# Longfield Solar Farm 

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11. Introduction

### 1.1 Context

AECOM has been appointed by Longfield Solar Energy Farm Ltd ('the Applicant') to prepare a Transport Assessment (TA) in support of the proposed Longfield Solar Farm ('the Scheme'), located approximately 1 km to the west of the village of Terling and 7 km to the northwest of Chelmsford in Essex.

The Order limits are approximately 453ha in size and located within the administrative areas of Braintree District Council (BDC) and Chelmsford City Council (CCC). The Order limits comprises existing agricultural land, which is separated by several areas of woodland, as well as parts of the existing highway network.

The Scheme comprises the construction, operation (maintenance), and decommissioning of a solar photovoltaic (PV) array electricity generating facility and energy storage facility with a total capacity exceeding 50 megawatts (MW) and export connection to the National Grid, including extension of the existing Bulls Lodge Substation. The Order limits includes the proposed Solar Farm Site, the Grid Connection Route and the Bulls Lodge Substation Site.

The electricity generated by the Scheme will be exported to the National Grid via the Grid Connection Route, via a connection between the Longfield Substation and the Bulls Lodge Substation Extension. This connection will also facilitate the import of electricity to be stored within the Battery Energy Storage System (BESS).

### 1.2 Document Purpose

The purpose of this TA is to demonstrate that the Scheme will be acceptable in transport and highway terms and it follows pre-application discussions held with Essex County Council (ECC) as the local highway authority and National Highways (formerly Highways England) as the highway authority for the Strategic Road Network (SRN). The TA has been prepared in accordance with a Transport Assessment Scoping Report (TASR) which was prepared by AECOM in April 2021, as well as the comments received from ECC Highways and National Highways in response to the Transport Assessment Scoping Report (TASR). An Environmental Statement (ES) has also been prepared which includes a chapter on transport and access.

### 1.3 Consultation

The development of this TA has been supported by an ongoing consultation process (details below), to agree the approach for the TA, allow mitigation measures to be incorporated into the Scheme design and to minimise adverse effects. The following provides a summary of the consultation which has taken place with respect to transport and access.

### 1.3.1 Initial Consultation (EIA Scoping Report)

An Environmental Impact Assessment (EIA) Scoping Report was prepared by AECOM in October 2020, to formally request a Scoping Opinion which was received from the Planning Inspectorate on behalf of the Secretary of State in December 2020. This included responses from ECC, National Highways, CCC and BDC in relation to transport and access. A summary of the comments received from the Planning Inspectorate with respect to transport and access, including AECOM's responses, is provided within Appendix A1.

### 1.3.2 ECC Highways

A pre-application meeting was held with ECC Highways on Monday $25^{\text {th }}$ January 2021 to review the routing and access strategy for the Scheme, as well as the scope and methodology for this TA. A copy of the meeting notes from the meeting with ECC Highways is held within Appendix A2, along with a copy of ECC's response to the meeting notes as received on $23^{\text {rd }}$ March 2021. The following key points were raised:

- The routing of Heavy Goods Vehicles (HGVs) will be expected to take place to/ from the west via Wheelers Hill and Cranham Road in order to prevent these larger vehicles from passing through the villages of Hatfield Peverel and Boreham e.g. along the B1137 Main Road.
- Construction vehicles travelling to/ from the Solar Farm Site will be expected to utilise a single point of access during the construction phase and the use of Protected Lanes should be avoided with the exception of emergency access if required.

Following the above, AECOM prepared a TASR to formally agree the scope and methodology for the TA based on the discussions held, which was issued to both ECC Highways and National Highways on Monday 19 ${ }^{\text {th }}$ April 2021. Further comments were received from ECC Highways on Monday $24^{\text {th }}$ May 2021 in response to the TA Scoping Report. These comments are also held within Appendix A2 and cover topics relating to the construction workforce, trip generation, trip distribution and construction impact.

The following additional meetings have been held with ECC Highways, with the supporting meeting minutes held within Appendix A3:

- $\quad 14^{\text {th }}$ July 2021 - Transport meeting with ECC Highways (as well as CCC and BDC) to provide a project update and a summary of pre-application responses, before running through the proposed Solar Farm Site access and routing strategy, the Grid Connection Route, other highway schemes and committed developments, scenarios and study area, construction workforce and trips, assessment of impacts and next steps.
- $\quad 5^{\text {th }}$ August 2021 - Park and Ride meeting with ECC to understand the potential viability of using the Chelmer Valley Park and Ride (CVPR) for construction worker parking during the construction period of the solar farm.
- $\quad 12^{\text {th }}$ August 2021 - Public Rights of Way (PRoW) meeting with ECC Highways (including PRoW officers) to run through the Scheme in detail in terms of managing PRoW throughout the lifetime of the Scheme, including with respect to crossings and separation of construction traffic, the Chelmsford Garden Community and post-decommissioning, the Grid Connection Route, desire lines, amenity considerations and next steps. The meeting was also used as an opportunity to follow up on actions from the Transport Meeting (14 ${ }^{\text {th }}$ July 2021).
- 14th December 2021 - Technical update meeting with local authorities (ECC, Chelmsford City Council (CCC) and Braintree District Council (BDC)) which included a general overview on the proposals for transport and access; and
- 20th January 2022 - Transport meeting with ECC Highways to provide updates in relation to the Grid Connection Route, Bulls Lodge Substation and PRoW management, as well as to find out more details in relation to CNEB (Phase 1) and the Cranham Road/ Drakes Lane overbridge.

As part of the consultation process, a number of principles have been agreed with ECC Highways including the proposed Solar Farm Site access location, visibility splays, crossing points on Noakes Lane and the approach for surveys and supporting assessment work for this TA. The relevant email correspondence is held in Appendices

## A4, A8 and A9.

### 1.3.3 National Highways

A pre-application meeting was held with National Highways on Thursday $28^{\text {th }}$ January 2021 to review the scope and methodology for this TA, as well as the proposed highway improvements (not related to the Scheme) in the surrounding area i.e. the A12 Chelmsford to A120 Widening Scheme as well as the Boreham Interchange improvements. A summary of the key points raised during the meeting is as follows:

- Explore a strategy to transfer construction staff to the Order limits i.e. to reduce the total number of vehicle trips;
- Review the additional vehicle movements on the SRN as a result of the Scheme;
- It was acknowledged that the Scheme was not expected to result in a significant impact on A12(T) Junction 19 (hereby referred to as the Boreham Interchange);
- Further discussions should be held to review potential synergies between National Highways proposed highway improvements and the construction/ operation of the Scheme; and
- Co-ordinated discussions should be held between National Highways and ECC Highways where necessary.

As set out above, a TASR was prepared to reflect the feedback received and then issued to National Highways on Monday $19^{\text {th }}$ April 2021. Pre-application comments were subsequently received from National Highways on

Wednesday 19th May 2021 in response to the TA Scoping Report. These comments are held within Appendix A5 and related to the construction workforce, routing arrangements, the operational phase and further consultation.

### 1.3.4 Synergies with A12 Chelmsford to A120 Widening Scheme

Following the pre-application meeting with National Highways, an additional meeting was held with National Highways and Jacobs on $8^{\text {th }}$ February 2021 to review the potential interactions between National Highways proposed highway improvements (A12 Chelmsford to A120 Widening Scheme) and the construction and operational phase of the proposed Longfield Solar Farm. This included a review of timescales for the delivery of the two projects, as well as the benefits of the proposed highway improvements in relation to Longfield Solar Farm and potential arrangements relating to compounds and the workforce during the construction phase.

A further project update meeting for the A12 Chelmsford to A120 Widening Scheme was held by Jacobs (with National Highways and Costain) on $11^{\text {th }}$ June 2021. This provided the opportunity for both the Longfield Solar Farm and A12 Chelmsford to A120 Widening project teams to share construction programmes, understand potential cumulative impacts and to discuss possible inter-relationships between the projects. A copy of the meeting notes is held within Appendix A6.

### 1.3.5 Statutory Consultation

The Applicant conducted a statutory consultation on the Scheme between $1^{\text {st }}$ June 2021 and $13^{\text {th }}$ July 2021. A summary of the comments relating to transport and access, as well as AECOM's responses to demonstrate how these comments have been addressed are held in Appendix A7. Further details of the responses received during consultation are included in a Consultation Report which will be submitted with the DCO Application.

### 1.3.6 Summary

A summary of the key themes in relation to transport and accessibility, including how these have been considered and addressed, is set out within Table 1 below.

Table 1: Main Matters Raised during Consultation

> Topic Consideration of Key Themes

| Construction Vehicles | Vehicle routing has been carefully considered, including with reference to HGVs where there is an agreed routing strategy in place. The number of HGV trips during the peak construction phase has been identified. A Framework Construction Traffic Management Plan (CTMP) has been prepared to provide further details of management and mitigation. |
| :---: | :---: |
| Construction Workforce | The majority of construction workers will travel to/ from the Order limits by car or shuttle service, with limited potential to travel by sustainable modes. Measures have been considered to reduce the impact of the construction workforce in terms of additional vehicle movements on the surrounding network. Details of the strategy in terms of local and non-local staff and how they would travel to/ from the Order limits have been provided in this TA and within the CTMP. |
| Vehicle Access | The Solar Farm Site will be served by a single point of access on Waltham Road. A speed survey has been carried out in the vicinity of the proposed access point as agreed with ECC Highways (and in accordance with CA185) in order to establish the appropriate junction visibility and forward Sight Stopping Distance (SSD). <br> The Bulls Lodge Substation will be accessed via the Boreham Interchange, Radial Distributor Road (RDR) and a new roundabout with the existing private road which serves the substation. The new roundabout has already been constructed as part of the RDR works. |
| Vehicle Routing | An appropriate routing and access strategy has been identified to prevent HGVs from using Protected Lanes and local roads through Boreham and Hatfield Peverel to the south. HGVs will be routed to/ from the west via Wheelers Hill and Cranham Road, with supporting highway improvements (carriageway widening) which will be implemented as part of the DCO application where necessary. There will be the potential to utilise the RDR following its completion prior to the construction phase. |
| Trip Distribution | HGVs will follow the agreed routing strategy. Journey to Work Census data has been used to forecast the trip distribution of construction workers, based on Chelmsford Middle Super Output |

Topic
Consideration of Key Themes

Area (MSOA) 005. Shuttle buses will travel to/ from local worker accommodation as well as the CVPR when this is utilised.

|  | CV |
| :---: | :---: |
| Road Safety | The collision record has been reviewed for the surrounding highway network. The findings of the Glint \& Glare assessment have also been reviewed. Stage 1 Road Safety Audits (RSAs) will also be carried out where necessary post-submission. |
| Public Rights of Way | Public Rights of Way (PRoW) will be carefully managed during the construction phase (and a separate Outline PRoW MP has also been prepared). Additional permissive routes will be provided for pedestrians and cyclists during the operational phase to facilitate connections across the Order limits, as well as with National Cycle Route 50 and Essex Way. |
| Highway Schemes | The potential overlap with and cumulative effects of other schemes within the vicinity of the Order limits e.g. A12 Chelmsford to A120 widening, Chelmsford North East Bypass (CNEB) and Boreham Interchange improvements have been considered. |
| Committed Developments and Traffic Growth | Committed developments including the Chelmsford Garden Community and Land North of Cranham Road, as well as highway improvement schemes including the A12 Chelmsford to A120 Widening Scheme have been considered. Future traffic growth has been determined using National Road Traffic Forecast (NRTF) growth factors with local National Trip Model (NTM) adjustments. |
| Construction Assessment | The construction assessment identifies any potential impacts and mitigation required in support of the Scheme, based on the forecast increase in trips on local roads and junctions. |
| Operational Assessment | The Scheme is expected to generate considerably fewer vehicle trips during the operational phase (compared to construction) and is not expected to have a significant impact on the surrounding highway network. |
| Decommissioning | The decommissioning effects of the Scheme are expected to be of a similar (or lesser) magnitude to the construction effects. On this basis, the construction period is considered to have the greatest change on the surrounding transport network and the construction phase has therefore been used to identify the likely impacts of the decommissioning phase including whether any mitigation will be required. A Decommissioning Strategy has been prepared as part of the ES which will be developed prior to the decommissioning phase to control the potential impacts. |
| Consultation/ Scoping | Ongoing consultation has been held with various stakeholders throughout the preparation of this TA, as well as the ES. |

This TA has been prepared based on the scope and methodology set out within the TASR and following the preapplication responses received from ECC and National Highways, as well as the discussions held above.

### 1.4 Additional Reports

The following reports have been prepared by AECOM in support of the Scheme and the DCO application:

- EIA Scoping Report (October 2020) chapter on transport and access;
- Preliminary Environmental Impact Report (PEIR, May 2021) chapter on transport and access.
- Framework Construction Traffic Management Plan (CTMP); and
- Environmental Impact Assessment (EIA) chapter on traffic \& transport.


### 1.5 Report Structure

The remainder of this TA is structured as follows:

- Section 2 sets out details relating to the Order limit's location, existing use and surrounding area;
- Section 3 provides an overview of relevant national and local transport policies;
- Section 4 provides details of the Order limit's accessibility by various travel modes including by vehicle, public transport, on foot and by bicycle;
- Section 5 provides details of the Scheme including in terms of the anticipated programme, vehicular access and pedestrian access arrangements;
- Section 6 sets out the forecast vehicular trip attraction and distribution for the Scheme during construction, operation and decommissioning;
- Section 7 reviews other committed developments in the area including in terms of highway improvements and other schemes;
- Section 8 sets out the assessment methodology in terms of study area, scenarios and types of assessment;
- Section 9 provides the highway impact assessment for the Scheme;
- Section 10 provides the walking and cycling assessment for the Scheme; and
- Section 11 sets out the summary to the report.


## 2. Site Location and Existing Use

### 2.1 Site Location

The Scheme is located within the administrative areas of Chelmsford and Braintree, in the county of Essex. The Order limits occupy circa. 453 ha of existing agricultural land to the east of Waltham Road, to the north of Boreham, Chelmsford. The Order limits consist of agricultural fields mainly under arable production, with some small parcels of pasture, interspersed with trees, hedgerows, small areas of woodland and farm access tracks. Bulls Lodge Substation and extension to it (which form part of the Scheme) are located within the southernmost extent of the Order limits, as well as parts of the existing highway network which will be utilised by vehicles travelling to/ from the Scheme.

A site location plan is included in Figure 1 below, as well as within Appendix B.


Contains Ordnance Survey data © Crown copyright and database right 2020
Figure 1: Site Location

### 2.2 Surrounding Area

The landscape features immediately surrounding the Order limits comprise a number of villages, including Fuller Street which is located approximately 300 m to the north, as well as Gamble's Green and Terling located 500m and 1.1 km to the east, Boreham located 500 m to the southwest and Hatfield Peverel which is located 1.5 km to the southeast. Chelmsford is located approximately 5.7 km to the southwest of the Order limits.

Boreham Road and Waltham Road run north to south along the western edge of the Solar Farm Site, with the A12(T) carriageway situated approximately 800 m beyond the southern edge of the Order limits. Waltham Road runs north/ south along the western boundary of the Solar Farm Site and becomes Boreham Road to the north of the junction with Cranham Road. The A12(T) and B1137 lie to the south and southwest of the Order limits, in addition to the Great Eastern Main Line (GEML) railway (which locally connects Chelmsford and Witham).

Across the remainder of the surrounding area, Terling Road, Terling Hall Road and Boreham Road are the main (albeit rural) north to south transport routes. Noakes Lane and Noakes Farm Road provide east to west access and pass through the Order limits. Braintree Road forms the main part of the road network to the north, extending between Terling and Fuller Street.

There is an extensive network of PRoW both within the Order limits and across the surrounding area. Further details of these are set out within Section 4 of this report and the Outline PRoW Management Plan (PRoW MP).

### 2.3 Study Area

The existing study area for the TA for the purposes of reviewing the key links and junctions on the surrounding highway network (including the collision data review) is identified within Figure 2 below. This includes the main existing routes to/ from the Order limits, including Wheelers Hill, Cranham Road and Waltham Road which will be utilised by HGVs during the construction phase as part of the agreed routing strategy.


Figure 2: Existing Study Area
The existing study area has been agreed with National Highways and ECC, as Highway Authorities for the SRN and local road network respectively. It should be noted that Boreham Road (Protected Lane) has been excluded from the study area as this will not be utilised by construction HGVs associated with the Scheme (as agreed with ECC Highways in January 2021).

It should be noted that the study area during the future baseline scenario (2025) will also reflect several upcoming highway improvements listed within Section 8, including the incorporation of the RDR which is currently under construction and the removal of the Generals Lane overbridge which is due to be demolished. A plan showing the surrounding highway network during the future baseline scenario of 2025 is held within Appendix C1.

## 3. Policy Context

### 3.1 Introduction

A summary of the key transport policies and guidance relating to the Order limits and the Scheme is set out below.

### 3.2 National Planning Policy

### 3.2.1 National Policy Statement for Energy (NPS EN-1)

The NPS for Energy (EN-1) (Ref 13.1) was published in 2011 and provides the basis for decisions regarding nationally significant energy infrastructure. Section 5.13 outlines the planning policy for traffic and transport, including guidance on undertaking relevant parts of the EIA. The most relevant paragraphs for this purpose are 5.13 .3 to 5.13 .5 which are set out as follows:

- Paragraph 5.13.3, which states that if a project is likely to have significant transport implications, a Transport Assessment should be included with the ES;
- Paragraph 5.13.4, which states that where appropriate, a Travel Plan to include demand management measures to mitigate transport impacts should be prepared; and
- Paragraph 5.13.5, which states that where additional transport infrastructure is proposed, this should be discussed with the relevant network providers (in terms of the possibility of co-funding by Government for any third-party benefits).

In addition, Section 3.1 relates to Infrastructure Planning Commission (IPC) decision making which includes the following:

- Paragraph 3.1.1, the UK needs all the types of energy infrastructure covered by this NPS in order to achieve energy security at the same time as dramatically reducing greenhouse gas emissions;
- Paragraph 3.1.2, it is for industry to propose new energy infrastructure projects within the strategic framework set by Government. The Government does not consider it appropriate for planning policy to set targets for or limits on different technologies;
- Paragraph 3.1.3, the IPC should therefore assess all applications for development consent for the types of infrastructure covered by the energy NPSs on the basis that the Government has demonstrated that there is a need for those types of infrastructure and that the scale and urgency of that need is as described for each of them in this Part; and
- Paragraph 3.1.4, the IPC should give substantial weight to the contribution which projects would make towards satisfying this need when considering applications for development consent under the Planning Act 2008.

The NPS EN-1 is currently under review and an updated draft was published for consultation in September 2021, where the above paragraphs are proposed to be relocated to Section 5.14 , supported by the following proposed updates:

- Paragraph 5.14.4, which also states that the assessment should consider any possible disruption to services and infrastructure (such as road, rail and airports); and
- Paragraph 5.14.8, which states that the Secretary of State (SoS) should only consider preventing or refusing development on highways grounds if there would be an unacceptable impact on highway safety, or residual cumulative impacts on the road network would be severe.


### 3.2.2 National Policy Statement for Renewable Energy Infrastructure (NPS EN-3)

The NPS for Renewable Energy Infrastructure (EN-3) (Ref 13.2) was published in 2011 and sets out the policies relating to electricity generation from renewable sources of energy, for consideration in conjunction with NPS EN1. It should however be noted that solar farms are not explicitly included within the document.

The NPS EN-3 is currently under review and an updated draft was published for consultation in September 2021, with the inclusion of solar photovoltaic generation impacts within Section 2.54. The most relevant paragraphs are set out as follows:

- Paragraph 2.54.3, which discusses the importance of assessing various potential routes to the site for the delivery of materials and components during the construction period;
- Paragraph 2.54.4, which considers the suitability of access roads for vehicles transporting components and the need to identify potential modifications where necessary;
- Paragraph 2.54.9, which states that consistent with EN-1, the SoS should be satisfied, taking into account the views of the relevant local highway authorities, that any abnormal loads can be safely transported whilst minimising inconvenience to other road users and that the environmental effects of this and other construction traffic, after mitigation, are acceptable; and
- Paragraph 2.54.10, which states that once solar farms are in operation, traffic movements to and from the Order limits are expected to be generally very light, and it is therefore very unlikely that traffic or transport impacts from the operational phase of a project would prevent it from being approved by the SoS.


### 3.2.3 National Planning Policy Framework (July 2021)

The Government's National Planning Policy Framework (NPPF) was originally published in March 2012 and later revised in July 2021, outlining the Government's planning policies and how they are expected to be applied. The TA will set out the key guidance points of relevance to this application.

The most relevant paragraphs in the context of transport are set out below:

- Paragraph 104 outlines that 'transport issues should be considered from the earliest of stages of planmaking and development proposals'; this is to ensure that:
- The potential impacts of development on transport networks can be addressed;
- Opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised - for example in relation to the scale, location or density of development that can be accommodated;
- Opportunities to promote walking, cycling and public transport use are identified and pursued;
- The environmental impacts of traffic and transport infrastructure can be identified, assessed and considered - including appropriate opportunities for mitigation and for net gains in environmental quality; and
- Patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places.
- Paragraph 110 outlines the key considerations when assessing sites to be allocated for development in plans or specific development applications. These are:
- Appropriate opportunities to promote sustainable transport modes can be (or have been) taken up, given the type of development and its location;
- Safe and suitable access to the Order limits can be achieved for all users;
- The design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance; and
- Any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.
- Paragraph 111 states that development should only be prevented or refused on highways grounds where there would be an unacceptable impact on highway safety, or the residual cumulative impacts of development on the road network would be severe
- Within this context, paragraph 112 states that applications for development should:
- Give priority first to pedestrian and cycle movements and then, as far as possible, facilitate access to high quality public transport;
- Address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
- Create places that are safe, secure and attractive, which minimise the scope for conflicts between pedestrians, cyclists and vehicles;
- Allow for the efficient delivery of goods, and access by service and emergency vehicles; and
- Be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.
- As outlined in Paragraph 113, all developments that generate significant amounts of movement should be required to provide a Travel Plan, and the application should be supported by a Transport Statement or TA so that the likely impacts of the proposal can be assessed.


### 3.2.4 National Planning Practice Guidance

The Government's Planning Practice Guidance; Travel Plans, TAs and Transport Statements in Decision Taking (2014) provides advice on when TAs and Transport Statements are required, and what they should contain. The most relevant paragraphs are set out below:

- Paragraph 002 states that Travel Plans, TAs and Transport Statements are all ways of assessing and mitigating the negative transport impacts of development in order to promote sustainable development. They are required for all developments which generate significant amounts of movements.
- Paragraphs 004 and 005 state that TAs primarily focus on evaluating the potential transport impacts of a development proposal and may propose mitigation measures to promote sustainable development and in order to avoid unacceptable or "severe" impacts where necessary.
- Paragraph 006 states that TAs support national planning policy and can positively contribute to encouraging sustainable travel, reducing traffic generation and detrimental impacts, reducing carbon emissions and climate impacts, creating accessible, connected and inclusive communities, improving health outcomes and quality of life, improving road safety and reducing the need for new development to increase existing road capacity of provide new roads.
- Paragraph 007 states that TAs should be established at an early stage and tailored to local circumstances, as well as proportionate to the size and scope of the proposed development. In addition, they should be brought forward through collaborative ongoing working between the local planning authority/ transport authority, transport operators, rail network operators, as well as National Highways where there may be implications for the strategic road network and other relevant bodies.
- Paragraphs 013 to 015 provide further details of when TAs are required, how the need and scope of a TA should be established and what information should be included.


### 3.3 Local Planning Policy

### 3.3.1 Essex Transport Strategy: The Local Transport Plan for Essex (June 2011)

The Local Transport Plan for Essex was published following an extensive period of consultation and evidence gathering. It sets out the county's aspirations for improving travel in the county, demonstrating the importance of meeting these aspirations to achieving sustainable long-term economic growth in Essex and enriching the lives of all residents. The Local Transport Plan is written to comply with the specific Department of Transport (DfT) requirements.

Within this document the Integrated Strategy (2011) is designed to support the delivery of the Local Transport Plan. One of the key actions from the Integrated Strategy is to support the growth of renewable and low carbon energy as a key sector and promote the growth and location of associated industries in Essex.

With respect to freight movement, Policy 6 states that the Council will manage the efficient movement of freight within the county by working with operators to ensure that HGVs use identified routes and that other freight traffic uses the most appropriate routes.

### 3.3.2 Essex County Council's Development Management Policies (February 2011)

ECC's Development Management Policies reflects the balance between the need for new development, employment opportunities, the regeneration and growth agenda, and protecting the transport network for the safe movement of people and goods. The following aims are identified:

- Protect and maintain a reliable and safe highway infrastructure;
- Improve access to services in both rural and urban locations;
- Offer where possible alternative travel options to the private car;
- Support and enhance public transport provision;
- Address the impact of commercial vehicles on the highway network and communities; and
- Support the aim and objectives of the County Council as the highway Authority.

The following policies are considered to be particularly relevant to this TA:

- Policy DM1 General Policy - the Highway Authority will protect the highway network for the safe and efficient movement of people and goods by all modes of travel by ensuring that:
- Where vehicular access is accepted in principle, new access points will be designed and constructed in accordance with the current standards and the number of access points will be kept to a minimum on roads designated within the Development Management Route Hierarchy;
- All proposals provide safe and convenient access for sustainable transport modes commensurate with their location; and
- Proposals will not create a significant potential risk or be detrimental to the safety of the highway network.
- Policy DM2 Strategic Routes/ Main Distributors, Policy DM3 Secondary Distributors and Policy DM5 Secondary or Multiple Vehicular Accesses state how the Highway Authority will protect the function of these categories of road.
- Policy DM4 Other Routes states that the Highway Authority will protect the function of all other routes by ensuring that new access points are designed and constructed in accordance with the current standards and by seeking improvement to existing substandard access.
- Policy DM7 Application of Design Standards states that the Highway Authority will protect the highway network for the safe and efficient movement of people and goods by ensuring that all works within the highway comply with the current national and ECC design standards appropriate for the category of road and ensuring that visibility splays and Stopping Sight Distances (SSD) for all roads comply with standards contained within the Design Manual for Roads and Bridges (DMRB) unless otherwise agreed with the Highway Authority.
- Policy DM8 Vehicle Parking Standards states that development proposals should comply with the Essex County Council's current "Parking Standards: Design and Good Practice" document, or its subsequent replacement.
- Policy DM9 Accessibility and Transport Sustainability - the Highway Authority will ensure that the developer will minimise the number of trips by the private vehicle through the provision of alternative transport modes and/ or associated infrastructure.
- Policy DM11 Public Rights of Way - any existing PRoW affected by development are required to remain protected and open for use by the public. These should remain on their existing alignment with the development designed and laid out to accommodate them. In the event there is no alternative and the development cannot accommodate the existing route, a diversion or alternative route shall be provided, this must be as convenient and suitable in all respects and constructed in accordance with current standards.
- Policy DM13 Transport Assessments - the Highway Authority will require a Transport Statement or TA to accompany a planning application in accordance with defined thresholds or where this is deemed to be necessary.
- Policy DM14 Safety Audits - the Highway Authority will require a Stage 1 Road Safety Audit including designer's response where appropriate, to accompany any planning application which seeks to materially alter the existing highway.
- Policy DM15 Congestion - the Highway Authority will protect the safety and efficiency of the public highway by requiring the developer to demonstrate that the development proposal has no detrimental impact upon the existing or proposed highway in congestion terms, as measured by assessing existing and proposed link/ junction capacity relevant to the development site, or by requiring appropriate mitigation measures.
- Policy DM19 HGV Movement - the Highway Authority will protect the safety and efficiency of the highway network by ensuring that any proposals which generate significant numbers of HGV movements are located in close proximity to the main road network.
- Policy DM20 Construction Management - the Highway Authority will protect the safety and efficiency of the highway network. This will include agreeing any temporary construction accesses with the Highway Authority prior to commencement of development.


### 3.3.3 The Chelmsford Local Plan 2013-2036 (May 2020)

CCC's Local Plan provides a new planning framework to meet local development needs for the period up to 2036. The Local Plan outlines the strategic priorities and long-term vision for Chelmsford and identifies locations for delivering housing and other strategic development needs such as employment, retail, leisure, community and transport development.

The key policies of relevance to this application are reproduced below.

- Strategic Policy S2 Addressing Climate Change and Flood Risk states that the Council, in addressing the move to a lower carbon future for Chelmsford, will encourage new development that provides opportunities for renewable and low carbon energy technologies and schemes.
- Policy DM19 Renewable and Low Carbon Energy states that proposals should not have a detrimental impact on highway safety.
- Policy DM27 Parking Standards states that the Council will have regard to the vehicle parking standards set out in the Essex Parking Standards when determining planning applications. Proposals which provide below these standards should be supported by evidence detailing the local circumstances that justify deviation from the standard.


### 3.3.4 Braintree District Council's Local Plan Review (2005)

BDC's Local Plan Review is one of the documents that makes up the development plan for the Braintree District. The Council is in the process of preparing a new Local Plan, which will eventually supersede the Local Plan Review in its entirety.

As part of the 'saved' policies within the document, Chapter 5 (Transport) includes policies on pedestrian networks, cycleways, public transport and generators of travel demand. Policy RLP 54 Transport Assessments states that all proposals for major new development will need to be accompanied by a TA in order to determine the effect of the proposal on traffic congestion, public transport, cycling and walking.

### 3.3.5 Braintree District Council's Core Strategy (September 2011)

BDC's Core Strategy forms part of the Local Development Framework and sets out the vision, objectives and strategy for the development of the District up to 2026. The aims of the Core Strategy reflect those in the Sustainable Community Strategy.

The Transport Chapter includes Policy CS7 Promoting Accessibility for All which states the following:

- The Council will work with partners to improve accessibility, to reduce congestion and reduce the impact of development upon climate change;
- Future development will be provided in accessible locations to reduce the need to travel;
- Sustainable travel will be encouraged through the requirement for travel plans from major developments, employers and institutions;
- Sustainable transport links will be improved, including provision of and contributions for cycling and walking and quality bus partnership;
- Traffic and car parking will be carefully managed to encourage sustainable travel; and
- The promotion of community-based initiatives such as car pools, car sharing and voluntary mini- bus services will be encouraged.


### 3.3.6 Braintree District Council's Emerging Local Plan 2013-2033

BDC's Local Plan 2013-2033 will include all major planning policy for the District, replacing the Core Strategy (2011) and the Local Plan Review (2005). The Publication Draft Local Plan (2017) is currently undergoing examination and includes the following policies within the transport and infrastructure chapter which are considered to be relevant to this TA:

- Policy LPP44 Sustainable Transport recognises that priority should be given to cycle and pedestrian movements and development proposals should provide appropriate provisions for all the following transport modes:
- Pedestrians through safe, accessible, direct and convenient design and layout of routes within the new development and the wider pedestrian network;
- Cyclists through safe design and layout of routes integrated into the new development and contributing towards the development and enhancement of the cycle network;
- Community transport, through measures that will promote car pools, car sharing and voluntary community buses, community services and cycle schemes
- Service, refuse and emergency vehicles where viable and practical; and
- Facilities for charging plug-in and other ultra-low emission vehicles.

The development will be required to be consistent with and contribute to the implementation of the 'Essex Transport Strategy' Local Transport Plan for Essex. Development which results in the loss of existing or proposed rights of way, will not be permitted unless alternative provision or diversions can be arranged which are; attractive, safe and convenient for public use.

- Policy LPP 45 Parking Provision states that parking on new developments, both commercial and residential, is covered in the Essex County Council Vehicle Parking Standards.
- Policy LPP 46 Protected Lanes, states that:
- The District Council will conserve the traditional landscape and nature conservation character of roads designated on the Proposals Map as Protected Lanes, including their verges, banks, ditches and natural features such as hedgerows and other structural elements contributing to the historic features of the lanes.
- Any proposals that would have a materially adverse impact on the physical appearance of these Protected Lanes or generate traffic of a type or amount inappropriate for the traditional landscape and nature conservation character of a protected lane, will not be permitted.

The Local Plan recognises the NPPF stance on promoting transport system in favour of sustainable transport modes, however, it also recognises that different policies and solutions will be necessary in different areas.

### 3.4 Summary

The Scheme with respect to transport and access is considered to be in accordance with relevant national and local policy as demonstrated within this TA, by providing mitigation to avoid any adverse impacts on highway safety or any 'severe' residual cumulative impacts on the road network. A separate Framework CTMP and Outline PRoW MP have also been prepared.

## 4. Accessibility Appraisal and Existing Conditions

### 4.1 Introduction

This section provides a summary of the accessibility of the Order limits via the surrounding highway network, as well as by public transport, cycling and on foot.

### 4.2 Highway Network

### 4.2.1 Strategic Highway Network

The A12(T) is a dual carriageway road which forms part of the SRN and is managed by National Highways. The A12(T) can be accessed via the B1137 Main Road, Boreham at the Boreham Interchange, and/ or the B1137 The Street, Hatfield Peverel at Junctions 20A and 20B (the Hatfield Peverel Interchange).

The A130 Essex Regiment Way (ERW) is a dual carriageway road which links Little Waltham, north of Chelmsford, to the A131 in the north heading towards Braintree. The A130 is classified by ECC as a Priority 1 Road (PR1) and provides access to Wheelers Hill, which joins with Leighs Road, Drakes Lane and Cranham Road to the east which then provides access to both Boreham Road and Waltham Road. In the south the route links with the A1016 near Belstead Hall and with the A12(T) at the Boreham Interchange (Junction 19).

In addition to the above, the Boreham Interchange improvements and the RDR including the new roundabout with the private road to/ from Bulls Lodge Substation are currently under construction and are expected to be complete (and therefore operational) both prior to and during the future assessment scenario (2025). Further details are provided within Section 7.

A plan showing the surrounding highway network, including the indicative alignment of the RDR, is held within Appendix C1.

### 4.2.2 Local Highway Network

## B1137 Main Road

The B1137 Main Road is classified as a Priority 2 Road (PR2) and is a single carriageway road with footways along the majority of its length and street lighting provision within the villages of Boreham and Hatfield Peverel. The existing speed restrictions applicable on the B1137 vary along its route, comprising the National Speed Limit ( 60 mph ) between the Boreham Interchange and the village of Boreham, 40 mph within Boreham itself, a section of National Speed Limit ( 60 mph ) to the east of Boreham, a section of 50 mph speed restriction to the west of Hatfield Peverel and 30 mph within Hatfield Peverel itself.

## Waltham Road and Boreham Road

Waltham Road and Boreham Road are rural single carriageway roads (both classified as PR2s) and together connect Boreham in the south with Great Leighs in the north and serve a mixture of localised residential, leisure, agricultural, commercial and industrial land uses. These roads are subject to the National Speed Limit (60mph) and do not contain pedestrian footways or street lighting provision which is in keeping with their rural character. The Solar Farm Site borders Waltham Road and Boreham Road at various locations.

## Cranham Road and Wheelers Hill

Waltham Road forms a priority junction with Cranham Road approximately 2.8 km to the north of the B1137 Main Road. Cranham Road is a rural single carriageway road which provides a connection to the A130 ERW to the west via Wheelers Hill. Cranham Road and Wheelers Hill are both classified as PR2s, are subject to the National Speed Limit ( 60 mph ) and do not contain any pedestrian footways or street lighting provision.

## Braintree Road

Braintree Road runs to the north of the Order limits and is a rural single carriageway road which is accessed via Boreham Road at its western extent and serves the villages of Fuller Street and Terling. Braintree Road is rural in
character, subject to the National Speed Limit ( 60 mph ) and does not contain any pedestrian footways or street lighting provision.

## Terling Hall Road

Terling Hall Road runs along the eastern boundary of the Solar Farm Site and is accessed via the B1137 Main Road to the south, where there is a $12^{\prime} 6$ " height restriction as the route passes underneath the railway line. Terling Hall Road is a narrow rural single carriageway road which principally serves agricultural properties.

## Generals Lane, Private Road and Bulls Lodge Substation

Generals Lane is a rural single carriageway road (classified as a local road) which is accessed via the Boreham Interchange and passes over the A12(T) eastbound on-slip as well as the railway line. The road is subject to the National Speed Limit ( 60 mph ) and does not contain any pedestrian footways or street lighting provision. Generals Lane provides access to a private road (subject to a 30 mph speed limit) which subsequently runs east and provides access to the existing Bulls Lodge Substation. It is understood that the private road was previously upgraded to accommodate the works which were carried out when the substation was originally constructed.

As previously mentioned, Generals Lane will be demolished as part of the current ongoing works at the Boreham Interchange; further details are provided within Section 7.

A plan showing the surrounding highway network is held within Appendix C1.

### 4.2.3 Protected Lanes

The Chelmsford Local Plan 2013-2036 identifies a number of Protected Lanes and byways which are located near to the Order limits and have historic and landscape value. The Council intends to protect these lanes and byways by preserving, as far as possible, the trees and hedgerows, banks, ditches and verges which contribute to their character, and by resisting development proposals which have an adverse environmental impact upon them (such as a material increase in traffic) in line with Strategic Policy S3 (Conserving and Enhancing the Historic Environment) and Policy DM13 (Non-Designated Heritage Assets).

The following local routes have protected status as set out within the Chelmsford Local Plan 2013-2036, shown on the Adopted Policies Map for Chelmsford North (Map 1):

- Boreham Road to the north of the junction with Cranham Road;
- Braintree Road between the junctions with Boreham Road (west) and Fairstead Hall Road (east) including a short section which passes through the northern extents of the Solar Farm Site;
- Terling Hall Road to the east of the Solar Farm Site;
- The following local roads which run through the centre of the Solar Farm Site:
- Noakes Lane which runs between the junctions with Boreham Road (west) and Terling Hall Road (east) and provides access to Noakes House, Hankins Farm and Little Weathers; and
- Birds Farm Lane which runs between the junctions with Boreham Road (west) and Noakes Lane (east) and provides access to Bird's Farm Cottage.

A plan showing the Protected Lanes located near the Order limits is held within Appendix C2.

### 4.2.4 Traffic Flows

## Peak Hours

The following time periods have been reviewed to inform the assessment based on traffic count data collected in both 2019 and 2021 which is summarised further below:

- 07:00 to 08:00 - development peak hour during the construction phase (based on the winter profile which offers a robust assessment);
- 08:00 to 09:00 - network peak hour for the local highway network;
- 17:00 to 18:00 - network peak hour for the local highway network; and
- 18:00 to 19:00 - development peak hour during the construction phase (based on the winter profile as above).


## Baseline Data (2019)

Due to issues of collecting new reliable traffic data during the Covid-19 Pandemic, a review of historic traffic count data was initially carried out to identify useful sources of survey data for the TA. This has subsequently been supplemented with further data where necessary, which is summarised further below.

As part of the above review, three separate Automatic Traffic Counts (ATCs) were carried out by Advanced Transport Research Ltd at the following locations on Waltham Road or Boreham Road in October 2019:

1. Waltham Road, approximately 350 m to the north of the junction with the B1137 Main Road (for a 14-day period between $10^{\text {th }}$ October and $23^{\text {rd }}$ October 2019)
2. Waltham Road, approximately 100 m to the south of the junction with Cranham Road (for a seven-day period between $10^{\text {th }}$ October and $16^{\text {th }}$ October 2019)
3. Boreham Road, approximately 850 m to the north of the junction with Drakes Lane (for a seven-day period between $10^{\text {th }}$ October and $16^{\text {th }}$ October 2019).

These traffic counts are considered to provide representative traffic flows within the study area given these were carried out during a neutral month in 2019 and prior to the Government's Covid-19 restrictions which initially came into effect in March 2020. The locations of these traffic counts are shown in Figure 3 below.


Figure 3: Location of Traffic Count Surveys

Further to the above, recent traffic count data has been identified for Cranham Road based on ATCs which were carried out in February 2019 in support of the Site Access Technical Review (162328/N01) prepared in support of the consented development on land to the north of Cranham Road (Ref: 16/01394/OUT).

In addition, Department for Transport (DfT) count data has been collated for the surrounding highway network for 2019. This data provides Annual Average Daily Flows (AADF) which represents the number of vehicles travelling past a count point on an average day of the year. The following DfT count data has been utilised in support of this TA:

- DfT Site 941145: B1137 Main Road, to the west of the junction with Waltham Road; and
- DfT Site 60001: A130 ERW, to the north of the roundabout with Channels Drive.

In terms of the SRN, traffic data for the A12(T) has been collated from National Highways' WebTRIS database for October 2019, to provide consistency with the above counts:

- WebTRIS Site 6261/2: A12(T) northbound, to the north of the northbound off-slip at the Boreham Interchange;
- WebTRIS Site 6261/1: A12(T) northbound off-slip at the Boreham Interchange;
- WebTRIS Site 6262/2: A12(T) southbound, to the south of the southbound off-slip at the Boreham Interchange; and
- WebTRIS Site 6262/1: A12(T) southbound off-slip at the Boreham Interchange.

A summary of the baseline traffic data which has been utilised in support of this TA is set out in Table 2 below. This has been presented for the traditional weekday peak hours, as well as the anticipated development peak hours and across the day.

Table 2: Baseline Traffic Data (2019)

| Location | Source | Date | Period | Total Vehicles (Two-Way) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{aligned} & \text { 07:00- } \\ & \text { 08:00* } \end{aligned}$ | $\begin{gathered} \text { 08:00- } \\ \text { 09:00 } \end{gathered}$ | $\begin{aligned} & \text { 17:00- } \\ & \text { 18:00 } \end{aligned}$ | $\begin{aligned} & \text { 18:00- } \\ & \text { 19:00* } \end{aligned}$ | 24 hours |
| Waltham Road <br> (Site 1, north of Main Rd) | ATR | $\begin{gathered} \text { October } \\ 2019 \end{gathered}$ | Average <br> Weekday | 868 | 833 | 849 | 452 | 7,939 |
| Waltham Road <br> (Site 2, south of Cranham Rd) | ATR | $\begin{gathered} \text { October } \\ 2019 \end{gathered}$ | Average <br> Weekday | 880 | 822 | 811 | 420 | 7,368 |
| Boreham Road <br> (Site 3, south of Leighs Rd) | ATR | $\begin{gathered} \text { October } \\ 2019 \\ \hline \end{gathered}$ | Average <br> Weekday | 727 | 531 | 482 | 238 | 3,878 |
| Cranham Road | Site Access <br> Technical Review | $\begin{gathered} \text { February } \\ 2019 \end{gathered}$ | Average <br> Weekday | 455 | 369 | 400 | 218 | 4,003 |
| B1137 Main Road | DfT Count (941145) | 2019 | AADF | 765 | 760 | 778 | 633 | 7,829 |
| A130 ERW | DfT Count (60001) | 2019 | AADF | 2,476 | 2,306 | 2,551 | 2,013 | 27,334 |
| Boreham Interchange (SB Off-Slip) | WebTRIS (6262/1) | October 2019 | Average <br> Weekday | 1,626 | 1,638 | 938 | 699 | 13,681 |
| Boreham Interchange (NB Off-Slip) | WebTRIS (6261/1) | $\begin{gathered} \text { October } \\ 2019 \\ \hline \end{gathered}$ | Average <br> Weekday | 1,355 | 1,232 | 1,096 | 936 | 15,223 |
| A12(T) | WebTRIS <br> (4 locations) | $\begin{gathered} \text { October } \\ 2019 \end{gathered}$ | Average <br> Weekday | 7,612 | 7,278 | 6,373 | 5,111 | 92,175 |

*anticipated development peak hours in terms of traffic flows during the winter (worst-case scenario)
The 2019 traffic flows are also shown by the traffic flow diagrams held within Appendix R.

## Additional Data (2021)

Following discussions with ECC Highways (see related email correspondence in Appendix A4), further traffic count data has been obtained to inform the local highway modelling for the Waltham Road/ Cranham Road junction and the B1137 Main Road/ Waltham Road junction. These surveys were carried out on Tuesday 7th September 2021
(between 07:00-10:00 and 16:00-19:00) following the relaxation of the Covid-19 restrictions in July 2021 and the return of the schools (including New Hall School) after the Summer school holiday period. The 2021 baseline traffic flows have been adopted in place of the 2019 baseline data where appropriate. The full results of the surveys are held within Appendices D1 to D4 and a summary (including a comparison against the 2019 baseline data in brackets where applicable) is set out below in Table 3.

Table 3: Baseline Traffic Data (2021)

| Traffic Count | Location | Total Vehicles (Two-Way) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 07:00-08:00* | 08:00-09:00 | 17:00-18:00 | 18:00-19:00* |
| Waltham Road/ Cranham Road Junction | Boreham Road (north of Cranham Road) | 210 | 277 | 258 | 166 |
|  | Waltham Road (south of Cranham Rd) | $\begin{gathered} 657 \\ (-123) \end{gathered}$ | $\begin{gathered} 747 \\ (-125) \end{gathered}$ | $\begin{gathered} 719 \\ (-92) \end{gathered}$ | $\begin{aligned} & 416 \\ & (-4) \\ & \hline \end{aligned}$ |
|  | Cranham Road | $\begin{gathered} 467 \\ (+12) \\ \hline \end{gathered}$ | $\begin{gathered} 498 \\ (+129) \\ \hline \end{gathered}$ | $\begin{gathered} 483 \\ (+83) \\ \hline \end{gathered}$ | $\begin{gathered} 286 \\ (+68) \\ \hline \end{gathered}$ |
| Main Road/ Waltham Road Junction | Waltham Road (north of Main Rd) | $\begin{array}{r} 743 \\ (-125) \\ \hline \end{array}$ | $\begin{gathered} 855 \\ (+22) \\ \hline \end{gathered}$ | $\begin{gathered} 813 \\ (-36) \\ \hline \end{gathered}$ | $\begin{gathered} 491 \\ (+39) \\ \hline \end{gathered}$ |
|  | B1137 Main Road (west of Waltham Road) | $\begin{gathered} 698 \\ (-67) \end{gathered}$ | $\begin{gathered} 893 \\ (+133) \end{gathered}$ | $\begin{gathered} 988 \\ (+210) \end{gathered}$ | $\begin{gathered} 617 \\ (-16) \end{gathered}$ |
|  | B1137 Main Road (east of Waltham Road) | 831 | 880 | 1,061 | 652 |

*anticipated development peak hours in terms of traffic flows during the winter (worst-case scenario)
The above results indicate the following when comparing the 2019 baseline data with the 2021 traffic flows:

- Traffic flows on Waltham Road to the south of Cranham Road were lower in September 2021 than in October 2019, but were comparable to the north of the B1137 Main Road;
- Traffic flows on Cranham Road to the west of Waltham Road were higher in September 2021 than in October 2019; and
- Traffic flows on the B1137 Main Road were considerably higher during the network peak hours in September 2021 than in October 2019, whilst being comparable during the anticipated development peak hours.

The above findings for the B1137 Main Road indicate that traffic levels through the B1137 Main Road/ Waltham Road junction are currently higher than would typically be expected and that this is considered to be due to ongoing works at the Boreham Interchange. Following discussions with ECC Highways, it is understood that this is also a result of traffic rat-running along Waltham Road and B1137 Main Road to avoid existing congestion on the A130. This has therefore been considered as part of the local junction modelling below where necessary.

The 2021 traffic flows are also shown by the traffic flow diagrams held within Appendix R.

### 4.2.5 Highway Capacity

## Local Junction Modelling

As agreed with ECC Highways, local junction modelling has been undertaken for the Waltham Road/ Cranham Road and B1137 Main Road/ Waltham Road junctions, to the north and south of the proposed Solar Farm Site access on Waltham Road. The modelling has been carried out using PICADY for priority T-junctions, which is the appropriate industry-standard software that forms part of the Transport Research Laboratory's "Junctions 9" suite. The junction geometry for the existing network has been taken from Ordnance Survey (OS) mapping and checked against aerial imagery and on-site observations. Plans showing the measurements which have been used to inform the modelling are held in Appendices F1 to F3.

The individual junction peaks (in terms of overall traffic flows) have been reviewed for each junction, in addition to the proposed development peak hours of 07:00-08:00 and 18:00-19:00, both for model validation purposes and to provide a worst-case assessment. The 2021 model results have been compared against the 2021 queue length surveys and adjustments have subsequently been applied to the models where necessary, to reflect the surveyed queues more accurately. Further details are provided within each section below.

The PICADY results tables provide the maximum Ratio of Flow to Capacity (RFC) values predicted for each arm, together with the maximum average queue (in vehicles) and the average overall delay incurred by each vehicle passing through the junction. An RFC value of 0.85 is usually taken to indicate that the manoeuvre is operating at practical capacity, while a value of 1.0 indicates that it is operating at theoretical capacity. Once a manoeuvre is operating at an RFC above 0.85 it becomes very sensitive to any increase in traffic, and the software is not well suited to model the impact of additional traffic on approaches already operating close to or above theoretical capacity, tending to exaggerate the resultant increase in queue lengths.

## Waltham Road/ Cranham Road Junction

The results for the Waltham Road/ Cranham Road junction based on the 2021 traffic counts are presented in Table 4 below. It should be noted that no model adjustments have been made following a comparison of the outputs with the queue length surveys (see Appendix D3) given the following:

- The modelled queue lengths on Cranham Road (maximum of one vehicle) are comparable to the surveyed queue lengths (typically 0-1 vehicles) during the AM scenarios and the PM development peak hour; and
- The modelled queue length on Cranham Road (maximum of four vehicles) is comparable to the surveyed queue lengths (average of 1-2 vehicles, maximum of six vehicles) during the PM junction peak hour.

Table 4: PICADY Summary - Waltham Road/ Cranham Road Junction - 2021 Existing Situation

|  | AM Dev Peak (07:00-08:00) |  |  | AM Junction Peak(07:45-08:45) |  |  | PM Junction Peak(16:15-17:15) |  |  | PM Dev Peak <br> (18:00-19:00) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | RFC | Max Q (vehs)* | Delay (s) | RFC | Max Q (vehs)* | Delay (s) | RFC | Max Q (vehs)* | Delay (s) | RFC | Max Q (vehs)* | Delay <br> (s) |
| Cranham Road (Left Turn) | 0.00 | 0 | 5.8 | 0.01 | 0 | 7.9 | 0.03 | 0 | 6.9 | 0.01 | 0 | 5.8 |
| Cranham Road (Right Turn) | 0.29 | 1 | 10.3 | 0.44 | 1 | 13.6 | 0.79 | 4 | 33.3 | 0.36 | 1 | 10.6 |
| Waltham Road (Ahead/ Right Turn) | 0.02 | 0 | 6.0 | 0.02 | 0 | 5.9 | 0.01 | 0 | 5.7 | 0.02 | 0 | 6.5 |
| Overall Junction <br> Delay (secs/ veh) |  | 2.1 |  |  | 3.5 |  |  | 16.2 |  |  | 4.6 |  |

*rounded up for robustness

The above shows that the Waltham Road/ Cranham Road junction currently operates well within capacity during the development peak hours, as well as during the AM junction peak hour (07:45-08:45), with minimal queuing. In terms of the PM junction peak hour (16:15-17:15), the junction operates within, but close to practical capacity, with some queuing on Cranham Road. The full modelling results are held in Appendix G1

## B1137 Main Road/ Waltham Road Junction

The results for the B1137 Main Road/ Waltham Road junction based on the 2021 traffic counts are presented in Table 5 below. It should be noted that the following model adjustments have been made to provide comparable outputs with the queue length surveys (see Appendix D4), with separate models set up for the AM and PM scenarios:

- AM Scenarios - Traffic flows were increased by $10 \%$ on Waltham Road, in order for the modelled queue lengths (maximum of 17-19 vehicles) to be comparable to the surveyed queue lengths (maximum of 13-18 vehicles).
- PM Scenarios - Traffic flows were reduced by 5\% on Waltham Road, in order for the modelled queue lengths (maximum of 11 vehicles) to be comparable to the surveyed queue lengths (maximum of 13 vehicles).

Table 5: PICADY Summary - B1137 Main Road/ Waltham Road Junction - 2021 Existing Situation

|  | AM Dev Peak <br> (07:00-08:00) |  |  | AM Junction Peak(07:45-08:45) |  |  | PM Junction Peak(16:45-17:45) |  |  | PM Dev Peak(18:00-19:00) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | RFC | Max Q (vehs)* | Delay <br> (s) | RFC | Max Q (vehs)* | Delay (s) | RFC | Max Q (vehs)* | Delay (s) | RFC | Max Q (vehs)* | Delay (s) |
| Waltham Road (Left Turn) | 0.98 | 6 | 142.8 | 0.98 | 8 | 138.8 | 0.88 | 5 | 46.6 | 0.40 | 1 | 11.9 |
| Waltham Road (Right Turn) | 0.97 | 11 | 130.5 | 0.97 | 11 | 135.7 | 0.90 | 6 | 66.0 | 0.57 | 2 | 21.2 |
| B1137 Main Road (Ahead/ Right Turn) | 0.73 | 4 | 16.8 | 0.73 | 4 | 15.4 | 0.38 | 1 | 7.5 | 0.31 | 1 | 6.3 |
| Overall Junction Delay (secs/ veh) |  | 43.5 |  |  | 48.2 |  |  | 21.5 |  |  | 6.3 |  |

*rounded up for robustness

The above shows that the B1137 Main Road/ Waltham Road junction currently operates above practical capacity during both AM scenarios, as well as during the PM junction peak hour, with significant queuing on Waltham Road and some queuing on the B1137 Main Road. The junction operates well within capacity during the PM development peak hour (18:00-19:00) with minimal queuing. The full modelling results are held in Appendix G2.

As identified within Table 3, traffic flows on the B1137 Main Road (and therefore through the junction) during the traditional network peak hours (08:00-09:00 and 17:00-18:00) were approximately $20 \%$ higher during the 2021 surveys than compared to the 2019 historic data. Following discussions with ECC Highways, it is understood that this partly reflects local rat-running on this part of the local network, due to the temporary works at the Boreham Interchange i.e. road users are currently travelling along the B1137 Main Road and Waltham Road, to bypass temporary congestion at the Boreham Interchange and along the A130 White Hart Lane. These works are expected to be completed by the construction phase (2025).

## Summary

The modelling results indicate that the Waltham Road/ Cranham Road junction currently operates well within capacity during all periods except for the PM junction peak (16:15-17:15) where the junction operates close to practical capacity. The B1137 Main Road/ Waltham Road junction currently operates above practical capacity during the peak periods partly owing to the temporary works at the Boreham Interchange and associated ratrunning along the B1137 Main Road and Waltham Road.

An assessment of the forecast impacts of the Scheme in terms of additional traffic passing through the above junctions as well as the proposed Solar Farm Site access junction is set out within Section 8.

### 4.2.6 Vehicle Speeds <br> Baseline Data (2019)

As part of the TASR, the 2019 survey results for Waltham Road and Boreham Road were initially reviewed to identify existing $85^{\text {th }}$ percentile vehicle speeds and the associated visibility requirements for the proposed Solar Farm Site access on Waltham Road. A summary of these results is set in Table 5 below and the associated survey data is held within Appendices D1 and D2.

Additional Data (2021)
Following discussions with ECC Highways (see related email correspondence in Appendix A4), an additional speed survey was carried out at the location of the proposed Solar Farm Site access on Waltham Road in May 2021 (neutral month), to confirm the visibility requirements for the proposed Solar Farm Site access. Whilst Covid19 restrictions remained in place at this time, it was agreed with ECC Highways that these were not expected to affect vehicle speeds. The speed survey was conducted in accordance with CA 185 which forms part of DMRB and sets out the requirements for measuring vehicle speeds and determining $85^{\text {th }}$ percentile speeds. A summary of the survey results is set out in Table 5 below and the associated survey data is held within Appendices D3 and D4.

## Summary

A summary of the speed survey results is set out in Table 6 below. The results have been reported in kilometres per hour (kph) for the purposes of calculating the visibility requirements for the proposed Solar Farm Site access within Section 8.

Table 6: Waltham Road Speed Survey Results

| Date | Location | Direction | $85^{\text {th }}$ Percentile <br> Speed (kph) |
| :---: | :---: | :---: | :---: |
| October 2019 | Waltham Road, circa. 350 m to the north of the junction with the B1137 Main Road (Location 1) | Northbound | 71.8 kph |
|  |  | Southbound | 72.9 kph |
|  | Waltham Road, circa. 100m to the south of the junction with Cranham Road (Location 2) | Northbound | 70.5 kph |
|  |  | Southbound | 69.7 kph |
|  | Boreham Road, circa. 850 m to the north of the junction with Drakes Lane (Location 3) | Northbound | 71.9 kph |
|  |  | Southbound | 66.8 kph |
| May 2021 | Waltham Road, circa. 100 m to the south of the junction with Cranham Road (Location 2) | Northbound | 66.3 kph |
|  |  | Southbound | 64.1 kph |

Source: Surveys carried out by Advanced Transport Research Ltd
Based on the above, the highest vehicle speeds on Waltham Road were recorded in 2019 (at all locations). The 2019 survey results (highest recorded $85^{\text {th }}$ percentile speeds) have therefore been used to determine the visibility requirements at the proposed Solar Farm Site access for robustness, as agreed with ECC Highways (see Section $8)$.

### 4.2.7 Collision Review

Personal Injury Accident (PIA) data has been obtained from ECC for the agreed study area (see Figure 2) for the most recent five-year period available at the time of the request, between $1^{\text {st }}$ April 2016 and $311^{\text {st }}$ March 2021. The review has however been carried out for the most recent three-year period prior to the introduction of Covid-19 restrictions in March 2020, representing the period between $1^{\text {st }}$ March 2017 and $29^{\text {th }}$ February 2020. The only exception is for Waltham Road in the vicinity of the proposed Solar Farm Site access, where the full five-year period has been examined. Further details including the locations and severity of the recorded PIAs during this period are contained in Appendix E.

A total of 58 collisions were recorded within the study area during the three-year period, with an additional two collisions on Waltham Road in the vicinity of the proposed Solar Farm Site access in July 2020. A summary of the collisions by location is set out below, in the following order:

- Waltham Road, to the south of Cranham Road, within 250 m of the proposed Solar Farm Site access location;
- Wheelers Hill and Cranham Road (forming part of the agreed routing strategy for HGVs); and
- Remainder of the study area.

For the purposes of this review, a collision cluster is considered to represent a location where three or more collisions were recorded during the three-year period, representing a rate of at least one collision per year. A further review has then been carried out to determine whether there appears to be any patterns in terms of contributory factors or circumstances.

It should be noted that unless otherwise stated, the collisions occurred during daylight hours on a dry road surface.

## Waltham Road, south of Cranham Road, within 250m of Proposed Solar Farm Site Access

The following comment was raised by ECC Highways on $22^{\text {nd }}$ April 2021 as part of the consultation process with respect to the proposed Solar Farm Site access location on Waltham Road (see Appendix A4 for further details):
"The speed of vehicles appears to be quite high at this location, so the speed survey to establish actual speeds will be essential. There is also evidence of at least one recent speed related accident in this location, so you will need to investigate the accident history too. The reflector marker posts on the outside of the bend have been wiped out and the edge of carriageway significantly damaged. There is also very little verge between the edge of carriageway
and the brow of the ditch which would make it difficult to put in mitigation measures. As there is clearly an issue here, any junction would need to fully comply with the standards because any departures, or exceptions to the RSA, are unlikely to be signed off by the highway authority".

Given ECC's comment above, a review of the full five-year collision record (between $1^{\text {st }}$ April 2016 and $31^{\text {st }}$ March 2021) has been carried out for this part of the network. The following three incidents were identified during this period:

- One incident (slight) occurred approximately 145 m to the southeast of the Waltham Road/ Cranham Road junction (approximately 20 m to the southeast of the proposed Solar Farm Site access), when a northbound driver lost control of their vehicle on a wet road surface causing their vehicle to enter a ditch (no other vehicles were involved). This incident occurred on 29 ${ }^{\text {th }}$ September 2019.
- One incident (slight) occurred approximately 185 m to the southeast of the Waltham Road/ Cranham Road junction (approximately 60 m to the southeast of the proposed Solar Farm Site access), when a northbound driver lost control of their vehicle on a wet road surface causing their vehicle to roll onto its side (no other vehicles involved). This incident occurred on $8^{\text {th }}$ July 2020.
- One incident (slight) occurred approximately 145 m to the southeast of the Waltham Road/ Cranham Road junction (approximately 20 m to the southeast of the proposed Solar Farm Site access), when a northbound motorcyclist lost control of their vehicle after encountering debris (lump of concrete) on the carriageway, causing their vehicle to enter a ditch (no other vehicles involved). This incident occurred on 19 ${ }^{\text {th }}$ July 2020.

In view of the above, a total of three incidents (all slight) occurred within the vicinity of the proposed Solar Farm Site access on Waltham Road all involving a single vehicle travelling northbound and a loss of control due to a slippery road surface or debris in the carriageway, resulting in a vehicle to leave the carriageway. This section of the Waltham Road carriageway has since been resurfaced (in May 2021) and it is considered that this should help to alleviate any concerns given that a 'slippery/ defective road surface' was cited as a contributory factor for each of the three incidents reported above. The resurfaced carriageway is shown in Figure 4 below.


Figure 4: Waltham Road - Resurfaced Carriageway
Wheelers Hill and Cranham Road
Two collisions were recorded on the Wheelers Hill/ Cranham Road section during the three-year study period which are summarised as follows:

- One collision (slight) occurred on Cranham Road which involved a head-on collision between two vehicles (cars) on a wet road surface.
- One incident (slight) occurred on Wheelers Hill which involved a driver losing control of their vehicle (car) on a wet road surface resulting in a subsequent collision with a tree (no other vehicles were involved).

These collisions are not considered to constitute a cluster or pattern.

## Remainder of Waltham Road, more than 250 m south of the Proposed Solar Farm Site Access

Two collisions were recorded on Waltham Road (more than 250 m south of the proposed Solar Farm Site access) during the three-year study period which are summarised as follows:

- One incident (slight) occurred on Waltham Road to the south of the junction with Holts Lane which involved a driver losing control of their vehicle after an animal ran out into the carriageway, causing them to collide with a brick wall.
- One collision (serious) occurred on Waltham Road near the junction with Holts Lane which involved a driver losing control of their vehicle on a wet (and oil covered) road surface resulting in a head-on collision with another vehicle.

These collisions are not considered to constitute a cluster or pattern.

## A12(T) Mainline Carriageway

A total of eight collisions were recorded on the $\mathrm{A} 12(\mathrm{~T})$ mainline carriageway during the three-year study period which are summarised as follows:

- One collision (slight) occurred to the south of the Boreham Interchange on the A12(T) southbound carriageway which involved two vehicles on a wet road surface during dark conditions;
- One collision (slight) occurred between the off-slip and on-slip for the Boreham Interchange on the A12(T) northbound carriageway which involved two vehicles on a wet road surface during dark conditions;
- One collision (slight) occurred just to the northeast of the Boreham Interchange on the A12(T) southbound carriageway which involved four vehicles on a wet road surface during dark conditions;
- One incident (slight) occurred just to the northeast of the Boreham Interchange on the A12(T) southbound carriageway which involved a single vehicle after a loss of control;
- Two collisions (both slight) occurred to the northeast of Boreham on the A12(T) southbound carriageway which involved two vehicles, with one incident occurring on a wet road surface;
- One incident (serious) occurred to the northeast of Boreham on the A12(T) northbound carriageway which involved two vehicles on a wet road surface;
- One incident (slight) occurred just to the northeast of the Boreham Interchange on the A12(T) northbound carriageway which involved a single vehicle after a loss of control.

In view of the above, there is not considered to be any collision clusters on the A12(T) mainline carriageway within the study area, with fewer than three collisions (i.e. less than one collision per year) at any location. It should also be noted that National Highways is seeking to implement improvements along the section of the A12(T) to the east of the Boreham Interchange as part of the A12 Chelmsford to A120 Widening Scheme.

## Boreham Interchange

A total of 16 collisions were recorded on the $\mathrm{A} 12(\mathrm{~T})$ slip roads to/ from Boreham Interchange or at one of the junction roundabouts during the three-year study period which are summarised as follows:

- One incident (fatal) occurred on the A12(T) southbound off-slip (towards the Boreham Interchange) after three people exited their vehicle (emitting smoke) on the slip road with two of them subsequently being struck by a passing vehicle (one fatality and one serious injury);
- One collision (slight) occurred on the A12(T) southbound on-slip (away from the Boreham Interchange) which involved three vehicles;
- Four collisions (one serious, three slight) occurred on the A12(T) northbound off-slip (towards the Boreham Interchange), of which:
- Two incidents (one serious, one slight) involved a single vehicle loss of control, with one incident occurring on a wet road surface during the hours of darkness;
- Two collisions (both slight) involved two vehicles with one incident following a collision with a lighting column and the other following a collision on the mainline carriageway.
- Three collisions (two serious, one slight) occurred at the A12/ A130/ Drovers Way/ Winsford Way roundabout, including a collision between a vehicle and a cyclist on the Winsford Way approach (slight, wet road surface, dark conditions), a rear end shunt type collision on the A130 north-eastern roundabout approach (slight) and a collision on the roundabout itself (serious, wet road surface);
- Four collisions (all slight) occurred at the A12/ A130/ A138/ Generals Lane roundabout, which each involved a collision between two vehicles on the roundabout itself, with two occurring on a wet road surface;
- Three collisions (one serious, two slight) occurred at the A12/ B1137 Main Road roundabout, two of which involved a collision between a car and motorcycle on the roundabout (one serious on a wet road surface during the hours of darkness), and the other involved a collision between a car and a goods vehicle on the roundabout (slight, during the hours of darkness).

In view of the above, there appears to be collision clusters at the A12(T) northbound off-slip, the A12/ A130/ Drovers Way/ Winsford Way roundabout, the A12/ A130/ A138/ Generals Lane roundabout and the A12/ B1137 Main Road roundabout. Of these, there doesn't appear to be a pattern for the collisions which occurred on the A12(T) northbound off-slip or the A12/ A130/ Drovers Way/ Winsford Way roundabout as these involved separate circumstances/ contributory factors. However, the collisions at the A12/ A130/ A138/ Generals Lane roundabout and the A12/ B1137 Main Road roundabout all involved two vehicles on the roundabout itself.

It should be noted that improvements are currently being carried out at the Boreham Interchange in support of the Beaulieu Park Development and delivery of the RDR. Furthermore, National Highways is seeking to implement further improvements at the Boreham Interchange as part of the A12 Chelmsford to A120 Widening Scheme.

A130

A total of 21 collisions were recorded on the A130 during the three-year study period which are summarised as follows from west to east across the study area:

- One collision (serious) occurred on the A130 ERW to the north of the A130/ Pratts Farm Lane roundabout, which involved a collision between two vehicles;
- Two collisions (both slight) occurred at the A130/ Pratts Farm Lane roundabout, which involved a collision between two or more vehicles, with one incident occurring during the hours of darkness;
- Two collisions (both slight) occurred on the A130 ERW to the south of the A130/ Pratts Farm Lane roundabout, which involved a collision between two or more vehicles on a wet road surface, with one incident occurring during the hours of darkness;
- Three collisions (two serious, one slight) occurred at the A130/ Little Waltham Road junction, of which one incident involved a vehicle contravening the 'no right turn' sign to Little Waltham Road resulting in a collision (slight), one involved a collision between two vehicles after a vehicle attempted to turn out of Little Waltham Road (serious) and the other involved a rear end shunt collision between two vehicles on the A130 (slight);
- One collision (serious) occurred on the A130 ERW to the north of the A130/ A1016 roundabout, which involved a collision between two vehicles;
- Two collisions (one serious, one slight) occurred at the A130/A1016 roundabout, both involving a collision between two vehicles during the hours of darkness, with one incident occurring on a wet road surface;
- Two collisions (both slight) occurred at the A130/ New Bowers Way roundabout, both involving a collision between two vehicles, with one incident occurring during the hours of darkness;
- Four collisions (two serious, two slight) occurred on the A130 White Hart Lane (WHL) to the east of the A130/ New Bowers Way roundabout, of which one incident involved a head-on collision between two vehicles after a loss of control (serious, during the hours of darkness), one involved a collision between a vehicle and a pedestrian (slight), one involved a rear end shunt type collision between two vehicles (slight) and the other involved a collision between a vehicle and pedestrian on Oak Lodge Tye near the junction with the A130 (serious);
- One collision (slight) occurred at the A130/ Colchester Road roundabout which involved a collision between two vehicles during the hours of darkness;
- Three collisions (one serious, two slight) occurred on the A130 Colchester Road to the east of the A130/ Colchester Road roundabout which involved a collision between a vehicle and a cyclist on the BMW Dealership access road near the junction with the A130 (slight, on a wet road surface during the hours of
darkness), one involved a collision between an HGV turning out of Fordson Road and a motorcyclist on the A130 (serious, on a wet road surface) and the other involved a collision between a vehicle and a pedestrian near the BMW Dealership when temporary traffic signals were in place (slight, during the hours of darkness).

In view of the above, there appears to be collision clusters at the A130/ Little Waltham Road junction, as well as along the A130 WHL to the east of the A130/ New Bowers Way roundabout and along the A130 Colchester Road to the east of the A130/ Colchester Road roundabout. However, there doesn't appear to be a pattern for the collisions which occurred at these locations, as these involved separate circumstances/ contributory factors.

It should be noted that the RDR (currently under construction) will provide a connection between the A130 ERW and the Boreham Interchange including via a new bridge over the railway line and A12( $T$ ) northbound on-slip. The existing A130 will be re-classified following the completion of the RDR and there is expected to be a reduction in traffic levels on this part of the network as strategic (non-local) traffic re-routes onto the RDR.

## A1016 Chelmer Valley Road

Two collisions (one serious, one slight) were recorded on the A1016 Chelmer Valley Road to the west of the A130/ A1016 roundabout which both involved a collision between two or more vehicles, with one incident (slight) occurring on the northeast-bound carriageway on a wet road surface during the hours of darkness and the other (serious) involving a rear end shunt type collision between two vehicles on the southwest-bound carriageway. These collisions are not considered to constitute a cluster or pattern.

## B1137 Main Road

A total of five collisions were recorded on the B1137 Main Road during the three-year study period which are summarised as follows:

- One collision (slight) involved an eastbound vehicle striking a central island near the junction with Villiers Place during the hours of darkness, causing the vehicle to roll onto its roof (no other vehicles were involved);
- One collision (slight) involved a rear end shunt type collision between an eastbound vehicle and cyclist near the junction with Church Road;
- One collision (serious) involved a collision between a vehicle attempting to turn right from Main Road to Boreham House and a passing motorcyclist;
- One collision (slight) involved a rear end shunt type collision between two vehicles attempting to turn right from Main Road to Boleyn Way during the hours of darkness;
- One collision (slight) involved a collision between two vehicles at the Main Road/ Waltham Road junction and involved an unmarked police car travelling under a blue light.

In view of the above, all five collisions occurred at different locations on the B1137 Main Road and appear to have involved separate circumstances/ contributory factors. These collisions are not therefore considered to constitute a cluster or pattern.

## Leighs Road

One incident (slight) occurred on Leighs Road involving a driver losing control of their vehicle during the hours of darkness (no other vehicles were involved). This is considered to be an isolated incident.

## Remainder of the Network

No collisions were recorded at the following locations across the study area, for the three-year period reviewed:

- A130 ERW/ Wheelers Hill roundabout
- A130 ERW/ Armistice Avenue roundabout
- A130 WHL/ New Abbotts Way roundabout


## Summary

The main outcomes of the above collision review are as follows:

- Whilst there appears to be a pattern of loss of control incidents on Waltham Road in the vicinity of the proposed Solar Farm Site access, this section of the carriageway has since been resurfaced which should alleviate any concerns given that a 'slippery/ defective road surface' was cited as a contributory factor for all three of these incidents.
- Whilst several collision clusters/ patterns have been identified at the A12 Boreham Interchange, improvements are currently being carried out at the junction in support of the Beaulieu Park Development and delivery of the RDR. Furthermore, National Highways is seeking to implement further improvements at the Boreham Interchange as part of the A12 Chelmsford to A120 Widening Scheme.
- Whilst several collision clusters have been identified along the A130, there doesn't appear to be a pattern for these collisions which involved separate circumstances/ contributory factors. In addition, the RDR will provide a new connection between the A130 ERW and the Boreham Interchange, resulting in the reclassification of the existing A130 and an anticipated reduction in traffic levels on this part of the network as strategic (non-local) traffic re-routes onto the RDR.
- No collision clusters or patterns were identified for the remainder of the network including on Waltham Road (further to the south), Cranham Road, Wheelers Hill, the B1137 Main Road and the A12(T) mainline carriageway.
- No collisions occurred at the A130/ Wheelers Hill roundabout, A130/ Armistice Avenue roundabout of the A130/ New Abbots Way roundabout within the three-year period of review.

A further review of the collision record is carried out within Section 8 with respect to the additional traffic movements which are forecast to be generated by the Scheme, to determine whether any mitigation may be required to resolve any road safety concerns.

### 4.3 Public Transport

### 4.3.1 Bus

The nearest bus stops to the Solar Farm Site are located on the B1137 Main Road in the village of Boreham to the south, which are served by bus routes 71 and 73. A summary of these bus services is set out in Table 7.

Table 7: Bus Service Summary on Main Road, Boreham (towards Chelmsford)

| Bus Stop | Service | Route | Typical Frequency |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Mon-Fri | Sat | Sun |
| Main Road (Boreham, opp. Waltham Road) | $\begin{gathered} 71 \\ \text { First Essex } \end{gathered}$ | Colchester Town Centre Chelmsford City Centre | Eight morning services Ten afternoon services | Five morning services Seven afternoon services | None |
| Main Road (Boreham, opp. Waltham Road) | 71A <br> First Essex | Colchester Town Centre Chelmsford City Centre | Three morning services Five afternoon services | Three morning services Five afternoon services | None |
| Main Road (Boreham, opp. Waltham Road) | 71D <br> First Essex | Witham - Chelmsford City Centre | One morning service | None |  |
| Main Road (Boreham, opp. Waltham Road) | 71E <br> First Essex | Colchester Town Centre Chelmsford City Centre | Three morning services One afternoon service | None |  |
| Main Road (Boreham, opp. Waltham Road) | $\begin{gathered} 73 \\ \text { First Essex } \end{gathered}$ | Maldon - Chelmsford City Centre | One morning service | One morning service | None |
| Main Road (Boreham, opp. Waltham Road) | $73 \mathrm{~A}$ <br> First Essex | Heybridge - Moulsham | Six daily services (one every 2-3 hours) | Six daily services (one every 2-3 hours) | None |

During the AM peak, the journey time from Hatfield Peverel railway station to the B1137 Main Road via bus route 73A is approximately five minutes. The route from Chelmsford railway station to the B1137 Main Road via bus route 71 or 73 is approximately 22 minutes.

Further to the above, there is a bus stop on Braintree Road to the north of the Order limits, which is served by two additional bus routes. A summary of these bus services is set out in Table 8.

Table 8: Bus Service Summary on Braintree Road (towards Braintree)

| Bus Stop | Service | Frequency |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Route | Weekday | Sat | Sun |  |
| Braintree Road <br> (Fairstead, Three Ashes <br> Corner) | 345 <br> (Hedingham) | Fuller Street, Square and <br> Compasses - Braintree Town <br> Centre | Wednesdays only <br> (one daily service) | No service |
| Braintree Road <br> (Fairstead, Three Ashes <br> Corner) | SB21 <br> (Traveline) | Fuller Street, Square and <br> Compasses - Braintree Town <br> Centre | Monday to Friday <br> (one daily service) | No service |

There are no bus stops located on Waltham Road, Boreham Road or Cranham Road within close proximity of the Solar Farm Site, or on Generals Lane or the private road near to Bulls Lodge Substation.

### 4.3.2 Rail

Hatfield Peverel railway station is located nearest to the Order limits, approximately 4 km to the northeast of Boreham. The station is served by the GEML and provides a connection to Ipswich, Colchester and Braintree to the north, as well as Chelmsford, Shenfield, Stratford and London Liverpool Street to the south.

Chelmsford railway station is located approximately 7 km to the southwest of Boreham and is served more frequently than Hatfield Peverel station. There is also a direct shuttle service which runs between Chelmsford station and the CVPR.

A summary of the rail services to/ from Hatfield Peverel and Chelmsford stations is set out below in Table 9.
Table 9: Rail Service Summary

| Station | Service | Typical Frequency |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Weekday | Sat | Sun |
| Hatfield Peverel | Ipswich and/ or Colchester to London Liverpool Street | 7 morning services (07:00-10:00) <br> 6 afternoon services (16:00-19:00) | One service per hour | One service per hour |
|  | London Liverpool Street to Colchester and/ or lpswich | 4 morning services (07:00-10:00) <br> 7 afternoon services (16:00-19:00) | One service per hour | One service per hour |
| Chelmsford | Ipswich and/ or Colchester to London Liverpool Street | 23 morning services (07:00-10:00) <br> 17 afternoon services (16:00-19:00) | Five services per hour | Two services per hour |
|  | London Liverpool Street to Colchester and/ or Ipswich | 13 morning services (07:00-10:00) <br> 16 afternoon services (16:00-19:00) | Five services per hour | Two services per hour |

Source: Greater Anglia Timetable (Accessed $27^{\text {th }}$ September 2021)

### 4.4 Walking and Cycling

### 4.4.1 Pedestrians

No footways are provided alongside Waltham Road, Boreham Road or Cranham Road in the immediate vicinity of the Solar Farm Site. A National Walking trail (Essex Way) runs to the north of the Order limits, which runs north along the River Ter, eastwards along the southern boundary of Sandy Woods before reaching Terling and then heading northwards. Essex Way ultimately runs from Epping in the south to Harwich in the north.

There are a number of PRoW which pass through or run adjacent to the Order limits which are summarised below. The details of the PRoW have been obtained from the PRoW Interactive Map available on the ECC website. The PRoW (footpaths and bridleways) routes are also shown on a plan held within Appendix C3.

The following PRoW pass through the Order limits, running progressively from north to south:

- PRoW 221_30 (far north): The footpath commences in the west from Boreham Road and continues for approximately 560 m south of Lyons Hall Cottage where the route joins with PRoW 113_11 in the east.
- PRoW 113_11 (far north): The footpath runs through the Solar Farm Site south of Sandy Wood, joining with PRoW 221_30 to the west, PRoW, 113_35 to the north and PRoW 113_13 to the east; the route is approximately $2,030 \mathrm{~m}$ in length.
- PRoW 221_53 (north): The footpath commences in the west from Boreham Road and continues for approximately 480 m through Scarlett's Wood where it links with PRoW 113_33 in the east.
- PRoW 113_33 (north): Runs from the west where it links with PRoW 221_53 at Scarlett's Wood and continues eastwards for approximately $1,160 \mathrm{~m}$ past Scarlett's Farm towards Terling Hall Road.
- PRoW 113_25 (north): The footpath commences to the west of Noakes Lane and runs eastwards near Noakes Farm for approximately 490m before joining Noakes Farm Road.
- PRoW 113_30 (centre): Runs from where it joins with PRoW 213_4 to the west, continuing eastwards to the north of Ringers Wood for approximately $1,140 \mathrm{~m}$ until crossing Terling Hall Road to the east where it links to PRoW 113_28.
- PRoW 213_4 (centre): Runs from where it joins with PRoW 113_30 to the north, continuing southwards for approximately 600m where is joins PRoW 113_32.
- PRoW 113_32 (centre): The footpath commences in the south in Porter's Wood where it joins with PRoW 213_18 and then runs northwards for approximately $1,150 \mathrm{~m}$ where it joins with PRoW 213_5 before continuing further northwards for approximately 350 m where it joins to PRoW 213_4.
- PRoW 213_5 (centre): The footpath commences in the west from Waltham Road leading into the Solar Farm Site to the east along Stocks Farm, the route runs for approximately 480m before joining with PRoW 113_32.
- PRoW 213_18 (south): The footpath commences in the west from Waltham Road leading into the Solar Farm Site to the east, the route continues to the north of Kenwood House for approximately 580m where it joins with PRoW 113_32 in Porter's Wood.
- PRoW 213_19 (south): The footpath commences in the west from Waltham Road leading into the Solar Farm Site to the east, the route continues to the south of Kenwood House and further east for approximately 570 m where it joins with PRoW 90_36 south of Toppinghoehall Wood.
- PRoW 213_20 (south): The footpath commences in the west from Waltham Road and runs eastwards for approximately 650 m where it forms a connection with Chantry Lane.
- PRoW 213_21 (south): The footpath commences in the north from Waltham Road and runs along Wallace's Lane to the southwest before heading south, forming a connection with PRoW 213_17 and then heading further south through the Order limits; the route is approximately $1,480 \mathrm{~m}$ in length.
- PRoW 213_48 (southwest): The bridleway commences in the north at a connection with PRoW 213_16 and PRoW 213_17, running south to join a private road and then running west along the private road for approximately 550m to join PRoW 213_49 and PRoW 213_15.
- PRoW 213_23 (southwest): The bridleway commences in the west at a connection with PRoW 213_8 and PRoW 213_10, running east to cross the RDR and a private road before continuing southeast towards the A12( T ). The route is approximately 900 m in length.

Further to the above, the following PRoW run either adjacent to or within close proximity to the Order limits, running progressively from north to south:

- PRoW 113_35 (far north): Footpath, north of Sandy Wood;
- PRoW 76_16 (far north): Footpath, north of Sandy Wood;
- PRoW 113_13 (far north): Footpath, east of Sandy Wood;
- PRoW 113_12 (far north): Footpath, east of Sandy Wood;
- PRoW 113_22 (northeast): Footpath, east of Sparrow's Farm;
- PRoW 113_28 (northeast): Footpath, east of Roll's Farm;
- PRoW 113_27 (northeast): Footpath, north of Ringer's Farm;
- PRoW 221_54 (northwest): Footpath, north of Chopping's Wood;
- PRoW 221_56 (northwest): Footpath, south of Chopping's Wood;
- PRoW 221_57 (northwest): Footpath, north of Lawns Farm;
- PRoW 213_1 (northwest): Footpath, north of Bird's Farm;
- PRoW 213_2 (west): Footpath, southwest of Boreham Road;
- PRoW 225_60 (west): Footpath, north of Cranham Road;
- PRoW 213_51 (west): Footpath, north of Cranham Road
- PRoW 225_37 (west): Footpath, southwest of Power's Farm;
- PRoW 225_19 (west): Footpath, northeast of Wheeler's Farm;
- PRoW 225_36 (west): Footpath, south of Wheeler's Farm;
- PRoW 90_36 (south): Footpath, south of Toppinghoehall Wood;
- PRoW 213_17 (south): Footpath, south of Wallace's Farm Cottages;
- PRoW 213_24 (southwest): Footpath, south of Bulls Lodge Quarry;
- PRoW 213_49 (southwest): Footpath, west of Bull's Lodge Quarry; and
- PRoW 213_15 (southwest): Footpath, south of Walford Farm House.

During early consultation with ECC Highways in January 2021, it was advised that pedestrian surveys should be carried out in spring/ summer 2021 (if possible) for any pedestrian or cycle routes to be potentially affected by the Scheme. However, given the ongoing restrictions during the COVID-19 pandemic and based on the proposed mitigation set out within the Framework CTMP and the Outline PRoW MP, the proposed impacts on PRoW within the Order limits during construction are not expected to be significant. No requirement to carry out surveys was identified during a PRoW Transport Meeting with ECC Highways in August 2021, and ECC Highways subsequently confirmed (in January 2022) that surveys were not considered to be required in view of the above. As such, no baseline data is available regarding the local pedestrian and cycle usage.

A review of the above with respect to the Scheme is set out within Section 9.

### 4.4.2 Cycling

Cycle access has been considered to explore the possibility of construction and operational staff cycling to the Order limits. For the purpose of cycle accessibility, cycle times of 10 and 20 minutes at an average speed of 15 kph (equating to 2.5 km and 5 km respectively) have been assumed to the proposed Solar Farm Site access on Waltham Road.

Within a 2.5 km distance, the Solar Farm Site can be accessed from Boreham to the south and Gamble's Green to the northeast. Within a 5 km distance, the Solar Farm Site can also be accessed from Great Leighs to the north, Terling to the northeast, Hatfield Peverel to the southeast, parts of Springfield and Chelmer Village (within northeast Chelmsford) to the southwest and Little Waltham to the west.

National Cycle Network (NCN) Route 50 passes within 5 km of the proposed Solar Farm Site access on Waltham Road, running along Terling Hall Road to the east of the Solar Farm Site, before running through Terling and joining Braintree Road to run towards Great Leighs to the northwest. There are no on or off-road cycling facilities on Waltham Road, Boreham Road or Cranham Road to the west of the Solar Farm Site.

The above cycle catchment areas and NCN Route 50 are illustrated on a plan held within Appendix C4

## 5. The Scheme

### 5.1 Introduction

This section of the TA provides further details of the Scheme including the proposed programme, the construction, operational and decommissioning phases, the proposed Solar Farm Site, Grid Connection Route and Bulls Lodge Substation Site layout and access arrangements, vehicle types, routing and parking arrangements, as well as pedestrian and cycle access.

It should be noted that the Design Principles for the Scheme have been assessed. There are not expected to be any new, different or worse effects than what has been assessed for any scheme built within the Design Principles. The transport impact assessment is based on the worst-case parameters in terms of daily construction staff and HGVs during the peak phase of construction (based on the Design Principles).

### 5.2 Scheme Summary

### 5.2.1 Introduction

The Scheme consists of the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) array electricity generating facility and energy storage facility and supporting grid connection infrastructure. The Scheme will allow for the generation, storage and export of more than 50 megawatts (MW) for export to the National Grid and will include an extension to the existing Bulls Lodge Substation.

The Order limits has been separated into the following three components which are explored further below:

- Solar Farm Site;
- Grid Connection Route; and
- Bulls Lodge Substation Site.


### 5.2.2 Solar Farm Site

The Solar Farm Site will occupy the majority of the Order limits and will consist of the following:

- Solar PV array works area;
- Longfield Substation;
- (BESS compound;
- Ancillary infrastructure; and
- Landscape works area.

The Solar Farm Site will be accessed via a new proposed point of access on Waltham Road. The Solar Farm Site will be fenced and protected via security measures such as CCTV. Internal access tracks, habitat management and drainage will also be provided within the fenced areas of the solar farm.

## Solar PV Array Works Area

The Solar PV array works area will contain PV tables (formed of PV panels and mounting structures) set out in rows and grouped into PV arrays. Supporting infrastructure, as well as secondary access tracks and ancillary works will be provided.

## The Longfield Substation

The Longfield Substation will be a new substation located to the north of Toppinghoehall Wood within the Solar Farm Site. It will be connected to the PV arrays and BESS via low voltage distribution cables in order to collect electricity (at 33 kV ) from those components of the Scheme. The substation will then convert the electricity to 400 kV for onward transmission to the Bulls Lodge Substation via the Grid Connection Route.

The BESS Compound
The BESS Compound will allow for the storage, importation, and exportation of energy from the Solar Farm Site to the National Grid. This will contain battery energy storage structure and units, as well as supporting infrastructure, cabling, local buildings, primary access tracks, fencing and other associated works such as CCTV.

## Ancillary Infrastructure

The Ancillary Infrastructure includes the areas within the Solar Farm Site (outside of the Solar PV Array Works Area, BESS Compound, Longfield Substation, or Landscape Works Area) which contain Low Voltage Distribution Cables to the Longfield Substation and any associated tracks or drainage.

## Landscape Works Area

The remainder of the solar farm will be made up of the landscape works area which will contain field margins, setaside, fencing, CCTV as well as other bio-diversity measures and associated works.

### 5.2.3 Grid Connection Route

The proposed Grid Connection Route comprises an area within which the high voltage cables will be laid within Order limits, connecting the Solar Farm Site to the Bulls Lodge Substation. The cables will be buried underground along with jointing pits to be installed at regular intervals to facilitate the installation and joining of cables.

The Grid Connection Route will run to the east of the Bulls Lodge Substation, crossing PRoW 213_21 and then Waltham Road. The Grid Connection Route will subsequently run northwards towards the Solar Farm Site, crossing both PRoW 213_20 and then PRoW 219_19. The affected PRoW will be temporarily diverted around each works area during the cable installation. Temporary Traffic Management (TTM) will also be implemented on Waltham Road to allow the cable to be installed.

### 5.2.4 The Bulls Lodge Substation Site

The Bulls Lodge Substation is located within the southernmost extent of the Order limits and is currently accessed via the Boreham Interchange and then a private road from the west. The Scheme includes the upgrade, modification and extension of the existing Bulls Lodge Substation, including two new points of access approximately 180 m to the west and 30 m to the east of the existing substation access respectively. The western access will be utilised during both construction and operation, whereas the eastern access will only be utilised during construction and then removed prior to the operational phase.

### 5.2.5 Components

The following principal infrastructure will be provided to support the Scheme:

- PV panels, mounting structures, tables and arrays;
- Solar stations (inverters, transformers and switchgear);
- Distribution cables;
- BESS and supporting compound;
- Longfield Substation;
- Grid connection cables;
- Primary and secondary access tracks, and car parking;
- Ancillary buildings (office, warehouse and plant buildings)
- Fencing and security measures;
- Drainage;
- An extension of the existing Bulls Lodge Substation;
- Landscaping including habitat creation areas; and
- Construction laydown areas.


### 5.3 Programme

### 5.3.1 Summary

The main construction phase is predicted to be between January 2024 and December 2025. The anticipated construction, operational and decommissioning periods are as follows:

- Construction Period (not earlier than 2024 to 2026);
- Operational Period (not earlier than 2026 to 2065); and
- Decommissioning Period (not earlier than 2066).


### 5.3.2 Construction

The nature of the Scheme is such that the greatest impact is likely to occur during the construction and decommissioning phases. The peak construction period is anticipated to take place during 2025 on the basis that the Scheme is built out over a 24 -month period. The proposed site layout is shown in Appendix H1. The construction programme is contained within the Framework CTMP.

In addition to the above, it is not considered that a short delay in construction would result in a change to the conclusions of this TA. In addition, the following is considered to be applicable should there be a delay of up to 5 years to the start of construction:

- Road improvement schemes in the cumulative assessments (e.g. A12 Chelmsford to A120 Widening Scheme) may have already been completed by the time the Scheme construction begins, which would result in a better future baseline than that assessed. If any road improvement schemes remain under construction then there would be no change i.e. they would remain as a cumulative scheme; and
- Other cumulative schemes may have been completed by the time the Scheme construction begins, which would elevate the trips on the local road network in the future baseline. As the assessment criteria is based on a percentage change of vehicle numbers, a higher baseline flow would reduce the proportional impact that the Scheme has on the road network. This would reduce or maintain the levels of effect presented in this TA.


### 5.3.3 Operation

The Scheme is expected to be operational from the first quarter of 2026. The proposed site layout is shown in Appendix H1.

A minimal level of activity (see Section 6) is expected across the Order limits during the operational phase and restricted principally to vegetation management, equipment maintenance and servicing, replacement and renew of any components, as well as monitoring. It is anticipated that maintenance and servicing would include the inspection, removal, reconstruction, refurbishment or replacement of faulty or broken equipment, as well as adjusting the solar module orientation to ensure the continued effective operation of the Scheme. Along the Grid Connection Route and distribution cables, operational activity will consist of routine inspections and any reactive maintenance such as where a cable has been damaged. The Bulls Lodge Substation extension will be managed and maintained by National Grid.

It is anticipated that there will be up to eight permanent staff onsite during the operational phase which equates to a maximum of eight vehicles (or 16 two-way vehicle trips) per day, with additional staff attending when required for maintenance and cleaning activities.

The design life of the Scheme is 40 years; however, if equipment is still operating successfully and safely, the developer may choose to operate beyond the Scheme's design life. This is a common occurrence for generating stations; many stations operate beyond the design life if they are well maintained.

### 5.3.4 Decommissioning

The Scheme will be decommissioned at the end of the operational phase when the land within the Solar Farm Site will be returned to its original use. The works and extension to the Bulls Lodge Substation will remain under National Grid's control and it is intended that the buried cables will be left in situ.

For the purposes of the EIA, the decommissioning assessment year is assumed to be no earlier than 2066. The decommissioning period is expected to be similar in duration and nature to the construction phase, albeit slightly shorter duration and fewer vehicle trips. It is therefore considered reasonable to assume that the impacts will be the same as, and not greater than, the construction phase. This may overestimate the actual impacts slightly but is considered to be broadly accurate. In addition, this scenario is considered to be too far into the future to be able to accurately predict future baseline traffic flows or junction forms at that time.

Therefore, for the purposes of this TA, the assessment of the construction phase has been used to determine the anticipated impact of the Scheme during its decommissioning phase as agreed with ECC Highways and National Highways.

### 5.4 Vehicular Access Arrangements

### 5.4.1 Introduction

During the construction phase the Scheme will be served by a proposed Solar Farm Site access on Waltham Road and the Bulls Lodge Substation extension will be served by two proposed accesses on the private road. The proposed access locations for the Scheme are illustrated in Figure 5 below (as well as Appendix H2) and further details are provided below. It should be noted, the existing access to the Bulls Lodge Substation will continue to be operational during the construction phase of the Scheme.


Figure 5: Proposed Order limits Access Arrangements (Construction Phase)

The proposed access for the Solar Farm Site and the proposed western access for Bulls Lodge Substation will both be utilised during the operational phase. However, the proposed eastern access for Bulls Lodge Substation will be removed towards the end of construction as this will not be required during the operational phase.

It should be noted that the existing Bulls Lodge Substation site access on the private road (situated between the proposed eastern and western accesses) for will be retained throughout construction, operation and decommissioning, but will not be utilised by the Scheme.

### 5.4.2 Proposed Solar Farm Site Access

The proposed access for the Solar Farm Site is situated on the eastern side of Waltham Road, approximately 125 m to the south of the Waltham Road/ Cranham Road junction. This location has been agreed with ECC Highways and offers the following benefits:

- The proposed access will provide direct access from Waltham Road into the Solar Farm Site without crossing any third-party land;
- The access will be located on a section of carriageway where the required visibility splays and Sight Stopping Distances (SSDs) will be achievable in each direction following vegetation clearance within the Order limits (see Section 8);
- The section of Waltham Road carriageway near the proposed Solar Farm Site access has recently been resurfaced (in May 2021) which should help to alleviate any road safety concerns relating to the historic collision record on this part of the network (see Section 4);
- The access will minimise the distance covered by construction HGVs on Waltham Road, given the agreed routing strategy where HGVs will travel via Wheelers Hill and Cranham Road to the west;
- Waltham Road is approximately 6.0 m in width to the north of the proposed Solar Farm Site access which will limit the extent of any carriageway widening to accommodate HGVs on this part of the network (see Section 8); and
- All vehicles approaching Solar Farm Site access from either the A12(T) to the south or the A130 to the west will avoid Boreham Road which has protected status.

The proposed Solar Farm Site access will be utilised during the construction, operational and decommissioning phases and the proposed layout of the access is shown within Appendix I1. During the construction phase, this will provide access to a north-south construction route within the Solar Farm Site which will allow construction vehicles to access all areas. The north-south route supports the proposals to provide a single point of access for the Solar Farm Site and will minimise the usage of other parts of the local highway network, including the Protected Lanes of Boreham Road to the west and Braintree Road to the north. It should be noted that part of this route will subsequently become a green corridor (see Section 5.11 ) during the operational phase, providing pedestrian and cycle access through the Solar Farm Site as well as maintenance access for vehicles.

### 5.4.3 Proposed Bulls Lodge Substation Access

The Bulls Lodge Substation will be accessed via the Boreham Interchange and the RDR which will form a new roundabout with the existing private road that serves the substation to the east. The RDR is currently under construction and is expected to be completed in May 2023 i.e. prior to the construction phase. Therefore, construction and operational phase vehicles will utilise the RDR and existing private road to travel to/ from Bulls Lodge Substation throughout the programme.

During the construction phase, two new site accesses will be provided to facilitate the extension of the Bulls Lodge Substation extension which will be located on the northern side of the private road circa. 180 m to the west and 30 m to the east of the existing substation access respectively. The existing access for Bulls Lodge Substation will be retained throughout construction and operation and won't be utilised in support of the Scheme. Further details are provided within Section 8.

During the operational phase, the Bulls Lodge Substation extension will be accessed via the western access, as opposed to the eastern access which will be removed at the end of the construction phase.

### 5.4.4 Emergency Access

Should it be necessary, access for emergency vehicles will also be achievable via several alternative existing access points (e.g. should the proposed access for the Solar Farm Site become blocked or unavailable). The below sets out a few examples of alternative access points which could be utilised in an emergency if required:

- Waltham Road, existing access circa. 160 m south of Kenwood House access - located to the west and towards the southern extent of the Solar Farm Site;
- Waltham Road, existing access for Stocks Farm (Porridge Pot Lane) - located to the west of the Solar Farm Site and to the south of the proposed access;
- Boreham Road, existing junction with Birds Farm Lane - located to the west of the Solar Farm Site and to the north of the proposed access;
- Boreham Road, existing junction with Noakes Lane - located to the west of the Solar Farm Site and to the north of the proposed access; and
- Terling Hall Road, existing junction with Noakes Farm Road - located to the east and towards the northern extent of the Solar Farm Site.

It should be noted that the above is designed to provide a few examples of where emergency access could be taken and that several additional points of access could also be utilised from Waltham Road or Boreham Road to the west, or from Terling Hall Road to the east. It is not considered appropriate to limit the proposals to a defined point of secondary or emergency access as this would potentially restrict the ability for emergency vehicles to access the Solar Farm Site given the unpredictable nature and location of any incidents.

For Bulls Lodge Substation, should there be any issues with one of the proposed eastern or western access points then it will be possible to utilise the alternative access point to gain access.

### 5.5 Additional Construction Considerations

### 5.5.1 Construction Compounds

As shown by the proposed Solar Farm Site layout, one main construction compound will be located near to the proposed Solar Farm Site access and approximately ten smaller secondary compounds will be situated across the Solar Farm Site at strategic locations, served by the primary and secondary access routes. The compounds will be converted to solar PV or landscaping at the end of their use.

The main construction compound will be located 580m from the proposed Solar Farm Site access, adjacent to the primary access road which will run from the proposed access and eastwards through the Solar Farm Site. The main compound will be approximately $150 \mathrm{~m} \times 150 \mathrm{~m}$ in size and will contain offices, mobile welfare units, canteens, storage and waste skips, an 11 kV power supply, parking areas and space for storage, a wheel washing facility, a bunded area for refuelling and the storage of liquids, as well as unloading and turning areas.

The smaller secondary construction compounds will be situated across the Solar Farm Site at strategic locations. The secondary compounds will be up to $50 \mathrm{~m} \times 50 \mathrm{~m}$ in size and will contain material storage areas, mobile welfare units, offices, diesel generators, rock fill placed on a suitable formation and temporary matting (if required), fencing to secure the compound, parking areas and turning areas.

A construction compound will also be provided for Bulls Lodge Substation which will be accessed via the proposed eastern access on the private road.

Further details of the proposed construction compounds are provided within the Framework CTMP.

### 5.5.2 Access Tracks

It is proposed to utilise the existing hard-surfaced tracks that run throughout the Solar Farm Site where possible as the primary construction route (upgrading existing access tracks through widening or resurfacing where these are required along the route), and to construct additional secondary access tracks where connectivity is required. The access tracks from the proposed site access to the main construction compound, as well as the access tracks to Longfield Substation and Bulls Lodge Substation, will be 6.0 m in width. Passing places ( 20 m in length) will be installed at strategic locations in order to allow the safe passage of construction vehicles. The internal tracks will enable free-flowing movement within the Solar Farm Site whilst removing construction traffic from local roads.

### 5.5.3 Car and Cycle Parking

During the construction phase of the works, a total of 150 parking will be provided within the main construction compound for construction workers which is designed to meet peak parking demand. A total of 50 cycle parking spaces will also be provided. Construction workers will then be transported within the Order limits via mini-bus, or similar.

### 5.5.4 Grid Connection Route

The proposed Grid Connection Route from the Longfield Substation to the point of connection at Bulls Lodge Substation is expected to be formed of a single 400 kV cable circuit. The proposed Grid Connection Route and the associated 20 m working corridor runs southwest from the Solar Farm Site, where it runs south along the eastern side of Waltham Road, before crossing both Waltham Road and Boreham Brook. The Grid Connection Route then runs further south before running west adjacent to the private road serving Bulls Lodge Substation, before crossing the private road to reach the substation. A plan showing the Grid Connection Route is held within the Framework CTMP.

The construction area for the Grid Connection Route will be accessed from two locations. The proposed works to the west of Boreham Brook will be accessed via the private road which serves Bulls Lodge Substation. The cable route works to the east of Waltham Road will be accessed from within the Solar Farm Site.

There will be a single crossing point of Waltham Road to allow vehicles to access the section of Grid Connection Route to the west of Waltham Road up to the central crossing of Boreham Brook. Construction vehicles will not be permitted to travel along Waltham Road for the purposes of accessing the Grid Connection Route, they will cross directly over Waltham Road between the works areas east and west of the site. These agreed routing arrangements are illustrated by the plan held in Appendix H3. Temporary access tracks will be provided along each section of the Grid Connection Route, as well as to provide access to any works areas as required.

The Grid Connection Route will require temporary traffic management on Waltham Road for a period of up to 30 weeks in order to allow this to be installed across Waltham Road and to allow construction vehicles to safely cross Waltham Road to access the section of the cable route to the west. Following discussions with ECC Highways, it is proposed to implement temporary traffic signals on Waltham Road which will only hold up mainline traffic when a construction vehicle needs to cross Waltham Road. There are expected to be up to 30 such vehicle crossing movements per day (equivalent to 3-4 crossing movements per hour) which will only hold up traffic momentarily (when construction vehicles cross Waltham Road). Waltham Road will remain free-flowing, with mainline traffic having priority under a green traffic signal, other than when construction vehicles need to cross Waltham Road. Therefore, the temporary traffic signals are not expected to have a material impact on journey times or driver delay along Waltham Road.

In terms of the installation of the Grid Connection Route itself across Waltham Road, it is envisaged that this will be dealt with through a lane closure(s) rather than a whole road closure. The exact methodology for implementing the temporary traffic management will be determined by the contractor once appointed and designed to minimise any potential effects as far as possible. Further details will be provided within the detailed CTMPs once further details are known in due course.

Further details of the Grid Connection Route including the proposed crossing point on Waltham Road are provided within the Framework CTMP.

### 5.5.5 Stage 1 Road Safety Audit

The preliminary design of the proposed Solar Farm Site access, Waltham Road crossing point (for the construction of the Grid Connection Route), proposed carriageway widening (on Wheelers Hill, Cranham Road and Waltham Road) and the proposed Noakes Lane crossing points will be subject to a Stage 1 Road Safety Audit postsubmission (and secured as part of the detailed CTMPs). A Designer's Response will then be prepared so that any road safety concerns are addressed as part of the detailed design.

### 5.6 Vehicle Types, Plant Requirements and Abnormal Loads

### 5.6.1 Construction

It is expected that all construction vehicles accessing the Order limits will fall into the 'normal' size category (i.e. transit vans and HGVs). It is anticipated that the following vehicle types will serve the Scheme during the construction phase:

- Cars;
- Small vans;
- 10 m rigid vehicles;
- Box vans;
- 8-wheeler rigid lorries;
- Concrete mixers; and
- Flatbed low loaders.

All cranes required in support of construction will be classified as normal loads. The largest mobile crane is expected to be 14.5 m in length and 2.85 m in width. Vehicle swept paths have been carried out for a mobile crane of similar (albeit slightly larger) dimensions for the proposed site access on Waltham Road for the Solar Farm Site. Vehicle swept paths have also been carried out for a maximum legal articulated vehicle ( 16.5 m in length) for the proposed western and eastern access for Bulls Lodge Substation, as well as the proposed site access on Waltham Road. The swept paths (Appendices I2 and J3) demonstrate that all vehicles including mobile cranes will be able to access the Order limits without overrunning any kerb lines.

At this stage, there are expected to be three abnormal loads associated with Longfield substation and two abnormal loads associated with Bulls Lodge Substation. The vehicles transporting the abnormal loads will be no larger (in terms of height, width or length) than a maximum legal articulated vehicle and are only expected to be abnormal due to the weight of the components transported. A specialised haulage service will be employed to allow these components to be transported with the necessary escort, permits and traffic management, with the contractor consulting the relevant highways authorities to ensure the correct permits are obtained. The police will also be given advanced notification under the Road Vehicle Authorisation of Special Types Order 2003. Swept paths have been carried out and are held in Appendices I 2 and J 3 .

All mobile cranes and abnormal loads will be required to follow the agreed HGV routing strategy when travelling to/ from the Order limits. Carriageway widening will be carried out along Wheelers Hill, Cranham Road and Waltham Road to accommodate HGVs travelling to/ from the Solar Farm Site. No carriageway widening is expected to be required on the private road to/ from Bulls Lodge Substation to accommodate HGVs travelling to/ from the substation as the existing carriageway conditions are deemed to be appropriate (the private road was previously upgraded to accommodate the works which were carried out when the substation was originally constructed).

As above, the abnormal loads are only expected to be abnormal due to the weight of the components transported rather than the size of the vehicles. Therefore, the 6 m wide construction track within the Solar Farm Site is expected to accommodate all trips associated to the construction phase of the Scheme.

As set out within Section 7, carriageway widening will be carried out along Wheelers Hill, Cranham Road and Waltham Road to accommodate HGVs travelling to/ from the Solar Farm Site. The private road to/ from Bulls Lodge Substation was also previously upgraded when the original substation was constructed and is therefore suitable for HGVs.

As previously mentioned, a Framework CTMP has been prepared in support of the DCO application which provides further details of the construction phase of the Scheme in terms of how construction vehicles will be managed.

### 5.6.2 Operation

There is currently expected to be up to eight members of staff on site per day, which will result in a very low level of vehicular activity (see Section 6). The majority of vehicles will be cars or transit vans associated with operational and maintenance staff.

### 5.6.3 Decommissioning

The same vehicle types are expected during the decommissioning phase as per the construction phase of the development.

### 5.7 Vehicle Routing

### 5.7.1 Construction HGVs

As agreed with ECC Highways, construction HGVs will travel to/ from the Solar Farm Site via the SRN (including the RDR if travelling to/ from the A12(T)), Wheelers Hill, Cranham Road and Waltham Road, to avoid passing along any Protected Lanes or through the villages of Boreham or Hatfield Peverel to the south. Local off-site highway improvements (e.g. verge clearance, hedge cutting and/ or carriageway widening) will be carried out along Wheelers Hill, Cranham Road and Waltham Road at the required locations to provide the desired 6.0 m carriageway width for HGVs along this route where possible (further details are set out within Section 9). In terms of the wider network, construction vehicles will access Wheelers Hill from the south via the A12(T) at the Boreham Interchange and then the RDR, or via the A120 and A131 to the north. A vehicle routing plan showing the agreed routing strategy for HGVs is held in Appendix H3.

Construction vehicles associated with Bulls Lodge Substation will utilise the A12(T), Boreham Interchange, RDR and then the private road to the east of the new roundabout. Other than to provide the two new access points for the Bulls Lodge Substation extension and to accommodate the installation of the Grid Connection Route, there is not expected to be a requirement for any off-site road modifications as a result of these works as the private road is already suitable for larger vehicles which currently access the substation.

### 5.7.2 Construction and Operational Staff

Construction and operational staff will be directed to take the most direct route to the Order limits using 'higher' order roads, such as $A$ and $B$ classified roads i.e. the SRN and PR1/ PR2 routes. It is envisaged that workers would use the routes set out above to access Waltham Road from the north, or the B1137 Main Road to access Waltham Road from the south if travelling via the A12(T) as set out within Section 6.

There will be the potential to utilise additional parking spaces within the CVPR for construction worker parking during the peak construction periods, to reduce the requirement for parking on site and to reduce vehicle trips on the local highway network. The CVPR is accessed via the A130 ERW at the roundabout with Pratt's Farm Lane, approximately 1 km to the south of the A130/ Wheelers Hill roundabout. Further details of these potential arrangements are set out within Section 8 and a summary of discussions relating to the CVPR is contained within
Appendix A3. It should be noted that the trip generation (Section 6) and highway assessment (Section 8) have been undertaken on the basis that the CVPR is not utilised in support of the Scheme, in order to provide a worstcase assessment in terms of additional vehicles trips on the surrounding highway network. The use of the CVPR nonetheless forms part of the additional mitigation identified within the ES.

### 5.7.3 Alternative Route Limitations

The above routing strategy reflects the most suitable routes available and has been specified by ECC from the outset of the project, due to the following limitations/ restrictions associated with alternative local routes which run to the north and east of the Order limits:

- Terling Hall Road (to/ from the east) is categorised as a local road and is a narrow rural single carriageway road which has a 12 '6" height restriction as the route passes underneath the railway line, a short distance to the north of the A12(T). This road also has protected status (see Section 4).
- Braintree Road (to/ from the north) is categorised as a local road and is a rural single carriageway road which serves the villages of Fuller Street and Terling, which narrows to below 4 m in width to the east of the junction with Boreham Road. This road also has protected status (see Section 4).


### 5.7.4 Bulls Lodge Substation

Construction and operational vehicles will access Bulls Lodge Substation via the Boreham Interchange, the RDR (due to be completed by May 2023) and the existing private road to the east of the RDR. Construction vehicles will utilise the proposed eastern and western access points to the Bulls Lodge Substation extension. Operational vehicles will utilise the proposed western access, following the removal of the eastern access at the end of the construction phase.

### 5.7.5 Future Network Changes

As previously identified, construction and operational vehicles will be able to utilise the RDR to travel between the A12(T) and the A130 ERW via the Boreham Interchange. This route will bypass the A130 Colchester Road and A130 WHL, providing a more direct route between the site and the SRN. Further details are set out within Section 7.

The routing arrangements are not expected to change during the implementation of the A12 Chelmsford to A120 Widening Scheme or the various improvements due to be carried out at the Boreham Interchange, as it is understood that there will be no daytime road closures during these works. Should there be any temporary overnight road closures, then vehicle movements will be re-timed as necessary to avoid having to use alternative routes to travel to/ from the Order limits. Further details are set out within the Framework CTMP.

### 5.8 Parking

### 5.8.1 Car Parking

The proposed land use of the Scheme does not appear to fall into any of the categories specified within the Essex County Council Parking Standards: Design and Good Practice (Sept 2009) (the 'EPOA Standards'). Therefore, the proposed parking provision has been considered on its own merit to meet the needs of the development during both construction and operation and is justified below.

During the construction phase of the works, a total of 150 parking spaces will be provided within the main construction compound for construction workers which is designed to meet peak parking demand (see Table 11). The proposed layout of the main construction compound is illustrated within the Framework CTMP.

As above, there will be the potential to utilise additional parking spaces within the CVPR for construction worker parking during the peak construction periods, to reduce the requirement for parking on site and to reduce vehicle trips on the local highway network. Further details of these potential arrangements are set out within Section 8 and a summary of discussions relating to the CVPR is contained within Appendix A3.

During the operational phase, it is not envisaged that any parking spaces will be provided for operational staff who will travel to various locations across the Order limits and park within the individual land parcels (within the site fencing) to carry out maintenance work as and when required. In addition, it is not proposed to provide any parking for visitors, given that the Scheme will be an operational solar farm rather than a visitor attraction (e.g. a solar park).

### 5.8.2 Cycle Parking

As set out in Section 4, there is limited cycle provision in the surrounding area, with no on or off-road cycling facilities on Waltham Road, Boreham Road or Cranham Road to the west of the Solar Farm Site. In addition, the majority of construction and operational staff will be expected to live outside of the 20 -minute catchment area for cycling (see Section 4).

