	Montford Road	2022	NB	0.491	51.399
9069	Kitchener Road	2022	NB	0.493	51.401
9070	Glanville Road	2022	NB	0.492	51.398
9071	Medway Riverside	2022	WB	0.502	51.396
9072	Riverside, Strood Riverside	2022	WB	0.502	51.396
9073	Main Road	2022	EB	0.533	51.419
9073	Main Road	2022	WB	0.533	51.419
9074	Wigmore Road	2022	NB	0.579	51.343
9075	Edwin Road, Rainham Edwin Rc	2022	NB	0.585	51.367
9112	Eastcourt Lane, Medway Eastcc	#N/A	NB	0.581	51.380
9076	Chatham, Medway Cuxton Roa	2023	NB	0.484	51.390
9077	Chatham, Medway Horsted Wa	2023	NB	0.512	51.359
9078	Chatham, Medway Beacon Hill	2023	NB	0.549	51.370
9079	Esplanade, Rochester Esplanad	2023	NB	0.502	51.392
9080	Deanwood Drive, Gillingham De	2023	NB	0.599	51.346
9081	Best Street (W)	2016	EB	0.525	51.381
9081	Richard Street	2016	EB	0.525	51.381
9081	Best Street (E)	2016	EB	0.525	51.381
9084	Wainscott Road	2017	NB	0.510	51.407
9084	Frindsbury Hill	2017	NB	0.510	51.407
9084	Berwick Way	2017	NB	0.510	51.407
9084	Frindsbury Hill S	2017	NB	0.510	51.407
9084	Beneden Road	2017	NB	0.510	51.407
9089	Bloors Lane	2017	SB	0.595	51.366
9089	London Road (E)	2017	SB	0.595	51.366
9089	London Road (W)	2017	SB	0.595	51.366
9092	High Street (N)	2021	SB	0.447	51.345
9093	Howlsmere Close	2021	WB	0.447	51.345
9094	High Street (S)	2021	NB	0.447	51.345

Final Traffic Count Dataset					
CalValID	Name	Year	Direction	X	Y
9095	Kent Road (N)	2021	SB	0.444	51.354
9096	Kent Road (S)	2021	NB	0.443	51.353
9097	Vicarage Road	2021	EB	0.443	51.353
9098	Corporation Road (N)	2022	SB	0.504	51.391
9099	Gas House Road	2022	SB	0.504	51.391
9100	Corporation Road (S)	2022	SB	0.504	51.391
9101	Northgate	2022	SB	0.504	51.391
12579	Mill Lane	2022	SB	0.645	51.355
12579	Mill Lane	2022	NB	0.645	51.355
12770	Yelstead Road	2022	SB	0.614	51.320
12770	Yelstead Road	2022	NB	0.614	51.320
12771	South Street Road (Site 1)	2022	EB	0.630	51.319
12771	South Street Road (Site 1)	2022	WB	0.630	51.319
12963	Chalky Road	2022	EB	0.630	51.317
12963	Chalky Road	2022	WB	0.630	51.317
12885	Chestnut Street	2022	EB	0.690	51.343
12885	Chestnut Street	2022	WB	0.690	51.343
12886	Maidstone Road, Borden	2022	NB	0.670	51.335
12886	Maidstone Road, Borden	2022	SB	0.670	51.335
12719	Church Street	2022	EB	0.475	51.331
12719	Church Street	2022	WB	0.475	51.331
12720	New Court Road	2022	EB		
12720	New Court Road	2022	WB		
12722	Rochester Road South	2022	NB	0.488	51.337
12722	Rochester Road South	2022	SB	0.488	51.337
12945	Tunbury Avenue	2022	NB	0.523	51.334
12945	Tunbury Avenue	2022	SB	0.523	51.334
12721	0	2022	NB	0.482	51.331
12721	0	2022	SB	0.482	51.331
12921	High Street, Wouldham	2022	NB	0.458	51.349
12921	High Street, Wouldham	2022	SB	0.458	51.349
12922	Knowle Road	2022	EB	0.464	51.346
12922	Knowle Road	2022	WB	0.464	51.346
12924	School Lane	2022	EB	0.466	51.352
12924	School Lane	2022	WB	0.466	51.352
12925	Hall RoadSouth of Knowle Roac	2022	NB	0.458	51.345
12925	Hall RoadSouth of Knowle Roac	2022	SB	0.458	51.345
13112	Castle Way South of Park Road	2022	SB	0.423	51.306
13112	Castle Way South of Park Road	2022	NB	0.423	51.306
13113	Lunsford Lane North of Willow	2022	SB	0.434	51.306
13113	Lunsford Lane North of Willow	2022	NB	0.434	51.306
13114	Leybourne Way West of Tesco	2022	EB	0.440	51.312
13114	Leybourne Way West of Tesco	2022	WB	0.440	51.312
13115	New Hythe Lane	2022	SB	0.442	51.304