It is proposed to provide 25 cycle stands within the main construction compound for construction workers, with the capacity to accommodate up to 50 bicycles. The usage of these cycle spaces will be monitored to determine whether any additional spaces are required to meet demand during the construction phase.

During the operational phase (and following the removal of the main construction compound), it is not proposed to provide any cycle parking within the Order limits as maintenance staff will be expected to travel by vehicle.

### 5.9 Pedestrian and Cycle Access

### 5.9.1 Construction Phase

Pedestrians will be able to utilise the existing pedestrian network to access the Order limits during the construction phase, including the PRoW summarised within Section 4 and shown on the plan held in Appendix C3. The PRoW will be managed or temporarily diverted throughout the construction phase to ensure that these remain open and can continue to be safely used. Further details of how these will be managed are set out in Section 9.

Cyclists will be able to access the Solar Farm Site via the proposed access on Waltham Road, which will provide access to the main construction compound where cycle parking will be available for construction workers.

### 5.9.2 Operational Phase

There are no PRoW closures or diversions proposed during the operational phase and all existing PRoW will therefore be retained. In addition, the Scheme seeks to deliver various permissive paths within the Solar Farm Site to enhance pedestrian and cycle access and connectivity. A central north-south route will be provided through the Solar Farm Site, starting from Waltham Road at the south and running northwards towards Braintree Road. The north-south corridor will intersect with various east-west routes (both existing PRoW and proposed permissive paths) to maximise connectivity within the Solar Farm Site. The drawings showing the proposed Solar Farm Site layout and landscape masterplan during the operational phase are held in Appendix H 1 and Appendix O respectively.

As for the construction phase, pedestrians will also be able to utilise the existing pedestrian network to access the Order limits during the operational phase. Cyclists will be able to use the proposed Solar Farm Site access on Waltham Road to access the main north-south green corridor within the Solar Farm Site.

## 6. Proposed Trip Attraction and Distribution

### 6.1 Introduction

The following section provides details of the anticipated travel characteristics of the Scheme during the construction, operational and decommissioning phases. It should be noted that there is very limited information within the TRICS trip generation database for standalone solar farms and a first principles approach has therefore been adopted to derive the anticipated vehicle trip attraction based on professional judgement and information received from the project team. The below provides a summary of the forecast vehicle trips associated with each phase based on the peak level of activity expected, during the peak hours and across the day. It should be noted that the approach for deriving the trip attraction and distribution has been agreed with ECC Highways and National Highways, following the preparation of the TASR and subsequent pre-application discussions.

### 6.2 Construction

### 6.2.1 Approach

As set out within Section 5, there will be the potential to utilise additional parking spaces within the CVPR for construction worker parking during the peak construction periods if required, to reduce the requirement for parking on site and to reduce vehicle trips on the local highway network. However, for the purposes of the trip attraction, distribution and subsequent highway assessment (Section 8) it has been assumed that all construction workers would travel directly to/ from the Solar Farm Site, in order to provide a robust assessment of the Scheme. The potential use of the CVPR has then been considered as additional mitigation within Section 8.

### 6.2.2 Trip Attraction

The construction phase peak period is anticipated to take place during the 2025 summer period, when up to 533 construction workers (associated with both the Solar Farm Site and Bulls Lodge Substation Site) are expected to travel to/ from the Order limits per day. The following has been assessed:

- A maximum of 500 construction workers for the Solar Farm Site per day for a period of up to two months, with $45 \%$ likely to be sourced locally and $55 \%$ likely to be non-local; and
- A maximum of 33 construction workers for the Bulls Lodge Substation Site per day for a period of up to 18 months, with all staff to be sourced locally and to travel directly to/ from the Bulls Lodge Substation Site. There will also be up to 22 LGVs per day in addition to the above construction worker trips.

It should be noted that the majority of construction workers and HGV movements will be associated with the Solar Farm Site which therefore forms the focus of this chapter. Separate details relating to Bulls Lodge Substation have been provided where appropriate. Table 10 below provides a summary of the peak daily construction workforce for the Solar Farm Site in terms of the anticipated split between local and non-local staff (reviewed with EDF and the socio-economic team) and anticipated shift patterns.

Table 10: Solar Farm Site - Anticipated Construction Workforce (Peak Activity)

| Type | Working Hours | Local | Non-Local | Total |
| :---: | :---: | :---: | :---: | :---: |
| Civil works/ structures | Summer 12-hour shift <br> $(07: 00-19: 00)$ <br> Winter 10-hour shift <br> $(08: 00-18: 00)$ | 126 | 161 | $287(58 \%)$ |
| Welfare \& compound, panels, <br> electrical works, CCTV, internal <br> substations, site management and <br> general site staff | Early 8-hour shift <br> $(08: 00-16: 00)$ | Late 8-hour shift <br> $(09: 00-17: 00)$ | 44 | 57 |
| Other | Ad hoc (staggered) | 11 | 54 | $101(20 \%)$ |
|  |  |  | $101(20 \%)$ |  |


| Type | Working Hours | Local | Non-Local | Total |
| :---: | :---: | :---: | :---: | :---: |
| Total |  | 225 | 275 | 500 |
| Proportion |  | 45\% | 55\% | 100\% |

For Bulls Lodge Substation, all construction workers are expected to be sourced locally and there is expected to be a maximum of 26 construction worker vehicles per day. This allows for limited car sharing amongst the 33 construction workers equivalent to 1.2 occupants per vehicle i.e. given there will be fewer staff and therefore fewer opportunities to car share than for the Solar Farm Site. The shuttle service will not be used to transfer workers to/ from Bulls Lodge Substation as construction workers will be expected to travel directly to/ from the substation rather than via the Solar Farm Site.

It is assumed that construction workers would arrive to the Order limits within the hour prior to starting a shift and depart within the hour after completing a shift. In terms of the small number of other staff travelling at various times, it is assumed that they would arrive between 09:00-12:00 and depart between 14:00-17:00. For the purposes of the highway impact assessment, the winter profile (as opposed to the summer profile) has been adopted to provide a worst-case assessment in terms of travel patterns, resulting in the development peak hours being more closely aligned with the network peak hours due to the compressed working hours (10-hour shift) for civil works/ structures staff. These working hours have been adopted for both the Solar Farm Site and Bulls Lodge Substation.

As set out within Section 4, there is limited potential to travel to/ from the Order limits on foot or by public transport. It is therefore anticipated that the majority of local construction workers would travel by car, whereas non-local staff would stay within local accommodation and then be transferred to/ from the Solar Farm Site by shuttle service. The anticipated travel patterns of construction workers for the Solar Farm Site are as follows, following discussions with ECC Highways:

- Local staff: 95\% to travel by car (average car occupancy of 1.5 per vehicle);
- Local staff: 5\% to travel by other modes e.g. by bus or bicycle (or in the instance that the CVPR is utilised, by rail, bus and private shuttle service); and
- Non-local staff: $100 \%$ to travel to/ from local accommodation by shuttle service (to be provided as part of the Scheme).

It should be noted that car sharing will be encouraged for local construction workers and based on experience of previous DCO applications where a large construction workforce has been employed, an average car occupancy of 1.5 persons per vehicle is considered to be realistic for the purposes of calculating the forecast vehicle trip attraction for the Solar Farm Site. The Applicant will implement measures (to be secured as part of the Framework CTMP) to seek to maximise the numbers of staff that car share with colleagues to reduce the number of vehicles travelling to/ from the Order limits each day, including a Car Share Scheme which will be implemented to match potential sharers and help staff identify any colleagues who could potentially be collected along their route to/ from site. The aspiration is to achieve a higher average occupancy level than 1.5 persons per vehicle to further reduce the impact of the Scheme on the local network and the SRN.

The proportion of local staff expected to travel by non-vehicular modes (5\%) has been sense checked against journey to work patterns from the 2011 Census database for residents travelling to Chelmsford MSOA 005 as a destination (i.e. to their place of work) which is the area identified by ECC Highways as being representative of the Order limits. The mode share which has been derived from the 'WUO3EW - Location of usual residence and place of work by method of travel to work' dataset is shown in Table 11 below. The Census information is held within Appendix N

Table 11: 2011 Census Mode Share - Chelmsford MSOA 005 (Place of Work)

| Mode | Share |
| :---: | :---: |
| Car Driver/ Motorcyclist | $82.3 \%$ |
| Car Passenger | $5.3 \%$ |
| Train | $1.4 \%$ |
| Bus | $2.6 \%$ |


|  |  |
| :---: | :---: |
| Cycle | $2.8 \%$ |
| Wak | $4.8 \%$ |
| Other | $0.8 \%$ |
| Total | $\mathbf{1 0 0 . 0 \%}$ |

The anticipated travel patterns of local construction workers are considered to be in keeping with the Census mode share presented above, with the majority of trips to be carried out by car, with a very limited proportion of trips to be made by other means.

The following assumptions have been adopted for the shuttle service which will be provided for non-local staff travelling to/ from the Solar Farm Site:

- The shuttle services will travel between the Solar Farm Site and local worker accommodation (assumed to be available in Chelmsford or Braintree for example) to transfer all non-local staff to and from the Solar Farm Site each day;
- The shuttle services will depart from the Solar Farm Site to pick-up construction workers from local worker accommodation and return to the Solar Farm Site within the hour prior to the start of a shift;
- The shuttle services will depart from the Solar Farm Site to drop-off construction workers back at their local worker accommodation within the hour after the completion of a shift (before returning back to the Solar Farm Site);
- The shuttle services will each be expected to have an average occupancy of 25 people when transferring construction workers;
- A shuttle service round-trip (e.g. from the Solar Farm Site to local worker accommodation in Chelmsford or Braintree for example, and then back to the Solar Farm Site) is expected to take around $30-45$ minutes on average (it has been assumed that a shuttle service would both depart and return during the same hour); and
- A total of six shuttle buses will be available to cater for peak demand.

To provide a worst-case assessment and to allow for some contingency in the phasing, the individual peaks in terms of construction vehicle trips for the Solar Farm Site and Bulls Lodge Substation have been combined. In reality, the 'peak' number of daily movements is expected to be lower than that assessed, as the individual peaks for the Solar Farm Site and Bulls Lodge Substation are not expected to overlap.

There is expected to be a maximum of 75 HGVs per day across the Order limits for the peak of construction (period of one month). However, the following has been assessed:

- A maximum of 50 HGVs associated with the Solar Farm Site (travelling to/ from the proposed access on Waltham Road via Cranham Road, Wheelers Hill and A130 Essex Regiment); and
- A maximum of 46 HGVs associated with the extension to Bulls Lodge Substation (travelling to/ from the substation via the A12(T), RDR and private road).

HGV trips are expected to be split evenly across the day and will avoid the peak hours where possible to minimise impacts on the surrounding highway network at these times. The above construction vehicle numbers (LGVs and HGVs) consider all expected activities including those relating to servicing and the disposal of waste.

The anticipated vehicular trip attraction of the Scheme during the peak period of the construction phase (summer 2025) is set out within Tables 12 to 14 below based on the methodology and assumptions set out above. To provide a robust assessment, the compressed winter profile (10-hour shift) for civils/ structures staff has been adopted in terms of travel patterns to align the development peak hours more closely with the network peak hours.

Table 12: Solar Farm Site - Forecast Vehicular Trip Attraction - Peak Construction Phase

| Time | Cars |  | Shuttle Buses |  | HGVs |  | Total |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Arr | Dep | Arr | Dep | Arr | Dep | Arr | Dep | Total |
| 06:00-07:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $\mathbf{0}$ |
| $07: 00-08: 00$ | 108 | 0 | 9 | 9 | 0 | 0 | 117 | 9 | $\mathbf{1 2 6}$ |


| Time | Cars |  | Shuttle Buses |  | HGVs |  | Total |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Arr | Dep | Arr | Dep | Arr | Dep | Arr | Dep | Total |
| 08:00-09:00 | 28 | 0 | 2 | 2 | 0 | 0 | 30 | 2 | 32 |
| 09:00-10:00 | 3 | 0 | 0 | 0 | 7 | 0 | 10 | 0 | 10 |
| 10:00-11:00 | 2 | 0 | 0 | 0 | 7 | 7 | 9 | 7 | 16 |
| 11:00-12:00 | 2 | 0 | 0 | 0 | 7 | 7 | 9 | 7 | 16 |
| 12:00-13:00 | 0 | 0 | 0 | 0 | 8 | 7 | 8 | 7 | 15 |
| 13:00-14:00 | 0 | 0 | 0 | 0 | 7 | 8 | 7 | 8 | 15 |
| 14:00-15:00 | 0 | 2 | 0 | 0 | 7 | 7 | 7 | 9 | 16 |
| 15:00-16:00 | 0 | 2 | 0 | 0 | 7 | 7 | 7 | 9 | 16 |
| 16:00-17:00 | 0 | 31 | 2 | 2 | 0 | 7 | 2 | 40 | 42 |
| 17:00-18:00 | 0 | 28 | 2 | 2 | 0 | 0 | 2 | 30 | 32 |
| 18:00-19:00 | 0 | 80 | 7 | 7 | 0 | 0 | 7 | 87 | 94 |
| 19:00-20:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 143 | 143 | 22 | 22 | 50 | 50 | 215 | 215 | 430 |

Table 13: Bulls Lodge Substation - Forecast Vehicular Trip Attraction - Peak Construction Phase

| Time | Lars |  | LGVs | HGVs |  | Total |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Arr | Dep | Arr | Dep | Arr | Dep | Arr | Dep | Total |
| 06:00-07:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $\mathbf{0}$ |
| $07: 00-08: 00$ | 20 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | $\mathbf{2 0}$ |
| 08:00-09:00 | 6 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | $\mathbf{6}$ |
| 09:00-10:00 | 0 | 0 | 3 | 0 | 7 | 0 | 10 | 0 | $\mathbf{1 0}$ |
| 10:00-11:00 | 0 | 0 | 3 | 3 | 6 | 7 | 9 | 10 | $\mathbf{1 9}$ |
| 11:00-12:00 | 0 | 0 | 3 | 3 | 7 | 6 | 10 | 9 | $\mathbf{1 9}$ |
| 12:00-13:00 | 0 | 0 | 3 | 3 | 6 | 7 | 9 | 10 | $\mathbf{1 9}$ |
| 13:00-14:00 | 0 | 0 | 4 | 3 | 7 | 6 | 11 | 9 | $\mathbf{2 0}$ |
| 14:00-15:00 | 0 | 0 | 3 | 4 | 6 | 7 | 9 | 11 | $\mathbf{2 0}$ |
| 15:00-16:00 | 0 | 0 | 3 | 3 | 7 | 6 | 10 | 9 | $\mathbf{1 9}$ |
| 16:00-17:00 | 0 | 6 | 0 | 3 | 0 | 7 | 0 | 16 | $\mathbf{1 6}$ |
| 17:00-18:00 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | $\mathbf{5}$ |
| 18:00-19:00 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 15 | $\mathbf{1 5}$ |
| 19:00-20:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $\mathbf{0}$ |
| Total | $\mathbf{2 6}$ | $\mathbf{2 6}$ | $\mathbf{2 2}$ | $\mathbf{2 2}$ | $\mathbf{4 6}$ | $\mathbf{4 6}$ | $\mathbf{9 4}$ | 94 | $\mathbf{1 8 8}$ |

Table 14: Total Forecast Vehicular Trip Attraction - Peak Construction Phase

| Time | Solar Farm Site |  |  |  | Bulls Lodge Substation |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Arr | Dep | Total | Arr | Dep | Total | Arr | Dep | Total |
| 06:00-07:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:00-08:00 | 117 | 9 | 126 | 20 | 0 | 20 | 137 | 9 | 146 |
| 08:00-09:00 | 30 | 2 | 32 | 6 | 0 | 6 | 36 | 2 | 38 |
| 09:00-10:00 | 10 | 0 | 10 | 10 | 0 | 10 | 20 | 0 | 20 |
| 10:00-11:00 | 9 | 7 | 16 | 9 | 10 | 19 | 18 | 17 | 35 |
| 11:00-12:00 | 9 | 7 | 16 | 10 | 9 | 19 | 19 | 16 | 35 |
| 12:00-13:00 | 8 | 7 | 15 | 9 | 10 | 19 | 17 | 17 | 34 |


| Time | Solar Farm Site |  |  | Bulls Lodge Substation |  |  | Total |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Arr | Dep | Total | Arr | Dep | Total | Arr | Dep | Total |
| 13:00-14:00 | 7 | 8 | 15 | 11 | 9 | 20 | 18 | 17 | 35 |
| 14:00-15:00 | 7 | 9 | 16 | 9 | 11 | 20 | 16 | 20 | 36 |
| 15:00-16:00 | 7 | 9 | 16 | 10 | 9 | 19 | 17 | 18 | 35 |
| $16: 00-17: 00$ | 2 | 40 | 42 | 0 | 16 | 16 | 2 | 56 | 58 |
| 17:00-18:00 | 2 | 30 | 32 | 0 | 5 | 5 | 2 | 35 | 37 |
| 18:00-19:00 | 7 | 87 | 94 | 0 | 15 | 15 | 7 | 102 | 109 |
| 19:00-20:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | $\mathbf{2 1 5}$ | $\mathbf{2 1 5}$ | $\mathbf{4 3 0}$ | $\mathbf{9 4}$ | 94 | $\mathbf{1 8 8}$ | $\mathbf{3 0 9}$ | 309 | $\mathbf{6 4 8}$ |

The above indicates that for the Solar Farm Site, there is expected to be a maximum of 126 two-way vehicle trips during the AM development peak hour (07:00-08:00) and 94 two-way vehicle trips during the PM development peak hour (18:00-19:00). A lower number of additional trips is expected during the traditional network weekday peak hours of 08:00-09:00 and 17:00-18:00, representing 32 two-way vehicle trips during each of these periods. Further details of the proposed trip attraction calculations are contained within Appendix P1. These construction vehicles will access the Order limits via the proposed Solar Farm Site access on Waltham Road.

In terms of Bulls Lodge Substation, there is expected to be a maximum of 20 two-way vehicle trips for any given hour of the day. These construction vehicles will access the Order limits via the A12(T), Boreham Interchange, RDR and the private road to the east of the new roundabout. There is not expected to be a requirement for any off-site road modifications as a result of these works (other than to provide the eastern and western access points) as the private road was upgraded when the original substation was constructed and is currently suitable for larger vehicles which currently infrequently access the substation.

### 6.2.3 Vehicle Trip Distribution

The proposed construction vehicle trip distribution for the Solar Farm Site has been informed by journey to work patterns from the 2011 Census database for residents travelling to Chelmsford MSOA 005 as a destination i.e. to their place of work. The 'WU03EW - Location of usual residence and place of work by method of travel to work' dataset has been used to determine the distribution of incoming residents driving by car or van. The following points of origin have been reviewed to derive a regional vehicle trip distribution:

- At MSOA level for Chelmsford (all 21 MSOAs) and Braintree (all 18 MSOAs) to distribute local trips to Chelmsford MSOA 005, representing $56.2 \%$ of all vehicle trips.
- At local authority level for all remaining areas where at least four residents travelled to Chelmsford MSOA 005 as a car/ van driver, representing $41.2 \%$ of all vehicle trips.
- Areas where three or fewer residents travelled to Chelmsford MSOA 005 as a car/ van driver were excluded, representing just $2.6 \%$ of all vehicle trips.

The regional trip distribution has therefore been based on points of origin where at least four residents travelled to Chelmsford MSOA 005 as a car/ van driver (representing $97.4 \%$ of all vehicle trips), which includes all MSOAs in Chelmsford and Braintree, as well as many areas in the southeast. These trips have then been assigned to the following entry/ exit points to the study area, to inform the anticipated trip distribution of construction vehicle trips:

- A12(T) to the north
- A12(T) to the south
- A130 to the south (for local trips not using the A12(T))
- A130 to the north (via the A131)

The following regional trip distribution (Table 15) has been identified for construction vehicles travelling to/ from the Solar Farm Site, with the detailed calculations held in Appendix P2. It should be noted that adjustments have been made below depending on the type of trip i.e. construction worker, shuttle bus and HGV.

Table 15: Regional Vehicle Trip Distribution - Incoming Trips to Chelmsford MSOA 005

| Route | \# Residents | Distribution |
| :---: | :---: | :---: |
| A12(T) North | 632 | $14.8 \%$ |
| A12(T) South | 1,600 | $37.5 \%$ |
| A130 North | 795 | $18.6 \%$ |
| A130 South | 1,241 | $29.1 \%$ |
| Total | $\mathbf{4 , 2 6 7}$ | $\mathbf{1 0 0 \%}$ |

Following the above, the construction vehicle trips for the Solar Farm Site have been routed onto the local highway network as follows:

- Construction worker vehicles have been distributed to/ from the Solar Farm Site based on the most logical route to/ from the identified network entry/ exit point i.e. the shortest or quickest journey based on Google Routeplanner. Whilst a limited number of construction worker vehicles (up to 16 cars/ vans per day) would travel to/ from Bulls Lodge Substation instead of the Solar Farm Site, all construction worker trips have been distributed to/ from the Solar Farm Site (i.e. the proposed access on Waltham Road) to provide a robust assessment of the local highway network.
- The distribution shown in Table 15 has been revised for shuttle buses, on the basis that these vehicles would travel to/ from local worker accommodation and would not therefore be expected to utilise the A12(T). The locations for local worker accommodation have yet to be determined, and it has therefore been assumed that shuttle buses would travel via the A130 and A131 towards Braintree to the north (30\%), the A130 towards Chelmsford to the south (40\%), or alternatively via the B1137 Main Road towards Boreham (20\%) or Hatfield Peverel (10\%) to the east.
- The distribution shown in Table 15 has been revised for HGVs travelling to/ from the Solar Farm Site, on the basis that these would be strategic trips (e.g. originating from ports such as Felixstowe or Southampton) and would therefore be expected to utilise the A12(T) to the south ( $50 \%$ ), the A12(T) to the north (25\%) or the A130 and A131 to the north ( $25 \%$ ). These vehicles would then follow the agreed routing strategy via Wheelers Hill, Cranham Road and Waltham Road. In terms of HGVs travelling to/ from Bulls Lodge Substation, it has been assumed that $50 \%$ would travel to/ from the A12(T) to the north and $50 \%$ would travel to/ from the A12(T) to the south, subsequently utilising the Boreham Interchange, RDR and the private road to/ from the substation.

The resultant construction worker trip distribution for those travelling to/ from the Solar Farm Site is shown below in Figure 6.


Figure 6: Construction Worker Trip Distribution (Solar Farm Site, Local Staff)
The anticipated distribution of shuttle services transferring non-local staff between the Solar Farm Site and local accommodation is shown below in Figure 7.


Figure 7: Shuttle Service Distribution (Solar Farm Site, Non-Local Staff)
The anticipated distribution of HGVs travelling to/ from the Solar Farm Site via the agreed routing arrangements is shown below in Figure 8.


Figure 8: HGV Distribution (Solar Farm Site, Agreed Routing Strategy)
The agreed routing arrangements are not expected to change during the implementation of the A12 Chelmsford to A120 Widening Scheme or the various improvements due to be carried out at the Boreham Interchange, as it is understood that there will be no daytime road closures during these works. Should there be any temporary overnight road closures, then vehicle movements will be re-timed as necessary to avoid having to use alternative routes to travel to/ from the Order limits. Further details on management and mitigation will be set out within the Detailed CTMP if additional management and mitigation is required.

In terms of construction trips to/ from Bulls Lodge Substation, the following has been assumed:

- All construction workers would travel directly to/ from the substation via the A12(T), the Boreham Interchange and the RDR; and
- $50 \%$ construction vehicles (comprising HGVs, LGVs and staff) would travel to/ from the A12(T) to the north and the remaining $50 \%$ would travel to/ from the $\mathrm{A} 12(\mathrm{~T})$ to the south, utilising the Boreham Interchange, RDR and the private road to/ from the substation.

The forecast levels of additional vehicle trips on the surrounding highway network during the peak construction phase of the Scheme are illustrated by the traffic flow diagrams held within Appendix R. This includes trips associated with both the Solar Farm Site and the Bulls Lodge Substation Site.

### 6.3 Operation

There is expected to be up to eight members of staff on site per day during the operational phase, with the majority of trips taking place in four-wheel drive vehicles or transit vans, with HGVs rarely expected to access the Order limits. This therefore equates to a maximum of eight vehicles (or 16 daily two-way vehicle trips) per day. There is not expected to be any impacts arising from operational traffic movements and no assessment has been carried out, as agreed with ECC Highways and National Highways.

### 6.4 Decommissioning

The decommissioning effects of the Scheme are expected to be of a similar (or lesser) magnitude to the construction effects. On this basis, the construction period is considered to have the greatest change on the surrounding transport network and the construction phase has therefore been used to identify the likely impacts of the decommissioning phase including whether any mitigation will be required. This may overestimate the actual traffic flows slightly but is considered to be broadly accurate. In addition, the decommissioning phase is expected to take place no earlier than 2066 and is therefore considered to be too far into the future to be able to accurately predict future baseline traffic flows or road / junction layouts at that time.

A Decommissioning Strategy has been prepared as part of the ES which will be developed prior to the decommissioning phase to control the potential impacts.

### 6.5 Assessments

The following assessments have been carried out as part of the TA:

- Highway Assessment (Section 8)
- Walking and Cycling Assessment (Section 9).

The Scheme is not expected to have any impact on public transport due to the following:

- There are no bus stops located on Waltham Road, Boreham Road or Cranham Road within close proximity of the Solar Farm Site, or on Generals Lane or the private road near to Bulls Lodge Substation;
- The nearest railway stations are located at Hatfield Peverel circa. 4 km to the northeast of Boreham and at Chelmsford circa. 7 km to the southwest of Boreham;
- At least $95 \%$ local construction staff are expected to travel to/ from the Order limits by car;
- Less than $5 \%$ local construction staff are expected to travel to/ from the Order limits by other modes such as by bus or by bicycle; and
- All non-local staff will stay within local accommodation and travel to/ from the Order limits by shuttle service.

Therefore, the Scheme is not expected to have an impact on public transport and no further assessment has been carried out.

## 7. Committed Developments/ Schemes

### 7.1 Introduction

The cumulative schemes for consideration have been agreed in consultation with ECC and National Highways.
The following highway improvement schemes are due to be completed ahead of the construction phase and are therefore considered to form part of the future baseline (2025) situation:

- Boreham Interchange Improvements;
- RDR; and
- $\quad$ Phase 1 of the Chelmsford North East Bypass (CNEB).

The following highway improvement schemes are expected to be completed after or during the construction phase and are therefore considered to represent a cumulative scheme:

- A12 Chelmsford to A120 Widening Scheme;
- CNEB Phase 2; and
- Outer Radial Distributor Road (RDR2).

Several of the highway improvements identified above in relation to the Order limits' indicative location are illustrated in Figure 9 below.


Figure 9: Highway Improvement Works in the vicinity of the Boreham Interchange Source: Chelmsford Local Plan SOCG 22 (November 2018)

Furthermore, there are a number of committed developments (with planning permission) within the area which have been considered as cumulative schemes including the Chelmsford Garden Community and a development on land to the north of Cranham Road.

A summary of the highway improvement schemes which are expected to be incorporated as part of the future baseline situation is set out below.

### 7.2 Future Baseline

### 7.2.1 Boreham Interchange Improvements and the Radial Distributor Road (RDR)

The highway network during the construction phase will be different from current, having incorporated several changes as a result of ongoing highway schemes including the Boreham Interchange improvements, the RDR and the removal of the Generals Lane overbridge. The Boreham Interchange improvements and delivery of the RDR will allow development traffic to bypass parts of the A130 including White Hart Lane and improve the links to the Order limits from the strategic network. The following improvements are planned to be delivered by spring/ May 2023 and are therefore expected to be in place prior to the construction phase for Longfield Solar Farm:

- Completion of the RDR from A130 ERW to Boreham Interchange including a new bridge over the railway line and $\mathrm{A} 12(\mathrm{~T})$ northbound on-slip (currently under construction);
- Construction of a new fully signalised Generals Lane roundabout, which includes for a new arm for the RDR;
- The provision of a cut-through lane on the Generals Farm roundabout from the A12(T) southbound on-slip for traffic travelling towards Chelmsford and the A130/ A131;
- Partially signalising the Drovers Way roundabout, with signals on the A12(T) northbound off-slip;
- Improvements to the footway/ cycleway that runs on the south side of the interchange which forms the route to Chelmsford; and
- Provision of an improved route along the north side of the interchange to allow residents of Boreham to walk and cycle to the new station.

The existing access arrangements for Bulls Lodge Substation are due to change as a result of above:

- The Generals Lane connection with the Boreham Interchange and A12(T) overbridge will be demolished as part of the works at the Boreham Interchange; and
- The RDR will be completed, including the connection with the Boreham Interchange and new overbridge, as well as the new roundabout with the private road to/ from Bulls Lodge Substation.

The plan showing the surrounding highway network within Appendix C1 includes the indicative alignment of the RDR which is currently under construction.

### 7.2.2 Chelmsford North East Bypass (Phase 1) (CNEB)

The CNEB will provide an 8 km bypass between the $\mathrm{A} 12(\mathrm{~T})$ and the current A 131 , providing a strategic link between Chelmsford, Braintree, London Stansted Airport and the east and south east of England. The first phase (Phase 1) will consist of a single carriageway link between the current Beaulieu Housing Development and a new roundabout on the existing A131 at Chatham Green, as well as widening the existing A131 between Chatham Green and Deres Bridge to dual carriageway. A subsequent phase (Phase 2) is planned to dual the A131 between the Beaulieu Housing Development and the roundabout at Chatham Green. A plan showing the indicative proposals is shown below in Figure 10.


Figure 10: Chelmsford North East Bypass Proposals
Source: Essex Highways Information Brochure (July 2020)
https://www.essexhighways.org/uploads/docs/chelmsford_neb_a4_landscape_brochure4.pdf

The future CNEB will ultimately extend through the Chelmsford Garden Community, whilst tying in with National Highways' proposed improvements to Junction 19 (Boreham Interchange) of the A12(T) which will be delivered as part of the A12 Chelmsford to A120 Widening Scheme.

The construction of the CNEB is set to start in early 2023 with Phase 1 planned to open in late 2024. It should be noted that the bypass will not provide a direct connection with Cranham Road, as an overbridge will be provided at this location. However, the delivery of the RDR will allow development traffic to bypass parts of the A130 including White Hart Lane, improving links to the Order limits from the SRN.

As set out above, the CNEB (Phase 1) will change the alignment of Cranham Road to accommodate the bypass and the provision of a combined Cranham Road/ Drakes Lanes overbridge. The new structure will be constructed offline to keep Cranham Road open for as long as possible. However, Cranham Road may need to be temporarily closed to permit the tie-in of this existing route with the new approaches to the overbridge (this cannot be confirmed at this stage however). Therefore, depending on the nature/ duration/ programme of the above closure (if required), an alternative route may need to be temporarily followed by construction vehicles travelling to/ from the Solar Farm Site which will be agreed with ECC Highways. Alternatively, it may be possible to reschedule HGVs to avoid any periods where there may be a closure. Further details will be provided as part of the Detailed CTMP for the Solar Farm Site once further details are known.

At this stage, it is expected that should a temporary diversion route be required, then this would be via the B1137 Main Road and Waltham Road as discussed with ECC Highways. There will be a maximum of 50 daily HGVs (100 two-way movements) associated with the Solar Farm Site. This would represent a $1.2 \%$ increase in daily traffic levels along the B1137 Main Road (see Table 22 for 2025 baseline flows) and a $1.2 \%$ increase in daily traffic levels along Waltham Road north of Main Road (see Table 22 for 2025 baseline flows) in the instance that these HGVs are temporarily diverted via the B1137 Main Road and Waltham Road due to a closure on Cranham Road. Both B1137 Main Road and Waltham Road currently accommodate and are therefore suitable for accommodating HGVs. Therefore, these temporary increases are considered to be immaterial and are not expected to result in any significant effects.

### 7.3 Cumulative Schemes

### 7.3.1 A12 Chelmsford to A120 Widening Scheme

The proposed A12 Chelmsford to A120 Widening Scheme comprises National Highways' plans to widen the section of the A12(T) between Chelmsford (Junction 19, Boreham Interchange) and the interchange with the A120 (Junction 25). The preferred route of the A12(T) widening in the vicinity of the Order limits is predominantly on-line (i.e. upgrading of existing carriageway) and comprises improvements to Junction 19 (Boreham Interchange) and the replacement of the existing Junction 20A and Junction 20B with a new Junction 21 to the east of Hatfield Peverel. The project is anticipated to commence construction in 2025, with completion estimated for 2027. The proposed A12 Chelmsford to A120 Widening Scheme will be supported by a CTMP.

Further details of the project and the consultation held with National Highways are contained within Appendix A5.

### 7.3.2 Chelmsford Garden Community and Supporting Improvements

The new Chelmsford Garden Community is allocated in the Chelmsford Local Plan to the southwest of the Solar Farm Site and is due to provide approximately 10,000 new homes and significant new employment by 2044. A new railway station (Beaulieu station) will also be delivered (set to be completed by 2025/ 2026), along with part of the CNEB; an 8 km bypass between the A12(T) and the current A131, providing a connection with Boreham via a new link road, bridge and roundabout. It is understood that the following will also be delivered, as illustrated on Figure 9:

- RDR from the A130 ERW to Boreham Interchange including a new bridge over the railway line and A12(T) northbound on-slip (currently under construction); and
- RDR2 which is included in Chelmsford Local Plan for access to Chelmsford Garden Community, including a connection to the CNEB and the reconfiguration of the A130 ERW/ Wheelers Hill roundabout, as well as an amended link to Cranham Road.

Further details of discussions held with ECC Highways in relation to the above are contained within Appendix
A3.

### 7.3.3 Development on Land North of Cranham Road

Planning consent (16/01394/OUT) has been granted (at appeal) for a new flour and feed mill including storage, alterations to access, parking, landscaping and associated ancillary development on land to the north of Cranham Road, approximately 500 m to the west of Waltham Road. The majority of vehicles associated with the development are expected to travel to/ from the A130 to the west, to minimise the routing of HGVs through Boreham via the Boreham Interchange. To support the above, the corridor between the A130 and the development site is proposed to be widened by widening the road surface, verge clearance and hedge cutting along Wheelers Hill and Cranham Road. It should be noted that these improvements will be carried out in support of Longfield Solar Farm in the instance that this comes forward first. Further details of these proposed improvements are provided within Section 8.

It is anticipated that the development on land to the north of Cranham Road would take around 10 years to reach full operation, as operations are transferred from the current site in Chelmsford. The development has not yet commenced. Notwithstanding the above, the future baseline scenario (2025) includes operational traffic associated with the development on land to the north of Cranham Road.

### 7.3.4 Additional Schemes

## Scoping Discussions

The following additional schemes were also identified during the scoping discussions with ECC Highways and National Highways, for consideration as part of the TA:

- A120 Braintree to A12 - a proposed dual carriageway to provide an improved route between Braintree and the A12. This proposal forms one of the 'pipeline projects' announced as part of the second Road Investment Strategy (RIS2) which covers the period between April 2020 and March 2025. A validation exercise is currently being completed by National Highways to determine whether further work is required to progress the project.
- Bradwell B - a proposed nuclear power station at Bradwell-on-Sea in Essex, located circa. 25 km to the east of the Order limits. The original nuclear power station was decommissioned in 2002. The project is currently at public consultation stage.
- Sizewell C - a proposed nuclear power station at Sizewell in Suffolk, located circa. 90km to the northeast of the Order limits. The site currently consists of two nuclear power stations, one of which is still operational. The project is expected to be completed in 2031.

The A120 Braintree to A12 proposal is not currently a committed scheme and this has therefore been excluded from the scope of this TA. In addition, whilst the construction of the other two schemes (if/ when these come forward) may temporarily increase traffic levels along the $\mathrm{A} 12(\mathrm{~T})$, only a limited proportion of these construction vehicles (especially with respect to Sizewell C) would be expected to utilise the section of the SRN within the vicinity of the Order limits, including the Boreham Interchange. It is therefore not expected that there would be any cumulative effects between these schemes and Longfield Solar Farm. As such, these projects have also been scoped out from this TA.

The TA includes a review of traffic flows along the $\mathrm{A} 12(\mathrm{~T})$ as a result of additional traffic generated by the Scheme. No junction modelling has been carried out for the SRN given that the Scheme is not expected to have a significant impact on this part of the network. This approach has been agreed with National Highways.

## Environmental Statement Cumulative Schemes

Several additional cumulative schemes have been identified for consideration as part of the ES which have therefore been reviewed from a transport and access perspective to determine whether they could materially affect the highway impact assessment during the future baseline year (2025) and should therefore be considered as part of the TA. A summary of the most relevant consented schemes based on their location, scale and anticipated timeframes is as follows.

- Beaulieu Station Hub (19/01722/SCOPE) - scoping opinion issued to amend parameters including building heights. The Officer Report states that these changes would not increase overall traffic flows and that it was proposed to scope traffic and transport out of the EIA process. As such, this scheme has not been considered further.
- Bulls Lodge Quarry (CHL/1890/87 and ESS/147/20/CHL) - application to vary phasing, end date and details. The Transport Statement states that the scheme would have no impact on highway capacity, road safety or the environmental impact of road traffic. As such, this scheme has not been considered further.
- Sheepcotes Farm Quarry (ESS/01/18/CHL) - application for an agricultural reservoir via sand and gravel quarry. The Transport Statement states that there would be a $0.5 \%$ increase in daily traffic movements associated with the proposal which would be for a time limited period of around 5 years, equating to a worst-case addition of 110 two-way daily movements on A131 Braintree Road, as well as 11 two-way movements during the AM peak (08:00-09:00) and nine two-way movements during the PM peak (17:0018:00). These additional movements have been added to the 2025 future baseline flows for the A131 Braintree Road (see Table 19). The traffic flow diagrams remain unchanged given details of trip distribution/ turning movements are not known.
- North East Chelmsford urban extension (Beaulieu and Channels) - allocated and outline permission granted for 4,350 new homes and 40,000 sqm of business park and railway station floorspace. Construction commenced in 2014 and is expected to continue until the late 2020s. As such, construction traffic is already on the network and captured by the baseline survey data. The construction trips associated with this scheme have not been considered further.
- Land East of Plantation Road, Boreham (18/00682/MAT/1) - proposals seek to vary landscaping details following the original application (14/01552/OUT) for 145 dwellings, which are currently under construction. The Transport Statement for the original application identifies that, based on 200 dwellings, there would be an additional 45 two-way trips (AM peak, 08:00-09:00) and 43 two-way trips (PM peak, 17:00-18:00) on B1137 Main Road to the east of Plantation Road. This equates to an additional 33 and 32 two-way trips respectively based on the reduced quantum of 145 dwellings. Based on Section 8, the B1137 Main Road/ Waltham Road junction is projected to operate over capacity during the future baseline scenario (2025). These additional movements have therefore been excluded as the conclusions would remain unchanged.
- RDR Phase 3 (17/02165/OUT) - the construction of the RDR is currently underway and associated construction traffic is already on the network and captured by the baseline survey data. The RDR is expected to be complete by December 2021 and no construction traffic is expected to be on the network during the future baseline year of 2025. The construction trips associated with this scheme have not been considered further.
- The Chelmsford Civic Amenity and Recycling Centre is currently operational and the removal of the condition relating to fencing details (ESS/42/11/CHL) has no transport implications. As such, this site has not been considered further.
- The Chelmsford Waste Transfer Station is currently operational and the removal of the condition relating to operational hours (ESS/19/20/CHL), to extend the operational hours, is not expected to have an adverse impact in terms of traffic levels, allowing trips to be staggered over a longer duration across the course of the day. As such, this site has not been considered further.
- The Dunmow Waste Management site is currently operational and the retrospective application to revise the site layout drawing to reflect the current site working layout (ESS/17/17/CHL) will not change permitted activities or affect traffic levels associated with site operations. As such, this site has not been considered further.
- The Springfield Highways Depot is currently operational and the proposed minor amendments to the car parking layout and landscape treatment (CC/CHL/01/17) is not expected to affect traffic levels associated with the site as the additional car parking facilities have already been constructed with any trips captured by the baseline survey data. As such, this site has not been considered further.
- The retention of the existing Essex Regiment Way Stone Plant (08/00372/ FUL), with the introduction of formalised car parking spaces, surface treatment and revised access arrangements is expected, based on the Transport Statement, to result in a change in traffic flow of circa. 2\% on the A130 Essex Regiment Way during the peak hours, equivalent to +41 Passenger Car Units (PCUs) during the AM peak (08:00-09:00) and +57 PCUs during the PM peak (17:00-18:00). These additional movements have been added to the 2025 future baseline flows for the A130 Essex Regiment Way (see Table 19). The traffic flow diagrams remain unchanged given details of trip distribution/ turning movements are not known.
- Willows Green Solar Farm (UTT/22/0007/FUL) - application for a Solar Farm Site (< 50 MW ). The Planning Application documents indicate that the construction phase would be expected to take place over a period
of 26 weeks, during which there would be up to 18 daily construction vehicles (including eight HGVs). This would therefore represent a temporary uplift in trips and it is possible that the solar farm would be operational prior to the construction phase (2025) of the Scheme. Therefore, and given the limited number of additional (temporary) movements, the additional construction trips have not been included as part of the 2025 future baseline flows. Furthermore, additional traffic movements during the operational phase are expected to be limited to a few daily staff (car/ LGV) trips which have also been excluded

The remaining cumulative schemes identified for consideration as part of the ES have been reviewed but excluded for the purposes of this TA, as these schemes are either far removed from the study area or have yet to be consented (and are therefore not committed).

### 7.4 Timescales

A summary of the anticipated timescales for the main committed developments/ schemes is set out within Table 16 below.

Table 16: Committed Developments/ Scheme Summary

> Committed Development/ Scheme Anticipated Date of Completion

| Boreham Interchange Improvements | Spring 2023 |
| :---: | :---: |
| RDR | May 2023 |
| CNEB (Phase 1) | Late 2024 |
| Beaulieu Station | $2025 / 2026$ |
| A12 Chelmsford to A120 Widening Scheme | 2027 |
| RDR2 | Post-2036 |
| CNEB (Phase 2) | 2044 |
| Chelmsford Garden Community |  |

### 7.5 Summary

The main construction phase for the Scheme is expected to commence during the first quarter of 2024 and to be completed during the first quarter of 2026. The above highway improvements schemes and committed developments have therefore been considered as follows as part of this TA:

- The RDR and associated Boreham Interchange improvements (which are currently under construction) are due to be complete prior to the construction phase of the Scheme. As such, the proposed HGV routing strategy utilises the Boreham Interchange and RDR where appropriate.
- The CNEB (Phase 1) will be under construction during the early part of the proposed construction period and is due to be complete towards the end of the proposed construction period. Vehicles travelling to/ from the Solar Farm Site will utilise the Cranham Road/ Drakes Lanes overbridge once this has been completed.
- Beaulieu railway station, RDR2 and the A12 Chelmsford to A120 Widening Scheme will be under construction and therefore not in place to support the construction phase of the Scheme. Nonetheless, these committed schemes will be in place to support the operational and decommissioning phases of the Scheme.
- The CNEB (Phase 2) and Chelmsford Garden Community are not expected to affect the proposed construction phase and will be completed during the operational phase of the project. The assessment of the construction phase therefore excludes these committed schemes/ developments.
- The timeframes for the development on land to the north of Cranham Road are currently unknown. Nonetheless, the forecast operational trips (see Section 8) have been included on the network to provide a robust assessment of cumulative traffic movements during the construction phase. In terms of the proposed
carriageway widening improvements on Wheelers Hill and Cranham Road, it is assumed that these would be implemented as part of Longfield Solar Farm (see Section 8).


## 8. Highway Assessment

### 8.1 Assessment Scenarios

The following scenarios have been examined in detail as part of the highway assessment:

- Existing Baseline (2021);
- Future Baseline (2025); and
- Peak Construction Phase (2025).

The following scenarios been examined qualitatively:

- Operational Phase (2026-2065); and
- Decommissioning Period (not earlier than 2066).

It should be noted that whilst the TA assesses the potential impact of construction vehicle movements on the strategic and local highway networks, a quantitative assessment has not been carried out for operational traffic movements given the small increases expected (see Section 6.3).

The decommissioning effects of the Scheme are expected to be of a similar (or lesser) magnitude to the construction effects. On this basis, the construction period is considered to have the greatest change on the surrounding transport network and the construction phase has therefore been used to identify the likely impacts of the decommissioning phase including whether any mitigation will be required. This may overestimate the actual traffic flows slightly but is considered to be broadly accurate. In addition, the decommissioning phase is expected to take place no earlier than 2066 and is therefore considered to be too far into the future to be able to accurately predict future baseline traffic flows or road / junction layouts at that time.

### 8.2 Existing Baseline (2021)

Details relating to the existing baseline including existing traffic flows on the surrounding highway network and a review of the collision record are presented within Section 4.

### 8.3 Future Baseline (2025)

### 8.3.1 Highway Improvements

As identified in Section 7, the RDR and associated Boreham Interchange improvements are due to be complete and therefore in place during the construction phase of the project.

### 8.3.2 Committed Development

## Development on Land North of Cranham Road

As identified in Section 7, operational trips associated with the committed development on land to the north of Cranham Road have been included on the surrounding highway network, to provide a robust assessment of the Scheme in terms of cumulative impacts during the construction phase. This information has been taken from Section 5 (Table 5.2) and Section 6 (Table 6.4) of the respective Chelmer Mill Transport Assessment (August 2016) which was prepared in support of the planning application. A summary of the additional vehicular trips which have been included on the highway network is set out in Table 17 below.

Table 17: Development on Land North of Cranham Road - Vehicle Trip Generation

| AM Peak |  |  |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Vehicle Class | PM Peak <br> $(08: 00-09: 00)$ |  | Average Weekday <br> $(17: 00-18: 00)$ |  | (24 Hours) |  |  |  |  |
|  | Arr | Dep | Total | Arr | Dep | Total | Arr | Dep | Total |
| Light (cars/ vans) | 8 | 2 | 10 | 2 | 15 | 17 | 52 | 52 | 105 |
| Heavy (HGVs/ tractors) | 4 | 2 | 6 | 0 | 1 | 1 | 43 | 43 | 86 |
| Total | 12 | 4 | 16 | 2 | 16 | 18 | 95 | 95 | 191 |

## Source: Chelmer Mill, Transport Assessment (Vectos, August 2016)

It should be noted that the above trips for the network peak hours of 08:00-09:00 and 17:00-18:00 have also been adopted for the development peak hours of 07:00-08:00 and 18:00-19:00 (respectively) to provide a robust cumulative assessment of the Scheme.

The above trips have been distributed as follows:

- Light vehicles have been distributed to/ from the proposed access on Cranham Road, adopting the same distribution as construction workers (i.e. 2011 Census) for Longfield Solar Farm; and
- Heavy vehicles have been distribution to/ from the proposed access on Cranham Road, adopting the same distribution as HGVs (i.e. the agreed routing strategy) for Longfield Solar Farm.

The vehicular trips associated with the above are shown on the traffic flow diagrams held in Appendix $\mathbf{R}$.

## Additional Schemes

As previously set out within Section 7, the tabulated traffic flows for the 2025 future baseline scenario (provided further below) include vehicular trips associated with the following additional cumulative schemes:

- $\quad$ Sheepcotes Farm Quarry (ESS/01/18/CHL)
- Essex Regiment Way Stone Plant (08/00372/ FUL).


### 8.3.3 Traffic Growth

Projected background traffic growth has been applied to the traffic flows derived from the available traffic survey data to represent conditions during the future construction assessment year of 2025.

Traffic growth has been calculated using National Road Traffic Forecast (NRTF) growth factors, reflecting projected increases in annual vehicle mileage on roads within the England and Wales. National Trip Model (NTM) adjustments have then been applied within the Trip Ends Model Program (TEMPRO) utilising National Trip Ends Model (NTEM) dataset v7.2 and 2018 RTF - Scenario 1 (Reference Case) to reflect local factors (i.e. Chelmsford) for the appropriate road types, to determine the forecast increases in future baseline car driver trips during each weekday peak period. These represent the latest datasets available, covering the period up to 2050.

A summary of the growth factors is provided below in Table 18, with the outputs provided within Appendix $\mathbf{Q}$.
Table 18: Traffic Growth Factors

| Growth Period | Road Type | Traffic Growth Factor (Chelmsford) |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | AM Peak | PM Peak | Average Weekday |
| $2019-2025$ |  |  |  |  |
| (Construction) | Trunk | 1.0591 | 1.0603 | 1.0669 |
|  | Principal | 1.0484 | 1.0496 | 1.0561 |
| 202 <br> (Construction)* | Minor | 1.0483 | 1.0495 | 1.0560 |

*applied to the traffic flows (local network) derived from the 2021 junction counts
Based on the information presented in Section 7, it is not considered necessary to adjust the above growth factors to consider extant consents and Local Plan allocations for both employment and residential use given the following:

- Trips associated with the consented development on land to the north of Cranham Road have been applied to the network directly but are not considered significant enough to warrant an adjustment (i.e. reduction) to the growth factors, which offers a robust approach; and
- The Chelmsford Garden Community will not be occupied during the 2025 future assessment year.

The growth factors presented in Table 18 have been applied to the 2019 and 2021 baseline traffic flows as follows:

- Trunk: Applied to the A12(T) and Boreham Interchange traffic flows
- Principal: Applied to the A130 ERW and A131 Braintree Road traffic flows
- Minor: Applied to the remaining roads within the study area.

The anticipated future baseline flows on the surrounding highway network during the network and development peak hours of the construction phase are shown by the flow diagrams held in Appendix $\mathbf{R}$.

### 8.3.4 Junction Modelling

The results of the junction modelling for both the 2025 future baseline scenario and the 2025 future scenario with the inclusion of construction traffic are presented in the following section for ease of comparison.

### 8.4 Construction Phase (2025 Peak)

### 8.4.1 Proposed Solar Farm Site Access Arrangements

## Introduction

As previously set out within Section 5, the Solar Farm Site will be served by the proposed access on Waltham Road, circa. 125 m to the south of the junction with Cranham Road. A drawing showing the indicative design of the proposed Solar Farm Site access junction is held within Appendix I1. Further details of the proposed access design, visibility splays and vehicle swept paths are provided below.

## Visibility Requirements

The required application of design standards are set out within ECC's Development Management Policies document (dated February 2011) which states the following under Policy DM7 'visibility splays and stopping sight distances (SSD) for all roads, with the exception of internal estate roads which carry or are intended to carry HGVs and/ or passenger transport vehicles at a level of less than $5 \%$ of the overall traffic flow, must comply with standards contained within DMRB unless otherwise agreed with the Highway Authority'.

DMRB CD 109 (Highway Link Design) identifies desirable minimum SSDs based on the design speed of the carriageway. These values are adopted within DMRB CD 123 (Geometric design of at-grade priority and signalcontrolled junctions) in order to determine the visibility requirements (the 'y' distance) at priority junctions, measured along the edge of the major road carriageway from the centreline of the minor arm at the junction. These requirements are shown in Table 19 below.

Table 19: Desirable Minimum SSDs based on Design Speed

| Design Speed (kph) | SSD ('Y' Distance) |
| :---: | :---: |
| 50 | 70 m |
| 60 | 90 m |
| 70 | 120 m |
| 85 | 160 m |
| 100 | 215 m |
| 120 | 295 m |

The minimum distance from which the visibility splays are measured at simple priority junctions is at a 2.4 m setback (the ' $x$ ' distance) from the give-way line

The 'Desirable Minimum' SSDs in the DMRB are based on a driver perception/ reaction time of two seconds and a deceleration rate of $0.25 \mathrm{~g}\left(2.45 \mathrm{~m} / \mathrm{s}^{2}\right.$ ). The 'Absolute Minimum' (one step below Desirable Minimum) SSD values use the same reaction time and a deceleration rate of $0.375 \mathrm{~g}\left(3.68 \mathrm{~m} / \mathrm{s}^{2}\right)$.

The $85^{\text {th }}$ percentile speed of traffic represents the appropriate speed measurement for an existing major road when determining visibility splay requirements. The above parameters have been adopted to calculate the desirable minimum and absolute minimum visibility requirements for Waltham Road based on the highest recorded 85 ${ }^{\text {th }}$ percentile speeds in October 2019 as identified within Section 4. The results are shown below in Table 20.

Table 20: SSDs on Waltham Road and Boreham Road (DMRB)

| Direction | 85 ${ }^{\text {th }}$ Percentile Speed <br> (Highest Recorded) | DMRB Requirement (SSD/ ' $Y$ ' Distance) |  |
| :---: | :---: | :---: | :---: |
|  |  | Desirable Minimum | Absolute Minimum |
| Northbound | 71.9 kph | 122m | 95 m |
| Southbound | 72.9 kph | 125m | 97m |

In view of the above, and the requirements set out in DMRB CD 123 and DMRB CD 109, the following desirable minimum visibility splays have been identified:

- Junction visibility splays of $2.4 \mathrm{~m} \times 125 \mathrm{~m}$ for vehicles turning from the proposed Solar Farm Site access to the mainline carriageway; and
- Forward visibility splays/ SSDs of 125 m for vehicles travelling towards the proposed Solar Farm Site access on the immediate junction approaches of the mainline carriageway.

The above visibility/ SSD requirements have been agreed with ECC Highways as identified by the correspondence held in Appendix A4.

A drawing showing the required areas to be kept clear to achieve the above visibility splays and SSDs is held within Appendix 11. This demonstrates that these can all be achieved through the clearance of vegetation etc. within the highway boundary and the Order limits.

## Vehicle Swept Paths

As set out in Section 5, the agreed routing strategy for HGVs is via Wheelers Hill, Cranham Road and Waltham Road, to prevent these larger vehicles from passing through Hatfield Peverel or Boreham to the south of the Solar Farm Site. As such, all HGVs will turn left into the proposed Solar Farm Site access from Waltham Road to the north, and then right out of the access to return back to Waltham Road to the north. A drawing showing vehicle swept paths for a maximum legal articulated vehicle and a mobile crane is held in Appendix $\mathbf{I 2}$.

The vehicle swept paths demonstrate that construction vehicles will be able to turn in/ out of the proposed access without overrunning any kerb lines. It should be noted that banksmen will be in place to control HGV movements at the access to ensure these movements are carried out safely. An appropriate level of visibility will be achievable to/ from the access as set out above. A small section of the Waltham Road carriageway will be widened to 6.0 m to the north of the proposed Solar Farm Site access to support the movements of HGVs and further details are provided below.

## Solar Farm Site Access Road

As shown by the proposed layout of the access (held in Appendix I1), the site access road will include laybys on either side to accommodate HGVs waiting to enter or exit the Solar Farm Site should this be required (to prevent stacking of vehicles). The site access road has been designed to accommodate two-way movements as shown by the vehicle swept paths held in Appendix I2. There is expected to be up to 7-8 HGVs arriving to or departing from the Solar Farm Site per hour as set out in Section 5, which equates to one HGV arriving or departing approximately every eight minutes. The proposed layout of the Solar Farm Site access and site access road is considered to be appropriate for accommodating this level of activity. A Stage 1 Road Safety Audit (RSA) will be carried out on the preliminary design of the proposed site access post-submission.

The proposed site access road will be surfaced with tarmac over a 20 m distance from the junction with Waltham Road, to minimise the transfer of material onto the public highway as a result of construction vehicles.

### 8.4.2 Proposed Carriageway Widening

Following discussions with ECC Highways, it was agreed that carriageway widening improvements should be implemented along the local highway network where necessary along the agreed route to accommodate construction vehicles travelling to/ from the Solar Farm Site. This includes widening the carriageway to 6.0 m where possible and providing a minimum width of 5.5 m where 6.0 m is not possible i.e. due to constraints such as thirdparty land ownership and existing buildings (there is only one instance of this - see below). A detailed review has therefore been carried out for Wheelers Hill, Cranham Road and Waltham Road, representing the section of the local highway network between the A130 ERW and the proposed Solar Farm Site access on Waltham Road, to determine the areas where widening may be required.

A detailed schedule and series of drawings are held within Appendix L identifying the extent and locations of potential carriageway widening that may be required to achieve a minimum carriageway width of 6.0 m along the agreed extents of the local highway network. This has been informed by OS mapping, highway boundary information and a visual inspection to identify the areas where the widening should take place e.g. to determine which side of the carriageway would be most appropriate for the widening. These drawings indicate the following:

- Where the carriageway currently falls below 6.0 m in width (based on the OS mapping), it will be possible to widen the carriageway to 6.0 m within the highway boundary along the entire route ( 18 individual sections), except for a single pinch point (within Section 1 of 18) at the western extent of the study area (adjacent to Kingswood, approximately 150 m east of the A130/ Wheelers Hill roundabout) due to existing buildings on both sides of the carriageway;
- For the above pinch point, as agreed with ECC, it will be possible to widen the carriageway to 5.5 m within the highway boundary which is considered to be appropriate for the following reasons:
- The carriageway will only fall below 6.0 m (but no less than 5.5 m ) for a short distance (pinch point) of circa. 40 m , with good forward visibility in each direction at this location
- A carriageway width of 5.5 m is sufficient for two large vehicles to pass based on Manual for Streets guidance;
- The existing carriageway exceeds 6.0 m in width both to the east and west of the pinch point, allowing two large vehicles to easily pass; and
- An existing access provides an additional opportunity for two large vehicles to pass to the west of the pinch point, if required.

It should be noted that following a visual inspection, the anticipated extents of the proposed carriageway widening are considered to represent a worst-case scenario as 8 out of the 18 sections appear to be wider in reality than indicated by the OS mapping. Further details are set out within the schedule held in Appendix $\mathbf{L}$.

In view of the above, it is recommended that a topographical survey is carried out at the detailed design stage to determine the true extents of widening at the eight identified locations in order to avoid any unnecessary works i.e. should less widening be required to achieve 6.0 m width or in the instance that the carriageway is already 6.0 m in width.

The proposed extent of carriageway widening to be delivered in support of the Scheme has been agreed with ECC Highways, as shown by the meeting minutes held in Appendix A3. A Stage 1 Road Safety Audit (RSA) will be carried out on the preliminary design of the proposed carriageway widening post-submission. The carriageway widening will be secured by the DCO and further details are included within the Framework CTMP.

### 8.4.3 Proposed Bulls Lodge Substation Access

During the construction phase, two new accesses will be provided to facilitate the extension of the Bulls Lodge Substation as follows:

- A western access will be located on the northern side of the private road circa. 180 m to the west of the existing substation access. This will be utilised by HGVs to carry out the necessary works to extend Bulls Lodge Substation; and,
- An eastern access will be located on the northern side of the private road circa. 30m to the east of the existing substation access. This will provide access to the construction compound for the substation and will primarily be utilised by construction workers. This access will also be utilised by HGVs when deliveries are made.

The existing operational access for Bulls Lodge Substation will be retained but will not be utilised by vehicles associated with the Scheme. A plan showing the proposed vehicle access arrangements for Bulls Lodge Substation is held within Appendix J1.

The section of private road which serves Bulls Lodge Substation was upgraded when the original substation was constructed, is subject to a 30 mph speed limit and only serves the substation and a limited number of buildings and agricultural fields to the east. Therefore, this part of the network is suitable for HGVs whilst being limited to a few local/ repeat users and is therefore lightly trafficked. Visibility splays of $2.4 \mathrm{~m} \times 90 \mathrm{~m}$ will be provided at the western and eastern accesses commensurate with the desirable minimum requirement for a 30 mph speed limit.

The drawings held within Appendix J2 shows the areas to be kept clear to achieve these visibility splays to in each direction.

All vehicles will turn left into the proposed substation accesses from the private road to the west, and then right out of the site access to return back to the west. Drawings showing vehicle swept paths for a maximum legal articulated vehicle are held in Appendix J3. The vehicle swept paths demonstrate that construction vehicles will be able to turn in/ out of the proposed substation accesses without overrunning any kerb lines. It should be noted that banksmen will be in place to control HGV movements at the accesses to ensure these movements are carried out safely. An appropriate level of visibility will be achievable to/ from each access as set out above.

It should be noted that the western access will be retained during the operational phase to provide maintenance access to the extended part of the Bulls Lodge Substation. The existing operational access for Bulls Lodge Substation will also be retained to provide access to the existing part of the substation. The eastern access will be removed during the operational phase.

### 8.4.4 Noakes Lane Crossing Points

The proposed construction route within the Solar Farm Site will cross Noakes Lane at two locations to allow construction vehicles to access all parts of the Solar Farm Site. Following discussions with ECC Highways, it was agreed that visibility splays of 90 m should be provided in both directions at these crossing points, through the clearance of vegetation (hedgerows) within the Solar Farm Site. A drawing showing the locations of these crossing points and the areas to be kept clear to achieve visibility splays of $2.4 \mathrm{~m} \times 90 \mathrm{~m}$ is held within Appendix K. It should be noted that the crossing points will be gated with supporting measures (e.g. banksmen and signage) to safely control construction vehicles as they cross Noakes Lane to access different parts of the Solar Farm Site. Priority will be provided to vehicles on Noakes Lane, with construction vehicles being held until the carriageway is clear in both directions. A Stage 1 Road Safety Audit (RSA) will be carried out on the preliminary design of the proposed Noakes Lane crossing points post-submission. Further details relating to mitigation and management are provided within Section 8.

### 8.4.5 Temporary Traffic Management on Waltham Road

The Grid Connection Route will require temporary traffic management on Waltham Road for a period of up to 30 weeks in order to allow this to be installed across Waltham Road and to allow construction vehicles to safely cross Waltham Road to access the section of the cable route to the west. Following discussions with ECC Highways, it is proposed to implement temporary traffic signals on Waltham Road which will only hold up mainline traffic when a construction vehicle needs to cross Waltham Road. There are expected to be up to 30 such vehicle crossing movements per day (equivalent to $3-4$ crossing movements per hour) which will only hold up traffic momentarily (when construction vehicles cross Waltham Road). Waltham Road will remain free-flowing, with mainline traffic having priority under a green traffic signal, other than when construction vehicles need to cross Waltham Road. Therefore, the temporary traffic signals are not expected to have a material impact on journey times or driver delay along Waltham Road. In terms of the installation of the Grid Connection Route itself across Waltham Road, it is envisaged that this will be dealt with through a lane closure(s) rather than a whole road closure. The exact methodology for implementing the temporary traffic management will be determined by the contractor once appointed and designed to minimise any potential effects as far as possible. Further details will be provided within the detailed CTMPs once further details are known in due course.

The construction area for the Grid Connection Route will be accessed from two locations. The works to the west of Boreham Brook will be accessed via the private road which serves Bulls Lodge Substation. The works to the east of Waltham Road will be accessed from the Solar Farm Site. There will be a single crossing point of Waltham Road to allow vehicles to access the section of Grid Connection Route to the west of Waltham Road up to the central crossing of Boreham Brook. Construction vehicles will not be permitted to travel along Waltham Road for the purposes of accessing the Grid Connection Route, they will cross directly over Waltham Road between the works areas east and west of the site. These routing arrangements are illustrated by the plan held in Appendix H3. Further details of the Grid Connection Route including the proposed crossing point on Waltham Road are provided within the Framework CTMP.

### 8.4.6 Highway Capacity

## Forecast Increases in Traffic Movements

The anticipated impacts of construction vehicle movements have been determined by reviewing the forecast increases in traffic movements against the future baseline traffic flows on the local and strategic highway networks. This includes a review of the increase in two-way vehicle movements during the proposed network and development peak hours, both in terms of actual increases and percentage increases relative to the future baseline traffic flows. The results are shown in the tables below and are also presented diagrammatically by the traffic flow diagrams held in Appendix $\mathbf{R}$.

It should be noted that the assessment considers cumulative trips associated with both the Solar Farm Site and the Bulls Lodge Substation Site. The assessment focuses on both the strategic network, as well as the local network near the Solar Farm Site (i.e. Waltham Road, Main Road, Cranham Road and Wheelers Hill) given that the majority of trips will be to/ from the Solar Farm Site. A qualitative assessment has been carried out for the RDR given that this is due to be completed in May 2023 and therefore there is no existing traffic data for this part of the future highway network. Furthermore, and given the lower number of trips which are expected to use the private road to/ from the Bulls Lodge Substation (compared to the local highway network in the vicinity of the Solar Farm Site), a qualitative assessment has been carried out for the private road. Nonetheless, the number of additional trips which are expected to utilise these parts of the highway network (RDR and private road) as a result of the Scheme have been identified for the construction phase (see Table 21 and Table 22).

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Table 21: 2025 Construction Traffic Impact Assessment - Strategic Highway Network - Link Flows (Two-Way)

| Link | AM Dev Peak (07:00-08:00) |  |  | AM Network Peak (08:00-09:00) |  |  | PM Network Peak(17:00-18:00) |  |  | PM Dev Peak(18:00-19:00) |  |  | Daily (24 Hours) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Base | Dev | Increase | Base | Dev | Increase | Base | Dev | Increase | Base | Dev | Increase | Base | Dev | Increase |
| A12(T) Northeast | 6,089 | 26 | 0.4\% | 5,972 | 7 | 0.1\% | 4,184 | 7 | 0.2\% | 3,070 | 19 | 0.6\% | 63,081 | 161 | 0.3\% |
| A12(T) South | 5,140 | 51 | 1.0\% | 4,785 | 14 | 0.3\% | 4,733 | 13 | 0.3\% | 4,084 | 38 | 0.9\% | 66,154 | 251 | 0.4\% |
| A130/ A131 Braintree Road | 2,292 | 25 | 1.1\% | 1,866 | 6 | 0.3\% | 2,368 | 6 | 0.3\% | 1,589 | 19 | 1.2\% | 26,023 | 91 | 0.4\% |
| A130 ERW (south of Wheelers Hill) | 2,610 | 39 | 1.5\% | 2,471 | 10 | 0.4\% | 2,749 | 10 | 0.4\% | 2,129 | 29 | 1.4\% | 29,115 | 176 | 0.6\% |
| A130 ERW (south of CVPR) | 2,610 | 39 | 1.5\% | 2,471 | 10 | 0.4\% | 2,749 | 10 | 0.4\% | 2,129 | 29 | 1.4\% | 29,115 | 176 | 0.6\% |
| A130 ERW (south of RDR) | 2,600 | 39 | 1.5\% | 2,462 | 10 | 0.4\% | 2,740 | 10 | 0.4\% | 2,119 | 29 | 1.4\% | 28,996 | 101 | 0.3\% |
| RDR* | - | 20 | - | - | 6 | - | - | 5 | - | - | 15 | - | - | 263 | - |

*RDR only expected to be used for Bulls Lodge Substation and by HGVs following agreed routing strategy, no baseline data available (as currently under construction)
Table 22: 2025 Construction Traffic Impact Assessment - Local Highway Network - Link Flows (Two-Way)

| Link | AM Dev Peak (07:00-08:00) |  |  | AM Network Peak (08:00-09:00) |  |  | PM Network Peak(17:00-18:00) |  |  | PM Dev Peak(18:00-19:00) |  |  | Daily (24 Hours)* |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Base | Dev | Increase | Base | Dev | Increase | Base | Dev | Increase | Base | Dev | Increase | Base | Dev | Increase |
| Boreham Road (north of Cranham Road) | 217 | 0 | 0.0\% | 286 | 0 | 0.0\% | 267 | 0 | 0.0\% | 172 | 0 | 0.0\% | - | 0 | - |
| Waltham Road (north of site access) | 678 | 64 | 9.5\% | 771 | 16 | 2.1\% | 743 | 16 | 2.2\% | 430 | 48 | 11.1\% | 7,780 | 267 | 3.4\% |
| Waltham Road (south of site access) | 678 | 62 | 9.1\% | 771 | 16 | 2.1\% | 743 | 16 | 2.1\% | 430 | 46 | 10.7\% | 7,780 | 163 | 2.1\% |
| Waltham Road (north of Main Road) | 767 | 62 | 8.1\% | 883 | 16 | 1.8\% | 841 | 16 | 1.9\% | 508 | 46 | 9.1\% | 8,383 | 163 | 1.9\% |
| Cranham Road (west of Waltham Road) | 482 | 64 | 13.3\% | 514 | 16 | 3.1\% | 499 | 16 | 3.2\% | 296 | 48 | 16.2\% | 4,228 | 267 | 6.3\% |
| Wheelers Hill | 498 | 64 | 12.9\% | 530 | 16 | 3.0\% | 517 | 16 | 3.1\% | 314 | 48 | 15.3\% | 4,418 | 267 | 6.0\% |
| Main Road (east of Waltham Road) | 858 | 2 | 0.2\% | 909 | 0 | 0.0\% | 1,097 | 0 | 0.0\% | 674 | 1 | 0.2\% | - | 4 | - |
| Main Road (west of Waltham Road) | 721 | 60 | 8.3\% | 922 | 15 | 1.7\% | 1,022 | 15 | 1.5\% | 638 | 45 | 7.0\% | 8,267 | 158 | 1.9\% |
| Private Road to/ from Bulls Lodge Substation** | - | 20 | - | - | 6 | - | - | 5 | - | - | 15 | - | - | 188 | - |

*2021 survey data only covers the peak hours, and 24 -hour data is not therefore available for all parts of the network
**construction staff vehicles only, all HGVs would travel outside of the development and network peak hours
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Table 23: 2025 Construction Traffic Impact Assessment - Junction Entry Flows

| Junction | AM Dev Peak (07:00-08:00) |  |  | AM Network Peak (08:00-09:00) |  |  | PM Network Peak(17:00-18:00) |  |  | PM Dev Peak <br> (18:00-19:00) |  |  | Daily (24 Hours)* |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Base | Dev | Increase | Base | Dev | Increase | Base | Dev | Increase | Base | Dev | Increase | Base | Dev | Increase |
| Proposed Solar Farm Site Access Junction | 678 | 126 | 18.6\% | 771 | 32 | 4.1\% | 743 | 32 | 4.3\% | 430 | 94 | 21.9\% | 7,780 | 430 | 5.5\% |
| Waltham Road/ Cranham Road Junction | 689 | 64 | 9.3\% | 786 | 16 | 2.1\% | 755 | 16 | 2.1\% | 449 | 48 | 10.7\% | - | 267 | - |
| Main Road/ Waltham Road Junction | 1,173 | 62 | 5.3\% | 1,357 | 16 | 1.2\% | 1,480 | 16 | 1.1\% | 910 | 46 | 5.1\% | - | 163 | - |
| A130/ Wheelers Hill Roundabout | 3,053 | 64 | 2.1\% | 2,473 | 16 | 0.7\% | 2,574 | 16 | 0.6\% | 1,996 | 48 | 2.4\% | 29,546 | 267 | 0.9\% |
| A12(T) SB Off-Slip** | 1,725 | 26 | 1.5\% | 1,737 | 7 | 0.4\% | 995 | 0 | 0.0\% | 741 | 0 | 0.0\% | 14,614 | 81 | 0.6\% |
| A12(T) NB Off-Slip** | 1,441 | 51 | 3.5\% | 1,311 | 14 | 1.0\% | 1,164 | 0 | 0.0\% | 993 | 0 | 0.0\% | 16,282 | 126 | 0.8\% |

*2021 survey data only covers the peak hours, and 24 -hour data is not therefore available for all parts of the network
**includes arrivals only i.e. exiting the A12(T) at the Boreham Interchange to access the Order limits

The results shown in Tables 21 to 23 above indicate the following:

- A total of 126 two-way vehicle trips are expected to utilise the proposed Solar Farm Site access on Waltham Road during the AM development peak hour (07:00-08:00), with 94 two-way vehicle trips during the PM development peak hour (18:00-19:00). This equates to around 2-3 vehicles per minute during the busiest times.
- There are expected to be significantly fewer vehicle trips during the traditional weekday peak hours of 08:00-09:00 and 17:00-18:00, where 32 additional two-way trips will be expected during each of these hours.
- The Scheme is expected to have the largest proportional increase in traffic flows on Cranham Road (increase of $16 \%$ during the PM development peak hour). Carriageway widening improvements will be implemented on Cranham Road (as discussed and agreed with ECC) to support the increase in HGV movements where necessary. This has been treated as embedded mitigation as part of the Scheme. It is possible that the majority of these highway improvements would not need to be undertaken by the Applicant in the instance that these are undertaken by the developer of the Land North of Cranham Road.
- The Scheme is expected to result in a maximum traffic flow increase of $11.1 \%$ on Waltham Road (north of the proposed access) during the PM development peak hour (18:00-19:00), representing an increase of 48 vehicles at this time, which equates to less than one vehicle per minute on this very short section.
- The Scheme is expected to result in a maximum traffic flow increase of $8.3 \%$ on the B1137 Main Road during the AM development peak hour (07:00-08:00), representing an increase of 60 vehicles at this time, or an average of one vehicle per minute.
- The Scheme is not expected to have a significant impact on any strategic routes as follows:
- Maximum increase of 39 two-way vehicles (+1.5\%) on the A130 ERW during the AM development peak hour (07:00-08:00);
- Maximum increase of 26 two-way vehicles (+0.4\%) on the A12(T) to the northeast of the Boreham Interchange during the AM development peak hour (07:00-08:00); and
- Maximum increase of 51 two-way vehicles (+1.0\%) on the A12(T) to the south of the Boreham Interchange during the AM development peak hour (07:00-08:00).
- A total of 263 two-way vehicles on the RDR, via the Boreham Interchange and the A12(T), travelling to/ from the Order limits via the agreed routing strategy.
- The total traffic flows (with the Scheme) during the AM development peak hour (07:00-08:00) are expected to fall below the future baseline traffic flows (without the Scheme) during the AM network peak hour (08:0009:00) for Waltham Road and the B1137 Main Road. This demonstrates that the Scheme is not expected to result in higher traffic levels on these parts of the network than will already be experienced at other times of the day;
- The total traffic flows (with the Scheme) during the PM development peak hour (18:00-19:00) are expected to fall below the future baseline traffic flows (without the Scheme) during the PM network peak hour (17:0018:00) across the entire study area. This demonstrates that the Scheme is not expected to result in higher traffic levels across the surrounding highway network than will already be experienced at other times of the day.

The extension to the existing Bulls Lodge Substation is expected to result in up to 94 additional vehicles per day comprising 46 HGVs and 48 LGVs (including staff) during the peak period. It is not expected that any improvements will be required along the private road to/ from Bulls Lodge Substation to accommodate these additional trips, other than to accommodate the proposed eastern and western accesses.

Further to the above, there is expected to be a maximum of 20 additional two-way vehicle movements on the RDR and the private road to/ from Bulls Lodge Substation, via the Boreham Interchange and the A12(T) as a result of the Bulls Lodge Substation extension during the construction phase. This equates to a maximum of one additional vehicle movement every three minutes. The construction of the Bulls Lodge Substation extension is not expected to have an adverse impact on any of the cumulative schemes listed within Section 7 including Bulls Lodge Quarry.

Whilst the above represents the peak construction phase which will be temporary, local junction modelling has been carried out for the proposed Solar Farm Site access junction on Waltham Road and at the Waltham Road/ Cranham Road junction as agreed with ECC Highways, to determine whether any further improvements are likely
to be required on the surrounding highway network in support of the Scheme. No modelling is required for the strategic highway network as agreed with National Highways, given that the Scheme is not expected to have any significant impacts on the SRN including the A12(T).

## Local Junction Modelling

As set out within Section 4, local junction modelling has been undertaken using PICADY for the Waltham Road/ Cranham Road and the B1137 Main Road/ Waltham Road junctions. The existing models have been informed by 2021 traffic count data (in terms of traffic flows and validating queue lengths), measurements from OS mapping, as well as aerial imagery and on-site observations. An additional model of the proposed Solar Farm Site access junction on Waltham Road has also been prepared based on the proposed design of the access with supporting improvements including vegetation clearance and carriageway widening on Waltham Road. Plans showing the measurements which have been used to inform the local junction modelling are held in Appendices F1 to F3.

The PICADY results tables provide the maximum RFC values predicted for each arm, together with the maximum average queue (in vehicles) and the average overall delay incurred by each vehicle passing through the junction. An RFC value of 0.85 is usually taken to indicate that the manoeuvre is operating at practical capacity, while a value of 1.0 indicates that it is operating at theoretical capacity.

## Proposed Solar Farm Site Access Junction on Waltham Road

The results for the proposed access junction for the 2025 future year scenario with construction traffic are presented in Table $\mathbf{2 4}$ below. It should be noted that the modelling has only been carried out for the proposed development peak hours when the highest levels of vehicular activity are expected to/ from the Solar Farm Site.

Table 24: PICADY Summary - Proposed Solar Farm Site Access Junction - 2025 Future Baseline + Construction

|  | AM Dev Peak (07:00-08:00) |  | PM Dev Peak (18:00-19:00) |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | RFC | Max Q* <br> (vehs) | Delay <br> (s) | RFC | Max Q* <br> (vehs) | Delay <br> (s) |
| Site Access (Left Turn) | 0.01 | 0 | 13.0 | 0.12 | 1 | 6.9 |
| Site Access (Right Turn) | 0.05 | 1 | 29.3 | 0.18 | 1 | 11.5 |
| Waltham Road (Ahead/ Right Turn) | 0.31 | 1 | 5.9 | 0.01 | 0 | 8.3 |
| Overall Junction Delay (secs/ veh) |  | $\mathbf{1 . 5}$ |  |  | $\mathbf{2 . 1}$ |  |

*rounded up for robustness
The above shows that the proposed Solar Farm Site access junction on Waltham Road is forecast to operate well within capacity during the peak construction phase (2025) with minimal queuing. The full modelling results are held in Appendix G3.

## Waltham Road/ Cranham Road Junction

The results for the Waltham Road/ Cranham Road junction for the 2025 future year baseline scenario without and with construction traffic are presented in Tables 25 and 26 below.

Table 25: PICADY Summary - Waltham Road/ Cranham Road Junction - 2025 Future Baseline

|  | AM Dev Peak (07:00-08:00) |  |  | AM Junction Peak(07:45-08:45) |  |  | PM Junction Peak(16:15-17:15) |  |  | PM Dev Peak (18:00-19:00) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | RFC | Max Q (vehs)* | Delay <br> (s) | RFC | Max Q (vehs)* | Delay <br> (s) | RFC | Max Q (vehs)* | Delay <br> (s) | RFC | Max Q (vehs)* | Delay <br> (s) |
| Cranham Road (Left Turn) | 0.00 | 0 | 5.9 | 0.01 | 0 | 7.9 | 0.04 | 0 | 7.1 | 0.01 | 0 | 5.9 |
| Cranham Road (Right Turn) | 0.30 | 1 | 10.6 | 0.46 | 1 | 14.2 | 0.82 | 5 | 38.6 | 0.38 | 1 | 11.0 |
| Waltham Road <br> (Ahead/ Right Turn) | 0.02 | 0 | 6.0 | 0.02 | 0 | 5.9 | 0.01 | 0 | 5.7 | 0.03 | 0 | 6.5 |


|  | AM Dev Peak (07:00-08:00) |  |  | AM Junction Peak(07:45-08:45) |  |  | PM Junction Peak(16:15-17:15) |  |  | PM Dev Peak <br> (18:00-19:00) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | RFC | Max Q (vehs)* | Delay (s) | RFC | Max Q (vehs)* | Delay (s) | RFC | Max Q (vehs)* | Delay <br> (s) | RFC | Max Q (vehs)* | Delay (s) |
| Overall Junction <br> Delay (secs/ veh) |  | 2.2 |  |  | 3.6 |  |  | 18.7 |  |  | 4.8 |  |

*rounded up for robustness

Table 26: PICADY Summary - Waltham Road/ Cranham Road Junction - 2025 Future Baseline + Construction

|  | AM Dev Peak (07:00-08:00) |  |  | AM Junction Peak(07:45-08:45) |  |  | PM Junction Peak(16:15-17:15) |  |  | PM Dev Peak <br> (18:00-19:00) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | RFC | Max Q (vehs)* | Delay (s) | RFC | Max Q (vehs)* | Delay (s) | RFC | Max $Q$ (vehs)* | Delay (s) | RFC | Max Q (vehs)* | Delay (s) |
| Cranham Road (Left Turn) | 0.00 | 0 | 6.1 | 0.01 | 0 | 8.1 | 0.04 | 0 | 7.1 | 0.01 | 0 | 5.9 |
| Cranham Road (Right Turn) | 0.44 | 1 | 13.5 | 0.52 | 2 | 16.0 | 0.83 | 5 | 40.9 | 0.40 | 1 | 11.6 |
| Waltham Road (Ahead/ Right Turn) | 0.02 | 0 | 6.0 | 0.02 | 0 | 5.9 | 0.01 | 0 | 5.7 | 0.03 | 0 | 6.6 |
| Overall Junction Delay (secs/ veh) |  | 3.6 |  |  | 4.4 |  |  | 19.2 |  |  | 4.7 |  |

The above shows that the Waltham Road/ Cranham Road junction is forecast to operate well within capacity during the development peak hours, as well as during the AM junction peak hour (07:45-08:45), with minimal queuing. In terms of the PM junction peak hour (16:15-17:15), the junction is forecast to operate within but close to practical capacity, with some queuing on Cranham Road. However, there is not expected to be any additional queuing at this junction as a result of the Scheme during this scenario. The full modelling results are held in Appendix G1.

## B1137 Main Road/ Waltham Road Junction

The Boreham Interchange improvements and RDR (which are due to be completed well in advance of 2025) are expected to ease congestion through the B1137 Main Road/ Waltham Road junction by delivering additional capacity on the surrounding highway network with a subsequent redistribution of vehicle movements. It is therefore not possible to accurately forecast future traffic flows through this junction with these improvements in place. As a result, the future baseline modelling results for the B1137 Main Road/ Waltham Road junction exclude these wider improvements. The results for the B1137 Main Road/ Waltham Road junction for the 2025 future year baseline scenario without construction traffic are presented in Table 27 below.

Table 27: PICADY Summary - B1137 Main Road/ Waltham Road Junction - 2025 Future Baseline

|  | AM Dev Peak (07:00-08:00) |  |  | AM Junction Peak(07:45-08:45) |  |  | PM Junction Peak(16:45-17:45) |  |  | PM Dev Peak(18:00-19:00) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | RFC | Max Q (vehs)* | Delay <br> (s) | RFC | Max Q (vehs)* | Delay (s) | RFC | Max Q (vehs)* | Delay <br> (s) | RFC | Max Q (vehs)* | Delay <br> (s) |
| Waltham Road (Left Turn) | 1.03 | 9 | 202.0 | 1.03 | 12 | 206.2 | 0.99 | 10 | 117.3 | 0.43 | 1 | 12.7 |
| Waltham Road (Right Turn) | 1.03 | 16 | 179.7 | 1.03 | 17 | 208.5 | 1.00 | 9 | 135.5 | 0.60 | 2 | 23.0 |
| B1137 Main Road (Ahead/ Right Turn) | 0.76 | 4 | 19.0 | 0.76 | 4 | 17.4 | 0.40 | 1 | 7.6 | 0.32 | 1 | 6.4 |
| Overall Junction <br> Delay (secs/ veh) |  | 58.8 |  |  | 71.1 |  |  | 46.9 |  |  | 6.8 |  |

*rounded up for robustness

The above shows that, without the completion of the Boreham Interchange improvements and the RDR, the B1137 Main Road/ Waltham Road junction is forecast to operate above operational capacity during both AM scenarios, as well as during the PM junction peak hour, with significant queuing on Waltham Road and some queuing on the B1137 Main Road. The junction is forecast to operate well within capacity during the PM development peak hour (18:00-19:00) with minimal queuing. The full modelling results are held in Appendix G2.

A review of the potential impact of construction traffic has been carried out based on the results presented in Table 27, given that the future baseline conditions of the B1137 Main Road/ Waltham Road junction will be expected to improve following the completion of the Boreham Interchange improvements and the RDR. The results in Table 23 indicate that there is expected to be an additional 16 vehicular trips passing through the B1137 Main Road/ Waltham Road junction during each of the network peak hours, as a result of the Scheme. This equates to one additional vehicle every 3-4 minutes, representing less than $1 \%$ increase in traffic flows through this junction when compared to the 2025 future baseline flows, which is not considered to be significant.

Further to the above, there will be the potential to utilise additional parking spaces within the CVPR for construction workers (see Appendix A3) during the peak construction periods, to reduce additional vehicle trips on this part of the local highway network. In view of the above, it is not considered that any further mitigation is required during the construction phase other than that already identified.

## Summary

In view of the above, the Scheme is not expected to result in any material impacts on the surrounding local highway network during the peak period of the construction phase. As such, no further off-site highway improvements are considered to be necessary to those already identified in support of the Scheme.

### 8.4.7 Highway Safety

## Collision Record

A summary of the additional construction vehicle movements associated with the Scheme is set out below for locations where any existing collisions clusters or patterns were identified (Section 4) to determine whether any remedial measures may be required in support of the Scheme.

## Waltham Road

There is expected to be up to 93 additional vehicle movements on Waltham Road during the busiest hour (07:00$08: 00$ ) of the peak construction period, mainly comprising construction workers arriving. A total of three incidents (all slight) were recorded during the five-year study period. These all involved a single vehicle travelling northbound and a loss of control due to a slippery road surface or debris in the carriageway, resulting in a vehicle leaving the carriageway. The Waltham Road carriageway has however since been resurfaced (in May 2021) and it is considered that this would help to alleviate any concerns given that a 'slippery/ defective road surface' was cited as a contributory factor for each of these incidents. In addition, no collisions occurred within 150 m of the proposed Grid Connection Route crossing point on Waltham Road and no remedial measures are therefore expected to be required at this location.

## A12 Boreham Interchange

There is expected to be up to 89 additional vehicle movements at the A12 Boreham Interchange during the busiest hour (07:00-08:00) of the peak construction period, mainly comprising construction workers arriving. This equates to an increase of circa. $2.7 \%$ in terms of additional movements using the A12(T) off-slips, which would be lower across the overall junction given that no vehicles will be departing at this time and using the A12(T) on-slips. Improvements are currently being (and will continue to be) carried out at the Boreham Interchange and it is recommended that the collision record is monitored by ECC and/ or National Highways as part of these ongoing works. The additional traffic associated with the Scheme is not expected to have a material impact on the safety record of the A12 Boreham Interchange and no further remedial measures are considered to be necessary in support of the Scheme.

## A130

There is expected to be up to 55 additional vehicle movements on the A130 to the south of the CVPR during the busiest hour (07:00-08:00) of the peak construction period, mainly comprising workers arriving by vehicle. The RDR will provide a new connection between the A130 ERW and the Boreham Interchange, resulting in the reclassification of the existing A130 and the redistribution of traffic movements from the A130 to the RDR. It is
recommended that the collision record of the existing A130 and the RDR is monitored by ECC following the completion of the RDR to determine whether this has improved. The additional traffic associated with the Scheme is not expected to have a material impact on the safety record of the existing A130 and no further remedial measures are considered to be necessary in support of the Scheme.

## Remainder of the Network

No collision clusters or patterns were identified for the remainder of the network including on Waltham Road (further to the south), Cranham Road, Wheelers Hill, the B1137 Main Road and the A12(T) mainline carriageway. In addition, no incidents involved HGVs on Wheelers Hill or Cranham Road. The additional traffic associated with the Scheme is therefore not expected to have a material impact on the safety record of these parts of the network and no further remedial measures are considered to be necessary in support of the Scheme.

## Summary

In view of the above, the additional traffic associated with the Scheme is not expected to exacerbate the existing collision record of the surrounding network.

## Glint and Glare Assessment

A Glint and Glare Assessment has been undertaken by Neo Environmental Ltd to consider the potential impacts of the Scheme on various receptors including the surrounding highway network. A 1 km survey area was selected around the Order limits which included a total of 80 road receptors and eight rail receptors. Of these, 24 road receptors and five rail receptors were located within the no reflection zone and therefore discounted, whereas geometric analysis was conducted for the remaining 56 road receptors and three rail receptors which included the following roads:

- A12(T);
- Leighs Road;
- Boreham Road;
- Cranham Road;
- Terling Hall Road; and
- Waltham Road.

The assessment identified solar reflections to be theoretically possible for 53 of the 56 road receptors within the study area. However, upon further review, no actual glint and glare impact was identified for 45 of these receptors, whereas a potential impact was identified for the remaining eight receptors. Measures were therefore explored (e.g. planting of hedgerows, maintained to a height of at least 3 m in order to conceal the solar reflections) to mitigate the overall impacts for these eight road receptors.

For the rail receptors, the assessment identified solar reflections to be theoretically possible for two of the three rail receptors within the study area. However, upon further review, existing verges were found to be sufficient to screen all views of the Scheme from these two receptors and no impacts were therefore identified.

In view of the above, it is considered that the overall glint and glare impacts of the Scheme will be negligible for the surrounding highway and rail networks with the proposed mitigation in place where required. Further details of the results are contained within the Glint and Glare Assessment.

### 8.4.8 Mitigation and Management Measures

The following measures have been included as embedded mitigation within the ES and will be implemented to minimise the traffic impacts of the Scheme on the highway network during the construction and decommissioning phases. The measures will be secured through the DCO, primarily by the Framework CTMP and Outline PRoW MP, as well as via the Outline Construction Environmental Plan or the Decommissioning Strategy for the decommissioning phase. The measures include:

- Delivering a north-south construction route through the Solar Farm Site, to allow vehicles to access all areas via a single point of access during the construction period;
- Managing areas where the internal construction route crosses any local access roads, by providing adequate visibility splays between construction vehicles and other road users, implementing traffic
management e.g. advanced signage to advise other users of the works, as well as manned controls at each crossing point (marshals/ banksmen), with a default priority that construction traffic will give-way to other users. This includes the two crossing points on Noakes Lane (see Appendix K) and the short section of PRoW 213_48 which runs along the private road to/ from Bulls Lodge Substation;
- Restricting HGV movements to certain routes i.e. via Wheelers Hill and Cranham Road to the west, to prevent construction vehicles from using Protected Lanes, as well as the B1137 Main Road and passing through Hatfield Peverel and/ or Boreham;
- Reducing HGV movements during certain times of the day (e.g. between 07:00 and 09:00, as well as 17:00 and 19:00), to avoid increasing traffic levels on the surrounding highway network during the traditional weekday peak hours;
- Implementing a Delivery Management System to control the bookings of HGV deliveries from the start of the construction period. This will be used to regulate the arrival times of HGVs via timed delivery slots, as well as to monitor compliance of HGV routing (instructing all HGV drivers to avoid Waltham Road to the south of the proposed Solar Farm Site access, as well as Boreham Road to the north of Cranham Road). In addition, adequate space will be made available along the proposed access road to ensure no queuing back onto the surrounding road network occurs;
- Implementing a monitoring system to record the route of all HGVs travelling to and from the Order limits, to record any non-compliance with the agreed routing strategy/ delivery hours and to communicate any issues to the relevant suppliers to ensure the correct routes and times are followed;
- Developing a communications strategy including regular meetings with contractors to review and address any issues associated with travel to/ from the Order limits, as well as to relay information including any restrictions and requirements which should be followed;
- Providing a suitable point of access on Waltham Road circa. 125 m to the south of the junction with Cranham Road, with any supporting improvements (e.g. vegetation clearance) to take place within the highway boundary and the Order limits if required;
- Implementing TTM on Waltham Road during the period when the Grid Connection Route is installed to connect the Bulls Lodge Substation with the Solar Farm Site. Further details with respect to any TTM arrangements and timeframes for installing the cables across Waltham Road are set out within the Framework CTMP;
- As set out within the Framework CTMP, the following arrangements are proposed to be implemented to safely manage the construction vehicle crossing point on Waltham Road, of which there are expected to be up to 30 vehicle crossing movements per day for a period of approximately 30 weeks during the construction phase:
- The construction access points will be located opposite each other on Waltham Road (both gated out-of-hours to prevent general access);
- All construction vehicles will access the western section via the eastern section, which will in turn be accessed from within the Solar Farm Site i.e. the crossing will accommodate straight-ahead vehicle movements only, with no vehicles turning to/ from Waltham Road;
- The construction access tracks will have a minimum width of 6 m to accommodate two-way HGV movements movement along the construction access route;
- Forward visibility splays of at least 125 m will be provided to the vehicle crossing point and associated Temporary Traffic Management (TTM) for traffic approaching the crossing point on the two Waltham Road approaches;
- Temporary traffic signals will be implemented at each arm of the crossing (this includes one on each side of the crossing on Waltham Road and one on each side of the crossing on the construction route i.e. four traffic signals in total); and
- The temporary traffic signals will be demand-based (i.e. on-call system for the two minor construction access arms, to ensure Waltham Road traffic is only impacted when construction vehicles need to cross Waltham Road).
- Encouraging local construction staff to car share, to reduce single occupancy car trips, by promoting the benefits of car sharing such as reduced fuel costs and by providing dedicated parking spaces for those car
sharing. A Car Share Scheme will be implemented to match potential sharers and to help staff identify any colleagues who could potentially be collected along their route to/ from site;
- Implementing a shuttlebus service to transfer non-local staff to/ from local worker accommodation (assumed average occupancy of 25 workers per service), to reduce vehicle trips on the surrounding highway network. Whilst these locations are currently unknown, these are likely to be locally based in Chelmsford and Braintree;
- Providing limited (but sufficient) on-site car parking to accommodate the expected parking demand of construction staff within the Order limits. Parking will be limited to 150 spaces at the Solar Farm Site (within the main construction compound served by the proposed access on Waltham Road) and to 50 spaces at the Bulls Lodge Substation Site (within a construction compound served by the proposed eastern access), to encourage staff to travel together;
- Implementing local off-site highway improvements (verge clearance, hedge cutting and/ or carriageway widening), where required along Wheelers Hill, Cranham Road and Waltham Road, to support HGV movements;
- Positioning of suitably qualified banksmen at the proposed Solar Farm Site access on Waltham Road, the two proposed accesses for Bulls Lodge Substation, the Waltham Road construction vehicle crossing point and at internal crossing points (e.g. Noakes Lane), to allow all vehicle arrivals and departures to be safely controlled during the construction period;
- Vegetation clearance at the proposed Solar Farm Site access on Waltham Road (visibility splays of 125 m ), the two crossing points on Noakes Lane (visibility splays of 90 m ) and the proposed Bulls Lodge Substation accesses from the private road (visibility splays of 90 m ) in order to achieve appropriate levels of visibility at these locations as agreed with ECC Highways;
- Avoiding the usage of Protected Lanes, unless required for 'one-off' emergency access; and
- A specialised haulage service will be employed to allow abnormal loads to transport components with the necessary escort, permits and traffic management, with the contractor consulting the relevant highways authorities to ensure the correct permits are obtained. The police will also be given advanced notification under the Road Vehicle Authorisation of Special Types Order 2003.

The following measures have been included as additional mitigation within the ES and will be implemented to minimise the traffic impacts of the Scheme on the highway network during the construction and decommissioning phases. The measures will be secured through the DCO, primarily by the Framework CTMP and Outline PRoW MP, as well as via the Outline Construction Environmental Plan or the Decommissioning Strategy for the decommissioning phase. The measures include:

- Utilising the Chelmer Valley Park and Ride (CVPR) site for construction worker parking (with a supporting shuttle service to/ from the Solar Farm Site) during the peak construction (and decommissioning) periods of the Scheme if required by ECC Highways, to reduce construction vehicle worker trips on the surrounding network including at the B1137 Main Road/ Waltham Road junction;
- Cutting back vegetation at the Waltham Road/ Cranham Road junction (within the highway boundary) to maximise visibility at this junction; and
- Conduct a Stage 1 Road Safety Audit on the preliminary design of access and crossing points and proposed carriageway widening post-submission (to be secured as part of the detailed CTMPs).


### 8.5 Operational Phase (2026-2065)

The following embedded design mitigation measures referred to below will be implemented during the operational phase and will be secured through the DCO such as through the Outline Operational Environmental Management Plan:

- Converting the north-south construction route to a green corridor and maintenance route, to improve connectivity for pedestrians and cyclists through the Solar Farm Site, as well as to allow operational vehicles to access all areas of the Solar Farm Site via a single point of access during the operational period;
- Providing a suitable point of access for operational vehicles on Waltham Road circa. 125 m to the south of the junction with Cranham Road;
- Controlling areas where the internal maintenance route crosses any existing local access roads (such as by providing gates), permitting only operational traffic to utilise these internal routes within the Solar Farm Site. Operational traffic should give-way to other road users when utilising the crossing points. Visibility should be maximised between operational vehicles and other users, with warning signage provided if required; and
- Measures e.g. planting of hedgerows, maintained to a height of at least 3 m , in order to conceal the solar reflections and to mitigate the overall impacts for road receptors (based on the Glint and Glare Assessment).


### 8.6 Decommissioning Phase (not earlier than 2066)

The decommissioning effects of the Scheme are expected to be of a similar (or lesser) magnitude to the construction effects. On this basis, the construction period is considered to have the greatest change on the surrounding transport network and the construction phase has therefore been used to identify the likely impacts of the decommissioning phase including whether any mitigation will be required. This may overestimate the actual traffic flows slightly but is considered to be broadly accurate. In addition, the decommissioning phase is expected to take place no earlier than 2066 and is therefore considered to be too far into the future to be able to accurately predict future baseline traffic flows or road / junction layouts at that time.

A Decommissioning Strategy has been prepared as part of the ES which will be developed prior to the decommissioning phase to control the potential impacts. The measures set out within Section 8.4 .8 will also be adopted in support of the decommissioning phase.

## 9. Walking and Cycling Review

### 9.1 Assessment Scenarios

The following scenarios have been examined qualitatively as part of the review of walking and cycling:

- Existing Baseline (2021);
- Future Baseline (2025);
- Construction Phase (2025);
- Operational Phase (2026-2065); and
- Decommissioning Period (not earlier than 2066).


### 9.2 Existing Baseline (2021)

Details relating to the existing baseline including existing pedestrian and cycle networks are presented within Section 4.

### 9.3 Future Baseline (2025)

The future baseline conditions of the pedestrian and cycles networks are broadly expected to reflect existing conditions as presented in Section 4, albeit a few potential changes have been identified below.

The A12 Chelmsford to A120 widening improvements include a proposed pedestrian/ cycle link over the A12(T) to the north of the Boreham Interchange, which will improve connectivity in the area including with the Chelmsford Garden Community. This will also create a link between PRoW 213_45 and PRoW 213_23 (to the south of the Order limits), as well as with PRoW 213_48 located to the southwest of the Order limits to the west of Bulls Lodge Substation.

The Chelmsford Garden Community proposals include improvements to existing footpaths to the southwest of the Solar Farm Site. These improvements are however expected to take place after 2025, as the construction programme is set to last until 2044.

### 9.4 Construction Phase (not earlier than 2025)

### 9.4.1 Pedestrian and Cycle Routes

Access to all existing PRoW will be retained during the construction phase, with no PRoW closures and a limited number of temporary PRoW diversions around the Grid Connection Route works area when this is installed as well as a couple of temporary PRoW diversions within the Solar Farm Site. The below provides details of how existing PRoW will be managed during the construction phase (running progressively from north to south) which is supported by the drawing held in Appendix M. This also identifies the minimum legal PRoW widths (based on information supplied by ECC) which will be retained throughout the construction phase. It should be noted that a separate Outline PRoW Management Plan (PRoW MP) has also been prepared, which supports the Framework CTMP.

## Construction Route Crossing Points

The proposed construction route will cross the following existing PRoW within the Solar Farm Site. This includes the main (primary) construction route which will be utilised throughout the construction programme and secondary routes which will be utilised less frequently to access certain parcels when required:

- PRoW 113_33-1 x primary crossing point and $1 \times$ secondary crossing point;
- PRoW 221_53-1 x secondary crossing point;
- PRoW 113_25-1 x primary crossing point;
- PRoW 113_30-1 x primary crossing point and 2 x secondary crossing points;
- PRoW 213_4-1 x primary crossing point along diverted section;
- PRoW 213_5-1 x primary crossing point;
- PRoW 113_32-2 x primary crossing points and $1 \times$ secondary crossing point along diverted section; and
- PRoW 213_18-1 x secondary crossing point.

Each diversion will be clearly marked out, along with appropriate signage at either end of the diversion. The diversion routes will be agreed with the relevant local authority prior to construction.

The existing PRoW and proposed crossing points will be carefully managed to ensure that all users are able to safely pass through these areas.

## Physical Separation from Construction Route

The proposed construction route will be physically separated from existing PRoW, to maximise the safety of pedestrians and cyclists within the Order limits. The following existing PRoW will run alongside, but will be physically separated from, the proposed construction route:

- PRoW 113_25 - to be physically separated from the primary construction route for a length of circa. 110 m ;
- PRoW 213_4 - to be temporarily diverted throughout construction and physically separated from the primary construction route for a length of circa. 575 m (circa. 75 m additional length); and
- PRoW 113_32-to be temporarily diverted throughout construction and physically separated from the primary construction route for a length of circa. 450 m (no additional length).

Each diversion will be clearly marked out, along with appropriate signage at either end of the diversion. The diversion routes will be agreed with the relevant local authority prior to construction. The existing PRoW will be reinstated during the operational phase, albeit public access will be retained throughout as a result of the PRoW diversions.

As above, a sufficient corridor will be provided to accommodate and retain the minimum legal PRoW widths (specified by ECC) will be maintained for all PRoW throughout the construction phase. The above locations including details of minimum legal PRoW widths are presented on the drawing held in Appendix M. Further details of the proposed temporary diversions of PRoW 213_4 and 113_32 are provided within the Framework CTMP and the Outline PRoW MP.

## Grid Connection Route

The proposed Grid Connection Route will cross three existing PRoW and it is therefore proposed to temporarily (and locally) divert these PRoW around each works area, for a short period (circa. 2-3 weeks each), when the cables are installed:

- PRoW 213_19 - temporary PRoW diversion around the works area during cable installation (circa. 20 m additional length);
- PRoW 213_20 - temporary PRoW diversion around the works area during cable installation (circa. 30m additional length); and
- PRoW 213_21 - temporary PRoW diversion around the works area during cable installation (circa. 45 m additional length).

The construction works will be very localised at the above locations and the temporary PRoW diversions will therefore only displace the existing PRoW around the works area before re-joining the existing PRoW.

Each minor diversion will be clearly marked out, along with appropriate signage at either end of the diversion. The diversion routes will be agreed with the relevant local authority prior to construction of the Scheme. The existing PRoW will be reinstated once the Grid Connection Route has been installed at each location, albeit public access will be retained throughout as a result of the localised PRoW diversions.

## Bulls Lodge Substation Access

An existing bridleway (PRoW 213_48) runs along the existing private road to/ from Bulls Lodge Substation for a distance of circa. 550m. In addition, an existing bridleway (PRoW 213_23) crosses the existing private road to/ from Bulls Lodge Substation approximately 200 m to the northeast of the junction with the RDR.

The private road currently accommodates agricultural vehicles as well as maintenance vehicles for the existing Bulls Lodge substation. During the development and network peak hours, there is expected to be a maximum of 20 additional two-way vehicle movements on the private road to/ from Bulls Lodge substation, via the Boreham Interchange and the $\mathrm{A} 12(\mathrm{~T})$ as a result of the Scheme during the construction phase. This equates to a maximum of one additional vehicle movement every three minutes. The private road will be utilised by construction vehicles associated with the extension of the existing Bulls Lodge substation, with a maximum of 46 HGVs per day and 48 LGVs/ cars per day (during peak construction phase).

In order to safely manage access along the private road, safety measures such as signage and banksmen will be provided at either end of the 550 m section to both manage and increase awareness of construction vehicles and PRoW users when required. This has been agreed as the preferred approach with ECC Highways, rather than seeking to temporarily divert or close the PRoW. It should be noted that no physical modifications are expected to be necessary to accommodate construction vehicles on the private road, other than to accommodate the eastern and western access points for the extension of the existing Bulls Lodge Substation, as it is currently used by vehicles of a similar size and type.

### 9.4.2 Mitigation and Management Measures

The following measures have been included as embedded mitigation within the ES and will be delivered to minimise the traffic impacts of the Scheme on pedestrians and cyclists during the construction and decommissioning phases. The measures will be secured through the DCO, primarily by the Framework CTMP and Outline PRoW MP, as well as via the Outline Construction Environmental Plan or the Decommissioning Strategy for the decommissioning phase. The measures include:

- Maintaining access to/ along PRoW during the construction phase, including minimum legal widths for PRoW users;
- Providing temporary PRoW diversion routes where necessary e.g. when the Grid Connection Route is installed, to avoid any PRoW closures. Each diversion will be clearly marked out, along with appropriate signage at either end of the diversion. The diversion routes will be agreed with the relevant local authority prior to construction;
- Providing sufficient protection/ separation between existing PRoW and the proposed construction route where necessary;
- Managing areas where the internal construction route crosses any existing PRoW (where these are unable to be diverted), by maximising visibility between construction vehicles and other users (pedestrians and cyclists), implementing traffic management e.g. advanced signage to advise other users of the works, as well as manned controls at each crossing point (marshals/ banksmen), with a default priority that construction traffic will give-way to other users. This includes several PRoW crossing points (see Appendix M);
- Providing sufficient cycle parking spaces within the Order limits to encourage construction staff to travel by bicycle where viable ( 50 cycle parking spaces to be provided); and
- Developing a communications strategy including regular meetings with contractors to review and address any issues associated with walking or cycling to/ from the Order limits, as well as to relay information including any restrictions and requirements which should be followed.

It should be noted that all pedestrian and cycle routes will be maintained and remain unobstructed at all times when in use, to ensure the continued safe passage of the public including when using the PRoW through the Order limits and at crossing points. Further details are set out within the Outline PRoW MP which supports the Framework CTMP.

### 9.4.3 Impact Assessment

The Scheme is not expected to have any adverse impacts on pedestrians and cyclists during the construction phase, with the above mitigation and management in place.

### 9.5 Operational Phase (not earlier than 2026-2065)

During the operational phase, a number of green routes/ permissive paths will be provided to improve pedestrian and cycle connectivity throughout the Solar Farm Site including with existing PRoW. It is not expected that any TTM, PRoW diversions or closures will be required and the majority of vehicles accessing the Order limits will be
maintenance vehicles/ Light Goods Vehicles (LGVs). In addition, the Scheme will retain the existing links with Essex Way and NCN Route 50 to the north of the Order limits. The operational phase of the Scheme is set to promote many benefits by improving walking and cycling connectivity within the Order limits, as follows:

- Converting the north-south construction route to a green corridor and maintenance route, to improve connectivity for pedestrians and cyclists through the Solar Farm Site, whilst allowing operational vehicles to access all areas of the Solar Farm Site via the single point of access on Waltham Road, when required;
- Maintaining access to all existing PRoW within the Order limits, with no diversions or closures (any PRoW temporarily diverted during the construction phase will be reinstated during the operational phase);
- Providing additional permissive paths within the Solar Farm Site to improve connections and desire lines for pedestrians and cyclists, including to/ from existing PRoW, National Cycle Route 50, Essex Way and the Chelmsford Garden Community; and
- Controlling areas where the internal maintenance route crosses any existing PRoW or local access roads (such as by providing gates), permitting only operational traffic to utilise these internal routes within the Order limits. Operational traffic would give-way to other users when utilising the crossing points. Visibility will be maximised between operational vehicles and other users, with warning signage provided if required.

In view of the above, the Scheme is not expected to have any adverse impacts on pedestrians or cyclists during the operational phase, as it aims to improve the connectivity and desire lines for non-motorised users, including to/ from National Cycle Route 50, Essex Way and the Chelmsford Garden Community. Drawings showing the proposed Order limits layout and the landscape masterplan during the operational phase are held in Appendix $\mathbf{O}$.

### 9.6 Decommissioning Phase (not earlier than 2066)

During the decommissioning phase, the north-south construction route (and secondary construction routes) will be re-established to allow HGVs and construction workers to access all areas of the Solar Farm Site. All pedestrian and cycle routes will be maintained and remain unobstructed at all times when in use, to ensure the continued safe passage of the public including when using the PRoW through the Order limits and at crossing points. The measures listed within Section 9.4 .2 above will be implemented to minimise the traffic impacts of the Scheme on pedestrians and cyclists during the decommissioning phase.

As part of the decommissioning phase, walking and cycling routes will be returned to their existing baseline conditions i.e. prior to any changes made in relation to the Scheme during previous phases, which will include the removal of the permissive paths established during the operational phase.

## 10. Summary

AECOM has been appointed by Longfield Solar Energy Farm Ltd (the Applicant) to prepare a Transport Assessment (TA) in support of the proposed Longfield Solar Farm (the Scheme), located approximately 1 km to the west of the village of Terling and 7 km to the northwest of Chelmsford in Essex.

The Order limits are approximately 453ha in size and is located within the administrative areas of Braintree District Council (BDC) and Chelmsford City Council (CCC). The Order limits comprise existing agricultural land which is separated by several areas of woodland, as well as parts of the existing highway network.

The Scheme comprises the construction, operation (maintenance), and decommissioning of a solar photovoltaic (PV) array electricity generating facility and energy storage facility with a total capacity exceeding 50 megawatts (MW) and export connection to the National Grid, including extension of the existing Bulls Lodge Substation. The Order limits includes the proposed Solar Farm Site, the Grid Connection Route and the Bulls Lodge Substation Site.

As part of the Scheme, a Grid Connection Route corridor will be constructed between the proposed energy storage facility located on the Solar Farm Site and the local National Grid connection located at Bulls Lodge Substation (which is set to be extended in order to support the demand of the Scheme).

Transport issues have been considered from an early stage and initial pre-application discussions with ECC Highways and National Highways supported by the preparation of an Access Appraisal in January 2021. Scoping discussions and further consultation have continuously been held throughout the process, supported by the preparation of a Transport Assessment Scoping Report (TASR) in April 2021 and following pre-application discussions with Essex County Council (ECC) as the local highway authority and National Highways (formerly Highways England) as the highway authority for the Strategic Road Network (SRN). An Environmental Statement (ES) has also been prepared which includes a chapter on transport and access. It is therefore considered that the transport implications of the Scheme have been duly considered with the refinement and agreement of several aspects including the proposed access points and routing strategy throughout this process.

This TA accords with various policies and guidance including the NPS EN-1, NPS EN-3, NPPF, NPPG, ECC's Development Management Policies, CCC's Local Plan and BDC's Local Plan, to assess the likely impacts of the Scheme and identify any required mitigation. As above, this has been developed through ongoing collaborative working with ECC Highways and National Highways and is both tailored to local circumstances whilst reflecting the size and scope of the Scheme. In accordance with the NPS EN-1, NPS EN-3 and the NPPF, this TA demonstrates that the Scheme would not result in an unacceptable impact on highway safety and that the residual cumulative impacts of the development on the road network would not be severe.

The proposed access points and routing strategy for the Scheme has been developed in accordance with ECC's Development Management Policies and supported by various discussions with ECC Highways. A single point of access is proposed on Waltham Road for the Solar Farm Site which has been agreed with ECC Highways in terms of the suitability of the access location and visibility splays to be provided. The proposed Solar Farm Site access has been designed in accordance with the current standards to allow vehicles to access all areas of the Solar Farm Site. All HGVs will be required to follow the A130 and/ or the RDR, Wheelers Hill, Cranham Road and Waltham Road to avoid passing along any Protected Lanes or through Hatfield Peverel or Boreham to the south. The Scheme will allow for the efficient delivery of goods, and access by service and emergency vehicles.

During the construction phase, two new accesses will be provided to facilitate the extension of the Bulls Lodge Substation. A western access will be located on the northern side of the private road circa. 180 m to the west of the existing substation access and an eastern access will be located on the northern side of the private road circa. 30 m to the east of the existing substation access. The western access will be retained during the operational phase to provide maintenance access to the extended part of the Bulls Lodge Substation. The eastern access will be removed during the operational phase. The existing operational access for Bulls Lodge Substation will be retained at all times but won't be utilised by vehicles associated with the Scheme.

The section of private road which serves Bulls Lodge Substation was upgraded when the original substation was constructed. The road is subject to a 30 mph speed limit and only serves the substation and a couple of buildings and agricultural fields to the east. Therefore, this part of the network is suitable to HGVs whilst being limited to a few local/ repeat users and is therefore lightly trafficked. Visibility splays of $2.4 \mathrm{~m} \times 90 \mathrm{~m}$ will be provided at the western and eastern accesses commensurate with the desirable minimum requirement for a 30 mph speed limit
and suitable swept paths of the vehicles which will utilise these junctions have been undertaken. Banksmen will be in place to control HGV movements at the accesses to ensure these movements are carried out safely.

The TA identifies the potential impacts of the development on the transport networks during the construction, operational and decommissioning stages of the Scheme. This has been informed by a review of both the existing capacity and safety record of the surrounding highway network. The Order limits are located within close proximity to the SRN including the A12(T) to the south and the A130 to the west. The Scheme has been designed with various mitigation to avoid any detrimental impact upon the existing or proposed highway in safety or congestion terms. This includes minimising vehicle trips on the local highway network through the provision of shuttle bus services, adopting a vehicle routing strategy for HGVs to utilise the most appropriate routes to/ from the Order limits whilst avoiding Protected Lanes, and providing an appropriate level of parking spaces on site. The potential for utilising additional parking spaces within the CVPR during the peak construction phase has also been explored as additional mitigation (albeit the highway impact assessment has been based on the CVPR not being utilised to offer a worstcase assessment)

In terms of non-vehicular travel modes, whilst there is limited potential to utilise public transport given the rural location of the Order limits, opportunities to promote walking and cycling have been sought by retaining access to all PRoW during the construction phase and by providing additional connections in the form of permissive paths throughout the Solar Farm Site during the operational phase. Several discussions have been held with ECC Highways with respect to safely managing PRoW during the construction phase which have informed the proposed mitigation set out within this TA (as well as the Framework CTMP, Outline PRoW MP and the ES transport chapter), including through segregating the main construction route from PRoW, managing any crossing points and providing temporary diversions where required. The Scheme seeks to minimise the scope for conflicts between pedestrians, cyclists and vehicles.

In view of the above, the Scheme with respect to transport and access is considered to be in accordance with relevant national and local policy as demonstrated within this TA, by providing mitigation to avoid any adverse impacts on highway safety or any 'severe' residual cumulative impacts on the road network.

## Appendix A1 - Planning Inspectorate Comments (Transport and Access)

| Para of Scoping Opinion | Section of Scoping Report | Comment | AECOM Response |
| :---: | :---: | :---: | :---: |
| 4.8.1 | 13.5.11 | Detailed assessment of impacts during operation <br> Considering the nature of the Proposed Development, the Inspectorate is content that significant effects are unlikely to occur and that a detailed assessment of impacts from operational traffic movements can be scoped out of the ES. However, the ES should provide an estimate of the anticipated traffic movements for the operational phase. | Noted and agreed. ES (transport chapter) qualitatively assesses operational traffic movements. |
| 4.8.2 | Table 16-1 <br> and 13.6.18 | Hazardous loads <br> The Scoping Report states that there are no nearby road features (such as significant vertical drops) which suggest that the transfer of materials poses a risk beyond that which would be expected on the general highway network. The Inspectorate has considered the nature and characteristics of the Proposed Development and agrees that significant effects are not likely to occur. An assessment of impacts associated with the transport of hazardous loads can be scoped out of the ES. However, the ES should still outline the estimated number and composition of any hazardous loads. | Noted and agreed. No hazardous loads are expected which is reflected within the ES (transport chapter). |
| 4.8.3 | Table 16-1 <br> and 13.5.1 | Assessment of impacts during decommissioning <br> Table 16-1 of the Scoping Report proposes that an assessment of impacts for the decommissioning phase is scoped out of the ES, due to uncertainties in relation to future traffic flows and transport infrastructure. This is however contradicted by paragraph 13.5.1, which states that "...the greatest impact is likely to occur during the construction and decommissioning phases and this will be the focus of the assessment of transport effects presented in the ES". In the absence of information to demonstrate that decommissioning of the Proposed Development would not lead to significant effects interms of Transport and Access, the Inspectorate considers that this matter should be assessed in the ES. | The effects during the decommissioning phase are not expected to exceed those during the construction phase. The assessment of decommissioning within the ES (transport chapter) and TA is therefore based on the assessment for construction. This is considered to provide a robust approach and avoids duplicating assessments. Any mitigation also applies to both the construction and decommissioning phases. |
| 4.8.4 | 2.2.7 | Impacts <br> Paragraph 2.2.7 of the Scoping Report explains that an east-west panel orientation (if this option is pursued) would result in more HGV movements since more panels are required. The ES assessment of impacts to Transport and Access and the accompanying Transport Assessment (TA) should be based on the relevant worst-case having regard to any parameters applicable to the Proposed Development, including panel orientation. | Noted, the TA and ES (transport chapter) both assess the peak period of construction in terms of construction vehicle movements (workers, LGVs and HGV ). |
| 4.8.5 | Section 13.4 | Baseline conditions <br> The description of baseline conditions in Section 13.4 of the Scoping Report makes no mention of the Great Eastern M ain Line (GEML) railway, which is located immediately adjacent to the southern boundary of the application site. Impacts to rail travellers, including train drivers, such as those associated with visual amenity and glint and glare, should be assessed where significant effects are likely to occur. Appropriate cross-referencing and explanation between relevant ES aspect chapters should be provided. | The site redline boundary no longer runs immediately adjacent to the GEM L, and as such no impacts are expected to rail travellers/ train drivers. Nonetheless, a glint \& glare assessment has been undertaken. The TA and ES (transport chapter) include reference to the glint \& glare assessment. |
| 4.8.6 | 13.4.5 | Baseline conditions and impacts <br> Paragraph 13.4.5 of the Scoping Report explains that PRoW may need to be temporarily or permanently diverted/ closed as a result of the Proposed Development. The locations of any diversions or closures should be illustrated on suitable figures in the ES. The ES should assess impacts to users of PRoW where significant effects are likely. Where possible the assessment should be supported by pedestrian counts, with effort made to agree the locations for such counts with relevant consultation bodies. The assessment of impacts on users of PRoW should consider potential interactions with other aspect assessments as relevant (for example noise and visual impacts and recreational value). | The proposals will not result in any permanent diversions or closures to existing PRoW. Limited temporary diversions (but no closures) will be required during the construction phase which will be managed to avoid any significant effects. Further details are provided within the ES (transport chapter), TA, Framework CTM P and Outline PRoW Management Plan. |
| 4.8.7 | 13.4.6 | Baseline conditions <br> The Scoping Report states that "There are no on or off-road cycling facilities within the immediate vicinity of the Site". The Inspectorate notes that National Cycle Network Regional Route 5013 passes through the application site boundary between Three Elms and Three Ashes Cottages and runs to the east of the application site boundary at the Waltham Road/ Terling Hall Road junction. The ES must assess any impacts on users of this cycle route which are likely to result in significant effects. | Noted, the ES (transport chapter) and TA include reference to National Cycle Network Regional Route 50, and identify potential impacts on users of this cycle route as a result of the proposals. It should be noted that the proposals seek to deliver a north-south green corridor within the site which is expected to provide an enhanced connection to this existing cycle route during the operational phase. |
| 4.8.8 | 13.5.10 | TA and cumulative effects assessment <br> The ES should clearly explain the relationship with the TA, how traffic movements have been predicted and what models and assumptions have been used to inform the assessment. Anticipated numbers of vehicle movements should be set out (including vehicle type, peak hour and daily movements). The Transport and Access aspect chapter and the cumulative assessment should clearly explain the approach adopted to estimate traffic growth as it appears in the TA. The explanation should include reference to appropriate software such as the Department for Transport's TEM PRO14 software. This should be kept under review should any other developments come forward which may trigger the need to update the previous traffic modelling work. <br> The Scoping Report states that the TA and Access Strategy will consider the impact of the proposed A12 Chelmsford to A120 Widening Scheme. The Applicant also should consider whether traffic associated with other developments including the proposed Bradwell B nuclear power station, Chelmsford Garden Community, Chelmsford NE Bypass, Radial Distributor Road 2 and planned works to the Boreham Interchange could result in cumulative effects in terms of traffic and therefore need to be considered in the TA and cumulative assessment in the ES. The Applicant should make effort to agree the scope of the TA with relevant consultation bodies including the highways authority and Highways England. | ES (transport chapter) and TA include details of the consultation held with ECC Highways and National Highways. These also set out the methodology and scope of assessment based on the agreed approach, including in terms of trip generation, background traffic growth, cumulative effects of other schemes etc. |
| 4.8.9 | 13.6.2 | Baseline <br> The Scoping Report states that traffic counts will be undertaken, "...if considered necessary and subject to Covid-19 Pandemic restrictions...". The ES should identify the locations where any traffic count surveys have been undertaken, explain how these locations were selected and confirm precise details of when the counts were undertaken. Effort should be made to agree these details with relevant consultation bodies. To provide assurance that the assessment of likely significant effects is supported by a robust dataset, the ES should include a justification to support the extent of the survey effort, including why the traffic data collected is considered to represent the typical (neutral) flow conditions on the network. | ES (transport chapter) and TA include details of the traffic count data used in support of the assessment work, including details of their locations and timeframes, as well as their appropriateness for use as part of the baseline situation. |
| 4.8.10 |  | Impacts <br> The Transport and Access chapter does not confirm whether impacts resulting from the transport of waste will be assessed in the ES. The Applicant is referred to the Inspectorate's comments in Table 4.16 (ID 4.16.1) of this Opinion (Waste). | ES (transport chapter) and TA assess the peak period of construction in terms of construction vehicle movements (workers and HGVS). |

## Appendix A2 - ECC Pre-Application Meeting Summary and TASR Comments

## Longfield Solar Farm - ECC Highways Pre-application Meeting

| Meeting name | Meeting date |
| :--- | :--- |
| Longfield Solar Farm - | $25^{\text {th }}$ January 2021 |
| ECC Highways Pre- |  |
| application Meeting |  |
| Time | Location |
| 15:00-16:30 | MS Teams |
| Prepared by |  |
| Chris Burlton |  |

## Attendees

Natalie Hayward - ECC
Rachael Donovan - ECC
Ben Kennedy - ECC
Hilary Gore - ECC
Gary Macdonnell - ECC
Mark Watson - AECOM
Chris Burlton - AECOM
Weronika Rybinska - AECOM
James Pateman - Pershing Consultants
Michael Ziloudis - EDF

## Apologies

Peta Donkin - AECOM
Peter Hetherington - EDF
Ref Description Action

1. Details of the agenda, presentation and meeting notes are appended None
2. AECOM ran through the presentation during the call and discussions were subsequently held with Essex None County Council (ECC) Highways relating to the content covered. The presentation slides have been updated to reflect ECC's comments during the call, shown in red.
3. AECOM to prepare a Transport Assessment Scoping Report (TASR) for issue to ECC Highways for AECOM comment on the scope of the Transport Assessment.
4. ECC Highways to provide comments on the TASR once received

ECC Highways

Minutes
Longfield Solar Farm - ECC Highways Pre-application Meeting

## Agenda, Presentation \& Meeting Notes

ECC-Highways Meeting
Monday 25th January 2021

## Longfied

## Agenda

- Introduction
- Scoping Opinion (key themes)
- Vehicle routing strategy
- Highway improvement schemes
- Walking \& cycling
- Access appraisal
- Transport Assessment scoping
- Next steps



## Introduction

- Site covers approximately 470 hectares
- Located circa. 7 km to the northeast of Chelmsford
- Within the administrative areas of Braintree District Council and Chelmsford City Council
- Set to generate, store and export up to 500 MW of electrical generation capacity



## Scoping Opinion - Key Themes

- Construction - vehicle routing (HGVs), CTMP, management and mitigation
- Vehicle Routing/ Access - Strategic Road Network (SRN), local roads and access strategy
- Public Rights of Way - management of PRoWs, Non-Motorised Users and active travel
- Highway Schemes - potential overlap with other schemes e.g. A12 to A120 widening, Chelmsford NE bypass, Boreham Interchange improvements
- Protected Lanes - potential use of Protected Lanes such as Boreham Road
- Consultation/ Scoping - Essex County Council and Highways England
- Additional Considerations - Marriage Mills development, abnormal loads


## Vehicle Routing Strategy

A12 (T)

- Access via A12(T) to the south, via the Boreham Interchange and B1137 (Main Road), to access Waltham Road
- Requirement to minimise additional traffic through Boreham


## A130

- Access via A130 to the west, to access Wheelers Hill, Cranham Road and Waltham Road
- Widening improvements required to support the usage of this route by larger vehicles (Marriage Mills scheme)



## ECC Comment:

- The preferred route is via the A130, Wheelers Hill and Cranham Road


Contains Ordnance Survey data O Crown copyright and database night 2020

## Protected Lanes

- Boreham Road to the north of the junction with Cranham Road
- Braintree Road between the junctions with Boreham Road (west) and Fairstead Hall Road (east) including a short section which passes through the northern extents of the site
- Terling Hall Road to the east of the site
- A couple of local roads which run through the centre of the site


## ECC Comment:

- The scheme should seek to avoid using Protected Lanes where possible (except for emergency access if required)



## ECC Comments:

- Anticipated dates are as follows:
- Boreham Interchange Improvements + RDR1 Phase 2a - expected to be completed by Autumn 2022
- Chelmsford NE Bypass - expected to be completed by Summer 2024
- Proposed RDR2 - expected to be completed by 2027 (at the earliest)


## Walking \& Cycling

- Public Rights of Way
- National Walking Route (Essex Way)
- National Cycle Route 50
- Potential linkages with Chelmsford Garden Village



## ECC Comment:

- Improving the pedestrian desire line to Essex Way (within the site) would be of local benefit


## Proposed Green Links

- Main North-South corridor
- Several East-West routes
- Linkages with existing routes e.g. PRoWs
- Temporary construction routes through the site (minimise usage of local highway network)
- Operational vehicle access (maintenance)


[^0]
## Access Appraisal

Purpose

- Inform scoping discussions with Essex County Council and Highways England
- Proposed routing strategy
- Potential points of access
- Other considerations e.g. protected lanes, highway improvement schemes

Utilises the following information

- OS Mapping
- Highway boundary information
- PRoW network
- Historic traffic count and speed survey data
- Collision data (CrashMap)
- Site visit observations



## ECC Comment:

- Access $\mathbf{2}$ is the preferred location (out of the four potential locations identified)
- The scheme should be served by one good quality access during construction


## Appraisal Summary for Access 1: Kenwood House

| Criteria | Opportunity | Constraint |
| :---: | :---: | :---: |
| Access | - Existing point of access on Waltham Road (approx. 7.0 m in width) supporting movements of larger vehicles | - The access and access road passes through third party land (landowner agreement required) <br> - The access and access road requires improvements to serve larger vehicles |
| Speeds | Existing vehicle speeds significantly lower than speed limit | - |
| Visibility | - Adequate visibility is achievable to/ from the north and south | - Significant vegetation clearance would be required |
| Collision Record | No collisions recorded nearby | - |
| PRoWs | - | - An existing route may need to be diverted to maintain safe access during construction |
| Vehicle Routing | The location of the access point would minimise the usage of the local highway network <br> Vehicles approaching the site would avoid Boreham Road (protected lane) | - Some very minor widening improvements may be required where Waltham Road falls below 55 m in width i . to accommodate HGVs |

[^1]
## Appraisal Summary for Access 2: South of Stocks Farm, Waltham Road

| Criteria | Opportunity | Constraint |
| :---: | :---: | :---: |
| Access | - The adjacent land falls within the site boundary and there is flexibility to reposition the potential access point | - A new access point would need to be constructed <br> - Waltham Road is approximately 56 m in width at this location, and improvements may be required to support larger vehicles turning to/ from the access |
| Speeds | Existing vehicle speeds significantly lower than speed limit | - |
| Visibility | Adequate visibility appears to be achievable to/ from the identified access location, in excess of the minimum desirable requirements | - |
| Collision Record | - No collisions recorded nearby | - |
| PRoWs | - No PRoWs to manage within the vicinity of the access | - |
| Vehicle <br> Routing | - The location of the access point would minimise the usage of the local highway network <br> - Vehicles approaching the site would avoid Boreham Road (protected lane) | - Some minor widening improvements may be required where Waltham Road falls below 5.5 m in width i.e. to accommodate HGVs |

## Appraisal Summary for Access 3: Stocks Farm, Waltham Road

| Criteria | Opportunity | Constraint |
| :---: | :---: | :---: |
| Access | Utilises an existing access point | The access and access road passes through third party land (landowner agreement required) <br> Both the access road and Waltham Road (approx. 5.4 m in width) requires improvements to serve larger vehicles |
| Speeds | Existing vehicle speeds significantly lower than speed limit | - |
| Visibility | Adequate visibility appears to be achievable to/ from the access | - |
| Collision Record | - No collisions recorded nearby | - |
| PRoWs | - | - An existing route may need to be diverted to maintain safe access during construction |
| Vehicle Routing | - The location of the access point would minimise the usage of the local highway network <br> - Vehicles approaching the site would avoid Boreham Road (protected lane) | Some minor widening improvements may be required where Waltham Road falls below 5.5 m in width |

## Appraisal Summary for Access 4: North of Whitehouse Farm, Boreham Road

| Criteria | Opportunity |  |
| :--- | :--- | :--- |
| Access | The adjacent land falls within the site boundary, there may be <br> some flexibility to reposition the potential access point | -A new access would need to be constructed <br> - <br> Boreham Road is approximately 5.2 m in width at this location and it is <br> likely that improvements would therefore be required <br> Speeds - Existing vehicle speeds significantly lower than speed limit |

RED rating

## Mitigation and Management Measures

To be explored to support the proposals:

- Banksmen at the site access point(s) to manage vehicle movements during construction
- Road signs and/ or markings to increase awareness of the site access point(s)
- Temporary Traffic Management (TTM) to provide added warning of the site access point(s) during construction where necessary
- Restricting HGV movements to certain routes, access points and/ or times of the day
- Maintaining access to PRoWs
- CTMP to be prepared


## Transport Assessment Scoping

- Site location \& existing use
- Policy context
- Accessibility appraisal
- Development proposals
- Trip generation and distribution
- Committed developments/ schemes
- Assessment methodology
- Highway assessment
- Walking \& cycling assessment


## Policy Context

- National Planning Policy/ Guidance - NPPF and Government's Planning Practice Guidance; Travel Plans, Transport Assessments and Statements in Decision Taking (2014)
- Essex Transport Strategy \& ECC's Development Management Policies
- Chelmsford Local Plan 2013-2036
- Braintree Local Plan Review (2005), Core Strategy (2011) and Local Plan Publication Draft for Consultation (2017)


## ECC Comment:

- The policy section should also include reference to National Policy Statements (NPS)


## Accessibility Appraisal

- Highway Network
- Strategic and Local Highway Networks
- Protected Lanes
- Public Transport
- Bus stops on Main Road
- Hatfield Peverel station
- Pedestrians
- National walking trail
- PRoWs
- Cyclists
- National Cycle Route 50


## Development Proposals

- Scheme summary
- Programme
- Construction (2024 to 2026)
- Operation (2026 to 2065)
- Decomissioning (2065 to 2067)
- Vehicular access
- Access points
- Routing
- Vehicle types
- Parking (car + cycle)
- Pedestrian and cycle access


## Trip Generation and Distribution

## Construction

- Up to 42 HGVs per day + LGV movements (construction staff)
- HGVs to be distributed to/ from SRN based on agreed routing strategy
- Construction staff: 2011 Census (journey to work) to inform mode share + vehicle trip distribution (incoming trips, Chelmsford MSOA 005 and Braintree MSOA 018)
- Surrounding highway schemes/ works to inform routing

Operation

- Five operational staff (up to five daily vehicle arrivals/ departures)
- Routing/ distribution - as per construction staff above

Decommissioning

- Similar/ lower magnitude to construction effects


## Committed Developments/ Schemes

- A12 to A120 Widening Scheme
- Chelmsford Garden Community and Supporting Improvements
- New railway station
- Beaulieu Radial Distributor Road (RDR)
- Radial Distribution Road 2 (RDR2)
- Chelmsford NE Bypass
- Boreham Interchange Improvements
- Land North of Cranham Road


## ECC Comment:

- Include reference to Bradwell B \& Sizewell C
- The Boreham Interchange Improvements and the Radial Distributor Road (RDR1) will allow development traffic to bypass parts of the A130 including White Hart Lane



## ECC Comment:

- Study area to include A130 between Boreham Interchange and Wheelers Hill
- Consider removing Boreham Road, given the main point of access will be on Waltham Road to the south of the junction with Cranham Road


## Assessment Methodology

## Anticipated Scenarios

- Existing Baseline (2021)
- Construction Peak Period (2025)
- Operational Opening Year (2026)
- Decommissioning Period (2065)


## Proposed Assessments

- Highway assessment
- Walking and cycling assessment


## Highway Assessment

Existing conditions

- Traffic flows (ATCs, DfT Counts, WebTRIS, other applications e.g. Cranham Road)
- Highway safety (5 years PIA data)

Future baseline conditions

- Highway improvements
- Committed developments
- Traffic growth (TEMPRO)


## Waltham Road - Existing Traffic Flows

| Direction | Average Weekday AM Peak <br> $(08: 00-09: 00)$ |  | Average Weekday PM Peak <br> $(17: 00-18: 00)$ | Average Weekday <br> (24 hours) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Total Vehicles | \% HGVs | Total Vehicles | \% HGVs | Total Vehicles | \% HGVs |
| Northbound | 461 | $7.2 \%$ | 352 | $4.5 \%$ | 3,906 | $9.9 \%$ |
| Southbound | 372 | $7.8 \%$ | 497 | $5.2 \%$ | 4,034 | $10.3 \%$ |
| Two-Way | $\mathbf{8 3 2}$ | $\mathbf{7 . 5 \%}$ | $\mathbf{8 4 8}$ | $\mathbf{4 . 9 \%}$ | $\mathbf{7 , 9 3 8}$ | $\mathbf{1 0 . 1 \%}$ |

## Highway Assessment

Proposed access arrangements

- Vehicle flows/ speeds, visibility splays, collision record, pedestrian routes, vehicle swept paths
- Visibility requirements $-85^{\text {th }}$ percentile speeds

Impact assessment

- Construction - vehicle increases (including \%s)
- Operation/ decommissioning - qualitative only
- Junction modelling not expected to be necessary

Mitigation and Management

## ECC Comment:

- New speed survey(s) to CA185 will be required once access point(s) have been determined
- Include reference to the Glint \& Glare assessment within the TA e.g. consideration of road safety


## Walking and Cycling Assessment

Existing conditions

- Routes
- Flows?

Future baseline conditions

- Additional routes

Proposed routes

- Internal green routes
- External connections

Impact assessment

- Diversions/ closures
- New routes/ desire lines
- Usage levels

Management and mitigation

## ECC Comment:

- Pedestrian surveys should be carried out in Spring/ Summer 2021 if possible


## Next Steps

- Transport Scoping Report to be shared
- Additional consultation with Highways England
- Feedback on access appraisal and TA scope
- Preparation of TA
- Preparation of other deliverables:
- Preliminary Environmental Impact Report (PEIR)
- Environmental Impact Assessment (EIA)
- Construction Traffic Management Plan (CTMP)


From: Hilary Gore - Strategic Development M anager (South)
Sent: 23 M arch 2021 17:29
To: Burlton, Chris
Cc: Rachael Donovan - Principal Planning Officer; Nicholas French - Project M anager; Gary Macdonnell - Network Coordinator
Subject: [EXTERNAL] Longfield Solar Farm
Hi Chris,
I apologise for the delay in getting back to you. I have added my comments to your queries below,

- The approach for obtaining highway boundary information and the costs attached to this Highway boundary information can be obtained from Highwayrecords@essexhighways.org . The highway records team will let you know the cost of the information.
- Any comments on the proposed approach for the following technical aspects of the TA:
- Traffic growth - traffic growth should be calculated using NRTF growth factors with local NTM adjustments
- Mode share - the site is quite remote therefore it is expected that most of the construction staff would travel by car or by staff transport which is provided by the applicant.. It is unlikely that many construction workers will walk or cycle to the site although The TA will have to identify the expected mode share and ECC would verify this.
- Trip distribution - this will need to be based on the origin of the materials for the construction traffic, but taking into consideration the fact that construction vehicles should be routed by the main/strategic road network. With regard to construction workers using the 2011 journey to work census data is acceptable but we suggest that you use just Chelmsford MSOA 005
- Confirmation of the status of Marriage Mills application/ highway improvements - The Marriages Mill planning application reference 16/01394/OUT was allowed at appeal. The applicant has subsequently put in an application to remove the condition to close the existing access which ECC considers to ne sub-standard. This application has not yet been determined. The development has therefore not yet commenced.
- Further clarity on the anticipated routing arrangements to/ from the site following the completion of Boreham Interchange improvements + Radial Distributor Road (RDR)/ Chelmsford NE Bypass e.g. it is understood that:
- This would be via the Boreham Interchange, Chelmsford NE Bypass/ RDR (depending on timescales for delivery), Essex Regiment Way (ERW) and then Wheelers Hill, Cranham Road and Waltham Road- correct
- The Chelmsford NE Bypass will not provide a connection with Cranham Road (just an overbridge at this location) - correct
- The new ERW/ Wheelers Hill junction and RDR2 would not benefit the site (as no connection between RDR2 and Cranham Road) - There will be a connection from RDR 2 to Wheelers Hill/Cranham Road. The
roundabout which is proposed by the Chelmsford Garden Village (CGV) Consortium will provide a new connection to the RDR2 in place of the arm to Wheelers Hill and therefore a connection to Wheelers Hill/Cranham Road will be required further to the east from the RDR2.

I have included some comments on the slides, which are attached for your information.

Additional points are as follows:
Speed surveys in the vicinity of the proposed access points should be carried out in accordance with CA185 in order to establish the appropriate junction visibility and forward SSD.

There may be a conflict with construction of Chelmsford NE Bypass if construction commences Q1 of 2024, and potentially with the HE proposals for J19 Boreham Interchange although we are not aware of construction dates for this scheme yet.

There is no mention of Chelmsford Garden Village in the Committed Highway Schemes and Other Developments section of the Access Appraisal Report, This is included it the Local Plan and will be a strategic development site.

Access location 2 is the preferred access location. Visibility does appear to be constrained by vegetation within the highway verge. This ideally should be removed/replaced outside the visibility splay to maintain clear to ground level splays at all times.

The carriageways should ideally be improved to 6.0 m rather than 5.5 m as suggested in the report, to accommodate HGV movements.

I hope that this is helpful. Please let me know if you require clarification of any of the points.

Kind regards

## Hilary Gore

Strategic Development Manager (South)
Please note that I work part-time Monday - Thursday

## Essex Highways

# Longfield Solar Farm Transport Assessment Scoping Report Review 

## Background

AECOM has been appointed by Longfield Solar Energy Farm Ltd to prepare a Transport Assessment Scoping Report (TASR) in support of the proposed Longfield Solar Farm, located approximately 1 km to the west of the village of Terling and 7 km to the northwest of Chelmsford in Essex.

The site is approximately 470ha in size (including cable corridors) and is located within the administrative areas of Braintree District Council and Chelmsford City Council. The site comprises existing agricultural land which is separated by several areas of woodland

A pre-application meeting was held with ECC Highways on Monday 25 ${ }^{\text {th }}$ January 2021 to review the proposed routing and access strategy for the site, as well as the scope and methodology for the TA. A copy of the meeting notes from the meeting with ECC Highways is held within Appendix B of the scoping report, along with a copy of their response received on $23{ }^{\text {rd }}$ March 2021. The following key points were raised:

- The routing of HGVs will be expected to take place to/ from the west via the A130, Wheelers Hill and Cranham Road in order to prevent these larger vehicles from passing through the villages of Hatfield Peverel and Boreham e.g. along the B1137 Main Road.
- Construction vehicles will be expected to utilise a single point of access during the construction phase and the use of Protected Lanes should be avoided with the exception of emergency access if required.
A pre-application meeting was also held with Highways England on Thursday 28 $^{\text {th }}$ January 2021 to review the scope and methodology for the TA, as well as the proposed highway improvements in the surrounding area i.e. the A12 to A120 widening scheme as well as the Boreham Interchange improvements. A summary of the key points is as follows:
- Explore a strategy to transfer construction staff to the site i.e. to reduce the total number of vehicle trips
- Review the additional vehicle movements on the SRN as a result of the scheme
- It was acknowledged that the proposals were not expected to result in a significant impact on A12 J19 i.e. the Boreham Interchange
- Further discussions should be held to review potential synergies between Highway England's proposed highway improvements and the construction/ operation of the scheme
- Co-ordinated discussions should be held between Highways England and ECC Highways where necessary.


## Summary

The construction phase will generate higher levels of traffic (Cars, LGVs and HGVs) than the operational phase of the development based on the detail in the scoping report.

All construction worker trips would utilise Wheelers Hill/Cranham Road to access the A130 Essex Regiment Way/A131 Braintree Road in the north (access to A120)
and Waltham Road/B1137 Main Road in the south (Access A12 in south via Boreham Interchange). Shuttle bus will utilise the same routes. Therefore, the construction workers are not currently included within the routing strategy.

The HGV's will access by the agreed routing strategy route, via Wheelers Hill and Cranham Road.

This routing is subject to confirmation of the location of the proposed access to the construction site. Further detail on these initial location and clearer mapping (Figure 3 is low resolution quality) should be included.
A factor of 1.7 person per vehicle has been applied for car sharing to the local construction worker trips. This appears high, construction workers, particularly skilled workers such as engineers and electricians often travel in their own vans which carry their tools. All trips should be assessed as a base case and a car sharing factor agreed with ECC applied as a sensitivity test. The Census mode share for Chelmsford 005 is detailed as $5.3 \%$ and this is likely to represent the trips in the populated area not rural as is with this location. That would equate to a car sharing percentage of $1.05 \%$.
$55 \%$ of the workforce are to be accommodated locally and access the site by shuttle. ECC are unsure how realistic it would be to house this number of people locally. More information should be provided to show how and where this could be provided before these trips could be discounted.

No details have been given regarding how the number of HGV trips has been derived. More details are therefore required.

AECOM has stated that given the temporary nature of construction trips, and the anticipated levels of movements, it is not anticipated that any junction modelling will be required in support of the TA. An increase of 30 vehicles or more or $5 \%$ increase in trips may require further assessment should capacity issues be identified. Particularly on key local roads and junctions.

## Trip Generation

AECOM states that there is limited potential to travel to/ from the site on foot or by public transport. It is therefore proposed that the majority of local construction workers will travel by car, whereas non-local staff will stay within local accommodation and be transferred to/ from the site by shuttle service. The anticipated travel patterns of construction workers are as follows:

- Local staff: $90 \%$ to travel by car (average car occupancy of 1.7 per vehicle, given staff will be local)
- Local staff: $10 \%$ to travel by other modes e.g. by bus, bicycle or on-foot
- Non-local staff: $100 \%$ to travel to/ from local worker accommodation by shuttle

It is agreed that there is limited potential to travel to and from the site by sustainable modes therefore a $10 \%$ travel by other modes is a high percentage.

Boreham, Hatfield Peverel and the surrounding villages have an average $0.8 \%$ bicycle travel to work, 3.3 and $4 \%$ walk to work (within Boreham, Hatfield Peverel) and 2.5 and $1.3 \%$ bus. So, $10 \%$ would not appear to be realistic in this location, with the distance from the surrounding towns and villages without offering further mitigation such as a local shuttle bus pick up for local staff.

It should therefore be assumed that all construction workers travel by car due to the rural location as a base case. We would suggest that $5 \%$ for sustainable modes for Local Trips should be applied as a sensitivity test, as this provides a much more realistic target for trips by sustainable modes as long as suitable improvements and incentives can be provided to encourage workers to use these sustainable modes, which also need to be identifies in the TA.

Table 6 provides a comparison with the 2011 Census Mode Share - Chelmsford MSOA 005 (Place of Work)

The proposed 1.7 car occupancy is considered to be too high. In the census only $3.3 \%$ in Boreham and the Leighs and $2.8 \%$ in Hatfield Peverel travel to work as a passenger in a car which is a low percentage by comparison. 2011 Census Mode Share - Chelmsford MSOA 005 (Place of Work) details 5.3\% car passengers for MSOA Chelmsford 005. As indicated above, this does not indicate a 1.7 car occupancy.

The anticipated construction workforce is shown in table 5. By applying the 1.7 car sharing this reduces the 259 local worker trips, minus $10 \%$ sustainable modes, to 137 trips. The car sharing target should be realistic and provided as a sensitivity test, similar to that for sustainable modes. We would suggest a target of 1.35 is reasonable target providing that there are incentives for car sharing which also need to be identifies in the TA.

In Table 5 the working hours of proposed types of workforce are identified. The largest proportion of $58 \%$ falls under the civil works/structures type with the following shift patterns:

- Summer 12-hour shift (07:00-19:00)
- Winter 10-hour shift (08:00-18:00)

This would mean that the peak network hours are avoided. AECOM state that it is assumed that construction workers will arrive to the site within the hour prior to starting a shift and depart from the site within the hour after completing a shift. However, the impact of these hours would have to be considered in terms of consideration of the local population (the Considerate Constructors organisation suggest an 8am start time for this reason. Only $20 \%$ are predicted to travel in the traditional peak hours, with $55 \%$ of these proposed to be on the shuttle bus.

Table 5 details that 317 construction workers (55\%) will be staying in local accommodation and being transferred to the site. This is a very large number of staff to be accommodated. Is this realistic to assume that this demand can be met?

A workplace travel plan with monitoring would need to be in place to ensure, if agreed, that these are the retained trip patterns.

In terms of HGVs, AECOM states that a maximum of 25 HGVs are expected to travel to/ from the site on a given day. These trips are expected to be staggered evenly across the day and will avoid the peak hours where possible to minimise impacts on the surrounding highway network at these times. At this stage, it is assumed that 3-4 HGVs would arrive per hour between 09:00-16:00 and 3-4 HGVs would depart per hour between 10:00-17:00. The TA will need to review the anticipated profile of HGV movements in further detail.

As indicated above further details are required regarding the HGV trips and how the figure of 25 per day has been derived.

Table 7: Forecast Vehicular Trip Attraction - Peak Construction Phase table. There are discrepancies from the description below table 5 with the arrivals and departures, not all trips are shown arriving in the hour prior to the shift time. Explanation needs to be given as to why there is one less shuttle bus in the AM. Does this relate to the size of the shuttle bus?

These figures for the local workforce in Table 7 are based on the car sharing approach of 1.7 person per vehicle so may not fully represent the trips to the site and will need to be revised accordingly.

## Distribution

The distribution is based on the figures provided in the report. There are no flow diagrams provided with the report to show the distribution.

Table 8 presents the regional trip distribution of incoming trips to Chelmsford MSOA 005. This appears to be acceptable. The construction vehicle trips are split into 3 groups but only the HGV trips are being detailed as those to follow the agreed routing strategy. The others are distributed on the most logical route to/from the site.

The distribution of construction workers to the proposed site results in 47.7\% (50 AM and 37 PM) of trips entering by Wheelers Hill/ Cranham Rd/ Waltham Rd (North) via the A130 and 52.3\% (54 AM and 40 PM) B1137 Main Rd/Waltham Rd (South) via the Boreham interchange.

The distribution of shuttle for construction workers to the proposed site results in 69.5\% (14 AM 11 PM) of trips entering by Wheelers Hill/ Cranham Rd/ Waltham Rd (North) via the A130 and 30.5\% (6 AM and 5 PM) B1137 Main Rd/Waltham Rd (South) via the Boreham interchange. However, the report indicates that:

Locations for local worker accommodation have yet to be determined, and it has therefore been assumed that shuttle buses will travel via the A130 towards Braintree to the north or Chelmsford to the south, or alternatively via the B1137 Main Road towards Boreham and Hatfield Peverel. Once the location of the accommodation has been finalised the distribution of shuttle bus trips may therefore need to be amended.

All HGV trips are shown as being outside of the peak hour and will follow the routing strategy. We have no evidence of comparable sites to base this evidence on or
compare the trip generation. Further detail on how these trip rates for the HGV's have been derived should be provided.

## Construction Impact

Table 20 demonstrates the impact on each road from the construction traffic. Once the trip generation figures are revised this will be able to identify where the key impacts are, what junctions should be assessed (if required) and any mitigation that may be required.

AECOM have stated that given the temporary nature of construction trips, and the anticipated levels of movements, it is not anticipated that any junction modelling will be required in support of the TA.

An increase of 30 vehicles or more or $5 \%$ increase in trips may require further assessment should capacity issues be identified. Particularly on key local roads and junctions.

## Appendix A3 - Additional ECC Meeting Minutes

| Meeting name <br> Longfield Transport <br> Theme Group Meeting | Meeting date |
| :--- | :--- |
| 14/07/21 |  |
| Time | Location |
| 15:00-16:30 | Microsoft Teams |
| Project name <br> Longfield Solar Farm | Prepared by <br> Helen Kelleher |

Attendees
Peta Donkin, AECOM, EIA Lead
Helen Kelleher, AECOM, EIA
Mark Watson, AECOM, Transport Lead
Chris Burlton, AECOM, Transport
Weronika Rybinska, AECOM, Transport
James Pateman, Pershings, Project Manager
Nicholas French, ECC, Project Manager
Laura Percy, Chelmsford City Council, Planning
Rachael Donovan, Essex County Council, Principal Planning Officer
Timothy Havers, Braintree District Council, Planning Lead
Hilary Gore, ECC, Strategic Development Manager
Ben Kennedy, ECC, Principal Transportation and Infrastructure Planner
Gary Macdonnell, ECC, Network Co-ordinator
Claire Ruse, ECC, Strategic Development Engineer

## Apologies

Bill Gregory, AECOM, EIA Planning Lead
Circulation list
As per attendees and apologies

All attendees introduced themselves and their roles and a safety moment was provided by PD.

## 02 Project Update

PD gave a brief summary of the project programme, noting that the consultation period of the PEIR ended on 13 July 2021. Proposed to submit the DCO submission (including ES/ TA) by the end of 2021.
CB gave an update on what has been undertaken and submitted, including the PEIR and Transport Assessment Scoping Report (TASR). Acknowledged that the PEIR and TASR were focused on the construction phase. Comments received from Essex County Council (ECC) and Highways England (HE) on the TASR.

## 03 Pre-application Response (ECC and Highways England)

CB set out the main responses received from ECC and HE on the TASR.

## 04 Site Access and Routing Strategy/ Construction Phase External Routes/ Access

CB discussed that the proposed site access was via Waltham Road, that an updated speed survey had been undertaken and that required levels of visibility could be achieved.
HG acknowledged that the speed survey had been done and that sufficient levels of forward visibility should be provided.

HG raised concerns that there has been an accident at the junction of Waltham
Road/Cranham Road, possibly due to a narrow verge at the sharp bend near/ south of the access point.
HG asked if any improvements at the junction were being proposed; and that the collision data should be reviewed. MW/CB to review and look into any proposals to improve the junction in agreement with the Client.
MW advised that the construction access would have appropriate signage and would be managed/ secure.

CB discussed and presented the proposed carriageway widening works, explaining that whilst it should be possible to achieve 6 m along the majority of the route, that
there is a small section of the carriageway where 6 m widening on both sides is not possible.

HG acknowledged this section where a widening of 6 m is not possible. HG accepted that such unavoidable pinch points would be acceptable.

Note
CB advised that the CTMP/TA would contain a full set of plans of the proposed widening.

HG discussed that the NE bypass is being constructed but is unsure of timings. HG advised that there may be points during the construction phase where the routing of construction traffic may need to be reviewed. HG to provide related information/ update.

## Internal Construction Route

CB presented the internal construction routes for the proposed site.
HG asked if PRoWs had to be diverted and would prefer existing PROWs to remain as such rather than being used as construction routes. HG stated that they would only accept PROW diversions if absolutely necessary and that any diversions should be no worse than the existing.

PD advised that the scheme was looking to use the surfaced paths already present on the site, rather than creating more concrete and rubble on site.

Re PROW 113_25 PD advised that this existing PRoW would have solar PVs either side and that this was both an amenity and a safety issue which was raised by Essex Police (people being funnelled down a corridor) hence why this PROW would be permanently diverted. advised that there are often crossing points on lanes during construction, but

See Next

Note

## Note

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 appropriate signage and controls will need to be in place. HG will need to agree these to ensure that they are compliant.

## 05 Grid Connection and Cable Route

CB discussed that there were two options and asked if there was a preference.
HG advised that they need more detail on the routes and timescales of each option, for e.g. if one option has a longer timescale. There will be an impact on highways from both options. HG will speak to the internal team for some feedback when more detail has been provided.

## 06 Highways Schemes and Committed Developments

CB discussed known highways schemes that are committed developments and that will need to be considered as part of the assessment, these included:

- RDR and Chelmsford NE Bypass;
- A12 - A120 widening; and
- Land to north of Cranham Road.

HG to provide latest dates of highway schemes/developments, the NE Bypass is a 2year construction commencing late 2022 until late 2024. The A12 - A120 widening will be under construction at a similar time to the development of the proposed scheme.

TH asked if both NSIPS for A12 and A120 were being accounted for. MW advised that the A120 was not raised by Highways England, therefore only considering the A12. TH advised that the A120 was more than just widening and is a new road
outside of Braintree connecting to the A12. The scheme was promoted by ECC jointly with Highways England to take to a preferred option and that it was handed back to Highways England. GMcD advised that the delivery of the scheme is being sought as part of RIS3 (2025-2030).
MW to speak to Highways England regarding this scheme and is to provide feedback to the wider team.

07 Scenarios/Study Area
HG advised that the classification of roads is to change, for e.g. A130 to become
Note A131.

HG asked where the suppliers will be coming from, will this be along the A12 or A120/ A131. Asked that consideration should be given to this in the Transport Assessment (TA).

08 Construction Workforce and Trips
CB presented that the mode share will be 95\% (increased from 90\%) and that the vehicle occupancy will be 1.5 workers per vehicle (decreased from 1.7 workers per vehicle as previously discussed).

Peak workforce of 576 expected. Split 55\% non-local and 45\% local. Non-local staff would be accommodated locally and then transferred by shuttle service.
CR asked how 300+ (non-local) staff will be allocated accommodation locally. This and the car occupancy figure would need to be justified in the TA. PD advised that the accommodation issue was being looked at as part of the socioeconomics/health and population chapter to confirm this.

CR advised that if the staff were not accommodated locally that this would increase the number of trips and would need to be considered. LP advised that locally there is unlikely to be enough accommodation to accommodate 300+ workers.
PD advised that off site caravan sites were being explored by the Client, but nothing had been confirmed at this stage. This will continue to be explored.

PD
MW agreed that this would need to be considered in the transport assessment when information is available.

HG and CR mentioned the possibility of using Chelmer Valley Park \& Ride which may be worth investigating to transport workers to the site during the construction phase in combination with a new shuttle service. Advised that for a nominal parking fee at the Park \& Ride, the use of the current Park \& Ride, which has capacity, could decrease traffic numbers/trips on the local network.
MW agreed that it was good to be informed of the Park \& Ride option. HG to speak to Park \& Ride team and feedback.

## Note

Assessment of Impacts
CB explained the approach to the assessment which included:

- Construction: HGVs, light vehicles and shuttle buses;
- Operation: qualitative approach only; and
- Decommissioning: this is to be based on the findings of the construction phase.

HG confirmed that this approach was acceptable, and that the improvements/ measures to support construction should also be fit for purpose during

## Note

 decommissioning.CR asked for Waltham Rd/ Main Road to be included in addition to local modelling of
MW/CB site access and Waltham Road/Cranham Road junction.

10 Next Steps

- Arrange a meeting to discuss PRoW: HG/RD to look at potential dates approx. 3 weeks hence and circulate.

HG/RD/PD/

Options on cable routes: information to be provided to enable team to assess MW implications.

- Construction workforce: local/non-local workers - to review how these can be brought to the site.

MW/CB/PD

HG advised that they want to be involved in the Transport Assessment and that that additional meetings, if required, would be welcomed.

## Note

11 AOB
RD asked about the timeline for the glint and glare assessment as it is important to understand implications from this assessment on road safety. PD advised that the glint and glare assessment was being undertaken but that the assessment would not be available until the final design has been produced scheduled to be end of July 2021, but then the assessment would need to be finalised. Therefore, unlikely to have any information until 3-4 weeks after this.
RD asked about the timeline for cumulative effects. PD advised that the planning team have put together a list and shared this with the host authorities previously.

Note

BG to follow up PD/MW/CB meeting. PD advised that the landscape team were on site and that they would be producing a drawing(s). PD advised that the PRoW meeting should be in 2-3 weeks time.

Meeting name
Chelmer Valley Park and Ride Meeting

Time
12:00-12:30
Project name
Longfield Solar Farm

Meeting date
05/08/21

Location
Microsoft Teams
Prepared by
Chris Burlton

Attendees
Rachael Price, ECC, Lead for Commercial Operations
Rhona Halliday, ECC, Park and Ride Manager
Peter Hetherington, EDF Renewables, Construction Project Manager
Bill Gregory, AECOM, Planning Lead
Chris Burlton, AECOM, Principal Transport Planner
Mark Watson, AECOM, Associate Transport Planner
Weronika Rybinska, AECOM,Graduate Transport Planner
Apologies
Peta Donkin, AECOM, EIA Lead

01 Introduction
This meeting was arranged following discussions with ECC Highways, to understand the potential viability of using the Chelmer Valley Park and Ride (P\&R) site for construction worker parking during the construction period of the solar farm.
The key purpose of the meeting was to, subject to viability, understand the number of spaces which could be made available, the potential arrangements for worker shuttle services and the mechanism for securing these arrangements. For example, based on the potential needs of the project, whether it would be possible to utilise up to 200 spaces for construction workers during the peak construction phase.

## 02 Key Discussion Points

The following key points were discussed/ confirmed during the meeting:

- ECC confirmed that it would be possible to utilise 200 spaces at the Chelmer Valley $\mathrm{P} \& \mathrm{R}$ if required during the construction phase. There is an overall capacity of circa. 1,000 spaces at Chelmer Valley P\&R which was only around 50\% utilised prior to COVID-19 pandemic/ restrictions.
- The spaces could be utilised at a cost of $£ 3.60$ per space per day, and a discount would be available for utilising a certain number of spaces (e.g. 50+ spaces) for a certain period (e.g. one month).
- The arrangements could be flexible by utilising a greater number of spaces during the peak construction period and fewer spaces during quieter periods.
- ECC has their own fleet of minibuses and could provide a service to transport workers between the P\&R and the solar farm site if required. Alternatively, a private shuttle service could be operated by the developer which would be easier to control in terms of service frequency and flexibility.
- The proposed working hours at the solar farm site during the construction phase (Monday-Friday 7am-7pm, Saturday 7am-1pm) aligns with the opening hours of the $P \& R$ (open from 6:30am until 8pm during the week). It is understood that the $P \& R$ opening hours could be extended to support the scheme if required.
- The use of the $P \& R$ would offer a sustainable travel option for construction workers arriving to Chelmsford by rail, who could then use a P\&R service to travel to/ from the Chelmer Valley P\&R and then the site via private shuttle.
- The use of the P\&R would reduce construction worker vehicle trips on local roads (e.g. Wheelers Hill, Cranham Road and Waltham Road) and is easily accessible with good connections to the Strategic Road Network (SRN).
- The use of parking at the $\mathrm{P} \& R$ would reduce the number of parking spaces required on the solar farm site for construction workers, albeit a certain number of spaces would nonetheless need to be provided for operational reasons.

| Meeting name | Meeting date |
| :--- | :--- |
| PRoW and Transport | $12 / 08 / 21$ |
| Meeting |  |
| Time | Location |
| 15:30-17:00 | Microsoft Teams |
| Project name | Prepared by |
| Longfield Solar Farm | Bill Gregory |

Attendees
Hilary Gore, ECC, Strategic Development Manager (South) (HG)
Robert Lee, ECC (RL)
Helen Baker, ECC (HB)
Nicholas French, ECC, Project Manager (NF)
Rachael Donovan, ECC, Principal Planning Officer (RD)
Peta Donkin, AECOM, EIA Lead (PD)
Bill Gregory, AECOM, Planning Lead (BG)
Chris Burlton, AECOM, Principal Transport Planner (CB)
Mark Watson, AECOM, Associate Transport Planner (MW)
Weronika Rybinska, AECOM,Graduate Transport Planner (WR)

## Apologies

Claire Ruse, ECC, Strategic Development Engineer
Circulation list
As per attendees and apologies

01 Introduction
PD introduced the meeting and clarified the purpose of the meeting is to discuss the proposed impact of the scheme on PRoW as shown on the plan issued to the councils in advance, which is a work in progress PD clarified the following headlines:

- No PRoW proposed to be closed at all.
- Any to be diverted will be for construction period only. Not operation.

RD would like to run through issues raised at stat con.
PD yes, we can treat this as a workshop.

## 02 Overview of proposals

CB talked through the plan showing PRoW. Noted that construction traffic will be separated from PRoW where possible. Highlighted crossing points.

CB seeking to retain 113_25, but also provide permissive routes to act as an alternative.
CB asked for comments.
03 Crossings and separation of construction traffic
HG Routes to the north. Crossing points. How will they be managed and how long will they be closed for?

CB A gate in place and banksman to control vehicle movements. Signage. Seeking to keep sight lines clear.

HG Banksmen are important. Although PRoW may not be well used, but construction vehicles would be unexpected.
MW confirmed that yes, banksmen would be used at all crossings.
HG agreed that this is fine.
CB clarified that period of impact at secondary track crossing points is likely to be in the order of months whilst panels are installed in particular parcels. Would depend on parcel sizes.
PD likely that phasing would be north to south, but this is subject to confirmation once a contractor is appointed.

HG communication plan will be important to keep Officers informed on likely timing of PRoW impacts.
HB Lead in for a TRO is likely 2 months.

## Ref Note

CB operational phase connections (permissive paths) may be added.
CB longest area with PRoW along parallel with construction route is in the centre of the site. Circa. 1 km in total, between PDA27/28 and between PDA 27/26\&22. PRoW 213_4 and 113_32.
HG how will the PRoW be separated from construction route?
CB yes, we have cross sections. PD showed sections from statutory consultation:


PD These show a 9m wide corridor minimum (worst-case). Vegetation may be used as a natural buffer.

MW these are for relatively small sections only i.e. this won't be the case across the entire site, alternative options used elsewhere where PRoW won't run parallel to construction routes.
RL Longer ones would need something more substantial than post and rail, as post and rail won't do anything for dust and noise.

RL is 3 m an arbitrary width applied to all rights of way within the site? Or is it based on historic widths associated with PRoW?
PD if we need a bit more room we will see if we can provide more. 3 m should be a worst-case example.
RL ECC would want as wide as possible as hedgerows can grow out.

MW is there a minimum width?
RL there are legal minimums e.g. field edge footpath minimum width, but AECOM should obtain details of legal widths of existing PRoW.
RL would be happy with 3 m as a minimum width in this case.
HB agrees. The more width the better i.e. for maintenance and users.
HB please make contact with our department to obtain records of widths. Most will be 1.5 m , but some may be wider.

PD agreed to contact ECC Highways to request the information via contact details provided by HB in the meeting chat.
CB would suggest checking legal minimum width of 113_30, in addition to those previously covered (113_25, 213_4 and 113_32).

04 Chelmsford Garden Community / Post Decommissioning
CB identified site access location. Looking to provide 125 m visibility splays based on speed surveys undertaken.
CB noted Chelmsford Garden Village urban extension. Recognise the potential for crossing of Waltham Road in this area, possibly to link with a permissive path.

CB highlighted consideration of a permissive path to the south of Stocks Farm.
RL permissive paths would have a recreational purpose. Is it intended for them to have the same life span as the solar farm?
CB correct.
RL what is the reasoning behind being permissive and only for 40 years? Is it related to landowner agreement? Can be taken away at any moment, and certainly at end of project, so little value in my view. To take it away in 40 years would seem to be a limited benefit.
PD the Applicant is leasing for 40 years and has no control over the land beyond that.

RL the proposals for permissive paths would have to be viewed as a limited 40-year benefit. This is the nature of the scheme and accepted.
HG consequence of that is that we (ECC) should be looking at providing connections between the Garden Community and existing PRoW.

RL agreed. It have been very useful to get clarity on this point.

## 05 Cable Route

CB temporary diversion will be required when cable route works are undertaken crossing a PRoW. Only for a short time. Will seek to provide a convenient diversion.

06 Desire Line between Wallace's Lane and Terling Hall Road
HG asked if a continuous East-West route between Wallace's Lane and Terling Hall Road could be considered by including sections of permissive routes within the site for cyclists (connecting existing PRoW). HG to email CB for project team to consider.

HG permissive route would be useful even if only for 40 years as 40 years is a long time in people's lifetime.
PD will only be able to do something if it is within Order Limits (red line), but will look at it once information is sent through.

## $07 \quad$ Next steps for PRoW

RL keep Helen, Hilary and Rob informed as things get solidified. In terms of general principles pleased that PRoW will be kept open. Pleased with separation of access tracks. Pleased with proposed widths. Pleased that diversions will be via TRO. Pleased with banksman, signage and leaflet/plan for drivers.
RL on balance the proposals are good. In terms of the 40 years, it is difficult to know what it will be like with screening. People want views but don't want glint and glare. Where PRoW pass through a field between solar panels (i.e. 113_25) a wider width should be sought if possible (e.g. at least 5 m ), so walkers don't feel enclosed. Can't change fact that it will feel like a different environment, but don't want it to be a constrained one.
RL had there been the opportunity to make some permanent changes, we would have sat down and looked at that, and changed them for mutual benefit, but this won't be possible given the likely return to agricultural use and given we are restricted to the landowner's requirements. Given that we can not improve what is there, the next best thing is retaining, which is proposed and welcomed.
HG agree with RL's comments. Would be useful to have a note of agreed point.
$B G$ is taking a note.
08 Amenity
RD re: consultation responses. Amenity issues, we have covered quite a lot already. PD has shown widths and treatments. Cllr Wagland is keen to visit a solar farm, to see how issues of amenity on PRoW have been tackled on other sites. Would help no end.
RD fear of crime was raised as an issue by the police.
MW we looked at this re: existing PRoW 113_25 going through panels. Looked at diverting it and providing a route around the edge, however this was not favoured and this PRoW is to therefore be retained.
PD showed this on a plan - have opened up the proposed fence lines at either end of the corridor and alternative routes (permissive paths) will be provided during the operational phase.

HG asked about the width of that. Would need at least 5 m not to feel too enclosed (see RL comment under item 07 above).
PD will confirm width. Also, key to note that people will have the choice to avoid this by using the alternative routes.

PD re: site visit. EDF do not have their own solar farm, but Padero do. Have asked if we can organise a visit to any, or obtain drone footage to make it easier to visualise what the scheme may look like on the ground. Will look into it and get an example.
RD note Glint and Glare work is in progress. This can therefore form part of an ongoing discussion when we have information to share.

PD draft Glint and Glare feedback has been received. Needs to be updated to reflect recent design updates. Interim feedback has identified very few issues, and these will be mitigated through additional screening for example. Will share report when available.

## Transport

MW re: visibility splays at crossing points on Noakes Lane. Original position was to provide 125 visibility (i.e. the same as the main site access on Waltham Road) however design team are looking to reduce this to 90 m given the nature of road/ very narrow/ manned banksmen etc. and due to potential impact on vegetation removal. In response ECC had requested a speed survey to justify reduced splay requirements, however MW questioned whether this would be overkill given nature of
road and the validity of a survey on such a low trafficked road - argued that surely 90 m would be ok?

HG would be comfortable with a balance. 125m would be fine, but if this takes out a lot of vegetation, something less may be preferable. MW/CB to check and prepare a plan showing level of clearance required to achieve 125 m and 90 m splays, and to subsequently liaise with HG.

MW re: visibility splays at the main site access on Waltham Road, speed survey data has been provided to demonstrate how the requirements have been calculated, has ECC had the opportunity to review this?

HG had a quick look, would it be possible for a plan of survey locations to be provided?

CB yes, a plan has been provided for the 2021 survey and a plan showing the locations of the 2019 surveys will also be sent through to HG.

MW re: local junction modelling, please could HG advise whether there are any requirements for the traffic surveys which will need to be carried out at the Waltham Road/ Cranham Road and the Main Road/ Waltham Road junctions? We currently propose to carry out a single midweek survey on either the 7th, 8th or 9th September.

HG surveys should be from mid September to make sure schools and colleges are back, but in this location wouldn't make much difference, so provided schools are back that would be fine.

CB Newhall School starts back on $6{ }^{\text {th }}$ September.
HG this has an impact. Am happy that this is representative if they are back.
MW will set up surveys on that basis.
CB can we check if a single day survey 7-10am and 4-7pm to cover peak hours and to match expected construction worker arrival / departure times is sufficient?

HG Will double check with Claire Ruse whether she is happy with a single day.
Sometimes requests 2 days, so will check and revert.
MW noted we had a good conversation with Rachael and Rhona from Park \& Ride team. Was very helpful. Thanks to HG for putting us in touch. Even suggested potential to use P\&R bus from Chelmsford station to car park to encourage sustainable travel to/ from the site.

HG this is positive news, please could a short note be prepared summarising what was covered during the meeting for ECC's records?
CB yes, a short note will be prepared and circulated.

## 10 AOB

PD noted work-in-progress updates to proposed layout / design will be presented at the Core Team meeting on Monday.

## Appendix A4 - ECC Email Correspondence

From: Burlton, Chris
Sent: 19 April 2021 10:28
To: Hilary Gore - Strategic Development Manager (South); Natalie Hayward - Principal Planning Officer National Infrastructure; Rachael Donovan - Principal Planning Officer; Ben Kennedy - Principal Transportation \& Infrastructure Planner; Gary Macdonnell - Network Coordinator; Nicholas French Project Manager
Cc: Donkin, Peta E; Symonds, Kate; Watson, Mark; Rybinska, Weronika
Subject: Longfield Solar Farm - Transport Assessment Scoping Report for ECC Highways' Review

CAUTION: This is an external email.

Dear Hilary,

Many thanks for the below, please find the Transport Assessment Scoping Report attached for ECC's review, in support of the Longfield Solar Farm proposals. For reference, details of the scoping discussions previously held are contained within Appendix $B$.

We would welcome any comments on the proposed scope/ methodology for the Transport Assessment, which can then be picked up as part of the document.

In particular, it would be useful if the acceptability of the proposed site access location could be confirmed in principle as soon as possible, so that we can make arrangements for the speed survey to be carried out at the appropriate location.

Please note that the attached has also been circulated to Highways England for comment,

Kind regards,

Chris

Chris Burlton, BSc (Hons) MSoRSA MCIHT
Principal Transport Planner, Transportation
Strategic Planning \& Advisory

## AECOM

Saxon House
27 Duke Street
Chelmsford, Essex, CM1 1HT, UK
$\mathrm{T}+44$ (0) 1245771200
aecom.com

From: Hilary Gore - Strategic Development M anager (South)
Sent: 22 April 2021 13:04
To: Burlton, Chris
Cc: Donkin, Peta E; Symonds, Kate; Watson, M ark; Rybinska, Weronika; Natalie Hayward - Principal Planning Officer National Infrastructure; Rachael Donovan - Principal Planning Officer; Ben Kennedy Principal Transportation \& Infrastructure Planner; Nicholas French - Project M anager; Gary Macdonnell - Network Coordinator
Subject: [EXTERNAL] Longfield Solar Farm
Hi Chris
I have now had a chance to look at the new location for the proposed Solar Farm access from Waltham Road and in principle this revised access is acceptable to ECC subject to the detailed design, RSA and speed surveys. We will require site access layout plans to at least $1: 500$ scale showing the proposed geometry of the access including swept path analysis for the largest vehicles expected to deliver to the site. Confirmation will also be required that the visibility splays and SSD will be achievable either within land under your control or within the adopted highway.

The site frontage may have to be reprofiled in order to provide clear to ground level visibility splays and the necessary SSD because of the bank. Details should therefore be provide of the visibility that can be achieve both vertically and horizontally.

The speed of vehicles appears to be quite high at this location, so the speed survey to establish actual speeds will be essential. There is also evidence of at least one recent speed related accident in the is location, so you will need to investigate the accident history too. The reflector marker posts on the outside of the bend have been wiped out and the edge of carriageway significantly damaged. There is also very little verge between the edge of carriageway and the brow of the ditch which would make it difficult to put in mitigation measures. As there is clearly an issue here, any junction would need to fully comply with the standards because any departures, or exceptions to the RSA, are unlikely to be signed off by the highway authority

I hope that this is sufficient for you to finalise the access location.

## Please note the following:

The content of this communication is based on information supplied at the time of the enquiry and is not a formal response to a planning application. Please be aware that it may not reflect the contents of any formal reply made by the Highway Authority in response to an official consultation from the LPA on a planning application submitted for a proposal containing more detailed information and following comprehensive internal consultation with appropriate departments of Essex Highways; particularly if in the opinion of the Highway Authority highway safety, efficiency and accessibility standards cannot be achieved.

Kind regards

## Hilary Gore <br> Strategic Development Manager (South)

Please note that I work part-time Monday - Thursday

## Essex <br> Highways

From: Burlton, Chris
Sent: 03 August 2021 10:31
To: Hilary Gore - Strategic Development Manager (South); Claire Ruse - Strategic Development Engineer
Cc: Watson, Mark; Rybinska, Weronika; Donkin, Peta E
Subject: Longfield Solar Farm - Noakes Lane Crossing Points

CAUTION: This is an external email.

Good morning Hilary and Claire,

Following our meeting on $14^{\text {th }}$ July, we wish to seek your further views on the two proposed construction route crossing points on Noakes Lane as illustrated on the attached plan.

As discussed, construction vehicle movements will be controlled at these crossing points (gates and banksmen) and signage will be provided in advance of the crossing points on Noakes Lane. In addition and given the character of Noakes Lane, vehicle speeds are expected to be considerably lower than those surveyed on Waltham Road (the 2019 surveys recorded a worst-case $85^{\text {th }}$ percentile speed of 45 mph on Waltham Road).

With the above in mind, we are currently exploring the potential to provide 70 m visibility in each direction at the crossing points by clearing hedgerows within the site boundary as required, representing the desirable minimum requirement commensurate with vehicle speeds of 30 mph (50kph).

Please could you confirm whether this forms an acceptable approach?

Kind regards,

Chris

Chris Burlton, BSc (Hons) MSoRSA MCIHT
Principal Transport Planner, Transportation
Strategic Planning \& Advisory
AECOM
Saxon House
27 Duke Street
Chelmsford, Essex, CM1 1HT, UK

From: Hilary Gore - Strategic Development M anager (South)
Sent: 05 August 2021 10:11
To: Burlton, Chris; Claire Ruse - Strategic Development Engineer
Cc: Watson, M ark; Rybinska, Weronika; Donkin, Peta E; Rachael Donovan - Principal Planning Officer National Infrastructure
Subject: [EXTERNAL] RE: Longfield Solar Farm - Noakes Lane Crossing Points
Hi Chris,
Thank you for your email.
The crossing points are acceptable in principle as long as they are controlled by banksmen and have the appropriate gates and signage. In addition we would suggest that the vehicular routes are narrowed to a single vehicle width either side of the crossing point with space for an additional vehicle to wait on the track beyond the single lane section. This helps to reduce speed of construction vehicles on the approach to the crossing.

Also speed surveys will need to be undertaken to assess the actual speed of vehicles on Noakes Lane so that the appropriate visibility splays for the actual speed of vehicle can be calculated,

Also can you please provide details of your visibility calculations for these crossing points and the proposed main access on Waltham Road, together with the speed surveys, so that we can confirm that the proposals are acceptable to ECC. Also plans showing the SSD on the approach to the access as discussed at our recent meeting.

Rachael Donovan recently sent an email to your team suggesting a PROW meeting on the $12^{\text {th }}$ August as this is the only date that my PROW colleague can make in the next few weeks because of leave. Can you confirm if this is acceptable to you? Could you please circulate some more detailed information including layout plans showing areas with PROW of similar scale to those that you sent for the crossing points on Noakes Lane, and details of any PROW diversions and enhancements before the meeting? This will enable us to provide advice on the best way to proceed and whether your proposals will be acceptable to ECC.

I look forward to hearing from you.

Kind regards

## Hilary Gore

Strategic Development Manager (South)
Please note that I work part-time Monday - Thursday

## Essex Highways

## SAFBR CREFNERMITALTHIER

From: Burlton, Chris
Sent: 11 August 2021 12:42
To: Hilary Gore - Strategic Development Manager (South)
Cc: Claire Ruse - Strategic Development Engineer; Watson, Mark; Rybinska, Weronika; Donkin, Peta E; Rachael Donovan - Principal Planning Officer National Infrastructure
Subject: Longfield Solar Farm - Visibility Splays and Junction Modelling

## CAUTION: This is an external email.

Hi Hilary,

Many thanks again for the below, separate to tomorrow's PRoW discussion we have provided responses to your points with supporting information. We also wish to review the requirements for additional surveys on Waltham Road to inform the local junction modelling if possible, so that these can be booked in as soon as possible.

## Proposed Site Access

Following the below, please find attached 2019 and 2021 survey data for Waltham Road with supporting calculations (including to CA185 for the 2021 survey results), which identify the desirable minimum requirement to provide 125 m visibility splays to/ from the proposed site access junction on Waltham Road. The 2019 surveys recorded the highest $85^{\text {th }}$ percentile speeds on Waltham Road and these results have therefore been adopted to calculate the visibility requirements. The attached drawing shows the required levels of junction and forward visibility at the proposed site access. We would be grateful if you could confirm that this is acceptable.

## Noakes Lane Crossing Points

We have reviewed this with the project team and now propose to provide the same level of visibility at the proposed crossing points on Noakes Lane as at the main site access on Waltham Road (i.e. 125m), through the clearance of vegetation/ hedgerows within the site boundary where necessary. This would be expected to exceed the requirement that would otherwise be determined by identifying existing vehicle speeds on Noakes Lane, given that vehicle speeds on Waltham Road (as surveyed) are very likely to be higher. We consider this to provide a robust approach given the character of Noakes Lane. Please could you confirm whether this provides an acceptable approach?

## Local Junction Modelling

As previously discussed, we propose to carry out local modelling (Junctions 9) of the Waltham Road/ Cranham Road junction and the Main Road/ Waltham Road junction, to determine whether any mitigation will be required to accommodate construction traffic associated with the scheme. We will therefore need to undertake peak hour surveys (manual classified counts) at these junctions as we do not currently hold turning count data given previous COVID-19 restrictions. As such, we currently propose to carry these out at 07:00-10:00 and 16:00-19:00 on a single weekday (either Tues 7th/ Wed 8th/ Thu 9th September, subject to survey company availability), given that schools (including New Hall School) will have returned. Please could you confirm whether this would be acceptable, and whether there are any specific requirements with respect to these surveys?

We would be happy to discuss the above as part of the 'AOB' section of tomorrow's PRoW meeting if time allows, but would be particularly in interested in your thoughts for the above surveys if not all can be covered at that time.

Kind regards,
Chris

Chris Burlton, BSc (Hons) MSoRSA MCIHT
Principal Transport Planner, Transportation
Strategic Planning \& Advisory

## AECOM

Saxon House
27 Duke Street
Chelmsford, Essex, CM1 1HT, UK
$\square$

From: Hilary Gore - Strategic Development M anager (South)
Sent: 16 August 2021 19:12
To: Burlton, Chris
Cc: Claire Ruse - Strategic Development Engineer; Watson, M ark; Rybinska, Weronika; Donkin, Peta E; Rachael Donovan - Principal Planning Officer National Infrastructure
Subject: [EXTERNAL] RE: Longfield Solar Farm - Visibility Splays and Junction M odelling
Hi Chris
I have now had a chance to look at the speed survey data for the site access junction and I confirm that junction visibility and SSD of 125 m would be acceptable for the site access junction, subject to safety audit comments. However with regard to the SSD, the extent of the visibility envelope should be shown on the mainline between a point 1.5 times the desirable minimum stopping sight distance from the centre line of the minor road and the centre line itself, in accordance with note 2 of paragraph 2.13 of CD109. It is likely that this can be achieved within land under your client's control, however, this whole length should be kept clear of vegetation. Please could you send a revised drawing showing this SSD.

Kind regards

## Hilary Gore

Strategic Development Manager (South)
Please note that I work part-time Monday - Thursday

## Essex <br> Highways

## SAFER/GREMNER/HEALTHIER

From: Burlton, Chris
Sent: 18 August 2021 09:45
To: Hilary Gore - Strategic Development Manager (South)
Cc: Claire Ruse - Strategic Development Engineer; Watson, Mark; Rybinska, Weronika; Donkin, Peta
E; Rachael Donovan - Principal Planning Officer National Infrastructure
Subject: RE: Longfield Solar Farm - Visibility Splays and Junction Modelling

CAUTION: This is an external email.

Hi Hilary,

Many thanks for your response below, confirming that junction visibility and SSD of 125 m is acceptable for the proposed site access junction on Waltham Road, reflecting the desirable minimum requirement based on the worst-case $85^{\text {th }}$ percentile speeds recorded in 2019. Please see the attached plan showing the locations of the 2019 surveys for reference.

Following your advice below we have updated the visibility splay drawing for the proposed site access (see attached), to show the additional areas to be kept clear to achieve the 125 m forward visibility (desirable minimum SSD) on the immediate junction approaches in each direction. This has been measured 188 m back from the centreline of the proposed site access in each direction (i.e. 1.5 $x$ desirable minimum SSD), to provide at least 125 m forward visibility for vehicles travelling towards the proposed site access, measured along the centreline of the mainline carriageway. We trust that this is acceptable, however please let us know if you have any further comments.

On a separate note, please find attached a summary of the discussions held during the Park \& Ride meeting earlier this month for your information.

Kind regards,

Chris

Chris Burlton, BSc (Hons) MSoRSA MCIHT
Principal Transport Planner, Transportation
Strategic Planning \& Advisory
AECOM
Saxon House
27 Duke Street
Chelmsford, Essex, CM1 1HT, UK

From: Hilary Gore - Strategic Development M anager (South)
Sent: 18 August 2021 17:15
To: Burlton, Chris
Cc: Claire Ruse - Strategic Development Engineer; Watson, M ark; Rybinska, Weronika; Donkin, Peta E; Rachael Donovan - Principal Planning Officer National Infrastructure
Subject: [EXTERNAL] RE: Longfield Solar Farm - Visibility Splays and Junction M odelling
Hi Chris

Thank you for the additional visibility information and the P\&R meeting notes.
I confirm that the additional area to be kept clear of vegetation for the SSD on the approaches to the junction is acceptable as shown on drawing 60640215-1013-
TA-050. However the annotation needs to be clarified, so that it is clear that the reference to (EQUIVALENT TO 1.5 X DESIRABLE MINIMUM SSD) refers to the immediate approaches rather than the envelope itself. I had to read it a few times to be sure what it was referring to.

Kind regards

## Hilary Gore <br> Strategic Development Manager (South)

Please note that I work part-time Monday - Thursday

## Essex Highways

From: Hilary Gore - Strategic Development M anager (South)
Sent: 16 August 2021 13:08
To: Burlton, Chris
Cc: Claire Ruse - Strategic Development Engineer; Watson, M ark; Rybinska, Weronika; Donkin, Peta
E; Rachael Donovan - Principal Planning Officer National Infrastructure; Nick French - Project M anager
Subject: [EXTERNAL] RE: Longfield Solar Farm - Visibility Splays and Junction Modelling
Hi Chris

Thank you for your email regarding the visibility splays and the modelling
I have not yet had a chance to look at the speed survey data for Waltham Road proposed site access, but will try to this week.

With regard to the visibility splays for the Noakes Lane crossings, I confirm that provision of 125 m " y " distances would be acceptable based on the speed survey data for Waltham Road. However, as discussed at the meeting last week, we may be willing to reconsider the visibility requirements should the 125 m " $y$ " distance necessitate an excessive amount of vegetation removal. I understand that you are going to examine the implications of the visibility splay on the landscaping and revert back if necessary.

I confirm that a single weekday count at the junctions of Main Rd/Waltham Rd and Cranham Rd/Waltham Road between, 07:00-10:00 and 16:00-19:00, is acceptable providing that the counts are on Tues/Weds or Thurs as proposed.

Kind regards

## Hilary Gore <br> Strategic Development Manager (South)

Please note that I work part-time Monday - Thursday

## Essex Highways

From: Burlton, Chris
Sent: 17 August 2021 16:48
To: Hilary Gore - Strategic Development Manager (South)
Cc: Claire Ruse - Strategic Development Engineer; Watson, Mark; Rybinska, Weronika; Donkin, Peta
E; Rachael Donovan - Principal Planning Officer National Infrastructure; Nick French - Project
Manager
Subject: RE: Longfield Solar Farm - Visibility Splays and Junction Modelling

CAUTION: This is an external email.

Hi Hilary,

Many thanks for the below response, including confirmation of the requirements for the junction counts which will be carried out on a single mid-weekday.

As requested, please find attached a couple of visibility splay drawings at the Noakes Lane crossing points, based on " y " distances of 125 m (as accepted) and 90 m (reduced vegetation removal).

In summary, these indicate that the 125 m visibility splays would require a total area of around 1,750 sqm to be kept clear, whereas the 90 m visibility splays would require a reduced area of around 1,270 sqm to be kept clear. This clearance (where required) would include a combination of tree and hedge removal, with the majority being required on the northern side of Noakes Lane. Therefore, please let us know your thoughts on this, in terms of the level of visibility which should be provided at these crossing points with the desire to avoid excessive vegetation removal.

In terms of other actions, we are currently reviewing your response relating to visibility at the main site access (thank you for sending this through), and shall circulate a summary of the notes from the Park \& Ride meeting in due course (these are just being reviewed internally).

Kind regards,

Chris

Chris Burlton, BSc (Hons) MSoRSA MCIHT
Principal Transport Planner, Transportation
Strategic Planning \& Advisory
AECOM
Saxon House
27 Duke Street
Chelmsford, Essex, CM1 1HT, UK
$\square$

From: Hilary Gore - Strategic Development M anager (South)
Sent: 19 August 2021 11:58
To: Burlton, Chris
Cc: Claire Ruse - Strategic Development Engineer; Watson, M ark; Rybinska, Weronika; Donkin, Peta
E; Rachael Donovan - Principal Planning Officer National Infrastructure; Nick French - Project
M anager
Subject: [EXTERNAL] RE: Longfield Solar Farm - Visibility Splays and Junction Modelling
Hi Chris

Thank you for the additional information regarding the visibility splays for the crossing points on Noakes Lane.

We appreciate that 125 m would have a significant effect on landscaping. The alignment of the road is likely to restrict the speed of on-coming vehicles in Noakes Lane, and the crossings are proposed to be controlled by banksmen; therefore as 90 m is appropriate for 30 mph and one step below the desirable minimum for 40 mph we are prepared to accept splays with a " y " distance of 90 m in the instance.

Kind regards

## Hilary Gore <br> Strategic Development Manager (South)

Please note that I work part-time Monday - Thursday

## Essex Highways

## Appendix A5 - National Highways PreApplication Comments

Mark Norman
Operations - East
Woodlands
Manton Lane
Bedford MK41 7LW

## AECOM

Saxon House
27 Duke Street
Chelmsford, Essex, CM1 1HT
For the Attention of Chris Burton

Dear Sir,

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017(the EIA Regulations) - Regulations 10 and 11<br>Application by Longfield Solar Energy Farm Limited (the Applicant) for an Order granting Development Consent for the Longfield Solar Farm (the Proposed Development) Draft transport Scoping note consultation

I refer to your email of the 19 May 2021, With reference to Transport Assessment Scoping Report. I apologise for the delay in getting back to you. We believe this proposal will have no significant impact on the A12 or the A12 Chelmsford to A120 Widening scheme provided continuous discussions are held with Highways England and the appropriate accommodations are made during construction, where necessary. Please see the notes below.

- It is noted that Longfield Solar Farm construction programme is between 2024 - 2026 with the construction peak being 2025. A12 Chelmsford to A120 Widening scheme construction programme is set to also begin in 2023, ending in 2027 . Every effort should be made to ensure road access routes are not overwhelmed with construction traffic.
- Table 5 shows construction worker movement will be 576 in and out each day which is significant (however it is noted that the use of shuttle buses and longer Summer working hours will minimise the impact).
- It is appreciated that there is mention of making routing arrangements during the construction of A12 Chelmsford to A120 Widening Scheme, however more clarity is needed on how the routing will change and if this will have any cumulative impacts on other access routes.
- We believe that impact during operational use with 5-8 daily staff accessing the site will have no significant impact on the A12 or the A12 Chelmsford to A120 Widening Scheme during construction, operation or dismantling.
- To ensure minimal impacts on either construction programme(s) and surrounding communities, we strongly advise continuous communications between Longfield Solar Farm and Highways England.


Mark Norman
Planning Manager
Operations (East)

## Appendix A6 - A12 Chelmsford to A120 Widening Scheme Meeting Notes

NONE
www.jacobs.com

| Subject | A12-Longfield NSIP Project update Stat Con and Cumulative Developments |  |  |
| :---: | :---: | :---: | :---: |
| Client | HE A12 Widening Scheme | Date | 11 June 2021 |
| Project | A12 J19 to J25 Widening Priject |  |  |
| Project No. | B229H130 | File | Document2 |
| Prepared by | Nuno Fernandes | Phone No. | 07492067005 |
| Participants | May, Lucy (Jacobs); Barber, Keith (Jacobs); Peta Donkin (AECOM); Titley, Neil (AECOM); Gregory, Bill (AECOM); James Pateman (Pershing); Alexis Coleman (PinsentMason); Watson, Mark (AECOM); Burton, Chris (AECOM); Matt Bussey (Pershing); Paul Kelly (SEC); Douglas Johnson (SEC); Ahern, Maxine (HE); Miguel Machado (Costain); Peter Hetherington (EDF) |  |  |



Project Notes

A12 - Longfield NSIP Project update Stat Con and Cumulative Developments 11 June 2021

| Notes |  | Action |
| :---: | :---: | :---: |
|  | programme and construction routes, number of movements per day. |  |
|  | Peta advise that the area has low unemployment to start with. Longfield assumptions is to have 576 workers at its peak. |  |
|  | It was also shared that at request from Essex the only construction route is through J19 towards RDR and then Cranham Road, Waltham Road is no longer a possible route. |  |
|  | The total daily trip s expected to be 193 movements at $J 19$ (slightly higher that the initial 150. |  |
| 4 | A12 advised that we are expecting to have 1500 to 1800 workers. We would have a statutory diversion at $J 19$ from late 2024 and start of construction in Spring 2025, works to be concluded in 2026. To note that the junction will be maintaining its operation capacity with some night or weekend closures. Also we are making improvements to the current Junction works (Mayer Brown development) and not a compete overhaul of the junction. | A12 Traffic and Populations and Health to review the numbers on their assessment to reflect updated data. |
| 5 | Longfield enquire about the Land Use plans North of the Railways at J19. A12 advise that we have a pedestrian bridge and a retaining wall (flood management) and some ecological mitigation, this would have a haul route from the RDR on the existing Filed track. Longfield advise that they use the same route to carry out works on the substation further east from the A12 RLB. | Both projects need to liaise on this use/ share of the haul route. Both DCO cannot contradict each other and must have sharing mechanism in place. To be discussed with Essex and Landowner. Miguel to liaise initially with Mark Watson at AECOM. |

$6 \quad$ AECOM advise that expects 50 to 100 Electricians mostly working on the upgrade of the substation (shared haul route). And further 200 to 300 workers installing PV's. Longfield also asked about where A12 workers would be accommodated, temporary accommodation, local hotels or other options. Miguel advise that mostly would eb using hotels and more towards Colchester but this information and construction details would be matured by Sep/October time at that point be ready to share with Longfield the final data.

Keith Barber from transport advise that Traffic would take a Proportionate Approach to the diversions and construction traffic, sift the RFFP according to timescale and size. The thresholds for EIA $=100$ HGVs in $/ 100$

A12 Traffic and Populations and Health to review the numbers on their assessment to reflect updated data.

Both projects need to liaise on this use/ share of the haul route. DConnot contradict sharing mechanism in place. To be discussed with Essex and Landowner. Miguel to liaise AECOM.

## Project Notes

A12 - Longfield NSIP Project update Stat
Con and Cumulative Developments
11 June 2021

| Notes |  | Action |
| :--- | :--- | :--- |
| HGVs out per day (AADT) or 500 vehs in $/ 500$ vehs out <br> per day (AADT). |  |  |
|  |  |  |

## Nuno Fernandes

A12 J19 Note

## Appendix A7 - Statutory Consultation Comments (Transport and Access)

Longfield Solar Farm - Statutory Consultation Feedback (20 ${ }^{\text {th }}$ July 2021) - Summary of Transport Comments and Responses

| Consultee | Main matter raised | How has the concern been addressed |
| :---: | :---: | :---: |
| Braintree District Council (BDC) | Glint and glare | A Glint and Glare assessment has been undertaken, which informs the ES and has been considered by the TA. |
| BDC | Construction | A CTMP has been prepared and the management of construction traffic is also considered / assessed within the ES and TA. |
| BDC | Traffic movements | The forecast level of traffic movements during the construction phase (as a result of the Scheme) have been identified and assessed as part of the ES and TA. HGVs will follow the agreed routing strategy and will avoid peak hours. |
| BDC | Cumulative impacts | Cumulative impacts between the construction phase of the Scheme and other committed developments / highway improvements including the A12 widening scheme have been considered as part of the ES and TA. |
| BDC | Permissive cycleways | Several permissive paths (for pedestrians and cyclists) are proposed during the operational phase of the Scheme and are shown by supporting drawings. |
| CheImsford City Council (CCC) | Chelmsford Garden Community | The Scheme includes a potential pedestrian / cycle connection point with the Chelmsford Garden Community, to accommodate a potential future desire line following the completion of this development and to improve public accessibility into the wider countryside. |
| Essex County Council (ECC) | Highway network categorisation | The categorisation of the surrounding highway network is described and shown in the ES and TA. |
| ECC | Future highway network changes | The future highway improvements / changes (including the RDR which will become the A131) are considered as part of the future baseline conditions of the ES and TA. The RDR forms part of the routing strategy for construction vehicles, given that this will provide access between the Boreham Interchange and the A130 Essex Regiment Way. Further details of other improvements including the A12 to A120 widening and the Chelmsford North East Bypass are provided within the ES and TA. |
| ECC | PRoW management and amenity | Several meetings have been held with ECC Highways (including PRoW officers) to review, revise and agree the proposed strategy for managing PRoW during the construction and decommissioning phases of the Scheme. This includes measures to physically segregate existing PRoW from proposed construction routes, as well as having controlled crossing points (with gates and banksmen) to safely accommodate pedestrians and cyclists. No PRoW will be permanently closed or diverted as a result of the Scheme, and the minimum legal PRoW widths will continue to be met or exceeded in all instances. A PRoW management plan has been prepared to illustrate the proposed strategy. |


| Consultee | Main matter raised | How has the concern been addressed |
| :--- | :--- | :--- |
| ECC | Permissive paths | Several permissive paths will be provided within the Order Limits during the operational phase of the Scheme to <br> improve connectivity through the Order Limits as well as within existing PRoW. The Scheme includes a potential <br> pedestrian / cycle connection point with the Chelmsford Garden Community, to accommodate a potential future <br> desire line following the completion of this development and to improve public accessibility into the wider <br> countryside. <br> Whilst PRoW will remain in place after decommissioning, it is envisaged that any permissive paths created by the <br> Scheme during the operational phase would ultimately be removed, as the potential retention of these routes would <br> be outside the control of Longfield Solar Energy Farm Ltd and subject to third party landowner agreement. Measures <br> (e.g. signage or temporary access restrictions) will be implemented to prevent the permissive paths from becoming <br> PRoW during the operational phase, so that these can subsequently be removed. It should be noted that the <br> connectivity of the Order Limits post-decommissioning would be no worse than the existing situation. |
| ECC | Glint and glare | A Glint and Glare assessment has been undertaken to identify any required mitigation, which informs the ES and has <br> been considered by the TA. |
| Hatfield Peverel <br> Parish Council <br> (HPPC) | Routing strategy | The proposed routing strategy for larger construction vehicles (i.e. HGVs) has been agreed with ECC and carriageway <br> widening improvements are proposed where necessary on the local highway network. |
| Highways England | Transport <br> Assessment | A couple of meetings have been held with Highways England to run through and agree the scope of the TA. The <br> Scheme is not expected to have a material impact on the SRN and no transport mitigation (further to that already <br> proposed) is expected to be needed. |
| Highways England | A12 to A120 <br> Widening Scheme | A couple of meetings have been held with Highways England / Jacobs to review potential synergies between the A12 <br> to A120 Widening proposals and the Scheme. Also, potential cumulative impacts during the construction phase of the <br> Scheme and mitigation to reduce these impacts on the SRN including the A12(T) and the Boreham Interchange have <br> been considered. The ES and TA include details of the mitigation that will be implemented to reduce the traffic <br> impacts of the Scheme during the construction phase. It is acknowledged that the construction A12 widening team <br> sees no objection to the plans presented by Longfield Solar Energy Farm Ltd. |


| Consultee | Main matter raised | How has the concern been addressed |
| :--- | :--- | :--- |
| Little Waltham <br> Parish Council | Vehicular access | The TA includes a highway impact assessment (including junction modelling) to demonstrate that the proposed site <br> access on Waltham Road will be suitable for accommodating traffic during the construction phase. A secondary point <br> of access is not required (or desired), and the proposed routing and access strategy has been agreed with ECC <br> Highways and Highways England. Several strategic routes can be used to travel to / from the Order Limits including <br> the A12 (north and south) and the A120 / A131. Carriageway widening improvements will be implemented on the <br> local highway network where necessary to accommodate larger vehicles / HGVs during the construction phase. |
| Royal Mail | Cumulative impacts <br> on the A12 | A couple of meetings have been held with Highways England / Jacobs to review potential synergies between the A12 <br> to A120 Widening proposals and the Scheme. Also, potential cumulative impacts during the construction phase of the <br> Scheme and mitigation to reduce these impacts on the SRN including the A12(T) and the Boreham Interchange. The |
| ES and TA include details of the mitigation that will be implemented to reduce the traffic impacts of the Scheme |  |  |
| during the construction phase. The Scheme is not expected to have a material impact on the SRN. |  |  |$|$| PRoW and permissive |
| :--- |
| paths | | Several meetings have been held with ECC Highways (including PRoW officers) to review, revise and agree the |
| :--- |
| proposed strategy for managing PRoW during the construction and decommissioning phases of the Scheme. This |
| includes measures to physically segregate existing PRoW from proposed construction routes, as well as having |
| controlled crossing points (with gates and banksmen) to safely accommodate pedestrians and cyclists. No PRoW will |
| be permanently closed or diverted as a result of the Scheme, and the minimum legal PRoW widths will continue to be |
| met or exceeded in all instances. A PRoW management plan has been prepared to illustrate the proposed strategy. |
| Several permissive paths will be provided within the Order Limits during the operational phase of the Scheme to |
| improve connectivity through the Order Limits as well as with existing PRoW. The Scheme includes a potential |
| pedestrian / cycle connection point with the Chelmsford Garden Community, to accommodate a potential future |
| desire line following the completion of this development and to improve public accessibility into the wider |
| countryside. |

## Appendix A8 - Further ECC Discussions (October and November 2021)

From: Burlton, Chris
Sent: 08 October 2021 16:22
To: Matthew Bradley - Strategic Development Manager (North)
Cc: Watson, Mark; Rybinska, Weronika; Donkin, Peta
Subject: Longfield Solar Farm - Transport Items

Hi Matthew,

Many thanks for the earlier call, it was very useful to run through the carriageway widening proposals on Wheelers Hill and Cranham Road in relation to the highway boundary and third party land ownership information.

Further to this, and as discussed, please find a couple of emails attached relating to the following, which had previously been sent through to Hilary for information:

- Private road to/ from Bulls Lodge substation, and the management of PRoW 213_48 (bridleway) users
- Existing conditions at the B1137 Main Road/ Waltham Road junction, and the approach for the junction modelling.

Please let us know if you have any further thoughts on these aspects, happy to set up another call next week if best,

Kind regards,

Chris

Chris Burlton, BSc (Hons) MSoRSA MCIHT
Principal Transport Planner,
Strategic Planning \& Advisory, Transportation, EMIA

## AECOM

Saxon House,
27 Duke Street,
Chelmsford, Essex, CM11HT, UK

From: Burlton, Chris
Sent: 01 November 2021 17:18
To: Matthew Bradley - Strategic Development Manager (North)
Cc: Watson, Mark; Rybinska, Weronika; Donkin, Peta
Subject: RE: Longfield Solar Farm - Transport Items

Hi Matthew,

Apologies for leaving this for a few weeks, we are just following up on a few outstanding items as we complete the ES chapter and supporting documents, therefore any comments or views on the below would be much appreciated, following our conversation on the $8^{\text {th }}$ October.

We can send through the original emails if this would be helpful as a reference.

Kind regards,

Chris

Chris Burlton, BSc (Hons) MSoRSA MCIHT
Principal Transport Planner,
Strategic Planning \& Advisory, Transportation, EMIA
AECOM
Saxon House,
27 Duke Street,
Chelmsford, Essex, CM11HT, UK

From: M atthew Bradley - Strategic Development M anager (North)
Sent: 05 November 2021 16:08
To: Burlton, Chris
Subject: [EXTERNAL] RE: Longfield Solar Farm - Transport Items

## Dear Chris

Thanks for your e-mail, Hilary has already responded to some of the matters but I am repeating them here for completeness. The ECC responses are in bold. I am around on Monday between 10:30 and 13:00 should you wish to catch up on MS Teams.

## Private road to/ from Bulls Lodge substation, and the management of PRoW 213_48 (bridleway) users

Firstly, an existing bridleway runs along/ adjacent to the existing private road for a short (circa. 550 m ) section, as shown below with reference to the existing vehicle route to/ from Bulls Lodge substation which will be used by construction vehicles as part of the proposed substation extension.


There is not expected to be a significant level of additional construction vehicle movements on this part of the highway network e.g. a few HGVs and perhaps 10-15 cars or vans per day, when required. In addition, the private road currently accommodates agricultural vehicles as well as
maintenance vehicles for the substation. Therefore, it is proposed to implement measures (e.g. signage, banksmen) to manage construction vehicles on this section of the private road when required, similar to other areas of the site itself e.g. at PRoW crossing points. We understand that this forms the preferred approach, rather than seeking to temporarily divert or close the PRoW, and we would be grateful if you could confirm that this would be acceptable. It should be noted that no physical modifications are expected to be necessary to accommodate construction vehicles on the private road.

With regard to the public rights of way and based upon the low number of vehicle trip anticipated in connection with the sub station we would prefer the PROW to be managed with signage and banksmen during the construction period rather than temporary diversions or closures. The details of these measures will need to be agreed with Essex Highways prior to commencement of use of the private road by construction vehicles.

> Secondly, we wondered whether any further details were available for the Chelmsford NE Bypass (CNEB), in terms of the proposed alignment in this area and whether this may affect the private road. We are aware that the CNEB will pass over the private road a short distance to the east of the RDR roundabout, however, will the construction of the CNEB be expected to result in any temporary closures or diversion works to the private road for example? Any further details would be very useful, many thanks.

With regard to your second point of your e-mail dated 17 September 2021 the planning application for the first phase of CNEB has been submitted and the consultation period is due to commence later this week. Essex County Council is the planning authority for this application, so you should be able to find details on the planning portal. The first phase of CNEB utilises the southern sections of the RDR up to roundabout 4. (at the north eastern corner of the Beaulieu site), it then continues northwards to join the A131. The southern section of the RDR, from roundabout 4 to Boreham Interchange, therefore will remain in place forming part of the bypass route until the dual carriageway section of the bypass is constructed sometime in the future. As yet there is only a safeguarded corridor for phase 2 of the CNEB route, no design, and no date for implementation. It is therefore very unlikely that the phase 2 CNEB would have any impact on your scheme (unless it is delayed until around 2035/36 then there may be implications). Access to the private road to Bulls Lodge quarry and the sub-station will be from RDR roundabout 5 (which is the RDR roundabout shown on your extract below), and will remain unchanged by the bypass at this stage.

## Existing conditions at the B1137 M ain Road/ Waltham Road junction, and the approach for the junction modelling.

We touched upon this matter during our recent teams discussion and my experience of the B1137/Waltham Road junction is that queuing similar or slightly worse than identified in your 2021 surveys has been present on the network at this location for a number of years and therefore may not relate directly to the works currently taking place at the Boreham Interchange given that the area was already subject to congestion at peak times.

For transparency I think it would be best to provide information relating to the B1137/Waltham Road junction in 2025 but caveat the result with fact that changes to the network are planned to come into play by 2025 and will very likely influence future use of this junction.

Additionally there is the mitigation already proposed as set out in your e-mail.
Many thanks.
Have a good weekend.
Matthew Bradley | Strategic Development Manager (North)
Strategic Development

## Appendix A9 - Further ECC Discussions (January 2022)

From: W atson, M ark
Sent: 20 January 2022 17:27
To: Matthew Bradley - Strategic Development Manager (North); Rachael Donovan - Principal Planning Officer National Infrastructure
Cc: Titley, Neil; Burlton, Chris; Rybinska, Weronika; Matt Bussey; James Pateman
Subject: Longfield SF - ECC update
Matthew/ Rachael
Many thanks for your time this morning.
As requested I attach the presentation we talked through and below are some notes of the discussion:

- Waltham Road proposals (temporary traffic management of construction vehicles crossing) are acceptable to ECC in principle, but Stage 1 Road Safety Audit is requested on Waltham Road to close any concerns that may be raised e.g., given Waltham Road is a rural road on which we are proposing to install a temporary signalised crossroads (for a period of 30 weeks)
- Stage 1 RSA also likely to be required for main site access on Waltham Road, carriageway widening works on Wheelers Hill and Cranham Road, as well as Noakes Lane crossing points. This may also need to cover the proposed site access points on the private road for Bulls Lodge substation. The approach/ timing for the Stage 1 RSA to be determined.
- ECC agreed that proposed approach for managing construction vehicles on the section of private road (to/ from Bulls Lodge) which accommodates the existing bridgeway remains acceptable as per the previous position
- ECC agreed that pedestrian counts on PRoW are not necessary, given that PRoW M anagement Plan proposals will not have any adverse effects on these i.e., given no closures or permanent diversions are proposed
- ECC requested that we share the PRoW M anagement Plan prior to DCO submission (note that this needs to be updated to reflect revised Arcus layout and to remove reference to permissive paths)
- ECC not sure (at this stage) whether Cranham Road will be kept open at all times when the CNEB (and overbridge) is constructed. However, as details not known currently, we should assume that Cranham Road will remain open and that a temporary diversion route via Waltham Road could be followed if necessary (which would be for a limited period). ECC suggested that the two teams should work together as further details relating to the CNEB emerge.
- ECC expecting to see the DCO application prior to submission as agreed with Carly V [note, Carly will discuss this with ECC in her next meeting]

Kind regards
Mark

Mark Watson, BA (Hons) MCIHT MSoRSA
Associate Director, Transportation
Strategic Planning \& Advisory

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## Appendix B - Site Location Plan



## Appendix C1 - Surrounding Highway Network



## Appendix C2 - Protected Lanes



## Appendix C3 - Existing Walking and Cycling Routes



## Appendix C4-Cycle Catchment Areas



## Appendix D1 - 2019 Speed Survey Results (Waltham Road and Boreham Road)

Waltham Road and Boreham Road-October 2019 Survey Locations


## Advanced Transport Research_EH

## Globals

```
                            Report Id CustomList-610
                Descriptor Advanced Transport Research_EH
                Created by MetroCount Traffic Executive
    Creation Time (UTC) 2019-10-18T09:53:04
            Legal Copyright (c)1997-2018 MetroCount
            Graphic header.gif
                Language English
                Country United Kingdom
                    Time UTC + 60 min
        Create Version 5.0.6.0
            Metric Non metric
                Speed Unit mph
            Length Unit ft
                Mass Unit ton
Dataset
                Site Name 23218-001
            Site Attribute ESSEX HIGHWAYS
                File Name Q:I23218 Chelmsford 19369\23218-001 0 2019-10-18 1050.EC0
                    File Type Plus
                Algorithm Factory default axle
            Description !BOREHAM ROAD NORTH[60M]
                    Lane 0
                Direction }
            Direction Text 7-North bound A]B, South bound B]A.
            Layout Text Axle sensors - Paired (Class/Speed/Count)
            Setup Time 2019-10-09T06:57:55
                Start Time 2019-10-09T06:57:55
            Finish Time 2019-10-17T05:43:55
                    Operator ATR
            Configuration 40 MC5600 80 00 14 6a 6a ? CA65B50S MC56-L5 [MC55] (c)Microcom 19Oct04
Profile
                    Name Advanced Transport Research_EH
                        Title Advanced Transport Research
            Graphic Logo C:and SettingsDocuments3.21_on_us_logo_cmyk 50.BMP
                    Header
                    Footer
            Percentile 185
            Percentile 295
                    Pace }1
                Filter Start 2019-10-09T06:58:00
                    Filter End 2019-10-17T05:43:55
            Class Scheme ARX
                    F Cls(1-10) Dir(N) Sp(0,120) Headway(]0) Span(0-328.084) Lane(0-16)
            Low Speed 0
            High Speed 120
            Posted Limit }6
            Speed Limits 6875606060000060
                Separation }0.00
            Separation Type Headway
            Direction North
Encoded Direction 1
```


## Advanced Transport Research EH

Column

| Time [-- | 24-hour time (0000-2359) |
| :---: | :---: |
| Total | Number in time step |
| Cls 1 | Class totals |
| Cls 2 | Class totals |
| Cls 3 | Class totals |
| Cls 4 | Class totals |
| Cls 5 | Class totals |
| Cls 6 | Class totals |
| Cls 7 | Class totals |
| Cls 8 | Class totals |
| Cls 9 | Class totals |
| Cls 10 | Class totals |
| Fix1 | User defined fixed text |
| Time [-- | 24-hour time (0000-2359) |
| Vbin 010 | Speed bin totals |
| Vbin 1015 | Speed bin totals |
| Vbin 1520 | Speed bin totals |
| Vbin 2025 | Speed bin totals |
| Vbin 2530 | Speed bin totals |
| Vbin 3035 | Speed bin totals |
| Vbin 3540 | Speed bin totals |
| Vbin 4045 | Speed bin totals |
| Vbin 4550 | Speed bin totals |
| Vbin 5060 | Speed bin totals |
| Vbin 6070 | Speed bin totals |
| Vbin 7080 | Speed bin totals |
| Vbin 8090 | Speed bin totals |
| Vbin 90100 | Speed bin totals |
| Mean | Average speed |
| Vpp 85 | Percentile speed |
| JPSL 60 | Number exceeding Posted Speed Limit |
| JPSL\% 60 | Percent exceeding Posted Speed Limit |
| JSL1 68 ACPO | Number exceeding Speed Limit 1 |
| ]SL1\% 68 ACPO | Percent exceeding Speed Limit 1 |
| JSL2 75 DFT | Number exceeding Speed Limit 2 |
| JSL2\% 75 DFT | Percent exceeding Speed Limit 2 |


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| ${ }^{1300}$ | 12 | 0 | 10 | $\bigcirc$ | 1 | 0 | 1 | 0 |  | 0 |  |  | 1350 <br> 1315 <br> 130 |  | \％ |  | 0 |  | 0 | ${ }^{3}$ |  |  | 1 | 0 | 0 | 0 | 0 | ${ }_{0}^{3.6}$ | 5.7 | $\bigcirc$ | 0 | 0 | 0 | $\bigcirc$ |  |
| （1350 | 117 | ${ }_{1}^{2}$ | ${ }_{13}^{7}$ | ： | ${ }_{2}^{2}$ | ！ | 1 | ： |  | ： | \％ |  | （1330 | ： | ： | ： | ${ }^{0}$ | $\stackrel{1}{0}$ | $\bigcirc$ | 6 | $3_{3}^{3}$ | ${ }_{3}^{1}$ | 1 | ： | ： | ： | 0 | ${ }_{36}^{0.7}$ | ${ }_{6.6}^{9.2}$ | $\bigcirc$ | 0 | ： | ： | ： |  |
| 100 | ${ }_{26}^{22}$ | O | ${ }_{21}^{18}$ | \％ |  |  | $\bigcirc$ | ： |  | 0 |  |  | 100 | 0 | － | ： | $\bigcirc$ | $\stackrel{0}{5}$ | ${ }^{3}$ | ${ }_{8}^{8}$ | ${ }_{5}^{3}$ | ${ }_{5}^{8}$ | $\bigcirc$ | $\bigcirc$ | － | $\bigcirc$ | $\bigcirc$ | ${ }_{38}^{0.7}$ | ${ }^{7} .7$ | $\bigcirc$ | 3.86 | ： | $\bigcirc$ | ： | $\bigcirc$ |
| 130 | $\stackrel{2}{2}$ |  | ${ }^{20}$ | 1 | 2 | 0 | 0 | 0 |  | 0 |  |  | ${ }^{130}$ | 0 | 0 | 0 | 1 |  | $\bigcirc$ | ${ }^{15}$ | 7 | 1 | 0 | 0 | 0 | 0 | 0 | ${ }_{38.6}$ | 2. | 0 | ${ }^{0}$ | 0 | 0 | 0 | 0 |
| 1500 | ${ }_{22}^{29}$ | 0 | ${ }_{19}^{23}$ | 0 | 2 | 0 | 1 | － |  | 0 | $\bigcirc$ |  | 1500 | 0 |  | 0 | 0 | 1 | ${ }^{8}$ | 6 | 10 | 2 | ${ }_{2}$ | 0 | 0 | 1 | 0 | ${ }_{3.9}$ | 51 | 1 | 3． 5 | 1 | 55 | ＋ | 55 |
| 1515 | ${ }_{2}^{26}$ | 0 | ${ }_{21}^{21}$ | 0 |  |  | 0 | 0 |  | 0 |  |  | ${ }_{1515}$ | 0 | 0 | 0 | 1 | ${ }^{2}$ | ${ }_{2}$ | ${ }_{5}^{8}$ | ${ }_{8}^{8}$ |  | 1 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | ${ }_{22}^{39}$ | ${ }_{75}^{6.3}$ | 0 | 0 | $\bigcirc$ | 0 | 0 | 0 |
| 155 |  |  | 39 | 0 | ${ }_{3}$ | 0 | 1 | 0 |  | 0 | 0 |  | 155 |  | 0 | 0 | 1 | ， | ${ }_{8}$ | ${ }_{18}$ | 10 | 2 | 2 | 1 | 0 | 1 |  | 39.7 | ${ }^{8} 8$ | 2 | ． 5 |  | 2273 | ＋ | 2.273 |
| ${ }_{16015}^{1605}$ | ${ }_{62}$ | ！ | ${ }_{56}$ | 0 | ${ }_{6}$ | ${ }_{0}$ | 0 | \％ |  | 0 |  |  | 1615 |  |  | 0 | \％ | \％ |  | ${ }_{33}^{15}$ | ${ }_{17}^{10}$ | ${ }_{3}^{3}$ | 3 | ！ | \％ | $\bigcirc$ | 0 | 39.9 | 6.8 | 0 | 2.9 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| 1630 | ${ }^{87}$ | 0 | ${ }^{69}$ | 0 | ${ }^{15}$ | 0 | ${ }^{3}$ | 0 |  |  |  |  | 1630 <br> 165 |  | $\bigcirc$ | 2 |  |  | ${ }_{12}^{13}$ | ${ }_{3}^{35}$ | ${ }_{32}^{18}$ | 11 | 0 | 0 | $\bigcirc$ | 0 | 0 | ${ }_{39}^{37.3}$ |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 17700 | ${ }_{63}^{68}$ | 0 | ${ }_{65}^{65}$ |  | ${ }^{3}$ | 0 | 0 | 0 |  | 0 | 0 |  | 1700 1715 | 0 |  | $\bigcirc$ | 0 |  | 6 | ${ }^{32}$ | ${ }_{25}^{23}$ | ${ }_{6}$ | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |  | 0 |  |
| 1730 | ${ }_{86}$ | 0 | ${ }_{79}$ | 0 |  |  | 0 | 0 |  |  |  |  | 1730 |  | － |  | 1 | 2 | ${ }_{22}$ | ${ }_{0}$ | ${ }_{19}^{25}$ | ${ }_{2}^{6}$ | ！ | 0 | － | $\bigcirc$ | 0 | ${ }_{37}$ | ${ }_{1.5}$ | $\bigcirc$ | 0 | － | 0 | 0 |  |
| 175 | 77 | 0 | 70 |  |  | 1 | $\bigcirc$ | 0 |  |  |  |  | 175 |  | 0 |  |  | ${ }^{2}$ | ${ }^{6}$ | ${ }^{31}$ | ${ }^{31}$ | ${ }^{6}$ | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 39.8 |  | 0 |  |  | 0 | $\bigcirc$ |  |
| 1815 | ${ }^{39}$ |  | ${ }_{35} 9$ | 0 | 0 |  | 0 | 0 |  | 0 |  |  | 1818 | 0 | 0 | 0 | 0 | 0 | 5 | 9 | 15 | ${ }_{5}^{5}$ | 5 | 0 | 0 | $\bigcirc$ | 0 | 22 | 9.9 | 0 | 0 | 0 | 0 | － |  |
| ${ }_{185}^{1850}$ | ${ }_{21}^{26}$ | ！ | ${ }_{21}^{25}$ | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}^{0}$ | 0 | ${ }_{0}$ |  |  |  |  | 1830 185 | 0 | \％ | \％ | 0 | 0 | 5 | 17 | ${ }_{6}$ | 3 <br> 2 | 1 | 0 | ： | ： | ： | ${ }^{0.3}$ | ${ }_{5}$ | $\bigcirc$ | ： | ： | 0 | ： | － |
| 1900 | 17 | 0 | 16 | 0 | 1 | 0 | 0 | 0 |  | 0 |  |  | 1900 |  | 0 | 0 |  |  | 1 | ${ }^{3}$ | ${ }_{5}$ | ${ }^{3}$ | ， | 0 |  | 0 |  | 27 | 7.9 | 0 | 0 | 0 | 0 | 0 |  |
| ${ }_{1}^{1950}$ | 15 | $\bigcirc$ | 15 | 0 | $\bigcirc$ | O | $\bigcirc$ | ： |  | \％ |  |  | 1935 1930 | 0 | $\bigcirc$ | \％ | 0 | ${ }_{3}$ | 0 | ${ }_{2}^{2}$ | 5 | ${ }_{2}^{2}$ | ${ }_{2}^{2}$ | ： | ： | $\bigcirc$ | $\bigcirc$ | ${ }_{0.2}$ | ${ }_{52.6}$ | $\bigcirc$ | － | ： | 0 | $\bigcirc$ |  |
| 195 | 11 | 0 | 11 |  | 0 | 0 |  | 0 |  | 0 |  |  | ${ }^{19} 5$ |  | 0 | 0 | 0 | 0 |  | ${ }_{1}^{2}$ | 7 | $\stackrel{2}{1}$ | $\bigcirc$ | 0 | ： | ： | 0 | 1.8 37.8 | ${ }^{6.6}$ | $\bigcirc$ | 0 | $\bigcirc$ | 0 | \％ |  |
| 2015 | 11 | 0 | 11 | 0 | 0 | 0 | 0 | 0 |  |  |  |  | 2015 |  |  |  |  | 0 | ${ }_{0}$ | ${ }^{3}$ |  | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 0 | $\bigcirc$ | ${ }^{1.3}$ | .1 | 0 | $\bigcirc$ | 0 | 0 | 0 |  |
| 205 | 9 | ： | ${ }_{9}^{8}$ | ： | 0 | $\bigcirc$ | $\bigcirc$ | ： |  | 0 |  |  | 205 <br> 2050 <br> 205 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | ${ }_{3.6}$. |  | 1 | 11.11 | 0 | 0 | 0 |  |
| 2100 215 | 7 | ： | 7 | ： | 0 | $\bigcirc$ | $\bigcirc$ | ： |  | ： |  |  | 2100 2115 |  | ！ | ： | ： | ： | 1 | ${ }_{2}$ | ${ }_{3}^{3}$ | 1 | ！ | \％ | ： | ： | － | ${ }_{39} 0.8$ ． |  | $\bigcirc$ | ： | － | ： | $\bigcirc$ |  |
| $\begin{array}{r}2130 \\ \hline 185\end{array}$ | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 |  | 0 |  |  | 2130 215 |  | 0 |  | 0 | ： | O | ${ }_{5}$ | ${ }_{1}^{2}$ | 1 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ | ${ }^{38,3}$ ． |  | 0 | 0 | $\bigcirc$ | 0 | 0 |  |
| 2200 | 8 | － | 8 | 0 | 0 | 0 | 0 |  |  | 0 |  |  | 2200 |  | 0 |  | 0 | 0 | 0 | 1 |  | 2 | 1 | 0 | 0 | 0 | 0 | 3.9. |  | 0 | 0 | 。 | 0 | 0 |  |
| ${ }_{2230}^{2215}$ | 7 | － | 7 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | $\bigcirc$ |  |  | ${ }_{2215}^{2215}$ |  |  |  | ： | ： |  | ${ }_{0}^{2}$ |  |  |  | ： | ： |  |  | 39. 59. |  | $\bigcirc$ | $\bigcirc$ | ！ | 0 | ： |  |
| 225 | ${ }_{2}$ | 0 | 2 |  | 0 | 0 | 0 | 0 |  | 0 | 0 |  | 225 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 | ${ }^{279 .}$ |  | 0 | 0 | 0 |  | 0 |  |
| ${ }_{2315}^{235}$ | 6 | 0 | ${ }_{6}$ |  | 0 | 0 | 0 | － |  | 0 | \％ |  | ${ }_{2315}^{2350}$ |  | 0 |  | 0 | $\bigcirc$ | 0 | 1 | ${ }_{2}$ | ${ }_{2}^{1}$ | $!$ | ： | $\stackrel{1}{1}$ | $\bigcirc$ | $\bigcirc$ | ${ }_{8.2}^{7 .}$ |  | i | 16.67 | O | 16.67 | ： |  |
| 2330 |  | 0 |  |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  |  | 0 |  |  | － 2330 |  |  |  |  | $\bigcirc$ |  | $\bigcirc$ |  |  | $\bigcirc$ | $\bigcirc$ | \％ |  | $\bigcirc$ | ． 6. |  | $\bigcirc$ |  | $\bigcirc$ | 0 | \％ |  |
| 0719 | 1992 | 19 | 1299 |  | 144 |  |  |  |  |  |  |  | 0719 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 394 | 447 |  | 1072 |  | 0536 | 8 |  |
| ${ }^{06} 22$ | 1606 | 19 | 1411 | 5 | 146 | ${ }^{3}$ | 15 15 | \％ |  | ， | 5 |  | －${ }_{06}^{0622}$ | $3_{3}^{3}$ | ${ }_{4}^{4}$ | 5 | 16 16 | ${ }_{46}^{46}$ | ${ }_{226}^{223}$ | 594 | 401 | （174 | －48 | 9 | ${ }_{4}^{3}$ | 5 5 | ： | 396 | 449 | 17 | 1059 | 8 | 0496 | 8 |  |
| 0000 | 1638 | 19 | ${ }_{1443}$ | 5 | ${ }_{146}$ | 3 | 15 |  |  | 1 |  |  | 0000 |  |  |  |  |  | ${ }_{226}$ | 594 | 501 | 174 | 51 |  |  | 5 | 0 | 397 | 449 | 18 | 1099 | 9 | 0549 | 8 | 0488 |