Final Traffic Count Dataset					
CalValID	Name	Year	Direction	X	Y
13115	New Hythe Lane	2022	NB	0.442	51.304
13116	Hall Road north of The Avenue	2022	SB	0.474	51.299
13116	Hall Road north of The Avenue	2022	NB	0.474	51.299
13118	Snodland Road (Week 1)	2022	WB	0.423	51.324
13118	Snodland Road (Week 1)	2022	EB	0.423	51.324
13119	Snodland Road (Week 2)	2022	WB	0.423	51.324
13119	Snodland Road (Week 2)	2022	EB	0.423	51.324
13120	Paddlesworth Road	2022	EB	0.421	51.333
13120	Paddlesworth Road	2022	WB	0.421	51.333
13121	Maidstone Road North of Barlir	2022	NB	0.505	51.333
13121	Maidstone Road North of Barlir	2022	SB	0.505	51.333
13122	A228 Ashton Way	2022	SB	0.416	51.307
13122	A228 Ashton Way	2022	NB	0.416	51.307
13131	A228 Malling Road	2022	SB	0.428	51.313
13131	A228 Malling Road	2022	NB	0.428	51.313
131311	A228 Castle Way	2022	NB		
131311	A228 Castle Way	2022	SB		
13131	Leybourne Way	2022	WB		
13131	Leybourne Way	2022	EB		
131331	A228 Castle Way	2022	SB		
131331	A228 Castle Way	2022	NB		
131332	M20 Offslip EB	2022	EB		
131332	M20 Onslip WB	2022	WB		
131334	M20 Onslip SB	2022	SB		
131334	M20 Offslip NB	2022	NB		
131333	A228 WB	2022	SB		
131333	A228 EB	2022	NB		
13138	Station Road	2022	SB		
13138	Station Road	2022	NB		
131381	A20 London Road (E)	2022	WB		
131381	A20 London Road (E)	2022	EB		
13138	A20 London Road (W)	2022	EB		
13138	A20 London Road (W)	2022	WB		
131381	New Road North of Medina Roa	2022	NB		
131381	New Road North of Medina Roa	2022	SN		
131421	A229 Onslip SB	2022	SB		
131421	A229 offslip NB	2022	NB		
131423	A229 offslip SB	2022	SB		
131423	A229 Onslip NB	2022	NB		
131422	A229	2022	EB		
131422	A229	2022	WB		
13143	A229	2022	EB	0.510	51.335
13143	A229	2022	WB	0.510	51.335
13143	M2 Offslip SB	2022	SB		

Final Traffic Count Dataset					
CalValID	**Name**	**Year**	**Direction**	**X**	**Y**
13143	M2 onslip NB	2022	NB		
131431	M2 Offslip NB	2022	NB		
131431	M2 Onslip SB	2022	SB		
131431	A2045 WB	2022	WB		
131431	A2045 EB	2022	EB		