## Advanced Transport Research_EH

## Globals



## Advanced Transport Research EH

Column

| Time [-- | 24-hour time (0000-2359) |
| :---: | :---: |
| Total | Number in time step |
| Cls 1 | Class totals |
| Cls 2 | Class totals |
| Cls 3 | Class totals |
| Cls 4 | Class totals |
| Cls 5 | Class totals |
| Cls 6 | Class totals |
| Cls 7 | Class totals |
| Cls 8 | Class totals |
| Cls 9 | Class totals |
| Cls 10 | Class totals |
| Fix1 | User defined fixed text |
| Time [-- | 24-hour time (0000-2359) |
| Vbin 010 | Speed bin totals |
| Vbin 1015 | Speed bin totals |
| Vbin 1520 | Speed bin totals |
| Vbin 2025 | Speed bin totals |
| Vbin 2530 | Speed bin totals |
| Vbin 3035 | Speed bin totals |
| Vbin 3540 | Speed bin totals |
| Vbin 4045 | Speed bin totals |
| Vbin 4550 | Speed bin totals |
| Vbin 5060 | Speed bin totals |
| Vbin 6070 | Speed bin totals |
| Vbin 7080 | Speed bin totals |
| Vbin 8090 | Speed bin totals |
| Vbin 90100 | Speed bin totals |
| Mean | Average speed |
| Vpp 85 | Percentile speed |
| JPSL 60 | Number exceeding Posted Speed Limit |
| JPSL\% 60 | Percent exceeding Posted Speed Limit |
| JSL1 68 ACPO | Number exceeding Speed Limit 1 |
| ]SL1\% 68 ACPO | Percent exceeding Speed Limit 1 |
| JSL2 75 DFT | Number exceeding Speed Limit 2 |
| JSL2\% 75 DFT | Percent exceeding Speed Limit 2 |





| ${ }_{1}^{\text {me }}$ | otal | $\mathrm{cls}_{1}$ | $\underset{\substack{\mathrm{Cls} \\ 2}}{ }$ | ${ }_{\substack{\text { cls } \\ 3}}$ | $\underset{4}{\text { cls }}$ | $\underset{\substack{\text { cls } \\ 5}}{ }$ | $\underset{6}{\text { cls }}$ | $\xrightarrow{\text { cls }}$ | ${ }_{8}^{\mathrm{Cls}}$ | $\underset{9}{\text { cls }}$ | ${ }_{\substack{\text { cls } \\ 10}}$ | Fix1 | ${ }_{1}^{\text {ime }}$ | $\begin{gathered} \text { Vbin } \\ 0 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 10 \\ 15 \end{gathered}$ | $\begin{gathered} \text { vin } \\ 15 \\ 20 \end{gathered}$ | $\begin{aligned} & \begin{array}{l} \text { bin } \\ 20 \\ 20 \end{array} \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 25 \\ 30 \end{gathered}$ | $\begin{gathered} \text { vin } \\ 30 \\ 35 \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 35 \\ & 30 \end{aligned}$ | $\begin{aligned} & \text { Vbin } \\ & 40 \\ & 45 \end{aligned}$ | $\begin{aligned} & \text { vbin } \\ & 45 \\ & 50 \end{aligned}$ | $\begin{aligned} & \text { bin } \\ & 50 \\ & 50 \end{aligned}$ | $\begin{gathered} \text { voin } \\ 60 \\ 70 \end{gathered}$ | $\begin{gathered} \text { vin } \\ 70 \\ 80 \end{gathered}$ | $\begin{aligned} & \text { vin } \\ & 80 \\ & 80 \\ & 90 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 90 \\ 900 \end{gathered}$ | Mean | $\mathrm{V}_{\text {vop }}$ | $\begin{aligned} & \text { IPSL } \\ & \hline 60 \end{aligned}$ | $\underset{60}{\text { PSLL/ }}$ | $\begin{gathered} \text { 15L1 } \\ \text { ACPO } \\ \text { ACPO } \end{gathered}$ | $\begin{aligned} & 15 \mathrm{LL1} \mathrm{\%} \\ & 68 \\ & \text { ACPO } \end{aligned}$ | $\begin{aligned} & 15 L 2 \\ & 75 \\ & 75 \\ & \hline \text { DF } \end{aligned}$ | $\begin{gathered} 1512 \% \\ 75 \\ \text { DF } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0000 0015 | ${ }_{2}^{0}$ | 0 | ${ }_{2}^{0}$ | ${ }_{0}^{0}$ | ! | : | 0 | 0 | : | $\bigcirc$ | 0 |  | 0000 0015 | ${ }_{0}^{0}$ | 0 | ${ }_{0}^{0}$ | 0 | $\begin{aligned} & 0 \\ & 0 \\ & 1 \end{aligned}$ | 0 | , | 0 | 0 | 0 | 0 | $0$ | \% | \% | 33.7 |  | $\bigcirc$ | $\begin{aligned} & 0 \\ & 0 \end{aligned}$ | $\begin{aligned} \\ 0 \end{aligned}$ | $\text { CPO } \begin{gathered} 0 \\ 0 \end{gathered}$ | $\begin{aligned} & \text { DF } \\ & 0 \\ & 0 \end{aligned}$ |  |
| 0030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }^{0} 0035$ | 0 | 0 |  | 0 | 0 |  | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 | 0 |  |  |  | 0 | $\bigcirc$ |  |  |  | 0 |
| 005 0100 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | : | : |  | 005 000 | 0 | 0 | 0 | 0 | 0 | 0 | ${ }_{2}$ | 0 | 1 | $\bigcirc$ | : | 0 | 0 | 0 | ${ }_{36.7}^{7.7}$. |  | 0 | 0 | 0 |  | $\bigcirc$ | - |
| ${ }_{0} 0115$ | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0115 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |  | 0 | 0 | 0 | 0 | ${ }_{37.6} 6$. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| ( ${ }^{0130}$ | 1 | $\bigcirc$ | ${ }_{0}$ | ${ }_{0}^{0}$ | ${ }_{1}$ | ${ }_{0}^{0}$ | ${ }_{\circ}^{\circ}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | - |  | - 015 | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 1 | ${ }_{0}^{0}$ | $\stackrel{0}{0}$ | $\stackrel{0}{0}$ | $\stackrel{0}{0}$ | : | $\stackrel{0}{0}$ | $\bigcirc$ | $\stackrel{0}{0}$ | 30.1 . |  | $\bigcirc$ | $\bigcirc$ | $\stackrel{0}{0}$ | ${ }_{0}^{\circ}$ | $\bigcirc$ | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 |
| - 0215 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | \% | : | \% | $\bigcirc$ | - |  | 0215 0230 | \% | \% | \% | : | $\bigcirc$ | ${ }_{1}$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | : | $\bigcirc$ | : | $\bigcirc$ | 31. |  | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | 0 |
| 025 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 025 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |  |  | 0 | 0 | 0 |  | 0 | 0 |
| 0300 0315 | 0 | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 0300 0315 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 0 | \% | \% | $\bigcirc$ | 0 | : | : | $\bigcirc$ | $\bigcirc$ |  |  | \% | 0 | : | ${ }_{0}^{\circ}$ | 0 | ${ }_{0}^{0}$ |
| 0330 | 0 | 0 | ${ }^{\circ}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0330 | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 0 | 0 |  |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | - 00 | 0 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | : | 0 | $\bigcirc$ |  | 5.9 |  | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{0}$ | $\bigcirc$ | - |
| $\bigcirc{ }^{15}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 015 | 0 | 0 | 0 | 0 | 0 | $\bigcirc$ | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 0 | 38. |  | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ |
| ${ }_{0} 5$ | ${ }_{0}$ | 0 | ${ }^{2}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{0} 5$ | 0 | 0 |  | 0 | 0 | 0 | ${ }_{0}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | so |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 0500 | ${ }_{3}$ | $\bigcirc$ | ${ }_{3}^{0}$ | ${ }_{0}^{0}$ | \% | $\stackrel{0}{0}$ | - | $\stackrel{0}{0}$ | $\bigcirc$ | : | : |  | O515 | \% | : | : | : | $\bigcirc$ | 0 | ${ }_{2}^{0}$ | ${ }_{1}$ | $\bigcirc$ | $\bigcirc$ | : | $\bigcirc$ | 0 | 0 | 0.5. |  | : | $\bigcirc$ | : | ${ }_{0}^{0}$ | 0 | $\bigcirc$ |
| 0530 | ${ }^{2}$ | 0 | ${ }^{2}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0530 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 39.5. |  | 0 | 0 | 0 | 0 | 0 |  |
| 0650 | ${ }^{3}$ | ${ }_{0}$ | ${ }_{3}^{3}$ | ${ }_{0}^{0}$ | 1 | ${ }_{0}^{0}$ | $\bigcirc$ | ${ }_{0}^{0}$ | $\bigcirc$ | $\bigcirc$ | : |  | O650 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | \% | 0 | ${ }_{1}$ | ${ }_{1}^{2}$ | : | 1 | : | $\bigcirc$ | \% | $\bigcirc$ | ${ }_{0.7}^{6.5}$. |  | : | : | : | ${ }_{0}^{\circ}$ | : | - |
| ${ }^{0665}$ | 1 | $\bigcirc$ | 1 |  | 0 |  | 0 | 0 | $\bigcirc$ | 0 | 0 |  | 0615 |  | 0 |  | 0 | 0 |  | 0 |  | ${ }^{\circ}$ |  | 0 | 0 |  | $\bigcirc$ |  |  |  | 0 |  | 0 | 0 | 0 |
| - 065 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0630 <br> 065 <br> 070 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | ${ }_{0}$ | 0 | 0 | $\begin{aligned} & 0 \\ & 0 \end{aligned}$ | 0 | 35.6. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 0700 0715 | ${ }_{7}^{6}$ | $\bigcirc$ | ${ }_{7}$ | ${ }_{0}^{0}$ | 1 | - | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | : |  | 0700 0715 | $\bigcirc$ | : | 0 | : | $\bigcirc$ | ${ }_{1}$ | 3 3 |  | ${ }_{0}^{2}$ | ${ }_{2}^{0}$ | : | $\bigcirc$ | $\bigcirc$ | 0 | ${ }^{1.7}{ }^{1.7}$. |  | - | 0 | $\bigcirc$ | 0 | 0 | : |
| 0730 | ${ }_{1}{ }^{7}$ | 1 | ${ }^{5}$ | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0730 | 0 | 1 | 0 | $\bigcirc$ | 0 | 0 | 1 | 3 | ${ }^{2}$ | 1 | 0 | 0 | 0 | 0 | 37.7. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 0800 | 18 | 0 | 1 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 |  | 0800 | 0 | 0 | 0 | 0 | 0 | 3 | 9 | 2 |  | 0 | 0 | 0 | 0 | 0 | 39.3 | 5.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| -0815 | 17 | 1 | 15 15 | $\bigcirc$ | 1 | \% | : | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | : |  | 0815 0830 | 0 | 1 | $\bigcirc$ | : | $\bigcirc$ | 1 | 7 | 3 5 | ${ }_{5}^{5}$ | $\bigcirc$ | : | $\bigcirc$ | 0 | 0 | ${ }_{38.5}^{39.7}$ | ${ }_{3.3}^{7.6}$ | \% | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| 085 | ${ }^{13}$ | 0 | ${ }_{12}^{13}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 085 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{5}^{5}$ |  | 2 | ${ }^{2}$ | 0 | 0 | 0 | $\bigcirc$ | ${ }^{2.9}$ | ${ }_{50} 5$ | 0 | - | $\bigcirc$ | 0 | 0 | $\bigcirc$ |
| 0915 | 16 | 0 | 15 | 1 | 0 | 0 | - | 0 | 0 | 0 | 0 |  | 0915 | 0 | 0 | 0 | 0 | 2 | 3 | ${ }_{6}$ | ${ }_{3}$ | ${ }_{2}$ | 0 | 0 | 0 | 0 | 0 | ${ }_{37}$ | ${ }_{\text {5 }}^{\text {¢ }}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| 0930 | ${ }^{29}$ | 0 | ${ }^{26}$ | 0 | ${ }^{3}$ | 0 | 0 | 0 | 0 | 0 | 0 |  | 0930 | 0 | 0 | $\bigcirc$ | 1 | 0 |  | ${ }_{3}^{15}$ | 7 | 5 | $\bigcirc$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ | ${ }^{39}$ | 2.6 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 0 |
| 1000 | 18 | ${ }_{0}$ | ${ }_{17}$ | $\bigcirc$ | 1 | 0 | - | 0 | $\bigcirc$ | $\bigcirc$ | 0 |  | 1000 | 0 | 0 | 0 | 0 | ${ }_{3}$ | ${ }_{3}$ | 6 | ${ }_{3}$ | 1 | 2 | 0 | 0 | 0 | 0 | ${ }_{38.2}^{37.2}$ | 7.9 | 0 | 0 | 0 | ${ }_{0}$ | 0 | $\bigcirc$ |
| 1015 1030 | ${ }_{22}$ | 1 | ${ }_{21}^{12}$ | $\bigcirc$ | 1 | \% | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | \% |  | 1015 1030 | $\bigcirc$ | 1 | \% | \% | ${ }_{2}^{0}$ | ${ }_{8}^{1}$ | ${ }_{6}$ | ${ }_{2}$ | 3 | $\bigcirc$ | \% | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{37.1}^{39.8}$ | ${ }_{5.7}^{5.6}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ |
| 105 | 19 | 0 | 18 | 0 | 1 | $\bigcirc$ | 0 | 0 | 0 | 0 | 0 |  | 105 | 0 | 0 | 0 | $\bigcirc$ | 0 | ${ }^{3}$ | 8 |  | 1 | 2 | 0 | 1 | 0 | 0 | ${ }^{1.5}$ | 52.8 | 1 | 5.263 | 1 | 5.263 | 0 | 0 |
| 1115 | ${ }_{31}^{20}$ | ${ }_{0}$ | ${ }^{18}$ | 1 | 1 | O | 。 | 0 | 0 | 0 | 0 |  | 1115 | 0 | ${ }_{0}^{0}$ | $\stackrel{0}{0}$ | \% | $\bigcirc$ | ${ }_{8}^{6}$ | ${ }_{13}{ }^{7}$ | 9 | $\stackrel{1}{1}$ | ${ }_{0}^{\circ}$ | : | \% | $\stackrel{0}{0}$ | - | ${ }_{38}^{37.6}$ | ${ }_{2.7}^{0.8}$ | $\bigcirc$ | ${ }_{0}^{\circ}$ | $\stackrel{0}{0}$ | $\stackrel{0}{0}$ | ${ }_{0}$ | $\bigcirc$ |
|  |  | 0 |  | 0 |  |  | 0 | 0 | 0 | 0 | 0 |  | 1130 |  | 0 |  |  |  |  | 5 |  | 1 |  | 0 |  |  | 0 | ${ }^{37.3}$ |  |  |  |  |  | 0 | 0 |
| 115 1200 | 31 22 | - | ${ }_{20}^{31}$ | : | ${ }_{2}$ | : | - | $\bigcirc$ | $\bigcirc$ | : | : |  | 115 1200 1 | $\bigcirc$ | : | : | : | ${ }_{0}^{3}$ | 7 | ${ }_{9}^{12}$ | 7 | ${ }_{1}^{2}$ | ${ }_{1}$ | : | : | 0 | $\bigcirc$ | ${ }_{38.7}^{37.2}$ | 3.1. ${ }_{3}^{2.1}$ | : | 0 | : | ${ }_{0}$ | $\bigcirc$ | 0 |
| ${ }^{1215}$ | 1 | 0 | ${ }^{13}$ | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }^{1215}$ | 0 | 0 | 0 | 0 | 0 | 3 | 7 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 38 | ${ }^{3.1}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| +125 | 27 19 | ! | ${ }_{17}^{2}$ | ${ }_{0}^{0}$ | ${ }_{2}^{2}$ | - | ${ }_{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 1230 125 12 |  | ${ }_{0}^{0}$ | 1 | : | ${ }_{0}^{6}$ |  | - ${ }^{3}$ |  | $\bigcirc$ | $\bigcirc$ | : | O | $\bigcirc$ | $\bigcirc$ | $3_{37 .}$ | ${ }_{3.1}^{2.6}$ | - | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ |
| ${ }^{1300}$ | ${ }^{25}$ | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }^{1300}$ | 0 | 0 | 0 | 0 | ${ }^{2}$ | 8 | ${ }^{8}$ | ${ }_{5}$ | 1 | 0 | 1 | 0 | 0 | 0 | ${ }^{37.3}$ | ${ }^{3.3}$ | 1 |  | 0 | 0 | 0 | 0 |
| 1315 130 | ${ }_{23}^{25}$ | ${ }_{3}$ | ${ }_{20}^{25}$ | 0 | $\bigcirc$ | 0 | - | 0 | $\bigcirc$ | \% | 0 |  | 1330 | 0 | 1 | 0 | 0 | 0 | ${ }_{6}$ | 11 | 3 | 1 | 1 | : | 0 | 0 | 0 | ${ }_{36.8}$ | ${ }^{3.5}$ | 0 | 0 | $\bigcirc$ | 0 | 0 | 0 |
|  | ${ }_{12}$ |  |  |  |  |  |  |  | 0 |  | 0 |  | 135 |  | 0 |  | 0 | 0 |  | 6 |  | 1 |  | 0 |  |  | 0 |  |  |  |  |  |  | 0 | 0 |
| 115 | 12 | O | 12 | 0 | 0 | - | 0 | 0 | 0 | 0 | $\bigcirc$ |  | 115 | ${ }_{0}$ | ${ }_{0}$ | : | : | : | ${ }_{2}$ | 5 7 | 5 2 | ${ }_{1}^{2}$ | $\bigcirc$ | : | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{38} 0.9$ | ${ }_{2.1}^{6.8}$ | - | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | : |
| 130 | 20 |  | 18 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 |  | 130 |  | 0 | 0 | 0 | 0 | 8 | 7 |  | 0 | 1 | 0 | 0 | 0 | 0 | 37.2 | 1.7 | 0 | 0 | 0 | 0 | 0 |  |
| 1500 | 1 | 1 | 12 | 0 | 1 | : | - | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | : |  | 1500 | $\bigcirc$ | : | $\bigcirc$ | 0 | 0 | ${ }_{2}^{6}$ | 5 | 5 | ${ }_{2}$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{0}$ | - $\begin{aligned} & 3.2 \\ & 39.9\end{aligned}$ | ${ }_{6.1}^{37.1}$ | $\bigcirc$ | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ |
| ${ }^{1515}$ |  |  |  |  | 2 |  |  |  | 0 | 0 |  |  | 1515 |  |  |  | 0 | 0 | ${ }^{2}$ | ${ }_{5}^{10}$ |  | ${ }^{2}$ |  | 0 |  |  | 0 | ${ }^{38.6}$ | ${ }^{3.6}$ |  | 0 | 0 |  | 0 | 0 |
| 155 | 18 | 0 | ${ }^{18}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 155 | 0 | 0 | 0 | 0 | 0 | 2 | 10 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 38. | 1.9 | 0 | 0 | 0 | 0 | 0 |  |
|  | 13 | 0 | 12 | 0 | + |  | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 |  | 1600 1615 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 1 |  | ${ }_{3}^{6}$ |  | 1 | $\bigcirc$ | - | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 38 38.9 | 1.2 3.5 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ |
| ${ }_{1630}$ | 19 | 0 | ${ }_{18}^{12}$ | 0 | 1 | O | 。 | 0 | 0 | 0 | 0 |  | 1630 |  | 0 | 0 | 0 | 3 | 8 | 5 |  | 0 |  | 0 | 0 |  | 0 |  | 1.5 | 0 |  |  |  |  | ${ }_{0}$ |
| 165 1700 | 7 | 0 |  | 0 |  |  |  | 0 | 0 | 0 | 0 |  | 165 |  | 0 | 0 | 0 | 0 | 1 |  |  | 0 | 0 | 0 | 0 |  | 0 |  |  | 0 | 0 | 0 | 0 |  | 0 |
| 1715 | 9 | 1 | 8 | 0 | ${ }_{0}$ | 0 | 0 | 0 | 0 | 0 | 0 |  | 1715 | 0 | 0 | 0 | 0 | $\bigcirc$ | 3 | 5 | 2 | 0 | 0 | : | \% | 0 | 0 | ${ }_{36.9}$. |  | \% | 0 | \% | 0 | 0 | 0 |
| 1730 | 15 | $\bigcirc$ | ${ }_{11}^{13}$ | 0 | 2 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | 0 | 0 |  | 1735 |  | 0 | 0 | 0 | 1 | 8 | ${ }^{2}$ | 2 | ${ }^{2}$ |  | 0 | 0 | 0 | $\bigcirc$ | 38.1 | ${ }^{6.8}$ | 0 | 0 | 0 |  |  | $\bigcirc$ |
| ${ }_{1800}$ | 11 | \% | 10 | 0 | 1 | \% | - | 0 | 0 | 0 | 0 |  | 1800 | 0 | 0 | 0 | 0 | 0 |  | 8 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | ${ }_{0.6}$ | ${ }_{9} 9$ | 0 | 0 | 0 | 0 | 0 | \% |
| 1815 1830 | 18 | 0 | 15 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1815 |  | 0 | 0 | 1 | ${ }^{2}$ |  |  | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 33.9 | 1.8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1830 185 | ${ }_{11}^{9}$ | ${ }_{0}$ | ${ }_{10}^{9}$ | ${ }_{0}^{0}$ | 1 | - | $\bigcirc$ | ${ }_{0}^{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | $\begin{array}{r}1830 \\ 185 \\ \hline 18\end{array}$ | 0 | \% | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{8}^{6}$ | 2 | 1 | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{0}$ | $\bigcirc$ | ${ }_{0}$ | ${ }_{\substack{33.7 \\ 3 \\ 3 .}}^{\text {a }}$ | 37. | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ |
|  | 7 | 0 |  | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 1900 | 0 | 0 | 0 | 0 | 0 |  |  |  | 0 |  | 0 |  |  | 0 | 3.7 |  | 0 | 0 |  |  | 0 | 0 |
| ${ }_{1930}^{195}$ | $1{ }_{17}^{7}$ | - | ${ }_{9}^{6}$ | - | 1 | : | - | $\stackrel{0}{0}$ | $\bigcirc$ | : | : |  | 1915 <br> 1930 | $\bigcirc$ | : | $\bigcirc$ | : | ${ }_{2}$ |  | 1 | ${ }_{0}^{3}$ | $\stackrel{0}{0}$ | 1 | : | \% | : | 0 | 33.2 | 36.7 | 0 | 0 | 0 | 0 | 0 | - |
| 195 | ${ }_{12}$ | $\bigcirc$ | ${ }^{8}$ | $\bigcirc$ | 1 |  |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 |  | 195 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | 1 |  |  |  | 1 |  | 0 | $\bigcirc$ |  | $\bigcirc$ | ${ }_{351}^{36.5}$. | 35.8 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 0 | $\bigcirc$ |
| 2015 | 3 | 0 | ${ }_{3}^{3}$ | 0 | 0 |  | 0 | 0 | 0 | 0 | : |  | 2015 | $\bigcirc$ | 0 | 0 | : | 1 | 0 | ${ }_{0}$ | 2 | 0 |  | : | 0 | 0 | 0 | - 38.15. |  | 0 |  | 0 | 0 | 0 | 0 |
| 205 |  | 0 |  | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 205 |  | 0 |  | 0 |  |  | 1 |  |  | 0 | 0 |  |  | 0 | ${ }_{33.3}$. |  | 0 | 0 |  | 0 | 0 |  |
| ${ }^{2} 2115$ | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $\bigcirc$ |  | ${ }_{2}^{2100}$ | 0 | 0 | 0 | $\bigcirc$ | 0 |  | 1 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | 33.9. |  | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ |
| ${ }_{2130}$ | 2 | 0 | 2 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{2130}$ | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 2.8. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 215 2200 |  | \% |  | - | $\bigcirc$ | : | \% | $\bigcirc$ | : | $\bigcirc$ | : |  | 215 2200 | $\bigcirc$ | : | : | : | : | ${ }_{0}^{2}$ | ${ }_{1}^{2}$ | 0 | : | $\bigcirc$ | : | $\bigcirc$ | : | 0 | ${ }_{35.9}^{35.7}$ : |  | ! | $\bigcirc$ | - | ${ }_{0}^{0}$ | $\bigcirc$ | : |
| ${ }_{2215}^{2230}$ | ${ }_{9}$ | $\bigcirc$ | 5 | 0 | 0 | 0 | $\bigcirc$ | 0 | 0 | 0 | $\bigcirc$ |  | ${ }_{2235}^{2215}$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{3}$ | 1 | 2 | $\bigcirc$ | 0 | 0 | 0 | 0 | $\bigcirc$ | ${ }_{3}^{38.9}$ 3. |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ |
| 225 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 225 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 1 | 0 | 0 |  | 0 | 0 | 35.9. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }_{2300}^{2305}$ |  | 0 | ${ }^{3}$ | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{2}^{2300}$ | 0 | 0 | 0 | $\bigcirc$ | 0 | ${ }_{1}$ | 1 | 1 | 0 | 0 | 0 | 0 | 0 | $\bigcirc$ |  |  | 0 | 0 | $\bigcirc$ |  | 0 | $\bigcirc$ |
| ${ }_{2330}$ | ${ }^{2}$ | 0 | ${ }_{2}^{3}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | - | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | ${ }_{2330}^{2315}$ | 0 | 0 | $\bigcirc$ | 1 | 0 | 1 | 1 | 0 | $\bigcirc$ |  | $\bigcirc$ | $\bigcirc$ | 0 | 0 | ${ }_{26.8}^{30.2}$ |  | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 |
| 235 0719 | 84 | $\stackrel{9}{9}$ | 720 | ${ }_{4}^{0}$ | ${ }_{51}^{2}$ | : | : | : | : | 0 | : |  | 235 0719 | : | ${ }_{4}^{0}$ | $\stackrel{1}{1}$ | ${ }_{4}^{0}$ | ${ }_{30}$ | 192 | 294 | 183 |  | ${ }_{14}$ | ${ }_{1}^{0}$ | 1 | : | : | 3.5 <br> 379 |  | ${ }_{2}$ | $025{ }^{\circ}$ | 0 | ${ }_{0} 128$ | 0 | - |
| 0622 | 870 | 9 | 800 | 5 | 56 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0622 | 0 | 4 | 2 | 5 | 40 | 222 | 322 | 194 | 63 | 16 | 1 | 1 | 0 | 0 | 377 | 434 | 2 | 023 | 1 | 0115 | 0 | 0 |
| \% | ${ }^{9} 9$ |  | ${ }^{3}$ | 5 | 59 |  |  |  |  |  |  |  | 060 |  | 4 | 2 |  | 4 |  | 338 | - |  | 17 |  |  |  |  | 376 | 43 | 2 | -217 | 1 | , 11 |  | 0 |
| 0000 |  |  |  |  |  |  |  |  |  |  |  |  | 0000 |  |  |  |  |  |  |  | 203 | 67 |  |  | 1 |  |  |  | 433 |  |  |  |  | 0 | 0 |










## Advanced Transport Research_EH

## Globals



## Advanced Transport Research EH

Column

| Time [-- | 24-hour time (0000-2359) |
| :---: | :---: |
| Total | Number in time step |
| Cls 1 | Class totals |
| Cls 2 | Class totals |
| Cls 3 | Class totals |
| Cls 4 | Class totals |
| Cls 5 | Class totals |
| Cls 6 | Class totals |
| Cls 7 | Class totals |
| Cls 8 | Class totals |
| Cls 9 | Class totals |
| Cls 10 | Class totals |
| Fix1 | User defined fixed text |
| Time [-- | 24-hour time (0000-2359) |
| Vbin 010 | Speed bin totals |
| Vbin 1015 | Speed bin totals |
| Vbin 1520 | Speed bin totals |
| Vbin 2025 | Speed bin totals |
| Vbin 2530 | Speed bin totals |
| Vbin 3035 | Speed bin totals |
| Vbin 3540 | Speed bin totals |
| Vbin 4045 | Speed bin totals |
| Vbin 4550 | Speed bin totals |
| Vbin 5060 | Speed bin totals |
| Vbin 6070 | Speed bin totals |
| Vbin 7080 | Speed bin totals |
| Vbin 8090 | Speed bin totals |
| Vbin 90100 | Speed bin totals |
| Mean | Average speed |
| Vpp 85 | Percentile speed |
| JPSL 60 | Number exceeding Posted Speed Limit |
| JPSL\% 60 | Percent exceeding Posted Speed Limit |
| JSL1 68 ACPO | Number exceeding Speed Limit 1 |
| ]SL1\% 68 ACPO | Percent exceeding Speed Limit 1 |
| JSL2 75 DFT | Number exceeding Speed Limit 2 |
| JSL2\% 75 DFT | Percent exceeding Speed Limit 2 |


| ${ }_{1}^{\text {me }}$ | otal | ${ }_{\text {cls }}^{1}$ | $\underset{2}{\text { Cls }}$ | ${ }_{3}^{\text {Cls }}$ | ${ }_{4}^{\text {Cls }}$ | $\begin{gathered} \mathrm{Cls} \\ 5 \end{gathered}$ | $\underset{6}{\text { cls }}$ | ${ }_{7}{ }_{7}$ | $\begin{gathered} \mathrm{cls} \\ 8 \end{gathered}$ | $\underset{9}{\mathrm{Cls}}$ | $\begin{aligned} & \mathrm{Cls} \\ & 10 \end{aligned}$ | Fix 1 | ${ }_{i}^{\text {ime }}$ | $\begin{gathered} \text { Voin } \\ \text { on } \\ 10 \end{gathered}$ | $\begin{gathered} \text { Voin } \\ 10 \\ 15 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 15 \\ 20 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 20 \\ 25 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 25 \\ 30 \\ \hline \end{gathered}$ | $\begin{gathered} \text { Voin } \\ 30 \\ 35 \end{gathered}$ | $\begin{gathered} \text { Vin } \\ 35 \\ 30 \\ 40 \end{gathered}$ | $\begin{gathered} \text { Voin } \\ 40 \\ 45 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 45 \\ 50 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 50 \\ 60 \\ \hline 0 \end{gathered}$ | $\begin{gathered} \text { Vain } \\ 60 \\ 70 \end{gathered}$ | $\begin{gathered} \text { Vain } \\ 70 \\ 80 \end{gathered}$ | $\begin{gathered} \text { Vin } \\ 80 \\ 90 \\ \hline \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 90 \\ 100 \end{gathered}$ | Mean | $\begin{gathered} \mathrm{vppp}^{8} \\ 80 \end{gathered}$ | $\begin{gathered} \text { JPSL } \\ 60 \end{gathered}$ | $\underset{60}{\text { IPSL\% }}$ | $\begin{gathered} 1 \mathrm{SL1} \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{gathered} 15 \mathrm{SLL} \mathrm{\%} \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{aligned} & \text { 1SL2 } \\ & 75 \\ & \text { DF } \end{aligned}$ | $\begin{gathered} 152 \% \\ 75 \\ \text { DF } \\ \hline \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 075 080 | $8{ }^{1}$ |  | 75 |  | ${ }_{0}^{0}$ | ： |  |  |  | \％ |  |  | 075 0800 | 0 | ${ }_{2}^{0}$ | 0 9 | ${ }_{8}^{\circ}$ | $\frac{1}{5}$ | 8 | $2{ }^{0}$ | ${ }_{16}^{0}$ | $\stackrel{0}{7}$ | 0 | ： | ${ }_{0}^{0}$ | 0 | 0 | 33.9 | 3.7 |  | － |  | 0 | 0 | 0 |
| （0815 | 113 51 5 | \％ | ${ }_{3}^{98}$ | \％ | $\stackrel{12}{7}$ | 1 |  | 0 | 0 | 0 | $\bigcirc$ |  | －0815 | ： | 0 | $\bigcirc$ | ： | 1 | ${ }_{10}^{23}$ | ＋ $\begin{array}{r}52 \\ 15\end{array}$ | 31 15 | ${ }_{8}^{5}$ | $2$ | ： | 1 | 0 | $\bigcirc$ | ${ }_{39.6}^{38.5}$ | 2.5 5.5 |  | ${ }_{0}^{0.885}$ |  | ${ }_{0}^{0.885}$ | 0 | $\bigcirc$ |
| －85 | 7 | 0 | ${ }_{5} 9$ | 0 |  | 0 | ${ }^{2}$ | 0 | 0 | 0 | 0 |  | －885 | 0 | 0 | 0 | 1 | 8 | 1 | ${ }^{23}$ | 12 | 9 | $\begin{aligned} & 2 \\ & 5 \end{aligned}$ | 0 | 2 | $\begin{aligned} & 0 \\ & 0 \end{aligned}$ | 0 | 39． | ${ }^{7} .5$ | 2 | 2.703 |  | 2.703 |  |  |
| 0915 | 5 | $\bigcirc$ | ${ }^{5}$ | 1 | 7 | $\bigcirc$ | 1 | $\stackrel{0}{0}$ | $\bigcirc$ | ： | ： |  | 0900 0905 | ： | $\bigcirc$ | \％ | ： | $3_{3}^{3}$ | ${ }_{3}^{13}$ | 1 | ${ }_{21}$ | ${ }_{3}^{5}$ | $\frac{5}{1}$ | ： | $0$ | $\begin{aligned} & 0 \\ & 0 \\ & 0 \end{aligned}$ | $\begin{aligned} & 0 \\ & 0 \end{aligned}$ | ${ }_{39.2}^{39.5}$ | ${ }^{5} 1$ |  | ${ }_{0}^{0}$ |  | ${ }_{0}^{0}$ | $\begin{aligned} & 0 \\ & 0 \end{aligned}$ | 0 |
| 0930 | 39 | 0 | 3 | 0 | 2 | 1 | ${ }^{2}$ | 0 | 0 | 0 | 0 |  | 0930 | 0 |  |  | 0 |  |  | 16 | －6 | ${ }_{5}^{6}$ | 2 | 0 | 1 | 0 |  | 0.2 | ${ }_{8}^{8.3}$ |  | 2.56 |  | 2.56 |  | 2.56 |
| O955 |  | 0 | ${ }_{26}^{39}$ | 1 |  | $\bigcirc$ | 1 | 0 | 0 | 0 |  |  | O955 | $\bigcirc$ | 0 | 0 | 0 | 2 |  | ${ }_{8}^{18}$ | ${ }^{15}$ | ${ }_{6}^{5}$ |  | 0 | 0 | 0 | $\bigcirc$ | ${ }_{0}^{0.8}$ | ${ }_{8.7} 5$ |  | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 0 |
| 1000 1015 | ${ }_{36}^{27}$ | ${ }_{2}$ | ${ }_{29}^{26}$ | ${ }_{0}^{0}$ | ${ }_{5}$ | ： | ！ | $\bigcirc$ | $\bigcirc$ | ： | \％ |  | 1000 1015 |  |  | ${ }_{0}^{0}$ |  | ${ }_{2}^{2}$ |  | $1^{8}$ | ${ }_{9}^{6}$ | ${ }_{6}^{6}$ | $\begin{aligned} & 1 \\ & 0 \end{aligned}$ | ： | ： | ： |  | ${ }_{38.8}^{0.1}$ | ${ }_{6.2}^{8.7}$ |  | ： | $\bigcirc$ |  |  | ： |
| 1030 105 | ${ }_{36}^{23}$ | 0 | 19 | 0 | 3 | $\bigcirc$ | 1 | 0 | 0 | － | $\bigcirc$ |  | 1030 | $\bigcirc$ | $\bigcirc$ | ${ }_{1}$ | $\bigcirc$ | 1 | ${ }_{6}$ | 11 |  | 1 | 0 | 0 | 0 | 0 | $\bigcirc$ | ${ }_{\substack{36.8 \\ 362}}$ | 1.5 |  | 0 | 0 | 0 | 0 | $\bigcirc$ |
| 1100 | 1 | 0 | 3 | 0 | 5 | 0 | 1 |  | 0 | 0 | 1 |  | 1100 | 0 | 0 | 0 | 3 | 3 | 12 | 5 | 9 | 6 | 3 | 0 | 0 | 0 | 0 | 37.7 | 7.5 |  | 0 |  | 0 |  | 0 |
| ${ }_{1115}^{1150}$ | ${ }_{35}$ | \％ | 31 27 | $\bigcirc$ | 7 | $\bigcirc$ | ${ }_{1}$ | 0 | 0 | 0 | $\bigcirc$ |  | 1115 1130 115 | 0 | 0 | 0 | 2 | 3 | 5 | 12 | ${ }_{18}^{9}$ | ${ }^{6}$ | 3 | 0 | \％ | 0 | 0 | 392 | ¢ 6.9 |  |  |  | $\bigcirc$ | $\bigcirc$ | 0 |
| 1130 <br> 115 <br> 185 | 3135 | $\bigcirc$ | 27 26 | 1 | ${ }_{5}^{6}$ | ： | 1 | 0 | $\bigcirc$ | － | ： |  | （1130115 <br> 115 | ： | $\bigcirc$ | ${ }_{0}^{0}$ | ： | ${ }_{3}^{1}$ | 5 5 | 13 15 | 13 <br> 3 | ${ }_{2}^{1}$ | 1 | ！ | ： | $\bigcirc$ | $\bigcirc$ | ${ }_{37.9}^{39.2}$ | 3.8 <br> 5.8 | 0 | ${ }^{2.857}$ | $\bigcirc$ | ${ }^{0}$ | ${ }_{0}^{0}$ | 0 |
| ${ }^{1200}$ | 30 5 | 1 | ${ }_{3}$ | 1 | 3 | 0 | 1 | 0 | 0 |  | 0 |  | ${ }^{1200}$ | $\bigcirc$ | 0 | 1 | 0 | 2 | 11 | 5 | ${ }^{5}$ |  | 2 | 0 | 0 | 0 | $\bigcirc$ | 37．6 | ${ }_{7}^{7.3}$ |  | ${ }^{0}$ | 0 | 0 | 0 | $\bigcirc$ |
| （1215 | 5 3 | $\bigcirc$ | ${ }_{38}^{37}$ | 1 | 3 2 2 | ： | 3 | ： | ： | 0 | ： |  | （1215 | $\bigcirc$ | $\bigcirc$ | 0 | ： | 6 | $\begin{array}{r}17 \\ \hline 6\end{array}$ | ${ }_{1}^{12}$ | ${ }_{11}^{7}$ |  | 0 | $!$ | ： | 0 | ： | ${ }_{38.3}^{36.9}$ | 3．3 5.2 | 1 | ${ }^{2.222}$ | ： | － | ： | ： |
|  | 37 | 0 | 35 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |  | 125 | 0 | 0 | 0 | 2 | 3 | 9 | 13 | 5 | 3 | 2 | 0 | 0 | 0 | 0 | 37.5 | ． 8 |  | 0 |  | 0 | 0 | 0 |
| 1300 1315 1 | ${ }^{0}$ | ${ }^{2}$ | ${ }_{31}^{29}$ | 0 | 7 | $\bigcirc$ | 1 | 0 | 0 | 0 | 1 |  | 1300 135 135 | 0 | 0 | $\bigcirc$ | ${ }^{2}$ | 1 | 7 | 1 | 13 | 1 | 2 | $\bigcirc$ | 0 | 0 | 0 | 38 | ${ }_{5}^{2.7}$ | 0 | 0 | 0 | 0 | $\bigcirc$ | $\bigcirc$ |
| ${ }_{1350}$ | ${ }_{36}$ |  | ${ }_{28}$ |  | 3 | 0 | 3 | 0 | 0 | 1 | 1 |  | 1350 130 |  | 0 | 0 | 0 | 2 | 12 | 10 | 10 | 1 | ${ }_{1}$ | 0 | \％ | 0 | 0 | ${ }_{37.1}^{38.2}$ |  |  |  |  |  |  |  |
| 135 100 | 35 50 5 | $\bigcirc$ | 31 | 0 | 7 | 1 | 1 | ： | $\bigcirc$ | － | $\bigcirc$ |  | 135 100 | 0 | 0 | 0 | $\bigcirc$ | ${ }_{2}^{6}$ | ${ }_{17}^{7}$ | 16 22 | 5 | $\frac{1}{2}$ | ＋ | $\bigcirc$ | ： | 0 | $\bigcirc$ | ${ }_{36.8}^{36.1}$ | ${ }_{1}^{2 .}$ | 0 | 0 | $\bigcirc$ | 0 | 0 | 0 |
| 115 | 52 | 0 | ${ }^{28}$ | 0 | 10 | 0 | 3 | 0 | 0 | 0 |  |  | 115 | 0 | 0 | 0 |  |  | 13 | ${ }_{20} 2$ | 7 | 3 | 2 | 0 | 0 | 0 | 0 | 36.5 | 1.3 |  | 0 | 0 | 0 | ${ }_{0}$ |  |
|  | 9 | 2 | ${ }^{0}$ | $\bigcirc$ | ${ }^{3}$ | 0 |  | 0 | 0 | 0 | 0 |  | 130 +15 | 0 | 0 | 0 | 0 | ${ }^{13}$ | 16 | 11 | 5 | 1 | 3 |  | 0 |  | 0 | ${ }_{35.1}^{35.2}$ | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 155 | ${ }_{60}^{66}$ |  | 51 | 0 | 11 7 | 1 | ${ }_{1}^{2}$ |  | $\bigcirc$ | 0 | ！ |  | 1500 |  | $\bigcirc$ | $\bigcirc$ | 1 |  | ${ }_{18}^{13}$ | ${ }_{16}^{26}$ | ${ }_{16}^{12}$ | 5 | 3 |  |  |  | 0 |  |  |  |  |  | ${ }_{0}$ |  | － |
| 1515 <br> 1530 <br> 150 | ${ }_{79}^{62}$ | 2 | 53 69 | 0 | 7 | $\bigcirc$ | 1 | 0 | $\bigcirc$ | 0 | ： |  | 1515 1530 150 | $\bigcirc$ | 0 | 0 | 1 | 1 | ${ }_{28} 9$ | ${ }_{29}^{29}$ | 11 | 7 | O | $\bigcirc$ | 0 |  | $\bigcirc$ | ${ }^{38.7}$ | 1.1 | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 0 | ： |
|  |  |  |  | 2 |  |  |  |  |  |  |  |  | －1550 |  |  |  |  |  |  |  |  |  |  |  | 0 |  | 0 |  |  |  |  |  | 0 |  |  |
| 1600 | 118 | 2 | 107 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1600 | 0 | 0 | 0 | 0 | 7 | ${ }^{28}$ | $5{ }_{5}$ | 17 | ${ }_{5}^{8}$ | 1 | 0 | 0 | 0 | － | ${ }^{37.2}$ | 2.2 | 0 | 0 | 0 |  | 0 | 0 |
| 1615 1630 160 | ${ }_{13}^{121}$ | ！ | 12 | ${ }_{0}^{0}$ | 10 | ${ }_{0}^{2}$ | $\bigcirc$ | 0 | $\bigcirc$ | － | － |  | 1615 1630 1630 | － | － | $\bigcirc$ | O | 3 5 | ${ }^{38}$ | 58 | 28 26 | 5 3 | 2 | － | － |  |  | ${ }^{37.6}$ | ${ }_{2.1}^{2.6}$ | － | － | － | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ |
| 165 | 125 | $\bigcirc$ | 110 | 1 | ${ }_{7}^{13}$ | 0 | 0 | 0 | $\bigcirc$ | 0 | $\bigcirc$ |  | 165 | O | 0 | 0 | 1 | 1 | ${ }_{2}$ | ${ }^{8}$ | ${ }_{25}^{22}$ | ${ }_{3}$ | 2 | $\bigcirc$ | ： | 0 | $\bigcirc$ | ${ }_{375}^{37.5}$ | ${ }_{2}^{2.7}$ | 0 | $\bigcirc$ | \％ | 0 | $\bigcirc$ | $\bigcirc$ |
| 1715 | 108 | 0 | 10 | 0 | 2 | 0 | 0 |  | 1 | 0 | 0 |  | 1715 | 0 | 0 | 0 | 1 | 1 | 29 | 52 | 19 |  | 1 | 1 | 0 | 0 | 0 | 37.9 | 1.7 |  | 0.926 |  |  | 0 |  |
| $\begin{array}{r}1730 \\ 175 \\ \hline\end{array}$ | ${ }_{96}^{11}$ | ！ | ${ }_{90}^{106}$ | ${ }_{0}$ | ${ }_{6}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ | ： |  | 1730 <br> 175 | $\bigcirc$ | ： | ： | ： | ${ }_{3}^{6}$ | ${ }_{20}^{33}$ | ${ }_{6}^{29}$ | ${ }_{19}^{26}$ | 15 8 | 0 | ： | ： | 1 | $\bigcirc$ | ${ }_{38.3}^{38.9}$ | ${ }_{2}{ }_{2} .7$ | $!$ | ${ }^{0.877}$ | 1 |  | 1 |  |
| 1800 | 96 | 0 | 92 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 |  | 1800 | $\bigcirc$ | 0 | 0 | 0 | 1 | ${ }^{23}$ | $3{ }^{3}$ | 19 | 5 | 5 | $\bigcirc$ | 0 | 0 | 0 | ${ }^{38 .}$ | ． 3 |  |  | 0 |  | 0 |  |
| 1815 1830 180 | ${ }_{7}^{67}$ | $\stackrel{1}{1}$ | ${ }_{1}^{6}$ | $\bigcirc$ | ${ }_{5}^{2}$ | ： | 1 |  | $\bigcirc$ | － | ： |  | 1815 1830 180 |  | ： | ： | ： | 2 | 16 18 | 19 | 12 7 | ！ | 1 | 0 | ： |  | 0 | ${ }_{36.3}^{38.3}$ | ${ }_{1.2}^{2.3}$ | $!$ | 1．${ }_{0}$ | \％ | 0 | ${ }_{0}^{0}$ | － |
| 185 | ${ }_{3}^{36}$ | 0 | ${ }^{1}$ | 0 | ${ }_{2}$ | 0 | 0 | 0 | 0 | 0 | 0 |  | 185 | $\bigcirc$ | 0 | 0 | 0 | 2 | 11 | ${ }_{2}^{25}$ | 6 | 0 | 0 | 1 | 0 |  | － | 37．7 | 0．2 |  | ${ }^{2.326}$ | 0 | 0 | 0 | 0 |
| 1915 | ${ }_{33}$ | 1 | 31 | 0 | 2 | 。 | 0 | 0 | 0 | 0 | 0 |  | 1915 |  | 0 | 0 | 0 | ${ }_{2}$ | ${ }_{9}^{13}$ | 15 | ${ }_{5}$ | 1 |  | － | 0 | 0 | 0 | ${ }_{37.1}$ | $3{ }^{3}$ |  | ． | 0 | 0 | 0 | － |
| ＋1930 | 35 21 | $\bigcirc$ | 31 20 | $\bigcirc$ |  | ： | $\bigcirc$ | ！ | $\bigcirc$ | － | 0 |  | 1930 195 19 | 0 | － | ： | ： | ${ }_{2}$ | ${ }_{3}^{8}$ | $\stackrel{11}{9}$ | ${ }_{3}$ | ${ }_{3}^{2}$ | 1 | ： | ： | 0 | ： | 39.8 38.8 | ${ }_{8.8}^{3.8}$ | \％ | 0 | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ | 0 |
| ${ }_{2000}$ | 25 12 | 0 | ${ }_{11}^{23}$ | 0 | ${ }^{2}$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | ${ }_{2000}$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | ${ }_{2}$ | ${ }_{5}^{10}$ | ${ }_{3}^{8}$ | ${ }_{2}^{2}$ | ${ }^{3}$ | 0 | 0 | $\bigcirc$ | $\begin{aligned} & 0 \\ & 0 \end{aligned}$ | $\bigcirc$ | ${ }_{3.3}^{36 .}$ | ${ }_{0}^{0.8}$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 0 | $\bigcirc$ |
| ${ }^{2030}$ | 12 | 。 | 8 | 0 | 1 | \％ | 0 | \％ | $\bigcirc$ | 0 | ： |  | ${ }_{2030}^{2015}$ |  | 0 | 0 | 0 | ${ }_{1}$ | ${ }_{2}$ | ${ }_{2}^{3}$ | 2 | 2 | 0 | 1 | \％ |  | － | ${ }_{0.7}$. |  |  | ${ }_{11.11}$ | 0 | ${ }_{0}$ | ${ }_{0}$ | 0 |
| 205 | ${ }^{23}$ | 1 | 20 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |  | 205 | 0 | 0 | 1 | 0 | 1 |  | 8 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 36.6 | ． 6 |  | 0 | 0 | 0 | 0 | 0 |
| 2100 | ${ }_{11}^{20}$ | － | 19 | 0 | 1 | $\bigcirc$ | $\bigcirc$ | ： | $\bigcirc$ | － | 0 |  | （2100 | $\bigcirc$ | ： |  | － | ${ }_{0}^{3}$ |  | ${ }_{5}^{6}$ |  | ${ }_{0}^{2}$ | 1 | $\bigcirc$ | \％ | 0 | － | ${ }^{38.1}$ | ${ }_{6}{ }^{5}$ | 0 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | 0 |
| 2130 | 9 |  | 9 |  | 0 | 0 |  | 0 | 0 | 0 | 0 |  | 2130 |  | 0 |  |  | 2 | 2 | 2 |  | 0 |  | 0 | 0 | $0$ | 0 | 37.1. |  |  | 0 | 0 | 0 | 0 |  |
| 215 2200 | $\stackrel{3}{9}$ | $\bigcirc$ | ${ }_{9}^{3}$ | ${ }_{0}^{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ： | $\bigcirc$ | ${ }_{0}^{0}$ | ： |  | 215 2200 | ： | 0 | \％ | ： | 1 | 2 | 0 | ${ }_{2}^{0}$ | ${ }_{2}^{0}$ | \％ | ： | ： | ： | $\bigcirc$ | ${ }_{38.1}^{33.7}$ ． |  | $\bigcirc$ | － | $\bigcirc$ | ${ }_{0}^{0}$ | ： | 0 |
| 2215 | 12 | 0 | 11 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }^{2215}$ | 0 | 0 | 0 | 1 | 1 |  |  |  |  |  |  | 0 | 0 | － | 36．2． | 9. |  | 0 | 0 | 0 | 0 | 0 |
| 2250 | ${ }_{8}$ |  | ${ }_{8}$ | ${ }_{0}$ | － | \％ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 |  | 2250 |  |  |  |  | 0 |  |  |  | \％ |  | \％ | 0 |  |  | ${ }_{39.3}^{35.9}$ |  |  | － | ${ }_{0}$ |  | 0 | － |
| ${ }_{2300}^{2300}$ | ${ }^{3}$ | 0 | 3 | 0 | 0 | 0 |  |  | 0 | $\bigcirc$ | 0 |  | 2300 2315 |  | 0 | 0 | 0 | 0 | ${ }^{2}$ | ${ }^{2}$ | 1 | 0 | 0 | $\bigcirc$ | 0 |  |  | 37.6 |  |  | 0 | 0 |  | $0$ | $\bigcirc$ |
| （2330 | 3 | $\bigcirc$ | 这 | － | 1 | ： | \％ | ： | \％ | － | $\bigcirc$ |  | （2315 $\begin{aligned} & 2330 \\ & 235\end{aligned}$ | 0 | － | － | 0 | $\bigcirc$ | ${ }_{1}^{2}$ | 1 1 2 | 1 | ！ | ： | $\begin{aligned} & 0 \\ & 0 \\ & 0 \end{aligned}$ | ： | $\begin{aligned} & 0 \\ & 0 \\ & 0 \end{aligned}$ |  | 37.9 372. |  |  | － | － | 0 | － | － |
| － 2319 | 2774 | ${ }_{21}$ | 2429 | ${ }_{14}$ | 245 | ${ }_{8}$ | $\stackrel{0}{46}$ | ${ }_{3}$ | $\stackrel{0}{2}$ | ${ }^{0}$ | 5 |  | 235 0719 | $\bigcirc$ | ${ }_{2}$ | ${ }_{11}$ | 30 | 145 | 680 | 1055 | 568 | 193 | 79 | 6 | 4 | 1 | 0 | ${ }_{378}$ | 435 | 11 | 0397 | 5 | 018 | 2 | 0072 |
| 0622 | 3011 | 23 | 2649 | 15 | 259 | 8 | 46 | 3 | 2 | 1 | 5 |  | 0622 | 0 | 2 | 12 | 30 | 162 | 749 | 1142 | 609 | 209 | 84 | 7 | 4 | 1 | 0 | 377 | 435 | 12 | 0399 | 5 | 0166 | 2 | 66 |
|  | ${ }_{3064}$ | ${ }_{23}^{23}$ | ${ }_{2697}^{2697}$ | 15 15 | ${ }_{264}^{264}$ | ${ }_{8}^{8}$ | 46 46 | ${ }_{3}^{3}$ | $\begin{array}{r}3 \\ \hline\end{array}$ |  |  |  | 0600 0000 000 |  |  | 12 | 31 31 | 165 | ${ }_{766}^{766}$ | ${ }_{1}^{1159}$ | ${ }_{617}^{617}$ | ${ }_{214}^{214}$ | ${ }^{86}$ | 7 | 4 | 1 | 0 | 377 377 | ${ }_{435}^{435}$ | 12 12 | 0392 0392 | $\begin{aligned} & 5 \\ & 5 \end{aligned}$ | O163 | $\stackrel{2}{2}$ | － 0065 |






| ${ }_{1}^{\text {me }}$ | otal | $\mathrm{cls}_{1}$ | $\underset{2}{\substack{\text { cls } \\ 2}}$ | ${ }_{3}^{\text {cls }}$ | ${ }_{4}^{\text {cls }}$ | $\stackrel{c}{\text { Cls }}$ | ${ }_{6}^{\text {cls }}$ | $\underset{7}{\text { Cls }}$ | ${ }_{8}^{\text {cls }}$ | ${ }_{9}^{\text {cls }}$ | ${ }_{\substack{\text { cls } \\ 10}}$ | Fix1 | ${ }_{1}^{\text {ime }}$ | $\begin{gathered} \text { Voin } \\ 0 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vin } \\ 10 \\ 15 \end{gathered}$ | $\begin{gathered} \text { Vinn } \\ 15 \\ 20 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 20 \\ 25 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 25 \\ 30 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 30 \\ 35 \end{gathered}$ | $\begin{aligned} & \text { Voin } \\ & 35 \\ & 40 \end{aligned}$ | $\begin{aligned} & \text { Vin } \\ & 40 \\ & 45 \end{aligned}$ | $\begin{aligned} & \text { vin } \\ & 45 \\ & 50 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 50 \\ 60 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 60 \\ 70 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 70 \\ 80 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 80 \\ 90 \end{gathered}$ | $\begin{gathered} \text { Voin } \\ 90 \\ 900 \end{gathered}$ | Mean | ${ }_{8}^{\text {V }}$ | $\begin{gathered} \text { \|PSL } \\ 60 \end{gathered}$ | ${ }_{60}^{\text {PPSL/ }}$ | $\begin{gathered} 1 \text { 15L1 } \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{gathered} 151 \% \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{aligned} & 15 L 2 \\ & 75 \\ & \text { DF } \end{aligned}$ | $\begin{gathered} 1512 \% \\ 75 \\ \text { DF } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0000 0015 | 2 | 0 | 2 | $\bigcirc$ | 0 | ${ }_{0}^{0}$ | 0 | ${ }_{0}^{0}$ | \% | 0 | 0 |  | 0000 0015 | 0 | 0 | 0 | 0 | 0 | $\frac{1}{1}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.9 : |  | $\stackrel{0}{0}$ | ${ }_{0}^{0}$ |  | 0 | 0 | 0 |
| O030 | ${ }_{2}$ | 0 | 1 | $\bigcirc$ | 1 | 0 | $\bigcirc$ | - | 0 | 0 | $\bigcirc$ |  | 0030 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | $\bigcirc$ | ${ }^{359.9}$. |  | 0 | $\bigcirc$ |  | 0 | 0 | 0 |
| 005 0000 | ${ }_{1}^{2}$ | $\bigcirc$ | ${ }_{1}^{2}$ | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{\circ}$ | 0 | $\bigcirc$ | : |  | 005 000 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{1}^{1}$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }^{327.7}$ : |  | $\bigcirc$ | 0 | $\bigcirc$ |  | 0 | 0 |
| 0115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  | 0 | 0 | 0 | 0 | 0 |  |
| ${ }^{015}$ | 2 | $\bigcirc$ | 2 | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{0}$ | 0 | 0 | $\bigcirc$ | 0 |  | -130 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 38. |  | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{0}$ | 0 | : |
| ${ }^{0200}$ |  | 0 | 1 | 0 | 0 | $\bigcirc$ | $\bigcirc$ |  | $\bigcirc$ | 0 | 0 |  | 0200 0215 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | : | 1 | : | $\bigcirc$ | 0 | $\bigcirc$ | 52.2 |  | : | $\bigcirc$ |  |  |  | 0 |
| 0215 0230 | $\bigcirc$ | : | $\stackrel{1}{1}$ | $\stackrel{0}{0}$ | : | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ | : | $\bigcirc$ | : |  | 0215 <br> 0230 <br> 020 | $\bigcirc$ | $\bigcirc$ | : | 0 | 0 | ${ }_{1}$ | : | $\stackrel{0}{0}$ | $\stackrel{0}{0}$ | $\bigcirc$ | : | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 32. |  | $\bigcirc$ | $\bigcirc$ | : | ${ }_{0}^{0}$ | $\stackrel{0}{0}$ | : |
| ${ }^{025}$ | 0 | $\bigcirc$ | ${ }_{2}$ | 0 | 0 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | 0 |  | 025 030 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 75. |  | 0 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | 0 |
| ${ }_{0315}$ | ${ }_{2}$ | 0 | ${ }_{2}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{0315}$ | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ${ }_{3.1}{ }^{\text {, }}$ |  | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0330 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38.3 |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 035 000 | $\bigcirc$ | : | $\stackrel{1}{1}$ | : | : |  | : | ${ }_{0}^{0}$ | : | : | 0 |  | 035 0 0 | : | : | : | : | : | : |  | 0 | ${ }_{1}^{0}$ | : | : | : | : | 0 | 8. |  | : | : | : | 0 | : | : |
| 015 0 0 30 | 3 | : | ${ }_{1}$ | \% | ${ }_{1}$ | 1 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ |  | O 15 0 0 | $\bigcirc$ | 0 | \% | 0 | 0 | 1 | 0 | ${ }_{1}^{2}$ | 0 | ${ }_{1}^{1}$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | ${ }_{2.1}^{1.3}$. |  | $\bigcirc$ | $\bigcirc$ | : | ${ }_{0}$ | 0 | ${ }_{0}$ |
| 05 | ${ }^{3}$ |  | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  | 05 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | - | 0 | 0 | 0 | 2.7 - |  | 0 | - | 0 |  |  | 0 |
| ${ }_{0515}$ | 11 | \% | 6 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 0 |  | O515 | ${ }_{0}^{0}$ | 0 | 0 | 0 | 1 | 3 | 3 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | ${ }_{38.9}{ }^{\text {a }}$ | 7. | 0 | 0 | 0 |  | 0 | ${ }_{0}$ |
|  | 8 | 0 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0530 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 3 | 0 | 0 | 0 | 0 |  |  | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }_{066} 05$ | 9 | 0 | $\frac{7}{17}$ | $\bigcirc$ | ${ }_{5}^{2}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 055 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 1 | ${ }_{6}$ | 3 | 3 | 1 | ${ }_{3}$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | 39.2 |  | 0 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| ${ }_{0615}$ | ${ }_{15}^{22}$ | 0 | 12 | 0 | 1 | 1 | 1 |  | 0 | 0 | 0 |  | 0615 |  | 0 | 0 | 0 | 1 | 3 | 2 | 5 | 1 | 3 | 0 | 0 | 0 | 0 | 1.5 | ${ }_{53.7}^{9.9}$ | 0 |  | 0 | 0 | 0 | 0 |
| (0630 | 35 6 | 1 | 32 | $\bigcirc$ | ${ }_{2}$ | 0 | 0 | 0 | 0 | $\bigcirc$ | 0 |  | - 0630 | $\bigcirc$ | 0 | ${ }_{1}$ | ${ }_{3}^{0}$ | 1 | ${ }_{9}^{6}$ | 18 17 | 10 | 6 | ${ }_{1}$ | : | : | 0 | $\bigcirc$ | ${ }_{37.3}^{38.6}$ | ${ }_{2.8}^{5.7}$ | 0 | $\bigcirc$ | \% | - | 0 | $\bigcirc$ |
|  |  | 0 | 65 | 0 |  | 1 |  | 0 | 0 | 0 | 0 |  | 0700 | 0 | 0 | 0 | 0 | 7 | ${ }^{13}$ | 32 | 1 | ${ }^{6}$ | 1 | 1 | 0 | 0 | 0 | 38.2 | 2.7 | 1 | 1.351 | 0 | 0 | 0 |  |
| ${ }_{0} 0730$ | 108 1 | 0 | 129 | 0 | ${ }_{11}^{31}$ | $\bigcirc$ | 1 | ${ }_{0}$ | 0 | \% | 1 |  | 0730 | 0 | 0 | 0 | 0 | 7 | 2 | 52 | 37 | 1 | $\bigcirc$ | 0 | \% | 0 | 0 | ${ }_{36.9}$ | 1.1 | 0 | $\bigcirc$ | \% | 0 | 0 | \% |
|  |  |  |  | 0 |  | $\bigcirc$ |  | 0 |  | 0 | 0 |  | 075 |  | 0 |  |  |  | 22 | ${ }_{35}^{26}$ | 19 | ${ }_{3}^{6}$ |  | $\bigcirc$ |  | 0 | $\bigcirc$ | ${ }^{37.1}$ | 2. | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }_{0815} 0800$ | 71 | 1 | 65 | 0 | 5 | 0 | ${ }_{1}$ | 0 | 0 | 0 | 0 |  | 080 0815 | 0 | 0 | 0 | 0 | 2 | 13 | ${ }_{33}^{35}$ | 19 | 3 | 0 | 0 | 0 | 0 | 0 | ${ }_{38.3}^{37.7}$ | ${ }_{3.1}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| - 0885 | ${ }_{81}^{86}$ | 0 | ${ }^{78}$ | 0 | 5 | 1 | 1 | 0 | 0 | $\bigcirc$ | 1 |  | 0830 | 0 | $\bigcirc$ | 0 | 1 | 7 | ${ }_{20}^{38}$ | ${ }_{38}^{20}$ | ${ }^{15}$ |  | 1 | $\bigcirc$ | - | ${ }_{0}$ | 0 | ${ }_{36,9}^{35.9}$ |  | 0 | $\bigcirc$ |  |  |  | 0 |
| 0900 | ${ }_{60}^{67}$ | 0 | 62 | 0 | ${ }_{6}$ | $\bigcirc$ | 1 | 0 | $\bigcirc$ | 0 | $\bigcirc$ |  | 0900 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 2 | 2 | 19 | ${ }_{2}^{2}$ | ${ }_{2}^{10}$ | ${ }^{10} 5$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | 0 | ${ }^{377}$ | 5.1 | $\bigcirc$ | 0 | \% | 0 | $\bigcirc$ | 0 |
| ${ }_{0} 0930$ | ${ }_{55}^{60}$ |  |  |  |  |  |  |  |  | $\bigcirc$ | $\bigcirc$ |  | 0915 0930 |  | - |  | ${ }_{1}^{1}$ |  |  | 15 20 | ${ }^{2} 7$ | ${ }_{3}$ |  | 0 |  | ${ }_{0}$ | 0 | ${ }_{35.5}^{38.8}$ | 3.8 <br> 1.2 | ${ }_{0}$ | ${ }_{0}$ |  |  | 0 | ${ }_{0}$ |
| 095 1000 | $\frac{1}{3}$ | ${ }_{1}$ | ${ }_{37}^{3}$ | $\bigcirc$ | 3 | \% | ${ }_{1}^{2}$ | 0 | 1 | : | 1 |  | 095 1000 | 0 | \% | \% | 0 | ${ }_{2}^{2}$ | +13 | 13 | 12 | ${ }_{0}^{6}$ | ${ }_{0}^{2}$ | 0 | 0 | $\bigcirc$ | 0 | ${ }_{36.1}^{38.1}$ | ${ }_{2.2}^{6.9}$ | $\bigcirc$ | 0 | : | ${ }_{0}^{\circ}$ | 0 | - |
| 1015 | 0 | 0 | ${ }^{28}$ | $\bigcirc$ | ${ }^{10}$ | 0 | 1 | 0 |  | 0 | $\bigcirc$ |  | 1015 | 0 | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{5}^{8}$ | ${ }_{1}^{9}$ | ${ }_{16}^{12}$ | 8 | 2 | 1 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | ${ }_{36} 36$ | ${ }^{2.3}$ | $\bigcirc$ | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ |
| ${ }_{105} 10$ | 32 | 0 | ${ }_{29}$ | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |  | 105 | 0 | 0 | 0 | 0 | ${ }_{2}$ | 8 | 13 | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 38.1 | ${ }^{\text {5. } 6}$ | 0 | 0 | 0 | ${ }_{0}$ | 0 | 0 |
| 1100 | ${ }_{29}$ | 0 | ${ }^{29}$ | $\bigcirc$ | 5 | $\bigcirc$ | 1 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 1100 1115 1 | 0 | 0 | $\bigcirc$ | \% | ${ }_{0}^{6}$ | 8 | 11 | ${ }^{10}$ | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 | ${ }_{381}^{36.3}$ | 2.3 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ |
| 1130 | ${ }_{3}$ | 0 | 37 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1130 | 0 | 0 | 0 | 0 | 2 | 19 | 1 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 36.5 | 2.5 | 0 | 0 | 0 |  | 0 | 0 |
| 115 1200 | 50 5 | \% | 7 | 0 | ${ }_{9}^{5}$ | 0 | 1 | $\bigcirc$ | $\bigcirc$ | \% | 0 |  | 115 1200 12 | $\bigcirc$ | $\bigcirc$ | \% | $\bigcirc$ | 7 2 | 18 | 19 21 | ${ }_{5}^{13}$ | 2 | ${ }_{2}$ | 0 | 0 | $\bigcirc$ | 0 | ${ }_{36.5}^{37.1}$ | ${ }_{0.7}^{1.2}$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 0 |
| 1215 | 57 | 0 | 5 | 1 | 10 | 0 | 1 | 0 | 0 | 0 | 0 |  | 1215 | 0 | 0 | 0 | 0 | 8 | 16 | 18 | 10 |  | 1 | 0 |  |  | 0 | 36.7 | 2.3 | 0 | 0 | 0 | 0 | 0 | 0 |
| +1230 | ${ }_{2}^{8}$ | $\bigcirc$ | ${ }_{33}^{38}$ | ${ }_{0}$ | ${ }_{8}^{6}$ | ${ }_{0}^{0}$ | 1 | ${ }_{0}$ | 1 | $\bigcirc$ | 1 |  | 1230 125 12 | ${ }_{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | 1 | 3 | ${ }^{16}$ | ${ }_{23}^{22}$ | ${ }_{7}$ | 2 | $\stackrel{0}{0}$ | 0 | ${ }_{0}$ | 0 | ${ }_{0}$ | ${ }_{36.2}^{35.6}$ | ${ }^{39.3}$ | 0 | 0 | $\bigcirc$ | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ |
|  |  |  |  |  | ${ }^{13}$ |  |  |  |  |  |  |  |  |  |  |  | $\bigcirc$ |  |  | 19 |  |  |  | $\bigcirc$ |  |  | $\bigcirc$ |  |  |  | - |  |  |  | 0 |
| ${ }_{1}^{1335}$ | ${ }^{3}$ | 0 | ${ }_{33}$ | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 1 |  | 1315 1330 13 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | : | 3 | 12 | 13 16 | 7 | 1 | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{35.3}^{37}$ | 1.8 39.8 | - | $\bigcirc$ | ${ }_{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | ${ }_{0}$ |
| 135 | 32 | 0 | ${ }^{25}$ | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 |  | 135 | 0 | 0 | 0 | 1 | ${ }^{3}$ | 5 | 9 | 10 |  | 0 | 0 | 0 |  | 0 | ${ }^{38}$ | . 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 115 | 60 | 0 | 51 | 0 | 9 | 0 | 0 | ${ }_{0}$ | $\bigcirc$ | $\stackrel{0}{0}$ | : |  | 115 | ${ }_{0}$ | \% | $\stackrel{0}{0}$ | ${ }_{0}$ | ${ }_{1}^{2}$ | ${ }_{2}^{12}$ | ${ }_{25}^{12}$ | ${ }_{5}^{9}$ | 5 | ${ }_{0}$ | $\bigcirc$ | - | 0 | $\bigcirc$ | ${ }_{36.5}^{38.5}$ | ${ }_{1.8}^{5.7}$ | : | $\bigcirc$ | : | - | 0 | ${ }_{0}^{0}$ |
|  |  |  | ${ }_{3}^{52}$ |  |  |  |  | 0 |  | $\bigcirc$ |  |  | 130 |  |  |  |  |  |  |  |  |  |  |  |  |  | $\bigcirc$ |  |  |  |  |  |  | 0 | 0 |
| 1500 | 6 | 0 | 57 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 |  | 1500 | 0 | 0 | 0 | 0 | 3 | 20 | ${ }^{28}$ | 9 |  | 0 | 0 | 0 | 0 | 0 | ${ }^{36.8}$ | 1.6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1515 | ${ }_{91} 6$ | 0 |  |  |  | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 |  | 1515 <br> 1530 <br> 1 | ${ }^{\circ}$ | 0 | $\bigcirc$ | $\bigcirc$ | 3 1 1 | ${ }_{25}^{22}$ | ${ }_{1}^{23}$ | ${ }_{20} 9$ | ${ }^{3}$ |  | \% |  |  | 0 | ${ }_{37}^{36.1}$ | 2.1 1.9 | - | $\bigcirc$ | 0 |  | 0 | 0 |
| 155 | 85 | 0 | ${ }^{73}$ | 0 | 9 | 1 | 2 |  | 0 | 0 | 0 |  | 155 | 0 | 0 | 0 | : | 2 | 28 27 37 | 39 | 13 | 5 | 0 | 0 | 0 | 0 | $\bigcirc$ | ${ }^{37.1}$ | 2 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1615 | ${ }_{153}$ | 0 | 133 | , | 19 | 0 | ${ }_{0}$ | 0 | 0 | 0 | 0 |  | 1615 | 0 | 0 | 0 | 0 |  | 58 | 67 | 19 | 6 | 0 | 0 | 0 | 0 | 0 | ${ }_{36.3}$ | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1630 165 165 | ${ }^{112}$ | 0 | ${ }^{100}$ | 0 | ${ }^{12}$ | $\bigcirc$ | 0 | 0 | 0 | $\bigcirc$ | $\bigcirc$ |  | 1630 | 0 | 0 | 0 | $\bigcirc$ | ${ }_{5}^{2}$ | ${ }_{1}^{6}$ | ${ }^{6}$ | 11 | 5 | 2 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | ${ }_{36 .}^{36 .}$ | 0. | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 |
| 1700 | 1 | 0 | 136 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | o |  | 1700 | 0 | 0 | 0 | 1 | 7 | 5 | 6 | 17 | 7 | 3 | 0 | 0 | 0 |  | 36.6 | 0.8 | 0 | 0 | 0 | 0 |  | 0 |
| $\begin{array}{r}1715 \\ 1780 \\ \hline\end{array}$ | 136 105 | $\bigcirc$ | 130 98 | 1 | ${ }_{6}^{5}$ | 0 | 1 | $\bigcirc$ | 0 | $\bigcirc$ | 0 |  | 1715 1780 | 0 | $\bigcirc$ | 1 | 1 |  | $3_{30}^{50}$ | 58 27 | 15 26 | 7 | ${ }_{1}^{1}$ | 1 | \% | $\bigcirc$ | 0 | ${ }_{37.2}^{36 .}$ | ${ }_{3.3}^{0.5}$ | 0 | $0.95{ }^{\circ}$ | ${ }_{0}$ | ${ }_{0}^{0}$ | 0 | \% |
| 175 | 75 | 0 | 72 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |  | 175 | 0 | 0 | 0 | 0 | 2 | ${ }_{2}^{26}$ | 32 | 9 | 5 | 1 | 0 | 0 | 0 | 0 | ${ }^{36.8}$ | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1815 1815 | ${ }_{56}$ | 0 | 5 | 0 | ${ }_{2}$ | 0 | 0 | 0 | 0 | 0 | 0 |  | 1815 | 0 | 0 | 0 | $\bigcirc$ | 0 | ${ }_{16}^{20}$ | ${ }_{2}^{35}$ | ${ }_{8}$ | ${ }_{2}^{2}$ | ! | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{35.7}^{37.5}$ | ${ }_{1}^{2.1}$ | 0 | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{\circ}$ | $\bigcirc$ | \% |
| $\begin{array}{r}1830 \\ \hline 185 \\ \hline\end{array}$ |  | 1 | ${ }_{35}^{35}$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 1830 185 185 | $\bigcirc$ | $\bigcirc$ | \% | : |  | 21 15 | 11 | ${ }_{5}^{6}$ | ${ }_{2}^{2}$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | ${ }_{355}^{35.5}$ | 1.3 0.3 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | 0 | 0 |
| 1900 | ${ }_{31}$ | 0 | 29 | 0 | 2 | 0 | 0 |  | 0 | 0 | 0 |  | 1900 | 0 | 0 | 0 | 0 | 5 | 15 | 12 | 1 | ${ }_{0}$ | 0 | 0 | 0 | 0 | 0 | ${ }_{3.1}$ | 36.8 | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }_{1}^{1915}$ | ${ }_{17}^{22}$ | ${ }^{\circ}$ | 21 15 | 0 | 1 |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 1915 1930 190 |  |  |  |  |  | 10 | ${ }_{7}^{6}$ |  | 0 |  | 0 | \% |  | 0 | ${ }_{31}^{33.6}$ | ${ }^{36.1}$ | 0 | 0 | ${ }_{0}$ | ${ }_{0}^{0}$ | 0 | \% |
| 195 | ${ }^{23}$ | 0 | 22 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 195 | 0 | 0 | 0 | 0 | 6 | 10 | 5 | 2 | 0 | 0 | 0 | 0 |  | 0 | 32.9 | ${ }_{38.1}$ | 0 | 0 | 0 | 0 |  | 0 |
| 2000 2015 | 13 12 | : | 13 <br> 11 | : | i | $\stackrel{0}{0}$ | : | 0 | $\bigcirc$ | : | : |  | ${ }_{2015}^{2000}$ | 0 | - | : | 0 |  | 7 | 5 | 1 | 1 | 1 | : | $\bigcirc$ | : | $\bigcirc$ | ${ }_{3}^{35.1}$ | - ${ }_{39.3}$ | : | : | : | 0 | : | 0 |
| 2030 | ${ }^{13}$ | 0 | ${ }_{11}^{13}$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | 0 | 0 | $\bigcirc$ |  | 2030 | 0 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 7 |  | 2 | 0 | 0 | 0 | 0 | 0 | 0 | ${ }_{353}^{35.2}$ |  | 0 | 0 | 0 | 0 |  | 0 |
| 2100 | ${ }_{12}^{12}$ | 0 | 11 | ${ }_{0}$ | 1 | 0 |  | 0 | 0 | $\bigcirc$ | 0 |  | ${ }_{2100}^{205}$ | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ | 0 | 1 | 5 | 5 | ${ }_{1}$ | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ | \% | $0$ | 0 | ${ }_{3}^{35.3}$ | ${ }_{38}$ | ${ }_{0}$ | $\bigcirc$ | ${ }_{0}$ | ${ }_{0}$ | 0 | : |
| 2130 |  | 1 |  | $\bigcirc$ | 1 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 0 |  | ${ }_{2115}^{2115}$ | $\bigcirc$ | 0 | $\bigcirc$ | 0 |  | 5 | ${ }_{5}$ |  | ${ }^{\circ}$ | $\bigcirc$ | $\bigcirc$ |  | $\bigcirc$ | 0 | ${ }_{388}^{33.5}$ |  | $\bigcirc$ |  |  | 0 | 0 |  |
| 215 <br> 215 <br> 2200 <br> 205 | 12 8 8 | $\bigcirc$ | (10 | 0 | 1 | 0 | 0 | ${ }_{0}$ | 0 | 0 | : |  | 215 215 2150 220 | ${ }_{0}$ | ${ }_{0}$ | 0 | : | : | 2 3 5 | 5 3 1 | ${ }^{3}$ | 20 | 0 | $\begin{aligned} & 0 \\ & 0 \\ & 0 \end{aligned}$ | $\begin{aligned} & 0 \\ & 0 \\ & 0 \end{aligned}$ |  | $\begin{aligned} & 0 \\ & 0 \\ & 0 \\ & 0 \end{aligned}$ |  |  | 0 |  | 0 | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ | 0 |
| 2215 | 7 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2215 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | ${ }_{0.1}$. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }^{2235}$ | 10 | $\bigcirc$ | 9 | $\bigcirc$ | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | : |  | 2230 <br> 225 <br> 2 | $\bigcirc$ | - | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ | ${ }_{0}^{2}$ | 2 |  | 1 | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  |  | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| 2300 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2300 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 37.5. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 2315 | ${ }_{5}^{2}$ | $\bigcirc$ | ${ }_{5}^{2}$ | ${ }_{0}$ | ${ }_{0}$ | 0 | ${ }_{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | ${ }_{233}^{2315}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | 1 | $\frac{1}{2}$ | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{36.1}^{3.5}$ : |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ | 0 | $\bigcirc$ |
| 235 |  | 0 |  |  |  |  |  | 0 |  | 0 | 0 |  | 235 | 0 |  | 0 |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 | 33.5 . |  | 0 |  | 0 |  | 0 |  |
| 0719 | 3223 | 4 | 2854 | 11 | 306 | 4 | 35 | 0 | 3 | 0 | 6 |  | 0719 | 0 | 0 | 1 | 12 | 182 | 989 | 1261 | 567 | 179 | 30 | 2 | 0 | 0 | 0 | 369 | 418 | 2 | 62 | 0 | 0 | 0 | 0 |
| ${ }^{0622}$ | ${ }^{3521}$ | 6 | ${ }^{3127}$ | 11 | ${ }^{327}$ | 5 | 36 | 0 | 3 | 0 | 6 |  | 0622 | 0 | 0 | $\stackrel{2}{2}$ | 19 | 208 | 1091 | 1360 | 603 | 197 | 39 | $\stackrel{2}{2}$ | 0 | 0 | 0 | 368 | 418 | 2 | 0057 | 0 | 0 | 0 | 0 |
| -0000 | 3561 | 7 | ${ }^{3163}$ | 11 | 330 |  | ${ }^{36}$ | 0 |  | 0 | 6 |  | ${ }^{0600}$ | 0 | 0 | 2 | 20 | 210 | 1117 | 1371 | 613 | 198 | ${ }^{42}$ | $\stackrel{2}{2}$ | 0 | 0 | 0 | 368 | 418 | $\stackrel{2}{2}$ | O056 | 0 |  | 0 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |






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$\frac{\pi}{x}$




## Advanced Transport Research_EH

## Globals



## Advanced Transport Research EH

Column

| Time [-- | 24-hour time (0000-2359) |
| :---: | :---: |
| Total | Number in time step |
| Cls 1 | Class totals |
| Cls 2 | Class totals |
| Cls 3 | Class totals |
| Cls 4 | Class totals |
| Cls 5 | Class totals |
| Cls 6 | Class totals |
| Cls 7 | Class totals |
| Cls 8 | Class totals |
| Cls 9 | Class totals |
| Cls 10 | Class totals |
| Fix1 | User defined fixed text |
| Time [-- | 24-hour time (0000-2359) |
| Vbin 010 | Speed bin totals |
| Vbin 1015 | Speed bin totals |
| Vbin 1520 | Speed bin totals |
| Vbin 2025 | Speed bin totals |
| Vbin 2530 | Speed bin totals |
| Vbin 3035 | Speed bin totals |
| Vbin 3540 | Speed bin totals |
| Vbin 4045 | Speed bin totals |
| Vbin 4550 | Speed bin totals |
| Vbin 5060 | Speed bin totals |
| Vbin 6070 | Speed bin totals |
| Vbin 7080 | Speed bin totals |
| Vbin 8090 | Speed bin totals |
| Vbin 90100 | Speed bin totals |
| Mean | Average speed |
| Vpp 85 | Percentile speed |
| JPSL 60 | Number exceeding Posted Speed Limit |
| JPSL\% 60 | Percent exceeding Posted Speed Limit |
| JSL1 68 ACPO | Number exceeding Speed Limit 1 |
| ]SL1\% 68 ACPO | Percent exceeding Speed Limit 1 |
| JSL2 75 DFT | Number exceeding Speed Limit 2 |
| JSL2\% 75 DFT | Percent exceeding Speed Limit 2 |

\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline $1^{\text {me }}$ \& otal \& ${ }_{\substack{\text { cls } \\ 1}}$ \& $\underset{2}{\text { Cls }}$ \& $\mathrm{cls}_{3}$ \& $\mathrm{cls}_{4}$ \& ${ }_{\substack{c \\ 5 \\ 5}}$ \& ${ }_{6}^{c}$ \& ${ }_{7}{ }_{7}$ \& ${ }_{8}^{\text {cls }}$ \& ${ }_{9}{ }_{9}$ \& ${ }_{\substack{\text { cls } \\ 10}}$ \& Fix1 \& ${ }_{1}{ }^{\text {ime }}$ \& $$
\begin{gathered}
\text { Vbin } \\
0 \\
10
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
10 \\
15
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
15 \\
\hline 20 \\
\hline
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
20 \\
25 \\
\hline
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
25 \\
30
\end{gathered}
$$ \& $$
\begin{gathered}
\text { vinn } \\
30 \\
35 \\
\hline
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Voin } \\
35 \\
40
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
40 \\
45
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
45 \\
50
\end{gathered}
$$ \& $$
\begin{gathered}
\text { vinn } \\
50 \\
60
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
60 \\
70
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
70 \\
80
\end{gathered}
$$ \& $$
\begin{aligned}
& \text { Voin } \\
& 80 \\
& 90
\end{aligned}
$$ \& $$
\begin{gathered}
\text { Voin } \\
90 \\
100
\end{gathered}
$$ \& Mean \& $$
\begin{gathered}
\mathrm{vppp}_{85}
\end{gathered}
$$ \& $$
\begin{gathered}
\text { JPSL } \\
60
\end{gathered}
$$ \& $$
\underset{60}{\text { IPSL\% }}
$$ \& $$
\begin{array}{|c}
\text { ISL1 } \\
68 \\
\text { ACPO }
\end{array}
$$ \& $$
\begin{gathered}
151 \% \\
68 \\
\text { ACPO }
\end{gathered}
$$ \& $$
\begin{aligned}
& 15 \mathrm{~L} 2 \\
& 75 \\
& \mathrm{TF}
\end{aligned}
$$ \& $$
\begin{gathered}
15 L 2 \% \\
75 \\
\hline \text { DF }
\end{gathered}
$$ <br>
\hline 075
0800 \& ${ }_{112}{ }^{2}$ \& ${ }_{1}$ \& 103 \& \& 7 \& \& \& $\bigcirc$ \& \& 0 \& : \& \& 075
0800 \& 0 \& 0
2
2 \& ${ }_{6}^{1}$ \& 0
6 \& 13 \& ${ }_{27}^{0}$ \& 51 \& ${ }_{3}^{0}$ \& \& 0 \& 0 \& - \& 0 \& ${ }_{0}^{0}$ \& $33.3{ }^{27}$ \& 38. \& \% \& 0 \& ${ }_{0}^{0}$ \& ${ }_{0}^{0}$ \& 0 \& 0 <br>
\hline 0815
0830 \& 139
112 \& $\bigcirc$ \& 123
100 \& \& ${ }_{11}^{12}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& : \& \& ${ }_{0}^{0835}$ \& $\bigcirc$ \& $\bigcirc$ \& \% \& 0 \& 3 \& $3^{9}$ \& 59
58 \& ${ }_{1}^{16}$ \& ${ }_{2}^{2}$ \& ${ }_{1}$ \& 0 \& : \& $\bigcirc$ \& 0 \& ${ }_{36.5}^{35.8}$ \& ${ }^{39.5}$ \& 0 \& $\bigcirc$ \& ${ }_{0}$ \& ${ }_{0}$ \& 0 \& $\bigcirc$ <br>
\hline ${ }^{085} 5$ \& ${ }_{98}$ \& 1 \& $\begin{array}{r}78 \\ 7 \\ \hline\end{array}$ \& 1 \& ${ }^{16}$ \& + \& 1 \& 0 \& 0 \& 0 \& 0 \& \& - 085 \& 0 \& 0 \& 1 \& \& 1 \& 21 \& ${ }_{6}$ \& ${ }^{27}$ \& ${ }_{0}$ \& 1 \& 0 \& 1 \&  \& 0 \& ${ }_{37}{ }^{36.5}$ \& ${ }^{1.8}$ \& \& 1.02 \& 1 \& 1.02 \& \& <br>
\hline ${ }_{0}^{0990} 0$ \& 83
70 \& $\bigcirc$ \& 75
63 \& $\bigcirc$ \& 7 \& \% \& ${ }_{0}^{3}$ \& $\bigcirc$ \& 0 \& : \& : \& \& 0900
0915 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \&  \& $\stackrel{0}{15}$ \& ${ }_{10}^{6}$ \& 38

27 \& | 36 |
| :---: |
| 11 | \& 3 \& \% \& : \& ! \& ! \& $\bigcirc$ \& ${ }_{35.9}^{39.9}$ \& 1.2

1.2 \& $\bigcirc$ \& \& \& ${ }_{0}^{\circ}$ \& $\bigcirc$ \& $\bigcirc$ <br>
\hline 0930 \& 58 \& 0 \& ${ }_{50}$ \& 1 \& 6 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 0930 \& 0 \& 0 \& 0 \& 1 \& 5 \& 5 \& 18 \& 18 \& 7 \& 3 \& 1 \& 0 \& 0 \& 0 \& 39.9 \& 6.1 \& 1 \& 1.72 \& 0 \& 0 \& 0 \& 0 <br>
\hline 095 \& 39 \& 0 \& ${ }^{35}$ \& 0 \& \& 0 \& 0 \& 0 \& \& 0 \& 0 \& \& 095 \& 0 \& 0 \& 0 \& 0 \& 0 \& 6 \& 15 \& 11 \& 7 \& 0 \& 0 \& 0 \& 0 \& 0 \& 39.9 \& 5.3 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 1000
1015 \& ${ }_{33}^{1}$ \& ${ }_{1}$ \& ${ }_{2}^{29}$ \& $!$ \& ${ }_{7}$ \& : \& ${ }_{1}^{2}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ! \& \& 1000
1015 \& $\bigcirc$ \& 0 \& 1 \& $\bigcirc$ \& $\frac{1}{0}$ \& ${ }_{1}^{2}$ \& ${ }_{11}^{21}$ \& 13
13 \& ${ }_{6}^{3}$ \& $\frac{1}{0}$ \& ${ }_{1}$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{1.3}^{39}$ \& \& 1 \& ${ }_{3.03}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 <br>
\hline 1030 \& 28 \& 0 \& 25 \& 0 \& ${ }_{5}$ \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 1030 \& 0 \& 0 \& 0 \& 0 \& 0 \& ${ }^{3}$ \& 11 \& 7 \& 7 \& $\bigcirc$ \& 0 \& 0 \& 0 \& 0 \& 1 \& ${ }_{6}^{6.1}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 1100 \& ${ }_{38}^{68}$ \& 1 \& ${ }_{31}^{36}$ \& 0 \& \& 1 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 1100 \& 0 \& 0 \& 1 \& ! \& 1 \& 10 \& 19 \& ${ }_{6}$ \& ${ }_{0}$ \& 1 \& 0 \& 0 \& 0 \& 0 \& ${ }_{36.9}^{38.8}$ \& 1.12 \& \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ <br>
\hline 1115 \& 6 \& 0 \& 1 \& 0 \& 3 \& 1 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 1115 \& 0 \& 0 \& 0 \& 0 \& 1 \& 6 \& 19 \& ${ }^{11}$ \& 7 \& 2 \& 0 \& \& 0 \& 0 \& ${ }_{39.8}$ \& 5.6 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline (1130 \& ${ }_{0}$ \& ${ }_{1}$ \& $\begin{array}{r}35 \\ 28 \\ \hline 8\end{array}$ \& $\bigcirc$ \& 7 \& ! \& 2 \& ${ }_{0}$ \& - \& : \& : \& \& 11130
115
115 \& $\bigcirc$ \& : \& $\bigcirc$ \& : \& ${ }_{0}^{3}$ \& ${ }_{1}^{8}$ \& 19
15 \& ${ }_{7}^{8}$ \& \& \% \& ${ }_{1}$ \& : \& - \& - \& ${ }_{38}^{38.1}$ \& 3 \& $\stackrel{1}{1}$ \& 2.5 \& : \& $\bigcirc$ \& ${ }_{0}^{0}$ \& 0 <br>
\hline ${ }_{1}^{1200}$ \& 39 \& 1 \& ${ }^{36}$ \& 0 \& ${ }^{5}$ \&  \& 2 \& 0 \& 0 \& 0 \& 0 \& \& 1200 \& 0 \& 0 \& \& $\bigcirc$ \& 1 \& 3 \& ${ }^{12}$ \& 15 \& 7 \& \& ${ }^{\circ}$ \& 0 \& 0 \& 0 \& 0.7 \& ${ }_{5}^{5.7}$ \& 0 \& $7{ }^{0}$ \& 0 \& 0 \& 0 \& 0 <br>
\hline (1215 \& ${ }_{35}^{28}$ \& ${ }_{1}$ \& ${ }_{2}^{26}$ \& $\bigcirc$ \& ${ }_{7}$ \& $\bigcirc$ \& ${ }_{2}^{1}$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& ${ }_{1}^{1}$ \& \& 1215
1230
120 \& $\bigcirc$ \& 0 \& : \& 0 \& 1 \& 3
5 \& ${ }_{8}^{12}$ \& ${ }_{13}^{8}$ \& 6 \& 1 \& 0 \& : \& ! \& $\bigcirc$ \& ${ }_{0.1}^{0.7}$ \& 5.7 \& ${ }_{0}^{2}$ \& 7.13 \& : \& $\bigcirc$ \& 0 \& $\bigcirc$ <br>
\hline 125 \& 57 \& 0 \& 6 \& 0 \& 7 \& 0 \& \& 0 \& 0 \& 0 \& 0 \& \& 125 \& 0 \& 0 \& 0 \& 0 \& 0 \& 3 \& 30 \& 20 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 39. \& 3.3 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 1300
1315 \& ${ }^{3}$ \& $\bigcirc$ \& ${ }^{35}$ \& $\bigcirc$ \& 7 \& : \& 1 \& 0 \& $\bigcirc$ \& \% \& : \& \& 1300

1315 \& \% \& : \& : \& 3 \& | 3 |
| :---: |
| 1 | \& ${ }_{6}$ \& ${ }_{20}^{12}$ \& 16 \& ${ }_{2}^{5}$ \& ${ }_{2}$ \& : \& : \& - \& - \& ${ }_{38.3}^{38.3}$ \& 3.2 \& : \& $\bigcirc$ \& : \& $\bigcirc$ \& $\bigcirc$ \& 0 <br>

\hline 1330 \& ${ }_{35}$ \& ${ }^{2}$ \& 26 \& 0 \& 6 \& 1 \& 0 \& 0 \& 0 \& $\bigcirc$ \& 0 \& \& ${ }^{1330}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 3 \& 1 \& 17 \& 1 \& 0 \& 0 \& \& 0 \& 0 \& 39.9 \& ${ }^{3.8}$ \& 0 \& \& 0 \& 0 \& 0 \& 0 <br>
\hline 135

100 \& | 56 |
| :---: |
| 5 | \& 1 \& 38 \& \% \& 9 \& $\bigcirc$ \& ${ }_{2}^{2}$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& \& 135

100
1 \& $\bigcirc$ \& 0 \& ${ }_{5}^{0}$ \& 3 \& 1 \& ${ }_{9}^{10}$ \& ${ }_{15}^{22}$ \& $\begin{array}{r}16 \\ \hline\end{array}$ \& ${ }_{6}^{3}$ \& $\bigcirc$ \& \% \& - \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{35.2}^{37.7}$ \& 3.7 \& \% \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ <br>
\hline 115 \& ${ }_{59}^{55}$ \& 1 \& 1 \& , \& 9 \& 0 \& ${ }_{2}^{3}$ \& 0 \& \& 0 \& 0 \& \& 115 \& 0 \& 0 \& 1 \& 0 \& 2 \& ${ }_{23}^{25}$ \& 17 \& ${ }^{8}$ \& ${ }_{3}$ \& - \& 0 \& 0 \& 0 \& 0 \& ${ }^{3575}$ \& 1.6 \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& 0 <br>
\hline 15 \& ${ }_{60}$ \& 2 \& 8 \& 0 \& 6 \& 1 \& 1 \& 0 \& 0 \& 0 \& 2 \& \& 135 \& 0 \& 0 \& 0 \& 1 \& ${ }_{0}$ \& ${ }_{18}^{23}$ \& ${ }_{2}^{18}$ \& ${ }_{9}^{12}$ \& ${ }_{9}$ \& ${ }_{0}$ \& $\bigcirc$ \& \& - \& $\bigcirc$ \& ${ }_{38.1}^{37.5}$ \& 5.2 \& $\bigcirc$ \& $\bigcirc$ \& : \& $\bigcirc$ \& $\bigcirc$ \& $\stackrel{0}{0}$ <br>
\hline 1500

155 \& \& 0 \& 39 \& 0 \& \& $\bigcirc$ \& 1 \& 0 \& 0 \& 0 \& $\bigcirc$ \& \& 1500

1515 \& 0 \& 0 \& 0 \& 0 \& 5 \& \& ${ }_{21}^{22}$ \& 11 \& 3 \& ${ }^{2}$ \& 0 \& \& 0 \& 0 \& 38.9 \& ${ }^{3.1}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>

\hline | 1515 |
| :--- |
| 153 | \& ${ }_{58}^{9}$ \& ${ }_{2}$ \& ${ }_{7}^{2}$ \& ! \& ${ }_{7}^{3}$ \& ! \& 1 \& : \& - \& : \& 1 \& \& 1515 \& : \& - \& \% \& ${ }_{2}$ \& ${ }_{3}^{0}$ \& 7 \& ${ }_{21}^{21}$ \& ${ }_{16}^{10}$ \& ${ }_{9}^{10}$ \& - \& : \& : \& \% \& - \& 38.7 \& ${ }_{5.1}^{6.8}$ \& : \& $\bigcirc$ \& : \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ <br>

\hline 155 \& ${ }_{70}^{65}$ \& O \& ${ }_{61}^{59}$ \& 0 \& \& 0 \& 1 \& 0 \& 1 \& $\bigcirc$ \& $\bigcirc$ \& \& 155 \& $\bigcirc$ \& 0 \& 0 \& $\bigcirc$ \& ${ }^{2}$ \& 17 \& ${ }_{33}^{17}$ \& 2 \& ${ }_{6}$ \& ${ }^{2}$ \& $\bigcirc$ \& \% \& 0 \& $\bigcirc$ \& 38.3 \& ${ }_{3}^{3.5}$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& 0 \& $\bigcirc$ \& 0 <br>
\hline 1615 \& 79 \& 0 \& 67 \& 0 \& 9 \& 0 \& 2 \& 0 \& 1 \& 0 \& 0 \& \& 1615 \& 0 \& 0 \& 0 \& 0 \& \& \& \& ${ }_{2}$ \& \& 2 \& 0 \& \& \% \& - \& ${ }_{39}^{39.9}$ \& ${ }_{3.2}^{3.5}$ \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{0}$ \& ${ }_{0}$ \& ${ }_{0}^{0}$ \& ${ }_{0}$ <br>
\hline \& ${ }^{86}$ \& 1 \& ${ }^{73}$ \& 0 \& 10 \& 0 \& 1 \& 0 \& 0 \& 1 \& 0 \& \& 1630 \& 0 \& 0 \& 0 \& 0 \& 0 \& 7 \& 50 \& 17 \& 11 \& \& 0 \& \& 0 \& 0 \& ${ }_{39}^{39.6}$ \& . 6 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 165
1700 \& ${ }_{76} 9$ \& 1 \& ${ }_{70}^{93}$ \& 1 \& 3 \& : \& 0 \& $\bigcirc$ \& $\bigcirc$ \& \% \& ${ }_{1}$ \& \& 165
1770 \& $\bigcirc$ \& $\bigcirc$ \& \% \& : \& $!$ \& ${ }_{10}^{20}$ \& $\begin{array}{r}5 \\ 3 \\ \hline\end{array}$ \& ${ }_{20}^{2}$ \& ${ }_{8}^{6}$ \& ${ }_{1}^{3}$ \& : \& \% \& 0 \& - \& ${ }_{39}^{38.7}$ \& $\begin{array}{r}2.8 \\ \hline 2\end{array}$ \& : \& 0 \& : \& $\bigcirc$ \& $\bigcirc$ \& : <br>
\hline 17715 \& 112 \& 1 \& 106 \& 0 \& 5 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 1715 \& 0 \& 0 \& 0 \& 0 \& 0 \& 18 \& 0 \& ${ }^{38}$ \& 15 \& 1 \& 0 \& 0 \& 0 \& 0 \& 39.8 \& ${ }^{5}$ \& 0 \& \& 0 \& 0 \& \& <br>
\hline 1730
175 \& 79
96 \& \% \& ${ }_{89}^{72}$ \& $\stackrel{0}{0}$ \& ${ }_{7}$ \& - \& ${ }_{0}$ \& $\bigcirc$ \& 0 \& : \& : \& \& $\begin{array}{r}1730 \\ 175 \\ \hline 185\end{array}$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& : \& 5 \& 16 \& ${ }_{37}^{29}$ \& ${ }_{31}^{29}$ \& ${ }_{7}^{5}$ \& : \& : \& : \& 1 \& $\bigcirc$ \& ${ }_{38}^{39.9}$ \& ${ }_{3.3}^{3.3}$ \& 1 \& ${ }^{266}$ \& 1 \& \& 1 \& <br>
\hline 1800 \& ${ }^{66}$ \& 0 \& ${ }_{51}$ \& 0 \& ${ }^{5}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 1800 \& 0 \& 0 \& 0 \& $\bigcirc$ \& ${ }^{3}$ \& 8 \& ${ }_{21}^{26}$ \& ${ }_{25}^{23}$ \& 6 \& 0 \& O \& 0 \& 0 \& 0 \& 39.1 \& ${ }^{2} .9$ \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& <br>
\hline ${ }_{1830}$ \& ${ }_{36}$ \& 1 \& ${ }_{33}$ \& $\bigcirc$ \& ${ }_{2}$ \& 0 \& - \& 0 \& 0 \& 0 \& 0 \& \& 1830 \& 0 \& 0 \& 0 \& : \& \% \& 8 \& ${ }_{1}^{21}$ \& ${ }_{9}^{25}$ \& 8 \& 1 \& : \& : \& 0 \& - \& ${ }^{0.1} 8$ \& 5.3 \& : \& 0 \& \% \& $\stackrel{0}{0}$ \& - \& - <br>

\hline 185 \& ${ }^{2}$ \& 0 \& ${ }^{39}$ \& 0 \& ${ }_{2}^{3}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 185 \& 0 \& 0 \& 0 \& 0 \& \& ${ }_{5}^{2}$ \& ${ }^{22}$ \& \& \& \& 0 \& \& 0 \& 0 \& 39.6 \& | 3.5 |
| :--- |
| 5 | \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>

\hline 1915 \& ${ }_{25}$ \& 0 \& ${ }_{25}^{28}$ \& 0 \& ${ }_{0}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 1915 \& 0 \& 0 \& 0 \& 0 \& 0 \& ${ }^{5}$ \& 9 \& 13 \& ${ }_{0}$ \& 。 \& 0 \& 0 \& 0 \& 0 \& 39.9 \& $\stackrel{5}{1}$ \& 0 \& \& 。 \& 0 \& 0 \& 0 <br>
\hline 1930 \& ${ }_{18}^{33}$ \& 1 \& ${ }^{30}$ \& 0 \& 2 \& 0 \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& \& 1930 \& 0 \& 0 \& 1 \& 0 \& \& 3 \& $1{ }_{5}$ \& ${ }^{10}$ \& ${ }_{5}^{5}$ \& 1 \& 1 \& 0 \& 0 \& 0 \& ${ }^{0.7}$ \& 5.1 \& 1 \& ${ }_{5}^{3.036}$ \& 0 \& 0 \& 0 \& 0 <br>
\hline 2000 \& $1{ }^{18}$ \& \% \& 13 \& 0 \& 1 \& - \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 2000 \& 0 \& 0 \& 0 \& 1 \& 2 \& 3 \& 1 \& 1 \& ${ }_{6}$ \& 0 \& 0 \& 0 \& \% \& 0 \& ${ }_{38.6}$ \& 7.3 \& 0 \& \& 0 \& 0 \& 0 \& 0 <br>
\hline 2015 \& 1 \& 0 \& 13 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& ${ }_{2015}^{2015}$ \& 0 \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \& 6 \& 3 \& \& $\bigcirc$ \& \& 0 \& $\bigcirc$ \& 2.6 \& 7.8 \& \& \& \& \& $\bigcirc$ \& 0 <br>
\hline ${ }_{20}^{2030}$ \& ${ }_{12}$ \& \% \& 12 \& $\bigcirc$ \& $\bigcirc$ \& - \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& 0 \& \& ${ }_{20}^{2030}$ \& $\bigcirc$ \& 0 \& \% \& 0 \& 0 \& 0 \& 3 \& \& ${ }_{2}$ \& 3 \& 0 \& \& 0 \& 0 \& 5.3 \& 55.1 \& \& 0 \& \% \& 0 \& ${ }_{0}$ \& - <br>
\hline 2100 \& 13 \& 0 \& 11 \& 0 \& 2 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 2100 \& 0 \& 0 \& 0 \& 0 \& 0 \& 3 \& \& 3 \& 0 \& ${ }_{1}$ \& 1 \& 0 \& 0 \& 0 \& 2.3 \& 52.2 \& 1 \& \& 0 \& 0 \& 0 \& 0 <br>
\hline 2130 \& 13 \& 0 \& 13 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& ${ }_{0}$ \& 0 \& \& 2130 \& 0 \& $\bigcirc$ \& ${ }_{0}^{0}$ \& 0 \& $\bigcirc$ \& 1 \& ${ }_{6}$ \& 1 \& ${ }_{3}^{3}$ \& 2 \& $\bigcirc$ \& \% \& \% \& \% \& \& 50.3 \& 0 \& ${ }_{0}$ \& : \& ${ }_{0}^{0}$ \& $\bigcirc$ \& - <br>
\hline 215 \& ${ }^{11}$ \& 0 \& 9 \& 0 \& 2 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 215 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 5 \& 7 \& ${ }_{3}$ \& 1 \& 0 \& 0 \& 0 \& 0 \& 2.1 \& ${ }^{7.1}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline ${ }_{2215}^{2200}$ \& 10 \& $\bigcirc$ \& ${ }_{9}$ \& $\bigcirc$ \& $\bigcirc$ \& 1 \& $\bigcirc$ \& - \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \& 2200

2215 \& $\bigcirc$ \& $\bigcirc$ \& : \& ${ }_{2}$ \& 0 \& $\bigcirc$ \& ${ }_{3}^{1}$ \& ${ }_{1}$ \& ${ }_{3}^{3}$ \& | 3 |
| :---: |
| 1 | \& : \& : \& - \& - \& ${ }_{38.3}^{5.5}$. \& \& : \& $\bigcirc$ \& : \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{0}^{0}$ <br>

\hline ${ }^{2230}$ \& ${ }^{8}$ \& 0 \& 8 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 2230 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 2 \& ${ }^{3}$ \& 2 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 225
2300 \& 5 \& \% \& 2 \& 0 \& 1 \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \& ${ }_{230}^{225}$ \& 0 \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 1 \& ${ }_{1}$ \& ${ }^{1}$ \& 0 \& $\bigcirc$ \& \& 0 \& $\bigcirc$ \& ${ }_{7}{ }^{\circ}$ \& \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 <br>
\hline ${ }_{2}^{2315}$ \& 11 \& 0 \& 11 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& O \& 0 \& \& 2315 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 3 \& 3 \& 0 \& 1 \& 0 \& 0 \& 0 \& ${ }^{8}$ \& 53 \& 1 \& 9.091 \& 0 \& 0 \& 0 \& 0 <br>
\hline - 235 \& ${ }_{3}^{2}$ \& $\bigcirc$ \& ${ }_{3}^{2}$ \& $\bigcirc$ \& $\bigcirc$ \& \% \& $\bigcirc$ \& $\bigcirc$ \& ! \& ! \& : \& \& - ${ }_{235}^{2330}$ \& $\bigcirc$ \& $\bigcirc$ \& ! \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{1}$ \& ${ }_{1}^{1}$ \& 1 \& 1 \& ${ }_{1}$ \& 0 \& $\bigcirc$ \& \% \& - \& ${ }_{3.6}^{5.3}$. \& \& ! \& 0 \& - \& ${ }_{0}$ \& 0 \& <br>
\hline 0719 \& 2705 \& 24 \& 2332 \& 11 \& 261 \& 12 \& 49 \& 1 \& 5 \& 1 \& 9 \& \& 0719 \& 0 \& 2 \& 18 \& 21 \& 92 \& 470 \& 1127 \& 713 \& 220 \& 35 \& 5 \& 1 \& 1 \& 0 \& 384 \& 435 \& 7 \& 0259 \& 2 \& 0074 \& \& 037 <br>
\hline 0622 \& 2907 \& 25 \& 2522 \& 11 \& 272 \& 12 \& 49 \& 1 \& 5 \& 1 \& 9 \& \& 0622 \& 0 \& \& 19 \& 22 \& 94 \& 491 \& 1193 \& 775 \& 255 \& 46 \& 8 \& \& \& 0 \& 386 \& 438 \& 10 \& 344 \& 2 \& 0069 \& \& <br>
\hline 0600 \& ${ }^{2963}$ \& 25 \& 2575 \& 11 \& ${ }_{2} 274$ \& ${ }^{13}$ \& 49 \& 1 \& 5 \& 1 \& 9 \& \& ${ }^{0600}$ \& 0 \& 2 \& 19 \& ${ }_{24}^{24}$ \& 94 \& 492 \& ${ }^{1206}$ \& 793 \& ${ }^{268}$ \& 54 \& 9 \& 1 \& 1 \& 0 \& 387 \& 441 \& 11 \& 0371 \& $\stackrel{2}{2}$ \& 0067 \& \& 0334 <br>
\hline 0000 \& 2963 \& 25 \& 2575 \& 11 \& 274 \& 13 \& 49 \& \& \& 1 \& \& \& 0000 \& 0 \& \& 19 \& 24 \& 94 \& 492 \& 1206 \& 793 \& 268 \& 54 \& 9 \& \& \& 0 \& 387 \& 441 \& 11 \& 037 \& \& 0067 \& \& 0034 <br>
\hline
\end{tabular}

| $\mathrm{I}^{\text {me }}$ | otal | $\mathrm{cls}_{1}$ | $\underset{\substack{\text { cls } \\ 2}}{ }$ | ${ }_{3}{ }_{3}$ | $\mathrm{Cl}_{4}$ | $\stackrel{c}{\text { cls }}$ | $\underset{\substack{\text { cls } \\ 6}}{ }$ | ${ }_{\substack{\text { cls } \\ 7}}$ | ${ }_{8}^{\mathrm{Cls}}$ | $\underset{9}{\text { cls }}$ | ${ }_{\substack{\text { cls } \\ 10}}$ | Fix1 | ${ }_{\text {ime }}$ | $\begin{gathered} \text { Vbin } \\ 0 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 10 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 15 \\ 20 \end{gathered}$ | $\begin{gathered} \text { Voin } \\ 20 \\ 20 \\ \hline \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 25 \\ & 30 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 30 \\ 35 \end{gathered}$ | $\begin{aligned} & \text { Vinn } \\ & 35 \\ & 40 \end{aligned}$ | $\begin{aligned} & \text { Vbin } \\ & 40 \\ & 45 \end{aligned}$ | $\begin{aligned} & \text { Vbin } \\ & 45 \\ & 50 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 50 \\ 60 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 60 \\ 70 \\ 70 \end{gathered}$ | $\begin{gathered} \text { Vinn } \\ 70 \\ 80 \end{gathered}$ | $\begin{gathered} \text { Vin } \\ 80 \\ 90 \end{gathered}$ | $\begin{gathered} \text { Voin } \\ 90 \\ 900 \end{gathered}$ | Mean | $\mathrm{v}_{\text {vop }}$ | $\begin{gathered} \text { IPSL } \\ 60 \end{gathered}$ | ${ }_{60}^{\text {PPSL/ }}$ | $\begin{gathered} 1 \text { 15L1 } \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{gathered} 15 L 1 \% \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{aligned} & 15 L 2 \\ & 75 \\ & \text { DF } \end{aligned}$ | $\begin{gathered} 1512 \% \\ 75 \\ \text { DF } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0000 0015 | 2 |  |  | 0 | ${ }_{1}$ | ： |  | 0 |  | 0 | $\bigcirc$ |  | 0000 0015 | 0 | 0 | 0 | 0 | 0 | － |  | 0 | 0 1 | 0 |  | 0 | 0 | 0 | 36． |  | 0 | 0 | 0 | 0 | 0 | $\bigcirc$ |
| 0030 005 005 | ${ }_{3}^{2}$ |  | 3 | 0 | 0 | 0 |  | 0 |  | $\bigcirc$ | ： |  | 0030 0 0 | $\bigcirc$ | 0 | ： | 0 | ： | $\bigcirc$ | 0 | $\stackrel{2}{1}$ | 0 | $\bigcirc$ | ： | 0 | ： | 0 | ${ }_{2.7}^{2.7}$ |  | ： | 0 | $\bigcirc$ |  |  | ： |
| 005 0100 | ${ }^{3}$ | 0 | 1 | \％ | ： | $\stackrel{0}{0}$ | $\stackrel{0}{0}$ | ： | ： | $\bigcirc$ | ： |  | 005 00100 | $\bigcirc$ | $\bigcirc$ | 0 | $\stackrel{0}{0}$ | 0 |  | 1 | 1 | $\stackrel{1}{0}$ | $\bigcirc$ | ： | 0 | $\stackrel{0}{0}$ | 0 | ${ }_{32.3}^{2 .}$ |  | ： | $\stackrel{0}{0}$ |  |  |  | $\bigcirc$ |
| 0115 0130 | 1 | $\bigcirc$ | $\frac{1}{2}$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 0 | $\bigcirc$ | ： | 0 |  | －0115 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | 1 | $\bigcirc$ | 1 | $\bigcirc$ | 0 | ${ }_{1}^{1}$ | 0 | 0 | 0 | 0 | 28.7 ． |  | 0 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | 0 |
| （ 0138 | ${ }_{1}^{2}$ | $\bigcirc$ | ${ }_{0}^{2}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | － | $\bigcirc$ | ： | $\bigcirc$ | 1 |  | － 01315 | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\stackrel{0}{0}$ | 1 | ： | $\bigcirc$ | 1 | ： | $\bigcirc$ | 0 | $\bigcirc$ | 38．6． |  | ： | ！ | ： | $\bigcirc$ | 0 | 0 |
| ${ }_{0}^{020}$ |  | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0200 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |  | 0 | 37.8 ． |  | 0 | 0 |  | 0 | 0 |  |
| － 0215 | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{1}^{1}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ： | $\bigcirc$ | ： |  | － 0215 | ： | － | $\bigcirc$ | ： | $\bigcirc$ | $\bigcirc$ | ！ | ${ }_{1}^{1}$ | － | $\bigcirc$ | 0 | ： | － | 0 | 2.8 ． |  | ： | $\bigcirc$ | $\bigcirc$ | $\stackrel{0}{0}$ | $\bigcirc$ | $\bigcirc$ |
| 025 | 1 | 0 | 1 | 0 | 0 | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 |  | 025 | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 1 | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | ${ }^{9.9} 9$. |  | 0 | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ |
| － 0300 | ${ }_{1}^{2}$ | $\bigcirc$ | 1 | ${ }_{0}^{0}$ | ！ | ${ }_{0}^{0}$ | ${ }_{0}^{\circ}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | \％ |  | － 0315 | ${ }_{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | ${ }_{0}$ | 0 | 1 | ！ | 1 | $\bigcirc$ | ${ }_{0}$ | 0 | ${ }_{0}^{0}$ | $\bigcirc$ | ${ }_{0}$ | 39.7 <br> 3.6 <br> . |  | $\bigcirc$ | $\bigcirc$ | \％ | ${ }_{0}$ | $\bigcirc$ | 0 |
| 0330 | 3 | 0 | ${ }^{3}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0330 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3.5 ． |  | 0 | 0 | 0 | 0 | 0 |  |
| － | 1 | $\bigcirc$ | ${ }_{1}$ | 0 | 0 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 |  | 边 | 0 | 0 | 0 | 0 | $\bigcirc$ | 0 | 0 | ${ }_{1}$ | 0 | ${ }_{0}$ | 0 | 0 | 0 | 0 | ${ }_{1.3}{ }^{3}$. |  | 0 | 0 | 0 | 0 | 0 | ${ }_{0}$ |
| 015 | 5 | 0 | 5 | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | ： |  | 015 0 0 0 | 0 | 0 | $\bigcirc$ | ： | ： | 0 | 1 | ${ }_{0}$ | 1 |  | ： | 0 | 0 | $\bigcirc$ | ${ }_{31}^{51}$ ： |  | ： | 0 | ： | $\bigcirc$ | 0 | $\bigcirc$ |
| ${ }_{0} 5$ | 9 |  | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 05 | 0 | 0 |  | 0 | 0 | 0 |  | 2 | 1 | 2 | 0 | 0 | 0 |  | 3. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| － | 13 | 1 | ${ }_{9}$ | ${ }_{0}^{0}$ | ${ }_{3}$ | ${ }_{0}^{0}$ | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ： |  | 0500 0515 | $\bigcirc$ | 0 | ： | 0 | 0 | ${ }_{2}$ |  | ${ }_{2}^{1}$ | 1 | ${ }_{3}^{1}$ | ： | ： | $\bigcirc$ | 0 | ${ }_{2.8}^{2.7}{ }^{\text {．}}$ | 53.9 | ： | ： | ： | $\bigcirc$ | 0 | $\bigcirc$ |
|  | 9 | 0 | 7 | 0 |  |  | 0 | 0 | 0 | 0 | 0 |  | 0530 |  | 0 |  | 0 |  | 0 | 3 |  | 2 |  | 0 | 0 |  | 0 | 2.6. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 055 | 17 19 | $\bigcirc$ | 15 17 | $\bigcirc$ | ${ }_{2}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 055 060 | $\bigcirc$ | $\bigcirc$ | \％ | \％ | $\bigcirc$ | 1 |  | 3 | ${ }_{3}^{7}$ | 3 2 2 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 1.1 | ${ }_{8}^{51.1}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| 0615 | 38 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 |  | 0615 | 0 | 0 | 0 | 0 |  | 6 | 5 | 15 | 5 | 3 | 0 | 0 | 0 | 0 | 1.1 <br> 0.1 | ${ }_{6} 6$ | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }^{0630}$ | ${ }_{7}^{60}$ | 1 | 53 63 | $\bigcirc$ | ${ }_{10}^{6}$ | $\bigcirc$ | 1 | $\bigcirc$ | $\bigcirc$ | \％ | 0 |  | － 0630 | $\bigcirc$ | $\bigcirc$ | \％ | $\bigcirc$ | ${ }_{2}^{2}$ | ${ }_{13}^{23}$ | ${ }_{37}^{30}$ |  | 1 | ${ }_{1}$ | 0 | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | ${ }_{38.2}^{35.7}$ | 39.5 3.5 | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 |
|  | 109 | 1 | ${ }_{98}$ | 0 | 9 | 0 | 1 | 0 | 0 | 0 | 0 |  | 0700 | 0 | 0 | 0 | 0 |  | 29 | 39 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 36.1 | 1.6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0715 0730 | 150 155 15 | 1 | ＋139 | ${ }_{0}^{0}$ | $1{ }^{10}$ | 1 | 1 | $\bigcirc$ | $\bigcirc$ | ： | ： |  | 0715 0730 | $\bigcirc$ | ： | ： | $\bigcirc$ | 11 | 37 27 | ${ }_{67}^{68}$ | $\begin{array}{r}32 \\ 8 \\ \hline\end{array}$ | ${ }_{2}$ | ： | ： | 1 | 0 | 0 | ${ }_{37.6}^{36.7}$ | 1.9 <br> 1.8 <br> 1 | 1 | ${ }_{0}^{0.667}$ | 1 | ${ }^{0.667}$ | ： | ： |
| 075 | ${ }^{116}$ | 0 | 10 | 0 | 11 | 0 | 0 | 0 | 1 | 0 | 0 |  | 075 |  | 0 |  | $\bigcirc$ |  |  | ${ }_{6}^{62}$ |  |  |  | 0 |  |  | 0 | ${ }^{39.3}$ | 2.1 |  | 0 |  | 0 | 0 | 0 |
| O880 | 123 162 1 | 1 | 117 <br> 135 <br> 1 | 1 |  | ${ }_{1}$ | ${ }_{2}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 1 |  | 0800 0815 | $\bigcirc$ | ： | $\bigcirc$ | ${ }_{1}^{2}$ | ${ }_{5}^{6}$ | $\stackrel{18}{18}$ | ${ }_{8}^{51}$ | ${ }_{30}^{39}$ | ${ }_{0}^{6}$ | 1 | ： | $\bigcirc$ | \％ | $\bigcirc$ | ${ }_{36.8}^{38.3}$ | 0．5 | － | $\bigcirc$ | \％ | $\bigcirc$ | 0 | － |
| 0830 | ${ }^{136}$ | 0 | 128 | 0 | 6 | 0 | 2 | 0 | 0 | 0 | 0 |  | 0830 |  | 0 | 0 | 0 | 0 | 30 | 82 | 18 | 5 | 1 | 0 |  | 0 | 0 | 37.7 | 0.5 | 0 | － | 0 | 0 | 0 | 0 |
| －080 | ${ }_{75}^{113}$ | $!$ | ${ }_{67} 97$ | 1 | 17 | ！ | ！ | ${ }_{0}^{0}$ | $\bigcirc$ | ！ | ！ |  | －0900 | ${ }_{0}^{0}$ | \％ | $\bigcirc$ | ${ }_{0}^{3}$ | ${ }_{3}^{8}$ | 2 | 0 | ${ }_{26}$ | ${ }^{3}$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | ${ }_{39.1}^{37.2}$ | 2.7 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ |
| 0915 |  |  |  |  |  |  |  |  |  |  |  |  | 0915 |  |  |  |  |  |  |  |  | 1 |  | 0 |  |  | 0 |  |  |  | 0 | 0 |  | 0 |  |
| －9950 | ${ }_{53}^{63}$ | ${ }_{0}$ | 5 | 1 | 5 | 0 | 2 | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | 0 |  | O950 | 0 | 0 | 0 | 0 | 1 | ${ }_{8}$ | ${ }_{20}$ | 21 | ${ }_{3}$ | 0 | 0 | 0 | ${ }_{0}$ | 0 | ${ }_{39.5}^{38.5}$ | 3.5 | － | 0 | ${ }_{0}$ | 0 | 0 | 0 |
|  | ${ }_{5}^{36}$ |  | 30 |  |  |  | ， |  | $\bigcirc$ |  | 0 |  | 1000 |  |  |  |  |  |  | ${ }_{20}^{13}$ |  | ${ }_{3}^{3}$ |  |  |  |  | 0 | 0.1 |  |  | 0 |  | 0 | 0 | $\bigcirc$ |
| ${ }^{1015}$ | 5 | $\bigcirc$ | 39 | 1 |  | $\bigcirc$ | 2 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 |  | 1015 1030 | ${ }_{0}$ | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | 1 | ${ }_{9}$ | ${ }_{1}^{20}$ | 15 | $\begin{array}{r}3 \\ 2 \\ \hline\end{array}$ | 1 | 0 | 0 | 0 | 0 | ${ }_{38,1}^{39.3}$ | ${ }_{3.6}^{3.5}$ | ${ }_{0}$ | 0 | 0 | 0 | 0 | 0 |
| 105 | ${ }^{2}$ |  | ${ }_{31}^{35}$ | 0 | ${ }^{3}$ | 0 | 1 | 1 | 0 | 0 | 1 |  | 105 | 0 | 0 | 0 | 2 | 1 | 11 | 13 | ${ }^{6}$ | 9 | 0 | 0 |  | 0 | 0 | ${ }^{38}$ | ${ }^{6}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| 1115 |  | 0 | 3 | 0 | 9 | 0 | 1 | 0 | 。 | 。 | 0 |  | 1115 | 0 | 0 | 0 | 0 | 0 | ${ }_{9}$ | 18 | 11 |  | 2 | 0 | 0 | 0 | 0 | ${ }_{39}{ }^{\text {as．}}$ ． |  | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 0 |  | ${ }^{37}$ | 0 | ${ }^{2}$ | 0 | 0 | 0 | 0 | 0 | 0 |  | 1130 |  | 0 |  | 0 |  |  | 11 |  | 7 |  | $\bigcirc$ | $\bigcirc$ |  | $\bigcirc$ | 0.9 | 7.2 |  | 0 |  |  | 0 | 0 |
| ${ }_{1200}^{115}$ | 38 | 1 | ${ }^{26}$ | $\bigcirc$ | ${ }_{5}^{8}$ | 1 | 1 | 1 | $\bigcirc$ | $\stackrel{0}{0}$ | 1 |  | 1150 | ${ }_{0}^{0}$ | \％ | $\stackrel{0}{0}$ | $\bigcirc$ | ${ }_{2}$ | 8 | 12 | 11 | ${ }_{5}^{6}$ | $!$ | $\bigcirc$ | － | ${ }_{0}$ | 0 | ${ }_{38.6}^{0.3}$ | $\stackrel{6.2}{5}$ | $\bigcirc$ | $\stackrel{0}{0}$ | $\bigcirc$ | $\stackrel{0}{0}$ | ${ }_{0}$ | $\bigcirc$ |
| ${ }^{1215}$ | ${ }^{31}$ | 2 | ${ }^{26}$ | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  | 1215 |  | 0 | 1 | 0 | 0 |  | 11 | 12 | ${ }^{2}$ |  | 0 |  | 0 | 0 | 39.1 | 3.1 | 0 | 0 | 0 | 0 | O | 0 |
| ＋1250 | 31 38 | ${ }_{0}$ | ${ }_{26}^{22}$ | 1 | ${ }_{8}$ | 1 | ${ }_{2}$ | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ | $\bigcirc$ |  | ＋1230 | 0 | 0 | 0 | 0 | ${ }_{10} 0$ | 8 | ${ }_{13}^{11}$ | ${ }_{8}^{9}$ | 3 <br> 3 | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ | ${ }^{38.9}$ 36． |  | \％ | ${ }_{0}^{\circ}$ | ${ }_{0}$ | $\bigcirc$ | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ |
|  |  |  |  | ${ }^{2}$ |  |  | ${ }^{3}$ | 0 | 0 | 0 |  |  |  |  |  |  | 1 |  | 13 |  |  |  |  | 0 |  |  | 0 |  | 5.2 | 0 | 0 |  | 0 | 0 | 0 |
| 1315 1330 | $5_{5}^{5}$ |  | 33 <br> 5 | 1 | 5 | $\bigcirc$ | ${ }_{2}^{2}$ | $\bigcirc$ | 1 | $\bigcirc$ | 0 |  | 1315 1330 13 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 10 | ${ }_{29}^{16}$ | 12 15 | 2 | ${ }_{3}^{1}$ | 1 | $\bigcirc$ | － | $\bigcirc$ | ${ }_{39,}^{37.7}$ | ${ }_{3.8}^{2.9}$ | 1 | ${ }^{2.222}$ | $\bigcirc$ | $\bigcirc$ | 0 | ： |
| 135 | 5 | 0 | 36 | 0 | 5 | 0 |  | 0 | 0 | 0 | 0 |  | 135 | 0 | 0 | 0 | 0 |  | 9 | 15 | 15 | 5 | 0 | 0 | 0 | 0 | 0 | 39.1 | ${ }^{3}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| 100 115 | ${ }_{5}^{6}$ | $\bigcirc$ | 32 5 | ${ }_{1}$ | ${ }_{5}^{8}$ | 1 | $\begin{array}{r}3 \\ 2 \\ \hline\end{array}$ | 1 | $\stackrel{1}{0}$ | 1 | ： |  | 100 115 1 | $\bigcirc$ | $\bigcirc$ | 0 | ： | $\bigcirc$ | ${ }^{16}$ | ${ }_{23}^{20}$ | ${ }_{15}^{9}$ | 1 | 0 | ： | 0 | $\bigcirc$ | 0 | ${ }_{0.8}^{37}$ | 2.1 7.5 | \％ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ： |
| 130 | 55 |  | 8 | 0 | 2 | 2 | ${ }^{2}$ | 0 | 1 | 0 | 0 |  | 130 | 0 | 0 | 0 | 0 | 1 | 7 | 2 | 19 | ${ }_{5}^{3}$ | 0 | 0 | 1 | 0 | 0 | 39.2 | 2.2 | 1 | 1.818 |  | 1.818 | 0 | 0 |
| 1500 | 68 | 0 | 57 | 0 | 7 | 1 | 1 | 0 | 0 | 1 | 1 |  | 1500 | 0 | 0 | 0 | 7 | ${ }_{9}$ | 7 | ${ }_{32}$ | ${ }_{6} 6$ | 5 | 2 | ： | 0 |  | 0 | 35.9 | 2.9 | 0 | ${ }_{0}$ | $\bigcirc$ | 0 | 0 | ${ }_{0}^{0}$ |
|  | 50 |  |  |  |  |  | 0 |  |  | 0 | 0 |  | 1515 |  | 0 |  | 0 |  |  | 17 |  | 6 |  | 0 |  |  |  |  |  |  |  |  |  | 0 |  |
| ＋1530 | 51 | $\bigcirc$ | 5 | ${ }^{2}$ | ${ }^{10}$ | 1 | 1 | $\bigcirc$ | $\bigcirc$ | ： | ： |  | 1530 155 15 | $\bigcirc$ | － | \％ | 1 | 1 | 11 6 | 20 | ${ }_{21}^{26}$ |  | 1 | ： | ： | － | $\bigcirc$ | ${ }_{39.6}^{39.2}$ | $\stackrel{2}{5}$ | － | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ |
| 1600 | 66 |  | 56 | 1 | 5 | 0 | ${ }^{2}$ | 0 | 0 | 0 | 1 |  | 1600 |  | 0 | 0 | 0 | 1 | 9 | 20 | 25 | 7 |  | 0 | 0 | 0 | 0 | 0. | 5.2 | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }_{1630}$ | ${ }_{89}$ | $\bigcirc$ | ${ }_{82}^{68}$ | 0 | 7 | 0 | $\bigcirc$ | $\bigcirc$ | ！ | $\bigcirc$ | ${ }_{0}$ |  | 1615 1630 | $\bigcirc$ | ： | $\bigcirc$ | $\bigcirc$ | 1 | ${ }_{10}^{19}$ | ${ }_{38}^{21}$ | ${ }_{3}^{25}$ | ${ }_{5}^{8}$ | ${ }_{1}$ | 0 | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ | ${ }_{39.5}^{38 .}$ | ${ }_{3}^{3}$ | $\bigcirc$ | ${ }_{0}^{0}$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ | \％ |
| 165 | 100 | 0 | 89 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 1 |  | 165 | 0 | 0 | 0 |  |  |  |  |  | 10 |  | 0 |  |  | 0 | 38.5 |  |  |  | 0 |  | 0 | 0 |
| 1715 | ${ }_{96}$ | 0 | ${ }_{91}$ | 1 | ${ }^{5}$ | 0 | 1 | 0 | 0 | ： | ： |  | $\begin{array}{r}1700 \\ 1775 \\ \hline 175\end{array}$ | $\stackrel{0}{0}$ | ： | ： | $\bigcirc$ | 11 6 | $\begin{array}{r}15 \\ \hline 6\end{array}$ | ${ }_{9}^{27}$ | $\begin{array}{r}38 \\ 28 \\ \hline\end{array}$ | 9 | ${ }_{2}$ | 0 | ： | ： | $\bigcirc$ | 38.7 <br> 38 | ${ }_{3.2}^{3.5}$ | ： | ： | ： | $\stackrel{0}{0}$ | 0 | 0 |
| 1730 | 91 | $\bigcirc$ | ${ }_{76} 8$ | ！ | ${ }_{5}^{5}$ | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 1730 |  | 0 |  |  | 2 |  | ${ }_{21}^{38}$ | ${ }_{39}^{21}$ | 9 |  | $\bigcirc$ |  |  | $\bigcirc$ | ${ }_{\text {cher }}$ | 3.9 3.3 | $\bigcirc$ | － | $\bigcirc$ |  | 0 | $\bigcirc$ |
| 1800 | ${ }_{87} 8$ | 0 | 77 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 0 |  | 1800 |  | 0 | 0 | 1 | ＇ | 16 | ${ }^{218}$ | 22 23 28 | 5 | 1 | 0 | 0 | 0 | 0 | 37.9 | 2.9 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1815 1830 | 58 | $\bigcirc$ | ${ }_{1}^{57}$ | $\bigcirc$ | 1 |  | $\bigcirc$ | $\bigcirc$ |  | $\bigcirc$ | $\bigcirc$ |  | 1815 1830 | ${ }_{0}^{0}$ | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{0}^{2}$ | 7 | 17 26 | 23 6 | $\stackrel{8}{5}$ | 1 | 0 | ： | $\bigcirc$ | $\bigcirc$ | ${ }_{39.1}^{0.1}$ | $\stackrel{5}{5} 2$ | ： | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 |
| 185 | ${ }_{32}^{35}$ | 0 | 35 | 0 | ${ }_{0}$ | 0 | 0 | 0 | 0 | 0 | 0 |  | 185 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 2 | 19 | 9 | 5 | 0 | 0 | 0 | 0 | $\bigcirc$ | ${ }_{39}^{39.7}$ | －9 | 0 | 0 | 0 | 0 | $\bigcirc$ | 0 |
| 1915 | 30 | 0 | 29 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1915 | 0 | 0 |  | 0 | 0 | 3 | 12 | 9 | ${ }^{2}$ |  | 0 | 0 | 0 | 0 | 1. | 50.2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1930 <br> 195 | ${ }_{31}^{23}$ | 1 | ${ }_{27}^{20}$ | ${ }_{0}^{0}$ | 2 | ${ }_{0}^{0}$ | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | 0 |  | 1930 195 | ${ }_{0}$ | ${ }_{0}^{0}$ | 1 | ${ }_{0}^{0}$ | $\bigcirc$ |  | $1{ }^{8}$ | 10 | 5 | 1 | $\bigcirc$ | ${ }_{0}^{0}$ | $\bigcirc$ | \％ | ${ }^{38.9} 1.3$ | 3.5 6.5 | － | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | \％ |
| 2000 | 11 | 0 | ${ }_{13}^{10}$ | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2000 | 0 | 0 | 0 | 0 | 0 |  | 6 |  | 0 | 0 | 0 | 0 | 0 |  | 39.3 | 1. | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }_{2030}^{2015}$ | 15 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | $\bigcirc$ | 0 |  | ${ }_{2030}$ | 0 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | ： | 7 | 3 5 | 2 | ${ }_{1}$ | ： | $\bigcirc$ | 0 | $\bigcirc$ | 1.2 | 9.9 | ： | 0 | \％ | $\stackrel{0}{0}$ | $\bigcirc$ | ： |
| 205 | ${ }_{11}^{12}$ | 0 | 11 | 0 | ${ }^{0}$ | 1 | 0 | 0 | 0 | 0 | $\bigcirc$ |  | ${ }_{2105}^{205}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{1}^{2}$ | 2 | ${ }^{3}$ |  |  | $\bigcirc$ | ： | 0 | $\bigcirc$ | －3 | 9.6 | 0 | 0 | 0 | － | 0 | $\bigcirc$ |
| 2115 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2115 | 0 | 0 | 0 | 0 | 0 | 1 |  | 2 | 2 |  | 0 | 0 | 0 | 0 | 1.2 ． |  | 0 | 0 | 0 | 0 |  | 0 |
| （ | ${ }_{8}^{12}$ | $\bigcirc$ | 8 | 1 | ${ }_{0}$ | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | $\bigcirc$ | ： |  | － | $\bigcirc$ | ！ | \％ | ： | $\bigcirc$ | ${ }_{0}^{3}$ | ${ }_{2}^{1}$ | 5 | 1 | ${ }_{1}^{2}$ | ： | ： | $\bigcirc$ | $\bigcirc$ | ${ }_{2.5}^{2.1}$ | 50.9 | － | ： | － | $\bigcirc$ | \％ | ： |
| 2200 | 13 | 0 | 13 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |  | 2200 |  | 0 | 0 | 0 | 0 |  |  | ${ }^{2}$ | ${ }_{3}^{3}$ | ${ }_{2}$ | 1 |  |  | 0 | ． 8 | 52.6 |  | 7.692 | 1 | 7.692 |  | 0 |
| 2230 | 11 | 0 | 10 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2230 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | 2 | 2 | 0 | 0 | 0 | 0 | 3.3 | 51.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 225 |  |  |  | 0 | 0 | 0 | 0 | 0 |  |  | 0 |  | 225 |  | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1.2 |  | 1 |  |  |  | 0 | 0 |
| ${ }_{2315}^{230}$ | 7 | $\bigcirc$ | 6 | 0 | ${ }^{1}$ | $\bigcirc$ | ${ }^{\circ}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 2315 <br> 2300 <br> 20 |  | 0 | \％ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 1 |  | ${ }_{1}^{2}$ | $\bigcirc$ | \％ | ： | $\bigcirc$ | $\bigcirc$ | 5.5 <br> 2.6 |  | ： | $\stackrel{\circ}{0}$ | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{0}$ |
| 2330 |  | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2330 |  | 0 | 0 | 0 | 0 | 0 | ${ }^{0}$ | 2 | 1 | 1 | 0 |  |  | 0 | 5.7. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| － 2319 | 3318 | 20 | 2887 | 20 | 300 | 13 | 53 | ${ }_{3}$ |  | 5 | ${ }_{11}$ |  | 235 074 | 0 |  |  | 29 | 153 | 527 | 1352 | 970 | 225 | $5{ }_{50}^{2}$ | 1 | ${ }_{2}$ |  | 0 | －6．2． | 432 | ${ }_{3}^{0}$ | 009 | ${ }_{2}^{0}$ | 006 | 0 | $\bigcirc$ |
| 0622 | 3718 | ${ }^{22}$ | 3244 | ${ }^{21}$ | ${ }^{337}$ | 14 | 55 | $3_{3}^{3}$ | 6 | 5 | 11 |  | 0622 | 0 | 0 | 10 | ${ }^{29}$ | 161 | 593 | 1509 | 1080 | 263 | 70 | 1 | 2 | 0 | 0 | 386 | 434 | 3 | 0081 | ${ }^{2}$ | 0054 | 0 | 0 |
| 0600 | 3779 | 22 | 3302 | 21 | 340 | 14 | 55 | ${ }^{3}$ | 6 |  | 11 |  | 0600 |  |  | 10 |  |  | 596 | ＋522 |  |  | 79 | 3 |  |  |  |  | 4 5 |  |  |  |  |  |  |
| 0000 | 3869 |  | 3378 | 21 | 352 |  |  |  |  |  | 12 |  | 0000 |  |  | 10 | 29 |  | 600 | 1551 | 1125 | 294 | 93 |  |  |  |  | 388 | 436 |  | 0129 | 3 |  |  | 0 |



| ${ }_{1}^{\text {me }}$ | otal | $\mathrm{cls}_{1}$ | $\underset{\substack{\mathrm{Cls} \\ 2}}{ }$ | ${ }_{\substack{\text { cls } \\ 3}}$ | ${ }_{4}^{\text {cls }}$ | $\underset{\substack{\text { cls } \\ 5}}{ }$ | $\underset{6}{\text { cls }}$ | $\underset{\substack{\text { cls } \\ 7}}{ }$ | ${ }_{8}^{\mathrm{Cls}}$ | $\underset{9}{\text { cls }}$ | ${ }_{\substack{\text { cls } \\ 10}}$ | Fix1 | ${ }_{1}^{\text {ime }}$ | $\begin{gathered} \text { Vbin } \\ 0 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 10 \\ 15 \end{gathered}$ | $\begin{gathered} \text { vin } \\ 15 \\ 20 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 20 \\ 20 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 25 \\ 30 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 30 \\ 35 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 35 \\ 40 \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 40 \\ & 45 \end{aligned}$ | $\begin{aligned} & \text { bbin } \\ & 45 \\ & 50 \end{aligned}$ | $\begin{aligned} & \text { vin } \\ & 50 \\ & 50 \end{aligned}$ | $\begin{aligned} & \text { voin } \\ & 60 \\ & 70 \end{aligned}$ | $\begin{aligned} & \text { Vbin } \\ & 70 \\ & 80 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 80 \\ 90 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 900 \\ 900 \end{gathered}$ | Mean | $\mathrm{V}_{\text {vop }}$ | $\begin{aligned} & \text { IPSL } \\ & \hline 60 \end{aligned}$ | $\underset{60}{\text { PSLL/ }}$ | $\begin{gathered} 15 L 1 \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{aligned} & 15 \mathrm{LL1} \mathrm{\%} \\ & 68 \\ & \text { ACPO } \end{aligned}$ | $\begin{aligned} & 15 L 2 \\ & 75 \\ & \text { DF } \end{aligned}$ | $\begin{gathered} 152 \% \\ \hline 75 \\ \text { DF } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0000 0015 |  | 0 | 2 | 0 | 1 | ： | 0 | 0 | ： | 0 | 0 |  | 0000 0015 | 0 | 0 |  | 0 |  | ， |  |  |  |  | $\begin{array}{r} 70 \\ 0 \\ 0 \end{array}$ |  |  |  | ${ }_{2.2}^{3.5}$ |  | ： |  | 0 |  |  | 0 |
| 0030 | 3 | 0 | 2 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 |  | OOS30 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | $\bigcirc$ | 1 | 0 | 0 | 0 | 0 | 0 | ${ }^{2.2}$ 1．2， |  | 0 |  | 0 | 0 | 0 | 0 |
| 005 0000 | 0 | ： | ${ }_{0}$ | $\bigcirc$ | 1 | $\bigcirc$ | ： | $\bigcirc$ | ： | ： | ： |  | － 01005 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }^{3}$ | $\bigcirc$ | 1 | $\bigcirc$ | ： | $\bigcirc$ | $\bigcirc$ | $\stackrel{0}{0}$ | 0.1 ． |  | $\bigcirc$ | $\bigcirc$ | ： | $\stackrel{0}{0}$ | $\bigcirc$ | 0 |
| － $\begin{aligned} & 0115 \\ & 0130\end{aligned}$ | $!$ | 0 | 0 | \％ | ： | 0 | 0 | 0 | 0 | $\bigcirc$ | \％ |  | 0115 0130 | $\bigcirc$ | 0 | 0 | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 | $\bigcirc$ | ： | 0 | $\bigcirc$ | $\bigcirc$ | 1. |  | \％ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ |
| 015 | ${ }^{2}$ | 0 | ${ }_{2}$ | 0 | 0 | 0 | O | 0 | 0 | 0 | 0 |  | 015 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.7 － |  | 0 | 0 | 0 | 0 |  |  |
| － 0215 | 0 | ${ }_{0}$ | ！ | ${ }_{0}^{0}$ | 0 | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | － 02200 | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | ${ }_{0}$ | $\bigcirc$ | 0 | $\bigcirc$ | 0 | ${ }_{0}$ | 0 | 0 | 0 | 0 | 0 |  |  | 0 | 0 | 0 | $\stackrel{0}{0}$ | 0 | ${ }_{0}$ |
|  | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0230 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 | 0 | 39.2. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }^{025}$ | 2 | 0 | 2 | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | ： |  | 025 030 | 0 | 0 | $\bigcirc$ | 0 | ： | 0 | 1 | 0 | 1 | 0 | ： | 0 | $\bigcirc$ | 0 | ${ }^{36} 8^{8}$ ： |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| 0315 | 1 | 0 | 1 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | ${ }^{0315}$ | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 36.8 ． |  | 0 | 0 | 0 | 0 | 0 | 0 |
| － | ${ }_{1}$ | $\bigcirc$ | 1 | $\bigcirc$ | 1 | $\bigcirc$ | － | $\bigcirc$ | $\bigcirc$ | \％ | 0 |  | －0350 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 1 | 1 | 0 | \％ | 0 | 0 | $\bigcirc$ | ${ }_{5.1}^{5.5}$ ． |  | 0 | 0 | 0 | 0 | 0 | ${ }_{0}^{0}$ |
| 000 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 000 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |  | 50.2. |  | 1 | з3．33 | 0 | 0 | 0 | 0 |
| O 15 | 5 | 0 |  | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 015 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | $\bigcirc$ | 0 | 0 | 0 | ${ }_{5.2}{ }^{\text {．}}$－ |  | 0 | 0 | 0 | 0 | 0 | $\bigcirc$ |
| ${ }_{0} 5$ | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{0} 5$ | 0 | 0 |  | 0 | 0 | 3 | 1 | 0 | ${ }_{0}$ |  | 0 | 0 | 0 | 0 | 39.1. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| －0515 |  | \％ |  | $\bigcirc$ | ： | 0 | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | － |  | 0500 0515 | $\bigcirc$ | \％ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 1 | 1 | 1 | 1 | 1 | ： | 0 | 0 | $\bigcirc$ | ${ }^{3.8}$－ |  | ： | $\bigcirc$ | ： | ${ }_{0}^{0}$ | 0 | $\bigcirc$ |
| 0530 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0530 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | ${ }^{38}$－ |  | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 |
| 0600 | ${ }_{12}^{6}$ | ${ }_{0}$ | 5 | ${ }_{0}^{0}$ | 2 | 0 | 。 | 0 | ${ }_{0}$ | 0 | 0 |  | ${ }_{0600}$ | 0 | 0 |  | 0 | 0 | 1 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | ${ }_{3.5}{ }^{\text {a }}$ | 9.8 | 0 | 0 | 0 |  |  | $\bigcirc$ |
| 0615 | ${ }^{8}$ | 0 | ${ }^{7}$ | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{0615}$ | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{5}^{3}$ | 1 | 0 | 0 | 0 | 0 | 0 | ${ }_{0}^{0.8}$ |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 0655 | 11 | $\bigcirc$ | 11 | 0 | $\bigcirc$ | $\bigcirc$ | － | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | － 0630 | $\bigcirc$ | $\bigcirc$ | \％ | \％ | \％ | 0 | ${ }_{7}^{3}$ | 5 2 2 | 2 | 1 | \％ | $\bigcirc$ | 0 | ${ }_{0}^{0}$ | ${ }_{1 .}^{2.6}$ | ${ }_{6.3}^{9.1}$ | $\bigcirc$ | \％ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| 0650 | 13 15 | $\bigcirc$ | 13 12 | ${ }_{0}^{0}$ | ${ }_{2}$ | $\bigcirc$ | $\stackrel{1}{1}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 |  | 065 0700 |  | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 1 | 5 | ${ }_{3}$ |  | ${ }_{2}$ | ： | $\bigcirc$ | 0 | 0 | 3 |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 0775 | 15 21 | \％ | ${ }_{20}$ | $\bigcirc$ | 1 | ： | ！ | 0 | $\bigcirc$ | $\bigcirc$ | ： |  | 0715 0730 | $\bigcirc$ | ： | ： | ： | 1 | 0 | ${ }_{7}^{6}$ | 5 6 | ${ }^{3}$ | ！ | ： | 0 | 0 | $\bigcirc$ | ${ }_{39.8}^{0.9}$ | ${ }_{5.9}^{6.9}$ | ： | $\bigcirc$ | ： | $\bigcirc$ | 0 | ： |
| 075 | 21 | 0 | 17 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 |  | 075 | 0 | 0 | 0 | 0 | 0 | 1 | ${ }^{3}$ | 12 |  |  | 0 | 0 | 0 | 0 |  |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 0815 | 20 | \％ | 19 | 0 | 1 | $\bigcirc$ | － | 0 | $\bigcirc$ | $\bigcirc$ | ： |  | 0800 0815 | $\bigcirc$ | － | \％ | $\bigcirc$ | ： | 2 | 9 | 1 5 5 | ${ }^{3}$ | ${ }_{2}^{1}$ | ： | $\bigcirc$ | \％ | ： | ${ }_{0.8}^{0.3}$ | ${ }^{5.9}$ | － | $\bigcirc$ | $\bigcirc$ | $\stackrel{0}{0}$ | ${ }_{0}$ | 0 |
| 0830 | ${ }^{39}$ | 1 | 33 <br> 25 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 |  | 0830 | $\bigcirc$ | $\bigcirc$ | 2 | 2 | 0 | 12 | 13 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | ${ }_{39}^{35.5}$ | ${ }^{1.3}$ | 0 | 0 | $\bigcirc$ | 0 | 0 | 0 |
| －085 | ${ }_{25}^{28}$ | ${ }_{0}$ | ${ }_{2}^{25}$ | $\bigcirc$ | ${ }_{1}^{3}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 085 0900 | $\bigcirc$ | \％ | $\bigcirc$ | $\stackrel{0}{0}$ |  | ${ }_{3}$ | 100 | 10 13 |  | 1 | ： | ： | $\bigcirc$ | $\bigcirc$ | ${ }_{1.7}^{39.7}$ | ${ }_{8.3}^{5.2}$ | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ： |
| 0915 | ${ }^{38}$ | 0 | ${ }^{3}$ | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |  | 0915 | 0 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | ${ }_{5}^{5}$ | 17 | 13 | ${ }^{2}$ | 1 | 0 | 0 | 0 | 0 | 39.9 |  | 0 | 0 | $\bigcirc$ | 0 | 0 | 0 |
| ${ }^{095}$ | 2 | 0 | 37 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |  | 095 | 0 | 0 | 0 | 0 | 0 | 8 | 15 | 12 | 6 | 1 | 0 | 0 | 0 |  | 39.5 | 5.2 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | 1000 |  |  |  |  |  |  | 5 |  |  |  | 0 |  |  | 0 |  |  |  | 0 |  |  |  |  |
| 1015 1030 | 31 | $\bigcirc$ | ${ }_{29}$ | 0 | ${ }_{2}$ | 0 | \％ | $\stackrel{0}{0}$ | － | $\bigcirc$ | － |  | 1015 1030 108 | $\bigcirc$ | ${ }_{0}^{0}$ | \％ | $\bigcirc$ | ： | ${ }_{0}^{5}$ | 15 | ${ }_{9}^{8}$ | 5 | ${ }_{2}^{1}$ | ： | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{1.9}^{38.7}$ | 6．5 | － | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ | $\bigcirc$ | $\bigcirc$ |
| 105 | ${ }_{35}^{29}$ | 0 | ${ }_{3}^{23}$ | 0 | ${ }_{1}^{6}$ | 0 | 0 | 0 | 0 | 0 | 0 |  | 105 | 0 | 0 | $\bigcirc$ | 7 | 1 | 1 | 10 | 6 |  | 0 | 0 | 0 | 0 | 0 | ${ }^{35.7}$ | ． 8 | 0 | 0 | 0 | 0 | 0 | O |
| 1115 | ${ }_{3}$ | 1 | 30 | 0 | 3 | 0 | 。 | 0 | 0 | 。 | 0 |  | 1115 | 0 | 0 | $\bigcirc$ | 0 | ${ }_{2}$ | 1 | 13 | ${ }_{13}^{8}$ | ${ }_{1}^{2}$ | 1 | ： | 0 | $\stackrel{0}{0}$ | 0 | ${ }_{38.6}^{35.5}$ | ${ }_{2.6}^{2.2}$ | \％ | $\bigcirc$ | $\stackrel{0}{0}$ | $\stackrel{0}{0}$ | ${ }_{0}$ | ${ }_{0}^{0}$ |
|  |  | 0 |  | 0 |  |  | 0 | 0 | 0 | 0 | 0 |  | 1130 |  | 0 | 0 | 0 |  |  | 21 |  |  |  |  |  |  | 0 | 39.1 |  |  | 0 |  | 0 | 0 | 0 |
| 115 1200 | ${ }_{38}^{39}$ | $\bigcirc$ | ${ }_{36}^{37}$ | $\bigcirc$ | ${ }_{2}^{2}$ | $\bigcirc$ | － | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ： |  | 115 1200 12 | $\bigcirc$ | ！ | ： | ： | $\bigcirc$ | 8 | 17 8 8 | 19 | 3 <br> 3 | $\bigcirc$ | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{39.8}^{39.8}$ | ${ }_{5}^{1}$ | ： | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 |
| ${ }^{1215}$ | 32 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }^{1215}$ | 0 | 0 | 0 | 0 | 0 | ${ }^{3}$ | 12 | ${ }^{13}$ |  | 0 | 0 | 0 | 0 | 0 | 0.5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | 1 | 39 | ${ }_{0}$ |  | ${ }_{0}$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 |  | 1230 125 12 | ${ }_{0}$ | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | 1 | 3 | 16 | ${ }_{1}^{22}$ | ${ }_{8}^{2}$ | 1 | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{1.2}^{0.6}$ | 3.7 6 | 1 |  | $\bigcirc$ | ${ }_{0}^{\circ}$ | $\bigcirc$ | ： |
| 1300 | 1 | 1 | 38 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1300 |  | 0 | 0 | 0 | 0 | 3 |  | 10 |  | 0 | 0 | 0 | 0 | 0 | 39.5 | 3.5 | 0 | 0 | 0 | 0 | 0 |  |
| lis ${ }_{1}^{1315}$ | 31 <br> 5 | \％ | 31 <br> 3 | 0 | ${ }_{2}$ | ： | ： | $\stackrel{0}{0}$ | ： | ： | ： |  | 1315 1330 | $\bigcirc$ | $\bigcirc$ | ： | $\stackrel{0}{0}$ | \％ | $\stackrel{1}{9}$ | ${ }_{2}^{13}$ | ${ }_{10}^{15}$ | ${ }_{2}^{2}$ | $\bigcirc$ | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{38,3}^{0.3}$ | ${ }_{3.3}^{3.7}$ | 0 | $\bigcirc$ | $\bigcirc$ | $\stackrel{0}{0}$ | $\bigcirc$ | 0 |
|  | ${ }^{23}$ | 1 | ${ }^{21}$ | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 135 |  | 0 |  | 0 | 0 | 1 | 12 |  | 1 | 0 | 0 | 0 | 0 | 0 | 39.8 |  | 0 | 0 | 0 |  | 0 | 0 |
| 115 | 31 | $\bigcirc$ | ${ }_{33}$ | 0 | 2 | ${ }_{0}$ | 0 | 0 | 0 | 0 | 0 |  | 115 | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ | ： | ${ }_{0}$ |  | 18 12 | ${ }_{10}^{8}$ | 8 | 0 | ： | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{28}^{38.5}$ | ${ }_{9.6}^{1.2}$ | － | $\bigcirc$ | $\bigcirc$ | $\stackrel{0}{0}$ | $\bigcirc$ | 0 |
| 130 | 31 |  | ${ }^{31}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 130 | 0 | 0 | 0 | 0 | 0 |  | 1 | ${ }^{13}$ | 1 | 0 | 0 | 0 | 0 | 0 | 39.7 | 2.9 | 0 | 0 | 0 | 0 | 0 |  |
| 1500 | ${ }_{19}^{28}$ | ${ }_{0}$ | ${ }_{16}$ | 0 | 3 | 0 | － | 0 | 。 | $\bigcirc$ | $\bigcirc$ |  | 1500 | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{0}$ | 0 |  | 5 | 5 | 5 | ${ }_{2}$ | $\bigcirc$ | 0 | $\bigcirc$ | 0 | ${ }_{2.5}^{1.5}$ | ${ }_{9.2}^{6.2}$ | $\bigcirc$ | ${ }_{0}$ | 0 | ${ }_{0}^{\circ}$ | 0 | ${ }_{0}^{0}$ |
| ${ }^{1515}$ | ${ }^{32}$ |  |  |  |  |  |  |  | $\bigcirc$ |  |  |  | 1515 |  | 0 |  |  |  |  |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  | 0 | 0 |
| 155 | ${ }_{28}$ | 0 | ${ }_{26}$ | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | $\begin{array}{r}155 \\ 15 \\ \hline 1505\end{array}$ | 0 | 0 | 0 | 0 | 0 | 1 | 11 | 11 | 5 | 1 | ： | $\bigcirc$ | ： | $\bigcirc$ | ${ }_{1.1}^{1.8}$ | ${ }_{5.7}^{6.7}$ | ： | ： | $\bigcirc$ | $\bigcirc$ | 0 | 0 |
|  | ${ }_{2}^{30}$ | 0 | ${ }_{2}^{30}$ | 0 | $\bigcirc$ | 0 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 1600 1615 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 10 10 | $\begin{array}{r}13 \\ 8 \\ 8 \\ \hline\end{array}$ | ${ }_{3}^{6}$ |  | $\bigcirc$ | $\bigcirc$ |  | $\bigcirc$ | ${ }_{398}^{2.2}$ | 7.9 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 0 |
| 1630 | 25 | 0 | ${ }_{26}^{22}$ | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1630 165 165 | $\bigcirc$ | 0 | 0 | ： | 0 |  | 12 17 | 8 | 2 | 1 | ： | 0 | 0 | 0 | ${ }^{1} 1$. | ${ }_{6}^{6.6}$ | ： | 0 | 0 | 0 | 0 | 0 |
| 177 | ${ }_{35}^{26}$ | 0 | 32 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1700 | 0 | 0 | 0 | 0 | 0 | 9 | 9 | 13 | 2 | 0 | 0 |  | 0 | 0 | ${ }^{38.8}$ | 3.7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1775 1730 | 33 <br> 31 | $\bigcirc$ | 31 28 28 | 1 | 1 | $\bigcirc$ | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ： |  | 1715 1730 | 0 | $\bigcirc$ | $\bigcirc$ | ： | $\bigcirc$ | 2 | ${ }_{1}^{10}$ | 13 <br> 8 | 5 | ${ }_{3}^{1}$ | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{1.6}^{0.6}$ | 5.5 9.1 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | O |
| 175 | ${ }^{33}$ | 0 | 30 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |  | 175 | 0 | 0 | 0 | 0 | 0 | 6 | 16 | 9 | ${ }_{2}$ | 0 | 0 | 0 | 0 | 0 | 38.7 | 2.2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1885 <br> 1815 | ${ }_{26}^{20}$ | ${ }_{0}$ | ${ }_{2} 19$ | ${ }_{0}^{0}$ | 1 | $\bigcirc$ | － | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | － |  | 1800 1815 | ${ }_{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | $\bigcirc$ | ： | 5 | 7 | 10 | ${ }_{3}^{1}$ | 1 | ： | $\bigcirc$ | ： | 0 | 39.8 388 | 3． 3.8 | ： | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ | $\bigcirc$ | ${ }_{0}^{0}$ |
| 1830 | 20 | $\bigcirc$ | 19 | $\bigcirc$ | 1 |  | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ |  | $\begin{array}{r}1830 \\ \hline 185\end{array}$ | 0 | 0 | $\bigcirc$ | 0 | 2 | 1 | ${ }^{8}$ | 8 | 1 | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }^{0.3}$ | ． 8 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ |
| 1900 | ${ }_{17}^{26}$ | $\bigcirc$ | ${ }_{16}^{25}$ | $\bigcirc$ | 1 | 0 | － | 0 | 0 | $\bigcirc$ | 0 |  | 1800 | ${ }_{0}$ | $\bigcirc$ | 0 | 0 | 0 |  | 5 | ${ }_{7}$ | 1 | 0 | ： | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{38.7}$ | 2.5 | ： | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ | 0 | 0 |
| 1915 1930 | 21 16 | $\bigcirc$ | ${ }_{1}^{20}$ | 1 | 1 | $\bigcirc$ | \％ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 1915 1930 198 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 1 |  | ${ }_{3}^{6}$ | 8 | ${ }_{1}^{2}$ | $\bigcirc$ | ： | 0 | $\bigcirc$ | $\bigcirc$ | ${ }^{38.8}$ | ${ }_{3.3}^{3.8}$ | $\bigcirc$ | 0 | $\bigcirc$ | 0 | 0 | 0 |
| 195 | 12 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 195 | 0 | 0 | 0 | 0 |  | 0 | ${ }^{3}$ | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 2. | ${ }_{8.5}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }_{200}^{2000}$ | 19 | $\bigcirc$ | ${ }_{17} 18$ | 0 | 1 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 0 |  | ${ }_{2015}^{2000}$ | ${ }_{0}$ | ${ }_{0}$ | 0 | $\bigcirc$ | 1 |  | 11 9 |  |  |  | ： |  |  | $\bigcirc$ | ${ }_{2.1}^{38.1}$ | ${ }_{51.5}^{0.7}$ | － | $\bigcirc$ | － |  | 0 | ： |
| 2030 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2030 | 0 | 0 | 0 |  | 0 |  | 3 |  | 1 |  | 0 | 0 |  | 0 | ${ }^{2.1}$ ． 6. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 205 2100 | ${ }_{10}^{9}$ | ： | 888 | ： | $!$ | ： | ： | $\stackrel{0}{0}$ | － | ： | ： |  | 205 200 | $\bigcirc$ | \％ | 0 | $\stackrel{0}{0}$ | 0 | ${ }_{2}^{2}$ | ${ }_{0}^{3}$ | 3 | ${ }_{3}^{1}$ | 0 | ： | $\bigcirc$ | ： | $\bigcirc$ | 38．5． |  | ： | ： | ： | $\stackrel{0}{0}$ | $\bigcirc$ | ： |
| ${ }_{2115}^{2115}$ |  |  | 3 | 0 | 1 |  | 0 | 0 | 0 | 0 | 0 |  | ${ }_{2115}^{2115}$ | 0 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | ${ }_{5}$ | 3 | 1 | 0 | 0 | 0 | $\bigcirc$ | 0 | $\bigcirc$ |  |  | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 0 |
| 215 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{215}$ |  | 0 | 0 | 0 |  |  | 3 | 1 | 0 | 0 | 0 | 0 |  | 0 | ${ }_{35} 7^{\text {\％}}$ ： |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 2215 | 5 |  | 5 | 0 | － |  |  | 8 | 0 | 0 | 0 |  | ${ }_{2215}^{2200}$ |  | 0 | 0 | $\bigcirc$ | 0 |  | ${ }_{3}$ |  | O | $\bigcirc$ | 0 |  |  | 0 | ${ }^{37.3}{ }^{\text {a }}$ ． |  |  |  |  |  |  | ： |
| 2215 <br> 225 <br> 225 | ${ }_{6}^{6}$ | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{22}^{2230}$ | 0 | 0 | 0 | 0 | 0 | 2 | ${ }_{2}$ | ${ }_{2}$ | 0 | 0 | 0 |  |  | 0 | ${ }_{377}^{37.7}$ ． |  | 0 | 0 | 0 |  | 0 | \％ |
| 225 2300 | 5 | － |  | ： | 1 | 0 | ： | 0 | ： | $\bigcirc$ | $\bigcirc$ |  | ${ }_{2300}^{225}$ | $\stackrel{0}{0}$ | $\stackrel{0}{0}$ | ： |  | $\bigcirc$ |  |  |  | ${ }_{1}$ | $\bigcirc$ | ： | ： | $\bigcirc$ | 0 | ${ }^{36.9}{ }^{\text {．}}$ ． |  | ： | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{\circ}$ | 0 | ： |
| 2315 2380 | ${ }_{2}^{6}$ | 0 | ${ }_{2}^{6}$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ |  | ${ }_{2315}^{2315}$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 3 | 1 | 2 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 36．5． |  | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| 235 |  | 0 |  | 0 |  |  | 0 | 0 |  |  | 0 |  | 235 | 0 | 0 |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 37.6 |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 062 | 1425 | 6 | ${ }^{1324}$ | 4 | 85 |  | 4 | 2 | O |  | 0 |  | O7 02 |  | － | 9 | 10 | ${ }_{18}$ | 181 | 570 | 464 | 171 | ${ }^{3}$ | ， |  |  |  | 399 | 45 | ， | 007 |  | － |  | 0 |
| ${ }^{0600}$ | 1685 | 6 | －1507 | 5 | 94 |  | 4 | 2 |  | O |  |  | － 060 |  |  | 9 | 10 | 18 | 191 | 657 | 533 | 196 | ${ }^{3}$ | ， |  |  |  | 㖪 | 45 |  | 0062 |  |  |  | 0 |
| 0 | 1728 |  | 1543 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| 0000 | 172 |  |  |  |  |  |  |  |  |  |  |  | 0000 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 |  | 451 |  |  | 0 |  |  | 0 |

\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline $1^{\text {me }}$ \& otal \& $\mathrm{cls}_{1}$ \& $\underset{\substack{\mathrm{Cls} \\ 2}}{ }$ \& ${ }_{\substack{\text { cls } \\ 3}}$ \& $\underset{4}{\text { Cls }}$ \& $\underset{\substack{\text { cls } \\ 5}}{ }$ \& $\underset{6}{\text { cls }}$ \& $\underset{\substack{\text { cls } \\ 7}}{ }$ \& ${ }_{8}^{\mathrm{Cls}}$ \& $\underset{9}{\text { cls }}$ \& ${ }_{\substack{\text { cls } \\ 10}}$ \& Fix1 \& ${ }_{1}^{\text {ime }}$ \& $$
\begin{gathered}
\text { Vbin } \\
0 \\
10
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
10 \\
15
\end{gathered}
$$ \& $$
\begin{gathered}
\text { vin } \\
15 \\
20
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
\text { 20 } \\
25
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
25 \\
30
\end{gathered}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
30 \\
35
\end{gathered}
$$ \& $$
\begin{aligned}
& \text { Vbin } \\
& 35 \\
& 30
\end{aligned}
$$ \& $$
\begin{aligned}
& \text { Vbin } \\
& 40 \\
& 45
\end{aligned}
$$ \& $$
\begin{aligned}
& \text { bbin } \\
& 45 \\
& 50
\end{aligned}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
50 \\
60
\end{gathered}
$$ \& $$
\begin{aligned}
& \text { Vbin } \\
& 600 \\
& 70
\end{aligned}
$$ \& $$
\begin{gathered}
\text { Vbin } \\
70 \\
80
\end{gathered}
$$ \& $$
\begin{aligned}
& \text { Vbin } \\
& 80 \\
& 80 \\
& 90
\end{aligned}
$$ \& $$
\begin{gathered}
\text { voin } \\
90 \\
900
\end{gathered}
$$ \& Mean \& $\mathrm{v}_{\substack{\text { vop } \\ 85}}$ \& $$
\begin{gathered}
\text { IPSL } \\
60
\end{gathered}
$$ \& $$
\underset{60}{\text { PSTLO }}
$$ \& $$
\begin{gathered}
15 L 1 \\
68 \\
\text { ACPO }
\end{gathered}
$$ \& $$
\begin{aligned}
& 15 \mathrm{LL1} \mathrm{\%} \\
& 68 \\
& \text { ACPO }
\end{aligned}
$$ \& $$
\begin{aligned}
& 15 L 2 \\
& 75 \\
& \text { DF }
\end{aligned}
$$ \& $$
\begin{gathered}
152 \% \\
\hline 50 \\
\text { DF }
\end{gathered}
$$ <br>
\hline 0000
0015 \& 3 \& 0 \& 3 \& 0 \& 0 \& \& 0 \& 0 \& ： \& 0 \& 0 \& \& 0000
0015 \& 0 \& 0 \& \& 0 \& \& ， \& \& \& \& \& $$
\begin{aligned}
& 70 \\
& 0 \\
& 0
\end{aligned}
$$ \& \& \& \& ${ }^{37.1} 1.6$ \& \& 0 \& $$
\begin{aligned}
& 0 \\
& 0
\end{aligned}
$$ \& $$
\begin{gathered}
\text { CPO } \\
0 \\
0
\end{gathered}
$$ \& \& \& 0 <br>
\hline 0030
005 \& 1 \& \& 1 \& O \& 0 \& 0 \& 0 \& 0 \& \& 0 \& 0 \& \& OOS30 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1 \& 0 \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& 0 \& 0 \& ${ }^{3.9} 9$. \& \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& 0 \& 0 <br>
\hline 005
0100 \& 2 \& 0 \& 2 \& $\bigcirc$ \& ： \& $\bigcirc$ \& ： \& $\bigcirc$ \& ： \& ${ }_{0}^{0}$ \& ： \& \& － 005 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 1 \& ${ }_{0}$ \& 1 \& $\stackrel{0}{0}$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $1.7{ }^{1.7}$ \& \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\stackrel{0}{0}$ \& $\bigcirc$ \& 0 <br>
\hline － $\begin{aligned} & 0115 \\ & 0130\end{aligned}$ \& ${ }_{2}^{3}$ \& ： \& ${ }_{3}^{3}$ \& \％ \& \％ \& $\bigcirc$ \& ： \& 0 \& \％ \& $\bigcirc$ \& 0 \& \& 0115
0130 \& $\bigcirc$ \& 0 \& 0 \& 0 \& 0 \& 0 \& ${ }_{1}$ \& ${ }_{1}^{2}$ \& 1 \& $\bigcirc$ \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{39.5}^{3.5}$ ． \& \& $\bigcirc$ \& $\bigcirc$ \& 0 \& ${ }_{0}$ \& $\bigcirc$ \& $\bigcirc$ <br>
\hline 015 \& 1 \& 0 \& 0 \& 0 \& 1 \& \& O \& 0 \& 0 \& 0 \& 0 \& \& 015 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& ${ }_{0}^{0.3}$ \& \& 0 \& 0 \& \& \& \& 0 <br>
\hline ${ }_{0}^{0215}$ \& 1 \& ${ }_{0}$ \& 1 \& ${ }_{0}^{0}$ \& 1 \& 0 \& ${ }_{0}$ \& ${ }_{0}^{0}$ \& $\bigcirc$ \& ${ }_{0}$ \& $\bigcirc$ \& \& － 02200 \& ${ }_{0}^{0}$ \& ${ }_{0}^{0}$ \& $\bigcirc$ \& ${ }_{0}$ \& 0 \& ${ }_{0}^{2}$ \& 1 \& ${ }_{1}^{1}$ \& 1 \& 1 \& ： \& 0 \& 0 \& $\bigcirc$ \& $\begin{array}{r}0.3 \\ 2 \\ \hline\end{array}$ \& \& ： \& $\bigcirc$ \& ： \& ${ }_{0}^{0}$ \& $$
0
$$ \& － <br>
\hline 0230 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 0230 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 025
0300 \& 1 \& $\bigcirc$ \& 1 \& $\bigcirc$ \& \％ \& $\bigcirc$ \& \％ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \％ \& \& 025
030 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 1 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 38.2 \& \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 <br>
\hline 0315 \& 1 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& ${ }^{0315}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& ． \& 0 \& ${ }_{0}$ \& 0 \& 0 \& 0 \& 0 \& 5. \& \& 0 \& 0 \& 0 \& 0 \& 0 \& ${ }_{0}$ <br>
\hline － \& ${ }_{2}^{3}$ \& ： \& 2 \& $\bigcirc$ \& ： \& $\bigcirc$ \& 0 \& 0 \& $\bigcirc$ \& ： \& ： \& \& － 035 \& $\bigcirc$ \& ！ \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& 1 \& ${ }_{1}^{2}$ \& ${ }_{1}$ \& 0 \& 0 \& $\bigcirc$ \& 0 \& ${ }_{8.7}^{6.7}$ \& \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& － <br>
\hline 000 \& 1 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 000 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 5.6 ． \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline － 15 \& 1 \& $\bigcirc$ \& 1 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& \& 015
0
0 \& 0 \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& ${ }^{29}{ }^{2}$ ． \& \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& <br>
\hline \& 1 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 05 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& ${ }_{5.3} 59$. \& \& 0 \& 0 \& 0 \& 0 \& 0 \& ${ }_{0}$ <br>
\hline 0500 \& 1 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 0 \& 0 \& 0 \& \& 0500

0515 \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 1 \& \& 0 \& 0 \& 0 \& $\bigcirc$ \& 9.2. \& \& 0 \& $\bigcirc$ \& 0 \& 0 \& 0 \& 0 <br>
\hline O530 \& 6 \& 0 \& 6 \& 0 \& 0 \& $\bigcirc$ \& － \& 0 \& 。 \& 0 \& 0 \& \& ${ }_{053}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 2 \& 2 \& 1 \& ${ }_{0}$ \& 1 \& 0 \& 0 \& 0 \& 0 \& 39．1． \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 055 \& 1 \& 0 \& 1 \& 0 \& 0 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 055 \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& 0 \& 1 \& $\bigcirc$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& ${ }^{37.3}$ ． \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline O6615 \& \& $\bigcirc$ \& 3 \& $\bigcirc$ \& 1 \& ${ }_{0}$ \& － \& 0 \& $\bigcirc$ \& 0 \& 0 \& \& ${ }_{0615}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& 1 \& 2 \& 1 \& $\bigcirc$ \& ： \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 1.8. \& \& $\bigcirc$ \& $\bigcirc$ \& ： \& $\stackrel{0}{0}$ \& $\bigcirc$ \& ： <br>
\hline 0630 \& 12 \& 0 \& ${ }_{5}^{12}$ \& 0 \& $\bigcirc$ \& 0 \& \％ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \& 0630
065 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 1 \& ${ }_{1}^{2}$ \& ${ }_{3}$ \& 5 \& 1 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 38．7． \& 3.7 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 <br>
\hline 0700 \& 10 \& 0 \& 8 \& 0 \& 2 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 0700 \& \& 0 \& 0 \& 0 \& 2 \& 0 \& 2 \& 3 \& 2 \& 1 \& 0 \& 0 \& \& \& \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 0715
0730 \& ${ }_{12}^{8}$ \& $\bigcirc$ \& ＋12 \& $\bigcirc$ \& ！ \& \％ \& ！ \& 0 \& $\bigcirc$ \& ： \& ： \& \& 0715
0730 \& $\bigcirc$ \& ： \& ： \& ： \& $\bigcirc$ \& 0 \& 3
5 \& 3 \& 1 \& $\bigcirc$ \& ： \& 0 \& 0 \& $\bigcirc$ \& ${ }_{2.1}^{1.3}{ }^{\text {a }}$ \& 6.7 \& ： \& $\bigcirc$ \& ： \& ${ }_{0}^{0}$ \& $\bigcirc$ \& ： <br>
\hline \& \& 0 \& ${ }^{13}$ \& 0 \& 1 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 075 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 5 \& ${ }^{3}$ \& 2 \& \& 0 \& 0 \& 0 \& 0 \& 38.8 \& 7.5 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 0800
0815 \& 5 \& $\bigcirc$ \& 5 \& 0 \& $\bigcirc$ \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& \& O800 \& 0 \& 0 \& 0 \& \％ \& $\bigcirc$ \& ！ \& ${ }_{3}^{1}$ \& ${ }_{3}^{2}$ \& ${ }_{3}^{2}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{19}^{2.5}$ ． \& \& $\bigcirc$ \& \％ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ <br>
\hline 0830 \& 19 \& 1 \& 15 \& 0 \& 3 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 0830 \& 0 \& 0 \& 1 \& \& 0 \& 0 \& 6 \& 10 \& 2 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 085
0900 \& ${ }_{1}^{16}$ \& ${ }_{2}$ \& 15
10 \& 1 \& 1 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& \& 085
0900 \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{2}$ \& $\bigcirc$ \& 0 \& 0 \& ${ }_{0}^{6}$ \& ${ }_{7}^{8}$ \& 2 \& ${ }_{3}^{0}$ \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{2}^{1.9}$ \& ${ }_{51.3}^{6.2}$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& \％ <br>
\hline 0915 \& 21 \& 0 \& 20 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 0915 \& 0 \& 0 \& 0 \& 0 \& 0 \& ${ }^{2}$ \& \& \& 3 \& ${ }^{3}$ \& 0 \& 0 \& 0 \& 0 \& ${ }^{1.6}$ \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline ${ }^{095}$ \& ${ }_{28}^{28}$ \& 5 \& 20 \& 0 \& 3 \& $\bigcirc$ \& 。 \& 0 \& 0 \& 0 \& 0 \& \& O95 \& 0 \& 0 \& 0 \& $\bigcirc$ \& 2 \& 5 \& ${ }_{8}^{10}$ \& 9 \& 1 \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& ${ }_{39.1}^{37.8}$ \& ${ }^{2.7}$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\stackrel{0}{0}$ \& $\bigcirc$ \& ${ }_{0}^{0}$ <br>
\hline \& \& \& \& \& 0 \& \& \& \& \& \& \& \& 1000 \& \& 0 \& \& \& \& \& \& \& 5 \& \& $\bigcirc$ \& \& \& 0 \& \& \& \& 0 \& \& \& $\bigcirc$ \& 0 <br>
\hline ${ }_{1030}^{1015}$ \& ${ }_{30}^{27}$ \& ${ }_{0}$ \& ${ }_{27}^{25}$ \& ${ }_{0}$ \& ${ }_{2}$ \& 0 \& 0 \& 0 \& 1 \& ${ }_{0}$ \& 0 \& \& 1015
1030 \& ${ }_{0}$ \& ${ }_{0}$ \& ${ }_{0}$ \& ${ }_{0}$ \& 1 \& ${ }^{3}$ \& 10 \& ${ }_{9}^{8}$ \& 1 \& ${ }_{3}^{0}$ \& ： \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 38.5
1.3
1.7 \& ${ }_{6}^{3.2}$ \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& ${ }_{0}^{0}$ <br>
\hline 105 \& 19 \& \& 18 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 105 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1 \& 5 \& 9 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 1.7 \& 5. \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 1115 \& ${ }_{21}^{25}$ \& $\bigcirc$ \& 21 \& 0 \& 0 \& \％ \& 。 \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& \& ${ }_{1115}^{1100}$ \& ${ }_{0}^{0}$ \& \％ \& $\stackrel{0}{0}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 10 \& ${ }_{13}^{11}$ \& ${ }^{3}$ \& ！ \& $\bigcirc$ \& $\bigcirc$ \& $\stackrel{0}{0}$ \& 0 \& 2.7 \& 6.1 \& $\stackrel{0}{0}$ \& $\bigcirc$ \& $\stackrel{0}{0}$ \& $\stackrel{0}{0}$ \& ${ }_{0}$ \& ${ }_{0}^{0}$ <br>
\hline \& \& 0 \& \& 0 \& ${ }^{2}$ \& \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 1130 \& \& 0 \& \& 0 \& \& \& 7 \& \& 1 \& \& \& \& \& 0 \& 39.2 \& \& \& \& \& 0 \& 0 \& 0 <br>
\hline 115
1200 \& 29
37 \& 1 \& ${ }_{35}^{26}$ \& 0 \& ${ }_{2}^{2}$ \& $\bigcirc$ \& － \& $\bigcirc$ \& $\bigcirc$ \& ： \& ： \& \& 115
1200

12 \& $\bigcirc$ \& ！ \& 1 \& ： \& $\bigcirc$ \& ${ }_{1}^{5}$ \& ${ }_{18}^{88}$ \& 10 \& 1 \& ${ }_{2}^{0}$ \& ： \& ： \& $\bigcirc$ \& $\bigcirc$ \& | 38.3 |
| :---: |
| 0.8 | \& ${ }_{6}^{2.7}$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& \％ <br>

\hline ${ }^{1215}$ \& ${ }^{26}$ \& 0 \& ${ }^{25}$ \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 1215 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 8 \& 10 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0.8 \& 5.3 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>

\hline | 1230 |
| :--- |
| 125 |
| 1250 | \& ${ }_{31}^{39}$ \& 1 \& －38 \& $\bigcirc$ \& 1 \& 0 \& 1 \& ${ }_{0}$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& \& 1230

125
12 \& ${ }_{0}$ \& ${ }_{0}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 2 \& ＋13 \& 19 \& ${ }_{2}^{2}$ \& ${ }_{0}^{2}$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ${ }^{1.7}$ \& 2．${ }^{\text {．}}$ \& 1 \& \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{0}^{0}$ <br>
\hline 130 \& 30 \& 0 \& 25 \& 0 \& 5 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 1300 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 12 \& 11 \& \& 2 \& 0 \& 0 \& \& 0 \& ${ }_{1.2}$ \& 5.6 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 1315
1330 \& ${ }_{0}^{26}$ \& ： \& 26
37 \& $\bigcirc$ \& ${ }_{3}$ \& \％ \& \％ \& 0 \& $\bigcirc$ \& ： \& ： \& \& 1315
1330 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& ： \& ${ }_{0}$ \& 13 \& 12
15 \& 9 \& ${ }^{3}$ \& 1 \& ： \& $\bigcirc$ \& ： \& $\bigcirc$ \& ${ }^{1.3}$ \& ${ }_{5.8}^{5}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\stackrel{0}{0}$ \& $\bigcirc$ \& $\bigcirc$ <br>
\hline ${ }^{13} 5$ \& ${ }^{39}$ \& 0 \& ${ }^{38}$ \& 1 \& 0 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 135 \& \& 0 \& 0 \& 0 \& \& \& 13 \& ${ }^{16}$ \& 3 \& 2 \& 0 \& 0 \& \& 0 \& \& \& \& 0 \& \& \& 0 \& 0 <br>
\hline 115 \& ${ }_{29}$ \& 1 \& ${ }_{25}^{22}$ \& $\bigcirc$ \& ${ }_{3}$ \& \％ \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& \& 115 \& ${ }_{0}$ \& 0 \& $\bigcirc$ \& ${ }_{1}$ \& $\bigcirc$ \& 1 \& 1 \& ${ }_{16}^{16}$ \& 3
5 \& ${ }_{3}^{0}$ \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& ${ }_{3}^{39.8}$ \& 8.5 \& ： \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 <br>
\hline 130 \& ${ }^{28}$ \& \& ${ }^{28}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 130 \& 0 \& 0 \& 0 \& 0 \& 0 \& 2 \& 7 \& 15 \& 1 \& ${ }^{3}$ \& 0 \& 0 \& 0 \& 0 \& 2 \& 6.1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline $150{ }^{5}$ \& ${ }_{27}^{27}$ \& ${ }_{0}$ \& ${ }_{27}^{21}$ \& ${ }_{0}^{0}$ \& ${ }_{0}^{3}$ \& 0 \& $\bigcirc$ \& ${ }_{0}$ \& $\bigcirc$ \& $\bigcirc$ \& － \& \& 1500 \& ${ }_{0}^{0}$ \& \％ \& $\bigcirc$ \& \％ \& ${ }_{0}$ \& ${ }_{3}^{2}$ \& ${ }_{10}^{8}$ \& ${ }_{7}^{12}$ \& ${ }_{5}^{2}$ \& 1 \& 1 \& ${ }_{0}$ \& $\bigcirc$ \& ${ }_{0}$ \& 1.9 \& 7.6 \& 1 \& 3.70 \& ${ }_{0}^{\circ}$ \& $\bigcirc$ \& ${ }_{0}^{0}$ \& $\bigcirc$ <br>
\hline 1515 \& 3 \& 0 \& \& 0 \& 1 \& \& 0 \& 0 \& 0 \& 0 \& 1 \& \& 1515 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& ${ }^{13}$ \& 10 \& 11 \& 0 \& 0 \& \& \& 0 \& \& 6.7 \& 0 \& \& \& 0 \& 0 \& 0 <br>
\hline 155 \& ${ }_{26}^{32}$ \& － \& ${ }_{22}^{29}$ \& 0 \& ${ }^{3}$ \& $\bigcirc$ \& － \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{0}^{0}$ \& 0 \& \& $\begin{array}{r}1530 \\ 155 \\ \hline\end{array}$ \& $\bigcirc$ \& ： \& ： \& ： \& ： \& \& ${ }_{13}^{16}$ \& ${ }_{5}^{6}$ \& ${ }^{3}$ \& 3 \& ： \& ： \& 0 \& ： \& ${ }_{39}^{0.6}$ \& ${ }_{6.1}^{7.7}$ \& ： \& $\bigcirc$ \& $\bigcirc$ \& $\stackrel{0}{0}$ \& $\bigcirc$ \& $\bigcirc$ <br>
\hline 1600 \& 30 \& 1 \& ${ }^{28}$ \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 1600 \& 0 \& 0 \& 1 \& 0 \& 0 \& 0 \& 8 \& 16 \& 3 \& ${ }^{2}$ \& 0 \& 0 \& 0 \& 0 \& 1.9 \& 6.2 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline ${ }_{1615}^{1630}$ \& ${ }_{37}$ \& ${ }^{\circ}$ \& ${ }_{3}^{30}$ \& 0 \& ${ }^{2}$ \& \& \& \& $\bigcirc$ \& $\bigcirc$ \& 0 \& \& 1615
1630 \& \& ${ }_{0}$ \& \& $\bigcirc$ \& \& 1 \& ${ }_{9}^{5}$ \& $1{ }_{12}^{10}$ \& \& \& ${ }_{2}$ \& 1 \& \& $\bigcirc$ \& \& ${ }_{9.1}^{9.1}$ \& ${ }_{3}^{0}$ \& \& 1 \& \& $\bigcirc$ \& ${ }_{0}^{0}$ <br>
\hline 165 \& 29 \& 0 \& 29 \& 0 \& $\bigcirc$ \& \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 165 \& 0 \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& \& 21 \& 3 \& 1 \& 0 \& 0 \& 0 \& 0 \& 2. \& 5.2 \& 0 \& \& 0 \& \& 0 \& <br>
\hline （1715 \& ${ }_{2}^{18}$ \& ： \& ${ }_{2}^{16}$ \& ： \& ${ }_{0}^{2}$ \& \％ \& ： \& $\stackrel{0}{0}$ \& ： \& $\stackrel{0}{0}$ \& ： \& \& 1700
1715 \& $\stackrel{0}{0}$ \& \％ \& \％ \& ： \& 0 \& ${ }^{3}$ \& 8 \& 8 \& 9 \& 0 \& ： \& ： \& ： \& $\bigcirc$ \& ${ }_{2.3}^{0.8}$ \& ${ }^{6.9}$ \& $\bigcirc$ \& ： \& ： \& $\bigcirc$ \& ： \& － <br>
\hline 1730 \& ${ }_{22}^{22}$ \& 0 \& ${ }_{21}^{21}$ \& 0 \& 1 \& \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& \& 1730 \& 0 \& 0 \& 0 \& $\bigcirc$ \& 1 \& $\bigcirc$ \& 7 \& \& \& 3 \& 0 \& 0 \& 0 \& $\bigcirc$ \& ${ }_{2.1}^{2.9}$ \& 50.3 \& $\bigcirc$ \& 0 \& 0 \& \& 0 \& 0 <br>
\hline 1800 \& ${ }_{29}^{22}$ \& ${ }_{0}$ \& ${ }_{27}^{21}$ \& 0 \& 2 \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \& 175
1800 \& $\bigcirc$ \& ${ }_{0}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{1}$ \& ${ }_{9}^{7}$ \& ${ }_{17}{ }^{9}$ \& ${ }_{1}^{6}$ \& ${ }_{1}$ \& ： \& ${ }_{0}$ \& $\bigcirc$ \& 0 \& ${ }_{1.2}^{2.1}$ \& 6.7 \& 0 \& $\bigcirc$ \& \％ \& $\bigcirc$ \& ${ }_{0}$ \& 0 <br>
\hline 1815
1830 \& ${ }_{21}^{22}$ \& ${ }^{1}$ \& ${ }_{20}^{22}$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& \& 1815
1880 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 1 \& ${ }^{10}$ \& ${ }_{7}^{10}$ \& 1 \& 2 \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{3}^{39.8}$ \& ${ }_{71}^{2.5}$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& 0 \& $\bigcirc$ <br>
\hline 185 \& ${ }_{18}^{21}$ \& 0 \& ${ }_{18}^{20}$ \& 0 \& 0 \& $\bigcirc$ \& － \& 0 \& 。 \& 0 \& 0 \& \& 185 \& ${ }_{0}^{0}$ \& 0 \& 0 \& \％ \& 0 \& 2 \& 3 \& 6 \& 5 \& 2 \& 0 \& 0 \& 0 \& 0 \& ${ }_{3}{ }_{3}$ \& ${ }_{9.3}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& <br>
\hline 1915 \& 16
17 \& \& ${ }_{17}^{16}$ \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& 5 \& 7 \& 7 \& \& \& \& \& $\bigcirc$ \& ${ }_{3 .}^{2.8}$ \& \& \& \& \& \& $\bigcirc$ \& $\bigcirc$ <br>
\hline 1930 \& 10 \& 0 \& 10 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 1930 \& 0 \& 0 \& 0 \& 0 \& \& 0 \& 1 \& 7 \& 2 \& \& 0 \& 0 \& 0 \& 0 \& ${ }_{2.7} 2$. \& \& 0 \& 0 \& 0 \& 0 \& \& 0 <br>

\hline ${ }_{2000}$ \& 13 \& 0 \& 11 \& 0 \& ${ }^{2}$ \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& \& 195 \& \& 0 \& $\bigcirc$ \& $\bigcirc$ \& \& \& | 3 |
| :---: |
| 3 | \& \& \& \& 0 \& 0 \& \& $\bigcirc$ \& ${ }_{39 .}^{39.6}$ ． \& ． 1 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \& 0 \& ： <br>

\hline 2015 \& 11 \& 0 \& 11 \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& ： \& \& ${ }_{2015}^{2015}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ： \& $\bigcirc$ \& 2 \& ${ }_{0}^{2}$ \& 5 \& ${ }_{3}$ \& 2 \& $\bigcirc$ \& 0 \& ： \& $\bigcirc$ \& 2.2 \& 52 \& $\bigcirc$ \& 0 \& \％ \& $\bigcirc$ \& $\bigcirc$ \& ： <br>
\hline 205 \& 7 \& 。 \& 7 \& 0 \& 0 \& \& \& 0 \& \& 0 \& 0 \& \& 205 \& 0 \& 0 \& 0 \& 0 \& \& \& 3 \& \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline ${ }_{2}^{2100}$ \& 2 \& 0 \& 2 \& 0 \& 0 \& \& 0 \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& \& ${ }_{2}^{2100}$ \& 0 \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ${ }^{\circ}$ \& ${ }_{2}^{2}$ \& 0 \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 2.8 ． \& \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& 0 \& $\bigcirc$ <br>
\hline 2130 \& 6 \& 0 \& 6 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 2130 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 3 \& 1 \& 2 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1.1. \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 215
2200 \& 2 \& $\bigcirc$ \& ${ }_{2}$ \& $\bigcirc$ \& ： \& \& ： \& $\bigcirc$ \& ： \& 0 \& ： \& \& 215
2200 \& $\bigcirc$ \& $\bigcirc$ \& ： \& ： \& ： \& ${ }_{0}^{2}$ \& 1 \& ${ }_{1}^{2}$ \& ${ }_{0}^{0}$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& 38.
39.3 \& \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& $\bigcirc$ <br>
\hline ${ }_{2230}^{2215}$ \& 1 \& $\bigcirc$ \& 1 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ： \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& \& ${ }_{2235}^{2215}$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& 1 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& 0 \& 38．1． \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 225 \& 3 \& 0 \& 2 \& 0 \& 1 \& 。 \& 0 \& 0 \& 。 \& 0 \& 0 \& \& 225 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1 \& 1 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 37．1． \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 2300 \& ${ }^{3}$ \& 0 \& ${ }^{3}$ \& 0 \& 0 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& \& ${ }_{2}^{2300}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1 \& 0 \& ${ }_{1}^{2}$ \& 0 \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& ${ }^{3.1}$. \& \& 0 \& 0 \& $\bigcirc$ \& 0 \& 0 \& 0 <br>
\hline ${ }_{233}^{235}$ \& ${ }_{2}$ \& 0 \& 2 \& 0 \& 0 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 2330 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 0 \& 2 \& 0 \& \& 0 \& 0 \& 0 \& 0 \& 2.1 \& \& 0 \& 0 \& \& 0 \& 0 \& 0 <br>
\hline 23 5 \& \& \& \& 0 \& \& \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 235 \& 0 \& 0 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& 0 \& 0 \& \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& \& \& 0 \& \& \& \& 0 \& <br>
\hline  \& 1168 \& 99 \& 1084 \& 3 \& ${ }_{61}^{58}$ \& \& 2 \& \& \& \& ， \& \& O \& \& 0 \& 7 \& ， \& \& \& 390 \& 437 \& 177 \& 4 \& 4 \& ， \& \& － \& 11 \& 461 \& 5 \& 0428 \& \& 0087 \& \& 0 <br>
\hline O60 \& 1318 \& 99 \& ${ }^{1216}$ \& 4 \& 6 \& \& 2 \& \& \& O \& ， \& \& － 060 \& \& \& 7 \& ， \& 10 \& 109 \& 425 \& 498 \& 203 \& 5 \& 4 \& ， \& \& \& 411 \& 461 \& 5 \& －3393 \& \& 0076 \& \& <br>
\hline 0000 \& 1368 \& 19 \& 1276 \& 4 \& 65 \& \& 2 \& 0 \& \& 。 \& 1 \& \& 0000 \& 0 \& ． \& 7 \& \& 10 \& 116 \& 442 \& 513 \& 220 \& 54 \& 4 \& 1 \& 。 \& ． \& 411 \& 462 \& 5 \& 0365 \& 1 \& 0073 \& ． \& 0 <br>
\hline
\end{tabular}






Advanced Transport Research_EH

```
Globals
    Report Id CustomList-689
    Descriptor Advanced Transport Research_EH
    Created by MetroCount Traffic Executive
    Creation Time (UTC) 2019-10-28T10:15:15
                Legal Copyright (c)1997-2018 MetroCount
            Graphic header.gif
            Language English
            Country United Kingdom
                Time UTC + 0 min
        Create Version 5.0.6.0
                Metric Non metric
            Speed Unit mph
            Length Unit ft
            Mass Unit ton
Dataset
            Site Name 23233-016
        Site Attribute ESSEX HIGHWAYS
            File Name Q:\23233 Chelmsford 19371\Eco files\23233-016 0 2019-10-28 1012.EC1
            File Type Plus
            Algorithm Factory default axle
            Description !WALTHAM RD NORTH [60M]
                Lane 1
            Direction 7
        Direction Text 7- North bound AJB, South bound B]A.
            Layout Text Axle sensors - Paired (Class/Speed/Count)
            Setup Time 2019-10-09T10:44:22
            Start Time 2019-10-09T10:44:22
            Finish Time 2019-10-14T01:10:05
            Operator ATR
        Configuration 40 MC5600 80 00 14 6a 6a ? FC23XRWX MC56-L5 [MC55] (c)Microcom 19Oct04
Dataset
            Site Name 23233-016
            Site Attribute ESSEX HIGHWAYS
            File Name Q:\23233 Chelmsford 19371\Eco files\23233-016 0 2019-10-28 1013.EC1
                    File Type Plus
                    Algorithm Factory default axle
            Description !WALTHAM RD NORTH [60M]
                    Lane 1
            Direction 7
        Direction Text 7- North bound A]B, South bound B]A.
            Layout Text Axle sensors - Paired (Class/Speed/Count)
            Setup Time 2019-10-14T01:11:33
            Start Time 2019-10-14T01:11:33
            Finish Time 2019-10-23T20:06:33
                Operator ATR
            Configuration 40 MC5600 80 00 14 6a 6a ? FC23XRWX MC56-L5 [MC55] (c)Microcom 19Oct04
Profile
            Name Advanced Transport Research_EH
                        Title Advanced Transport Research
        Graphic Logo C:and SettingsDocuments3.21_on_us_logo_cmyk 50.BMP
                        Header
                    Footer
            Percentile 185
            Percentile 295
                    Pace }1
            Filter Start 2019-10-09T10:45:00
            Filter End 2019-10-23T20:06:33
        Class Scheme ARX
                            F Cls(1-10) Dir(N) Sp(0,120) Headway(J0) Span(0-328.084) Lane(0-16)
            Low Speed 0
            High Speed }12
            Posted Limit }6
            Speed Limits 6875606060000060
            Separation }0.00
        Separation Type Headway
            Direction North
Encoded Direction 1
```


## Advanced Transport Research EH

Column

| Time [-- | 24-hour time (0000-2359) |
| :---: | :---: |
| Total | Number in time step |
| Cls 1 | Class totals |
| Cls 2 | Class totals |
| Cls 3 | Class totals |
| Cls 4 | Class totals |
| Cls 5 | Class totals |
| Cls 6 | Class totals |
| Cls 7 | Class totals |
| Cls 8 | Class totals |
| Cls 9 | Class totals |
| Cls 10 | Class totals |
| Fix1 | User defined fixed text |
| Time [-- | 24-hour time (0000-2359) |
| Vbin 010 | Speed bin totals |
| Vbin 1015 | Speed bin totals |
| Vbin 1520 | Speed bin totals |
| Vbin 2025 | Speed bin totals |
| Vbin 2530 | Speed bin totals |
| Vbin 3035 | Speed bin totals |
| Vbin 3540 | Speed bin totals |
| Vbin 4045 | Speed bin totals |
| Vbin 4550 | Speed bin totals |
| Vbin 5060 | Speed bin totals |
| Vbin 6070 | Speed bin totals |
| Vbin 7080 | Speed bin totals |
| Vbin 8090 | Speed bin totals |
| Vbin 90100 | Speed bin totals |
| Mean | Average speed |
| Vpp 85 | Percentile speed |
| JPSL 60 | Number exceeding Posted Speed Limit |
| JPSL\% 60 | Percent exceeding Posted Speed Limit |
| JSL1 68 ACPO | Number exceeding Speed Limit 1 |
| ]SL1\% 68 ACPO | Percent exceeding Speed Limit 1 |
| JSL2 75 DFT | Number exceeding Speed Limit 2 |
| JSL2\% 75 DFT | Percent exceeding Speed Limit 2 |


| $\mathrm{l}^{\text {me }}$ | otal | $\mathrm{cls}_{1}$ | ${ }_{2}^{\text {cls }}$ | ${ }_{3}{ }_{3}$ | ${ }_{4} \mathrm{Cls}$ | $\begin{gathered} \mathrm{Cls} \\ 5 \end{gathered}$ | $\mathrm{cls}_{6}$ | ${ }_{7}{ }_{7}$ | ${ }_{8}^{\text {cls }}$ | ${ }_{9}^{\text {cls }}$ | $\begin{aligned} & \text { Cls } \\ & 10 \end{aligned}$ | Fix1 | ${ }_{i}^{\text {ime }}$ | $\begin{gathered} \text { voin } \\ 0 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 10 \\ 15 \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 15 \\ & 20 \end{aligned}$ | $\begin{aligned} & \text { Vbin } \\ & 20 \\ & 25 \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { Vbin } \\ & 25 \\ & 30 \end{aligned}$ | $\begin{gathered} \text { vinn } \\ 30 \\ 35 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 35 \\ 30 \\ 40 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 40 \\ 45 \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 45 \\ & 45 \end{aligned}$ | $\begin{aligned} & \text { Vbin } \\ & 50 \\ & 60 \end{aligned}$ | $\begin{aligned} & \text { Vin } \\ & 60 \\ & 70 \\ & \hline \end{aligned}$ | $\begin{gathered} \text { Vin } \\ 70 \\ 80 \end{gathered}$ | $\begin{gathered} \text { Voin } \\ 80 \\ 90 \\ \hline \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 90 \\ & 100 \end{aligned}$ | Mean | $\begin{gathered} \substack{\mathrm{vpp}^{8} \\ 8} \end{gathered}$ | $\begin{aligned} & \text { JPSL } \\ & \hline 60 \end{aligned}$ | ${ }_{60}{ }_{60} \text { PSL\% }$ | $\begin{gathered} 1 \mathrm{IL1} \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{gathered} 15 L 1 \% \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{aligned} & 1 \mathrm{IL}, \\ & 75 \\ & \mathrm{TF} \end{aligned}$ | $\begin{gathered} 1 \mathrm{SLL2} \\ 75 \\ \hline \mathrm{DF} \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 105 1100 | $\stackrel{25}{1}$ | 1 | ${ }_{3}^{2}$ | 1 | 3 | 2 | - | : | $\bigcirc$ | 0 | 0 |  | 105 1100 | 0 | 5 | ${ }_{1}^{6}$ |  |  | ${ }_{7}^{5}$ | $2{ }_{2}^{3}$ | 6 | 1 | ${ }_{0}^{0}$ | \% | ${ }_{0}^{0}$ | 0 | 0 | ${ }_{35.1}^{23.1}$ | 33.8 0.3 | : | 0 |  | $\begin{aligned} & 0 \\ & 0 \\ & 0 \end{aligned}$ | 0 |  |
| ${ }_{1115}^{115}$ | ${ }_{5}^{6}$ | 0 | 39 | 0 | 5 | 1 | 2 | 0 | 0 | 0 | 0 |  | 1115 1130 1 | $\bigcirc$ | 0 |  | 1 | ${ }_{3}$ | ${ }^{6}$ | 16 | 13 | 5 | 0 |  | 0 |  | 0 | 37.9 375 | ${ }^{.2}$ |  | 0 | 0 | 0 | 0 |  |
| (1130 | - ${ }_{51}^{53}$ | ${ }_{1}$ | 36 | $\bigcirc$ | ${ }_{7}$ | ${ }_{1}$ | ${ }_{6}$ | 1 | $\bigcirc$ | : | 0 |  | +1130 | $\bigcirc$ | : | ${ }_{2}^{0}$ | 1 |  | 13 17 | 20 15 | 10 9 | 2 | ${ }_{0}^{2}$ | 1 | : | $\bigcirc$ | $\bigcirc$ | 37.5 35.9 | ${ }_{2 .}^{3.6}$ | i | 1.961 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  |
| 1200 | 37 | 0 | ${ }^{31}$ | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 |  | 1200 | 0 | 0 | 0 | 1 |  | 6 | 13 | 9 |  |  | 0 |  | 0 | 0 | ${ }_{38.3}$ | ${ }^{2}$ |  | 1. 0 | 0 | 0 | 0 | 0 |
| 1215 1230 | ${ }_{55}^{6}$ | ${ }_{1}$ | ${ }_{8}^{32}$ | $\bigcirc$ | ${ }_{3}^{9}$ | : | ${ }_{3}^{2}$ | \% | \% | $\bigcirc$ | 1 |  | 1215 1230 | : | $\bigcirc$ | 0 | 2 | 7 6 | 11 12 | 16 20 | ${ }_{9}^{8}$ | 1 | ${ }_{3}$ | 0 | : | 0 | \% | 3.9 37.9 | 1.7 5 | : | $\bigcirc$ | : | \% | 0 |  |
| 125 | ${ }_{53}^{53}$ | 0 | 1 | 0 | 10 | 0 | 2 | 0 | 0 | 0 | 0 |  | 125 | 0 |  |  | 1 |  | 9 | 21 | 10 | 5 | 3 | 0 | 0 | 0 | 0 | 38. | 6.3 | 0 | 0 | 0 |  | 0 |  |
| (1300 | 53 52 | $\bigcirc$ |  | $\bigcirc$ | ${ }_{2}^{8}$ | : | ${ }_{2}^{1}$ | \% | \% | \% | \% |  | 1300 1315 | $\bigcirc$ | \% | \% | ${ }_{2}^{3}$ | ${ }_{11}^{2}$ | ${ }_{9}^{10}$ | 16 17 | ${ }_{9}^{13}$ | 9 | $\bigcirc$ | : | : | $\bigcirc$ | 0 | 38.2 35.2 | 5.6 1.8 | : | 0 | : | : | 0 | - |
| 1330 | 8 | 3 | ${ }^{35}$ | 0 | 9 | 1 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{135}^{135}$ | 0 | 0 | 0 | 0 |  | 7 | ${ }_{20}$ | ${ }^{13}$ | 2 | 2 | 0 | 0 | 0 | 0 | ${ }_{38.7}$ | 3.2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 100 | ${ }_{5}$ | 0 | ${ }_{6}$ | 0 | 5 | $\bigcirc$ | 2 | 0 | $\bigcirc$ | - | 1 |  | 135 100 1 | 1 | 1 | 0 | ${ }_{1}^{3}$ | 11 | 181818 | 18 20 | ${ }_{11}^{88}$ | 5 | 2 | - |  | 0 | \% | 37.5 37.8 |  | : | - | : | \% | 0 |  |
| 115 | 61 | 1 | 8 | 0 | 7 | 0 | 3 | 0 | 1 | 0 | 1 |  | 115 | 0 | 0 | 1 | 3 | 7 | 10 | 17 | 15 | 8 | 0 | 0 | 0 | 0 | 0 | 37 |  | 0 | 0 | 0 | 0 | 0 |  |
|  | 55 51 5 | 1 | ${ }_{2}$ | ${ }_{1}$ | 6 | ${ }_{1}^{2}$ | ${ }_{1}^{2}$ | \% | $\bigcirc$ | \% | ${ }_{2}^{0}$ |  | 1300 | $\bigcirc$ | \% | \% | 1 | ${ }_{1}$ | 11 | 17 16 | 11 15 | ${ }_{5}^{2}$ | ${ }_{1}$ | ${ }_{1}$ | $\bigcirc$ | 0 | 0 | ${ }_{39.5}^{35 .}$ | ${ }_{5.1}^{1.5}$ | 0 | $1.96{ }^{\circ}$ | 0 | \% | ${ }_{0}$ |  |
| 1500 |  |  |  |  | 6 | 1 |  |  | 0 | 0 | 0 |  | 1500 |  |  | 0 |  |  |  |  |  | 3 |  | 0 |  |  |  |  |  |  |  |  |  |  |  |
| (1515 | ${ }_{53}$ | 0 | ${ }^{7}$ | 2 | ${ }^{2}$ | 1 | 0 | 0 | 0 | 0 | 1 |  | $\begin{array}{r}1515 \\ \\ 155 \\ \hline\end{array}$ | 0 | 0 | 0 | 0 | ${ }_{5}^{3}$ | 12 | ${ }^{18}$ | 15 | ${ }^{3}$ | ${ }_{1}^{2}$ | : | 0 | 0 | 0 | ${ }_{39.5}^{38.5}$ | 3.9 | O | $\bigcirc$ | 0 | 0 | 0 |  |
| (1530 | 60 73 |  | 51 68 | 0 | 3 | $\bigcirc$ | 1 | ${ }_{0}$ | ${ }_{0}$ | 0 | $\bigcirc$ |  | +1530 | $\bigcirc$ | 0 | 0 | 1 | 5 | 6 | ${ }_{23}^{27}$ | ${ }^{8}$ | 9 |  | 0 | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ |  |  | 0 | $\bigcirc$ | 0 | O | ${ }_{0}$ |  |
| 1600 | 70 | 0 | 60 | 1 |  | 0 | 1 | 0 | 0 | 0 | 1 |  | 1600 | 0 | 0 | 0 | 1 | 1 | 5 | ${ }^{23}$ | ${ }^{31}$ | 7 | 2 | 0 | 0 | 0 | 0 | 0.5 | . 9 | 0 | 0 | 0 | 0 | 0 |  |
| 1615 | 87 | 0 | 76 | 0 | 9 | 0 | 2 | 0 | 0 | 0 | 0 |  | 1615 | 0 | 0 | 0 | 0 | 5 | 10 | 36 | 25 |  |  | 0 | 0 | 0 | 0 | 39.5 | . 5 | 0 | 0 | 0 | 0 | 0 |  |
| 1630 | 90 | ${ }^{2}$ | 75 | 1 | 11 | $\bigcirc$ | 1 | 0 | 0 | 0 | 0 |  | 1635 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | ${ }^{21}$ | 12 | 2 | 0 | 0 | 0 | 0 | 39.5 | ${ }_{5}^{5.3}$ | 0 | ${ }^{0}$ | 0 | 0 | 0 |  |
| 1700 | 85 | 0 | 80 | 2 | 2 | 0 | 0 | \% | $\bigcirc$ | $\bigcirc$ | 1 |  | 165 1700 | ${ }_{0}^{0}$ | $\stackrel{0}{0}$ | \% | 0 | ${ }_{2}$ | ${ }_{7}$ | ${ }_{31}^{30}$ | ${ }_{17}^{39}$ | ${ }_{21}^{11}$ | ${ }_{7}^{2}$ | ! | : | \% | $\bigcirc$ | ${ }_{1.7}^{0.8}$ | 5.3 8 | 1 | ${ }^{1.099}$ | : | \% | $\bigcirc$ |  |
| 1715 | ${ }_{9}^{111}$ | 1 | ${ }^{105}$ | 0 |  | $\bigcirc$ | 0 | 0 | 1 | $\bigcirc$ | $\bigcirc$ |  | 1715 1730 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | 1 | ${ }_{5}^{3}$ | 1 | ${ }^{6}$ | 16 | 6 | 0 |  | 0 | $\bigcirc$ | 1.1 | 5.5 | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ |  |
| 175 | ${ }_{83}$ | $\bigcirc$ | ${ }_{79}$ | $\bigcirc$ | 6 | : | ${ }_{0}$ | : | $\bigcirc$ | 0 | \% |  | 1730 175 | ${ }_{0}^{0}$ |  | ${ }_{0}$ | ${ }_{0}$ | \% |  | ${ }_{35}^{39}$ | 22 | ${ }_{19}^{16}$ | ${ }_{3}$ | 0 |  | \% | $\bigcirc$ | 1.1 1.6 1 | ${ }_{6.7}^{6.2}$ | : | $\bigcirc$ | \% | \% | ${ }_{0}^{0}$ |  |
| 1800 | 7 | 0 | 70 | 1 | 3 | 0 | 0 |  | 0 | 0 | 0 |  | 1800 | 0 | 0 | 0 | 0 | 0 | 5 | 15 | 29 | 15 | 9 | 1 | 0 | 0 | 0 | 3.5 | 9.8 | 1 | 1.351 | 0 | 0 | 0 |  |
| 1815 <br> 189 | ${ }^{58}$ | $\bigcirc$ | ${ }_{36}^{57}$ | $\bigcirc$ | 1 | : | $\bigcirc$ | - | $\bigcirc$ | $\bigcirc$ | \% |  | 1815 1830 1 | $\bigcirc$ | - | \% | $\bigcirc$ | 1 | 9 | 17 | 18 | 13 | $3_{3}^{3}$ | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $3{ }^{1} 8$ | ${ }_{7}^{7.8}$ | 1 | 1.72 | 0 | \% | $\bigcirc$ |  |
| 185 | 8 | 0 | 8 | 0 | 0 |  | 0 |  | 0 | 0 | 0 |  | 185 | 0 | 0 | : | 0 | 1 | 8 | 19 | ${ }^{13}$ | 7 | $\bigcirc$ | 0 | 0 | 0 | 0 | 39.2 | . 7 |  | 0 |  | 0 | 0 |  |
| 1900 1915 | 30 25 | \% | 27 25 | $\bigcirc$ | ${ }_{0}^{3}$ | : | : | : | $\bigcirc$ | 0 | : |  | 1900 1915 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | : | 3 2 | ${ }_{11}^{9}$ | 10 5 |  | ${ }_{3}^{1}$ | 0 | : | $\bigcirc$ | $\bigcirc$ | 1.5 | 7.1 | 0 | $\bigcirc$ | \% | : | $\bigcirc$ |  |
|  | 3 | 1 | 32 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1930 | 0 | 0 | 0 |  | 0 |  | 10 | 9 | 6 |  | 0 | 0 | 0 | 0 | 1.8 | 8.2 | 0 | 0 | 0 | 0 | 0 |  |
| 195 | 21 | 0 | ${ }^{20}$ | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 195 | 0 | 0 | 0 | $\bigcirc$ | 0 | 0 | ${ }_{5}^{10}$ | 8 | ${ }_{1}$ | 0 | 1 | 0 | 0 | $\bigcirc$ | ${ }^{11} 8$ | 5.1 | 1 | 62 | $\bigcirc$ | 0 | 0 |  |
| ${ }_{2015}$ | 15 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2015 | 0 | 0 | 。 | 0 | ${ }_{0}$ | 2 | ${ }_{6}$ | 2 | 1 | 1 | 0 | 0 | 0 | 0 | ${ }^{37} 8$ | ${ }_{5.1} 5$ | 0 | 0 |  | 0 | 0 |  |
| 2050 | ${ }^{16}$ | $\bigcirc$ | ${ }_{6}^{16}$ | $\bigcirc$ | $\stackrel{1}{1}$ | : | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | : |  | ${ }_{20}^{2030}$ | $\bigcirc$ | \% | : | 0 | \% | ${ }_{3}^{0}$ | ${ }_{2}^{8}$ | ${ }_{2}^{6}$ | \% | ${ }_{0}^{2}$ | : | : | $\bigcirc$ | $\bigcirc$ | ${ }^{11.6}$. | 7.3 | 0 | $\bigcirc$ | \% | \% | 0 |  |
| 2100 | 1 | 0 | 13 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2100 | $\bigcirc$ | 0 | 0 |  | 0 | 2 | ${ }_{3}^{3}$ |  |  | 1 | 0 | 0 | 0 | 0 | 2.3 |  | 0 | 9 | 0 | 0 | 0 |  |
| ${ }_{2130}$ | 15 | $\bigcirc$ | 13 | $\bigcirc$ | 2 | : | $\bigcirc$ | - | : | : | : |  | ${ }_{2}^{2115}$ | $\bigcirc$ | \% | : | : | ! | ${ }_{1}$ | 3 <br> 6 | 5 | ${ }_{3}^{0}$ | 1 | ! |  | \% | $\bigcirc$ | ${ }_{1.1}^{2.8}$ | ${ }^{56.8}$ |  | ${ }^{9.091}$ | \% | \% | 0 |  |
| 215 | ${ }^{8}$ | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }^{215}$ | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 39.6 |  | 0 |  | 0 | 0 | 0 |  |
| ${ }_{2215}^{2200}$ | ${ }_{12}^{13}$ | $\bigcirc$ | ${ }_{10}^{13}$ | $\bigcirc$ | $\bigcirc$ | 1 | 1 | - | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | ${ }_{2215}^{2200}$ | $\bigcirc$ | 0 | : | $\bigcirc$ | 0 | ${ }_{1}$ | 3 | ${ }_{2}^{5}$ | ${ }_{3}^{2}$ | ${ }_{0}^{2}$ | ! | : | 0 | 0 | ${ }_{0.3}^{5.8}$ | ${ }_{8.7}^{53.6}$ |  | 7.692 | 0 | \% | ${ }_{0}$ |  |
| ${ }^{2230}$ |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2230 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |  | 0 | 0 | 39.5 |  | 0 | 0 | 0 | 0 |  |  |
| 225 | ${ }^{3}$ | 0 |  | $\bigcirc$ | 2 | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | 0 |  | ${ }^{223} 5$ | $\bigcirc$ | 0 | - | $\bigcirc$ |  | 1 | 2 | ${ }_{2}$ | 1 | $\bigcirc$ | 0 |  | 0 | $\begin{aligned} & 0 \\ & 0 \end{aligned}$ |  |  |  | 0 | 0 | 0 | - |  |
| ${ }_{2315}^{235}$ | 12 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{2315}$ | 0 | 0 | 0 | 0 | 0 | 1 | 5 |  | 1 | 0 | 1 | 0 | 0 | 0 | 1.8 | 8.5 |  | 8.333 | 0 | 0 | 0 |  |
| 2330 | 3 | 0 | $3^{3}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }^{2330}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1.7. |  | 0 | 0 | 0 | 0 | 0 |  |
| 源 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 2.2 |  |  |  |  |  |  |  |
| 0719 | 2010 | 16 | 1755 | 11 | 168 | 10 | 39 | 1 | 2 | 0 | 8 |  | 0719 | 1 | 6 | 12 | 31 | 112 | 293 | 715 | 526 | ${ }^{236}$ | 73 | 5 | 0 | 0 | 0 | 389 | 452 | 5 | 0249 | 0 | 0 | 0 |  |
| 0622 | ${ }^{2221}$ | 17 | 1954 | 11 | 179 | 10 | 39 | 1 |  | 0 | 8 |  | 0622 | 1 | 6 | 12 | 32 | 117 | 312 | 789 | 592 | ${ }^{264}$ | 89 | 7 | 0 | 0 | 0 | 391 | 453 | 7 | 0315 | 0 | 0 | 0 | 0 |
| 0600 0000 | ${ }_{2276}^{2276}$ | 17 | ${ }_{2005}^{2005}$ | ${ }_{11}^{11}$ | 181 181 | 11 | ${ }_{40}^{40}$ | 1 | 2 | : | ${ }_{8}^{8}$ |  | 060 0000 | 1 | ${ }_{6}^{6}$ | ${ }_{12}^{12}$ | 32 | 118 118 | 317 | ${ }_{806}^{806}$ | 610 | ${ }_{272}^{272}$ | ${ }_{93}^{93}$ | 9 | 0 | : | 0 | ${ }_{39} 2$ | 453 |  | - | : | : | 0 |  |














| $\mathrm{i}^{\text {me }}$ | otal | ${ }_{1}^{\text {cls }}$ | $\underset{\substack{\text { cls } \\ 2}}{ }$ | $\mathrm{cls}_{3}$ | ${ }_{4}^{\mathrm{Cls}}$ | ${ }_{c}^{\text {cls }}$ | $\underset{\substack{\text { cls } \\ 6}}{ }$ | ${ }_{c}^{\text {cls }}$ | ${ }_{8}^{\text {cls }}$ | $\xrightarrow[9]{\text { cls }}$ | ${ }_{\substack{\text { cls } \\ 10}}$ | Fix1 | ${ }_{\text {ime }}$ | $\begin{gathered} \text { Vbin } \\ 0 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 10 \\ 15 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 15 \\ 20 \end{gathered}$ | $\begin{aligned} & \text { vinin } \\ & 20 \\ & 25 \end{aligned}$ | $\begin{aligned} & \text { Vbin } \\ & 25 \\ & 30 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 30 \\ 35 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 35 \\ 30 \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 40 \\ & 45 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 45 \\ 50 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 50 \\ 50 \end{gathered}$ | $\begin{aligned} & \text { vinin } \\ & \hline 80 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 70 \\ 80 \end{gathered}$ | $\begin{gathered} \text { Voin } \\ 80 \\ 80 \\ 90 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 90 \\ 100 \end{gathered}$ | Mean | Vop 85 | ${ }_{60}^{\text {IPSL }}$ | ${ }_{60}^{\text {\|PSLTK }}$ | $\begin{gathered} 15 L 1 \\ \hline 68 \\ \text { ACPO } \end{gathered}$ | $\begin{gathered} 15 L 1 \% \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{aligned} & 15 L 2 \\ & 75 \\ & \text { DF } \end{aligned}$ | $\begin{gathered} 15 L 2 \% \\ 75 \\ \hline F \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0000 0015 | ${ }_{3}^{5}$ | 0 | 3 |  |  | 0 | ${ }_{0}^{0}$ | \％ | ${ }_{0}^{0}$ | ${ }_{0}$ | 0 |  | 0000 0015 | 0 | 0 | 0 | 0 | ${ }_{0}^{0}$ | ${ }_{1}^{0}$ | ${ }_{0}^{2}$ |  |  | 1 | ： | 0 | 0 | $\bigcirc$ | ${ }_{0.3}^{2 .}$ |  | 0 | 0 |  | 0 0 |  |  |
| 0030 | 3 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0030 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |  | 0 | 0 |  | 0 | ${ }_{7.7}$. |  | 0 | 0 | 0 | 0 |  | 0 |
| 005 0100 | ${ }_{2}$ | ： | ${ }_{1}$ | ： | ： | ： | 1 | $\bigcirc$ | ： | 0 | ： |  | 005 0 0 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | ${ }_{0}$ | 1 | 0 | $\bigcirc$ | ${ }_{1}$ | － | 0 | － | 0 |  |  | ： | $\bigcirc$ | 0 | 0 | 0 | ： |
| 0115 |  | 0 |  | 0 | 。 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0115 |  |  | 0 |  |  | 0 |  |  |  |  | 0 |  |  | 0 | 7.5 |  | 0 |  |  |  |  | 0 |
| 0130 | 1 |  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0130 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | ${ }_{0}$ | 0 | 0 | 0 | 0 | 7.9 37.9 28. |  |  | 0 | 0 | $\bigcirc$ | 0 | 0 |
| 015 0200 |  | ${ }_{0}$ | ${ }_{2}$ | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ |  | ${ }_{0}$ | ${ }_{0}$ | 0 | ${ }_{0}$ |  | ${ }_{0} 0200$ | 0 | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ | 0 | 0 | 0 | 1 | 0 |  | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ | 0 | 2.8 <br> 7.5 |  | 0 | ${ }_{0}$ | ${ }_{0}$ | 0 |  |  |
| ${ }^{2215}$ | 0 | ： | － | 0 | $\bigcirc$ | ： | ： | 0 | ： | $\bigcirc$ | ： |  | 0215 0230 | ： | 0 | ： | ： | ： | ： |  | 0 | 0 | ： | ： | ： | ： |  | 33.8 |  | 0 | 0 | 0 | 0 | 0 | ： |
| 025 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 025 | 0 | 0 | 0 | 0 | 0 | 0 | ${ }_{0}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  | 0 | 0 | 0 |  | 0 | \％ |
|  | 1 | ${ }_{0}$ | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | － | $\bigcirc$ | 0 |  | 0300 0315 | $\bigcirc$ | － | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ | ${ }_{0}$ | 1 | $\bigcirc$ | $\bigcirc$ |  | ${ }_{0}$ | ： | $\bigcirc$ |  |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 |
| оз3о | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | о330 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.7 |  | 0 | 0 | 0 | 0 |  | ${ }_{0}$ |
| 035 | 2 | 0 | ${ }^{2}$ | 0 | 0 | 0 | 0 |  | 0 | $\bigcirc$ | 0 |  | 035 | 0 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | 0 | 0 | ${ }_{0}$ | 2 | 0 | 0 | 0 | 0 | 50．3． |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 015 | ${ }_{11}$ | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 015 | 0 | 0 | 0 | 0 | 0 | 0 | ， | 1 | 0 | ， | 0 | 0 | 0 | 0 | 6.8. |  | 0 | ， | 0 | 0 | 0 | 0 |
| （1） | 11 6 | $\bigcirc$ | 11 6 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | ： | ： | ： | 0 |  | － | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ： | 1 | $\frac{1}{2}$ | 0 | ${ }_{0}^{2}$ | ${ }_{2}^{2}$ | ${ }_{1}^{3}$ | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 39.9 | 53.6 | ！ | ${ }^{9.091}$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ |
|  | 10 | 0 | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0500 | 0 | 0 | 0 | 0 | 0 | 0 |  |  | 5 | 0 | 0 | 0 | 0 | 0 | 3.3 ． |  | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }^{0515}$ | 12 | 0 | 11 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0515 | 0 | 0 | 0 | $\bigcirc$ | 0 | 1 | 0 | 3 | 0 | 8 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{9}{ }_{3}$ | ${ }_{\text {cke }}^{56.5}$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | 0 |
| 055 | 17 | 0 | 15 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |  | 055 | 0 | 0 | 0 | 0 | 1 | 1 |  | 6 | 0 | 5 | 0 | 0 | 0 | 0 |  | 56.6 | 0 |  | 0 | 0 | 0 | 0 |
| ${ }_{060} 06$ | ${ }^{31}$ | 0 | ${ }_{3}^{27}$ | $\bigcirc$ | ${ }^{3}$ | 1 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | ${ }_{0}^{0600}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 1 | 3 | 8 | 11 | ${ }_{5}^{6}$ | 1 | 0 | $\bigcirc$ | ： | ： | 2.6 | 8.3 59 5 | 1 | 3.226 | ： | 0 | 0 | ： |
| 0630 | 70 | 1 | 62 | 0 | 6 | 0 | 1 |  | 0 | 0 | 0 |  | ${ }_{0630}$ | 0 | 0 | 0 | 0 | 2 | 10 | 21 | 27 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 9.9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 065 0700 | ${ }_{115}^{87}$ | ${ }_{0}$ | ${ }^{76}$ | ${ }_{0}^{0}$ | ${ }_{8}^{9}$ | ${ }_{0}^{\circ}$ | $\bigcirc$ | \％ | ： | $\bigcirc$ | 0 |  | 065 0700 | ${ }_{0}$ | － | ${ }_{0}^{0}$ | $!$ | ${ }_{1}^{3}$ | 10 27 | 51 | ＋${ }_{26}^{36}$ | 9 | 1 | ： | $\bigcirc$ | $\bigcirc$ | － | ${ }_{38 .}^{39.7}$ | 2.9 | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | \％ | ： |
| 0715 | 12 | 0 | ${ }^{13}$ | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0715 | 0 | 0 | 0 | 0 | 0 | ${ }^{28}$ | ${ }_{6}$ | 1 | 9 | 0 | 0 | 0 | 0 | 0 | ${ }^{38.6}$ | ${ }^{3.2}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| 075 | －${ }_{1}^{151}$ | 0 | ${ }_{12}^{126}$ | ${ }_{0}$ | ${ }_{9}^{8}$ | ！ | 0 | ${ }_{0}$ | $\bigcirc$ | ${ }_{0}$ | ${ }_{0}$ |  | O75 | 0 | 0 | 0 | 0 | 5 | 15 | 81 | 1 | 6 | ${ }_{3}$ | 0 | 0 | 0 | 0 | ${ }_{38.8}$ | ${ }_{2.3}^{2.6}$ | 0 | 0 | 0 | 0 | ${ }_{0}$ | $\bigcirc$ |
| ${ }^{0800}$ | 10 | 1 | ${ }_{117}^{132}$ | $\bigcirc$ | 7 | ${ }^{2}$ | $\bigcirc$ | 0 | 0 | 0 | ${ }^{2}$ |  | ${ }^{0800}$ | 0 | 0 | 0 | $\bigcirc$ | 1 | 16 | ${ }_{51}^{66}$ | 7 | 9 | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }^{393}$ | $\begin{array}{r}2.9 \\ 1 \\ 1 \\ \hline 1\end{array}$ | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ |
| － 08315 | 132 <br> 17 | ！ | ${ }_{10}^{117}$ | 1 | ${ }_{5}^{8}$ | ${ }_{0}$ | 1 | $\bigcirc$ | ： | $\bigcirc$ | ${ }_{0}$ |  | ${ }_{0}^{08315}$ | ${ }_{3}$ | ${ }_{2}$ | ${ }_{11}$ | 9 | ${ }^{8}$ | 39 27 | ${ }_{39} 51$ | 32 | ${ }_{10}^{2}$ |  | ${ }_{0}$ | ${ }_{0}^{\circ}$ | ${ }_{0}^{0}$ | $\bigcirc$ | ${ }_{3}^{37}$ | ${ }_{2.1}^{1.2}$ | $\bigcirc$ | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}^{0}$ | 0 |
| 085 | ${ }_{83}$ | 1 | ${ }^{88}$ | 1 |  | ： | $\bigcirc$ | 0 | 0 | 0 | 0 |  | 085 | 0 | 0 | 0 | 1 | 2 | ${ }_{27}^{27}$ | ${ }_{3}$ | 2 | ${ }^{6}$ | 0 | 1 | 0 | 0 | 0 | 38.1 | 3.6 | 1 | 1.06 | 0 | 0 | 0 | 0 |
| ${ }_{0} 0915$ | ${ }_{73}^{83}$ | ${ }_{3}$ | 61 | 1 | 6 | ${ }_{2}$ | 0 | 0 | 0 | 0 | 0 |  | 09015 | 0 | ${ }_{0}$ | ${ }_{0}^{0}$ | 1 | ${ }_{0}$ | 12 17 | ${ }_{28}^{7}$ | ${ }_{19}^{20}$ | ${ }_{7}$ | 1 | $\bigcirc$ | － | ： | ： | ${ }_{38.5}^{38.3}$ | 2．6 | ： | ${ }_{0}^{0}$ | － | $\stackrel{\square}{0}$ | ${ }_{0}^{0}$ | － |
| 0930 | 57 | 0 | 51 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 |  | 0930 | 0 | 0 | 0 | $\bigcirc$ | ${ }_{5}^{2}$ | 18 | 18 | ${ }_{8}^{13}$ |  | 2 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | ${ }^{37.9}$ |  | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ |
| 1000 |  | 1 | ${ }_{2}^{36}$ | $\bigcirc$ | ${ }_{7}^{8}$ | ${ }_{0}$ | 1 | 0 | 0 | ${ }_{0}$ | 0 |  | － 1005 | 0 | 1 | 0 | 0 | 2 |  | 16 |  | 5 |  | 0 | 0 | 0 | 0 | ${ }_{37.9}$ | 5.7 | 0 | 0 | 0 |  | ${ }_{0}$ | ${ }^{\circ}$ |
| 1015 | $3^{3}$ | 2 | 3 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 |  | 1015 | 0 | 0 | 1 | 1 | ${ }_{2}^{2}$ | ${ }^{11}$ | 19 | ${ }^{6}$ | ${ }_{3}^{3}$ | 0 | 0 | 0 | 0 | 0 | ${ }_{36}^{36.7}$ | ${ }^{2} .8$ | 0 |  | 0 | 0 | 0 | 0 |
| 105 105 | ${ }_{9} 8$ | ${ }_{0}$ | ${ }_{2}$ | 1 | 5 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 1 | $\bigcirc$ | 0 |  | 1030 105 | 0 | \％ | $\bigcirc$ | $\stackrel{0}{0}$ | 3 | ${ }_{8}^{8}$ | 16 19 | 11 | ${ }_{3}^{2}$ | 0 | ${ }_{0}$ | ${ }_{0}$ | $\bigcirc$ | － | ${ }_{38}^{38.7}$ | 3.7 <br>  <br>  <br> .9 | O | $\bigcirc$ | ： | ${ }_{0}^{\circ}$ | ${ }_{0}^{0}$ | $\bigcirc$ |
| 1100 | 37 | ${ }^{3}$ | ${ }^{27}$ | 1 | 5 | 1 | 0 | 0 | 0 | 0 | 0 |  | 11100 | 0 | 0 | 2 | 1 | ${ }^{2}$ | 19 | 11 | ${ }^{10}$ | 1 | $\bigcirc$ | 1 | 0 | 0 | 0 | ${ }^{36.6}$ | ${ }_{5}^{3.5}$ | 1 | 2.703 | 0 |  | 0 | 0 |
| 1130 | 32 | 1 | ${ }^{23}$ | 0 | 5 | 1 | 1 | 0 | 0 | 1 | 0 |  | ${ }^{1130}$ | 0 | 0 | 1 | 1 | 3 | 5 | 12 | 7 | 3 | 0 | 0 | 0 | 0 | 0 | 37.1 | ${ }^{6} 6$ | 0 | 0 | 0 | 0 |  | 0 |
| 115 | 52 | 2 | ${ }_{36}^{2}$ | $\bigcirc$ | 7 | $\bigcirc$ | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 115 | $\bigcirc$ | 1 | 0 | $\bigcirc$ | 5 |  | 11 | ${ }_{12}^{13}$ | 7 | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 37.7 385 | ${ }_{3}^{5.8}$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ |
| 1215 | 2 | 0 | 35 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1215 | 0 | 1 | 0 | 1 |  | 7 | 11 |  | 3 | 2 | 0 |  | 0 | 0 | ${ }^{38}$ | ${ }^{3}$ | 0 |  | 0 | 0 | 0 | 0 |
| ＋1250 | 52 | 3 | ${ }_{2}$ | ${ }_{0}$ | ${ }_{5}^{6}$ | 2 | ${ }_{0}$ | － | 1 | $\bigcirc$ | ${ }_{0}$ |  | － 125 | $\bigcirc$ | \％ | 1 | ！ | 1 | 12 | ${ }_{21}^{12}$ | 12 | 5 | ${ }_{1}^{2}$ | 1 | ${ }_{0}$ | 0 | － | ${ }_{38}^{38.7}$ | 6 | ！ | 2.381 | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ | ： |
|  | 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 |  |  |  |  |  |  | 0 |  | 0 | 0 | ${ }^{38}$ | 2. | 0 | 0 | 0 | 0 | 0 | 0 |
| （1315 | 60 55 |  | ${ }_{6}^{53}$ | 1 | 5 | ${ }_{1}$ | 1 | 0 | $\bigcirc$ | 0 | 1 |  | 1315 1330 130 | $\bigcirc$ | $\bigcirc$ | 0 | $\stackrel{2}{5}$ | 7 | ${ }_{9}^{11}$ | 25 16 | ${ }_{1}^{10}$ | 5 | 1 | ${ }_{1}$ | $\bigcirc$ | 0 | － | ${ }_{36.7}^{36.8}$ | ${ }_{3.7}^{2.7}$ | 1 |  | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ |
| 135 | 9 | 0 | 37 | 0 | 8 | 0 | 3 | 0 | 1 | 0 | 0 |  | 135 | 0 | 0 | 1 | 3 | 1 | 12 | 19 | 8 | 3 | 2 | 0 | 0 | 0 | 0 | ${ }_{37.3}$ | 3.5 | 0 | 1．818 | 0 | 0 |  | 0 |
| 100 115 |  | 1 | ${ }_{2}^{33}$ | 1 | ${ }_{8}^{3}$ | 1 | 0 | $\bigcirc$ | 1 | $\bigcirc$ | 0 |  | 1 1 1 1 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{2}^{2}$ | －${ }^{5}$ | ${ }_{23}^{1}$ | ${ }_{8}^{13}$ | 3 6 |  | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{38}^{39}$ | ．${ }^{\text {．5 }}$ | \％ | 0 | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ | $\bigcirc$ |
| 130 | 2 | 0 | ${ }^{33}$ | 1 | 7 | 0 | 1 |  | 0 | 0 | 0 |  | 130 | 0 | 0 | 0 | 0 |  | 11 | 18 | 9 | 3 |  | 0 |  | 0 | 0 | 38.3 | 3.2 | 0 | 0 | 0 | 0 |  |  |
| 1500 | 51 | 1 | ， | 0 | 3 | 1 | 2 | 0 | 0 | 0 | 0 |  | 1500 | 0 | 0 | 0 | 0 | 1 | 13 | 13 | 13 | 6 | 5 | 0 | 0 | 0 | 0 | 39. | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1515 | ${ }_{70} 58$ | 0 | 7 |  |  |  |  |  |  |  |  |  | 1595 150 150 |  | 0 |  | $\bigcirc$ |  |  | ${ }_{27}^{25}$ |  | ${ }_{2}^{8}$ |  | 1 |  | 0 | $\bigcirc$ | ${ }_{37}$ | ${ }^{5 .}$ | 1 |  |  | $\bigcirc$ |  | 0 |
| 155 | 63 | ${ }_{2}$ | ${ }_{8}^{60}$ | ${ }_{0}^{0}$ | 10 | 1 | ${ }_{0}$ | 0 | $\bigcirc$ | $\bigcirc$ | 1 |  | $\begin{array}{r}1530 \\ 155 \\ \hline 15\end{array}$ | $\bigcirc$ | 。 | $\bigcirc$ | $\bigcirc$ | ${ }_{2}^{3}$ | 11 | ${ }_{2}^{27}$ | ${ }_{18}^{18}$ | ${ }_{1}^{2}$ | ${ }_{5}$ | 2 | ${ }_{0}$ | ${ }_{0}^{0}$ | － | 39.8 <br> 37 | 1.5 | 2 | 3.175 | \％ | ${ }_{0}$ | ${ }_{0}^{0}$ | ： |
|  | 7 | ${ }^{0}$ | ${ }_{68} 6$ | 0 | 5 | 0 | 1 | 0 | 1 | 0 | 1 |  | 1600 | 0 | 0 | 0 | 0 | 1 | 11 | 19 | 30 | 11 | 2 | 0 | 0 | 0 | 0 | 0.8 | 5. | 0 |  | 0 | 0 | 0 |  |
| 1630 | ${ }_{96}^{86}$ | ${ }_{0}$ | ${ }_{92}$ | ${ }_{0}$ |  | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ | $\bigcirc$ | 0 | ${ }_{0}$ |  | 1630 | 0 | 0 | ！ | 1 | ${ }_{0}^{2}$ | 8 | ${ }_{3}^{23}$ | ${ }_{1}^{32}$ | ${ }_{9}^{12}$ | 2 | 1 | ${ }_{0}$ | ： | ： | ${ }_{0.8}^{0.7}$ | 6 | 1 | ${ }_{1.0}^{1.19}$ | $\bigcirc$ | $\bigcirc$ | 0 | ： |
| 165 | ${ }_{8}^{80}$ | 0 | 77 | 0 | ${ }_{5}$ | 0 | 0 | 0 | 0 | 0 | 0 |  | 165 |  | 0 | 0 | 0 | 0 | 9 |  |  |  |  | 0 |  | 0 | 0 |  | 7.2 | 0 |  |  | 0 |  |  |
| 1715 | ${ }_{8}^{97}$ | $\bigcirc$ | ${ }_{81}^{92}$ | $\bigcirc$ | ${ }_{2}^{5}$ | ： | ： | － | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 1700 1715 | ${ }_{2}$ | $\bigcirc$ | ： | ${ }_{2}^{0}$ | 1 | ${ }_{16}^{6}$ | ${ }^{59}$ | ${ }_{21}^{31}$ | ${ }_{12}^{8}$ |  | ： | $\bigcirc$ | \％ | － | ${ }^{0.8} 8$ | $\stackrel{8}{5}$ | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ | ： |
| 1775 | 79 | 0 | ${ }_{89}$ | 0 | 1 | 0 | 0 |  | 0 | 0 | $\bigcirc$ |  | 1730 | 5 | 1 | 0 | $\bigcirc$ | 2 | 13 | ${ }_{37}^{38}$ | 13 27 | ${ }_{6}^{6}$ | ${ }_{2}$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | 36 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1800 | ${ }_{6}$ | 0 | ${ }_{59}$ | 0 | 5 | 。 | 0 | 0 | 0 | 0 | 0 |  | 1785 | 1 |  | $\bigcirc$ | 0 |  | ${ }^{13}$ | 16 | ${ }_{25}^{27}$ | ${ }_{1}^{6}$ |  | 0 | 0 | 0 | 0 | ${ }_{2.2}^{38.6}$ | ${ }_{8.7}^{3.2}$ | 0 | $\bigcirc$ | $\bigcirc$ | $\stackrel{0}{0}$ |  | 0 |
| 1815 1830 1 | ${ }_{5}^{55}$ |  | ${ }_{5}^{53}$ |  | ${ }_{1}$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 1815 1830 |  | $\bigcirc$ | 0 | $\bigcirc$ |  | ${ }_{5}^{6}$ | ${ }_{1}^{16}$ | 21 | ${ }_{5}^{9}$ |  | $\bigcirc$ |  | $\bigcirc$ | $\bigcirc$ | 1.3 0.7 | ${ }^{6.8}$ |  |  | $\bigcirc$ | $\bigcirc$ |  |  |
| 速 | ${ }^{32}$ | 0 | ${ }^{36}$ | 0 | 2 | 0 | 0 |  | 0 | 0 | 0 |  | 185 1900 | 0 | 0 | 0 | 0 | ： |  | 8 | ${ }^{10}$ | 9 | 1 | 0 | 0 | 0 | 0 | 2.3 | ${ }^{8}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| 1900 1995 | ${ }_{30}^{26}$ | ${ }_{0}$ | ${ }_{27}^{26}$ | 1 | ${ }_{2}^{0}$ |  | ： | 0 | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ |  | ${ }_{1}^{1900}$ | 0 | 0 | ${ }_{0}$ | 0 | 0 | ${ }_{3}$ | ${ }_{11}^{10}$ |  | 5 | ${ }_{2}$ | 0 | 0 | 0 | 0 | 1 | ${ }_{8.1}^{8 .}$ | 0 | 0 | ${ }_{0}$ | 0 | 0 |  |
| 1930 | 18 | 0 | 18 18 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ |  | $\begin{array}{r}1930 \\ 195 \\ \hline 1\end{array}$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | 1 | ${ }^{5}$ | 7 | ${ }^{3}$ | ${ }_{3}$ | 1 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | ${ }_{1.1}^{38.8}$ | ${ }_{7}^{5.2}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 |
| 2000 | ${ }^{18}$ |  | ${ }^{8}$ | 0 | 0 | 0 |  |  |  |  |  |  | 5 |  |  |  |  |  |  |  |  |  |  | ＋ |  |  |  |  |  |  |  |  | 0 |  | 0 |
| ${ }_{2015}^{2000}$ | ${ }_{15}^{8}$ | 1 | ${ }_{13}^{8}$ | ${ }_{0}$ | 1 | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ | ${ }_{0}$ | 0 | ${ }_{0}$ |  | ${ }_{2015}^{2000}$ | 0 | 0 | 1 | ${ }_{0}$ | ： | ${ }_{3}$ | 1 | 3 5 | ${ }_{1}^{2}$ | \％ | ！ | ： | ： | － | 37.7. |  | ！ | － | \％ | $\bigcirc$ | ${ }_{0}^{0}$ | ： |
| 2030 | 15 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2030 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 5 | ${ }_{2}$ |  | 0 | 0 | 0 | 0 | 1.3 | 6.1 | 0 | 0 |  | 0 | 0 | 0 |
| ${ }_{2}^{205}$ | ${ }^{13}$ | 0 | 12 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 205 | 0 | 0 | 0 | $\bigcirc$ | 0 | ${ }_{3}$ | ${ }^{5}$ | ${ }_{1}^{2}$ | ${ }_{2}$ | 1 | 0 | 1 | 0 | $\bigcirc$ | ${ }^{1.8}$ | 51．9 | 1 | 7.692 | 1 |  | 0 | $\bigcirc$ |
| 2115 | 11 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |  | 2115 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |  | 3 | 0 | 0 | 0 | 0 | 0 | 1.8 | ${ }_{9.3}$ | 0 |  | 0 | 0 | 0 | 0 |
| ${ }^{2130}$ | ${ }_{10}^{16}$ | 0 | 15 |  | $\frac{1}{2}$ | $\bigcirc$ | ${ }_{1}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 2130 215 | 0 |  | 0 | $\bigcirc$ |  | ${ }_{1}^{3}$ | ${ }_{5}^{3}$ | ${ }_{1}^{6}$ | ${ }_{2}^{3}$ | 1 | 1 | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{1.7}^{2.7}$ | ${ }^{6.6}$ | 1 | ${ }^{6.25}$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ |
| 2200 | 8 | 0 | 6 | 0 | 2 | 0 | 0 |  | 0 | 0 | 0 |  | 2200 | 0 |  | 0 | 0 |  | 1 |  | 2 | 1 |  | 0 | 0 | 0 | 0 | 38.7 |  | 0 |  | 0 | 0 | 0 | 0 |
| ${ }_{2215}^{2215}$ | ${ }_{6}$ | 0 | 9 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | \％ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | ${ }_{2230}^{2215}$ | $\bigcirc$ | － | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{0}^{2}$ | ${ }_{1}$ | 3 | 3 |  | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ | － | ${ }^{3} .2$ |  | ： | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{0}$ | ： |
| 225 | $\stackrel{2}{2}$ | 0 | 2 |  |  | 0 | 0 |  |  | 0 |  |  | 225 | 0 | 0 |  | $\bigcirc$ | 0 | $\bigcirc$ | 1 | 1 | 0 | ${ }^{0}$ | 0 | 0 | 0 | 0 | ${ }^{0.8}$ |  | 0 | 0 | $\bigcirc$ | 0 | 0 | 0 |
| ${ }_{2315}^{2300}$ | 3 | ！ | ${ }_{3}^{8}$ | 0 | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ | 0 | 0 | ${ }_{0}$ | $\bigcirc$ |  | ${ }_{2315}^{2350}$ | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | ${ }_{2}^{3}$ | 1 | ${ }_{0}^{2}$ | $\bigcirc$ | 0 | 0 | 0 | ${ }_{3.5}^{3.2}$ |  | 0 | $\bigcirc$ | $\bigcirc$ | $\stackrel{0}{0}$ | 0 | $\bigcirc$ |
| 2330 |  |  |  | \％ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | － |  | 0 | $\bigcirc$ |  | － 235 |  |  | 0 | $\bigcirc$ |  | $\bigcirc$ | 1 |  |  | ${ }_{2}$ | 0 |  | $\bigcirc$ | $\bigcirc$ | 39.9 7.8 |  | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ |
| 19 | 3334 | 27 | 2976 | 11 | 267 | 16 | 22 | 1 | 5 | 1 |  |  | 0719 | 11 | 7 | 18 | 33 | 101 | 612 | 1294 | 894 | ${ }^{284}$ |  |  |  | 0 | 0 | 385 | 437 |  |  | 0 |  | 0 | 0 |
| 22 | ${ }^{3752}$ | 31 | 3350 | 12 12 | 304 | －18 | ${ }_{24}^{24}$ | 1 | 5 | 1 | 8 |  | － 0600 | 11 | 7 | 19 | 34 | 108 | 670 | ${ }_{144}^{1434}$ | ${ }_{1}^{1047}$ | ${ }_{345}$ | ${ }_{96}$ | 12 <br> 12 | 1 | 0 | 0 | ${ }_{388}$ | ${ }_{441}^{44}$ | 13 <br> 13 | －${ }^{346}$ | 1 | －022 | 0 | ： |
| 00 | 3898 | 32 | 3481 | 12 | 314 | 18 | 25 | 1 |  | 2 |  |  | 0000 | 11 | 8 | 19 | 34 | 111 | 677 | 1465 | 1071 | 366 | 122 | 13 | 1 | 0 | 0 | 389 | 443 | 14 | 0359 | 1 | 0026 | 0 | 0 |


| $1^{\text {me }}$ | otal | $\mathrm{cls}_{1}$ | $\underset{2}{\text { cls }}$ | ${ }_{3}{ }_{3}$ | ${ }_{4}^{\text {cls }}$ | $\xrightarrow{\text { cls }}$ | $\mathrm{cls}_{6}$ | ${ }_{7}^{\text {cls }}$ | ${ }_{8}^{\text {Cls }}$ | $\underset{9}{\text { cis }}$ | ${ }_{\substack{\text { Cls } \\ 10}}$ | Fix1 | ${ }_{1}^{\text {ime }}$ | $\begin{gathered} \text { Voin } \\ 0 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vin } \\ 10 \\ 15 \end{gathered}$ | $\begin{gathered} \text { Vinn } \\ 15 \\ 20 \end{gathered}$ | $\begin{gathered} \text { Vin } \\ 20 \\ 25 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 25 \\ 30 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 30 \\ 35 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 35 \\ 40 \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 40 \\ & 45 \end{aligned}$ | $\begin{aligned} & \text { Vbin } \\ & 45 \\ & 50 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 50 \\ 60 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 60 \\ 70 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 780 \\ 80 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 80 \\ 90 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 990 \\ 100 \end{gathered}$ | Mean | $\mathrm{V}_{85}$ | ${ }_{60}^{\text {1PSL }}$ | ${ }_{60}^{\text {1PSL\% }}$ | $\begin{gathered} 15 L 1 \\ 688 \\ \text { ACPO } \end{gathered}$ | $\begin{aligned} & 1511 \% \\ & 68 \\ & \text { ACPO } \end{aligned}$ | $\begin{aligned} & 15 L 2 \\ & 75 \\ & 75 \\ & \hline \end{aligned}$ | $\begin{gathered} 15 L 2 \% \\ 75 \\ \text { DF } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0000 0015 |  | 0 |  | 0 | 0 |  |  |  | 0 | $\bigcirc$ | : |  | 0000 0015 | ${ }_{0}$ | 0 | 0 | 0 | 0 | ${ }_{1}$ |  |  |  | 0 | 0 | ${ }_{0}^{0}$ | 0 | ${ }_{0}$ | 31. |  | $\stackrel{0}{0}$ | ${ }_{0}^{0}$ | 0 | 0 0 |  |  |
| 0030 | 2 | 0 | 2 | $\bigcirc$ | 0 | 0 | 0 | 0 | 0 | 0 | $\bigcirc$ |  | O030 | 0 | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 | $\bigcirc$ | 1 | 1 | $\bigcirc$ | $\bigcirc$ |  | $\bigcirc$ | 51. |  |  | 0 | 0 |  | 0 | 0 |
| 005 0000 | 0 | $\bigcirc$ | ${ }_{0}^{3}$ | : | : | : | 0 | : | : | : | ! |  | 005 0100 | $\bigcirc$ | : | : | : | 0 | : | ${ }_{0}^{3}$ | : | 0 | 1 | : | : | 0 | $\bigcirc$ | 2 |  | $\bigcirc$ | ${ }_{0}^{\circ}$ | $\bigcirc$ | : | $\bigcirc$ | : |
| (0115 |  | 0 | 2 | $\bigcirc$ | 1 | 0 | 0 | 0 | $\bigcirc$ | \% | $\bigcirc$ |  | (0115 | ${ }_{0}$ | $\bigcirc$ | 0 |  | 0 | 0 | ${ }_{1}$ | $\bigcirc$ | ${ }_{0}^{2}$ | 0 | 1 | 0 | $\bigcirc$ | 0 | ${ }_{50.1}^{56.7}$. |  | 1 | 50 50 | ${ }_{0}$ | $\bigcirc$ | 0 | \% |
| 015 | , | 0 |  | 0 | 0 |  |  |  |  |  |  |  | 015 | 0 |  | 0 | 0 | 0 | \% |  | 0 |  | 0 | ${ }_{0}$ | 0 |  | 0 | ${ }^{5.5}{ }^{8.5}$. |  |  | \% | 0 |  | 0 |  |
| - 02200 | ${ }_{3}^{2}$ | $\bigcirc$ | ${ }_{3}^{2}$ | $\bigcirc$ | ${ }_{0}^{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ |  | ${ }_{0215}^{0200}$ | $\bigcirc$ | ${ }_{0}^{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 1 | ${ }_{0}^{2}$ | 1 | $\bigcirc$ | 1 | $\stackrel{0}{0}$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ | ${ }_{2.6}^{36.7}$ : |  | $\bigcirc$ | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ |  | 0 |
| 0230 | ${ }^{3}$ | 0 | ${ }^{2}$ | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0230 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 37.1 - |  | 0 | 0 | 0 | 0 | 0 | 0 |
| 025 | 0 | 0 | 0 | 0 | $\bigcirc$ | 0 |  | 0 | 0 | 0 | 0 |  | 025 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | : | $\bigcirc$ | 0 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ |  |  | $\bigcirc$ | 0 | 0 | 0 | 0 | 0 |
| ${ }_{0315}$ | 1 | 0 |  |  | 0 |  |  |  | 0 | 0 | 0 |  | ${ }_{0315}$ | 0 | 0 | 0 | 0 | 0 | 0 |  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.6 |  | 0 | 0 | 0 | 0 | 0 | 0 |
| -0330 | ${ }_{3}^{2}$ | $\bigcirc$ | ${ }_{3}^{2}$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | O2330 | 0 | $\bigcirc$ | 0 | : | 0 | 0 | 1 | $\begin{aligned} & 0 \\ & 2 \end{aligned}$ | 1 | 0 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{1.5}^{3.5}$ |  | 0 | 0 | 0 | 0 | 0 | $\bigcirc$ |
| 000 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 7.8. |  | 0 | 0 | 0 | 0 | 0 |  |
| - 15 | ${ }_{1}^{6}$ | 0 | ${ }^{6}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 015 | 0 | 0 | 0 | 0 | 0 | $\bigcirc$ | 1 | ${ }^{3}$ | ${ }_{2}$ | 0 | 0 | 0 | 0 | 0 | 2.9 |  |  | 0 | 0 | 0 | 0 | $\bigcirc$ |
| - |  | $\bigcirc$ | ${ }_{3}^{11}$ | 0 | ${ }_{1}$ | : | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | : | : |  | - |  | $\bigcirc$ | : | : | ${ }_{1}$ | ! | 0 | ${ }_{2}^{6}$ | 1 | ${ }_{0}^{3}$ | ${ }_{1}$ | : | $\stackrel{0}{0}$ | $\bigcirc$ | 3.8 | 50.5 | ${ }_{1}$ | 25 | $\stackrel{0}{0}$ | $\bigcirc$ | $\stackrel{0}{0}$ | : |
| O500 | ${ }_{16}^{9}$ | $\bigcirc$ | -888 | $\bigcirc$ | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{1}$ | ${ }_{1}$ |  | O5500 | $\bigcirc$ | $\bigcirc$ | 0 | \% | $\bigcirc$ | ${ }_{1}$ | ${ }_{1}$ | 5 | ${ }_{7}^{2}$ | 1 | ${ }_{1}^{1}$ | $\bigcirc$ | ${ }_{0}^{0}$ | $\bigcirc$ | 1.5 <br> 5.8 |  | 1 | 6.25 | ${ }_{0}^{\circ}$ | ${ }_{0}^{\circ}$ | ${ }_{0}$ | $\bigcirc$ |
| 0530 |  | 0 | 11 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0530 | 0 | 0 | 0 | 0 | 0 | 3 | 1 |  |  | 1 | 1 | 0 | 0 | 0 |  | 50. | 1 | 7.13 | 0 |  | 0 |  |
| O600 | ${ }_{2}^{23}$ | $\bigcirc$ | ${ }_{22}^{21}$ | 0 | 2 | $\bigcirc$ | 0 | 0 | 0 | ${ }_{0}$ | 0 |  | -0650 | $\bigcirc$ | 0 | $\bigcirc$ | \% | 2 | ${ }_{2}$ | 1 | ${ }_{9}$ | 5 | ${ }_{2}$ | 0 | 0 | $\bigcirc$ | 0 | ${ }_{1.8}^{2.8}$ | ${ }_{9.7}^{52.7}$ |  | ${ }_{0}^{8}$ | 1 | 8 | $\bigcirc$ | $\bigcirc$ |
| 06 | 39 | 0 | 33 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 0 |  | 0615 | 0 | 0 | 0 | 0 | $\bigcirc$ | 0 | 11 | ${ }^{23}$ | ${ }^{2}$ | ${ }^{2}$ | 1 | 0 | 0 | 0 | 2.5 | 7.7 |  | 2.56 | 0 | 0 | 0 | 0 |
| 06 | ${ }_{97}^{53}$ | ${ }^{\circ}$ | 85 | $\bigcirc$ |  | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ |  | 0630 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 1 | 1 | ${ }^{2}$ | ${ }_{3}^{12}$ | ${ }_{32}$ | ${ }^{10}$ | ${ }^{3}$ | - | $\bigcirc$ | 0 | $\bigcirc$ | ${ }^{2.6}$ | 7.1 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ |
| - 06500 | 97 107 | ${ }_{0}$ | 85 100 | $\bigcirc$ | ${ }_{7}$ | $\bigcirc$ | $\stackrel{0}{0}$ | $\bigcirc$ | ${ }_{0}$ | ${ }_{0}^{0}$ | $\stackrel{0}{0}$ |  | - 065 | $\stackrel{0}{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | ! | 0 | ${ }_{9}^{10}$ | 5 | ${ }_{35}^{32}$ | ${ }_{8}^{9}$ | 1 | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{\circ}$ | ${ }_{0}$ | ${ }_{39.5}^{39.7}$ | ${ }_{1}{ }^{\text {a }}$ |  | ${ }_{0}^{\circ}$ | ${ }_{0}^{\circ}$ | ${ }_{0}$ | ${ }_{0}$ | $\bigcirc$ |
| 0715 | ${ }_{1}^{10}$ | $\bigcirc$ | 130 127 | ${ }_{3}^{1}$ | 7 | $\bigcirc$ | ${ }_{0}$ | \% | $\bigcirc$ | $\bigcirc$ | \% |  | (0715 | 1 | ${ }_{1}$ | ${ }_{1}$ | $\stackrel{0}{2}$ |  | ${ }_{3}^{27}$ | ${ }_{68}^{63}$ | ${ }_{12}^{0}$ | ${ }_{3}^{6}$ | $\bigcirc$ | : | $\bigcirc$ | ${ }_{0}^{0}$ | 0 | 38.3 35.6 | ${ }_{39}^{2.7}$ | : | $\bigcirc$ | ${ }_{0}^{\circ}$ | 0 | 0 | $\bigcirc$ |
| 075 | 9 | 0 | 81 | 1 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |  | 075 | 5 | 0 | 1 | 3 | 8 | 32 | 30 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 33.5 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0800 | ${ }^{76}$ | 1 | ${ }^{68}$ | 1 | ${ }^{5}$ | 1 | 0 | 0 | 0 | 0 | 0 |  | 0800 | 1 | 0 | 1 | 1 | ${ }^{3}$ | ${ }_{19}^{27}$ | 28 | ${ }_{33}^{11}$ | 3 | 1 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | ${ }_{38 .}^{35 .}$ |  | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | 0 |
| ${ }^{08150}$ | 132 110 | $\bigcirc$ | ${ }_{101}^{12}$ | 1 | ${ }_{8}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | : | : | : |  | -0830 | \% | 0 | $\bigcirc$ | : | ${ }_{0}$ | ${ }_{8}^{19}$ | 59 50 | ${ }_{0}$ | 10 12 | ${ }_{0}^{2}$ | $\bigcirc$ | - | : | $\bigcirc$ | ${ }^{38.2}$ | 3.9 | 0 | 0 | ${ }_{0}$ | 0 | ${ }_{0}$ | ${ }_{0}$ |
| O85 | ${ }_{88}^{83}$ | 0 | 78 | 0 | ${ }_{8}$ | 0 | 1 | 1 | 1 | 0 | 0 |  | ${ }_{0}^{085}$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ | 2 | ${ }_{28}^{19}$ | 25 35 | ${ }_{16}^{26}$ | 11 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ | ${ }^{39}$ | 1.3 | $\bigcirc$ | 0 | 0 | 0 | 0 | $\bigcirc$ |
| 0915 | ${ }_{68}$ | 0 | 60 | 1 | 6 | 0 | 1 | 0 | 0 | 0 | 0 |  | 0915 | 0 | 0 | 0 | 1 | ${ }_{0}$ | ${ }_{5}^{68}$ | ${ }_{29} 9$ | 20 | 8 |  | 1 | 0 | ${ }_{0}$ | 0 | ${ }_{1}$ | 1.6 | 1 | 1. 71 | ${ }_{0}$ | 0 | ${ }_{0}$ | 0 |
| 0930 | 55 | 0 | 9 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0930 | 0 | 0 | 0 | $\bigcirc$ | ${ }_{5}$ | 5 | ${ }^{25}$ | 16 | 7 | ${ }^{2}$ | 0 | 0 | 0 | 0 | 0.5 | 5.3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 | ${ }_{53}^{53}$ | 2 | ${ }_{3}$ | 1 | 5 | 0 | 1 | $\bigcirc$ | 1 | 0 | $\bigcirc$ |  | 1000 | 0 | 0 | 0 | ! | 1 |  | ${ }_{21}^{20}$ | 20 |  | 3 | 0 | 0 | 0 | 0 | ${ }^{37.3}$ | 2.6 | 0 | 0 | 0 | 0 | ${ }_{0}$ | ${ }_{0}$ |
| (1015 | $\stackrel{3}{55}$ | $\bigcirc$ | ${ }^{28}$ | 1 |  | 0 | ${ }_{3}$ | $\bigcirc$ | $\bigcirc$ | 1 | 1 |  | 1015 1030 108 | 0 | $\bigcirc$ | 1 | ${ }_{2}$ | ${ }_{7}$ | ${ }_{16}^{10}$ | ${ }_{20}^{19}$ | ${ }_{7}$ | 2 | 1 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{3}^{37.2}$ | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 105 | ${ }^{3}$ | 1 | 32 | 0 | 7 | 1 | 2 | 0 | 0 | 0 | 0 |  | 105 | 0 |  | 0 | 1 | ${ }^{5}$ | 6 | 16 | 8 | 5 | ${ }^{2}$ |  | 0 | 0 | 0 | 38 | 5.3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1115 | 1 | 1 | ${ }_{37}$ | 0 | 1 | 1 | 1 | 0 | $\bigcirc$ | $\stackrel{0}{0}$ | $\stackrel{0}{0}$ |  | ${ }_{1115}^{1100}$ | ${ }_{0}^{\circ}$ | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ | 1 | 1 | ${ }_{10}^{9}$ | ${ }_{12}^{18}$ | ${ }_{9}^{17}$ | 7 | 1 | $\bigcirc$ | \% | 0 | : | ${ }_{39}^{39}$ | $6 .{ }^{2}$ | $\bigcirc$ | ${ }_{0}^{0}$ | 0 | $\bigcirc$ | $\bigcirc$ | - |
|  |  |  | 29 | 0 |  |  | 1 | 0 | 0 | 0 | 0 |  | 1130 | 0 | 0 | 1 | 0 | ${ }^{3}$ | 6 |  | 6 | ${ }^{3}$ | 1 |  | 1 | 0 | 0 |  |  |  | 882 | 1 |  | 0 | 0 |
| 1200 | 36 | $\bigcirc$ | ${ }_{30}$ | 0 | 5 | $\bigcirc$ | 1 | \% | 0 | 0 | \% |  | 1200 | 0 | 0 | 1 | \% | 0 | 7 | 15 | ${ }_{8}$ | 6 | 1 | : | 0 | 0 | 0 | 38.6 | 5.1 | 0 | ${ }_{0}$ | ${ }_{0}$ | 0 | 0 | \% |
| ${ }_{1215}$ |  |  |  | 0 |  | 0 |  | 0 |  | 0 |  |  | (1215 | - |  | 0 | ${ }_{0}$ | 3 <br> 5 | ${ }_{3}^{6}$ | 19 | 15 |  | $\bigcirc$ |  | $\bigcirc$ |  |  |  |  |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 |  |
| 125 | ${ }_{63}$ | 2 | ${ }_{8}$ | 0 | 9 | 1 | 2 | 0 | ${ }_{0}$ | 1 | \% |  | 1250 | 0 | 1 | 0 | ${ }_{0}$ | ${ }_{2}$ | ${ }_{9}$ | ${ }_{28}^{18}$ | 17 |  | 2 | 0 | 0 | 0 | 0 | ${ }_{38.6}$ | 3.8 | 0 | - | ${ }_{0}$ | 0 | 0 | ${ }_{0}$ |
| ${ }^{1300}$ | 62 | 1 | 51 | 0 | ${ }_{7}$ | 0 | ${ }^{2}$ | 0 | 0 | 0 | 0 |  | ${ }^{1300}$ | 0 | 0 | 0 | 0 | ${ }^{\circ}$ | 12 | 18 | ${ }^{26}$ | 3 | 3 | 0 | 0 | 0 | 0 | ${ }_{39}^{39.8}$ | ${ }_{5}^{2}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }_{1350}$ | ${ }^{62}$ | 0 | 39 | 0 | 5 | 1 | ${ }_{0}$ | 0 | 0 | 0 | 0 |  | 1330 | 0 | 0 | 0 | $\bigcirc$ | ${ }_{1}^{2}$ | ${ }_{5}^{12}$ | ${ }_{18}^{28}$ | 16 | ${ }_{5}^{6}$ | ${ }_{0}$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | ${ }_{39.6}^{38.7}$ | ${ }_{5}^{5.5}$ | $\bigcirc$ | ${ }_{0}$ | $\stackrel{0}{0}$ | $\stackrel{0}{0}$ | 0 |  |
| 135 | 66 |  | ${ }^{62}$ | 0 |  | 0 |  | 0 | 0 | 0 |  |  | 135 | 0 | 0 | 0 | 1 | 5 |  | ${ }^{28}$ |  |  | ${ }_{2}$ | 1 | 0 | 0 | $\bigcirc$ | 37.9 | 2.9 |  | 1.515 | 0 |  |  |  |
| $1{ }^{1} 15$ | ${ }_{59}^{66}$ | $\bigcirc$ | 50 | $\bigcirc$ | ${ }_{6}$ | 1 | ${ }_{2}$ | $\bigcirc$ | : |  | $\bigcirc$ |  | $1{ }^{1} 15$ | \% | \% | 0 | 0 | ${ }_{3}^{8}$ | ${ }_{10}^{12}$ | ${ }_{2}^{20}$ | ${ }_{13}^{13}$ | 7 | ${ }_{2}^{2}$ | 0 | : | $\stackrel{0}{0}$ | $\bigcirc$ | 36.8 39.1 | 7.2 | $\bigcirc$ | $\stackrel{0}{0}$ | $\stackrel{0}{0}$ | $\bigcirc$ | $\stackrel{0}{0}$ | $\bigcirc$ |
| (130 | 69 61 | $\bigcirc$ | 59 <br> 7 | $\bigcirc$ | ${ }_{9}^{8}$ | ${ }_{1}$ |  | : | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | (130 | $\bigcirc$ |  | ${ }_{1}$ | 1 | ${ }_{0}^{6}$ |  |  | ${ }_{23}^{23}$ |  | ${ }_{1}^{2}$ |  | $\bigcirc$ |  | $\bigcirc$ | ${ }_{39.3}^{38 .}$ | ${ }_{3}$. | 0 | $\bigcirc$ | ${ }_{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ |  |
| 150 | 52 62 | 0 | 3 | $\bigcirc$ | ${ }_{11} 7$ | 1 |  | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 1500 1515 15 | : | : | $\bigcirc$ | 1 | ${ }_{3}^{3}$ | ${ }_{11} 9$ | 21 21 | 13 16 16 | 5 | ${ }_{2}$ | 0 | 0 | 0 | 0 | 38 391 39, | 3.8 5.1 | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }_{1530}$ | 7 | 1 | 61 | 0 | 10 | 0 | ${ }_{0}$ | 0 | 0 | 0 | 2 |  | 1530 | 0 | 0 | 1 | 1 | ${ }_{6}$ | 12 | ${ }_{2}^{23}$ | ${ }_{21}$ | 5 |  | 0 | 0 | 0 | 0 | ${ }_{38.3}$ | ${ }^{5.1}$ | 0 | 0 | 0 | 0 | 0 |  |
| 155 1600 | ${ }_{7}^{56}$ | 1 | ${ }_{68}^{6}$ | $\bigcirc$ | 7 | 0 | ${ }_{0}$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 155 1600 | $\bigcirc$ | 0 | $\bigcirc$ | 1 | 3 | ${ }_{3}^{6}$ | ${ }_{26}^{12}$ | ${ }_{28}^{22}$ | 10 | ${ }_{1}$ | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 1.2 1 1 | ${ }_{6.3}^{6.3}$ | 0 | ${ }^{\circ}$ | $\bigcirc$ | 0 | $\bigcirc$ | : |
|  |  |  | ${ }_{80}$ |  | 3 |  |  | 0 | 0 | 0 | 2 |  | 1615 |  |  |  | 0 | 1 | 9 |  | ${ }_{23}^{28}$ |  |  | $\bigcirc$ | 0 | 0 | 0 | 0.8 | 7. | 0 |  | ${ }_{0}$ | 0 | 0 |  |
|  | 80 77 | $\bigcirc$ | 70 | $\bigcirc$ | 9 | $\bigcirc$ | $\bigcirc$ | ! | : | $\bigcirc$ | $\bigcirc$ |  | 1630 165 | ${ }_{2}^{1}$ | $\bigcirc$ | 1 | ${ }^{3}$ | 8 | ${ }_{21}^{17}$ | 39 28 | 13 | 0 | ${ }_{0}^{2}$ | : | $\bigcirc$ | ${ }_{0}^{0}$ | $\bigcirc$ | ${ }_{35.2}^{36.2}$ |  | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ |
| 1700 | 79 | 0 | 76 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1700 | 3 | 0 | 0 | 3 |  | 23 | 30 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 3.7 | 0.5 | 0 | 0 | ${ }_{0}$ | 0 | 0 | 0 |
| 1775 | ${ }^{86}$ | $\bigcirc$ | ${ }_{91}^{81}$ | 1 | 1 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 1715 1780 | ${ }_{1}$ | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{1}^{2}$ | ${ }_{16}^{2}$ | 35 37 | ${ }_{32}^{21}$ | 1 | 1 | : | $\bigcirc$ | 0 | $\bigcirc$ | 36.6 39 | ${ }_{3.2}^{1.6}$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ |  |
| 175 | ${ }^{78}$ | 0 | 7 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 |  | 175 | 0 | 0 | 0 | 0 | 0 | 9 | 32 | ${ }^{26}$ | 9 | 2 | 0 | 0 | 0 | 0 | 0.2 | ${ }^{5} 7$ | 0 | 0 | 0 | 0 | 0 | 0 |
| (1800 | 82 56 | $\bigcirc$ | 79 51 | $\bigcirc$ | 2 | ${ }_{1}$ | $\bigcirc$ | : | 1 | ${ }_{0}^{0}$ | : |  | (1800 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 1 | ${ }_{2}^{1}$ | 9 | - ${ }_{19}^{36}$ | ${ }_{21}^{26}$ | 13 | ${ }_{0}^{2}$ | : | : | $\bigcirc$ | 0 | ${ }_{38 .}^{0.3}$ | 5.3 | $\bigcirc$ | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ | \% | $\bigcirc$ | $\bigcirc$ |
| 1830 | ${ }^{6}$ | 0 |  | 1 | 1 | 0 | 0 | 0 | 0 |  | 0 |  | 1830 | 0 | 0 | 0 | ${ }_{2}$ | 1 | 11 | 12 | 12 | 7 | ${ }^{0}$ | 1 | 0 | 0 | 0 | 38.7 | 5.3 | 1 | 2.17 | 0 | 0 | 0 | 0 |
| 185 1900 | 31 28 | $\bigcirc$ | 31 26 | $\bigcirc$ | ${ }_{2}$ | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | : |  | 185 <br> 1900 | : | : | : | $!$ | 1 | ${ }_{3}^{8}$ | ${ }_{13}^{11}$ | ${ }_{7}^{8}$ |  | ${ }_{0}^{2}$ | \% | : | : | - | ${ }_{39.8}^{37.5}$ | ${ }_{5.1}^{2.7}$ | $\bigcirc$ | ${ }_{0}^{\circ}$ | 0 | ${ }_{0}$ | $\stackrel{0}{0}$ | : |
| 1915 1930 1 | 26 36 | 0 | 26 35 | 0 | ${ }_{1}$ | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 |  | 1915 1930 1 | $\bigcirc$ | 0 | 0 | : | 1 | ${ }_{7}^{6}$ | ${ }_{12}$ | ${ }_{10}^{3}$ | 5 | ${ }^{3}$ | 0 | : | 0 | $\bigcirc$ | 0.9 397 | ${ }_{5.5}^{9.7}$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ |  |
| 195 | 22 | 0 | 21 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 195 |  |  | 0 | 0 | 0 | 6 | 9 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 38.3 | 2.1 | 0 | 0 | 0 | 0 | 0 |  |
| 200 | 5 | $\bigcirc$ |  | 0 | 0 | O | $\bigcirc$ | 0 | - | 0 |  |  | 2000 | ${ }^{\circ}$ |  | O | ${ }^{2}$ |  | 0 |  |  |  | ${ }^{6}$ |  |  |  | 0 | ${ }^{35.6}$ |  | 0 |  | O | 0 | 0 |  |
| 0622 | 3620 | 15 | 3210 | 17 | 307 | 14 | ${ }_{38}$ | 3 | 5 | 2 | 9 |  | ${ }_{062} 07$ | 16 16 | ${ }_{2}$ | ${ }_{9}$ | 37 40 | ${ }_{137}$ | 643 | ${ }_{1407}$ | ${ }_{973}^{858}$ | 305 | 81 | 5 | 1 | 0 | 0 | ${ }_{385}^{383}$ | 441 | ${ }_{7}$ | ${ }_{0} 193$ | 1 | O028 | 0 |  |
| 0600 | 3620 | 15 | 3210 | 17 | 307 | 14 | 38 | 3 | 5 | 2 | 9 |  | 0600 | 16 | 2 | 9 | 40 | 137 | 643 | 1407 | 973 | 305 | 81 | 6 | 1 | 0 | 0 | 385 | 441 | 7 | 0193 | 1 | 0028 | 0 | 0 |
| 0000 | 3736 | 15 | 3313 | 17 | 316 | 14 | 38 | 3 | 6 | 3 | 11 |  | 0000 | 16 | 2 | 9 | 40 | 139 | 651 | 1435 | 1005 | 331 | 94 | 13 | 1 | 0 | 0 | 387 | 443 | 14 | 0375 | 2 | 0054 | 0 |  |


| $\mathrm{i}^{\text {me }}$ | otal | $\xrightarrow{\text { cls }}$ | $\xrightarrow{\text { cls }}$ | ${ }_{3}^{\text {cls }}$ | ${ }_{4}^{\text {Cls }}$ | $\underset{\substack{\text { cls } \\ 5}}{ }$ | ${ }_{6}^{\text {cls }}$ | $\stackrel{\mathrm{Cls}}{7}$ | ${ }_{8}^{\mathrm{Cls}}$ | $\stackrel{\text { cls }}{9}$ | ${ }_{10}$ | Fix1 | ${ }_{\text {ime }}$ | $\begin{gathered} \text { Voin } \\ 0 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 10 \\ 15 \end{gathered}$ | $\begin{aligned} & \text { vin } \\ & 15 \\ & 15 \end{aligned}$ | $\begin{aligned} & \text { voin } \\ & 20 \\ & 25 \end{aligned}$ | $\begin{aligned} & \text { Vbin } \\ & 25 \\ & 30 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 30 \\ 35 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 35 \\ 40 \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 40 \\ & 45 \end{aligned}$ | $\begin{aligned} & \text { vin } \\ & 45 \\ & 50 \end{aligned}$ | $\begin{aligned} & \text { vin } \\ & 50 \\ & 50 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 60 \\ 70 \end{gathered}$ | $\begin{gathered} \text { vinn } \\ 70 \\ 80 \end{gathered}$ | $\begin{gathered} \text { Voin } \\ 80 \\ 90 \end{gathered}$ | $\begin{gathered} \text { Vin } \\ 90 \\ 100 \end{gathered}$ | Mean | $\mathrm{V}_{85} \mathrm{~V}_{\text {pp }}$ | ${ }_{60}^{\text {JPSL }}$ | ${ }_{\text {JPSL\% }}$ | $\begin{gathered} \text { ISL1 } \\ \text { ACPO } \end{gathered}$ | $\begin{aligned} & 151 \% \\ & 68 \\ & \text { ACPO } \end{aligned}$ | $\begin{aligned} & 1 \mathrm{ILL} \\ & 75 \\ & \text { DF } \end{aligned}$ | $\begin{gathered} 15 L 2 \% \\ 75 \\ \text { DF } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0000 0100 | ${ }_{6}^{10}$ |  | ${ }_{5}^{9}$ | $\bigcirc$ | ! | \% | ${ }_{0}$ | 0 | 0 | $\bigcirc$ | 0 |  | 0000 0100 | ${ }_{0}^{0}$ | , | 0 | 0 | 0 |  |  | 1 | ${ }_{1}^{2}$ | 1 | - | 0 | 0 | ${ }_{0}^{0}$ | 2.1 2.9 | 50 | $\begin{aligned} & 0 \\ & 0 \end{aligned}$ | ${ }_{5}^{2.199} 5$ | $\bigcirc$ | ${ }_{0}$ | $\bigcirc$ | 0 |
| 0200 |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  | 0 |  | 2 | 2 | 1 |  | 0 | 0 | 0 | 0 |  |  |  | ${ }^{\text {2.02 }}$ |  |  |  | 0 |
| ${ }^{0300}$ | ${ }^{13}$ |  | ${ }_{20}^{12}$ | 0 | 1 | 0 | 0 |  |  | 0 | 0 |  | ${ }^{0300}$ | 0 | 0 | 0 | 0 | 0 | 1 | ${ }_{3}^{3}$ |  | ${ }^{3}$ | 2 | 0 | 0 | 0 | 0 | 3.6 | ${ }_{\text {50. }}^{50.6}$ | 0 | 1.688 |  | 0.59 |  | 0 |
| 0.00 0500 | 22 50 |  |  | 0 | 5 | - | $\bigcirc$ | $\bigcirc$ | ${ }_{0}^{\circ}$ | $\bigcirc$ | \% |  | ${ }_{0} 0000$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ |  |  |  | 15 | 11 | 7 | 1 |  |  | ${ }_{0}$ |  |  |  |  | - |  | ${ }_{0}^{0}$ | $\bigcirc$ |
| 0600 | 160 |  | 11 | 0 | 15 | 1 | 1 | 0 | 0 | 0 | 0 |  | 0600 | 0 | 0 | 0 |  | 5 |  |  |  |  | 7 | 1 | 0 | 0 | 0 | 0.6 | 6.1 |  | 0.536 | 0 |  | 0 | 0 |
| 070 | -385 |  | ${ }_{32}^{357}$ | ${ }^{2}$ | ${ }_{20}^{22}$ | 1 | 1 | 0 | 0 | 0 | $\bigcirc$ |  | 0700 | 2 | $\bigcirc$ | 1 | 2 | 1 | 80 | 170 | ${ }^{91}$ | ${ }^{22}$ | ${ }_{3}$ | 0 | 0 | 0 | 0 | 37.9 3.8 | $\begin{array}{r}2.6 \\ 2.2 \\ \hline\end{array}$ | 0 | 0.111 | O | 0.037 | 0 | 0 |
| 0900 | - 235 |  | ${ }^{22}$ |  |  | 1 | 2 | 1 | 0 | 0 | 0 |  | 0900 |  | 0 | 1 | 2 | 8 |  |  |  | 18 | 5 | 1 |  | 0 | 0 | ${ }_{38.3}$ |  |  | 0.395 |  | 0.091 | 0 | 0.03 |
| 1000 | 155 |  | 130 | 1 | 17 | 1 | 2 | 0 | 0 | 0 | 1 |  | 1000 | 0 | 1 | 1 |  | 7 | 30 | 63 | 35 | 12 |  | 0 |  |  | 0 | 37.8 | ${ }^{3} .5$ | 0 | 0.215 |  |  |  |  |
| 1100 | -166 |  | 139 |  | 18 | 1 | 3 | 0 | 0 | 0 | 1 |  | 1100 | 0 | 1 |  | ${ }_{3}$ | ${ }_{6}$ |  | ${ }_{7} 6$ |  | 15 |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{38.3}^{38.6}$ |  |  | 0. 03 | O | 0.121 | 0 | 0.0 |
| 1200 1300 | 179 |  | 151 166 | I | ${ }_{21}^{18}$ | 1 | ${ }^{3}$ | \% | ${ }_{1}$ | 0 | ! |  | 1200 1300 | ${ }_{0}$ | ! | 1 | 3 | ${ }_{9}$ | 3 | 77 |  | 15 16 16 | 5 | 1 | \% | 0 | - | ${ }_{38.6}^{38.3}$ |  | O | -0.186 | \% | ${ }_{0.101}^{0.037}$ |  | 0 |
| 100 | 19 |  | 166 | 1 | 18 | ${ }^{2}$ | 3 | 0 | 0 | 0 | 1 |  | 100 | 0 | 0 | 0 | 2 | 7 |  | 72 | 53 | 19 | 6 | 1 | 0 | 0 | 0 | 39 | ${ }^{6}$ |  | 0.275 |  | 0.069 |  | 0 |
| 1500 1600 1 | ${ }_{27}^{212}$ |  | 18 <br> 258 <br> 1 | ${ }_{1}$ | 20 16 | 1 | ${ }_{1}$ | $\bigcirc$ | $\bigcirc$ | \% | 1 |  | 1500 1600 | ${ }_{1}^{0}$ | $\bigcirc$ | 1 | ${ }_{1}^{2}$ | 9 |  | 70 101 | ${ }_{89}^{63}$ | ${ }_{31}^{22}$ | 8 8 | 1 | : | : | - | 39.2 | 5.19 |  | 0.35 0.62 | \% | 0.031 0.09 |  | $0.02{ }^{0}$ |
| 1700 | 287 |  | ${ }^{273}$ | 2 | 11 | 0 | 0 | 0 | 0 |  | 0 |  | 1700 |  | 1 | 1 | 1 | 5 | 0 | 108 | 8 | 33 | 11 | 0 | 0 |  | 0 | 39.3 | 5.1 | 1 | 0.186 | 0 | 0.023 | 0 | 0.023 |
| 1800 | 17 |  | 165 | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1800 | $\bigcirc$ | 0 |  | 0 | ${ }_{2}^{2}$ | 21 | 59 | ${ }^{58}$ | 2 | 9 | 1 | 0 | 0 | 0 | 0.7 | ${ }_{6}^{6.1}$ | 1 | 0.35 | 0 | 0 | 0 | 0 |
| ${ }^{1900}$ | 8 |  | 86 |  | 2 | ${ }_{0}$ | ${ }_{0}$ | $\bigcirc$ | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ |  | ${ }_{2000}$ | 0 | 0 | 0 | ! | 3 | ${ }_{8}$ | ${ }^{3}$ | ${ }_{13}^{28}$ | 7 |  | 0 | 0 | 0 | 0 | 0.3 | 7.1 | ¢ | -.593 |  | 0.18 | 0 | 0 |
| 2100 | 37 |  | ${ }^{35}$ | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2100 | 0 | 0 |  | 0 | 1 | 6 | 11 | 10 | 7 |  | 0 | 0 | 0 | 0 | 0.7 | 7.3 | 0 | 0.391 |  |  | 0 | 0 |
| 2200 | ${ }_{18}^{29}$ |  | ${ }_{16}^{28}$ | 0 | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | ${ }_{2200}^{2200}$ | $\bigcirc$ | O | $\bigcirc$ | $\bigcirc$ |  |  | ${ }_{5}^{8}$ | ${ }_{6}^{8}$ | ${ }^{5}$ | $\stackrel{3}{1}$ | 1 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{5}^{2}$ | ${ }^{9}$ |  | ${ }^{2.67}$ |  | 0.2.3 | 0 | $\bigcirc$ |


| $i^{\text {me }}$ | otal | $\mathrm{cls}_{1}$ | $\underset{\substack{\text { cls } \\ 2}}{ }$ | ${ }_{\substack{\text { Cls } \\ 3}}$ | $\underset{4}{\text { Cls }}$ | $\underset{5}{\text { cls }}$ | $\underset{\substack{\text { cls } \\ 6}}{ }$ | $\stackrel{\text { cls }}{7}$ | ${ }_{8}^{\text {cls }}$ | ${ }_{9}^{\text {cis }}$ | ${ }_{\substack{\text { cls } \\ 10}}$ | Fix1 | ${ }_{1}^{\text {ime }}$ | $\begin{gathered} \text { Voin } \\ 10 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vin } \\ 10 \\ 15 \end{gathered}$ | $\begin{gathered} \text { Vin } \\ 15 \\ 20 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 20 \\ 25 \end{gathered}$ | $\begin{gathered} \text { Voin } \\ 25 \\ 30 \end{gathered}$ | $\begin{gathered} \text { Vinin } \\ 30 \\ 35 \end{gathered}$ | $\begin{gathered} \text { Vinn } \\ 35 \\ 40 \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 40 \\ & 45 \end{aligned}$ | $\begin{gathered} \text { vinn } \\ 45 \\ 50 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 50 \\ 60 \end{gathered}$ | $\begin{gathered} \text { Vin } \\ 60 \\ 70 \end{gathered}$ | $\begin{gathered} \text { Vin } \\ 70 \\ 80 \end{gathered}$ | $\begin{gathered} \text { Vinn } \\ 80 \\ 90 \end{gathered}$ | $\begin{gathered} \text { Vinn } \\ 90 \\ 900 \end{gathered}$ | Me | $\mathrm{c}_{8 \text { \%pp }}$ | ${ }_{\text {J }}^{\text {JPSL }}$ | ${ }_{60}^{\text {JPSL\% }}$ | $\begin{gathered} \text { 15L1 } \\ \text { ACPO } \\ \text { ACPO } \end{gathered}$ | $\begin{aligned} & 15 L 1 \% \\ & 68 \\ & \text { ACPO } \end{aligned}$ | $\begin{aligned} & 1 \mathrm{SL2} \\ & 75 \\ & \mathrm{DF} \end{aligned}$ | $15 \mathrm{c} 2 \%$ 75 FF |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mon | 378 <br> 3935 <br> 8 | ${ }_{3}^{10}$ | ${ }^{3362}$ | 18 | ${ }_{3}^{300}$ | 1 | 25 |  | ${ }_{6}$ |  | ${ }_{12}^{13}$ |  | Mon |  |  | 5 |  | 15 |  | $1{ }^{1}$ |  |  | ${ }_{1}^{87}$ |  |  | 0 |  | ${ }^{38.3}$ | 3.6 |  | ${ }^{0.133}$ |  |  |  | 0 |
| Tue Wed | ${ }_{33295}^{3935}$ | ${ }_{1}$ | ${ }^{3506}$ | 18 | ${ }_{26}^{317}$ | 13 15 | ${ }^{26}$ | ${ }_{1}$ | 6 |  | ${ }_{10}^{12}$ |  | Tue Wed | 15 16 |  | 20 10 | ${ }_{37}^{31}$ | ${ }_{13}^{115}$ |  | ${ }_{1}^{1288}$ | ${ }_{850}^{107}$ | ${ }_{319}^{395}$ | 132 102 10 | 15 12 | ${ }_{0}$ | $\bigcirc$ |  | 387 | ${ }_{5}^{7}$ |  | 0.19 0.367 |  | 0.051 |  | : |
|  | ${ }_{3969}^{3269}$ | 32 | ${ }_{3528}^{293}$ | 17 | ${ }_{312}^{26}$ | 13 | 6 | 2 |  | 5 | 13 |  | Thu | ${ }_{28}^{16}$ | ${ }_{8}$ | 12 | ${ }_{8}$ | 171 | 765 | 150 | ${ }_{976}^{850}$ | ${ }_{337}$ | ${ }_{109}^{102}$ | ${ }_{11}^{12}$ | 1 | ${ }_{0}$ | - | ${ }_{38.2}^{38.7}$ | ${ }_{1}$ | 12 | ${ }_{0}^{0.277}$ |  | ${ }^{0.013}$ | $\begin{aligned} & 0 \\ & 0 \end{aligned}$ | 0 |
| Fri |  | 15 | 366 | 21 | 30 |  | 25 | 3 |  | 2 | 11 |  | Fri | 2 | ${ }^{3}$ |  | ${ }^{28}$ | 109 | 593 | 170 | 113 | ${ }^{375}$ | ${ }^{133}$ | 8 | 1 | 0 | 0 | 39.3 | . 6 | 9 | 0.22 |  | 0.026 |  | 0.013 |
| ${ }_{\text {\|Sut }}^{\text {\|Sun }}$ | 1989 1679 | 25 5 | 183 1561 | 15 8 | ${ }_{59}^{96}$ | 2 | ${ }_{3}^{5}$ | ${ }_{1}^{3}$ | ${ }_{1}^{3}$ | $\bigcirc$ | 2 |  | ${ }_{\substack{\text { \|Sat } \\ \text { \|Sun }}}^{\text {a }}$ | $\bigcirc$ |  | 8 | 11 | ${ }_{2}^{37}$ | ${ }_{188}^{252}$ | ${ }_{562}^{69}$ | 601 518 | ${ }_{25}^{257}$ | ${ }_{108}^{116}$ | ${ }_{10}^{12}$ | ${ }_{3}^{1}$ | ${ }_{1}^{0}$ | : | ${ }_{0.9}^{0.9}$ | 6.1 | $1_{1}^{13}$ | ${ }_{0}^{0.65}$ | 3 | ${ }_{0.238}^{0.151}$ |  | 0.025 0.06 |
| Grand Total |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $1^{\text {me }}$ | otal | $\mathrm{cls}_{1}$ | $\underset{\substack{\text { cls } \\ 2}}{ }$ | ${ }_{\substack{\text { Cls } \\ 3}}$ | $\underset{4}{\text { Cls }}$ | $\underset{\substack{\text { cls } \\ 5}}{ }$ | $\underset{\substack{\text { Cls } \\ 6}}{ }$ | $\underset{\substack{\text { cls } \\ 7}}{ }$ | ${ }_{8}^{\text {cls }}$ | $\stackrel{\text { cls }}{9}$ | ${ }_{\substack{\text { cls } \\ 10}}$ | Fix1 | ${ }_{1}^{\text {ime }}$ | $\begin{gathered} \text { Voin } \\ 0 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 10 \\ 15 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 15 \\ 20 \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 20 \\ & 25 \\ & \hline \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 25 \\ 30 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 30 \\ 35 \\ \hline \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 35 \\ & 40 \\ & \hline \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 40 \\ 45 \end{gathered}$ | $\begin{gathered} \text { vbin } \\ 45 \\ 50 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 50 \\ 60 \end{gathered}$ | $\begin{gathered} \text { Vin } \\ 60 \\ 70 \end{gathered}$ | $\begin{gathered} \text { Voin } \\ 70 \\ 80 \end{gathered}$ | $\begin{gathered} \text { Voin } \\ 80 \\ 90 \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 90 \\ & 100 \end{aligned}$ | Mean | $\mathrm{V}_{\text {Vpp }}$ | ${ }_{\text {J }}$ JPSL | ${ }^{\text {JPSL\% }}$ | $\begin{gathered} \text { 1SL1 } \\ \text { ACPO } \\ \text { ACP } \end{gathered}$ | $\begin{aligned} & 15 \mathrm{LL} \% \\ & 68 \\ & \text { ACPO } \end{aligned}$ | $\begin{aligned} & 1512 \\ & 75 \\ & \text { DF } \end{aligned}$ | $\begin{gathered} 1 \mathrm{SL2} \mathrm{\%} \\ 75 \\ \hline \mathrm{DF} \end{gathered}$ |
|  | 48176 | 367 | 43237 | 234 | 3566 | 152 | 378 | 28 | 55 | 31 | 128 |  |  | 157 | 65 | 135 | 414 | 1600 | 8253 | 17937 | 13025 | 4747 | 1672 | 156 | 14 | 1 |  | 39 | 446 | 171 | 0355 | 24 | 005 | 4 | 0008 |

Advanced Transport Research_EH

```
Globals
    Report Id CustomList-689
    Descriptor Advanced Transport Research_EH
    Created by MetroCount Traffic Executive
    Creation Time (UTC) 2019-10-28T10:14:06
                Legal Copyright (c)1997-2018 MetroCount
            Graphic header.gif
            Language English
            Country United Kingdom
                Time UTC + 0 min
        Create Version 5.0.6.0
                Metric Non metric
            Speed Unit mph
            Length Unit ft
            Mass Unit ton
Dataset
            Site Name 23233-016
        Site Attribute ESSEX HIGHWAYS
            File Name Q:\23233 Chelmsford 19371\Eco files\23233-016 0 2019-10-28 1012.EC1
            File Type Plus
            Algorithm Factory default axle
            Description !WALTHAM RD NORTH [60M]
                Lane 1
            Direction 7
        Direction Text 7- North bound AJB, South bound B]A.
            Layout Text Axle sensors - Paired (Class/Speed/Count)
            Setup Time 2019-10-09T10:44:22
            Start Time 2019-10-09T10:44:22
            Finish Time 2019-10-14T01:10:05
                    Operator ATR
            Configuration 40 MC5600 80 00 14 6a 6a ? FC23XRWX MC56-L5 [MC55] (c)Microcom 19Oct04
Dataset
            Site Name 23233-016
            Site Attribute ESSEX HIGHWAYS
            File Name Q:\23233 Chelmsford 19371\Eco files\23233-016 0 2019-10-28 1013.EC1
                    File Type Plus
                    Algorithm Factory default axle
                    Description !WALTHAM RD NORTH [60M]
                    Lane 1
            Direction 7
        Direction Text 7- North bound A]B, South bound B]A.
            Layout Text Axle sensors - Paired (Class/Speed/Count)
            Setup Time 2019-10-14T01:11:33
            Start Time 2019-10-14T01:11:33
            Finish Time 2019-10-23T20:06:33
                Operator ATR
            Configuration 40 MC5600 80 00 14 6a 6a ? FC23XRWX MC56-L5 [MC55] (c)Microcom 19Oct04
Profile
            Name Advanced Transport Research_EH
                        Title Advanced Transport Research
        Graphic Logo C:and SettingsDocuments3.21_on_us_logo_cmyk 50.BMP
                        Header
                    Footer
            Percentile 185
            Percentile 295
                    Pace }1
            Filter Start 2019-10-09T10:45:00
            Filter End 2019-10-23T20:06:33
        Class Scheme ARX
                            F Cls(1-10) Dir(S) Sp(0,120) Headway(]0) Span(0-328.084) Lane(0-16)
            Low Speed 0
            High Speed }12
            Posted Limit }6
            Speed Limits 6875606060000060
            Separation }0.00
        Separation Type Headway
            Direction South
Encoded Direction 4
```


## Advanced Transport Research EH

Column

| Time [-- | 24-hour time (0000-2359) |
| :---: | :---: |
| Total | Number in time step |
| Cls 1 | Class totals |
| Cls 2 | Class totals |
| Cls 3 | Class totals |
| Cls 4 | Class totals |
| Cls 5 | Class totals |
| Cls 6 | Class totals |
| Cls 7 | Class totals |
| Cls 8 | Class totals |
| Cls 9 | Class totals |
| Cls 10 | Class totals |
| Fix1 | User defined fixed text |
| Time [-- | 24-hour time (0000-2359) |
| Vbin 010 | Speed bin totals |
| Vbin 1015 | Speed bin totals |
| Vbin 1520 | Speed bin totals |
| Vbin 2025 | Speed bin totals |
| Vbin 2530 | Speed bin totals |
| Vbin 3035 | Speed bin totals |
| Vbin 3540 | Speed bin totals |
| Vbin 4045 | Speed bin totals |
| Vbin 4550 | Speed bin totals |
| Vbin 5060 | Speed bin totals |
| Vbin 6070 | Speed bin totals |
| Vbin 7080 | Speed bin totals |
| Vbin 8090 | Speed bin totals |
| Vbin 90100 | Speed bin totals |
| Mean | Average speed |
| Vpp 85 | Percentile speed |
| JPSL 60 | Number exceeding Posted Speed Limit |
| JPSL\% 60 | Percent exceeding Posted Speed Limit |
| JSL1 68 ACPO | Number exceeding Speed Limit 1 |
| ]SL1\% 68 ACPO | Percent exceeding Speed Limit 1 |
| JSL2 75 DFT | Number exceeding Speed Limit 2 |
| JSL2\% 75 DFT | Percent exceeding Speed Limit 2 |


| $\mathrm{l}^{\text {me }}$ | otal | $\mathrm{cls}_{1}$ | ${ }_{2}^{\text {cls }}$ | $\mathrm{cls}_{3}$ | ${ }_{4}{ }_{4}$ | ${ }_{\substack{C l s \\ 5}}$ | $\mathrm{cls}_{6}$ | ${ }_{7}{ }_{7}$ | $\begin{gathered} \mathrm{cls} \\ 8 \end{gathered}$ | ${ }_{9}{ }^{\text {cls }}$ | $\begin{aligned} & \mathrm{Cls} \\ & 10 \end{aligned}$ | Fix1 | ${ }_{i}^{\text {ime }}$ | $\begin{gathered} \text { Vbin } \\ 0 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vinn } \\ 10 \\ 15 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 15 \\ 20 \end{gathered}$ | $\begin{gathered} \text { Vinn } \\ 20 \\ 25 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 25 \\ 30 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 30 \\ 35 \end{gathered}$ | $\begin{aligned} & \text { Vbin } \\ & 35 \\ & 40 \\ & 40 \end{aligned}$ | $\begin{aligned} & \text { Vinn } \\ & 40 \\ & 45 \end{aligned}$ | $\begin{aligned} & \text { Vbin } \\ & 45 \\ & 50 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 50 \\ 60 \end{gathered}$ | $\begin{aligned} & \text { Vinin } \\ & 60 \\ & 70 \end{aligned}$ | $\begin{gathered} \text { Voin } \\ 70 \\ 80 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 80 \\ 90 \end{gathered}$ | $\begin{gathered} \text { Vinn } \\ 90 \\ 100 \end{gathered}$ | Mean | $\begin{gathered} \mathrm{vppp}_{85} \end{gathered}$ | $\begin{gathered} \text { JPSL } \\ 60 \end{gathered}$ | ${ }_{60}{ }_{60} \text { PSL\% }$ | $\begin{gathered} 1 \mathrm{SL1} \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{gathered} 151 \% 1 \% \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{aligned} & 1512 \\ & 75 \\ & \text { DF } \end{aligned}$ | $\begin{gathered} 1 \mathrm{SLL2} \mathrm{\%} \\ 75 \\ \text { DF } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 105 1100 | 8 | 1 | ${ }_{38}^{25}$ | $\bigcirc$ | 3 | : | ${ }_{2}^{0}$ | 0 | $\stackrel{0}{0}$ | 0 | ${ }_{1}^{0}$ |  | 105 1100 | 0 | 1 |  | 0 | +10 | ${ }_{10}^{5}$ | $1{ }_{17}$ | $1{ }_{11}^{1}$ | ${ }_{5}^{0}$ | ${ }_{1}^{1}$ | 1 | 0 | 0 | 0 | ${ }_{38.7}^{29.2}$ | 37.5 5.7 |  | 2.273 |  | $\begin{aligned} & 0 \\ & 0 \\ & 0 \end{aligned}$ | 0 |  |
| ${ }_{1115}^{115}$ | ${ }_{5}$ | 0 | ${ }_{3}^{33}$ | $\bigcirc$ | 7 | 0 | ${ }_{2}^{2}$ | 0 | 0 | 0 |  |  | 1115 1130 1 | $\bigcirc$ | 0 | 2 |  |  | 3 | 16 | 13 | 6 |  |  |  |  | 0 | ${ }^{0.3}$ | ${ }_{6}^{6.1}$ |  | 2.381 | 0 | - | 0 |  |
| ${ }^{1135}$ | 36 | $\bigcirc$ | ${ }_{26}$ | 1 | 7 | 2 | 0 | : | ${ }_{0}$ | : | : |  | 1130 115 1 | - | - | 0 | : | $\bigcirc$ | ${ }_{7}$ | 19 15 | 18 10 | 3 | 1 | : | : | 0 | $\bigcirc$ | ${ }_{39}{ }^{0 .}$ | 3.8 <br> 6 | : | - | 0 | $\bigcirc$ | ${ }_{0}^{0}$ |  |
| 1200 | 33 | 0 | 27 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 |  | 1200 | 0 | 0 | 0 | 0 | 1 | 1 | 17 | 6 | 8 | 0 | 0 | 0 | 0 | 0 | 0.6 | 7.7 | 0 | 0 | 0 | 0 |  |  |
| (1215 $\begin{aligned} & 1215 \\ & 1230\end{aligned}$ | 51 51 51 | 1 | 3 7 | 0 | 2 |  | 1 | : | : | : | : |  | (1215125 <br> 1230 | \% | \% | 1 | : | : | 12 | ${ }_{11}^{21}$ | 15 17 | 7 | 0 | : |  | \% | \% | 39.7 | 7.9 7.9 | : | 0 | : | \% | - |  |
| 125 | 9 | 0 | 3 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 |  | 125 | 0 | 0 | 0 | 0 | 0 | 12 | 10 | 17 | 11 | 1 | 2 |  | 0 | 0 | 2.2 | 7.8 | 2 | . 082 | 0 | 0 |  |  |
| (1300 | 55 2 | 1 | 35 | 0 | 10 6 | : | ${ }_{0}^{2}$ | $\bigcirc$ | \% | $\bigcirc$ | 0 |  | 1300 1315 | ${ }_{2}^{0}$ | \% | ${ }_{1}$ | ${ }_{5}^{0}$ | 0 | ${ }_{2}^{7}$ | 13 | ${ }_{15}^{20}$ | 12 2 | ${ }_{2}$ | : | : | $\bigcirc$ | 0 | 1.5 36.9 | 6.9 | : | 0 | : | : | 0 |  |
|  | ${ }^{3}$ | 0 | ${ }^{38}$ | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 |  | -1330 | 0 | 0 | 0 | 1 | ${ }_{0}$ |  | 15 | ${ }^{16}$ |  | ${ }_{3}$ | 0 | 0 | 0 | 0 | 0.9 | 8.3 | 0 | 0 | 0 | 0 | 0 |  |
| (1358 | 36 <br> 57 | $\bigcirc$ | 30 9 | ${ }_{0}$ | 6 | - | 2 | ${ }_{0}$ | ${ }_{0}$ | - | $!$ |  | 135 100 1 | ${ }_{0}^{0}$ | - | $\bigcirc$ | - | ${ }_{3}^{2}$ | ${ }_{11}^{6}$ | ${ }_{16}^{16}$ | $2{ }_{21}^{9}$ | ${ }_{6}$ | ! | - |  | ${ }_{0}^{0}$ | - |  |  |  | 0 | - | ${ }_{0}^{0}$ | ${ }_{0}$ |  |
| 115 | 53 | 0 | 0 | 0 | 11 | 0 | 2 | 0 | 0 | 0 | 0 |  | 115 | 0 | 0 | 0 | 1 | 0 | 6 | 20 | 20 | 5 | 1 | 0 | 0 | 0 |  | 39.8 | . 6 |  | 0 | 0 | 0 | 0 |  |
| 130 15 15 | 61 67 | ${ }_{0}$ | ${ }_{53}^{51}$ | 1 | 5 | 1 | 1 | 0 | 0 | : | 1 |  | 130 15 15 | 0 | 1 | ${ }_{3}$ | ${ }_{3}^{2}$ | 1 | 12 | 21 15 | ${ }_{18}^{17}$ | ${ }_{11}^{2}$ | ${ }_{0}$ | ${ }_{1}$ | 0 | 0 |  | ${ }_{37}^{39}$ | 3.8 5.7 | 2 | ${ }_{1}^{3.279}$ | 0 | 0 | $\bigcirc$ |  |
| 1500 |  |  |  |  |  |  |  |  |  |  |  |  | 1500 |  | 5 |  | 0 | 0 | 8 |  | 16 |  | 2 | 0 |  |  | 0 |  |  |  |  |  |  |  |  |
| (1515 | ${ }_{70}$ | 1 | ${ }_{78} 6$ | $\bigcirc$ | 8 | O | 1 | 0 | 0 | $\bigcirc$ | : |  | 1515 1530 1 | $\bigcirc$ |  | : | 1 | 1 |  | ${ }_{28}^{17}$ | ${ }_{33}^{31}$ | 12 16 |  | : |  | : | 0 | ${ }_{1}^{1.7}$ | ${ }_{7}^{6.5}$ | 0 | 0 | 0 | 0 |  | 0 |
| 1550 | $\begin{array}{r}102 \\ \hline\end{array}$ | 1 | 85 | 0 | 1 | 0 | 2 | \% | 0 | - | $\bigcirc$ |  | $\begin{array}{r}1530 \\ 155 \\ \hline 1\end{array}$ | $\bigcirc$ | ${ }_{0}$ | $\bigcirc$ | \% | ${ }_{1}^{2}$ | ${ }_{12}^{2}$ | ${ }_{8}^{28}$ | ${ }^{39}$ | ${ }_{10}^{16}$ | ${ }_{2}^{6}$ | - | 0 | 0 | - | 39.3 | ${ }_{3.5}^{7.1}$ | : | - | - | 0 | $\bigcirc$ |  |
| 1600 | 12 | ${ }^{2}$ | ${ }^{125}$ |  | 11 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1600 | 0 | 0 | 0 | 0 | 3 | ${ }^{21}$ | ${ }_{55}^{70}$ | 39 | 8 | 1 | 0 | 0 | 0 | 0 | 38.6 | 2.5 | 0 | 0 | 0 | 0 | 0 |  |
| ${ }_{1} 1630$ | ${ }_{13}{ }^{132}$ | 0 | 121 | 1 | 11 | 1 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{1630}^{165}$ | 0 | 0 | 1 | 0 | 10 | 15 | 2 | 55 | 11 | 0 | 0 | $\bigcirc$ |  | 0 | 38.8 | 3.1 | 0 | 0 | 0 | 0 | 0 |  |
| [1750 | 133 136 | 2 | 115 127 | ${ }_{0}^{3}$ | ${ }_{7}^{13}$ | : | 1 | $\bigcirc$ | $\bigcirc$ | : | $\bigcirc$ |  | 165 1700 | $\bigcirc$ | 0 | 1 | 3 0 | 1 | ${ }_{30}^{17}$ | ${ }_{39}^{56}$ | ${ }_{33}^{2}$ | ${ }_{20}^{6}$ | ${ }_{5}^{8}$ | $\stackrel{0}{2}$ | 0 | 0 | 0 | ${ }_{39}^{39.3}$ | 6.1 | ${ }_{2}$ | 1. 71 | \% | : | 0 |  |
| 1715 | 119 | 0 | 11 | 0 | ${ }^{3}$ | 0 | $\bigcirc$ | 1 | 1 | 0 | 0 |  | 1715 | 0 | 0 | 0 | 0 | 1 | 18 | 9 | ${ }_{5}^{3}$ | ${ }^{15}$ | ${ }^{2}$ |  |  | 0 | 0 | 39.7 | 5.9 |  | 0 | 0 | 0 | - |  |
| 175 <br> 1750 | 126 107 | 0 | 103 | 1 | ${ }_{3}$ |  | $\bigcirc$ | $\bigcirc$ | 0 | - | $\bigcirc$ |  | 175 | 0 | \% | 0 | : | $\bigcirc$ | ${ }_{2}^{8}$ | 57 | ${ }_{3}{ }^{5}$ | ${ }^{18}$ | 3 | : |  | ${ }_{0}^{0}$ | 0 | ${ }_{0.2}^{0.8}$ | ${ }_{3.8}^{5.1}$ | - | ${ }_{0}^{0}$ | : | $\bigcirc$ | $\stackrel{0}{0}$ |  |
| 1800 | 102 | 0 | 98 | 0 |  | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 |  | 1800 1815 | 0 | 0 | 0 | 0 | 0 | 1 |  | ${ }^{3}$ | 20 | 1 | 2 |  | 0 | 0 | 2 | 6.3 | 2 | 1.961 | 0 | 0 | 0 |  |
| (1815 | 70 | 1 | ${ }_{65}^{67}$ | 0 | ${ }_{5}^{2}$ | : | 1 | : | : | $\bigcirc$ | $\bigcirc$ |  | 1815 <br> 1830 <br> 18 | $\bigcirc$ | 1 | 3 | : | 2 | ${ }_{15}^{6}$ | ${ }_{23}^{23}$ | 26 18 | 9 | ${ }_{3}^{6}$ | : | : | - | 0 | 1.5 37.9 |  | $\bigcirc$ | $\stackrel{0}{0}$ | : | $\bigcirc$ | $\bigcirc$ |  |
| 185 | ${ }^{8}$ | 0 | ${ }^{6}$ | $\bigcirc$ | ${ }_{2}$ | 0 | $\bigcirc$ | 0 | 0 | 0 | $\bigcirc$ |  | 185 | 0 | 0 | 0 | $\bigcirc$ | 1 | 9 | 17 | 19 | ${ }^{2}$ | 0 | 0 |  | 0 | 0 | 38.7 | 3. | O | $\bigcirc$ | 0 | $\bigcirc$ | 0 |  |
| 1915 | ${ }_{37}$ | 0 | 35 | 0 | ${ }_{2}$ | 0 | 0 | 0 | 0 | 0 | 0 |  | 1915 | 0 | 0 | 0 | 0 | 0 | 5 | 11 | 17 |  | $\bigcirc$ | - |  | 0 | 0 | 0.7 | 9 | 0 | 0 | 0 | 0 | 0 |  |
| 1930 | 32 | 0 | ${ }^{27}$ | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1930 | 0 | 0 | 0 | 0 | 0 | 2 |  | 13 | 9 | 1 | 0 |  | 0 | 0 | 2.2 | 6.1 | 0 | 0 | 0 | 0 | 0 |  |
| 1955 | ${ }^{31}$ | $\bigcirc$ | 29 29 | \% | ${ }_{1}^{2}$ | : | : | $\bigcirc$ | : | : | - |  | 195 2000 | $\bigcirc$ | : | 0 | 1 | 0 | 2 | ${ }_{6}^{9}$ | 11 | 9 | 1 | 0 | 0 | 0 | ${ }_{0}$ | 2.2 | 8.8 | 0 | ${ }_{0}$ | 0 | ${ }_{0}$ | 0 |  |
| 2015 | 16 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2015 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 |  | ${ }^{2}$ | 0 | 0 | 0 | 0 | 3.7 | 51.7 | 0 | 0 | 0 | 0 | 0 |  |
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| 2100 | ${ }^{20}$ | 0 | 18 | 0 | ${ }^{2}$ | 0 | 0 | 0 | 0 | 0 | 0 |  | 2100 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 7 |  | ${ }^{3}$ |  |  | 0 | 0 | ${ }^{3.2}$ | 51.3 | 0 | 0 |  | $\bigcirc$ | - |  |
| ${ }_{2130}$ | 12 | $\bigcirc$ | 12 | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 |  | 2130 | 0 | $\bigcirc$ | 0 | - | $\bigcirc$ | - | 6 | ${ }_{2}^{8}$ | 3 | 1 | - |  | \% | 0 | ${ }_{2.2}^{2.2}$ | 8.7 | - | $\bigcirc$ | 0 | $\bigcirc$ | 0 |  |
| 215 |  | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 215 | 0 | 0 | 0 | 0 | 0 | 0 | ${ }^{2}$ | 2 | 0 | 0 | 0 | 0 | 0 | 0 |  |  | 0 | 0 | 0 | 0 | 0 |  |
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| ${ }^{2230}$ | 16 | $\bigcirc$ | 16 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 0 | 0 | $\bigcirc$ |  | 2230 | 0 | 0 | 0 | $\bigcirc$ | $\bigcirc$ | O | 6 |  | 3 | ${ }^{2}$ | 1 | 0 | 0 | 0 | . 5 | 5.3 |  | ${ }^{6.25}$ |  | 0 | 0 |  |
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| O7 19 | ${ }_{2717}^{2450}$ | ${ }^{18}$ | ${ }_{2163}^{2406}$ | 16 | ${ }_{232}^{212}$ | ${ }_{6}$ | ${ }_{29}^{29}$ | 1 | 1 | 0 | ${ }_{4}^{4}$ |  | -0719 | 4 | 8 | ${ }_{18}^{17}$ | ${ }_{18}^{17}$ | 54 54 54 | ${ }_{312}^{297}$ | ${ }_{983}^{904}$ | 790 | ${ }_{334}^{283}$ | 65 83 | ${ }_{13}^{11}$ | 0 | 0 | 0 | 396 | 45 | ${ }_{11}^{11}$ | 0449 0488 | 0 | 0 | 0 |  |
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| 0000 | ${ }_{2776}$ | ${ }_{21}$ | ${ }_{2461}$ | 17 | ${ }_{235}^{235}$ | 7 | ${ }_{29}^{29}$ | 1 | 1 | 0 | 4 |  | 0000 | 4 | ${ }_{8}$ | 18 | 18 | 54 | 312 | 996 | 907 | 353 | 90 | 16 | 0 | 0 | 0 | 40 | 454 | 16 | 0576 | 1 | 0036 | 0 |  |





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| $1^{\text {me }}$ | otal | $\mathrm{cls}_{1}$ | $\underset{\substack{\text { cls } \\ 2}}{ }$ | ${ }_{\substack{\text { cls } \\ 3}}$ | ${ }_{4}^{\text {cis }}$ | ${ }_{\substack{\text { cls } \\ 5}}$ | $\underset{6}{\text { cls }}$ | ${ }_{\substack{\text { cls } \\ 7}}$ | $\underset{8}{\text { cls }}$ | ${ }_{9}^{\text {cls }}$ | Cls | Fix1 | ${ }_{\text {ime }}$ | $\begin{gathered} \text { Voin } \\ 0 \\ 10 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 10 \\ 15 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 15 \\ 20 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 20 \\ 25 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 25 \\ 30 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 30 \\ 35 \end{gathered}$ | $\begin{aligned} & \text { Vin } \\ & 35 \\ & 30 \end{aligned}$ | $\begin{aligned} & \text { Vin } \\ & 40 \\ & 45 \end{aligned}$ | $\begin{aligned} & \text { Vbin } \\ & 45 \\ & 50 \\ & \hline 0 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 50 \\ 50 \\ 60 \end{gathered}$ | $\begin{gathered} \text { Vinn } \\ 60 \\ 70 \end{gathered}$ | $\begin{gathered} \text { Vbin } \\ 80 \\ 80 \end{gathered}$ | $\begin{aligned} & \text { vin } \\ & 80 \\ & 80 \\ & 90 \end{aligned}$ | $\begin{gathered} \text { Vbin } \\ 90 \\ 100 \end{gathered}$ | Mean | $\mathrm{v}_{\substack{\text { vop } \\ 85}}$ | ${ }_{60}^{\text {IPSL }}$ | ${ }_{60}^{\text {PPSL/ }}$ | $\begin{gathered} 15 L 1 \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{gathered} \text { 1SLL } \% \\ 68 \\ \text { ACPO } \end{gathered}$ | $\begin{aligned} & 15 L 2 \\ & 75 \\ & \text { 7F } \end{aligned}$ | $\begin{gathered} 15 \mathrm{LL} \% \\ 75 \\ \hline \mathrm{DF} \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
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| - | 888 | ${ }_{0}$ | ${ }_{7}^{3}$ | ${ }_{0}^{0}$ | ${ }_{1}$ | ${ }_{0}$ | ${ }_{0}$ | $\bigcirc$ | ${ }_{0}$ | ${ }_{0}^{0}$ | ${ }_{0}$ |  | - | ${ }_{0}^{\circ}$ | ${ }_{0}$ | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | 1 | ${ }_{0}$ | ! | ${ }_{3}^{0}$ | ${ }_{3}$ | ${ }_{1}^{2}$ | ${ }_{0}^{0}$ | ${ }_{0}^{0}$ | $\bigcirc$ | ${ }_{50.6}^{56.8}$ |  | 2 | ${ }_{12.5}^{66.67}$ | $\bigcirc$ | ${ }_{0}$ | ${ }_{0}$ | $\bigcirc$ |
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| - | 6 | $\bigcirc$ | 6 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{0}$ | ${ }_{0}$ | 0 |  | - | $\bigcirc$ | 0 | ${ }_{0}$ | $\bigcirc$ | 0 | 0 | 0 | 1 | ${ }_{0}$ | 1 | 3 | 1 | 0 | 0 | 60.9 : |  |  | 66.67 |  | 16.67 | 1 | 16.67 |
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| 0615 | 7 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0615 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |  | 2 | ${ }^{\circ}$ | 0 | 0 | 0 | 0 | ${ }_{2.3}$. |  | 0 | 0 | 0 | 0 | 0 | 0 |
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| ${ }_{0} 0730$ | ${ }_{13}$ | 0 | 11 | ${ }_{0}$ | 1 | - | 1 | \% | 0 | 0 | $\bigcirc$ |  | ${ }_{0} 0730$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ | 0 | 0 | ${ }_{0}^{6}$ | 7 | 3 | 2 | 1 | 0 | 0 | 0 | 6.8 | 56.2 | 1 | 7.692 | 0 | 0 | 0 | 0 |
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| ${ }_{0815}$ | ${ }_{26}^{25}$ | $\bigcirc$ | ${ }_{20}^{22}$ | $\bigcirc$ | ${ }_{5}$ | 1 | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\stackrel{0}{0}$ |  | ${ }_{0815}$ | ${ }_{\circ}^{\circ}$ | \% | $\bigcirc$ | \% | $\bigcirc$ | ${ }_{0}$ | ${ }_{7}^{6}$ | ${ }_{12}{ }^{8}$ | 6 | ${ }_{3}$ | 0 | 0 | 0 | $\bigcirc$ | ${ }_{3.3}^{2.6}$ | ${ }_{8.8}^{9.8}$ | ${ }_{0}^{0}$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ | ${ }_{0}$ |
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| 0915 | ${ }^{22}$ | 0 |  |  |  |  | 0 |  | 0 |  |  |  | 0915 |  |  |  |  |  | 0 |  |  |  | 3 |  | 0 | 0 | 0 |  |  |  | 0 | 0 |  | 0 | 0 |
| 095 | 39 | 0 | 35 |  | 3 | 0 | 0 | 0 | 0 | 0 | 0 |  | 095 | 0 | 0 | 0 | 0 | 3 | 8 | 9 | 13 | 3 | 3 | 0 | 0 | 0 | 0 | ${ }^{39.6}$ | ${ }_{5.1}^{8.1}$ | 0 | 0 | 0 | 0 | ${ }_{0}$ | 0 |
| 1000 | ${ }_{35}^{39}$ | 0 | ${ }_{30}$ | 0 | ${ }_{5}^{3}$ | 1 | ${ }^{\circ}$ | 0 | 0 | 0 | 0 |  | 1000 | ${ }_{0}$ | $\bigcirc$ | $\bigcirc$ | 1 | $\bigcirc$ | ${ }_{3}^{8}$ | ${ }_{9}^{15}$ | ${ }_{10}$ |  | ${ }_{3}^{3}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 39.7 | 6.1 9.3 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
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| 1100 | ${ }_{5}$ | 0 | ${ }_{1}$ | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1100 | 0 | 0 | 0 | 0 | 0 | 5 | 17 | 16 |  | 0 | 0 | 0 | 0 | 0 | 0.3 | 5. | 0 | 0 | 0 | 0 | 0 | 0 |
| 1115 1130 1 | ${ }_{9}^{55}$ | $\bigcirc$ | 51 | 0 |  | : | $\bigcirc$ | 0 | 0 | $\bigcirc$ | : |  | 1115 1130 1 | : | $\bigcirc$ | 1 | 0 | ${ }_{1}^{2}$ | ${ }_{6}$ | ${ }_{16}^{19}$ | 22 19 | 9 | ${ }_{1}^{3}$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{39}^{1.5}$ | 7.1 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ |
| 115 | ${ }^{36}$ | 0 | 35 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 115 | 0 | 0 | 0 | 0 | 0 | 1 |  | 17 | ${ }^{12}$ | 2 | 0 | 0 | 0 | 0 | ${ }^{3}$ | 9 | 0 | 0 | 0 | 0 | 0 |  |
| 1200 1215 | 58 39 | $\bigcirc$ | ${ }_{3}^{55}$ | $\bigcirc$ | 3 | 1 | : | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 1200 1215 | $\bigcirc$ | $\bigcirc$ | : | $\bigcirc$ | 1 | ${ }_{0}^{6}$ | 1 | ${ }_{19}^{17}$ | ${ }^{3}$ | ${ }_{2}$ | : | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }^{38.6}$ | 1.9 5.5 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| ${ }^{1230}$ | 7 | 1 | 69 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 0 |  | ${ }^{1230}$ | 0 | 0 | 0 | 0 | 0 | 30 | 18 | 18 | 7 | 1 | 0 | 0 | 0 | 0 | ${ }^{37.8}$ | 2. | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }_{1300}$ | ${ }_{9}^{52}$ | 0 | 7 | $\bigcirc$ | 1 | 1 | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{0}$ | 0 |  | ${ }_{1300}$ | \% | 0 | 0 | ! | 0 | 5 | 20 | ${ }_{20}^{12}$ | 2 | 1 | 1 | ${ }_{0}$ | 0 | 0 | ${ }_{0.2}^{39.5}$ | 6 | 1 | 2.01 | 0 | 0 | 0 | 0 |
| ${ }^{1315}$ | ${ }_{5}^{58}$ | 0 | 56 50 | 0 | 1 | 0 | 1 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | (1315 | $\bigcirc$ | 0 | $\bigcirc$ | : | 0 | 5 | 36 16 16 | ${ }_{23}^{8}$ | 6 | 1 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{1}^{38.1}$ | 1. 5 5 | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 0 |
| 135 | ${ }_{39}$ | 2 | 36 |  | 1 | 。 | 0 | 0 | 0 | 0 | 0 |  | 135 | 0 | 0 | 0 | 0 | 0 | $\stackrel{5}{2}$ | 10 | ${ }_{21}^{23}$ | 6 | 1 | 1 | 0 | 0 | 0 | ${ }_{2.3}^{1.2}$ | ${ }_{5.6}^{5.5}$ | 1 |  |  |  | 0 |  |
|  | ${ }^{3}$ |  | 2 | 0 | I | 0 | 0 | 0 | 0 | 0 |  |  | 100 | 0 | 0 | 0 | 0 |  | ${ }^{2}$ | 20 | 1 | ${ }^{6}$ | 1 | 0 | 0 |  | 0 | 0. | 5. | 0 | 0 | 0 | 0 | 0 |  |
| 130 | ${ }_{38}$ | $\bigcirc$ | ${ }_{37}$ | $\bigcirc$ | 1 | - | $\bigcirc$ | $\bigcirc$ | 0 | 0 | $\bigcirc$ |  | 130 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | 0 | ${ }_{1}$ | 7 | 16 | 7 | 6 | 1 | $\bigcirc$ | 0 | 0 | ${ }^{2.8}$ | 51.1 | O | 2.632 | 1 | 2.632 | 0 | $\bigcirc$ |
| ${ }_{1500}^{5}$ | 1 | 0 | 0 | 0 | $\stackrel{1}{3}$ | $\bigcirc$ | 0 | 0 | 0 | $\bigcirc$ | : |  | ${ }_{15}{ }_{15}^{5}$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | ${ }_{5}^{8}$ | 27 | ${ }^{15}$ | 7 | ${ }_{2}$ | ${ }_{0}$ | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{38}^{2}$ | 8.5 | ${ }_{0}$ | .878 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ |
| 1515 | ${ }^{38}$ |  | 35 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1515 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | ${ }^{20}$ | 7 |  | 0 | 0 | 0 | 0 | 3.7 | 8. | 0 | 0 | 0 | 0 | 0 | 0 |
| 1530 |  | $\bigcirc$ | ${ }^{36}$ | 0 |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 1 | $\bigcirc$ | \% |  | 1530 155 15 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | ${ }^{2}$ |  | 21 15 |  |  | $\bigcirc$ |  | $\bigcirc$ | $\bigcirc$ | ${ }_{1}^{1.1}$ |  | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| 1600 | ${ }_{38}$ |  | ${ }^{37}$ | 0 | 2 | - | - | 0 | 0 | 0 |  |  | 1600 | 0 | 0 | 0 | 0 | 1 | 1 | 7 | 16 | 10 | 3 | 0 | 0 | 0 | 0 | ${ }^{3.3}$ | 8.9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1615 1630 | ${ }_{0}^{2}$ | $\bigcirc$ | 39 39 | 0 | ${ }_{1}^{3}$ | : | $\bigcirc$ | \% | $\bigcirc$ | ${ }_{0}$ | $\bigcirc$ |  | (1630 | $\bigcirc$ | $\bigcirc$ | : | : | 1 | $\begin{array}{r}3 \\ 2 \\ \hline\end{array}$ | 13 17 | 19 13 |  | ${ }_{2}^{2}$ | $\bigcirc$ | : | $\bigcirc$ | $\bigcirc$ | ${ }_{1.1}^{1.2}$ | 5.7 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | ${ }_{0}$ | $\bigcirc$ |
| 165 | ${ }_{36}^{36}$ |  | 3 |  |  |  | 0 |  | 0 | 0 |  |  | 165 | 0 | 0 |  |  |  | 5 |  |  | 7 |  |  |  |  |  |  |  |  | 0 |  |  |  |  |
| ${ }_{1715}$ | ${ }_{36}$ | $\bigcirc$ | ${ }_{35}$ | $\bigcirc$ | 1 | - | ${ }_{0}$ | \% | $\bigcirc$ | ${ }_{0}$ | 0 |  | ${ }_{1715}$ | $\bigcirc$ | $\bigcirc$ | 0 | - | 0 | ${ }_{0}$ | ${ }_{7}$ | 1 | 8 |  | 1 | 0 | 0 | 0 | 7 | 50.9 | 0 | 2.778 | 0 | 0 | 0 | 0 |
| 1775 | ${ }^{30}$ | 0 | ${ }^{30}$ | 0 | $\bigcirc$ | 0 | 0 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ |  | 1730 | \% | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | ${ }^{2}$ | 11 | 1 | 2 | ${ }_{2}$ | 1 |  | 0 | $\bigcirc$ | ${ }_{23}^{2.9}$ | ${ }^{5.8}$ |  | ${ }^{3.333}$ | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ |
| 1800 1815 | ${ }^{3}$ | 0 | ${ }^{0}$ | O | 2 | 0 | 0 | 0 | 0 | 1 | : |  | 1800 1815 | 0 | 0 | 0 | 0 | 0 | 1 | ${ }_{2}^{22}$ | 15 | ${ }_{5}^{2}$ | 2 | 1 | 0 | 0 | 0 | 0.7 | 2.1 <br>  <br>  <br> 1.7 | + | 2.326 | 0 | 0 | 0 | 0 |
| 1815 | ${ }^{32}$ | 1 |  | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  | - | O | 0 |  |  |
| 185 | 30 | 0 | ${ }_{27}$ | 0 | 3 | 。 | 0 | 0 | 0 | 0 | 0 |  | 185 | 0 | 0 | 0 | 1 | 0 | 3 | 17 | 5 |  | 0 | 0 | 0 | 0 | 0 | ${ }_{38.5}^{3.7}$ | ${ }_{3}^{8.7}$ | 0 | 0 | $\bigcirc$ | 0 | 0 | 0 |
| 1900 | 2 | 0 | ${ }_{15}^{22}$ | 0 | ${ }^{2}$ | 0 | 0 | 0 | $\bigcirc$ | 0 | $\bigcirc$ |  | 1900 | 0 | 0 | 0 | 0 | ${ }^{1}$ | 1 | 6 |  |  | 3 |  |  |  | $\bigcirc$ |  | 9.5 |  | ${ }^{\circ}$ | 0 |  | $\bigcirc$ | $\bigcirc$ |
| ${ }_{1930}$ | ${ }_{25}$ | 0 | ${ }^{23}$ | 0 | 2 | 0 | 0 | $\bigcirc$ | 0 | ${ }_{0}$ | 0 |  | $\begin{array}{r}1955 \\ 1930 \\ \hline 1\end{array}$ | \% | $\bigcirc$ | $\bigcirc$ | : | 0 | 5 | 8 | ${ }^{3}$ | ${ }^{3}$ | ${ }_{2}$ | $\bigcirc$ | 0 | 0 | 0 | ${ }^{1.3}$ | ${ }^{8.5}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| 2000 | 25 | 0 | ${ }_{23}$ | 0 |  |  | 0 | 0 |  |  |  |  | 2000 |  |  |  |  |  | ${ }_{6}$ | ${ }_{7}$ | ${ }_{5}^{2}$ | ${ }_{3}$ | 3 |  |  |  | 0 |  | 51.2 |  |  | ${ }_{0}$ | 0 | 0 |  |
| 2005 2030 20 | 25 19 12 | 0 | 23 19 19 | 0 | ${ }_{0}$ | : | 0 | 0 | 0 | 0 | 0 |  | 2005 2030 2030 | \% | $\bigcirc$ | \% | : | 1 | ${ }^{12}$ | 5 |  | 1 | 0 | 0 | ${ }_{0}$ | ${ }_{0}^{0}$ | ${ }_{0}$ | ${ }_{3}{ }_{2}^{0.9}$ | ${ }^{39.1}$ | 0 | 0 | ${ }_{0}^{0}$ | 0 | - | 0 |
| 205 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 205 | 0 | 0 | 0 | 0 |  | 0 |  | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 1.6. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }^{2100}$ | 10 | 0 | 10 | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 2100 | : | $\bigcirc$ | $\bigcirc$ | 0 |  | 1 |  | ${ }_{7}$ | 1 | ${ }_{2}$ | 0 | $\bigcirc$ | - | $\bigcirc$ | ${ }_{2.9}^{3.3}$ | 51.2 | $\bigcirc$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| 2130 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 2130 | 0 | 0 | 0 | 0 |  | 2 | 3 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | ${ }_{39} 3.9$. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }_{2200}$ |  | $\bigcirc$ |  | $\bigcirc$ | 1 | $\bigcirc$ | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{0}$ | 0 |  | ${ }_{2200}$ | \% | 0 | 0 | $\bigcirc$ | 0 | ${ }_{1}$ | 1 | 5 | 1 | 1 | 0 | ${ }_{0}$ | 0 | 0 | ${ }_{1.6} 5$ | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }_{2215}^{2215}$ | $1{ }^{9}$ | : | $1^{9}$ | 0 | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | 0 | 0 | 0 | 0 |  | ${ }_{2215}^{2215}$ | 0 | $\bigcirc$ | $\bigcirc$ | 0 | 1 | 2 | 1 | 3 | 1 | $\bigcirc$ | 0 | $\bigcirc$ | 0 | $\bigcirc$ | ${ }_{36}^{38.5}$ | 17 | 0 | 0 | 0 | $\bigcirc$ | 0 | 0 |
| 225 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 225 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | ${ }_{37.3}$. |  | 0 | 0 | 0 | 0 | 0 | 0 |
| ${ }^{2300}$ | 6 | 1 | 5 | 0 | $\bigcirc$ | 0 | 0 | 0 | 0 | 0 | 0 |  | ${ }_{23}^{2300}$ | 0 | 0 | 0 | - | 0 | ${ }_{1}^{2}$ | 3 | 1 | ${ }_{2}$ | 1 | 0 | 0 | 0 | $\bigcirc$ | ${ }^{38.3}$ |  | 0 | 0 | 0 | 0 | 0 | $\bigcirc$ |
| 2315 2330 | 9 | 0 | ${ }_{9}^{8}$ |  | $\bigcirc$ | : | : | : | 0 | 0 |  |  | ${ }_{235}^{2315}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | 0 | 1 | 5 | ${ }_{1}^{2}$ | 1 | $\bigcirc$ | $\bigcirc$ | 0 | 0 | ${ }^{1.2}$ |  |  |  |  | 0 | 0 |  |
| 235 07 07 | 02 | ${ }_{11}$ | 1673 | $\stackrel{0}{4}$ | 102 | $\stackrel{0}{7}$ | ${ }_{2}^{0}$ | : | ${ }_{2}^{0}$ |  | - |  | 235 07 07 | : | $\bigcirc$ |  |  | ${ }_{24}$ | 178 | $53{ }^{2}$ | 645 | 301 | 102 | ${ }_{9}$ | : | - | - | 413 ${ }^{3.6}$ |  | $\stackrel{0}{9}$ | 0499 | 0 | 0111 | : | - |
| 0622 | ${ }^{2003}$ | 11 | 1861 | 4 | 114 | 7 | 3 |  | 2 | 1 | 0 |  | 0622 | 0 | 0 | 3 | 3 | ${ }^{26}$ | ${ }^{213}$ | 591 | 693 | 339 | ${ }^{125}$ | 10 | 0 | 0 | 0 | 413 | 47 | 10 | 0499 | 2 | 01 | 0 | 0 |
| 0000 | 2152 | 12 | 2001 |  | 121 |  | 3 |  |  | 1 |  |  | 0000 |  |  |  |  | 31 | 225 | 528 | 731 | 369 |  | 19 |  |  |  | 415 | 474 |  | - 23 |  | 0139 |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0046 |






\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline $1^{\text {me }}$ \& otal \& $\mathrm{cls}_{1}$ \& $\underset{\substack{\text { cls } \\ 2}}{ }$ \& ${ }_{3}{ }_{3}$ \& ${ }_{4}^{\text {Cls }}$ \& $\stackrel{c}{\text { cls }}$ \& $\underset{\substack{\text { cls } \\ 6}}{ }$ \& ${ }_{\substack{\text { cls } \\ 7}}$ \& ${ }_{8}^{\mathrm{Cls}}$ \& $\underset{9}{\text { cls }}$ \& ${ }_{\substack{C 1 s \\ 10}}$ \& Fix1 \& ${ }_{\text {ime }}$ \& $$
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$$ \& Mean \& $\mathrm{v}_{\text {vop }}$ \& ${ }_{60}^{\text {IPSL }}$ \& $$
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$$ \& $$
\begin{gathered}
1 \text { 15L1 } \\
68 \\
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& 15 \mathrm{LL1} \mathrm{\%} \\
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0015 \& $\stackrel{2}{5}$ \& \％ \& ${ }_{3}^{2}$ \& ！ \& ${ }_{2}^{0}$ \& ： \& \& ： \& ： \& $\stackrel{0}{0}$ \& $\bigcirc$ \& \& 0000
0015 \& － \& 0 \& 00 \& 0 \& 0 \& ${ }_{0}^{0}$ \& － \& 2 \& ${ }_{1}^{2}$ \& 0 \& － \& 0 \& 0 \& 0 \& 79.9
39. \& \& ： \& 0 \& 0 \& 0 \& $\bigcirc$ \& 0 <br>
\hline 0030
005
005 \& ${ }_{2}^{2}$ \& \& 2 \& ： \& 0 \& O \& ： \& 0 \& \& $\bigcirc$ \& ： \& \& 0030
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0 \& $\bigcirc$ \& 0 \& ： \& 0 \& ： \& \& 1 \& 1 \& ： \& 0 \& 1 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& ${ }_{5.2}{ }^{2}$ ： \& \& 1 \& 50 \& \& \& \& ： <br>
\hline 005
0100 \& ${ }_{1}^{2}$ \& 0 \& ${ }_{1}^{2}$ \& \％ \& ： \& 0 \& ： \& ： \& ： \& $\bigcirc$ \& ： \& \& 005
00100 \& $\bigcirc$ \& $\stackrel{0}{0}$ \& 0 \& ： \& $\bigcirc$ \& ： \& 1 \& $\stackrel{0}{0}$ \& 0 \& $\stackrel{1}{0}$ \& ： \& $\stackrel{0}{0}$ \& ${ }_{0}^{0}$ \& $\bigcirc$ \& ${ }^{8.3}{ }^{8.5}$. \& \& \％ \& ${ }_{0}^{0}$ \& $\stackrel{0}{0}$ \& $\stackrel{0}{0}$ \& \& ： <br>
\hline ${ }^{0} 115$ \& ${ }_{2}^{3}$ \& 0 \& ${ }_{3}^{3}$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 0115
0130 \& 0 \& 0 \& $\bigcirc$ \& 0 \& 0 \& 1 \& $\bigcirc$ \& ${ }_{1}$ \& 1 \& $\bigcirc$ \& 1 \& \％ \& 0 \& $\bigcirc$ \& ${ }_{6.7}^{7.5}$ \& \& 1 \& ${ }^{33.33}$ \& $\bigcirc$ \& 0 \& 0 \& ： <br>
\hline － \& ${ }_{3}$ \& $\stackrel{0}{0}$ \& ${ }_{3}^{2}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ： \& $\bigcirc$ \& 0 \& \& － 015 \& 0 \& 0 \& 0 \& ${ }_{0}$ \& ${ }_{0}$ \& 1 \& 1 \& 1 \& 0 \& ${ }_{0}$ \& 1 \& ${ }_{0}$ \& ${ }_{0}$ \& 0 \& ${ }_{3.5}^{6.7}$ \& \& O \& 33．33 \& ${ }_{0}$ \& ${ }_{0}$ \& 0 \& 0 <br>
\hline 砣 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 0 \& 0 \& \& 0200 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& \& 0 \& 0 \& \& 0 \& 0 \& 0 <br>
\hline － \& ${ }_{6}$ \& $\bigcirc$ \& ${ }_{6}$ \& ${ }_{0}^{0}$ \& ： \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ： \& \& 0215
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\hline 025 \& 1 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 025 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 53. \& \& 0 \& 0 \& \& 0 \& 0 \& 0 <br>
\hline －${ }_{0315}^{0300}$ \& 1 \& \％ \& ${ }_{1}$ \& ${ }_{0}^{0}$ \& ！ \& ${ }_{0}^{0}$ \& ${ }_{0}$ \& ${ }_{0}$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& \& ${ }_{0315}^{0300}$ \& ${ }_{0}$ \& ${ }_{0}^{0}$ \& ${ }_{0}^{0}$ \& ： \& $\bigcirc$ \& $\bigcirc$ \& ： \& ${ }_{1}$ \& $\bigcirc$ \& 1 \& $\bigcirc$ \& $\bigcirc$ \& ： \& － \& ${ }^{50.9} .^{\text {－}}$ ． \& \& ： \& ： \& $\bigcirc$ \& \& $\bigcirc$ \& $\bigcirc$ <br>
\hline оз30 \& 1 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& оз30 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 7.7. \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
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0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& ${ }_{0}^{2}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{1}^{2}$ \& 0 \& 0 \& 0 \& 51．5． \& \& ${ }_{1}^{2}$ \& 50
100 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ： <br>
\hline 015 \& 2 \& 0 \& 1 \& 0 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 015 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 2. \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline （ $\begin{array}{r}0 \\ 0 \\ 0 \\ 0 \\ 5\end{array}$ \& ${ }_{2}^{2}$ \& $\bigcirc$ \& ${ }_{1}^{2}$ \& 0 \& $\bigcirc$ \& ${ }_{1}^{1}$ \& $\bigcirc$ \& $\bigcirc$ \& ： \& $\bigcirc$ \& ： \& \& （1） \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ： \& $\bigcirc$ \& ： \& $\bigcirc$ \& ${ }_{1}^{0}$ \& $\bigcirc$ \& 1 \& 1 \& $\bigcirc$ \& ： \& 0 \& ${ }_{89.7}^{59 .}$ \& \& $!$ \& 500 \& ： \& ： \& 0 \& ： <br>
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0515 \& 7 \& $\bigcirc$ \& ${ }_{6}$ \& $\bigcirc$ \& ${ }_{1}$ \& 1 \& 1 \& $\bigcirc$ \& 0 \& 0 \& $\bigcirc$ \& \& 0500

0515 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& 2 \& \& 1 \& 2 \& 0 \& 0 \& 0 \& 0 \& 2.2 ． \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 0530 \& 12 \& 0 \& 8 \& 0 \& 2 \& 1 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 0530 \& 0 \& 0 \& 0 \& 0 \& 1 \& 0 \& 3 \& 2 \& 3 \& 3 \& 0 \& 0 \& 0 \& 0 \& 1. \& 51.7 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 055 \& 15 \& 0 \& 12 \& 0 \& 2 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 055 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 2 \& \& 6 \& ${ }^{3}$ \& 0 \& － \& 0 \& 0 \& 6.1 \& ${ }^{50 .}$ \& 0 \& 0 \& $\bigcirc$ \& 0 \& 0 \& 0 <br>
\hline 0615 \& ${ }_{20}$ \& 0 \& 16 \& 0 \& 3 \& 0 \& 1 \& 0 \& 。 \& 0 \& 0 \& \& 0615 \& 0 \& 0 \& 0 \& $\stackrel{0}{0}$ \& 0 \& 1 \& 5 \& 5 \& 2 \& 5 \& 2 \& 0 \& 0 \& 0 \& 6.2 \& 58.9 \& 2 \& 10 \& 1 \& \& 0 \& 0 <br>
\hline 0630 \& ${ }_{39}^{25}$ \& $\bigcirc$ \& ${ }_{35}^{22}$ \& $\bigcirc$ \& $3_{3}^{3}$ \& ${ }_{1}$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& \％ \& 0 \& \& － 0630 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& \& 5 \& ${ }_{15}^{6}$ \& 5 \& \& $\bigcirc$ \& 0 \& 0 \& $\bigcirc$ \& ${ }_{39.6}^{2.7}$ \& ${ }_{\text {c }}^{50.6}$ \& $\bigcirc$ \& 0 \& 0 \& 0 \& 0 \& ： <br>
\hline 0700 \& 76 \& 1 \& 68 \& 0 \& 6 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 0700 \& 0 \& 0 \& 0 \& 0 \& 0 \& 3 \& 39 \& 22 \& 11 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0. \& 5.2 \& 0 \& 0 \& 0 \& 0 \& 0 \& <br>
\hline － 0715 \& 9 \& 1 \& －90 \& 0 \& \& $\bigcirc$ \& 1 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \& 0715 \& $\bigcirc$ \& 1 \& ${ }_{6}$ \& ${ }^{3}$ \& ${ }_{16}^{2}$ \& 33 \& ${ }_{32}^{36}$ \& \& 2 \& \& $\bigcirc$ \& $\bigcirc$ \& 0 \& ${ }^{\circ}$ \& \& \& － \& $\bigcirc$ \& \& \& $\bigcirc$ \& O <br>
\hline 075 \& ${ }_{98}$ \& 1 \& ${ }_{9}$ \& ${ }^{2}$ \& 2 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 075 \& 7 \& 8 \& 6 \& 2 \& ${ }_{0}$ \& 2 \& 5 \& 0 \& ${ }^{\circ}$ \& 1 \& 0 \& 0 \& 0 \& 0 \& 9.5 \& 16.2 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 0800 \& 90 \& 2 \& ${ }^{83}$ \& $\bigcirc$ \& ${ }^{5}$ \& 0 \& 0 \& 0 \& 0 \& $\bigcirc$ \& ： \& \& 0800
0815 \& ${ }_{9}^{80}$ \& \& 1 \& 1 \& 1 \& ${ }_{3}^{0}$ \& ${ }_{1}^{2}$ \& 0 \& ： \& $\bigcirc$ \& 1 \& 0 \& 0 \& $\bigcirc$ \& 7.1 \& 6.3
8.9 \& 1 \& ${ }^{1.111}$ \& 0 \& $\bigcirc$ \& 0 \& 0 <br>
\hline 0830 \& ${ }_{95}^{106}$ \& 3 \& ${ }_{8}$ \& 0 \& ${ }_{7}$ \& 1 \& 0 \& 0 \& 。 \& 。 \& 0 \& \& 0830 \& 92 \& ${ }_{0}$ \& 0 \& 1 \& 1 \& ${ }_{0}$ \& 1 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 5.9 \& ${ }_{6.7} 6.9$ \& 0 \& ${ }_{0}^{\circ}$ \& ${ }_{0}^{0}$ \& ${ }_{0}$ \& ${ }_{0}^{0}$ \& \％ <br>
\hline 085 \& 89 \& 1 \& 79 \& 0 \& 8 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 085 \& ${ }_{3}$ \& ${ }^{12}$ \& 10 \& 9 \& 1 \& 11 \& ${ }^{21}$ \& 15 \& \& 3 \& 0 \& 0 \& 0 \& 0 \& ${ }_{30}^{30.5}$ \& 2 \& 0 \& $\bigcirc$ \& 0 \& 0 \& 0 \& 0 <br>
\hline 0915 \& 5 \& 0 \& ${ }_{38}$ \& 0 \& 6 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 0915 \& 0 \& ${ }_{0}$ \& 0 \& 0 \& 0 \& 3 \& 9 \& 18 \& 12 \& 3 \& 0 \& 0 \& 0 \& 0 \& ${ }_{2.7}$ \& ${ }_{7} .7$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 0930 \& 50 \& ${ }^{2}$ \& \& 0 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 0930 \& 0 \& 0 \& 1 \& 0 \& 1 \& ${ }_{5}$ \& 17 \& ${ }^{18}$ \& ${ }_{6}^{6}$ \& ${ }^{2}$ \& 0 \& 0 \& 0 \& $\bigcirc$ \& 0.2 \& 5.5 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 1000 \& 5 \& 1 \& ${ }_{0}$ \& 0 \& 3 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1 \& \& 1000 \& 0 \& 0 \& 0 \& 1 \& 9 \& 5 \& 17 \& ${ }_{9}^{25}$ \& \& 0 \& 0 \& － \& 0 \& 0 \& 36.6 \& 3．3 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 1015 \& 9 \& 3 \& ${ }_{31}^{37}$ \& 0 \& 7 \& $\bigcirc$ \& 2 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \& 1015
1030
1085 \& 0 \& $\bigcirc$ \& 1 \& $\bigcirc$ \& 2 \& ${ }_{3}^{2}$ \& 12 \& ${ }_{19}^{21}$ \& ${ }_{5}^{8}$ \& ${ }_{1}^{3}$ \& \％ \& 0 \& 0 \& $\bigcirc$ \& ${ }_{1}^{1.2}$ \& 7.2 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& 0 \& ： <br>
\hline 1050
105 \& ${ }_{5}^{2}$ \& 0 \& ${ }_{2}$ \& $\bigcirc$ \& 3 \& $\bigcirc$ \& ${ }_{0}$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& ： \& \& 1030
105 \& 0 \& $\bigcirc$ \& ${ }_{0}$ \& 0 \& ${ }_{0}$ \& ${ }_{0}$ \& 18 \& 22 \& \& 1 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& 1.1 \& \& 0 \& 0 \& $\bigcirc$ \& 0 \& 0 \& ： <br>
\hline 1100 \& 30 \& 1 \& 27 \& 0 \& 2 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 11100 \& 0 \& 0 \& 0 \& \& 0 \& \& 7 \& 8 \& 5 \& ${ }_{5}^{5}$ \& 0 \& 0 \& 0 \& 0 \& ${ }^{1.2}$ \& ${ }^{50 .}$ \& 0 \& 0 \& $\bigcirc$ \& 0 \& 0 \& 0 <br>

\hline 1130 \& \& 0 \& ${ }_{35}$ \& 0 \& ${ }_{9}^{8}$ \& 0 \& 0 \& 0 \& ！ \& ： \& ： \& \& | 1115 |
| :--- |
| 1130 | \& $\stackrel{0}{0}$ \& 1 \& $\bigcirc$ \& ： \& 1 \& ${ }_{3}^{8}$ \& \[

$$
\begin{aligned}
& 20 \\
& 12
\end{aligned}
$$
\] \& ${ }_{18}^{15}$ \& ${ }_{10} 9$ \& ${ }_{1}^{2}$ \& ： \& $\bigcirc$ \& $\bigcirc$ \& 0 \& ${ }_{1.9}$ \& ${ }_{6.8} 5$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>

\hline 115 \& ${ }_{8} 8$ \& $\bigcirc$ \& 29 \& 1 \& \& $\bigcirc$ \& ${ }^{2}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& \& 115
1200
1 \& $\bigcirc$ \& 1 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& $\frac{2}{7}$ \& ${ }_{20}^{20}$ \& 13
15
15 \& \& 1 \& 0 \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 39.1 \& ${ }_{3.5}^{5 .}$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& 0 \& $\bigcirc$ <br>
\hline 1215 \& 57 \& 0 \& 7 \& 0 \& 9 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 1215 \& \& 0 \& \& 0 \& 1 \& 7 \& 2 \& 17 \& 5 \& \& 0 \& \& \& 0 \& 0 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline ＋1250 \& ${ }_{7}^{8}$ \& \& 5 \& ！ \& ${ }_{2}$ \& 1 \& 0 \& \％ \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{0}$ \& \& 1230
125
12 \& ${ }_{0}^{0}$ \& ${ }_{0}$ \& 7 \& 1 \& 1 \& 16 \& 19 \& ${ }_{6}^{15}$ \& ${ }^{5}$ \& ${ }_{3}$ \& $\bigcirc$ \& ${ }_{0}$ \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{3}^{33} \mathbf{3} .7$ \& $\begin{array}{r}3.8 \\ \hline\end{array}$ \& $\bigcirc$ \& ${ }_{0}$ \& ${ }_{0}$ \& $\bigcirc$ \& ${ }_{0}^{0}$ \& \％ <br>
\hline \& 60 \& \& 8 \& 0 \& \& 2 \& \& \& 0 \& 0 \& 0 \& \& \& \& 0 \& 1 \& \& 6 \& \& 16 \& \& ${ }^{3}$ \& \& 0 \& \& 0 \& 0 \& 37.5 \& \& \& 0 \& \& \& 0 \& 0 <br>
\hline 年 1315 \& ${ }_{51}^{8}$ \& $\bigcirc$ \& 38 \& $\bigcirc$ \& 9 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& \& 1315
1330
13 \& $\bigcirc$ \& $\bigcirc$ \& 1 \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{10}^{6}$ \& ${ }_{1}^{22}$ \& 12
15 \& 7 \& 1 \& ${ }_{1}^{0}$ \& ： \& $\bigcirc$ \& $\bigcirc$ \& \& ${ }_{6.5}^{6.1}$ \& ${ }_{1}^{1}$ \& \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{0}$ \& ： <br>
\hline 135 \& 7 \& 0 \& 38 \& 0 \& 8 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 135 \& 0 \& 0 \& 0 \& 1 \& 0 \& 2 \& 16 \& 18 \& 6 \& \& 0 \& 0 \& 0 \& 0 \& 1.7 \& 7. \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 100
115 \& 7 \& ${ }_{0}^{3}$ \& ${ }_{63}^{6}$ \& 1 \& ${ }_{9}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 1 \& $\bigcirc$ \& \& 100
1
1 \& $\bigcirc$ \& $\bigcirc$ \& \％ \& 1 \& ${ }_{0}^{2}$ \& 17
18 \& ${ }_{21}^{17}$ \& ${ }_{23}^{1}$ \& ${ }_{11}^{3}$ \& 1 \& 0 \& ： \& 0 \& $\bigcirc$ \& ${ }_{39}^{37}$ \& ${ }_{5.2}^{2.6}$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& ： <br>
\hline 130 \& 60 \& \& 55 \& 0 \& \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 130 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 25 \& \& 7 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0.3 \& \& 0 \& \& 0 \& 0 \& 0 \& 0 <br>
\hline 1500 \& 90 \& ${ }_{0}$ \& ${ }_{80}^{68}$ \& 0 \& ${ }_{10}$ \& 0 \& ${ }_{0}$ \& \％ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& \& 1500 \& 0 \& 0 \& 0 \& 0 \& ${ }_{6}^{6}$ \& ${ }_{23}$ \& ${ }_{35}^{19}$ \& ${ }_{22}^{26}$ \& \& \& 1 \& $\bigcirc$ \& \& $\bigcirc$ \& ${ }_{37,1}^{39.2}$ \& \& 1 \& ${ }^{1.351}$ \& \& \& \& <br>
\hline 1515 \& 80 \& 0 \& \& 0 \& 5 \& 1 \& 1 \& 0 \& 0 \& 0 \& 0 \& \& 1515 \& 0 \& 0 \& 0 \& $\bigcirc$ \& 1 \& \& 32 \& 31 \& 2 \& 0 \& 0 \& 0 \& 0 \& 0 \& 38.7 \& 2.9 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>

\hline | 1530 |
| :--- |
| 155 |
| 15 | \& ${ }^{96}$ \& $\bigcirc$ \& 87 \& 1 \& 9 \& $\bigcirc$ \& 1 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \& 1530

155
15 \& 0 \& 0 \& $\bigcirc$ \& 0 \& ${ }_{10}^{2}$ \& ${ }_{1}^{12}$ \& ${ }_{38}^{18}$ \& ${ }_{32}^{38}$ \& ${ }_{11}^{2}$ \& 1 \& 0 \& ： \& $\bigcirc$ \& $\bigcirc$ \& ${ }^{38.1}$ \& 2.9 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 0 \& 0 \& $\bigcirc$ <br>
\hline 1600 \& 100 \& 1 \& ${ }_{92}$ \& 1 \& 6 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 1600 \& \& 0 \& 0 \& 0 \& \& 21 \& 33 \& 3 \& 3 \& 0 \& 0 \& 0 \& \& 0 \& 39 \& 2.9 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 1615
1630 \& 128

117 \& 1 \& ${ }_{10}^{113}$ \& ${ }_{1}^{1}$ \& ${ }_{11}$ \& ${ }_{1}$ \& ： \& \％ \& $\bigcirc$ \& $\bigcirc$ \& ： \& \& | 1615 |
| :--- |
| 1630 | \& ${ }_{22}$ \& $\stackrel{0}{10}$ \& ${ }_{7}$ \& 1 \& ${ }_{6}$ \& \& 27 \& ${ }_{12}^{68}$ \& ${ }^{11}$ \& ${ }_{2}^{1}$ \& ： \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ${ }^{27.6}$ \& 3.8

0.8 \& ： \& 0 \& $\bigcirc$ \& $\bigcirc$ \& ： \& ： <br>
\hline 165 \& 109 \& 0 \& \& 0 \& 11 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 165 \& 106 \& 1 \& \& 0 \& 0 \& ${ }^{2}$ \& 0 \& \& 0 \& \& 0 \& \& 0 \& 0 \& 5.7 \& 6.5 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>

\hline 1715 \& $\begin{array}{r}119 \\ \hline 199\end{array}$ \& ${ }_{0}^{2}$ \& ${ }_{117}$ \& $\bigcirc$ \& ${ }_{2}$ \& $\stackrel{0}{0}$ \& $\bigcirc$ \& ${ }_{0}^{0}$ \& $\bigcirc$ \& ： \& － \& \& | 1700 |
| :--- |
| 1715 | \& 79

98 \& ${ }_{19}^{10}$ \& 0 \& $\bigcirc$ \& ： \& 1 \& 1 \& ${ }_{2}$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& ： \& $\bigcirc$ \& $\bigcirc$ \& ${ }^{6.3}$ \& ${ }_{10.7}^{9.7}$ \& － \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{0}$ <br>
\hline 1730 \& ${ }^{123}$ \& 0 \& 119 \& 0 \& ${ }^{2}$ \& 0 \& 0 \& 1 \& 0 \& 1 \& 0 \& \& 1730 \& 102 \& 7 \& 9 \& 1 \& 0 \& 0 \& 2 \& 0 \& 2 \& 0 \& 0 \& 0 \& 0 \& \& 8.6 \& 10.8 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 175
1800 \& 106

87 \& 1 \& ${ }_{79}^{98}$ \& 1 \& ${ }_{7}^{6}$ \& $\bigcirc$ \& 1 \& $\bigcirc$ \& $\bigcirc$ \& \％ \& $\bigcirc$ \& \& | 175 |
| :--- |
| 1800 | \& ${ }_{0}^{80}$ \& 5 \& ${ }_{0}^{6}$ \& 1 \& 1 \& 1 \& ${ }_{7}$ \& ${ }_{29}^{10}$ \& 1 \& ${ }_{2}$ \& 1 \& ： \& 0 \& $\bigcirc$ \& ${ }_{39.8}^{11.7}$ \& 19.2

${ }_{2} .3$ \& 1 \& \& ${ }_{0}$ \& $\bigcirc$ \& 0 \& ： <br>
\hline ${ }_{1815}$ \& 66 \& 0 \& 62 \& 0 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 1815 \& 0 \& 0 \& 0 \& 0 \& 0 \& 2 \& \& 19 \& 0 \& \& 0 \& \& \& 0 \& 39 \& 2.1 \& 0 \& \& 0 \& \& 0 \& 0 <br>
\hline ${ }_{18} 185$ \& ${ }_{5}^{60}$ \& 0 \& \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 185 \& 0 \& 0 \& 0 \& $\bigcirc$ \& 1 \& ${ }_{5}^{8}$ \& ${ }_{20}^{23}$ \& 23
15 \& 3
3 \& ${ }_{1}^{2}$ \& ！ \& $\stackrel{0}{0}$ \& ： \& ： \& 39.2 \& ${ }_{2.3}^{2.8}$ \& $!$ \& ${ }^{1.667}$ \& \％ \& ： \& － \& <br>
\hline \& \& \& \& \& ${ }^{2}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 1900 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& \& 12 \& 5 \& \& 0 \& 0 \& 0 \& 0 \& 39.2 \& \& \& 0 \& \& \& 0 \& 0 <br>

\hline | 1915 |
| :--- |
| 1930 |
| 1 | \& $\begin{array}{r}32 \\ 28 \\ \hline\end{array}$ \& $\bigcirc$ \& 30

25 \& $\bigcirc$ \& ${ }_{3}^{2}$ \& $\bigcirc$ \& ： \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ： \& \& $\begin{array}{r}1915 \\ 1930 \\ \hline\end{array}$ \& $\bigcirc$ \& ： \& ： \& ： \& ： \& 5 \& 1 \& ${ }_{8}^{13}$ \& 1 \& ： \& ： \& 0 \& 0 \& $\bigcirc$ \& ${ }_{38.6}^{0.6}$ \& 3.9
2.9 \& ： \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 <br>
\hline 195 \& ${ }^{27}$ \& 0 \& ${ }^{27}$ \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 195 \& \& 0 \& 0 \& 0 \& 6 \& \& 10 \& ${ }^{2}$ \& \& \& 0 \& \& \& 0 \& ${ }^{37}$ \& 5.8 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline ${ }_{2015}^{2000}$ \& ${ }_{2}^{19}$ \& $\bigcirc$ \& 16
22 \& $\bigcirc$ \& ${ }_{0}^{2}$ \& $\frac{1}{2}$ \& ： \& ： \& $\bigcirc$ \& ： \& $\bigcirc$ \& \& ${ }_{2015}^{2000}$ \& $\bigcirc$ \& \％ \& ： \& ： \& 0 \& 6 \& ${ }_{15}^{9}$ \& 3
3 \& ${ }_{2}^{1}$ \& 0 \& ： \& ： \& 0 \& $\bigcirc$ \& ${ }_{38}^{37}$ \& 2.1
0.9 \& ： \& $\bigcirc$ \& \％ \& $\bigcirc$ \& 0 \& ： <br>
\hline ${ }^{2030}$ \& ${ }_{2}^{23}$ \& 0 \& 22 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 2030 \& 0 \& 0 \& 0 \& 0 \& 0 \& 5 \& 1 \& 11 \& 5 \& 1 \& 0 \& 0 \& 0 \& 0 \& 1.8 \& 8.2 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 205
2100 \& ${ }_{23}^{12}$ \& \& 11
22 \& 0 \& ${ }_{1}$ \& \％ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \％ \& $\bigcirc$ \& \& ${ }_{2100}^{205}$ \& $\bigcirc$ \& 1 \& \％ \& $\bigcirc$ \& 0 \& \& $1^{5}$ \& ${ }_{3}^{3}$ \& 1 \& \& 1 \& ： \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{1.1}^{39.9}$ \& ${ }_{50}^{52.6}$ \& 1 \& ${ }^{8.333}$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& 0 <br>
\hline 2115 \& 10 \& 0 \& 9 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 2115 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 2 \& 5 \& 3 \& 0 \& 0 \& 0 \& 0 \& 0 \& 3.2 \& \& 0 \& 0 \& 0 \& 0 \& 0 \& <br>
\hline － 2130 \& 1 \& $\bigcirc$ \& ${ }_{1}^{13}$ \& $\bigcirc$ \& 1 \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \％ \& 0 \& \& 2130
215 \& \& $\bigcirc$ \& \& $\bigcirc$ \& $\bigcirc$ \& 1 \& ${ }^{5}$ \& 3 \& \& \& 0 \& 0 \& \& $\bigcirc$ \& ${ }_{0.5}^{2.3}$ \& 5.7 \& $\bigcirc$ \& 0 \& $\bigcirc$ \& $\bigcirc$ \& 0 \& ： <br>
\hline 2200 \& 15 \& 0 \& 1 \& 0 \& 1 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 2200 \& 0 \& 0 \& 0 \& 0 \& 1 \& \& 3 \& ${ }^{6}$ \& \& \& 0 \& \& \& 0 \& 38.8 \& ${ }^{\text {．}} .5$ \& 0 \& \& 0 \& \& 0 \& 0 <br>
\hline ${ }_{2230}^{2215}$ \& ${ }_{5}^{6}$ \& ： \& ${ }_{5}^{6}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& ： \& ： \& $\bigcirc$ \& ： \& ： \& \& ${ }_{2230}^{2215}$ \& \％ \& － \& ： \& 0 \& ： \& \& $\stackrel{1}{0}$ \& 3 \& ${ }_{0}^{2}$ \& 0 \& 1 \& ： \& ： \& － \& ${ }_{2.3}$ ． \& \& \& ${ }^{16.67}$ \& \％ \& $\bigcirc$ \& 0 \& 0 <br>
\hline 225 \& \& \& \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 0 \& 0 \& \& 225 \& \& 0 \& 0 \& 0 \& 0 \& \& 2 \& 1 \& 1 \& 1 \& 0 \& 0 \& 0 \& 0 \& 3.2 \& \& \& 0 \& 0 \& \& 0 \& 0 <br>

\hline ${ }_{2315}^{230}$ \& \& \& \& 0 \& 0 \& $\bigcirc$ \& ${ }^{\circ}$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& \& | 2315 |
| :--- |
| 2300 |
| 20 | \& $\bigcirc$ \& $\bigcirc$ \& $\bigcirc$ \& 0 \& $\bigcirc$ \& 1 \& $\bigcirc$ \& $\frac{1}{2}$ \& $\begin{array}{r}3 \\ 2 \\ \hline\end{array}$ \& ${ }_{0}^{0}$ \& ： \& ： \& $\bigcirc$ \& $\bigcirc$ \& ${ }_{2.1}^{6.5}$ \& \& ： \& $\stackrel{\circ}{0}$ \& \％ \& $\bigcirc$ \& 0 \& \％ <br>

\hline 2330 \& 5 \& 0 \& 5 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& \& 2330 \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 \& 1 \& 2 \& 2 \& 0 \& 0 \& 0 \& \& 0 \& 3.7 － \& \& 0 \& 0 \& 0 \& 0 \& 0 \& 0 <br>
\hline 235
0719 \& 3513 \& 39 \& 3142 \& 12 \& 280 \& 10 \& ${ }_{24}$ \& ${ }_{2}$ \& \& ${ }_{2}$ \& 1 \& \& － 235 \& 826 \& \& \& 40 \& \& 340 \& 919 \& 864 \& 222 \& 57 \& 5 \& 0 \& \& 0 \& 302. \& \& \& 0142 \& 0 \& 0 \& 0 \& 0 <br>
\hline 0622 \& 3892 \& 40 \& 3487 \& 12 \& ${ }^{306}$ \& 15 \& 26 \& 2 \& 1 \& 2 \& 1 \& \& 0622 \& 826 \& 96 \& 64 \& 40 \& 91 \& 389 \& 1057 \& 970 \& 270 \& 80 \& \& 0 \& 0 \& 0 \& ${ }^{312}$ \& 433 \& 9 \& 0231 \& 1 \& 0026 \& 0 \& 0 <br>
\hline 0600 \& 3939 \& 40 \& 3533 \& 12 \& 307 \& 15 \& ${ }^{26}$ \& 2 \& \& \& 1 \& \& 0600 \& 826 \& 96 \& 64 \& \& 92 \& \& 1065 \& \& 281 \& 82 \& \& \& 0 \& \& \& 434 \& 10 \& 025 \& \& 025 \& \& <br>
\hline 0000 \& 4021 \& \& 3599 \& 12 \& 316 \& \& 29 \& \& \& \& 1 \& \& \& 826 \& \& \& \& \& \& 1079 \& 1009 \& \& \& 20 \& \& \& \& \& 436 \& 21 \& 0522 \& \& 0075 \& \& 0025 <br>
\hline
\end{tabular}








## 2019 Survey Data - Sight Stopping Distances/ Visibility Requirements

SSD $=\mathbf{v t}+\mathbf{v}^{\mathbf{2}} / \mathbf{2 d}$
$\mathrm{v}=$ speed ( $\mathrm{m} / \mathrm{s}$ )
$\mathrm{t}=$ driver perception-reaction time (s)
$\mathrm{d}=$ deceleration $\left(\mathrm{m} / \mathrm{s}^{2}\right)$

## Worst-case surveys (in terms of vehicle speeds) selected:

Northbound: Boreham Road (North) survey (9th-17th October 2019)
Southbound: Waltham Road survey (9th-23rd October 2019)

## DMRB

Driver perception-reaction time (s):
Deceleration rate (d):
Deceleration rate (d):

| 2 | seconds |
| :---: | :--- |
|  | 2.45 |
| $\mathrm{y} / \mathrm{s}^{2}$ |  |
| 3.68 | $\mathrm{~m} / \mathrm{s}^{2}$ |

Desirable M inimum
Absolute M inimum

## DM RB Requirements

Desirable M inimum

| Speed (kph) | Speed (m/s) | SSD (m) | DMRB Standard |
| :---: | :---: | :---: | :---: |
| 50 | 13.9 | 67.1 | 70 m |
| 60 | 16.7 | 90.0 | 90 m |
| 70 | 19.4 | 116.0 | 120 m |
| 85 | 23.6 | 161.0 | 160 m |
| 100 | 27.8 | 213.0 | 215 m |
| 120 | 33.3 | 293.4 | 295 m |

Absolute Minimum

| Speed (kph) | Speed (m/s) | SSD $(\mathbf{m})$ | DMRB Standard |
| :---: | :---: | :---: | :---: |
| 50 | 13.9 | 54.0 | 50 m |
| 60 | 16.7 | 71.1 | 70 m |
| 70 | 19.4 | 90.3 | 90 m |
| 85 | 23.6 | 123.0 | 120 m |
| 100 | 27.8 | 160.4 | 160 m |
| 120 | 33.3 | 217.6 | 215 m |

## Visibility Requirements (SSD)

Desirable M inimum

| 85th Percentile Speed (kph) | Speed (m/s) | SSD (m) | Rounded SSD (m) |
| :---: | :---: | :---: | :---: |
| Northbound (worst-case) |  |  |  |
| 71.9 | 20.0 | 121.4 | 122 |
| 72.9 | 20.2 | 124.2 | 125 |

Absolute M inimum

| 85th Percentile Speed (kph) | Speed (m/s) | SSD (m) | Rounded SSD (m) |
| :---: | :---: | :---: | :---: |
| Northbound (worst-case) |  |  |  |
| 71.9 | 20.0 | 94.2 | 95 |
| 72.9 | 20.2 | 96.2 | 97 |

## Appendix D2 - 2021 Speed Survey Results (Waltham Road)

## 2021 Survey Data (All) - Sight Stopping Distances/ Visibility Requirements

SSD $=\mathbf{v t}+\mathbf{v}^{2} / 2 \mathrm{~d}$
$\mathrm{v}=$ speed ( $\mathrm{m} / \mathrm{s}$ )
$\mathrm{t}=\mathrm{driver}$ perception-reaction time (s)
$\mathrm{d}=$ deceleration $\left(\mathrm{m} / \mathrm{s}^{2}\right)$

## DMRB

Driver perception-reaction time (s): Deceleration rate (d):
Deceleration rate (d):

| 2 | seconds |
| :---: | :--- |
| 2.45 | $\mathrm{~m} / \mathrm{s}^{2}$ |

Desirable M inimum Absolute M inimum

## DMRB Requirements

Desirable M inimum

| Speed (kph) | Speed $(\mathbf{m} / \mathbf{s})$ | SSD $(\mathbf{m})$ | DM RB Standard |
| :---: | :---: | :---: | :---: |
| 50 | 13.9 | 67.1 | 70 m |
| 60 | 16.7 | 90.0 | 90 m |
| 70 | 19.4 | 116.0 | 120 m |
| 85 | 23.6 | 161.0 | 160 m |
| 100 | 27.8 | 213.0 | 215 m |
| 120 | 33.3 | 293.4 | 295 m |

Absolute Minimum

| Speed (kph) | Speed (m/s) | SSD (m) | DM RB Standard |
| :---: | :---: | :---: | :---: |
| 50 | 13.9 | 54.0 | 50 m |
| 60 | 16.7 | 71.1 | 70 m |
| 70 | 19.4 | 90.3 | 90 m |
| 85 | 23.6 | 123.0 | 120 m |
| 100 | 27.8 | 160.4 | 160 m |
| 120 | 33.3 | 217.6 | 215 m |

## Visibility Requirements (SSD)

Desirable M inimum

| 85th Percentile Speed (kph) | Speed (m/s) | SSD (m) | Rounded SSD (m) |
| :---: | :---: | :---: | :---: |
|  | Northbound |  |  |
| 64.0 |  | 100.2 | 101 |
| 66.3 | 18.4 | 106.0 | 106 |
| Southbound |  |  |  |

Absolute Minimum

| 85th Percentile Speed (kph) | Speed (m/s) | SSD (m) | Rounded SSD (m) |
| :---: | :---: | :---: | :---: |
| 64.0 | 17.8 | 78.6 | 79 |
| 66.3 | 18.4 | 82.9 | 83 |

## 2021 Survey Data (Selected Worst-Case Period) - Sight Stopping Distances/ Visibility Requirements

## Method (in accordance with CA185)

Automatic speed measurement method
Neutral month surveyed (May 2021)
Results selected for two different weekdays, at different times of the day (avoiding peak hours)
Worst-case days (in terms of vehicle speeds) selected based on 8 days' data
Minimum of 200 vehicle speeds recorded during each measurement
Highest values selected in each direction, based on the two selected datasets
Period 1: Friday 21st M ay (10:00-12:00)
Northbound: 298 vehicles recorded, overall $85^{\text {th }}$ percentile speed of 40.3 mph ( $\max 42.1 \mathrm{mph}$ )
Southbound: 326 vehicles recorded, overall $85^{\text {th }}$ percentile speed of 39.9 mph ( $\mathrm{max} \underline{41.3 \mathrm{mph} \text { ) }) ~}$
Period 2: M onday 24th M ay (14:00-16:00)
Northbound: 341 vehicles recorded, overall $85^{\text {th }}$ percentile speed of 42.2 mph ( $\max \underline{\mathbf{4 3 . 3 m p h} \text { ) }}$
Southbound: 462 vehicles recorded, overall $85^{\text {th }}$ percentile speed of 40.2 mph ( max 41.2 mph )

## SSD $=\mathbf{v t}+\mathbf{v}^{2} / 2 \mathbf{d}$

$\mathrm{v}=$ speed ( $\mathrm{m} / \mathrm{s}$ )
$t=d r i v e r ~ p e r c e p t i o n-r e a c t i o n ~ t i m e ~(s) ~$
$\mathrm{d}=$ deceleration $\left(\mathrm{m} / \mathrm{s}^{2}\right)$

## DMRB

Driver perception-reaction time (s):
Deceleration rate (d):
Deceleration rate (d):

| 2 | seconds |
| :---: | :--- |
| 2.45 | $\mathrm{~m} / \mathrm{s}^{2}$ |
| 3.68 | $\mathrm{~m} / \mathrm{s}^{2}$ |

Desirable M inimum Absolute Minimum

DM RB Requirements
Desirable Minimum

| Speed (kph) | Speed (m/s) | SSD $(\mathbf{m})$ | DMRB Standard |
| :---: | :---: | :---: | :---: |
| 50 | 13.9 | 67.1 | 70 m |
| 60 | 16.7 | 90.0 | 90 m |
| 70 | 19.4 | 116.0 | 120 m |
| 85 | 23.6 | 161.0 | 160 m |
| 100 | 27.8 | 213.0 | 215 m |
| 120 | 33.3 | 293.4 | 295 m |

Absolute M inimum

| Speed (kph) | Speed (m/s) | SSD $(\mathbf{m})$ | DMRB Standard |
| :---: | :---: | :---: | :---: |
| 50 | 13.9 | 54.0 | 50 m |
| 60 | 16.7 | 71.1 | 70 m |
| 70 | 19.4 | 90.3 | 90 m |
| 85 | 23.6 | 123.0 | 120 m |
| 100 | 27.8 | 160.4 | 160 m |
| 120 | 33.3 | 217.6 | 215 m |

## Visibility Requirements (SSD)

Desirable M inimum

| 85th Percentile Speed (kph) | Speed (m/ s) | SSD (m) | Rounded SSD (m) |
| :---: | :---: | :---: | :---: |
| 69.7 | 19.4 | 115.1 | 116 |
| Northbound |  |  |  |
| 66.5 | 18.5 | 106.5 | 107 |

Absolute M inimum

| 85th Percentile Speed (kph) | Speed (m/ s) | SSD ( $\mathbf{m}$ ) | Rounded SSD (m) |
| :---: | :---: | :---: | :---: |
| Northbound |  |  |  |
|  | 19.4 | 89.6 | 90 |
| 66.5 | 18.5 | 83.2 | 84 |

## 2021 Survey Data (All) - Sight Stopping Distances/ Visibility Requirements

SSD $=\mathbf{v t}+\mathbf{v}^{2} / 2 \mathrm{~d}$
$\mathrm{v}=$ speed ( $\mathrm{m} / \mathrm{s}$ )
$\mathrm{t}=\mathrm{driver}$ perception-reaction time (s)
$\mathrm{d}=$ deceleration $\left(\mathrm{m} / \mathrm{s}^{2}\right)$

## DMRB

Driver perception-reaction time (s): Deceleration rate (d):
Deceleration rate (d):

| 2 | seconds |
| :---: | :--- |
| 2.45 | $\mathrm{~m} / \mathrm{s}^{2}$ |

Desirable M inimum Absolute M inimum

## DMRB Requirements

Desirable M inimum

| Speed (kph) | Speed $(\mathbf{m} / \mathbf{s})$ | SSD $(\mathbf{m})$ | DM RB Standard |
| :---: | :---: | :---: | :---: |
| 50 | 13.9 | 67.1 | 70 m |
| 60 | 16.7 | 90.0 | 90 m |
| 70 | 19.4 | 116.0 | 120 m |
| 85 | 23.6 | 161.0 | 160 m |
| 100 | 27.8 | 213.0 | 215 m |
| 120 | 33.3 | 293.4 | 295 m |

Absolute Minimum

| Speed (kph) | Speed (m/s) | SSD (m) | DM RB Standard |
| :---: | :---: | :---: | :---: |
| 50 | 13.9 | 54.0 | 50 m |
| 60 | 16.7 | 71.1 | 70 m |
| 70 | 19.4 | 90.3 | 90 m |
| 85 | 23.6 | 123.0 | 120 m |
| 100 | 27.8 | 160.4 | 160 m |
| 120 | 33.3 | 217.6 | 215 m |

## Visibility Requirements (SSD)

Desirable M inimum

| 85th Percentile Speed (kph) | Speed (m/s) | SSD (m) | Rounded SSD (m) |
| :---: | :---: | :---: | :---: |
|  | Northbound |  |  |
| 64.0 |  | 100.2 | 101 |
| 66.3 | 18.4 | 106.0 | 106 |
| Southbound |  |  |  |

Absolute Minimum

| 85th Percentile Speed (kph) | Speed (m/s) | SSD (m) | Rounded SSD (m) |
| :---: | :---: | :---: | :---: |
| 64.0 | 17.8 | 78.6 | 79 |
| 66.3 | 18.4 | 82.9 | 83 |

## 2021 Survey Data (Selected Worst-Case Period) - Sight Stopping Distances/ Visibility Requirements

## Method (in accordance with CA185)

Automatic speed measurement method
Neutral month surveyed (May 2021)
Results selected for two different weekdays, at different times of the day (avoiding peak hours)
Worst-case days (in terms of vehicle speeds) selected based on 8 days' data
Minimum of 200 vehicle speeds recorded during each measurement
Highest values selected in each direction, based on the two selected datasets
Period 1: Friday 21st M ay (10:00-12:00)
Northbound: 298 vehicles recorded, overall $85^{\text {th }}$ percentile speed of 40.3 mph ( $\max 42.1 \mathrm{mph}$ )
Southbound: 326 vehicles recorded, overall $85^{\text {th }}$ percentile speed of 39.9 mph ( $\mathrm{max} \underline{41.3 \mathrm{mph} \text { ) }) ~}$
Period 2: M onday 24th M ay (14:00-16:00)
Northbound: 341 vehicles recorded, overall $85^{\text {th }}$ percentile speed of 42.2 mph ( $\max \underline{\mathbf{4 3 . 3 m p h} \text { ) }}$
Southbound: 462 vehicles recorded, overall $85^{\text {th }}$ percentile speed of 40.2 mph ( max 41.2 mph )

## SSD $=\mathbf{v t}+\mathbf{v}^{2} / 2 \mathbf{d}$

$\mathrm{v}=$ speed ( $\mathrm{m} / \mathrm{s}$ )
$t=d r i v e r ~ p e r c e p t i o n-r e a c t i o n ~ t i m e ~(s) ~$
$\mathrm{d}=$ deceleration $\left(\mathrm{m} / \mathrm{s}^{2}\right)$

## DMRB

Driver perception-reaction time (s):
Deceleration rate (d):
Deceleration rate (d):

| 2 | seconds |
| :---: | :--- |
| 2.45 | $\mathrm{~m} / \mathrm{s}^{2}$ |
| 3.68 | $\mathrm{~m} / \mathrm{s}^{2}$ |

Desirable M inimum Absolute Minimum

DM RB Requirements
Desirable Minimum

| Speed (kph) | Speed (m/s) | SSD $(\mathbf{m})$ | DMRB Standard |
| :---: | :---: | :---: | :---: |
| 50 | 13.9 | 67.1 | 70 m |
| 60 | 16.7 | 90.0 | 90 m |
| 70 | 19.4 | 116.0 | 120 m |
| 85 | 23.6 | 161.0 | 160 m |
| 100 | 27.8 | 213.0 | 215 m |
| 120 | 33.3 | 293.4 | 295 m |

Absolute M inimum

| Speed (kph) | Speed (m/s) | SSD $(\mathbf{m})$ | DMRB Standard |
| :---: | :---: | :---: | :---: |
| 50 | 13.9 | 54.0 | 50 m |
| 60 | 16.7 | 71.1 | 70 m |
| 70 | 19.4 | 90.3 | 90 m |
| 85 | 23.6 | 123.0 | 120 m |
| 100 | 27.8 | 160.4 | 160 m |
| 120 | 33.3 | 217.6 | 215 m |

## Visibility Requirements (SSD)

Desirable M inimum

| 85th Percentile Speed (kph) | Speed (m/ s) | SSD (m) | Rounded SSD (m) |
| :---: | :---: | :---: | :---: |
| 69.7 | 19.4 | 115.1 | 116 |
| Northbound |  |  |  |
| 66.5 | 18.5 | 106.5 | 107 |

Absolute M inimum

| 85th Percentile Speed (kph) | Speed (m/ s) | SSD ( $\mathbf{m}$ ) | Rounded SSD (m) |
| :---: | :---: | :---: | :---: |
| Northbound |  |  |  |
|  | 19.4 | 89.6 | 90 |
| 66.5 | 18.5 | 83.2 | 84 |

## Appendix D3 - 2021 Survey Results (Waltham Road/ Cranham Road Junction)









| Intelligen <br> Client: <br> Project Number: <br> Junction Number: |  | AECOM ID05993 Site 1 |  |  | Date of Survey: Junction Name: Junction Type: |  | 08.09.2021 <br> Boreham Road / Cranham <br> T-Junction |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Total Junction Flow |  |  |  |  |  |  |  |
| Time | Cars | LGV | 0GV1 | 0GV2 | Buses | M/C | Cycle | Total |
| 07:00 | 87 | 22 | 2 | 1 | 2 | 2 | 1 | 117 |
| 07:15 | 136 | 28 | 4 | 1 | 1 | 1 | 1 | 172 |
| 07:30 | 142 | 38 | 2 | 1 | 0 | 0 | 1 | 184 |
| 07:45 | 150 | 36 | 2 | 2 | 0 | 3 | 1 | 194 |
| 08:00 | 156 | 34 | 4 | 0 | 0 | 1 | 1 | 196 |
| 08:15 | 162 | 32 | 3 | 4 | 0 | 1 | 0 | 202 |
| 08:30 | 146 | 39 | 6 | 2 | 0 | 1 | 0 | 194 |
| 08:45 | 138 | 25 | 3 | 2 | 0 | 0 | 1 | 169 |
| 09:00 | 75 | 24 | 5 | 3 | 0 | 0 | 0 | 107 |
| 09:15 | 58 | 14 | 2 | 1 | 1 | 0 | 2 | 78 |
| 09:30 | 61 | 20 | 1 | 0 | 0 | 3 | 0 | 85 |
| 09:45 | 49 | 19 | 2 | 1 | 0 | 5 | 2 | 78 |
| 16:00 | 124 | 48 | 1 | 2 | 2 | 2 | 0 | 179 |
| 16:15 | 151 | 49 | 3 | 7 | 0 | 3 | 0 | 213 |
| 16:30 | 134 | 47 | 0 | 2 | 1 | 3 | 1 | 188 |
| 16:45 | 132 | 40 | 1 | 1 | 0 | 4 | 2 | 180 |
| 17:00 | 140 | 37 | 4 | 0 | 0 | 1 | 1 | 183 |
| 17:15 | 157 | 17 | 1 | 0 | 0 | 1 | 2 | 178 |
| 17:30 | 167 | 23 | 0 | 0 | 0 | 0 | 0 | 190 |
| 17:45 | 147 | 28 | 0 | 1 | 0 | 3 | 0 | 179 |
| 18:00 | 112 | 16 | 3 | 0 | 3 | 1 | 0 | 135 |
| 18:15 | 87 | 12 | 0 | 0 | 1 | 1 | 6 | 107 |
| 18:30 | 89 | 14 | 1 | 0 | 0 | 2 | 6 | 112 |
| 18:45 | 54 | 14 | 0 | 0 | 1 | 8 | 3 | 80 |
| Start Time |  |  |  | ling Ho |  |  |  | Total |
| 07:00 | 515 | 124 | 10 | 5 | 3 | 6 | 4 | 667 |
| 07:15 | 584 | 136 | 12 | 4 | 1 | 5 | 4 | 746 |
| 07:30 | 610 | 140 | 11 | 7 | 0 | 5 | 3 | 776 |
| 07:45 | 614 | 141 | 15 | 8 |  | 6 | 2 | 786 |
| 08:00 | 602 | 130 | 16 | 8 | 0 | 3 | 2 | 761 |
| 08:15 | 521 | 120 | 17 | 11 |  | , | 1 | 672 |
| 08:30 | 417 | 102 | 16 | 8 | 1 | 1 | 3 | 548 |
| 08:45 | 332 | 83 | 11 | 6 | 1 | 3 | 3 | 439 |
| 09:00 | 243 | 77 | 10 | 5 | 1 |  | 4 | 348 |
| 16:00 | 541 | 184 | 5 | 12 | 3 | 12 | 3 | 760 |
| 16:15 | 557 | 173 | 8 | 10 | 1 | 11 | 4 | 764 |
| 16:30 | 563 | 141 | 6 |  | 1 |  | 6 | 729 |
| 16:45 | 596 | 117 | 6 | 1 | 0 | 6 | 5 | 731 |
| 17:00 | 611 | 105 | 5 | 1 | 0 | 5 |  | 730 |
| 17:15 | 583 | 84 | 4 | 1 | 3 | 5 | 2 | 682 |
| 17:30 | 513 | 79 | 3 | 1 | 4 | 5 | 12 | 611 |
| 17:45 | 435 | 70 | 4 | 1 | 5 | 7 | 12 | 533 |
| 18:00 | 342 | 56 | 4 | 0 | 5 | 12 | 15 | 434 |



The maximum queue length, in vehicles, is reported by lane for each five-minute period.
These are segregated into 'light' and 'heavy' vehicles, and are then presented as a maximum queue length using the assumption that a light vehicle contributes 6 m to a queue and a heavy vehicle 15 m . These values can be updated by the user.

| Vehicle Length Assumptions (metres) |  |  |
| :---: | :---: | :--- |
| Lights | Heavies |  |
| 6 | 15 |  |
| Additional Notes (Factors which may impact on survey results such as accidents, roadworks, special events) |  |  |



PM Peak Period:

|  | Lane C1 |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Time | Lights | Heavies | Total | Length (m) |
| 16:00 | 0 | 0 | 0 | 0 |
| 16:05 | 0 | 0 | 0 | 0 |
| 16:10 | 0 | 0 | 0 | 0 |
| 16:15 | 6 | 0 | 6 | 36 |
| 16:20 | 2 | 0 | 2 | 12 |
| 16:25 | 0 | 0 | 0 | 0 |
| 16:30 | 0 | 0 | 0 | 0 |
| 16:35 | 0 | 0 | 0 | 0 |
| 16:40 | 6 | 0 | 6 | 36 |
| 16:45 | 0 | 0 | 0 | 0 |
| 16:50 | 0 | 0 | 0 | 0 |
| 16:55 | 2 | 0 | 2 | 12 |
| 17:00 | 0 | 0 | 0 | 0 |
| 17:05 | 2 | 0 | 2 | 12 |
| 17:10 | 0 | 0 | 0 | 0 |
| 17:15 | 0 | 0 | 0 | 0 |
| 17:20 | 1 | 0 | 1 | 6 |
| 17:25 | 0 | 0 | 0 | 0 |
| 17:30 | 0 | 0 | 0 | 0 |
| 17:35 | 0 | 0 | 0 | 0 |
| 17:40 | 0 | 0 | 0 | 0 |
| 17:45 | 0 | 0 | 0 | 0 |
| 17:50 | 0 | 0 | 0 | 0 |
| 17:55 | 0 | 0 | 0 | 0 |
| 18:00 | 0 | 0 | 0 | 0 |
| 18:05 | 0 | 0 | 0 | 0 |
| 18:10 | 0 | 0 | 0 | 0 |
| 18:15 | 2 | 0 | 2 | 12 |
| 18:20 | 0 | 0 | 0 | 0 |
| 18:25 | 0 | 0 | 0 | 0 |
| 18:30 | 0 | 0 | 0 | 0 |
| 18:35 | 0 | 0 | 0 | 0 |
| 18:40 | 0 | 0 | 0 | 0 |
| 18:45 | 0 | 0 | 0 | 0 |
| 18:50 | 0 | 0 | 0 | 0 |
| 18:55 | 0 | 0 | 0 | 0 |

## Appendix D4 - 2021 Survey Results (B1137 Main Road/ Waltham Road Junction)




| Client: <br> Project Number Junction Number |  | AECOM ID05993 Site 2 | Date of Survey: Junction Name: Junction Type: |  |  |  | $\begin{aligned} & \text { 08.09.2021 } \\ & \text { B1137 Main Road / Waltham Road } \\ & \text { T-Junction } \end{aligned}$ |  |  | Arm A: Waltham Road (NW) <br> Arm B: B1137 Main Road (NE) |  |  |  |  |  |  | Arm C: B1137 Main Road (SW) |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | to B |  |  |  |  |  |  |  | OA |  |  |  |  |  |  |  |  |  |  |  |
| Time | Cars | LGV | 0GV1 | 0GV2 | Buses | M/C | Cyde | Total | Cars | LGV | 0GV1 | 0GV2 | Buses | M/C | Cyde | Total | Cars | LGV | 06V1 | 0GV2 | Buses | M/C | Cycle | Total |
| 07:00 |  |  |  |  |  |  |  | 0 | 54 | 16 | 1 | 1 | 0 | 1 | 0 | 73 | 24 | 8 | 2 | 0 | 0 | 0 | 2 | 36 |
| 07:15 |  |  |  |  |  |  |  | 0 | 73 | 15 | 2 | 1 | 0 | 0 | 0 | 91 | 46 | 12 | 2 | 1 | 1 | 0 | 1 | 63 |
| 07:30 |  |  |  |  |  |  |  | 0 | 80 | 16 |  | 0 | 0 | 1 | 1 | 98 | 55 | 11 | 0 | 1 | 2 | 2 | 0 | 71 |
| 07:45 |  |  |  |  |  |  |  | 0 | 66 | 12 | 2 | 2 | 0 | 1 | 0 | 83 | 66 | 10 | 0 | 0 | 3 | 2 | 0 | 81 |
| 08:00 |  |  |  |  |  |  |  | 0 | 50 | 18 | 2 | 1 | 0 | 0 | 0 | 71 | 67 | 17 | 2 | 0 | 0 | 0 | 2 | 88 |
| 08:15 |  |  |  |  |  |  |  | 0 | 63 | 14 | 1 | 2 | 0 | 0 | 0 | 80 | 57 | 6 | 3 | 0 | 0 | 1 | 1 | 68 |
| 08:30 |  |  |  |  |  |  |  | 0 | 46 | 10 | 1 | 4 | 0 | 1 | 0 | 62 | 38 | 8 | 1 | 0 | 1 | 1 | 0 | 49 |
| 08:45 |  |  |  |  |  |  |  | 0 | 35 | 5 | 2 | 3 | 1 | 0 | 0 | 46 | 45 | 10 | 1 | 0 | 1 | 0 | 0 | 57 |
| 09:00 |  |  |  |  |  |  |  | 0 | 31 | 12 | 0 | 2 | 0 | 0 | 0 | 45 | 47 | 6 | 1 | 0 | 1 | 0 | 0 | 55 |
| 09:15 |  |  |  |  |  |  |  | 0 | 18 | 6 | 1 | 2 | 0 | 0 | 0 | 27 | 37 | 6 | 2 | 0 | 0 | 0 | 1 | 46 |
| 09:30 |  |  |  |  |  |  |  | 0 | 30 | 8 | 1 | 0 | 1 | 0 | 0 | 40 | 52 | 10 | 1 | 0 | 1 | 1 | 2 | 67 |
| 09:45 |  |  |  |  |  |  |  | 0 | 20 | 7 | 1 | 3 | 0 | 0 | 0 | 31 | 48 | 8 | 1 | 0 | 0 | 0 | 1 | 58 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16:00 |  |  |  |  |  |  |  | 0 | 20 | 8 | 0 | 2 | 0 | 0 | 0 | 30 | 55 | 9 | 0 | 0 | 2 | 1 | 1 | 68 |
| 16:15 |  |  |  |  |  |  |  | 0 | 27 | 6 | 0 | 3 | 0 | 0 |  | 36 | 52 | 14 | 1 | 0 | 1 | 2 | 1 | 71 |
| 16:30 |  |  |  |  |  |  |  | 0 | 32 | 9 | 0 | 3 | 1 | 0 | 0 | 45 | 66 | 6 | 1 | 0 | 2 | 0 | 0 | 75 |
| 16:45 |  |  |  |  |  |  |  | 0 | 32 | 7 | 0 | 0 | 0 | 3 | 0 | 42 | 63 | 12 | 0 | 0 | 0 | 1 | 0 | 76 |
| 17:00 |  |  |  |  |  |  |  | 0 | 28 | 7 | 2 | 0 | 1 | 0 | 0 | 38 | 58 | 7 | 0 | 0 | 1 | 0 | 1 | 67 |
| 17:15 |  |  |  |  |  |  |  | 0 | 35 | 3 | 0 | 0 | 0 | 0 | 0 | 38 | 77 | 7 | 0 | 0 | 1 | 0 | 2 | 87 |
| 17:30 |  |  |  |  |  |  |  | 0 | 43 | 3 | 0 | 0 | 0 | 0 | 0 | 46 | 73 | 8 | 1 | 0 | 0 | 1 | 4 | 87 |
| 17:45 |  |  |  |  |  |  |  | 0 | 35 | 4 | 0 | 0 | 0 | 0 | 0 | 39 | 68 | 7 | 0 | 1 | 1 | 2 | 0 | 79 |
| 18:00 |  |  |  |  |  |  |  | 0 | 17 | 1 | 0 | 0 | 2 | 0 | 0 | 20 | 51 | 3 | 0 | 1 | 0 | 1 | 3 | 59 |
| 18:15 |  |  |  |  |  |  |  | 0 | 18 | 3 | 0 | 0 | 1 | 0 | 0 | 22 | 43 | 8 | 0 | 0 |  | 0 | 0 | 51 |
| 18:30 |  |  |  |  |  |  |  | 0 | 22 | 4 | 0 | 0 | 1 | 4 | 0 | 31 | 38 | 2 | 0 | 0 | 2 | 1 | 1 | 44 |
| 18:45 |  |  |  |  |  |  |  | 0 | 17 | 2 | 0 | 0 | 0 | 2 | 1 | 22 | 31 | 3 | 0 | 0 | 0 | 0 | 0 | 34 |
| Start Time |  |  |  | Rolling Hou |  |  |  | Total |  |  |  | Rolling Ho |  |  |  | Total |  |  |  | Rolling Ho |  |  |  | Total |
| 07:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 273 | 59 | 5 | 4 | 0 | 3 | 1 | 345 | 191 | 41 | 4 | 2 | 6 | 4 | 3 | 251 |
| 07:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 269 | 61 | 6 | 4 | 0 | 2 | 1 | 343 | 234 | 50 | 4 | 2 | 6 | 4 | 3 | 303 |
| 07:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 259 | 60 | 5 | 5 | 0 | 2 | 1 | 332 | 245 | 44 | 5 | 1 | 5 | 5 | 3 | 308 |
| 07:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 225 | 54 | 6 | 9 | 0 | 2 | 0 | 296 | 228 | 41 | 5 | 0 | 5 | 4 | 3 | 286 |
| 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 194 | 47 | 6 | 10 | 1 | 1 | 0 | 259 | 207 | 41 | 7 | 0 | 2 | 2 | 3 | 262 |
| 08:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 175 | 41 | 4 | 11 | 1 | 1 | 0 | 233 | 187 | 30 | 6 | 0 | 3 | 2 | 1 | 229 |
| 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 130 | 33 | 4 | 11 | 1 | 1 | 0 | 180 | 167 | 30 | 5 | 0 | 3 | 1 | 1 | 207 |
| 08:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 114 | 31 |  | 7 | 2 | 0 | 0 | 158 | 181 | 32 | 5 | 0 | 3 | 1 | 3 | 225 |
| 09:00 | 0 | 0 | , | 0 | 0 | 0 | 0 | - | 99 | 33 | 3 | 7 | 1 | 0 |  | 143 | 184 | 30 | 5 | 0 | 2 | 1 | 4 | 226 |
| 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 111 | 30 | 0 | 8 | 1 | 3 | 0 | 153 | 236 | 41 | 2 | 0 | 5 | 4 | 2 | 290 |
| 16:15 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 119 | 29 | 2 | 6 | 2 | 3 | 0 | 161 | 239 | 39 |  | 0 | 4 | 3 | 2 | 289 |
| 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 127 | 26 | 2 | 3 | 2 | 3 | 0 | 163 | 264 | 32 | 1 | 0 | 4 | 1 | 3 | 305 |
| 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 138 | 20 | 2 |  | 1 | 3 | 0 | 164 | 271 | 34 | 1 | 0 | 2 | 2 | 7 | 317 |
| 17:00 |  | 0 | 0 | 0 |  | 0 | 0 | 0 | 141 | 17 | 2 | 0 | 1 | 0 | 0 | 161 | 276 | 29 | 1 | 1 | 3 | 3 | 7 | 320 |
| 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 130 | 11 | 0 | 0 | 2 | 0 | 0 | 143 | 269 | 25 | 1 | 2 | 2 | 4 | 9 | 312 |
| 17:30 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 113 | 11 | 0 |  | 3 | 0 | 0 | 127 | 235 | 26 | 1 | 2 | 1 | 4 | 7 | 276 |
| 17:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 92 | 12 | 0 | 0 | 4 | 4 | 0 | 112 | 200 | 20 | 0 | 2 | 3 | 4 | 4 | 233 |
| 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 74 | 10 | 0 | 0 | 4 | 6 | 1 | 95 | 163 | 16 | 0 | 1 | 2 | 2 | 4 | 188 |



| Intelligent Data Collection Limited |  |  |  |  |  | cosme |  |  |  |  |  |  |  | 0 |  |
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|  |  |  |  |  |  |  |  | ${ }^{108}$ |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | ${ }^{\frac{10}{16}}$ |  |  |  |  |  |  |  |  |
| ${ }^{03,30}$ | ${ }^{16}$ |  | ${ }^{2}$ | 。 |  |  | ${ }_{4}^{48}$ | 4 |  |  | - |  |  |  |  |
| O-3, 0 | ${ }^{16}$ | ${ }_{2}^{2}$ | ${ }^{\frac{2}{3}}$ | 。 |  | $\bigcirc$ | ${ }^{\frac{8}{3}}$ | ${ }^{41}$ | ${ }^{12}$ | 1 | $\stackrel{\square}{6}$ | 1 |  |  | ${ }_{5}$ |
| (16, | ${ }^{\frac{2}{36}}$ | ${ }_{3}^{3}$ | ${ }^{2}$ | $\bigcirc$ |  | $\bigcirc$ | ${ }^{\frac{1}{105}}$ | ${ }^{36}$ | ${ }^{15}$ | - | ${ }^{\frac{3}{3}}$ |  | $\bigcirc$ |  | 570 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ${ }_{\text {cose }}^{\substack{100 \\ 10}}$ |  |  |  |  |  |  | ${ }^{\frac{15}{15}}$ | ${ }_{\text {c }}^{56}$ | - |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (16.50 |  | ${ }_{4}^{6}$ | ${ }^{\frac{8}{6}}$ |  | $\stackrel{8}{10}$ | $\stackrel{1}{2}$ |  |  | ${ }_{\text {ct }}^{68}$ | ${ }^{\frac{1}{3}}$ | $\stackrel{9}{\square}$ |  | [ ${ }_{5}^{4}$ |  | ${ }^{268}$ |
|  | ${ }^{\frac{9}{7}}$ |  |  |  |  |  | (eis |  | ${ }^{\frac{42}{48}}$ |  |  |  |  |  | - |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\xrightarrow{238}$ |




| Intelligent Data Collection Limited |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | Date of Survey:Junction Name:Junction Type: |  | $\begin{aligned} & \text { 08.09.2021 } \\ & \text { B1137 Main Road / Waltham } \\ & \text { T-Junction } \end{aligned}$ |  |
|  |  |  |  |  |  |  |  |  |
| $\frac{\text { Imee }}{\text { O7:00 }}$ |  |  |  |  |  |  |  |  |
|  | 193 | ${ }_{56}$ |  |  |  |  |  |  |
| 07:30 |  |  |  |  |  |  |  |  |
| 07,45 | 265 | 60 |  |  |  |  |  |  |
| 08:00 | ${ }_{275}^{276}$ | ${ }^{76}$ | 5 | ${ }_{4}^{4}$ |  |  |  |  |
|  | ${ }_{236} 23$ |  |  |  |  |  |  |  |
| 08:45 | 216 | 66 | 6 | 5 |  |  |  | ${ }^{298}$ |
| coiol | ${ }^{188}$ |  |  | 6 |  |  |  |  |
|  | ${ }^{148}$ | ${ }_{42}$ | 5 | ${ }^{3}$ |  |  |  |  |
| 09:45 | 143 | 32 | 4 | 9 |  | 6 |  |  |
| ${ }^{16,00}$ | ${ }^{248}$ | 66 <br> 75 | ${ }^{6}$ | ${ }_{5}^{5}$ | 5 | ${ }_{5}^{3}$ |  | ${ }^{334}$ |
|  | ${ }^{255}$ | ${ }_{6} 6$ | ${ }_{4}^{2}$ | 6 | ${ }_{4}^{2}$ | ${ }_{5}^{5}$ | 5 | ${ }_{\substack{350 \\ 360}}$ |
| ${ }^{16,45}$ | ${ }^{266}$ | ${ }^{76}$ |  |  |  |  |  |  |
| ${ }_{\text {lific }}^{17.15}$ | ${ }_{3}^{296}$ | ${ }_{4}^{51}$ | ${ }_{2}^{4}$ |  |  | 4 |  |  |
| 17:30 | ${ }^{315}$ | ${ }^{33}$ | 1 | 1 | 1 | 6 | 8 |  |
| \|lizas | ${ }^{228}$ | ${ }^{\frac{33}{31}}$ | 0 | $\stackrel{2}{1}$ | $\frac{3}{3}$ |  |  |  |
|  | 16 |  |  |  |  |  |  |  |
| ceme | ${ }^{170}$ | ${ }^{23}$ | 1 | 1 | ${ }^{4}$ | 7 | ${ }^{3}$ | ${ }^{209}$ |
|  |  |  |  |  |  |  |  |  |
| 07:00 | ${ }^{838}$ | ${ }^{211}$ | ${ }^{23}$ | ${ }^{20}$ | 17 | 16 | ${ }^{11}$ |  |
| 077.15 | ${ }^{966}$ | ${ }^{238}$ |  | ${ }_{26}^{19}$ | ${ }^{14}$ |  |  |  |
| ${ }^{07745}$ | ${ }^{1052}$ | ${ }^{237}$ | ${ }_{2}^{23}$ | ${ }^{30}$ | 10 | ${ }^{10}$ | ${ }_{8}^{8}$ |  |
|  |  |  |  |  |  |  |  |  |
| ${ }^{\text {003:30 }}$ | ${ }_{768}$ | ${ }_{1} 197$ | ${ }_{21}^{22}$ | ${ }^{24}$ | ${ }^{15}$ | ${ }^{3}$ | ${ }^{3}$ |  |
| O8:45 | ${ }_{6}^{680}$ | ${ }_{\text {c }}^{185}$ | ${ }_{18}{ }_{18}^{20}$ | ${ }^{18}$ | ${ }^{\frac{15}{11}}$ | ${ }_{10}$ | ${ }_{12}$ | ${ }^{831}$ |
|  |  |  |  |  |  |  |  |  |
| - 16.15 | ${ }_{\text {l }}^{1098}$ | ${ }_{\substack{268 \\ 240}}$ | ${ }_{10}^{10}$ | ${ }^{12}$ | ${ }^{13}$ | ${ }^{18}$ | ${ }^{11}$ | ${ }_{1}^{1430}$ |
| ${ }^{16,45}$ | ${ }^{12096}$ | ${ }_{207}^{207}$ | ${ }_{7}$ | ${ }^{6}$ | 13 <br> 10 <br> 10 |  | 9 | 1464 |
| -17:00 | ${ }^{12121}{ }^{1141}$ |  | ${ }_{3}^{7}$ | ${ }_{4}^{3}$ | ${ }^{11}$ | ${ }_{20}^{17}$ | ${ }^{17} 1$ | (1431 |
| ${ }^{17730}$ | ${ }_{1036}^{1036}$ |  |  | 5 | $\stackrel{9}{9}$ | ${ }_{18}^{17}$ | ${ }_{18}^{18}$ | ${ }^{12022}$ |
| (17.45 |  |  |  |  | 12 |  |  |  |



The maximum queue length, in vehicles, is reported by lane for each five-minute period.
These are segregated into 'light' and 'heavy' vehicles, and are then presented as a maximum queue length using the assumption that a light vehicle contributes 6 m to a queue and a heavy vehicle 15 m . These values can be updated by the user.

## Vehicle Length Assumptions (metres)

## Lights Heavies

Additional Notes (Factors which may impact on survey results such as accidents, roadworks, special events)
Any shaded entries indicate where queues reach the extent of the camera view.
Lane B1, vehicles turning right from the through road into the side road (Waltham Road).


AM Peak Period:

|  | Lane A1 |  |  |  | Lane A2 |  |  |  | Lane B1 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | Lights | Heavies | Total | $\begin{gathered} \text { Length } \\ (\mathrm{m}) \end{gathered}$ | Lights | Heavies | Total | $\begin{gathered} \text { Length } \\ (\mathrm{m}) \end{gathered}$ | Lights | Heavies | Total | Length <br> (m) |
| 07:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:35 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 |
| 07:40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 | 11 | 0 | 11 | 66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:50 | 2 | 0 | 2 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:55 | 13 | 0 | 13 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 18 | 0 | 18 | 108 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:05 | 15 | 1 | 16 | 105 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:10 | 12 | 1 | 13 | 87 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 | 17 | 0 | 17 | 102 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:20 | 2 | 1 | 3 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:25 | 0 | 0 | 0 | 0 | 3 | 2 | 5 | 48 | 0 | 0 | 0 | 0 |
| 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:35 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 33 | 0 | 0 | 0 | 0 |
| 08:40 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 | 4 | 0 | 4 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:50 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 |
| 08:55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:25 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:40 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 | 0 | 1 | 1 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

PM Peak Period:

|  | Lane A1 |  |  |  | Lane A2 |  |  |  | Lane B1 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | Lights | Heavies | Total | $\begin{gathered} \text { Length } \\ \text { (m) } \end{gathered}$ | Lights | Heavies | Total | $\begin{gathered} \text { Length } \\ (\mathrm{m}) \end{gathered}$ | Lights | Heavies | Total | $\begin{gathered} \text { Length } \\ (\mathrm{m}) \end{gathered}$ |
| 16:00 | 14 | 2 | 16 | 114 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:05 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:10 | 4 | 0 | 4 | 24 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 |
| 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:25 | 15 | 0 | 15 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 4 | 2 | 6 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:35 | 11 | 0 | 11 | 66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 24 | 0 | 0 | 0 | 0 |
| 16:50 | 2 | 0 | 2 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:55 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 2 | 0 | 2 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:05 | 2 | 0 | 2 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:10 | 3 | 0 | 3 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:20 | 13 | 0 | 13 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:25 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:35 | 1 | 0 | 1 | 6 | 2 | 0 | 2 | 12 | 0 | 0 | 0 | 0 |
| 17:40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:50 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 12 |
| 17:55 | 17 | 0 | 17 | 102 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:00 | 2 | 0 | 2 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:05 | 6 | 0 | 6 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:25 | 1 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Appendix E - Personal Injury Accident Data


Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Very Likely |
| 2nd: |  | Vehicle 2 |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V002 WAS FOLLOWING V001 ALONG WHITE HART LANE TOWARDS THE ROUNDABOUT WITH
SAINSBURYS. AS THEY DROVE OVER THE BRIDGE OVER THE RAILWAY LINE THE TRAFFIC CAME TO A HALT AND V002 COLLIDED AT A LOW SPEED WITH THE REAR OF V001. APPROXIMATE SPEED WAS LESS THAN 2
0MPH.
Occurred on WHITE HART LANE A130 100 METRES SOUTH OF JUNCTION WITH COLCHESTER ROAD A130

Accidents between dates 01/04/2016 and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


| Causation |  |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: | Failed to look properly | Vehicle 1 | Possible |
| 3rd: |  | Vehicle 2 | Very Likely |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V2 RIDING ON CYCLE LANE GOING TO WORK SAW A CAR STATIONARY COMING OUT OF THE EXIT OF V1 SLOWED DOWN AS V2 APPROACHED, AS V1 WAS STATIONARY V2 THOUGHT WAS GIVING WAY BUT INSTEAD JUST MOVED FORWARD AS IF WAS GOING LEFT AND V2 WENT IN THE SIDE OF V1 C AUSING TO FALL OFF BIKE AND DAMAGE MY BIKE , V1 DIDN'T SEE V2 AS DIDN'T LOOK LEFT BEFORE PULLED OUT

## Occurred on SLIP ROAD UNSPECIFIED ROAD OR LOCATION SOUTH OF JUNCTION WITH COLCHESTER ROA



Cycleway or shared use footway (not part of main car No skidding, jack-knifing or overturning

| Location at impact Hit object in road | Jct Approach None | First impact Off road: | Front <br> None |  | Hit vehicle: |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Did not leave carr |  |  | Age of Driver | 22 | Male |
| Not hit and run | Breath test | Not applicable |  |  |  |


| Casualty Reference: 1 | Vehicle: 2 | Age: 22 | Male | Driver/rider | Severity: Slight |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
|  |  | Postcode |  | Seatbelt |  |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


| Causation |  |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Cyclist entering road from pavement | Participant: | Confidence: |
| 2nd: |  | Vehicle 2 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE ONE WAS TRAVELLING ALONG SHARDELOW AVENUE HEADING IN THE GENERAL DIRECTION OF BOREHAM, THE PEDAL CYCLIST HAVING LEFT THE KERB TO THE DRIVERS OFFSIDE BEHIND A BUS CYCLED OUT INTO THE PATH OF VEHICLE ONE.

Occurred on SHARDELOW AVENUE UNSPECIFIED ROAD OR LOCATION 20 METRES SOUTH OF JUNCTION W

| Vehicle Reference | Car |  | Going ahead other |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Vehicle movement from | SW to NE |  | No tow / articulation |  |  |  |  |
| On main carriagewa |  |  |  | No skidding, | ck-knifing or ove | ning |  |
| Location at impact |  |  |  | First impact | Front |  | Hit vehicle: |
| Hit object in road | None |  |  | Off road: | None |  |  |
| Did not leave carr |  |  |  |  | Age of Driver | 35 | Female |
| Not hit and run |  | Breath test | Negative |  |  |  |  |
| Driver Postcode: |  | VRM: |  |  |  |  |  |


| Casualty Reference: | 1 | Vehicle: | 1 | Age: 7 | Female | Pedestrian |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

Driver's offside masked

| Vehicle Reference | 2 | Pedal Cycle |  | Going ahead other |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Vehicle movement from | NE | to SW | No tow / articulation |  |  |  |
| 9 | No skidding, jack-knifing or overturning |  |  |  |  |  |
| Location at impact | Entering main road |  | First impact | Nearside |  | Hit vehicle: |
| Hit object in road | None |  | Off road: | None |  |  |
| Did not leave carr |  |  |  | Age of Driver | 7 | Female |
| Not hit and run |  | Breath test | Not applicable |  |  |  |
| Driver Postcode: |  | VRM: |  |  |  |  |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 1664563 | 08/05/2016 | Time | 0714 | Vehicles | 2 | Casualties | 1 | Fatal |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 574400 N : | 209829 | First Road: | A 12 | Road Type |  | Dual carria |  |  |
| Speed limit: 70 | Junction Detail: | Slip Road |  |  |  | ive way or |  |  |
| Crossing: Control | None |  | Facilities: | None wit | hin 50 m |  | Road surface | Dry |
| Daylight |  |  |  | Fine without high winds |  |  |  |  |
| Special Conditions at | Site None |  |  |  |  | Carriageway | None |  |
| Place accident report | ed: Else | where |  | DfT Special | Projects: |  |  |  |


|  | Cactor: | Casation | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Loss of control | Vehicle 1 | Very Likely |
| 2nd: |  |  |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

IT APPEARS THE DRIVER WAS ON THE NORTH BOUND ON SLIP TO THE A12 WHEN HE CLIPPED THE KERB TO HIS NEARSIDE, OVER CORRECTED HIS STEERING AND LOST CONTROL, MOUNTING THE GRASS VERGE, HITTING A ROAD SIGN AND LANDING ACROSS BOTH LANES OF THE NORTH BOUND A12.

Occurred on BOREHAM A12 A138


Accidents between dates $\quad \mathbf{0 1 / 0 4} / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: |  | Vehicle 001 | Possible |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

## BOTH VEHICLES TRAVELLING ALONG A130, IN GENERAL DIRECTION OF CHELMSFORD, IN SLOW

 MOVING TRAFFIC. VEHICLE 2 SLOWS AND STOPS DUE TO TRAFFIC AHEAD, AND VEHICLE 1 FAILS TO STOP IN TIME AND COLLIDES WITH REAR OF VEHICLE 2.Occurred on
COLCHESTER ROAD A130


Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Selected using Manual Selection

| 16100520 | 05/08/2016 | Time | 1745 | Vehicles | 2 | Casualties | 1 | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 574055 N : | 208782 | First Road: | A 12 | Road Type |  | Dual carria |  |  |
| Speed limit: 70 | Junction Detail: | Other |  |  |  | Give way or controlled |  |  |
| Crossing: Control | None |  | Facilities: | None wit | thin 50m |  | Road surface | Dry |
| Daylight |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions at | Site None |  |  |  |  | Carriageway | None |  |
| Place accident report | ed: Else | where |  | DfT Special | Projects: |  |  |  | DfT Special Projects:


|  | Causation |  | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: |  |
| 2nd: |  |  |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

I WAS DRIVING MY VEHICLE IN THE OUTSIDE LANE OF THE A12 AT APPROXIMATELY 20-30 MPH IN TRAFFIC. SUDDENLY THE BLACK BMW HIT MY REAR BUMPER THROWING ME FORWARD IN MY SEAT. I STOPPED IN THE OUTSIDE LANE AND THE BLACK BMW STOPPED BEHIND ME. THE MALE DRI I WAS OK. I REPLIED, 'I'M FINE, BUT I'M WORRIED ABOUT MY DOG IN THE BOOT'. HE SAID, 'CAN I HAVE A LOOK AT YOUR DOG'. I REPLIED 'NO, CAN I HAVE YOUR DETAILS', HE REPLIED 'LET'S LOOK AT YOUR DOG'. I SAID 'NO, GIVE ME YOUR DETAILS'. I THEN TOOK A PICTUR
E OF THE FRONT OF HIS CAR. THE FEMALE PASSENGER OF V1THEN GOT OUT OF THE CAR AND APPROACHED ME IN AN AGGRESSIVE MANOR AND SAID 'GO THROUGH YOUR INSURANCE'. I REPLIED, 'YOU HIT ME, SO GIVE ME YOUR DETAILS'. SHE THEN EXAMINED MY CAR AND SAID 'THERE IS

Occurred on A12 BOREHAM INTERCHANGE A12 BOREHAM INTERCHANGE A12

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 1695403 | 16/08/2016 | Time | 0445 | Vehicles | 2 | Casualties | 1 | Serious |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 574090 N: | 209035 | First Road: | A 12 |  | Road Type | Slip road |  |  |
| Speed limit: 70 | Junction Detail: | Slip Road |  |  |  | e way or |  |  |
| Crossing: Control | None |  | Facilities: | None with | thin 50 m |  |  | Dry |

Darkness: no street lighting
Special Conditions at Site None
Place accident reported: Elsewhere

Fine without high winds

Carriageway Hazards: None DfT Special Projects:

| Causation | Participant: | Confidence: |  |
| :--- | :--- | :--- | :--- |
| 1st: | Failed to look properly | Vehicle 1 | Very Likely |
| 2nd: | Careless/Reckless/In a hurry | Vehicle 1 | Possible |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

## V001 WAS COLLIDED WITH REAR OF V002 WHICH HAD MOVED OUT TO OVERTAKE A BROKEN DOWN VEHICLE ON NEARSIDE OF THE ON-SLIP.

## Occurred on A12 400 METRES SOUTH OF JUNCTION WITH MAIN ROAD B1137



| Casualty Reference: 1 | Vehicle: 1 | Age: 25 | Male | Driver/rider | Severity: Serious |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |


Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


| Causation |  |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2nt: | Illness or disability, mental or physical |  | Vehicle 1 |

DRIVER OF VEHICLE ONE APPEARS TO HAVE HAD A MEDICAL EPISODE AT THE WHEEL AND MAY HAVE BLACKED OUT. AS A RESULT OF THIS HE HAS VEERED INTO THE PATH OF VEHICLE TWO TRAVELLING IN THE OPPOSING DIRECTION. VEHICLE ONE HAD JUST COME OFF OF A ROUNDABOUT AND COLL ISION WAS AT RELATIVELY LOW SPEED.

Occurred on COLCHESTER ROAD A130 10 METRES EAST OF JUNCTION WITH COLCHESTER ROAD B1137

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Very Likely |
| 2nd: |  | Vehicle 1 |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

I WAS DRIVING MY VEHICLE TO MY PARTNERS GARAGE, SANI'S MOTORS. I WAS IN THE MIDDLE LANE AND THE LORRY WAS IN THE INSIDE LANE. AS WE CAME ROUND THE ROUNDABOUT THE LORRY CAME OVER ON TO MY LANE SO I MOVED OUT THE WAY, FURTHER ROUND THE LORRY CAME ON TO MY SIDE EVEN MORE BEFORE CRASHING INTO THE SIDE OF MY CAR CAUSING ME TO MOUNT THE KERB. THE LORRY THEN DROVE OFF ON TO THE A12 SLIP ROAD TOWARDS LONDON.

## Occurred on BOREHAM A12 ROUNDABOUT A12 BOREHAM A12 ROUNDABOUT A130


Accidents between dates 01/04/2016 and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selection:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2st: | Failed to look properly | Vehicle 1 | Very Likely |
| 2nd: | Failed to judge other persons path or speed | Vehicle 1 | Very Likely |
| 3th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE 2 TRAVELLING ON THE B1137, MAIN ROAD, BOREHAM FROM THE GENERAL DIRECTION OF HATFIELD PEVEREL TOWARD CHELMSFORD. VEHICLE 1 TRAVELLING IN THE SAME DIRECTION BEHIND VEHICLE 2. VEHICLE 2 SLOWS DOWN AND STOPS TO ENABLE A VEHICLE AHEAD TO COMPLETE A MANOEUVRE IN THE CARRIAGEWAY. VEHICLE 1 FAILS TO SLOW DOWN IN TIME AND COLLIDES WITH THE REAR OF VEHICLE 2. DRIVER AND F/N/S PASSENGER FROM VEHICLE 2 SUSTAIN MINOR INJURIES.

Occurred on NICKS TYRES MAIN ROAD B1137 20 METRES EAST OF JUNCTION WITH CHURCH ROAD


| Casualty Reference: | 1 | Vehicle: | 2 | Age: | 39 | Female | Driver/rider | Severity: | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Postcod |  |  | Seatbelt |  |  |
| Casualty Reference: | 2 | Vehicle: | 2 | Age: | 14 | Female | Passenger | Severity: | Slight |
|  |  |  |  | Postco |  |  |  |  |  |

Front seat
Accidents between dates 01/04/2016 and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Selected using Manual Selection


Confidence:
Very Likely

|  | Factor: | Participant: | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Following too close | Vehicle 1 | Very Likely |
| 2nd: |  |  |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLES ONE AND TRAVELLING NORTH ON THE A12 TOWARDS COLCHESTER. VEHICLE TWO SLOWS AND STOPS DUE TO QUEUEING TRAFFIC ON THE OFF SLIP AT JUNCTION 19. VEHICLE ONE IS TRAVELLING BEHIND A LORRY AND HER VIEW AHEAD IS RESTRICTED. THE LORRY PULLS INTO LANE TWO
OF THE SLIP ROAD DUE TO QUEUEING TRAFFIC PRESENTING VEHICLE ONE DRIVER WITH A STATIONARY VEHICLE. VEHICLE ONE DRIVER BRAKES BUT COLLIDES WITH THE REAR OF VEHICLE TWO.

Occurred on CHELMSFORD BY PASS A12 200 METRES SOUTH OF JUNCTION WITH COLCHESTER ROAD A130



| Casualty Reference: 1 | Vehicle: 2 | Age: 20 | Male | Passenger | Severity: Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |

[^2]Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1} \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Slippery road (due to weather) | Participant: | Very Likely |
| 2nd: | Travelling too fast for conditions | Vehicle 1 | Very Likely |
| 3rd: | Careless/Reckless/In a hurry | Vehicle 1 |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE ONE HAD BEEN DRIVING AT SPEED DOWN THE A12, WHILST BEING FOLLOWED BY NIGHT TURN SILVER. AT THE ROUNDABOUT V2 WAS APPROACHING AND STOPPED BECAUSE V1 ENTERED THE ROUNDABOUT AT SPEED. V1 WAS UNABLE TO STOP AND A COLLISION HAD OCCURRED. V1 GOT OUT TH E VEHICLE AND BECOME AGGRESSIVE WHEN NIGHT TURN C/INSP GOT OUT HER CAR AND DEALT WITH THE SCENE. C/INSP EGAN STATED THAT V1 WAS AT FAULT DUE TO THE MANOR OF HIS DRIVING AND NEEDED TO BE REPORTED FOR CARELESS DRIVING.

Occurred on MAIN ROAD A130 1 METRES NORTH OF JUNCTION WITH MAIN ROAD A138


| Casualty Reference: | 1 | Vehicle: | 1 | Age: | 26 | Male | Driver/rider | Severity: | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |


Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1} \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Very Likely |
| 2nd: |  | Vehicle 1 |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE THREE WAS IN LANE ONE OF TWO ON THE A12 JUNCTION 18, CHELMSFORD, ESSEX LONDON BOUND WHEN STATIONARY IN STANDING TRAFFIC. VEHICLE TWO WAS SAT STATIONARY IN LANE TWO, NEXT TO VEHICLE THREE, ALSO IN STANDING TRAFFIC. VEHICLE ONE IS DRIVING IN LANE T WO AND COLLIDES INTO VEHICLE TWO, WHICH THEN PUSHES THEM INTO VEHICLE THREE CAUSING MINOR INJURY TO DRIVER OF VEHICLE ONE.

## Occurred on A12 SOUTH OF JUNCTION WITH B1137


Accidents between dates $\quad \mathbf{0 1 / 0 4} / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selection:
Selected using Manual Selection

| Vehicle Reference | 3 |  |
| :--- | :--- | :--- |
| Car |  |  |
| Vehicle movement from |  | N |

On main carriageway
Location at impact Not at, or within 20M of Jct Hit object in road None

| Did not leave carr |  |
| :--- | :--- |
| Not hit and run | Breath test $\quad$ Negative | Driver Postcode: VRM:



Causation

|  | Factor: | Participant: | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Careless/Reckless/In a hurry | Vehicle 1 | Very Likely |
| 2nd: |  |  |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V1 TRAVELLING ALONG NORTH BOUND ON SLIP OF A12 AT JUNCTION 19 (BOREHAM) WHEN IT LOST CONTROL AND CROSSED THE CENTRAL VERGE AND COLLIDED WITH A V2 TRAVELLING ALONG THE A12 FROM CHELMSFORD TOWARDS COLCHESTER.

Occurred on A12 CHELMER ROAD A138


| Vehicle Reference | 2 | Car |  |
| :--- | :--- | :--- | :--- |
| Vehicle movement from | SW to NE | No tow / articulation ahead other |  |


| On main carriageway |  |  |  | No skidding, jack-knifing or overturning |  |  | Hit vehicle: |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Location at impact | Mid Junction - on roundabout or 1 |  |  | First impact | Front |  |  |
| Hit object in road | None |  |  | Off road: | None |  |  |
| Did not leave carr |  |  |  |  | Age of Driver | 45 | Male |
| Not hit and run |  | Breath test | Negati |  |  |  |  |
| Driver Postcode: |  | VRM: |  |  |  |  |  |


| Casualty Reference: 1 | Vehicle: 2 | Age: 45 | Male | Driver/rider | Severity: Slight |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selection:
Notes:
Selected using Manual Selection


| Causation |  |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: | Faileq to look properly | Casualty 1 | Possible |
| 3rd: |  | Vehicle 1 | Very Likely |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE ONE PROCEEDED PAST A HGV BUT FAILED TO OBSERVE THE CENTRAL RESERVATION AND COLLIDED INTO IT.

Occurred on WHITE HART LANE A130 30 METRES OAK LODGE TYE


| Casualty Reference: 1 | Vehicle: 1 | Age: 26 | Male | Driver/rider | Severity: Slight |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Selected using Manual Selection


Confidence:

Very Likely
Possible

| Factor: | Causation | Carticipant: | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Failed to judge other persons path or speed | Vehicle 1 | Very Likely |
| 2nd: | Driving too slow for conditions or slow veh | Vehicle 2 | Possible |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

A12 CLOSED IN WITHAM AREA AND MOTORISTS REQUESTED TO FOLLOW DIVERSION. VEHICLE 1 TRAVELLING FROM BOREHAM TO CHELMSFORD. VEHICLE 1 ENTERED ROUNDABOUT AND ATTEMPTED TO MAINTAIN SPEED THROUGH THE ROUNDABOUT. VEHICLE 1 TRAVELLING TOO FAST AND NOT ABLE T
O STOP AND AVOID VEHICLE 2. VEHICLE 2 TRAVELLING AROUND THE ROUNDABOUT LOOKING FOR SIGN POSTS TO FOLLOW DIVERSION AND TRAVELLING QUITE SLOWLY. VEHICLE 2 HESITANT AT THE EXIT FOR A138 AND ABOUT TO TAKE ANOTHER LAP OF THE ROUNDABOUT WHEN VEHICLE 1 COLLID ED. DRIVER OF VEHICLE 2 LEFT SUFFERED A SMALL SUPERFICIAL CUT TO HIS NOSE. TREATED BY PARAMEDIC.

Occurred on JUNCTION 19 A12 ROUNDABOUT SOUTHBOUND TRACK A138 NEAR JN WITH A12

| Vehicle Reference | 1 | Taxi/Private hire car |  |  |  | Going ahead right bend |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Vehicle movement from | W | to | E | No tow / articulation |  |  |  |  |
| On main carriageway |  |  |  | No skidding, jack-knifing or overturning |  |  |  |  |
| Location at impact | Mid J | nction | - on rou | bout or 1 | First impact | Front |  | Hit vehicle: |
| Hit object in road | None |  |  |  | Off road: | None |  |  |
| Did not leave carr |  |  |  |  |  | Age of Driver | 40 | Male |
| Not hit and run |  |  | Breath test | Negati |  |  |  |  |
| Driver Postcode: |  |  | VRM: |  |  |  |  |  |



| Casualty Reference: 1 | Vehicle: 2 | Age: 75 | Male | Driver/rider | Severity: Slight |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2nd: | Tyres illegal, defective or under inflated | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VH1 TRAVELLING NORTH ON A12 IN LANE TWO. REAR NEARSIDE TYRE SHREDDED COMPLETELY AND DRIVER LOST CONTROL. VEHICLE VEERED SHARPLY LEFT AND UP THE SLIP ROAD, STARTED TO SPIN AND MOUNTED THE TARMAC ROAD EDGE. VAN ROLLED ONTO NEARSIDE OF VEHICLE

Occurred on A130 COLCHESTER ROAD - BOREHAM INTERCHANGE A12 COLCHESTER ROAD A130


| Casualty Reference: | 1 | Vehicle: | 1 | Age: | 26 | Male | Passenger | Severity: | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Postco |  |  |  |  |  |

Not car passenger
Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2nd: | Failed to look properly |  | Vehicle 1 |

I WAS DRIVING MY CAR, ENTERED THE ROUND ABOUT TO TAKE THE 3RD EXIT (RIGHT), APPROACHED 2ND EXIT IN RIGHT HAND LANE TO PREPARE TO TAKE THE 3RD EXIT, ONE CAR PULLED OUT OF THE 2ND EXIT IN FRONT OF ME SO I SLOWED DOWN. A RED ROYAL MAIL LORRY ALSO PULLED
OUT IN FRONT OF ME AS I SLOWED DOWN. THE 3RD CAR FROM THE 2ND EXIT PULLED OUT AND HIT MY CAR ON THE PASSENGER BACK DOOR. I'VE HIT MY HEAD ON THE SIDE WINDOW. NO AIR BAGS DEPLOYED. AFTER A UNKNOWN AMOUNT OF TIME WE BOTH GOT OUT THE CAR THEN GOT BACK N TO MOVE BOTH CARS OFF THE ROUND ABOUT. SIGNIFICANT DAMAGE WAS CAUSED TO MY CAR AND A SMALL AMOUNT TO THE FRONT OF HERS.

Occurred on SERVICES ROUNDABOUT A130 AT JN WITH B1137


| Casualty Reference: 1 | Vehicle: 2 | Age: 27 | Female | Driver/rider | Severity: Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


VEHICLE 1 TRAVELLING ON A138 NEGOTIATING A ROUNDABOUT IN THE NEARSIDE LANE HEADING IN THE DIRECTION OF CHELMSFORD CITY CENTRE, VEHICLE 2 IN THE MIDDLE LANE INTENDING ON TRAVELLING IN THE SAME DIRECTION, BOTH VEHICLES ENTER LANE ONE OF THE JUNCTION AT THE SAME TIME AND COLLIDE

Occurred on A138 AT JN WITH A130


| Casualty Reference: | 1 | Vehicle: | 1 | Age: | 26 | Male | Driver/rider | Severity: | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Postco |  |  |  |  |  |
| Casualty Reference: | 2 | Vehicle: | 1 | Age: | 1 | Female | Passenger | Severity: | Slight |
|  |  |  |  | Postco |  |  |  |  |  |
| Back seat |  |  |  |  |  |  |  |  |  |
| Casualty Reference: | 3 | Vehicle: | 1 | Age: | 26 | Female | Passenger | Severity: | Slight |
|  |  |  |  | Postco |  |  |  |  |  |

Front seat
Accidents between dates $\quad \mathbf{0 1 / 0 4} / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selection:
Selected using Manual Selection

| Vehicle Reference | 2 | Car |  |
| :--- | :--- | :--- | :--- |
| Vehicle movement from | SE | to NW |  |

On main carriageway
Location at impact Leaving roundabout Hit object in road None

| Did not leave carr |  |
| :--- | :---: |
| Not hit and run | Breath test |
| Negative |  | VRM:

## Notes:

No tow / articulation

| No skidding, jack-knifing or overturning |  |
| :---: | :---: |
| First impact | Nearside |
| Off road: | Nit vehicle: |

Off road: None
Age of Driver $57 \quad$ Female

| 17201640 | 18/07/2017 | Time | 0900 | Vehicles | 2 | Casualties | 1 | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 574036 N : | 209416 | First Road: | A 138 | Road Type |  | Dual carriageway |  |  |
| Speed limit: 70 | Junction Detail: | Roundabout |  | Give way or controlled |  |  |  |  |
| Crossing: Control | None |  | Facilities: | None wit | thin 50m |  | Road surface | Dry |
| Daylight |  | Fine without high winds |  |  |  |  |  |  |
| Special Conditions at | Site None |  |  |  |  | Carriageway | None |  |
| Place accident reporte |  | where |  | DfT Special | Projects: |  |  |  |

Confidence:
Very Likely

VEH 1 AND 2 ON ROUNDABOUT. VEH 1 WAS NEARSIDE OF VEH 2. VEH 2 INTENDING ON EXITING ONTO A138 SPRINGFIELD. VEH 1 CONTINUED AROUND ROUNDABOUT AND IMPACTED ON FRONT NEAR SIDE OF VEH 2

Occurred on SPINGFIELD A138 NEAR JN WITH A130 A130


Vehicle Reference $2 \quad$ Van or Goods 3.5 tonnes mgw and under Overtaking nearside
Vehicle movement from S to N No tow / articulation
On main carriageway
Location at impact Leaving roundabout
Hit object in road None
No skidding, jack-knifing or overturning
First impact Offside Hit vehicle Off road: None

Age of Driver 34 Male
Did not leave carr
Not hit and run $\quad$ Breath test Negative
Driver Postcode: VRM:
Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


Confidence:
Very Likely
Very Likely Very Likely Very Likely

|  | Causation |  |  |
| :---: | :---: | :---: | :---: |
|  | Factor: | Participant: | Confidence: |
| 1st: | Aggressive driving | Vehicle 1 | Very Likely |
| 2nd: | Aggressive driving | Vehicle 2 | Very Likely |
| 3rd: | Careless/Reckless/In a hurry | Vehicle 1 | Very Likely |
| 4th: | Careless/Reckless/In a hurry | Vehicle 2 | Very Likely |
| 5th: 6th: |  |  |  |

VEH 1 AND 2 TRAVELLING SOUTHBOUND ONSLIP FROM JUNCTION 19 ONTO A12. VEH1 IS OFFSIDE OF VEH 2. VEH 2 MOVES ACROSS TOWARDS VEH1. VEH1 MOVES TO AVOID VEH 2. VEH1 THEN MOVES BACK TO ORIGINAL POSITION, STRIKES REAR OFFSIDE QUARTER OF VEH 2 . VEH 2 IS SP UN ONTO VERGE TO OFFSIDE, CROSSES CENTRAL VERGE AND COLLIDES WITH VEH 3 ON A12

Occurred on JUNTION 19 ONSLIP BOREHAM A12 AT JN WITH CHELMSFORD BYPASS A12


Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1} \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Pactor: | Participant: | Confidence: |
| 2nd: | Poor turn or manoevre | Vehicle 1 | Possible |
| 3rd: | Failed to look properly | Vehicle 2 | Possible |
| 4th: | Failed to look properly | Vehicle 1 | Possible |
| 5th: |  | Vehicle 2 | Possible |
| 6th: |  |  |  |

VEHICLE 2 TRAVELLING AROUND ROUNDABOUT, JUNCTION A138/B1137, IN THE OUTSIDE LANE, INTENDING TO GO SOUTHBOUND ON THE A12. VEHICLE 1 TRAVELLING AROUND SAME ROUNDABOUT ON THE INSIDE LANE, ALSO INTENDING TO TRAVEL DOWN SOUTHBOUND ONTO THE A12. VEHICLE 1 MOVES SLIGHTLY OUT TO TAKE ON-SLIP AND CLIPS FRONT OFFSIDE CORNER OF VEHICLE 2, CAUSING RIDER TO FALL FROM HIS BIKE.

Occurred on A138 AT JN WITH B1137

Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1} \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection


| Causation |  |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Road layout (eg bend, hill etc.) | Participant: | Confidence: |
| 2nd: | Disobeyed automatic traffic signal | Vehicle 2 | Possible |
| 3rd: | Disobeyed automatic traffic signal | Vehicle 2 | Very Likely |
| 4th: | Distraction in vehicle | Vehicle 1 | Possible |
| 5th: |  | Vehicle 2 | Possible |
| 6th: |  |  |  |

VEHICLE 1 PULLING OUT OF BMW DEALERSHIP, COLCHESTER ROAD SPRINGFIELD, HEADING NORTH EAST TOWARD THE A12. VEHICLE 2 CROSSING ZEBRA CROSSING ON SPRINGFIELD ROAD IN FRONT THE DEALERSHIP, VEHICLE 1 HAS COLLIDED WITH VEHICLE 2 CAUSING RIDER TO COME OFF A BIKE.

Occurred on COLCHESTER ROAD A130


Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1} \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection


| Causation |  |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Following too close | Participant: | Confidence: |
| 2nd: | Passing too close to cyclist, horse rider or pedestrian | Vehicle 1 | Very Likely |
| 3rd: |  | Vehicle 1 | Very Likely |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V2 WAS TRAVELLING ALONG WINSFORD WAY TOWARDS THE ROUNDABOUT IN THE CENTRE OF THE ROAD INTENDING TO TURN RIGHT ON THE CYCLE WAY AT THE TRAFFIC ISLAND. BEFORE TURNING INTO THE CYCLE PATH V1 PASSED V2 ON ITS OFF SIDE. THE RIDER OF V2 FELL OFF HIS BICYCL E INTO THE ROAD WHICH CAUSED GRAZING TO HIS RIGHT SHOULDER, KNEE, HIP AND LEG. BOTH PARTIES STATE THAT V1 MADE NO CONTACT WITH V2 OR ITS RIDER.

## Occurred on WINSFORD WAY NEAR JN WITH COLCHESTER ROAD A130


Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and ${ }^{\text {31/03/2021 }} \quad$ (60) months

Selection:
Notes:
Selected using Manual Selection


|  | Causation |  | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Failed to look properly | Vehicle 1 | Very Likely |
| 2nd: |  |  |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE ONE TRAVELLING EAST TOWARDS BOREHAM VILLAGE COLLIDES WITH CENTRAL ISLAND BETWEEN THE OPPOSING LANES AND ROLLS OVER ONTO ITS ROOF.

Occurred on MAIN ROAD B1137 NEAR JN WITH VILLIERS PLACE


| Casualty Reference: | 1 | Vehicle: | 1 | Age: | 85 | Female | Driver/rider | Severity: | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Postco |  |  |  |  |  |
| Casualty Reference: | 2 | Vehicle: | 1 | Age: | 88 | Male | Passenger | Severity: | Slight |
|  |  |  |  | Postco |  |  |  |  |  |

Front seat
Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1} \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 17251943 | 23/12/2017 | Time | 0030 | Vehicles | S 2 | Casualties | 2 |  | Serious |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 573284 N : | 208877 | First Road: | A |  | Road Type | Single ca |  |  |  |
| Speed limit: 40 | Junction Detail: | Not withi | n 20 m of | nction |  |  |  |  |  |
| Crossing: Control | None |  | Facilities: | None wit | ithin 50 m |  |  | ad surface | Dry |
| Darkness: street lights present and lit |  |  | Fine without high winds |  |  |  |  |  |  |
| Special Conditions at Site | Site None |  |  |  |  | Carriageway Hazards: |  | None |  |
| Place accident report | ed: At s | ene |  | DfT Special | Projects: |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2nd: | Careless/Reckless/In a hurry |  | Vehicle 1 |

VEHICLE 1 TRAVELLING A130 TOWARDS BOREHAM. VEHICLE 2 TRAVELLING A130 IN THE OPPOSITE DIRECTION. VEHICLE 1 HAS COLLIDED WITH A CENTRAL TRAFFIC ISLAND, LOSING CONTROL AND THEN IMPACTING HEAD ON WITH VEHICLE 2 COMING IN THE OPPOSITE DIRECTION.

Occurred on WHITE HART LANE A130 NEAR JN WITH OAK LODGE TYE


| Casualty Reference: | 1 | Vehicle: | 1 | Age: | 20 | Male | Driver/rider | Severity: | Serious |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Postco |  |  | Seatbelt |  |  |
| Casualty Reference: | 2 | Vehicle: | 1 | Age: | 19 | Male | Passenger | Severity: | Slight |
|  |  |  |  | Postco |  |  |  |  |  |

Front seat

| Vehicle Reference | 2 | Goods vehicle - unknown weight |
| :--- | :--- | :--- | :--- |
| Vehicle movement from | SE to NW Articulated |  |$\quad$ Going ahead other

On main carriageway No skidding, jack knifing or overturning

| Location at impact | Not at, or within 20 M of Jct | First impact <br> Off road: | Front <br> None | Hit vehicle: |
| :--- | :---: | :---: | :---: | :---: |
| Hit object in road | None |  | Age of Driver | 34 |


| Nearside |  | Age of Driver | 34 |  |
| :--- | :---: | :---: | :---: | :---: |
| Not hit and run | Breath test | Negative |  |  |
| Driver Postcode: | VRM: |  |  |  |

Accidents between dates 01/04/2016 and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selected using Manual Selection

| 18289931 | 26/02/2018 | Time | 1645 | Vehicles | - 2 | Casualties | 1 | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 574060 N : | 208937 | First Road: | A 12 |  | Road Type | Dual carriageway |  |  |
| Speed limit: 70 | Junction Detail: | Not within 20m of junction |  |  |  |  |  |  |
| Crossing: Control | None |  | Facilities: | None wit | ithin 50m |  | Road surface | Dry |
| Daylight |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions at Site | Site None |  |  |  |  | Carriageway Hazards: None |  |  |
| Place accident report | ed: Else | where |  | DfT Special | Projects: |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

I WAS DRIVING MY VAN ON THE SLIP ROAD TO COME OFF THE A12 AT BOREHAM, I NOTICED THE POLICE HAD CLOSED PART OF THAT LANE SO HAD TO COME BACK OUT TO GET PAST THE CLOSED PART, AS I WAS COMING OUT IN TO A GAP A LORRY DRIVER AGRESSIVELY CLOSED THE GAP AND I HAD TO GET BACK INTO THE LEFT LANE (SLIP ROAD) THEN A LARGER GAP BECOME AVAILABLE SO WENT TO GO IN AGAIN AND HE DID THE SAME FLASHING HIS LIGHTS ON FULL BEAM AT ME AND HIT MY VAN PUSHING IT BACK OUT ON TO SLIP ROAD.

Occurred on A12 NEAR JN WITH A130


| Casualty Reference: 1 | Vehicle: 2 | Age: 33 | Male | Driver/rider | Severity: Slight |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
|  |  | Postcode |  | Seatbelt |  |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


| Causation |  |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 1st: | Failed to look properly | Vehicle 1 | Possible |
| 2nd: |  |  |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE 1 IS ENTERING THE ROUNDABOUT FROM THE A12 HAVING COME FROM COLCHESTER. VEHICLE 2 IS ON THE ROUNDABOUT ALREADY. VEHICLE 1 CROSSES THE PATH OF VEHICLE 2 KNOCKING VEHICLE 2 OVER AND THE RIDER TO COME OFF.

Occurred on A12 AT JN WITH B1137


| Vehicle Reference | 2 | Motorcycle over 500cc |  | Going ahead other |
| :--- | :--- | :--- | :--- | :--- |
| Vehicle movement from | E | to W | No tow/articulation |  |


| On main carriageway |  |  |  | Skidded |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Location at impact | Mid Junction - on roundabout or 1 |  |  | First impact | Front |  | Hit vehicle: |
| Hit object in road | None |  |  | Off road: | None |  |  |
| Did not leave carr |  |  |  |  | Age of Driver | 58 | Male |
| Not hit and run |  | Breath test | Negativ |  |  |  |  |
| Driver Postcode: |  | VRM: |  |  |  |  |  |


| Casualty Reference: 1 | Vehicle: 2 | Age: 58 | Male | Driver/rider | Sostcode |
| :---: | :---: | :---: | :---: | :---: | :---: |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 18284877 |  | /2018 | Time | 1835 | Vehicles | 2 | Casualties | 2 |  | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 574002 N : |  |  | First Road: | A 12 | Road Type |  | Dual carria |  |  |  |
| Speed limit: 70 | Junc | Detail: | Slip Road |  |  |  | Give way or controlled |  |  |  |
| Crossing: Control | None |  |  | Facilities: | None within 50 m |  |  | Road surface |  | Dry |
| Daylight |  |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions at Site |  | None |  |  | Carriageway Hazards: |  |  |  | None |  |
| Place accident reported: |  | Elsewhere |  | DfT Special Projects: |  |  |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Travelling too fast for conditions | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Possible |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE TWO WAITING IN LANE ONE TO GO AHEAD ONTO THE ROUNDABOUT. VEHICLE ONE TRAVELS UP THE SLIP ROAD IN LANE ONE AND COLLIDES WITH A LAMP COLUMN ON THE NEARSIDE VERGE BEFORE COLLIDING WITH THE REAR OF VEHICLE TWO.

Occurred on BOREHAM A12 AT JN WITH A130


| Casualty Reference: | 1 | Vehicle: | 1 | Age: | 17 | Female | Passenger | Severity: | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Postco |  |  |  |  |  |

Front seat

| Vehicle Reference | Car |  | No tow / articulation |  | Going ahead but held up |  | Hit vehicle: |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Vehicle movement from | m E |  |  |  |  |  |  |
| On main carriagewa |  |  | No skidding, jack-knifing or overturning |  |  |  |  |
| Location at impact | Entering roundabout |  |  | First impact | Back |  |  |
| Hit object in road | None |  | Off road: |  | None |  |  |
| Did not leave carr |  |  |  |  | Age of Driver | 29 | Male |
| Not hit and run |  | Breath test | Negative |  |  |  |  |
| Driver Postcode: |  | VRM: |  |  |  |  |  |


| Casualty Reference: 2 | Vehicle: 2 | Age: 29 | Male | Driver/rider | Severity: Slight |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2nt: | Following too close | Vehicle 1 | Very Likely |
| 3rd: | Careless/Reckless/In a hurry | Vehicle 1 | Very Likely |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

## CYCLIST AND VEH 1 HEADING NORTH ON MAIN ROAD, BOREHAM. AS BOTH VEHICLES APPROACHED A CENTRAL TRAFFIC ISLAND THE VAN HAS COLLIDED WITH THE REAR OF THE CYCLIST.

## Occurred on MAIN ROAD B1137 NEAR JN WITH CHURCH ROAD



| Casualty Reference: 1 | Vehicle: 2 | Age: 38 | Male | Driver/rider | Severity: Slight |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
|  |  | Postcode |  | Seatbelt |  |

Accidents between dates $\quad \mathbf{0 1 / 0 4} / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


| Causation |  |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Swerved | Participant: | Confidence: |
| 2nd: | Loss of control | Vehicle 1 | Possible |
| 3rd: |  | Vehicle 1 | Possible |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEH 1 TRAVELLING ALONG A12 TOWARDS GENERAL DIRECTION OF LONDON, IN LANE 3 OF 3. VEH 1 LOST CONTROL AND COLLIDED WITH CENTRAL RESERVATION THEN VEERED ACROSS THE 3 LANES AND LEFT CARRIAGEWAY TO THE NEARSIDE. DAMAGE WAS CAUSED TO VEH 1 AND CENTRAL CRA SH BARRIER. MINOR INJURIES CAUSED TO DRIVER OF VEH 1

Occurred on LONDON ROAD A12 NEAR JN WITH MAIN ROAD B1137

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selected using Manual Selection


| Causation |  | Confidence: |  |
| :--- | :--- | :--- | :--- |
| 1st: | Cartor: | Participant: | Possible |
| 2nd: |  | Casualty 1 |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE TWO WAS SLOWING TO TURN RIGHT INTO BOREHAM HOUSE, VEHICLE ONE FAILED TO NOTICE VEHICLE TWO INDICATING AND VEHICLE ONE STARTED TO TURN, VEHICLE TWO COLLIDED WITH THE SIDE OF VEHICLE ONE.

Occurred on MAIN ROAD B1137 NEAR JN WITH A12
Vehicle Reference 1 Motor Cycle over 50 cc and up to 125 cc Overtaking moving vehicle $\mathrm{O} / \mathrm{S}$
Vehicle movement from E to W No tow / articulation
On main carriageway No skidding, jack-knifing or overturning
Location at impact Not at, or within 20M of Jct
First impact Did not impact Hit vehicle:

Hit object in road None Off road: None

| Did not leave carr |  | Age of Driver | 54 | Male |
| :--- | :---: | :---: | :---: | :---: |
| Not hit and run | Breath test | Not requested |  |  |
| Driver Postcode: | VRM: |  |  |  |


Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and ${ }^{\text {31/03/2021 }} \quad$ (60) months

Selection:
Notes:
Selected using Manual Selection

| 18303957 | 22/06/2018 | Time | 1055 | Vehicles | 1 | Casualties |  |  | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 573021 N : | 209075 | First Road: |  |  | Road Type | Single carr |  |  |  |
| Speed limit: 40 | Junction Detail: | Not within 20 m of junction |  |  |  |  |  |  |  |
| Crossing: Control | None |  | Facilitie | Pelican, puffin, toucan etc. |  |  |  | Road surface | Dry |
| Daylight |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions a |  | Site None |  |  |  |  | Carriageway |  | None |  |
| Place accident report |  | where |  | DfT Special | Projects: |  |  |  |  |


| Causation |  |  |  |
| :---: | :---: | :---: | :---: |
|  | Factor: | Participant: | Confidence: |
| 1st: | Careless/Reckless/In a hurry | Vehicle 1 | Very Likely |
| $\begin{aligned} & \text { 2nd: } \\ & \text { 3rd: } \end{aligned}$ |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE ONE HAS FAILED TO NOTICE PEDESTRIAN CROSSING AT A PEDESTRIAN CROSSING, AND HIS HIT PEDESTRIAN.

## Occurred on A130 NEAR JN WITH BEAULIEU BOULEVARD



| Casualty Reference: | 1 | Vehicle: 1 | Age: <br> Postcode | Female | Pedestrian | Severity: Slight |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| On Ped Crossing |  |  |  |  | E bound |  |
| Driver's nearside |  |  |  |  |  |  |


| Accidents between dates | $\mathbf{0 1 / 0 4 / 2 0 1 6}$ | and | $\mathbf{3 1 / 0 3 / 2 0 2 1}$ | (60) months |
| :--- | :---: | :---: | :---: | :---: |
| Selection: |  |  | Notes: |  |

Selected using Manual Selection


| Causation |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| Factor: | Participant: | Confidence: |  |  |  |  |  |  |
| 1st: | Illness or disability, mental or physical | Vehicle 1 | Possible |  |  |  |  |  |
| 2nd: | Poor turn or manoevre | Vehicle 1 | Possible |  |  |  |  |  |
| 3rd: |  |  |  |  |  |  |  |  |
| 4th: |  |  |  |  |  |  |  |  |
| 5th: |  |  |  |  |  |  |  |  |
| 6th: |  |  |  |  |  |  |  |  |

## VEHICLE 1 TRAVELLING ALONG A12 IN THE GENERAL DIRECTION OF IPSWICH. FOR REASONS UNKNOWN, VEHICLE 1 LEAVES THE ROAD TO NEARSIDE AND COLLIDES WITH THE BUSHES.

Occurred on A12 NEAR JN WITH A138



Front seat
Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selected using Manual Selection

| 18321863 | 27/08/2018 | Time | 1829 | Vehicles | 2 | Casualties | 2 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |


| Causation |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Factor: |  |  | Participant: | Confidence: |
| 1st: Other |  |  | Vehicle 1 | Very Likely |
| 2nd: <br> 3rd: |  |  |  |  |
| 4th: |  |  |  |  |
| 5th: |  |  |  |  |
| 6th: |  |  |  |  |
| Other Cause: | SMOKE | Precipitating Factor: |  |  |
|  | FROM |  |  |  |
|  | DEFECTIVE |  |  |  |
|  | VEHILCE |  |  |  |

V1 PULLED INTO SLIP ROAD AFTER DEVELOPING A FAULT WHICH MEANT THAT A LARGE AMOUNT OF SMOKE STARTED TO COME FROM THE REAR. ALL PASSENGERS AND DRIVER EXITED THE VEHICLE AND TWO OF THE PASSENGERS WERE STUCK BY V2 WHICH CAME THROUGH THE SMOKE.
Occurred on JUNCTION 19 A12 NEAR JN WITH B1137 MAIN ROAD B1137


| Accidents between dates | $01 / 04 / 2016$ | and | $31 / 03 / 2021$ | (60) months |
| :--- | :---: | :---: | :---: | :---: |
| Selection: |  |  | Notes: |  |

Selected using Manual Selection


Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2nd: | Failed to look properly | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

AS I WAS CYCLING OUT OF BEAULIEU BLVD ONTO THE WHITE HART LANE ROUNDABOUT HEADING TOWARDS BOWERS WAY ROAD I WAS GOING AROUND THE ROUNDABOUT WHEN CAR REG NUMBER HV 58 HKZ PULLED OUT FROM WHITE HART LANE ROAD HITTING ME AND MY BIKE.

Occurred on WHITE HART LANE A130 AT JN WITH BOWERS WAY ROAD

| Vehicle Reference | 1 | Car |  |
| :--- | :--- | :--- | :--- |
| Vehicle movement from |  | SE | to NW |

On main carriageway
Location at impact Entering roundabout
Hit object in road None
Did not leave carr
Not hit and run
Driver Postcode:

| Vehicle Reference | 2 |  |
| :--- | :--- | :--- |
| Pedal Cycle |  |  |
| Vehicle movement from | NE | to $S W$ |

Starting
No tow / articulation
No skidding, jack-knifing or overturning First impact Front Hit vehicle: Off road: None

Age of Driver 33 Female
Driver not contacted

Going ahead other
No tow / articulation
No skidding, jack-knifing or overturning
First impact Nearside Hit vehicle:

Off road: None
Age of Driver 56 Male
Breath test Not applicable VRM:
Casualty Reference: 1 Vehicle: 2 Age: 56 Male Driver/rider Severity: Slight
Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Selected using Manual Selection

| 18333301 | 06/10/2018 | Time | 1154 | Vehicles | 2 | Casualties | 1 | Serious |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 573674 N : | 208867 | First Road: | A 130 |  | Road Type | Single carr |  | Unclassified |
| Speed limit: 40 | Junction Detail: | Other |  | Give way or controlled |  |  |  |  |
| Crossing: Control | None |  | Facilities: | Pelican, |  | puffin, tou | n etc. | Road surface | Wet/Damp |
| Daylight |  |  | Raining without high winds |  |  |  |  |  |
| Special Conditions at Si | Site None |  | Carriageway Hazards: None |  |  |  |  |  |
| Place accident report | At scene |  | DfT Special Projects: |  |  |  |  |  |


| Causation |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :---: | :---: | :---: | :---: |
|  | Factor: | Participant: | Confidence: |  |  |  |  |
| 1st: | Failed to look properly | Vehicle 2 | Very Likely |  |  |  |  |
| 2nd: | Failed to look properly | Vehicle 1 | Very Likely |  |  |  |  |
| 3rd: |  |  |  |  |  |  |  |
| 4th: |  |  |  |  |  |  |  |
| 5th: |  |  |  |  |  |  |  |

A LORRY (VEHICLE 1) WAS TRAVELLING SOUTHBOUND ALONG COLCHESTER ROAD FROM THE AUCTION HOUSE ROUNDABOUT TOWARDS THE SAINSBURY'S ROUNDABOUT. THE LORRY TURNED INTO THE JUNCTION OF FORDSON ROAD WHICH IS A SMALL CRESCENT TO EXECUTE A RECIPROCAL TURN TO CO NTINUE NORTHBOUND ALONG COLCHESTER ROAD. TRAFFIC WAS HEAVY AND THERE WAS SLOW MOVING TRAFFIC ON BOTH SIDES OF THE ROAD. THE DRIVER OF THE LORRY SAYS THAT VEHICLES IN BOTH DIRECTIONS HAD STOPPED AND HAD FLASHED HIM OUT OF THE SIDE TURNING. AS THE LO RY PULLED OUT OF FORDSON ROAD TO TURN RIGHT INTO COLCHESTER ROAD A MOTORBIKE (VEHICLE 2) WAS TRAVELLING SOUTHBOUND ALONG COLCHESTER ROAD FILTERING PAST TRAFFIC AT AN ESTIMATED $10-20 \mathrm{MPH}$. AS THE LORRY CREPT FORWARD THE MOTORBIKE CAME INTO CONTACT WIT

Occurred on COLCHESTER ROAD A130 AT JN WITH FORDSON ROAD

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Factor: | Causation | Participant: |
| :--- | :--- | :--- | :--- |
| 1st: | Failed to look properly | Vehicle 1 | Verfidence: |
| 2nd: |  |  |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |

WHAT HAPPENED DETAILS OF WHAT HAPPENED I WAS DRIVING IN THE MIDDLE LANE TO GO RIGHT ON THE ROUNDABOUT AND THE TRUCK WAS IN THE RIGHT HAND LANE TO GO STRAIGHT OVER AND WENT INTO THE SIDE OF ME AND SPUN ME AROUND DIDN'T STOP JUST DROVE OFF

Occurred on * BOREHAM B1137 AT JN WITH A138

| Vehicle Reference | 1 | Goods vehicle - unknown weight |  | Starting |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Vehicle movement from | $\text { NE to } \mathrm{SW}$ |  | No tow / articulation |  |  |  |
| On main carriageway |  |  | No skidding, jack-knifing or overturning |  |  |  |
| Location at impact |  | undabout | First impact | Nearside |  | Hit vehicle: |
| Hit object in road N | None |  | Off road: | None |  |  |
| Did not leave carr |  |  |  | Age of Driver | 29 | Male |
| Hit and run |  | Breath test | Driver not contacted |  |  |  |
| Driver Postcode: |  | VRM: |  |  |  |  |



| Casualty Reference: 1 | Vehicle: 2 | Age: 31 | Male | Driver/rider | Severity: Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |

Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1} \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection


VEHICLE 2 WAS ESCORTING VEHICLE 1 INTO BOREHAM SERVICES. ON THE APPROACH TO THE ROUNDABOUT OUTSIDE THE SERVICES, JUNCTION WITH THE A12 OFFSLIP AND COLCHESTER ROAD, THE DRIVER OF VEHICLE 1 WAS CONCENTRATING ON ANOTHER CAR IN LANE 1 AS WELL AS LOOKING AT VEHICLES FROM HIS RIGHT ON THE ROUNDABOUT. DRIVER OF VEH 1 FAILED TO SEE THAT VEH 2 HAD STOPPED TO GIVE WAY TO TRAFFIC ON THE ROUNDABOUT, AND COLLIDED WITH THE REAR OF VEHICLE 2 PUSHING IT 10 METRES AND CAUSING THE RIDER TO COME OFF.

Occurred on COLCHESTER ROAD A130 AT JN WITH COLCHESTER ROAD A130



| Casualty Reference: 1 | Vehicle: 2 | Age: 51 | Male | Driver/rider | Seatbelt |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: | Failed to look properly | Vehicle 1 | Possible |
| 3rd: |  | Vehicle 2 | Possible |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V1 AND V2 WERE NEGOTIATING THE ROUNDABOUT JUNCTION. WHEN V1 AND V2 COLLIDED. THIS CAUSED V2 TO SPIN. DAMAGE WAS CAUSED TO BOTH VEHICLES AND THE PASSENGER IN V1 WAS INJURED.

Occurred on BOREHAM INTERCHANGE A128 NEAR JN WITH GENERALS LANE



Front seat

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 19807241 | 09/01/2019 | Time | 1715 | Vehicles | S | Casualties | 1 |  | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 573622 N : | 208819 | First Road: | A 130 |  | Road Type | Single carriageway |  |  |  |
| Speed limit: 40 | Junction Detail: | Not within 20 m of junction |  |  |  |  |  |  |  |
| Crossing: Control | None |  | Facilities: | Ped. phase at traffic signal junctio |  |  |  | d surfac | Dry |
| Darkness: street lights present and lit |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions at | Site Road | orks |  |  |  | Carriageway |  | None |  |
| Place accident report | d: Else | where |  | fT Special | Projects: |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Possible |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

PEDESTRIAN WAS CROSSING THE ROAD AT THE TEMPORARY TRAFFIC LIGHTS OUTSIDE THE BMW COOPER CAR SALES SHOWROOM. VEH 1 WAS TRAVELLING WEST FROM FORDSON ROAD WHEN HE REALISED THAT THE TEMPORARY TRAFFIC LIGHTS WERE SHOWING RED. THE DRIVER BRAKED HARD AND
TURNED STEERING WHEEL TO LEFT BUT STRUCK A PEDESTRIAN WITH HIS WING MIRROR. THE PEDESTRIAN FELL TO THE FLOOR. DRIVER GOT OUT OF HIS CAR AND ASSISTED THE PEDESTRIAN (WHO IS A WORK COLLEAGUE) AND TOOK HER INTO THE WORKS PREMISES. PEDESTRIAN HAD A GR ZE TO HER LEFT KNEE BUT STATED SHE HAD NO OTHER INJURIES. DRIVER OF VEH 1 HAS ATTENDED CHELMSFORD POLICE STATION TODAY IN ORDER TO REPORT THE INCIDENT AS THE PEDESTRIAN (COLLEAGUE) HAS NOT BEEN IN WORK SINCE THE ACCIDENT. ALTHOUGH HE HAS HEARD FRO

Occurred on COLCHESTER ROAD (A130) - 70 METRES FROM JUNCTION WITH FORDSON ROAD

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

I WAS CYCLING ACROSS FROM BEAULIEU BOULEVARD CROSSING WHITE HART LANE ROUNDABOUT AT APPROXIMATELY 06:05 AM ON MY WAY TO THE STATION WHEN A SILVER CITROEN FAILED TO STOP AND KNOCKED ME OFF MY BIKE. THE BIKE IS WRECKED AND I WENT TO HOSPITAL FOR A CHEC K UP, FORTUNATELY NO BROKEN BONES JUST BAD BRUISING . THE DRIVER OF THE CITROEN DID NOT STOP AFTER HITTING ME. THE REAR OF MY BIKE WAS STRUCK BY THE NEARSIDE FRONT BUMPER.

## Occurred on NEW BOWERS WAY ROUNDABOUT (A130) NEAR JUNCTION WITH WHITE HART LANE (A130)


Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Pactor: | Participant: | Confidence: |
| 2nd: | Failed to signal/Misleading signal | Vehicle 1 | Very Likely |
| 3rd: |  | Vehicle 1 | Very Likely |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE 001 HAS ENTERED THE ROUNDABOUT IN THE WRONG LANE, SHE HAS THEN REMAINED IN THAT LANE ATTEMPTING TO TAKE THE 3RD EXIT AND CUT ACROSS THE FRONT OF VEHICLE 002 CAUSING THE COLLISION.

Occurred on A138 NEAR JUNCTION WITH GENERALS LANE ROUNDABOUT (A130)


Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Careles: | Participant: | Very Likely |
| 2nd: | Failed to look properly | Vehicle 1 | Very Likely |
| 3rd: |  | Vehicle 1 |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEH1 WAS ENTERING THE ROUNDABOUT IN THE MIDDLE LANE. VEH2 WAS NEGOTIATING ROUNDABOUT WITH RIGHT OF WAY FROM RIGHT HAND SIDE OF VEH1 VEH1 HAS FAILED TO GIVE WAY AND HAS COLLIDED WITH VEH2

Occurred on DROVERS WAY ROUNDABOUT (A130) AT JUNCTION WITH COLCHESTER ROAD (A130)


| Casualty Reference: | 1 | Vehicle: | 1 | Age: | 30 | Male | Driver/rider | Severity: | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Postcode |  |  |  |  |  |
| Casualty Reference: | 2 | Vehicle: | 1 | Age: | 25 | Male | Passenger | Severity: | Serious |
|  |  |  |  | Postco |  |  |  |  |  |

Front seat

Accidents between dates 01/04/2016 and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Possible |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

I HAD STOPPED FOR TRAFFIC AND WAS HIT FROM BEHIND BY A CAR WITH FORCE. MY PASSENGER JERKED FORWARD AND WAS SHAKING VIOLENTLY. I STOPPED AS DID THE CAR BEHIND AND MYSELF AND THE YOUNG FEMALE DRIVER FROM THE OTHER CAR GOT OUT, TOOK PHOTOGRAPHS OF THE D AMAGE TO BOTH CARS AND EXCHANGED DETAILS. THE OTHER DRIVER EXPRESSED A WISH TO SETTLE DAMAGED WITHOUT GOING VIA THE INSURANCE.

Occurred on WHITE HART LANE (A130) - 75 METRES FROM JUNCTION WITH OAK LODGE TYE

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selected using Manual Selection

| 19859671 | 19/07/2019 | Time | 2200 | Vehicles | S 2 | Casualties | 2 | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 574138 N : | 209398 | First Road: | A 12 |  | Road Type | Dual carri |  |  |
| Speed limit: 70 | Junction Detail: | Not within 20 m of junction |  |  |  |  |  |  |
| Crossing: Control | None |  | Facilities: | None wit | ithin 50m |  | Road surface | Wet/Damp |
| Darkness: no street lighting |  | Raining without high winds |  |  |  |  |  |  |
| Special Conditions | Site None |  |  |  |  | Carriageway | None |  |
| Place accident repor | ed: At s | cene |  | DfT Special | Projects: |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Exceeding speed limit | Participant: | Confidence: |
| 2nd: | Travelling too fast for conditions | Vehicle 1 | Very Likely |
| 3rd: | Careless/Reckless/In a hurry | Vehicle 1 | Very Likely |
| 4th: | Impaired by alcohol | Vehicle 1 | Possible |
| 5th: | Impaired by drugs (illicit or medicinal) | Vehicle 1 | Possible |
| 6th: |  | Vehicle 1 | Possible |

V1 WAS TRAVELLING A12 NORTHBOUND BETWEEN JUNCTIONS 19 TOWARDS 20A. FOR REASONS UNKNOWN V1 HAS LOST CONTROL AND HIT THE CENTRAL RESERVATION BEFORE THEN HITTING THE REAR OF V2 WHICH WAS TRAVELLING IN LANE ONE OF THE A12 HEADING IN THE SAME DIRECTION. DUE TO THE IMPACT, V2 HAS ROLLED AND LEFT THE CARRIAGEWAY TO THE NEARSIDE. V1 HAS THEN COME TO REST ON THE CENTRAL RESERVATION. DRIVER OF V1 RAN FROM THE SCENE. INJURY CAUSED TO PASSENGER OF V2.

Occurred on A12


| Casualty Reference: 1 | Vehicle: 2 | Age: 67 | Female | Passenger |  | Severity: Slight |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

Front seat

Casualty Reference: 2 Vehicle: 2 Age: 59 Male Driver/rider Severity: Slight
Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
|  | Factor: | Participant: | Confidence: |
| 1st: | Slippery road (due to weather) | Vehicle 1 | Very Likely |
| 2nd: | Rain, sleet, snow, or fog | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

INITIAL ENQUIRIES WITH BOTH DRIVERS SUGGEST THAT V1 HAS MOVED ACROSS FORM LANE 2 TO WHAT HE THOUGHT WAS A STILL PRESENT LANE 3. LANE 3 HAD ENDED PRIOR TO BOREHAM
INTERCHANGE EXIT. V1 DRIVER HAS MIRROR CHECKED AND SEEN NO LIGHTS AND MOVED OFFSIDE. HE HAS IMMEDIATELY SEEN THE CENTRAL RESERVATION BARRIER AND PULL BACK FORM THE OFFSIDE BREAKING INTO THE REAR OF V2 WHO WAS SLOWING FOR TRAFFIC IN LANE 2. V2 HAS THEN SPUN DUE TO THE IMPACT TO THE REAR OFFSIDE OF HIS VEHICLE AND IMPACTED WITH THE CENTR L RESERVATION BARRIER DAMAGING HIS NEARSIDE FRONT END. V2 HAS BEEN LEFT FACING ONCOMING TRAFFIC IN LANE 2. 1 INJURY OCCURRED TO THE PASSENGER OF V1 WHO WAS ASLEEP AT THE TIME OF THE INCIDENT, HE DECLINED AMBULANCE AND ATTENDED HIS GP THE NEXT DAY, D

Occurred on A12-54 METRES FROM JUNCTION WITH A12



Front seat

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


| Causation |  | Confidence: |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Possible |
| 2nd: |  | Vehicle 1 |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

FOUR VEHICLES INVOLVED, THREE OF THE VEHICLES ALL STOPPED EXCEPT THE LAST VEHICLE IN THE LINE, VEH 1 WHICH COLLIDED INTO THE REAR OF A VEH 2 WHICH THEN SHUNTED INTO VEH 3 AND WAS SHUNTED INTO VEH 4. INJURY CAUSED TO PASSENGER OF VEHICLE TWO MINOR NEC K PAIN. DAMAGE CAUSED TO ALL VEHICLES.

Occurred on A12-136 METRES FROM JUNCTION WITH A12


Front seat

| Accidents between dates | $01 / 04 / 2016$ | and | $31 / 03 / 2021$ | (60) months |
| :--- | :---: | :---: | :---: | :---: |
| Selection: |  |  | Notes: |  |

Selected using Manual Selection

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: | Failed to judge vehicles path or speed | Casualty 1 | Possible |
| 3rd: |  | Vehicle 1 | Possible |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE ONE WAITING TO EXIT OAK LODGE TYE INTENDING ON TURNING LEFT TO TRAVEL NORTH WEST ON A130 WHITE HART LANE. PEDESTRIAN CASUALTY CROSSING OAK LODGE TYE FROM WEST KERB TO EAST KERB. AS VEHICLE ONE STARTS TO TURN LEFT PEDESTRIAN CASUALTY IS CRO SSING IN FRONT OF THE VEHICLE AND A COLLISION OCCURS.

Occurred on OAK LODGE TYE NEAR JUNCTION WITH WHITE HART LANE (A130)

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 20930052 | 12/02/2020 | Time | 2028 | Vehicles | - 1 | Casualties | 1 | Serious |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 574041 N : | 209097 | First Road: | A 12 |  | Road Type | Slip road |  |  |
| Speed limit: 70 | Junction Detail: | Not with | 20 m of ju | nction |  |  |  |  |
| Crossing: Control | None |  | Facilities: | None wit | ithin 50m |  | Road surface | Wet/Damp |
| Darkness: street lights present and lit |  |  |  | Raining without high winds |  |  |  |  |
| Special Conditions at Site | Site None |  |  |  |  | Carriageway Hazards: None |  |  |
| Place accident report | ed: At s | ene |  | DfT Special | Projects: |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
|  | Factor: | Participant: | Confidence: |
| 1st: | Loss of control | Vehicle 1 | Very Likely |
| 2nd: | Impaired by drugs (illicit or medicinal) | Vehicle 1 | Possible |
| 3rd: | Inexperience with type of vehicle | Vehicle 1 |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE 1 PROCEEDED ALONG THE NORTH BOUND CARRIAGEWAY OF THE A12. VEHICLE 1 EXITED THE A12 AT JUNCTION 19 CHELMSFORD VIA THE OFF SLIP. VEHICLE 1 LOST CONTROL ON THE NEARSIDE BEND AND COLLIDED INTO IN THE OFFSIDE RESERVATION BARRIER. SERIOUS INJURIES SUSTAINED TO RIDER OF VEHICLE 1.

Occurred on A12-68 METRES FROM JUNCTION WITH DROVERS WAY ROUNDABOUT (A130)

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 20950308 | 10/05/2020 | Time | 1222 | Vehicles | 1 | Casualties | 2 | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 574100 N : | 209341 | First Road: | A 12 |  | Road Type | Dual carriageway |  |  |
| Speed limit: 70 | Junction Detail: | Not within 20 m of junction |  |  |  |  |  |  |
| Crossing: Control | None |  | Facilities: | None within 50m |  |  |  |  | Road surface | Dry |
| Daylight |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions at | Site None |  |  |  |  | Carriageway | None |  |  |
| Place accident report | d: At s | ene |  | DfT Special | Projects: |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Tyres illegal, defective or under inflated | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V1 WAS TRAVELLING NORTHBOUND ON THE A12 IN LANE 1. THE REAR OFFSIDE TYRE HAS HAD A 'BLOW OUT', THIS ACTION HAS CAUSED THE CAR TO BEGIN TO SWERVE ACROSS THE ROAD. THE DRIVER HAS LOST CONTROL AND LEFT THE CARRIAGEWAY ON THE NEARSIDE. THE VEHICLE HAS RO LLED AND COME TO REST ON ITS ROOF ON THE EMBANKMENT.

Occurred on A12


Front seat
Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Possible |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

## I WAS STATIONARY IN A LINE OF TRAFFIC HEADING TOWARDS BEAULIEU PARK ROUNDABOUT AND WAS HIT FROM BEHIND BY ANOTHER CAR

Occurred on WHITE HART LANE (A130) - 39 METRES FROM JUNCTION WITH NEW NABBOTTS WAY ROUND 1

Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1} \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection


Confidence:

|  | Factor: | Participant: | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Failed to judge other persons path or speed | Vehicle 1 | Possible |
| 2nd: |  |  |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

I WAS DRIVING FROM BOREHAM INTERCHANGE JUNCTION TO BOREHAM, OVER THE ROUNDABOUT. THE EXIT SLIP ROAD FROM THE A12 WAS ON MY LEFT HAND SIDE AND I COULD SEE A VEHICLE AHEAD WHICH WAS CREEPING FORWARDS AND NOT STOPPING. IT STOPPED ME BEING ABLE TO TURN OFF ONTO MAIN ROAD WITHOUT GOING INTO THE CAR. SO I STOPPED TO AVOID THE CAR AND AS A RESULT ANOTHER CAR CRASHED INTO THE BACK OF MY CAR. THE CAR THAT WAS CREEPING OUT DID NOT STOP AND DRIVE OFF. THE NUMBER PLATE WAS 652FGW

Occurred on BOREHAM ROUNDABOUT (A130) AT JUNCTION WITH A12


| Accidents between dates | $01 / 04 / 2016$ | and | $31 / 03 / 2021$ | (60) months |
| :--- | :---: | :---: | :---: | :---: |
| Selection: |  |  | Notes: |  |

Selected using Manual Selection

| Vehicle Reference | Car |  | Going ahead other |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Vehicle movement from | N | S | No tow / articulation |  |  |  |
| On main carriageway |  |  | No skidding, jack-knifing or overturning |  |  |  |
| Location at impact | Entering roundabout |  | First impact | Did not impact |  | Hit vehicle: |
| Hit object in road | None |  | Off road: | None |  |  |
| Did not leave carr |  |  |  | Age of Driver | 27 | Male |
| Non-stop, not hit Driver Postcode: |  | Breath test <br> VRM: | Driver not contacted |  |  |  |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


Confidence:
Very Likely

|  | Factor: | Participant: | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Failed to look properly | Vehicle 1 | Very Likely |
| 2nd: |  |  |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V2 WAS CYCLING AND HAD CROSSED THE SLIP ROAD OF THE A12 GOING SOUTHBOUND AND WAS APPROACHING THE EXIT OF SANI MOTORS/BOOT SALE/BOSS HOGG WHEN THE RIDER SAW V1 WAITING TO PULL OUT OF THE JUNCTION ONTO THE ROUNDABOUT. THE RIDER OF V2 CHECKED THE ROUN DABOUT TO SEE IF IT WAS ALSO CLEAR ANTICIPATING THAT V1 MAY PULL OUT. THE JUNCTION WAS CLEAR SO V2 PROCEEDED AND AS V2 APPROACHED V1 IT ROLLED BACK SLIGHTLY. THE ROUNDABOUT BECAME CLEAR AND V1 PROCEEDED TO DRIVE FORWARD. V2 ATTEMPTED TO BREAK TO ST P AND CALLED OUT BUT AT THAT STAGE IT WAS TOO LATE AND THE FRONT OF V1 HIT V2 CAUSING THE RIDER TO HIT THE BONNET THEN TO FALL INTO THE ROAD. BOTH PARTIES STOPPED AND EXCHANGE DETAILS.

Occurred on BOREHAM ROUNDABOUT (A130) NEAR JUNCTION WITH A12

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2nd: | Failed to look properly | Vehicle 1 | Possible |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE 1 WAS PARKED OUTSIDE 10 CHURCH ROAD THE OFFSIDE REAR PASSENGER DOOR WAS OPEN. VEHICLE TWO APPROACHED AND STOPPED AS THE ROAD WAS TOO NARROW TO PASS. VEHICLE TWO WAS STATIONARY AND THEN VEHICLE ONE MOVED OFF WITHOUT SHUTTING REAR OFFSIDE DOOR. VEHICLE 1 COLIDED WITH VEHICLE TWO SCRAPING ALONG THE WHOLE OFFIDE OF VEHICLE TWO CAUSING WING MIRROR TO COME OFF AND A DENT AND SCRATCHES. VEHICLE TWO REMAINED STATIOARY AND VEHICLE ONE PULLED OVER. A PASSENGER TRAVELLING IN VEHICLE ONE FROM THE PEN DOOR FELL OUT OF THE VEHICLE. ANOTHER PASSENGER FROM VEHICLE ONE THEN GOT OUT OF THE CAR. THEY SPOKE TO THE PASSANGER IN VEHICLE TWO BUT REFUSED TO GIVE ANY DETAILS EXCEPT A MOBILE NUMBER AND PROMISED TO CALL LATER. WHILE TALKING TO THIS PASSENGE Occurred on CHURCH ROAD - 36 METRES FROM JUNCTION WITH OLD FORGE ROAD



Back seat

Not hit and run Breath test Driver not contacted

Driver Postcode: VRM:
Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


| Causation |  |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2nd: | Poor turn or manoevre | Vehicle 2 | Possible |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

EF65 XXO WAS STOPPED ON THE ROAD DUE TO HAVING BROKEN DOWN. EF64 VNW WENT TO GO AROUND THIS VEHICLE AND WENT INTO THE NEARSIDE OF EF65 XXO DRAGGING THE VEHICLE CAUSING DAMAGE AND BROKEN GLASS. THIS WAS A SLOW COLLISION.

Occurred on WHITE HART LANE (A130)


Accidents between dates $\quad 01 / 04 / 2016$ and $31 / 03 / 2021 \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 201009803 | 23/12/2020 | Time | 1649 | Vehicles | S 2 | Casualties | 1 | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 573537 N : | 208766 | First Road: |  |  | Road Type | Dual carriageway |  |  |
| Speed limit: 40 | Junction Detail: | Not within 20m of junction |  |  |  |  |  |  |
| Crossing: Control | None |  | Facilities: | None wit | ithin 50 m |  | Road surface | Dry |
| Darkness: street lights present and lit |  |  |  | Fine without high winds |  |  |  |  |
| Special Conditions at | Site None |  |  |  |  | Carriageway Hazards: None | None |  |
| Place accident report | d: Else | where |  | DfT Special | Projects: |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: | Loss of control | Vehicle 1 | Possible |
| 3rd: |  | Vehicle 1 | Possible |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEH 1 LEFT THE ROUNDABOUT JUNCTION WITH COLCHESTER ROAD AND WHITE HEART LANE HEADING EASTERLY ON A130 COLCHESTER ROAD TOWARDS GENERAL DIRECTION OF THE A12. VEH 2 IN LANE 2 OF 2 ON A130 COLCHESTER ROAD TRAVELING WESTERLY TOWARDS THE ABOVE ROUNDABO UT JUNCTION. VEH 1 LOST CONTROL AND MOUNTED CENTRAL OFFSIDE KERB AREA, INTO THE PATH OF VEH 2. BOTH VEHICLES COLLIDED HEAD ON, CAUSING DAMAGE TO BOTH VEHICLES AND INJURY TO DRIVER OF VEH 1. DRIVER OF VEH 1 FAILED ROADSIDE BREATH TEST.

Occurred on COLCHESTER ROAD (A130) - 34 METRES FROM JUNCTION WITH WHITE HART LANE ROUNDAE

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selection:
Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2nd: | Animal or object in carriageway | Vehicle 1 | Possible |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE 1 TRAVELLING NORTHBOUND ON A12 IN LANE 2. VEH 1 HAS CHANGED LANES INTO LANE 1 AND SWERVED TO AVOID SOME ANIMAL THAT RAN OUT INTO THE CARRIAGEWAY LOSING CONTROL AND HITTING THE CRASH BARRIER TO THE NEARSIDE.

Occurred on A12-54 METRES FROM JUNCTION WITH A12


Front seat
Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


I WAS STOPPED AT THE ROUNDABOUT DESCRIBED ABOVE POSITIONED IN THE LEFT HAND LANE OF THE A130. I WAS FIRST IN THE QUEUE AND AS SUCH WAS LOOKING RIGHT. AFTER TWO VEHICLES PASSED I WAS PREPARING TO MOVE OFF AND STARTED TO MOVE WHEN I SAW A SILVER PEOPLE C ARRIER APPROACHING FROM MAIN ROAD IN THE LEFT HAND LANE THAT HAD NOT SIGNALLED AND AS SUCH I STOPPED BELIEVING THAT IT WAS GOING TO COME STRAIGHT ACROSS THE ROUNDABOUT. AS SUCH I STOPPED MOVING FORWARD AND STOPPED TO GIVE WAY TO THIS VEHICLE. A THIS PO INT I WAS HIT IN THE REAR

Occurred on A130 NEAR JUNCTION WITH GENERALS LANE ROUNDABOUT (A130)

| Vehicle Reference | Car | Going ahead other |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Vehicle movement from |  | No tow / articulation |  |  |  |
| On main carriageway |  | No skidding, | ack-knifing or ov | ning |  |
| Location at impact |  | First impact | Front |  | Hit vehicle: |
| Hit object in road | None | Off road: | None |  |  |
| Did not leave carr |  |  | Age of Driver | 73 | Female |
| Not hit and run |  | Driver not contacted |  |  |  |
| Driver Postcode: |  |  |  |  |  |



| Casualty Reference: 1 | Vehicle: 2 | Age: 25 | Male | Driver/rider | Seatbelt |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 1660894 |  | 4/2016 | Time | 0555 | Vehicles | - 2 | Casualties | 1 |  | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 571721 N : |  |  | First Road: |  |  | Road Type | Single carriageway |  |  |  |
| Speed limit: 60 | Junc | Detail: | Not within 20 m of junction |  |  |  |  |  |  |  |
| Crossing: Control | None |  |  | Facilities: | None within 50m |  |  |  | ad surface | Dry |
| Daylight |  |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions at Site |  | None |  |  |  |  | Carriageway Hazards: |  | None |  |
| Place accident report |  | Els | where |  | DfT Special | Projects: |  |  |  |  |


|  | Causation |  | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Very Likely |
| 2nd: |  | Vehicle 1 |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

## V1 TRAVELLING ALONG A131 TOWARDS CHELMSFORD WHEN DRIVER FELL ASLEEP LEAVING

 CARRIAGEWAY STRIKING A TRAILER ATTACHED TO A LORRY. MINOR INJURY CAUSED TO DRIVER Occurred on ESSEX REGIMENT WAY A131 300 METRES NORTH OF JUNCTION WITH PRATTS FARM LANE

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 16129378 |  | /2016 | Time | 0845 | Vehicles | 2 | Casualties | 1 | Serious |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 575336 N : |  |  | First Road: | U | Road Type |  | Single carr |  |  |
| Speed limit: 20 | Junct | Detail: | T \& Stag |  |  |  | Give way or |  | Unclassified |
| Crossing: Control | No |  |  | Facilities: | None wi | in 50m |  | Road surface | Wet/Damp |
| Daylight |  |  |  |  |  |  | Raining witho | winds |  |
| Special Conditions at | Site | None |  |  |  |  | Carriageway | None |  |
| Place accident reporte |  | Else | where |  | DfT Special | Projects: |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Slippery road (due to weather) | Participant: | Confidence: |
| 2nd: | Road layout (eg bend, hill etc.) | Casualty 1 | Very Likely |
| 3rd: |  | Vehicle 1 | Possible |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEH 1 MOTORBIKE ROUNDED CORNER NOT ANTICIPATING THE STATIONARY VEHICLE WAITING TO TURN INTO HOLTS LANE, BOREHAM AND WAS UNABLE TO STOP IN TIME DUE TO DAMP CONDITIONS. RIDER CAME OFF BIKE AND LANDED IN THE DITCH.

Occurred on WALTHAM ROAD UNSPECIFIED ROAD OR LOCATION HOLTS LANE


Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 16130258 | 23/11/2016 | Time | 1823 | Vehicles | S 4 | Casualties | 2 |  | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 571718 N : | 211954 | First Road: | A 1 |  | Road Type | Single carriageway |  |  |  |
| Speed limit: 60 | Junction Detail: | Not within 20 m of junction |  |  |  |  |  |  |  |
| Crossing: Control | None |  | Facilities: | None within 50m |  |  |  | d surfac | Dry |
| Darkness: no street lighting |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions | Site None |  |  |  |  | Carriageway |  | None |  |
| Place accident repor | d: Else | where |  | DfT Special | Projects: |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Distraction in vehicle | Participant: | Confidence: |
| 2nd: | Careless/Reckless/In a hurry | Vehicle 1 | Very Likely |
| 3rd: | Inexperienced or learner driver/rider | Vehicle 1 | Very Likely |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE 1 TRAVELLING SOUTH ON ESSEX REGIMENT WAY, CHELMSFORD, ESSEX HAS COLLIDED WITH QUEUEING TRAFFIC PRIOR TO ROUNDABOUT CAUSING VEHICLE 2 TO HIT VEHICLE 3 AND VEHICLE 3 TO HIT VEHICLE 4.

Occurred on ESSEX REGIMENT WAY A130 241 METRES NORTH OF JUNCTION WITH PRATTS FARM LANE


| Vehicle Reference |  |  | Car |
| :--- | :--- | :--- | :--- |
| to |  |  | Going ahead but held up |

On main carriageway

| Location at impact |
| :--- |
| Hit object in road at, or within 20 M of Jct |

None
No skidding, jack-knifing or overturning

Hit object in road None
First impact Back Hit vehicle:

Did not leave carr Age of Driver 41 Female Not hit and run Breath test Negative Driver Postcode: VRM:

| Casualty Reference: 2 | Vehicle: 2 | Age: 41 | Female | Driver/rider | Severity: Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Postcode |  | Seatbelt |  |


| Accidents between dates | $\mathbf{0 1 / 0 4} / 2016$ | and | $\mathbf{3 1 / 0 3 / 2 0 2 1}$ | (60) months |
| :--- | :---: | :---: | :---: | :---: |
| Selection: |  |  | Notes: |  |

Selected using Manual Selection

Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1} \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Travelling too fast for conditions | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE ONE WAS TRAVELLING ALONG WALTHAM ROAD FROM BOREHAM DIRECTION TOWARDS GREAT LEIGHS, WHEN IT LOST CONTROL AFTER ANOTHER VEHICLE, DETAILS UNKNOEN, WAS REPORTEDLY IN THE MIDDLE OF THE ROAD, SO TOOK AVOIDING ACTION AND COLLIDED INTO FENCE PANELS BEL
ONGING TO A PROPERTY CALLED THATCHED COTTAGE. AS A RESULT VEHICLE LEFT ROAD NEARSIDE AND ON IT'S ROOF.

Occurred on WALTHAM ROAD UNSPECIFIED ROAD OR LOCATION 200 METRES SOUTH OF JUNCTION WITH


Front seat

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selection:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2nd: | Failed to judge other persons path or speed | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLES 1 AND 2 TRAVELLING ON THE LONDON BOUND CARRIAGEWAY. VEHICLE 2 IN LANE ONE OF THREE. VEHICLE 1 IN LANE TWO OF THREE. VEHICLE 1 IS BEHIND VEHICLE 2 WHEN DRIVER CHANGES LANE AND COLLIDES WITH VEHICLE 2 WHO HAS SLOWED DUE TO STATIONARY TRAFFIC AHEAD

Occurred on A12 WALTHAM ROAD

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: | Distraction outside vehicle | Vehicle 1 | Very Likely |
| 3rd: |  | Vehicle 1 | Possible |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V1 AND 2 TRAVELLING FROM FORDEND DIRECTION TOWARDS CHELMSFORD ON A130. V1 HAS A VEHICLE TRAVELLING VERY CLOSE TO HIS REAR AND THINKING THAT HE WAS GOING TO OVERTAKE AS PULLED TO THE NEAR SIDE AND HAS SUBSEQUENTLY CLIPPED SIDE OF V2 CAUSING HIM TO COME OFF OF HIS BIKE.

Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1} \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Deposit on road (eg oil, mud, chippings) | Perticipant: | Very Likely |
| 2nd: |  |  |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V1 HAS BEEN TRAVELLING ALONG WALTHAM ROAD TOWARDS GREAT LEIGHS, V2 HAS BEEN TRAVELLING TOWARDS BOREHAM. V1 HAS LOST CONTROL ON THE N/S BEND, GOING ONTO THE WRONG SIDE OF THE ROAD - THE FRONT OF V1 HAS COLLIDED WITH THE FRONT OF V2 HEAD ON. THE ROAD
SURFACE WAS FOUND BY OFFICERS TO HAVE DIESEL ON THE BEND.

## Occurred on WALTHAM ROAD NEAR JN WITH HOLTS LANE


Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1} \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Inexperienced or learner driver/rider | Participant: | Confidence: |
| 2nd: | Travelling too fast for conditions | Vehicle 1 | Very Likely |
| 3rd: | Poor or defective road surface | Vehicle 1 | Possible |
| 4th: |  | Vehicle 1 |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

DRIVING HER VEHICLE WHEN SHE HIT SOMETHING WHICH RESULTED IN CAR STARTING TO VEER TO THE LEFT, SHE CORRECTED THE PULL, BUT CAR SPUN AROUND 180 DEGREES, FACING OPPOSITE DIRECTION, AND THEN ROLLED - IT ENDED IN A DITCH AND HIT A TREE WHICH STOPPED THE CAR, LEAVING IT ON ITS ROOF WITH DRIVER UPSIDE DOWN. THE WINDOWS HAD SHATTERED, HER HAIR WAS STUCK IN HER SUNROOF. THE AIRBAG DID NOT DEPLOY! SHE SUSTAINED THE INJURIES TO HER HEAD FROM HER WINDSCREEN AND / OR SIDE WINDOW. DRIVER RELASED HER SEATBELT TO UNTRAP HERSELF AND CRAWLED OUT THROUGH THE SHATTERED WINDOW AND RAN TO THE NEAREST HOUSE TO ALERT HELP.

Occurred on LEIGH'S ROAD

| Vehicle Reference | Car | Going ahead other |
| :--- | :--- | :--- |
| Vehicle movement from | SW to NE No tow / articulation |  |

On main carriageway
Location at impact Not at, or within 20M of Jct
Hit object in road None
Nearside
Not hit and run
Driver Postcode:

Breath test Driver not contacted
VRM:
Casualty Reference: 1 Vehicle: 1

| Age: 17 Female | Driver/rider | Severity: Slight |
| :---: | :---: | :---: |
| Postcode | Seatbelt |  |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selection:
Selected using Manual Selection


|  |  |  |  |
| :--- | :--- | :--- | :--- |
|  | Factor: | Causation | Participant: |
| 1st: | Failed to look properly | Vehicle 1 | Possible |
| 2nd: |  |  |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

ALL THREE VEHICLES WERE ON THE A130 ESSEX REGIMENT WAY CHELMSFORD ESSEX TRAVELLING TOWARDS CHELMSFORD DIRECTION. VEHICLE 2 - WAS ON LANE 2 OF 2 VEHICLE 3 - WAS ON LANE 1 OF 2 VEHICLE 1 - WAS ACROSS BOTH LANE VEHICLES 2 \& 3 WERE STATIC IN TRAFFI C FACING THE ROUNDABOUT / JUNCTION WITH PRATT'S FARM LANE, CHELMSFORD, ESSEX. VEHICLE 1 HAS THEN DRIVEN INTO THE REAR OF BOTH VEHICLES CAUSING MINOR DAMAGE TO THE REAR OFFSIDE OF VEHICLE 3 AND VEHICL 2. DAMAGE TO VEHICLE 1 IS FRONT END DAMAGE ONL
Y. PASSENGER IN VEHICLE 1 HAS RECEIVED SUSPECTED WHIPLASH INJURIES TO SHOULDER (TBC) BOTH VEHICLES 2 \& 3 WERE DRIVEN AWAY BY DRIVERS. VEHICLE 1 HAS TO BE RECOVERED.

Occurred on ESSEX REGIMENT WAY A130 NEAR JN WITH PRATT'S FARM LANE

| Vehicle Reference | Car |  |  | Going ahead other |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Vehicle movement from | N |  | S | No tow / articulation |  |  |  |  |
| On main carriageway |  |  |  | No skidding, jack-knifing or overturning |  |  |  |  |
| Location at impact | Jct Approach |  |  | First impactOff road: |  | Front |  | Hit vehicle: |
| Hit object in road N | None |  |  |  |  | None |  |  |
| Did not leave carr |  |  |  |  |  | Age of Driver | 47 | Male |
| Not hit and run |  |  | Breath test | Negative |  |  |  |  |
| Driver Postcode: |  |  | VRM: |  |  |  |  |  |

Casualty Reference: $1 \quad$ Vehicle: $1 \quad$| Age: 46 |
| :---: |
|  |

Front seat

Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Selected using Manual Selection



|  |  |  |  |
| :--- | :--- | :--- | :--- |
|  | Factor: | Causation | Participant: |
| 1st: | Careless/Reckless/In a hurry | Vehicle 1 | Very Likely |
| 2nd: |  |  |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE 1 WAS TRAVELLING DOWN ESSEX REGIMENT WAY TOWARDS THE GENERAL DIRECTION OF CHELMSFORD IN A LINE OF SLOW MOVING TRAFFIC, VEHICLE 2 WAS TRAVELLING DOWN ESSEX REGIMENT WAY IN THE SAME DIRECTION AS VEHICLE 1. VEHICLE 1 PROCEEDED TO CARRY OUT A U T URN IN FRONT OF VEHICLE 2, VEHICLE 2 COLLIDED WITH FRONT OFFSIDE OF VEHICLE 1.

Occurred on ESSEX REGIMENT WAY A130 NEAR JN WITH BELLSTEAD FARM LANE

Accidents between dates 01/04/2016 and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


| Causation |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Factor: |  |  | Participant: | Confidence: |
| Careless/Reckless/In a hurry Failed to look properly Other |  | Precipitating Factor: | Vehicle 1 <br> Vehicle 1 <br> Vehicle 1 | Very Likely Very Likely |
|  |  |  |  |  |
|  |  |  |  |  |
| 4th: |  |  |  |  |
| 5th: |  |  |  |  |
| 6th: |  |  |  |  |
| Other Cause: | WEARING OF |  |  |  |
|  | INAPROPRIA |  |  |  |
|  | TE |  |  |  |
|  | FOOTWARE |  |  |  |

ALL VEHICLES WERE TRAVELLING NORTH ON ESSEX REGIMENT WAY TOWARDS THE JUNCTION WITH BACK LANE. VEHICLE'S FOUR, THREE AND TWO SLOW TO A STOP IN TRAFFIC. VEHICLE ONE FAILS TO SEE THAT THE TRAFFIC AHEAD HAD STOPPED, AND COLLIDES WITH THE REAR OF VE
HICLE TWO WHICH IN TURN CAUSES VEHICLE TWO TO COLLIDE WITH VEHICLE THREE WHICH FORCES VEHICLE THREE FORWARDS IN TO VEHICLE FOUR. THE DRIVER OF VEHICLE ONE STATES THAT THE FLIP-FLOPS SHE WAS WEARING SLIPPED OFF THE BRAKE PEDAL.

Occurred on ESSEX REGIMENT WAY A130 NEAR JN WITH BACK LANE


Front seat

| Casualty Reference: 4 | Vehicle: 16 | Age: 16 | Male | Passenger | Severity: Slight |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

Back seat

| Accidents between dates | $01 / 04 / 2016$ | and | $\mathbf{3 1 / 0 3 / 2 0 2 1}$ | (60) month |
| :--- | :---: | :---: | :---: | :---: |
| Selection: |  |  | Notes: |  |

Selected using Manual Selection

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selected using Manual Selection

| 19821807 | $08 / 03 / 2019$ | Time | 1550 | Vehicles | 2 | Casualties | 1 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |


| Causation |  | Confidence: |  |
| :--- | :--- | :--- | :--- |
| 1st: | Loss of control | Participant: | Possible |
| 2nd: | Illness or disability, mental or physical | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V1 WAS TRAVELLING A12 JUNCTION 19 TOWARDS 20A NORTHBOUND. DRIVER OF V1 HAS SUFFERED A BLACKOUT AT THE WHEEL AND COLLIDED INTO THE REAR OF V2 WHICH WAS TRAVELLING IN THE SAME DIRECTION IN FRONT OF V1. DAMAGE TO BOTH VEHICLES. DRIVER OF V1 SUFFERED MINOR INJURIES.
Occurred on A12


| On main carriageway |  |  |  | No skidding, jack-knifing or overturning |  |  | Hit vehicle: |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Location at impact | Not at, or within 20M of Jct |  |  | First impact | Back |  |  |
| Hit object in road | None |  |  | Off road: | None |  |  |
| Did not leave carr |  |  |  |  | Age of Driver | 41 | Male |
| Not hit and run |  | Breath test |  |  |  |  |  |
| Driver Postcode: |  | VRM: |  |  |  |  |  |


| Accidents between dates | $\mathbf{0 1 / 0 4 / 2 0 1 6}$ | and | $\mathbf{3 1 / 0 3 / 2 0 2 1}$ | (60) months |
| :--- | :---: | :---: | :---: | :---: |
| Selection: |  |  | Notes: |  |

Selected using Manual Selection

| 19823724 | 15/03/2019 | Time | 1241 | Vehicles | - 1 | Casualties | 1 | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 571994 N : | 212807 | First Road: | U |  | Road Type | Single carriageway |  |  |
| Speed limit: 60 | Junction Detail: | Not wit | n 20 m of | nction |  |  |  | Wet/Damp |
| Crossing: Control | None |  | Facilities: | None wit | ithin 50 m |  | Road surface |  |
| Daylight |  |  |  | Fine without high winds |  |  |  |  |
| Special Conditions at | Site None |  |  |  |  | Carriageway Hazards: None |  |  |
| Place accident report | ed: Else | where |  | DfT Special | Projects: |  |  |  |


| Causation |  | Confidence: |  |
| :--- | :--- | :--- | :--- |
| 1st: | Deposit on road (eg oil, mud, chippings) | Participant: | Possible |
| 2nd: | Loss of control | Vehicle 1 | Possible 1 |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

## V1 TRAVELLING WEST ON WHEELERS HILL, WHEN DRIVER HAS LOST CONTROL OF VEHICLE AND LEFT THE CARRIAGEWAY TO THE OFFSIDE AND COLLIDED WITH A TREE.

Occurred on WHEELERS HILL


| Casualty Reference: 1 | Vehicle: 1 | Age: 50 | Female | Driver/rider | Severity: Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |

Accidents between dates $\quad \mathbf{0 1 / 0 4} / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 19857272 |  | 2019 | Time | 1730 | Vehicles | - 1 | Casualties | 1 |  | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 575523 N : |  |  | First Road: | U |  | Road Type | Single carriageway |  |  |  |
| Speed limit: 60 | Junc | Detail: | Not within 20m of junction |  |  |  |  |  |  |  |
| Crossing: Control | None |  |  | Facilities: | None within 50m |  |  | Road surface |  | Dry |
| Daylight |  |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions at | Site | None |  |  |  |  | Carriageway |  | None |  |
| Place accident report |  | At | ene |  | DfT Special | I Projects: |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Sactor: | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V001 WAS TRAVELLING ALONG WALTHAM ROAD TOWARDS BOREHAM WHEN AN ANIMAL RAN OUT INTO THE ROAD CAUSING THE DRIVER TO SWERVE. THIS CAUSED V001 TO HIT A BRICK WALL OF A PREMISES CALLED THATCHED COTTAGE THE RESULTING COLLISION CAUSED V001 TO OVERTURN ONTO ITS RIGHT SIDE IN THE ROAD.

Occurred on WALTHAM ROAD

Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and ${ }^{\text {and }}$ 31/2021 (60) months

Selection:
Notes:
Selected using Manual Selection


|  | Causation |  | Confidence: |
| :--- | :--- | :--- | :--- |
| 1st: | Slippery road (due to weather) | Participant: | Very Likely |
| 2nd: |  | Vehicle 1 |  |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

SILVER FORD KA TRVAVELLING FROM BOREHAM TOWARDS LT WATHAM LEFT THE CARRIAGEWAY ON A RIGHT HAND BEND IN WET WEATHER CONDITIONS AND WENT INTO NEARSIDE DITCH.

Occurred on WALTHAM ROAD - 144 METRES FROM JUNCTION WITH UNCLASSIFIED ROAD


| Casualty Reference: 1 | Vehicle: 1 | Age: 23 | Female | Driver/rider | Severity: Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 19900152 | 19/11/2019 | Time | 0908 | Vehicles | S 2 | Casualties | 2 |  | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 574444 N : | 212760 | First Road: | U | Road Type |  | Single carriageway |  |  |  |
| Speed limit: 60 | Junction Detail: | Not within 20m of junction |  |  |  |  |  |  | Wet/Damp |
| Crossing: Control | None |  | Facilities: | None wit | ithin 50 m |  |  | ad surface |  |
| Daylight |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions at | Site None |  |  |  |  | Carriageway |  | None |  |
| Place accident report | d: Else | where |  | DfT Special | Projects: |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: | Swerved | Vehicle 1 | Very Likely |
| 3rd: |  | Vehicle 1 | Possible |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V1 WAS TRAVELLING TOWARDS CHELMSFORD AND V2 WAS TRAVELLING TOWARDS BOREHAM. IT APPEARS V1 WAS ON THE WRONG SIDE OF THE ROAD AND HAS COLLIDED HEAD ON WITH V2.

Occurred on UNCLASSIFIED ROAD


Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1} \quad$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 19911256 | 18/12/2019 | Time | 1618 | Vehicles | s 2 | Casualties | 2 |  | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 571739 N : | 211586 | First Road: | A 130 |  | Road Type | Single carr |  |  |  |
| Speed limit: 60 | Junction Detail: | Not with | n 20 m of jun | nction |  |  |  |  |  |
| Crossing: Control | None |  | Facilities: | None wit | ithin 50m |  |  | Road surface | Wet/Damp |
| Darkness: street lights present and lit |  |  | Fine without high winds |  |  |  |  |  |  |
| Special Conditions at Site | Site None |  |  |  |  | Carriageway Hazards: |  | None |  |
| Place accident report | ed: At s | ene |  | IT Special | al Projects: |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Slippery road (due to weather) | Participant: | Confidence: |
| 2nd: | Slippery road (due to weather) | Vehicle 1 | Very Likely |
| 3rd: | Following too close | Vehicle 2 | Very Likely |
| 4th: |  | Vehicle 1 |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE 1, BV58YJU HAS BEEN TRAVELLING NORTHBOUND ON ESSEX REGIMENT WAY OVER TO THE RIGHT HAND SIDE OF THE ROAD OVERTAKING TRAFFIC WITH THE INTENTION OF TURNING RIGHT AT THE ROUNDABOUT WITH BACK LANE AND PRATT'S FARM LANE. VEHICLE 2, EJ65WFL HAS BEEN ON THE LEFT HAND SIDE OF THE ROAD AND HAS PULLED ONTO THE RIGHT HAND SIDE OF THE ROAD WITH THE INTENTION OF OVERTAKING TRAFFIC. VEHICLE 1 HAS COLLIDED TO THE REAR END OF VEHICLE 2 AS IT WAS TURNING RIGHT. THIS OCCURRED ON A WIDE, ONE LANE ROAD.

Occurred on ESSEX REGIMENT WAY (A130) - 36 METRES FROM JUNCTION WITH ESSEX REGIMENT WAY (


| Casualty Reference: 2 | Vehicle: $1 \quad$ Age: 26 | Male | Driver/rider | Sostcode |  |
| :---: | :---: | :---: | :---: | :---: | :---: |


Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Slippery road (due to weather) | Participant: | Confidence: |
| 2nd: | Travelling too fast for conditions | Vehicle 1 | Possible |
| 3rd: | Careless/Reckless/In a hurry | Vehicle 1 | Very Likely |
| 4th: |  | Vehicle 1 |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEH 1 TRAVELLING ON THE A12 LANE 3 OF 3 BETWEEN JUNCTION 20A AND JUNCTION 19 VEH 2 TRAVELLING ON SAME IN SAME DIRECTION IN LANE 2 OF 3. VEH 1 LOST CONTROL AND COLLIDED WITH CENTRAL CRASH BARRIER AND THEN COLLIDED WITH VEH 2. VEH 2 THEN LOST CONTRO L AND ALSO COLLIDED WITH CENTRAL CRASH BARRIER. DAMAGE CAUSED TO BOTH VEHICLES AND INJURY TO DRIVER OF VEH 2

Occurred on A12

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 19913950 | 29/12/2019 | Time | 1812 | Vehicles 2 | Casualties | 1 | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 575724 N : | 210263 | First Road: | U | Road Type | Single carr |  |  |
| Speed limit: 40 | Junction Detail: | T \& Stag Jct |  |  | Give way or controlled |  |  |
| Crossing: Control | None |  | Facilities: | Zebra crossing |  | Road surface | Dry |
| Darkness: street lights present and lit |  |  |  | Fine without high winds |  |  |  |
| Special Conditions at Site None |  |  |  |  | Carriageway Hazards: None |  |  |
| Place accident repor | ed: At s | ene |  | DfT Special Projects: |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Travelling too fast for conditions | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

THE COLLISION OCCURRED INSIDE THE JUNCTION ENTRANCE OF BOLEYN WAY, BOREHAM FROM THE MAIN ROAD. VEHICLE 1 WAS FOLLOWING VEHICLE 2. BOTH VEHICLES WERE DRIVING INTO BOLEYN WAY FROM THE MAIN ROAD. VEHICLE 1 FAILED TO SLOW DOWN AND STOP AND SUBSEQUENTL Y COLLIDED WITH THE DRIVER SIDE OF VEHICLE 2. DRIVER OF VEHICLE ONE STATED THAT HER FOOT SLIPPED OFF THE BREAK PEDAL CAUSING HER BREAKING TO STOP AND SHE COLLIDED WITH THE SIDE OF VEHICLE 1 AS IT WAS GOING INTO THE JUNCTION.

Occurred on BOLEYN WAY NEAR JUNCTION WITH MAIN ROAD (B1137)


| Casualty Reference: 1 | Vehicle: 2 | Age: 25 | Female | Driver/rider | Severity: Slight |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
|  |  | Postcode |  | Seatbelt |  |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Poor turn or manoevre | Participant: | Confidence: |
| 2nd: | Emergency vehicle on call | Vehicle 2 | Very Likely |
| 3rd: |  | Vehicle 1 | Very Likely |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE 1 UNMARKED POLICE VEHICLE BMW 530D WAS TRAVELLING UNDER EMERGENCY CONDITIONS ON THE B1137 MAIN ROAD BOREHAM FROM THE VILLAGE OF BOREHAM IN THE GENERAL DIRECTION OF HATFIELD PEVERAL. VEHICLE 2 A VAUXHALL ASTRA INDEX NUMBER EJ67YWE WAS TRAVELL
ING ALONG WALTHAM ROAD APPROACHING THE STOP JUNCTION OF WALTHAM ROAD AND MAIN ROAD BOREHAM WITH THE INTENTION OF TURNING RIGHT TOWARDS BOREHAM VILLAGE. AS VEHICLE 2
PULLED OUT INTO THE ROAD HE REALISED THAT POLICE VEHICLE TRAVELLING UNDER EMERGENCY C NDITIONS WAS COMING AND STOPPED ON TO THE HATFIELD PEVERAL BOUND SIDE OF THE CARRIAGEWAY. VEHICLE 1 COLLIDED WITH THE REAR OFFSIDE OF VEHICLE 2.

Occurred on MAIN ROAD (B1137) AT JUNCTION WITH WALTHAM ROAD


| Casualty Reference: | 1 | Vehicle: | 1 | Age: | 52 | Male | Driver/rider |  | Severity: | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Postcode |  |  | Seatbelt |  |  |  |
| Casualty Reference: | 2 | Vehicle: | 1 | Age: | 43 | Male | Passenger |  | Severity: | Slight |
|  |  |  |  | Postco |  |  |  | Seatbelt |  |  |

[^3]| Accidents between dates | $\mathbf{0 1 / 0 4} / 2016$ | and | $\mathbf{3 1 / 0 3 / 2 0 2 1}$ | (60) months |
| :--- | :---: | :---: | :---: | :---: |
| Selection: |  |  | Notes: |  |

Selected using Manual Selection



| Causation |  | Confidence: |  |
| :--- | :--- | :--- | :--- |
| 1st: | Slippery road (due to weather) | Vehicle 1 | Possible |
| 2nd: | Poor or defective road surface | Vehicle 1 | Possible |
| 3rd: | Road layout (eg bend, hill etc.) | Vehicle 1 |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

I HAVE ATTENDED THE LOCAITON FOR SEVERAL RTCS IN THE PAST, THERE IS SOME SLIGHT ADVERSE CAMBER IN THE ROAD AND IT CAN GET SLIPPERY AFTER THE RAIN, VEHICLE DRIVER HAS LOST CONTROL ON THIS CORNER CAUSING VEHICLE TO GO TO OFFSIDE OF THE ROAD AND ROLL ON TO IT'S SIDE.

Occurred on WALTHAM ROAD - 184 METRES FROM JUNCTION WITH UNCLASSIFIED ROAD

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Pactor: | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

THE MOTORCYCLIST WAS TRAVELLING IN A NORTH EASTERLY DIRECTION ON WALTHAM ROAD. UPON EXITING THE CORNER HE WAS FACED WITH A LUMP OF CONCRETE IN THE ROAD THAT APPEARS TO HAVE BEEN THROWN UP FROM THE PREVIOUSLY REPAIRED VERGE. HE HAS MADE DIRECT CONTACT WITH THIS DEBRIS WHICH HAS RESULTED IN AN IMMEDIATE CRACKING OF THE FRONT WHEEL AND THROWING HIM OFF THE MOTORCYCLE INTO THE DITCH.

## Occurred on WALTHAM ROAD - 144 METRES FROM JUNCTION WITH UNCLASSIFIED ROAD


Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 1683244 | 01/05/2016 | Time | 0003 | Vehicles | S 2 | Casualties | 2 |  | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 571930 N: | 209785 | First Road: | A 1 |  | Road Type | Single car |  |  |  |
| Speed limit: 60 | Junction Detail: | Not with | 20 m of | nction |  |  |  |  |  |
| Crossing: Control | None |  | Facilities: | None wit | ithin 50 m |  |  | d surfac | Dry |
| Darkness: street lights present and lit |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions at Site | Site None |  |  |  |  | Carriageway Hazards: |  | None |  |
| Place accident repor | d: Else | where |  | DfT Special | I Projects: |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: | Following too close | Vehicle 1 | Very Likely |
| 3rd: |  | Vehicle 2 | Very Likely |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

BOTH VEHICLES WERE TRAVELLING ALONG THE A130 TOWARDS THE GENERAL DIRECTION OF LITTLE WALTHAM. VEHICLE 1 WAS TRAVELLING DIRECTLY AHEAD OF VEHICLE 2. VEHICLE 2 HAS BRAKED HEAVILY FOR UNKNOWN REASON AND VEHICLE 1 HAS COLLIDED WITH THE REAR OF VEHICLE 2. Occurred on ESSEX REGIMENT WAY A130 NORTH OF JUNCTION WITH A101



| Casualty Reference: | 1 | Vehicle: | 2 | Age: | 26 | Male | Driver/rider | Severity: | Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Postco |  |  | Seatbelt |  |  |
| Casualty Reference: | 2 | Vehicle: | 2 | Age: | 26 | Female | Passenger | Severity: | Slight |
|  |  |  |  | Postco |  |  |  |  |  |

Front seat
Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


| Causation |  |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2nd: | Failed to look properly | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

PEDAL CYCLE COMING ACROSS ROUNDABOUT FROM A1016 CONTINUING ON A1016, VEHICLE 1 COMING ACROSS ROUNDABOUT GOING ONTO A130 HAS CLIPPED REAR WHEEL OF PEDAL CYCLE.

## Occurred on CHELMER VALLEY ROAD A1016 REGIMENT WAY A130



| Vehicle Reference |  |  |
| :--- | :--- | :--- |
| Pedal Cycle |  |  |
| Vehicle movement from | W | to E |

No tow / articulation
On main carriageway No skidding, jack-knifing or overturning
Location at impact Mid Junction - on roundabout or 1 First impact Back Hit vehicle:

Hit object in road None Off road: None
Did not leave carr Age of Driver 49 Female
Not hit and run Breath test Driver not contacted
Driver Postcode: VRM:

| Casualty Reference: 1 | Vehicle: 2 | Age: 49 | Female | Driver/rider | Severity: Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |


| Accidents between dates | $\mathbf{0 1 / 0 4} / 2016$ | and | $\mathbf{3 1 / 0 3 / 2 0 2 1}$ | (60) months |
| :--- | :---: | :---: | :---: | :---: |
| Selection: |  | Notes: |  |  |

Selected using Manual Selection


| Causation |  |  |  |
| :---: | :---: | :---: | :---: |
|  | Factor: | Participant: | Confidence: |
|  | Impaired by drugs (illicit or medicinal) | Vehicle 1 | Very Likely |
| 2nd: <br> 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

DRIVER OF VEHICLE ONE HAS HAD A MEDICAL EPISODE CAUSING A LOSS OF CONSCIOUSNESS RESULTING IN THE VEHICLE CROSSING A ROUNDABOUT AND EXITING INTO A BUSH.

Occurred on WHITE HART LANE A130 ESSEX REGIMENT WAY A130

| Vehicle Reference | Car | Going ahead other |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Vehicle movement from | NW to SE | No tow / articulation |  |  |
| On main carriageway |  | No skidding, jack-knifing or overturning |  |  |
| Location at impact | Leaving roundabout | First impact | Front | Hit vehicle: |
| Hit object in road C | Cent island of Rdbt | Off road: | None |  |
| Nearside |  |  | Age of Driver 59 | Male |
| Not hit and run | Breath test | Negative |  |  |
| Driver Postcode: | VRM: |  |  |  |


| Casualty Reference: 1 | Vehicle: 1 | Age: 59 | Male | Driver/rider | Severity: Slight |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
|  |  | Postcode |  | Seatbelt |  |

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selection:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 1st: | Illegal turn or direction of travel | Vehicle 1 | Very Likely |
| 2nd: | Failed to look properly | Vehicle 1 | Very Likely |
| 3rd: | Failed to judge other persons path or speed | Vehicle 2 |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

VEHICLE 1 TURNING RIGHT ACROSS THE MAIN CARRIAGEWAY INTO A SIDE ROAD. THIS IS IN CONTRAVENTION OF A 'NO RIGHT TURN' ROAD SIGN. AT THIS POINT, VEHICLE 2 WAS PASSING VEHICLE 1 AND RODE INTO THE SIDE OF VEHICLE 1. VEHICLE 2 WAS UTILISING THE BUS LANE TO PASS VEHICLE 1 WHICH IT IS ALLOWED TO DO AT THAT LOCATION.

Occurred on ESSEX REGIMENT WAY A130 LITTLE WALTHAM ROAD

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 18266558 | 09/02/2018 | Time | 1827 | Vehicles | 2 | Casualties | 2 |  | Serious |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 571970 N: | 209703 | First Road: | A |  | Road Type | 1 |  |  |  |
| Speed limit: 60 | Junction Detail: | Roundab |  |  |  | ive way or |  |  |  |
| Crossing: Control | None |  | Facilities | None wit | thin 50m |  |  | surface | Dry |
| Darkness: street lights present and lit |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions at Site | Site None |  |  |  |  | Carriageway Hazards: |  | None |  |
| Place accident reported: | Elsewhere |  | DfT Special Projects: |  |  |  |  |  |  |


| Causation |  |  |  |  |  |  | Participant: | Confidence: |
| :--- | :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| 1st: | Factor: | Cyclist entering road from pavement | Vehicle 2 |  |  |  |  |  |
| 2nd: | Cyclist wearing dark clothing at night | Vehicle 2 | Very Likely |  |  |  |  |  |
| 3rd: | Dazzling headlights | Vehicle 1 | Very Likely |  |  |  |  |  |
| 4th: | Overloaded or poorly loaded vehicle or trailer | Vehicle 2 | Very Likely |  |  |  |  |  |
| 5th: |  |  |  |  |  |  |  |  |
| 6th: |  |  |  |  |  |  |  |  |

V1 TRAVELLING ALONG A1016 CHELMER VALLEY ROAD GENERALLY NE DIRECTION. V2 WITH C1 PEDALLING AND C2 SITTING ON THE HANDLEBARS TRAVELLING FROM PUMP LANE TOWARDS WHITE HART LANE (GENERALLY NW DIRECTION). V2 CROSSES CARRIAGEWAY AT THE DIVIDING ISLAND A T GIVE WAY SECTION OF ROUNDABOUT. V1 JOINING ROUNDABOUT GIVES WAY TO LARGE VEHICLE CROSSING OS>NS, THEN MOVES OFF, UNABLE TO SEE V2 DUE TO LIGHTS OF ONCOMING VEHICLES AND V2'S RIDERS BEING IN DARK CLOTHING. V2, STILL IN MOTION FROM CROSSINGOPPOSIN G CARRIAGEWAY, CYCLES OUT IN FRONT OF V1 HAVING MISJUDGED V1'S MOVEMENT. V1 F/O/S STRIKES V2'S NS CAUSING V2 TO FALL OVER AND RIDER/PASSENGER TO FALL OFF. V1 STOPS AND DRIVER ASSISTS RIDERS OF V2. MINOR INJURIES CAUSED (GRAZES TO HAND OF C1 AND RI

Occurred on CHELMER VALLEY ROAD A1016 AT JN WITH WHITE HART LANE A130
Vehicle Reference 1 Taxi/Private hire car Starting

Vehicle movement from SW to NE No tow / articulation
On main carriageway
Location at impact Entering roundabout
No skidding, jack-knifing or overturning
Hit object in road None
Did not leave carr
Not hit and run
Driver Postcode:
Breath test Not requested VRM:

| Accidents between dates | $\mathbf{0 1 / 0 4} / 2016$ | and | $\mathbf{3 1 / 0 3 / 2 0 2 1}$ | (60) months |
| :--- | :---: | :---: | :---: | :---: |
| Selection: |  |  | Notes: |  |

Selected using Manual Selection


[^4]Accidents between dates 01/04/2016 and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 18286318 | 20/04/2018 |  | Time | 1225 | Vehicles | 2 | Casualties | 2 | Serious |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 571873 N : |  |  | First Road: | A 130 |  | Road Type | Single carriageway |  | Unclassified |  |
| Speed limit: 60 | Junct | Detail: | T \& Stag |  |  |  | Give way or | lled |  |  |
| Crossing: Control | None |  |  | Facilities: | None within 50 m |  |  | Road surface | Dry |  |
| Daylight |  |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions at Site |  | None |  |  |  |  | Carriageway | : None |  |  |
| Place accident report |  |  | ene |  | DfT Special | Projects: |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 1st: | Poor turn or manoevre | Vehicle 1 | Very Likely |
| 2nd: | Failed to look properly | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V1 HAD TRAVELLED SOUTH ON LITTLE WALTHAM ROAD IN CHELMSFORD BEFORE STOPPING AT THE JUNCTION WITH ESSEX REGIMENT WAY. V2 HAD JOINED ESSEX REGIMENT WAY FROM THE
ROUNDABOUT JUNCTION WITH THE A1016 AND WAS TRAVELLING NORTH. AS V2 APPROACHED THE JUNCTIO
N WITH LITTLE WALTHAM ROAD, V1 HAS PULLED OUT INTO THE PATH OF V2 CAUSING THE TWO OF THEM TO COLLIDE.

Occurred on ESSEX REGIMENT WAY A130 AT JN WITH LITTLE WALTHAM ROAD


Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Disobeyed Give Way or Stop sign or markings | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V1 WAS TRAVELLING SOUTH WEST ON A1016 CHELMER VALLEY ROAD IN THE NEARSIDE LANE. V2 WAS TRAVELLING SLIGHTLY BEHIND V1 SOUTH WEST IN THE DEDICATED BUS/BIKE LANE. V1 HAS
SUDDENLY AND WITHOUT REASON, LEFT THE SOUTH WEST LANE AND CROSSED INTO THE SOUTH WE ST BUS LANE. THE REAR OFFSIDE WING OF V1 HAS STRUCK V2. V1 HAS THEN CONTINUED ACROSS ALL FOUR LANE STOPPING IN THE OPPOSING NORTH EAST BUS LANE FACING THE WRONG WAY.

Occurred on CHELMER VALLEY ROAD A1016 NEAR JN WITH WHITE HART LANE A130

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selected using Manual Selection

| 19836759 | 05/05/2019 | Time | 1135 | Vehicles | s 2 | Casualties | 4 |  | Serious |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 571960 N : | 209746 | First Road: | A 130 |  | Road Type | Single carriageway |  |  |  |
| Speed limit: 60 | Junction Detail: | Not within 20 m of junction |  |  |  |  |  |  | Dry |
| Crossing: Control | None |  | Facilities: | None wit | ithin 50 m |  |  | d surface |  |
| Daylight |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions at | Site None |  |  |  |  | Carriageway |  | None |  |
| Place accident report | d: At | ene |  | IT Special | al Projects: |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Pactor: | Participant: | Confidence: |
| 2nd: | Loss of control | Vehicle 1 | Possible |
| 3rd: |  | Vehicle 1 | Possible |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

V1 HAD JOINED THE A131, BRAINTREE ROAD AND WAS TRAVELLING NORTHBOUND FROM THE JUNCTION WITH THE A130. V2 WAS TRAVELLING IN THE OPPOSITE DIRECTION AND WAS SLOWING FOR THE ROUNDABOUT. V1 HAS CLIPPED THE KERB ON THE NEARSIDE WHICH HAS CAUSED THE AIRBA G TO DEPLOY. V1 HAS THEN LOST CONTROL AND DRIVEN OVER THE CENTRAL WHITE LINE COLLIDING WITH THE FRONT OS OF V2.

Occurred on ESSEX REGIMENT WAY (A130) - 181 METRES FROM JUNCTION WITH LITTLE WALTHAM ROA


[^5]| Accidents between dates | $\mathbf{0 1 / 0 4} / 2016$ | and | $\mathbf{3 1 / 0 3 / 2 0 2 1}$ | (60) months |
| :--- | :---: | :---: | :---: | :---: |
| Selection: |  |  | Notes: |  |

Selected using Manual Selection


Back seat
Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

Selection:
Selected using Manual Selection

| 19905658 | 04/12/2019 | Time | 1358 | Vehicles | 2 | Casualties | 1 | Slight |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 571872 N : | 209907 | First Road: |  |  | Road Type | Single carr |  |  |  |
| Speed limit: 40 | Junction Detail: | Other |  |  |  | Give way or |  |  | Unclassified |
| Crossing: Control | None |  | Facilities | None wit | thin 50 m |  | Road surface | Dry |  |
| Daylight |  |  |  |  |  | Fine without |  |  |  |
| Special Conditions at | Site None |  |  |  |  | Carriageway | None |  |  |
| Place accident reporte | ed: At s | ene |  | DfT Special | Projects: |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| Factor: | Participant: | Confidence: |  |
| 2nd: | Failed to look properly |  | Vehicle 1 |

VEHICLE 1 AUDI TT - GV08 OUW HAS ENTERED A130 FROM ROUNDABOUT, DRIVER HAS STATED HE WAS LOOKING DOWN AT SAT NAV. HE LOOKED UP AND STATED HE SAW VEHICLE 2 MINI COUNTRYMAN HG11 WTR IN FRONT. HE TRIED TO BRAKE BUT COLLIDED WITH THE REAR OF IT CAUSING IT TO SPIN. DAMAGE TO BOTH CARS AND MINOR INJURY TO DRIVER OF VEHICLE 2.

Occurred on ESSEX REGIMENT WAY (A130) AT JUNCTION WITH LITTLE WALTHAM ROAD

Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Possible |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

## VEH 002 AND VEH 003 WERE HELD IN STATIONARY TRAFFIC, AT THIS TIME VEH 001 HAS NOT STOPPED AND COLLIDED WITH VEH 002 CAUSING VEH 002 TO COLLIDE INTO VEH 003. <br> Occurred on CHELMER VALLEY ROAD (A1016)



| Casualty Reference: 1 | Vehicle: 1 | Age: 77 | Female | Driver/rider | Severity: Slight |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |


| Vehicle Reference | Car |  |  |  | Going ahead but held up |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Vehicle movement from | $m \quad \mathrm{SW}$ to NE |  | No tow / articulation |  |  |  |  |
| On main carriagewa |  |  | No skidding, jack-knifing or overturning |  |  |  | Hit vehicle: |
| Location at impact |  | thin 20 M |  | First impact | Back |  |  |
| Hit object in road | None |  |  | Off road: | None |  |  |
| Did not leave carr |  |  |  |  | Age of Driver | 40 | Male |
| Not hit and run |  | Breath test | Negative |  |  |  |  |
| Driver Postcode: |  | VRM: |  |  |  |  |  |


| Vehicle Reference | Car | Going ahead but held up |
| :--- | :--- | :--- |
| Vehicle movement from | SW to NE |  |

On main carriageway No skidding, jack-knifing or overturning
Location at impact Not at, or within 20 M of Jct
Hit object in road

First impact Back Off road: None

Age of Driver 38 Female
Did not leave carr
Not hit and run Breath test Negative
Driver Postcode:

VRM:
Accidents between dates $\quad 01 / 04 / 2016$ and $\mathbf{3 1 / 0 3 / 2 0 2 1}$ (60) months

## Selection:

Notes:
Selected using Manual Selection

| 20926448 | 03/02/2020 | Time | 1800 | Vehicles | 2 | Casualties | 1 | Slight |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E: 571985 N : | 209725 | First Road: | A |  | Road Type | 1 |  |  |  |
| Speed limit: 60 | Junction Detail: | Roundab |  |  |  | Give way or | lled |  | A 130 |
| Crossing: Control | None |  | Facilities: | None wit | thin 50 m |  | Road surface | Wet/Damp |  |
| Darkness: street lights present and lit |  |  |  | Fine without high winds |  |  |  |  |  |
| Special Conditions a | Site None |  |  |  |  | Carriageway | None |  |  |
| Place accident report | ed: At s | ene |  | DfT Special | Projects: |  |  |  |  |


|  | Causation |  |  |
| :--- | :--- | :--- | :--- |
| 1st: | Factor: | Participant: | Confidence: |
| 2nd: |  | Vehicle 1 | Very Likely |
| 3rd: |  |  |  |
| 4th: |  |  |  |
| 5th: |  |  |  |
| 6th: |  |  |  |

## V2 WAS DRIVING DOWN ESSEX REGIMENT WAY WHERE THEY WERE DRIVING ROUND THE

 ROUNDABOUT. V1 HAS STOPPED COMING OFF THE ROUNDABOUT AND V2 HAS DRIVEN INTO THE BACK OF V1.Occurred on ESSEX REGIMENT WAY (A130) NEAR JUNCTION WITH NABBOTTS FARM ROUNDABOUT (A13

| Vehicle Reference |  |  |
| :--- | :--- | :--- |
| Car |  |  |
| Vehicle movement from |  |  |
| N | to $S$ |  |

On main carriageway
Location at impact Entering roundabout Hit object in road None
$\begin{array}{lrl}\text { Did not leave carr } & \\ \text { Not hit and run } & \text { Breath test } & \end{array}$
Driver Postcode:

Casualty Reference: 1 Vehicle: 1

| Vehicle Reference |  | Car <br> Vehicle movement from |
| :--- | :--- | :--- |
|  | N |  | | to S |
| :--- |

On main carriageway
Location at impact Entering roundabout
Hit object in road None
$\begin{array}{lc}\text { Did not leave carr } & \\ \text { Not hit and run } & \text { Breath test } \\ \text { Driver Postcode: } & \text { VRM: }\end{array}$

Stopping
No tow / articulation
No skidding, jack-knifing or overturning First impact Back Hit vehicle: Off road: None

Age of Driver 25 Female
VRM:

| Casualty Reference: | 1 | Vehicle: | 1 | Age: 25 | Female | Driver/rider | Severity: Slight |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  |  | Postcode |  | Seatbelt |  |  |


| Accidents between dates | $\mathbf{0 1 / 0 4} / 2016$ | and | $\mathbf{3 1 / 0 3 / 2 0 2 1}$ | (60) months |
| :--- | :---: | :---: | :---: | :---: |
| Selection: |  | Notes: |  |  |

Selected using Manual Selection


| Causation |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :---: | :---: | :---: | :---: |
|  | Factor: | Participant: | Confidence: |  |  |  |  |
| 1st: | Stationary or parked vehicle | Vehicle 1 | Very Likely |  |  |  |  |
| 2nd: |  |  |  |  |  |  |  |
| 3rd: |  |  |  |  |  |  |  |
| 4th: |  |  |  |  |  |  |  |
| 5th: |  |  |  |  |  |  |  |
| 6th: |  |  |  |  |  |  |  |

THIS CRASH WAS CAUSED DUE TO THE CYCLIST BEING ON THE NEARSIDE OF THE CAR INVOLVED WHILE THE CAR WAS INDICATING TO LEAVE THE ROUNDABOUT IN WHICH THE CAR HAS KNOCKED THE CYCLIST OFF.

Occurred on NABBOTTS FARM ROUNDABOUT (A130) NEAR JUNCTION WITH PUMP LANE


| Casualty Reference: 1 | Vehicle: 1 | Age: 24 | Male | Pedestrian | Severity: Slight |
| :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Postcode |  | Sirection Unknown |

Driver's nearside

Accidents between dates $\quad \mathbf{0 1 / 0 4 / 2 0 1 6}$ and ${ }^{\text {31/03/2021 }}$ (60) months
Selection:
Notes:
Selected using Manual Selection

Accidents involving:

|  | Fatal | Serious | Slight | Total |
| :--- | ---: | ---: | ---: | ---: |
| Motor vehicles <br> only (excluding <br> 2-wheels) | 2 | 8 | 59 | 69 |
| 2-wheeled motor <br> vehicles | 0 | 7 | 6 | 13 |
| Pedal cycles | 0 | 3 | 8 | 11 |
| Horses \& other | 0 | 0 | 0 | 0 |
| Total | 2 | 18 | 73 | 93 |

Casualties:

|  | Fatal | Serious | Slight | Total |
| :--- | ---: | ---: | ---: | ---: |
| Vehicle driver | 1 | 6 | 53 | 60 |
| Passenger | 0 | 3 | 25 | 28 |
| Motorcycle rider | 0 | 7 | 6 | 13 |
| Cyclist | 0 | 1 | 9 | 10 |
| Pedestrian | 1 | 3 | 3 | 7 |
| Other | 0 | 0 | 0 | 0 |
| Total | 2 | 20 | 96 | 118 |

## Appendix F1 - Waltham Road/ Cranham Road Junction Measurements



## Appendix F2 - Main Road/ Waltham Road/ Junction Measurements


Minor arm type. One lane plus flare Width at give-way: 10m (max)
10mack: 8 m
Om back 3.4 m
Estimate flare length: Yes
Visibility to left: 39m
Visibility to right: $(71+73) / 2=72 \mathrm{~m}$

## Arm C (B1137 Main Road)

rriageway. $(6.5+6.2) / 2=6.3 \mathrm{~m}$
Right turn lane- No
Visibility along A for C-B traffic: 250m (max)
C-B traffic blocks: Full blocking (0 PCUs prior to blocking)
Longfield Solar Farm
B1137 Main Road/ Waltham Road - Junction Measurements
$\begin{array}{lll}\text { APFP Regulation: 5(2)(a) } \\ \text { Project No.: } 60640215 & \text { Date: February } 2022 \quad \text { PINS Ref: EN010118 }\end{array}$

## Appendix F3 - Proposed Site Access Junction Measurements



## Appendix G1 - Junction Modelling Results Waltham Road/ Cranham Road

## Junctions 9

## PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462
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Filename: LSF - WR_CR Junction_011021.j9
Path: \Icm-man-0021CTB_CHE_englTransport Consultancy Projects\Job Folders_606160640215 - Longfield Solar Farml400 TechnicalMModelling
Report generation date: 05/10/2021 16:39:01
"Existing Layout - 2021 Base, AM 0700-0800
"Existing Layout - 2021 Base, AM 0745-0845
"Existing Layout - 2021 Base, PM 1615-1715
"Existing Layout - 2021 Base, PM 1800-1900
"Existing Layout - 2025 Base, AM 0700-0800
"Existing Layout - 2025 Base, AM 0745-0845
"Existing Layout - 2025 Base, PM 1615-1715
"Existing Layout - 2025 Base, PM 1800-1900
"Existing Layout - 2025 Base + Dev, AM 0700-0800
"Existing Layout - 2025 Base + Dev, AM 0745-0845
"Existing Layout - 2025 Base + Dev, PM 1615-1715
"Existing Layout - 2025 Base + Dev, PM 1800-1900

## Summary of junction performance

|  | AM 0700-0800 |  |  |  |  | AM 0745-0845 |  |  |  |  | PM 1615-1715 |  |  |  |  | PM 1800-1900 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{aligned} & \text { Set } \\ & \text { ID } \\ & \hline \end{aligned}$ | Queue (Veh) | Delay (s) | RFC | LOS | $\begin{array}{l\|} \hline \text { Set } \\ \text { ID } \\ \hline \end{array}$ | Queue (Veh) | Delay <br> (s) | RFC | LOS | $\begin{array}{l\|} \hline \text { Set } \\ \text { ID } \\ \hline \end{array}$ | Queue (Veh) | Delay (s) | RFC | LOS | $\begin{aligned} & \text { Set } \\ & \text { ID } \\ & \hline \end{aligned}$ | Queue (Veh) | Delay (s) | RFC | LOS |
|  | Existing Layout - 2021 Base |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Stream B-C | D1 | 0.0 | 5.84 | 0.00 | A | D2 | 00 | 785 | 0.01 | A | D3 | 0.0 | 6.94 | 0.03 | A | D4 | 0.0 | 5.82 | 0.01 | A |
| Stream B-A |  | 0.4 | 10.31 | 0.29 | B |  | 08 | 13.62 | 0.44 | B |  | 3.5 | 3332 | 0.79 | D |  | 0.6 | 10.60 | 0.36 | B |
| Stream C-AB |  | 0.0 | 5.98 | 0.02 | A |  | 00 | 590 | 0.02 | A |  | 0.0 | 5.70 | 0.01 | A |  | 0.0 | 6.49 | 0.02 | A |
|  | Existing Layout - 2025 Base |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Stream B-C | D5 | 0.0 | 5.87 | 0.00 | A | D6 | 00 | 792 | 0.01 | A | D7 | 0.0 | 7.05 | 0.04 | A | D8 | 0.0 | 5.87 | 0.01 | A |
| Stream B-A |  | 0.4 | 10.56 | 0.30 | B |  | 08 | 14.15 | 0.46 | B |  | 4.2 | 3857 | 0.82 | E |  | 0.6 | 11.01 | 0.38 | B |
| Stream C-AB |  | 0.0 | 5.97 | 0.02 | A |  | 00 | 590 | 0.02 | A |  | 0.0 | 5.69 | 0.01 | A |  | 0.0 | 6.50 | 0.03 | A |
|  | Existing Layout - 2025 Base + Dev |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Stream B-C | D9 | 0.0 | 6.13 | 0.00 | A | D10 | 00 | 807 | 0.01 | A | D11 | 0.0 | 7.12 | 0.04 | A | D12 | 0.0 | 5.94 | 0.01 | A |
| Stream B-A |  | 0.8 | 13.50 | 0.44 | B |  | 1.1 | 16.02 | 0.52 | C |  | 4.5 | 4087 | 0.83 | E |  | 0.7 | 11.64 | 0.40 | B |
| Stream C-AB |  | 0.0 | 6.00 | 0.02 | A |  | 00 | 590 | 0.02 | A |  | 0.0 | 5.73 | 0.01 | A |  | 0.0 | 6.62 | 0.03 | A |

[^6]
## File summary

File Description

| Title | Waltham Road/ Cranham Road Junction |
| :--- | :--- |
| Location | As above |
| Site number | 2 |
| Date | $05 / 10 / 2021$ |
| Version |  |
| Status | UPDATED DRAFT |
| Identifier |  |
| Client | Longfield Solar Farm |
| Jobnumber | 60640215 |
| Enumerator | NAlchris.burlton |
| Description |  |

## Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units | Average delay units | Total delay units | Rate of delay units |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| m | kph | Veh | Veh | perHour | s | -Min | perMin |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
| :--- | :---: | :---: | :---: | :---: |
|  |  | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
| D1 | 2021 Base | AM 0700-0800 | ONE HOUR | $06: 45$ | $08: 15$ | 15 |
| D2 | 2021 Base | AM 0745-0845 | ONE HOUR | $06: 45$ | $08: 15$ | 15 |
| D3 | 2021 Base | PM 1615-1715 | ONE HOUR | $17: 45$ | $19: 15$ | 15 |
| D4 | 2021 Base | PM 1800-1900 | ONE HOUR | $17: 45$ | $19: 15$ | 15 |
| D5 | 2025 Base | AM 0700-0800 | ONE HOUR | $06: 45$ | $08: 15$ | 15 |
| D6 | 2025 Base | AM 0745-0845 | ONE HOUR | $06: 45$ | 15 |  |
| D7 | 2025 Base | PM 1615-1715 | ONE HOUR | $17: 45$ | $15: 15$ | 15 |
| D8 | 2025 Base | PM 1800-1900 | ONE HOUR | $17: 45$ | $19: 15$ | 15 |
| D9 | 2025 Base + Dev | AM 0700-0800 | ONE HOUR | $06: 45$ | $08: 15$ | 15 |
| D10 | 2025 Base + Dev | AM 0745-0845 | ONE HOUR | $06: 45$ | 15 |  |
| D11 | 2025 Base + Dev | PM 1615-1715 | ONE HOUR | $17: 45$ | 15 |  |
| D12 | 2025 Base + Dev | PM 1800-1900 | ONE HOUR | $17: 45$ | $19: 15$ | 15 |

## Analysis Set Details

| ID | Name | Network flow scaling factor (\%) |
| :---: | :---: | :---: |
| A1 | Existing Layout | 100.000 |

THE FUTURE

## Existing Layout - 2021 Base, AM 0700-0800

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Waltham Road/ Cranham Road | T-Junction | Two-way |  | 2.14 | A |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Arms

## Arms

| Arm | Name | Description | Arm type |
| :---: | :--- | :--- | :--- |
| A | Waltham Road (South) |  | Major |
| B | Cranham Road |  | Minor |
| C | Waltham Road (North) |  | Major |

Major Arm Geometry

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| C | 6.20 |  |  | 59.0 | $\checkmark$ | 0.00 |

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

## Minor Arm Geometry

| Arm | Minor arm type | Lane Width (Left) (m) | Lane Width (Right) (m) | Visibility to left (m) | Visibility to right (m) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B | Two lanes | 350 | 4.00 | 47 | 107 |

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

| Stream | Intercept <br> (Veh/hr) | Slope <br> for <br> AB | Slope <br> for <br> AC | Slope <br> for <br> C-A | Slope <br> for <br> C-B |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B-A | 600 | 0.108 | 0.274 | 0.172 | 0.391 |
| B-C | 726 | 0.110 | 0.279 | - | - |
| C-B | 608 | 0.234 | 0.234 | - | - |

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| D1 | 2021 Base | AM 0700-0800 | ONE HOUR | $06: 45$ | $08: 15$ | 15 |

THE FUTURE

| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 387 | 100.000 |
| B |  | $\checkmark$ | 131 | 100.000 |
| C |  | $\checkmark$ | 149 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 327 | 60 |
|  | B | 130 | 0 | 1 |
|  | C | 140 | 9 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 2 | 2 |
|  | B | 4 | 0 | 0 |
|  | C | 3 | 0 | 0 |

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.00 | 5.84 | 0.0 | A |
| B-A | 0.29 | 10.31 | 0.4 | B |
| C-AB | 0.02 | 5.98 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

06:45-07:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 0.75 | 653 | 0.001 | 0.75 | 0.0 | 5.518 |  |
| B-A | 98 | 519 | 0.188 | 97 | 0.2 |  |  |
| C-AB | 8 | 611 | 0.013 | 8 | 0.504 |  |  |
| C-A | 104 |  |  | 104 | 5 |  |  |
| AB | 246 |  | 246 |  |  |  |  |
| AC | 45 |  | 45 |  |  |  |  |

07:00-07:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 0.90 | 638 | 0.001 | 0.90 | 0.0 | 5.648 | A |
| B-A | 117 | 508 | 0.230 | 117 | 0.3 | 9.190 | A |
| C-AB | 10 | 613 | 0.017 | 10 | 0.0 | 5.967 | A |
| C-A | 124 |  |  | 124 |  |  |  |
| AB | 294 |  |  | 294 |  |  |  |
| AC | 54 |  |  | 54 |  |  |  |

07:15-07:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 1 | 618 | 0.002 | 1 | 0.0 | 5.838 | A |
| B-A | 143 | 492 | 0.291 | 143 | 0.4 | 10287 | B |
| C-AB | 13 | 616 | 0.022 | 13 | 0.0 | 5.969 | A |
| C-A | 151 |  |  | 151 |  |  |  |
| AB | 360 |  |  | 360 |  |  |  |
| AC | 66 |  | 66 |  |  |  |  |

07:30-07:45

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 1 | 618 | 0.002 | 1 | 0.0 | 5.839 | A |
| B-A | 143 | 492 | 0.291 | 143 | 0.4 | 10314 | B |
| C-AB | 13 | 616 | 0.022 | 13 | 0.0 | 5.976 | A |
| C-A | 151 |  |  | 151 |  |  |  |
| AB | 360 |  |  | 360 |  |  |  |
| AC | 66 |  |  | 66 |  |  |  |

07:45-08:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh $/ \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 0.90 | 638 | 0.001 | 0.90 | 0.0 | 5.650 | A |
| B-A | 117 | 508 | 0.230 | 117 | 0.3 | 9.223 | A |
| C-AB | 10 | 613 | 0.017 | 10 | 0.0 | 5.975 | A |
| C-A | 124 |  |  | 124 |  |  |  |
| AB | 294 |  |  | 294 |  |  |  |
| AC | 54 |  |  | 54 |  |  |  |

08:00-08:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh $/ \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 0.75 | 653 | 0.001 | 0.75 | 0.0 | 5.522 |  |
| B-A | 98 | 519 | 0.188 | 98 | 0.2 | 8.551 | A |
| C-AB | 8 | 611 | 0.013 | 8 | 0.0 | 5.972 | A |
| C-A | 104 |  |  | 104 |  |  |  |
| AB | 246 |  |  | 246 |  |  |  |
| AC | 45 |  | 45 |  |  |  |  |

## Existing Layout - 2021 Base, AM 0745-0845

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Cranham Road | T-Junction | Two-way |  | 3.47 | A |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| D2 | 2021 Base | AM 0745-0845 | ONE HOUR | $06: 45$ | $08: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 421 | 100.000 |
| B |  | $\checkmark$ | 196 | 100.000 |
| C |  | $\checkmark$ | 169 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 311 | 110 |
|  | B | 192 | 0 | 4 |
|  | C | 162 | 7 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 3 | 3 |
|  | B | 4 | 0 | 25 |
|  | C | 2 | 0 | 0 |

THE FUTURE

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.01 | 7.85 | 0.0 | A |
| B-A | 0.44 | 13.62 | 0.8 | B |
| C-AB | 0.02 | 5.90 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

06:45-07:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 3 | 502 | 0.006 | 3 | 0.0 | 7.213 |  |
| B-A | 145 | 508 | 0.284 | 143 | 0.4 | 9.817 | A |
| C-AB | 7 | 617 | 0.011 | 7 | 0.0 | 5.896 | A |
| C-A | 121 |  |  | 121 |  |  |  |
| AB | 234 |  |  | 234 |  |  |  |
| AC | 83 |  |  | 83 |  |  |  |

07:00-07:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 4 | 486 | 0.007 | 4 | 0.0 | 7.466 |  |
| B-A | 173 | 494 | 0.349 | 172 | 0.5 | 11.146 | B |
| C-AB | 8 | 620 | 0.013 | 8 | 0.0 | 5.881 | A |
| C-A | 144 |  |  | 144 |  |  |  |
| AB | 280 |  |  | 280 |  |  |  |
| AC | 99 |  | 99 |  |  |  |  |

07:15-07:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathrm{hr})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 4 | 463 | 0.010 | 4 | 0.0 | 7.846 | A |
| B-A | 211 | 476 | 0.444 | 210 | 0.8 | 13521 | B |
| C-AB | 11 | 625 | 0.017 | 11 | 0.0 | 5.860 | A |
| C-A | 175 |  |  | 175 |  |  |  |
| AB | 342 |  |  | 342 |  |  |  |
| AC | 121 |  |  | 121 |  |  |  |

07:30-07:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 4 | 463 | 0.010 | 4 | 0.0 | 7.850 | A |
| B-A | 211 | 476 | 0.444 | 211 | 0.8 | 13620 | B |
| C-AB | 11 | 625 | 0.017 | 11 | 0.0 | 5.865 | A |
| C-A | 175 |  |  | 175 |  |  |  |
| AB | 342 |  |  | 342 |  |  |  |
| AC | 121 |  |  | 121 |  |  |  |

07:45-08:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 4 | 485 | 0.007 | 4 | 0.0 | 7.476 | A |
| B-A | 173 | 494 | 0.349 | 174 | 0.5 | 11254 | B |
| C-AB | 8 | 620 | 0.013 | 8 | 0.0 | 5.889 | A |
| C-A | 144 |  |  | 144 |  |  |  |
| AB | 280 |  |  | 280 |  |  |  |
| AC | 99 |  |  | 99 |  |  |  |

08:00-08:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathrm{hr})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 3 | 501 | 0.006 | 3 | 0.0 | 7.225 | A |
| B-A | 145 | 508 | 0.284 | 145 | 0.4 | 9.932 | A |
| C-AB | 7 | 617 | 0.011 | 7 | 0.0 | 5.901 | A |
| C-A | 121 |  |  | 121 |  |  |  |
| AB | 234 |  |  | 234 |  |  |  |
| AC | 83 |  | 83 |  |  |  |  |

## Existing Layout - 2021 Base, PM 1615-1715

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Cranham Road | T-Junction | Two-way |  | 16.20 | C |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| D3 | 2021 Base | PM 1615-1715 | ONE HOUR | $17: 45$ | $19: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 242 | 100.000 |
| B |  | $\checkmark$ | 382 | 100.000 |
| C |  | $\checkmark$ | 140 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 135 | 107 |
|  | B | 366 | 0 | 16 |
|  | C | 137 | 3 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 1 | 5 |
|  | B | 3 | 0 | 0 |
|  | C | 1 | 0 | 0 |

THE FUTURE

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.03 | 6.94 | 0.0 | A |
| B-A | 0.79 | 33.32 | 3.5 | D |
| C-AB | 0.01 | 5.70 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

17:45-18:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 12 | 602 | 0.020 | 12 | 0.0 | 6.106 |  |
| B-A | 276 | 532 | 0.518 | 271 | 1.0 | 13613 | A |
| C-AB | 3 | 635 | 0.004 | 3 | 0.0 | 5.693 | A |
| C-A | 103 |  |  | 103 |  |  |  |
| AB | 102 |  | 102 |  |  |  |  |
| AC | 81 |  | 81 |  |  |  |  |

18:00-18:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 14 | 575 | 0.025 | 14 | 0.0 | 6.420 |  |
| B-A | 329 | 522 | 0.630 | 327 | 1.6 | 18213 |  |
| C-AB | 3 | 641 | 0.005 | 3 | 0.0 | 5.647 |  |
| C-A | 123 |  |  | 123 |  |  |  |
| AB | 121 |  |  | 96 |  |  |  |
| AC | 96 |  |  |  |  |  |  |

18:15-18:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathrm{hr})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 18 | 539 | 0.033 | 18 | 0.0 | 6.905 | A |
| B-A | 403 | 508 | 0.793 | 396 | 3.3 | 30.407 | D |
| C-AB | 4 | 649 | 0.007 | 4 | 0.0 | 5.582 | A |
| C-A | 150 |  |  | 150 |  |  |  |
| AB | 149 |  |  | 149 |  |  |  |
| AC | 118 |  |  | 118 |  |  |  |

18:30-18:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh $/ \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 18 | 537 | 0.033 | 18 | 0.0 | 6.935 | A |
| B-A | 403 | 508 | 0.793 | 402 | 3.5 | 33318 | D |
| C-AB | 4 | 649 | 0.007 | 4 | 0.0 | 5.586 | A |
| C-A | 150 |  |  | 150 |  |  |  |
| AB | 149 |  |  | 149 |  |  |  |
| AC | 118 |  |  | 118 |  |  |  |

18:45-19:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 14 | 572 | 0.025 | 14 | 0.0 | 6.461 |  |
| B-A | 329 | 522 | 0.630 | 336 | 1.8 | 20028 |  |
| C-AB | 3 | 641 | 0.005 | 3 | 0.0 | 5.651 |  |
| C-A | 123 |  |  | 123 |  |  |  |
| AB | 121 |  |  | 96 |  |  |  |
| AC | 96 |  |  |  |  |  |  |

19:00-19:15

| Stream | Total Demand <br> $($ Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 12 | 599 | 0.020 | 12 | 0.0 | 6.133 |  |
| B-A | 276 | 532 | 0.518 | 278 | 1.1 | 14343 | B |
| C-AB | 3 | 635 | 0.004 | 3 | 0.0 | 5.697 | A |
| C-A | 103 |  |  | 103 |  |  |  |
| AB | 102 |  |  | 102 |  |  |  |
| AC | 81 |  |  | 81 |  |  |  |

## Existing Layout - 2021 Base, PM 1800-1900

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Cranham Road | T-Junction | Two-way |  | 4.57 | A |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| D4 | 2021 Base | PM 1800-1900 | ONE HOUR | $17: 45$ | $19: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 174 | 100.000 |
| B |  | $\checkmark$ | 181 | 100.000 |
| C |  | $\checkmark$ | 79 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 94 | 80 |
|  | B | 174 | 0 | 7 |
|  | C | 68 | 11 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 2 | 1 |
|  | B | 3 | 0 | 0 |
|  | C | 0 | 9 | 0 |

THE FUTURE

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.01 | 5.82 | 0.0 | A |
| B-A | 0.36 | 10.60 | 0.6 | B |
| C-AB | 0.02 | 6.49 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

17:45-18:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 5 | 659 | 0.008 | 5 | 0.0 | 5.506 |  |
| B-A | 131 | 548 | 0.239 | 130 | 0.3 | 8 |  |
| C-AB | 9 | 565 | 0.016 | 9 | 0.0 | 6.474 | A |
| C-A | 50 |  | 50 |  |  | A |  |
| AB | 71 |  |  | 71 |  |  |  |
| AC | 60 |  | 60 |  |  |  |  |

18:00-18:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 6 | 645 | 0.010 | 6 | 0.0 | 5.632 |  |
| B-A | 156 | 541 | 0.289 | 156 | 0.4 | 9.352 |  |
| C-AB | 11 | 567 | 0.020 | 11 | 0.0 | 6.482 |  |
| C-A | 60 |  |  | 60 |  |  |  |
| AB | 85 |  | 72 |  |  |  |  |
| AC | 72 |  |  |  |  |  |  |

18:15-18:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathrm{hr})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 8 | 627 | 0.012 | 8 | 0.0 | 5.815 | A |
| B-A | 192 | 531 | 0.361 | 191 | 0.6 | 10566 | B |
| C-AB | 14 | 569 | 0.025 | 14 | 0.0 | 6.489 | A |
| C-A | 73 |  |  | 73 |  |  |  |
| AB | 103 |  |  | 103 |  |  |  |
| AC | 88 |  |  | 88 |  |  |  |

18:30-18:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 8 | 626 | 0.012 | 8 | 0.0 | 5.817 | A |
| B-A | 192 | 531 | 0.361 | 192 | 0.6 | 10601 | B |
| C-AB | 14 | 569 | 0.025 | 14 | 0.0 | 6.483 | A |
| C-A | 73 |  |  | 73 |  |  |  |
| AB | 103 |  |  | 103 |  |  |  |
| AC | 88 |  | 88 |  |  |  |  |

18:45-19:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 6 | 645 | 0.010 | 6 | 0.0 | 5.638 | A |
| B-A | 156 | 541 | 0.289 | 157 | 0.4 | 9.398 | A |
| C-AB | 11 | 567 | 0.020 | 11 | 0.0 | 6.471 | A |
| C-A | 60 |  |  | 60 |  |  |  |
| AB | 85 |  |  | 85 |  |  |  |
| AC | 72 |  |  | 72 |  |  |  |

19:00-19:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 5 | 658 | 0.008 | 5 | 0.0 | 5.512 |  |
| B-A | 131 | 548 | 0.239 | 131 | 0.3 | 8.657 | A |
| C-AB | 9 | 565 | 0.016 | 9 | 0.0 | 6.469 | A |
| C-A | 50 |  |  | 50 |  |  |  |
| AB | 71 |  |  | 71 |  |  |  |
| AC | 60 |  |  | 60 |  |  |  |

## Existing Layout - 2025 Base, AM 0700-0800

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Cranham Road | T-Junction | Two-way |  | 2.19 | A |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| D5 | 2025 Base | AM 0700-0800 | ONE HOUR | $06: 45$ | $08: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 400 | 100.000 |
| B |  | $\checkmark$ | 135 | 100.000 |
| C |  | $\checkmark$ | 154 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 338 | 62 |
|  | B | 134 | 0 | 1 |
|  | C | 145 | 9 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 2 | 2 |
|  | B | 4 | 0 | 0 |
|  | C | 3 | 0 | 0 |

THE FUTURE

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.00 | 5.87 | 0.0 | A |
| B-A | 0.30 | 10.56 | 0.4 | B |
| C-AB | 0.02 | 5.97 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

06:45-07:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 0.75 | 651 | 0.001 | 0.75 | 0.0 | 5.539 |  |
| B-A | 101 | 517 | 0.195 | 100 | 0.2 | 8.620 | A |
| C-AB | 8 | 612 | 0.013 | 8 | 0.0 | 5.961 | A |
| C-A | 108 |  |  | 108 |  |  |  |
| AB | 254 |  |  | 254 |  |  |  |
| AC | 47 |  |  | 47 |  |  |  |

07:00-07:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh $/ \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 0.90 | 635 | 0.001 | 0.90 | 0.0 | 5.674 | A |
| B-A | 120 | 505 | 0.239 | 120 | 0.3 | 9.353 | A |
| C-AB | 10 | 614 | 0.017 | 10 | 0.0 | 5.961 | A |
| C-A | 128 |  |  | 128 |  |  |  |
| AB | 304 |  |  | 304 |  |  |  |
| AC | 56 |  | 56 |  |  |  |  |

07:15-07:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 1 | 614 | 0.002 | 1 | 0.0 | 5.872 | A |
| B-A | 148 | 488 | 0.302 | 147 | 0.4 | 10529 | B |
| C-AB | 13 | 617 | 0.022 | 13 | 0.0 | 5.961 | A |
| C-A | 156 |  |  | 156 |  |  |  |
| AB | 372 |  |  | 372 |  |  |  |
| AC | 68 |  |  | 68 |  |  |  |

07:30-07:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh $/ \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 1 | 614 | 0.002 | 1 | 0.0 | 5.874 | A |
| B-A | 148 | 488 | 0.302 | 148 | 0.4 | 10559 | B |
| C-AB | 13 | 617 | 0.022 | 13 | 0.0 | 5.967 | A |
| C-A | 156 |  |  | 156 |  |  |  |
| AB | 372 |  |  | 372 |  |  |  |
| AC | 68 |  | 68 |  |  |  |  |

07:45-08:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 0.90 | 635 | 0.001 | 0.90 | 0.0 | 5.679 | A |
| B-A | 120 | 505 | 0.239 | 121 | 0.3 | 9.389 | A |
| C-AB | 10 | 614 | 0.017 | 10 | 0.0 | 5.971 | A |
| C-A | 128 |  |  | 128 |  |  |  |
| AB | 304 |  |  | 304 |  |  |  |
| AC | 56 |  |  | 56 |  |  |  |

08:00-08:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 0.75 | 650 | 0.001 | 0.75 | 0.0 | 5.544 | A |
| B-A | 101 | 517 | 0.195 | 101 | 0.2 | 8.671 | A |
| C-AB | 8 | 612 | 0.014 | 8 | 0.0 | 5.968 | A |
| C-A | 108 |  |  | 108 |  |  |  |
| AB | 254 |  |  | 254 |  |  |  |
| AC | 47 |  | 47 |  |  |  |  |

## Existing Layout - 2025 Base, AM 0745-0845

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Cranham Road | T-Junction | Two-way |  | 3.59 | A |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| D6 | 2025 Base | AM 0745-0845 | ONE HOUR | $06: 45$ | $08: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 435 | 100.000 |
| B |  | $\checkmark$ | 202 | 100.000 |
| C |  | $\checkmark$ | 174 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 321 | 114 |
|  | B | 198 | 0 | 4 |
|  | C | 167 | 7 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 3 | 3 |
|  | B | 4 | 0 | 25 |
|  | C | 2 | 0 | 0 |

THE FUTURE

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.01 | 7.92 | 0.0 | A |
| B-A | 0.46 | 14.15 | 0.8 | B |
| C-AB | 0.02 | 5.90 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

06:45-07:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 3 | 499 | 0.006 | 3 | 0.0 | 7.252 |  |
| B-A | 149 | 506 | 0.295 | 147 | 0.4 | 9.996 | A |
| C-AB | 7 | 617 | 0.011 | 7 | 0.0 | 5.893 | A |
| C-A | 124 |  |  | 124 |  |  |  |
| AB | 242 |  |  | 242 |  |  |  |
| AC | 86 |  |  | 86 |  |  |  |

07:00-07:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh $/ \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 4 | 482 | 0.007 | 4 | 0.0 | 7.516 | A |
| B-A | 178 | 492 | 0.362 | 177 | 0.6 | 11.429 | B |
| C-AB | 8 | 620 | 0.013 | 8 | 0.0 | 5.878 | A |
| C-A | 148 |  |  | 148 |  |  |  |
| AB | 289 |  |  | 289 |  |  |  |
| AC | 102 |  |  | 102 |  |  |  |

07:15-07:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathrm{hr})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 4 | 459 | 0.010 | 4 | 0.0 | 7.915 | A |
| B-A | 218 | 472 | 0.462 | 217 | 0.8 | 14032 | B |
| C-AB | 11 | 625 | 0.017 | 11 | 0.0 | 5.855 | A |
| C-A | 181 |  |  | 181 |  |  |  |
| AB | 353 |  |  | 353 |  |  |  |
| AC | 126 |  |  | 126 |  |  |  |

07:30-07:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh $/ \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 4 | 459 | 0.010 | 4 | 0.0 | 7.921 | A |
| B-A | 218 | 472 | 0.462 | 218 | 0.8 | 14.148 | B |
| C-AB | 11 | 625 | 0.017 | 11 | 0.0 | 5.860 | A |
| C-A | 181 |  |  | 181 |  |  |  |
| AB | 353 |  |  | 353 |  |  |  |
| AC | 126 |  |  | 126 |  |  |  |

07:45-08:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 4 | 482 | 0.007 | 4 | 0.0 | 7.527 | A |
| B-A | 178 | 492 | 0.362 | 179 | 0.6 | 11553 | B |
| C-AB | 8 | 620 | 0.013 | 8 | 0.0 | 5.886 | A |
| C-A | 148 |  |  | 148 |  |  |  |
| AB | 289 |  |  | 289 |  |  |  |
| AC | 102 |  |  | 102 |  |  |  |

08:00-08:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathrm{hr})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 3 | 499 | 0.006 | 3 | 0.0 | 7.264 | A |
| B-A | 149 | 506 | 0.295 | 150 | 0.4 | 10.124 | B |
| C-AB | 7 | 617 | 0.011 | 7 | 0.0 | 5.899 | A |
| C-A | 124 |  |  | 124 |  |  |  |
| AB | 242 |  |  | 242 |  |  |  |
| AC | 86 |  | 86 |  |  |  |  |

## Existing Layout - 2025 Base, PM 1615-1715

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Cranham Road | T-Junction | Two-way |  | 18.69 | C |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| D7 | 2025 Base | PM 1615-1715 | ONE HOUR | $17: 45$ | $19: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 251 | 100.000 |
| B |  | $\checkmark$ | 395 | 100.000 |
| C |  | $\checkmark$ | 145 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 140 | 111 |
|  | B | 378 | 0 | 17 |
|  | C | 142 | 3 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 1 | 5 |
|  | B | 3 | 0 | 0 |
|  | C | 1 | 0 | 0 |

THE FUTURE

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.04 | 7.05 | 0.0 | A |
| B-A | 0.82 | 38.57 | 4.2 | E |
| C-AB | 0.01 | 5.69 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

17:45-18:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 13 | 597 | 0.021 | 13 | 0.0 | 6.160 |  |
| B-A | 285 | 530 | 0.537 | 280 | 1.1 | 14.166 | A |
| C-AB | 3 | 636 | 0.004 | 3 | 0.0 | 5.684 | A |
| C-A | 106 |  | 106 |  |  |  |  |
| AB | 105 |  |  | 105 |  |  |  |
| AC | 84 |  | 84 |  |  |  |  |

18:00-18:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 15 | 570 | 0.027 | 15 | 0.0 | 6.493 |  |
| B-A | 340 | 520 | 0.654 | 337 | 1.8 |  |  |
| C-AB | 3 | 642 | 0.005 | 3 | 0.0 | 5.428 |  |
| C-A | 127 |  |  | 127 |  |  |  |
| AB | 126 |  | 126 |  |  |  |  |
| AC | 100 |  | 100 |  |  |  |  |

18:15-18:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 19 | 532 | 0.035 | 19 | 0.0 | 7.012 | A |
| B-A | 416 | 505 | 0.824 | 408 | 3.9 | 34215 | D |
| C-AB | 4 | 651 | 0.007 | 4 | 0.0 | 5.568 | A |
| C-A | 155 |  |  | 155 |  |  |  |
| AB | 154 |  |  | 154 |  |  |  |
| AC | 122 |  |  | 122 |  |  |  |

18:30-18:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh $/ \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 19 | 529 | 0.035 | 19 | 0.0 | 7.051 | A |
| B-A | 416 | 505 | 0.824 | 415 | 4.2 | 38569 | E |
| C-AB | 4 | 651 | 0.007 | 4 | 0.0 | 5.572 | A |
| C-A | 155 |  |  | 155 |  |  |  |
| AB | 154 |  |  | 154 |  |  |  |
| AC | 122 |  |  | 122 |  |  |  |

18:45-19:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r )}$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 15 | 566 | 0.027 | 15 | 0.0 | 6.544 | A |
| B-A | 340 | 520 | 0.654 | 349 | 2.0 | 22000 | C |
| C-AB | 3 | 642 | 0.005 | 3 | 0.0 | 5.640 | A |
| C-A | 127 |  |  | 127 |  |  |  |
| AB | 126 |  |  | 126 |  |  |  |
| AC | 100 |  |  | 100 |  |  |  |

19:00-19:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 13 | 595 | 0.022 | 13 | 0.0 | 6.188 | A |
| B-A | 285 | 530 | 0.537 | 288 | 1.2 | 15054 | C |
| C-AB | 3 | 636 | 0.004 | 3 | 0.0 | 5.688 | A |
| C-A | 106 |  |  | 106 |  |  |  |
| AB | 105 |  |  | 105 |  |  |  |
| AC | 84 |  |  | 84 |  |  |  |

## Existing Layout - 2025 Base, PM 1800-1900

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Cranham Road | T-Junction | Two-way |  | 4.75 |  |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| D8 | 2025 Base | PM 1800-1900 | ONE HOUR | $17: 45$ | $19: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 183 | 100.000 |
| B |  | $\checkmark$ | 190 | 100.000 |
| C |  | $\checkmark$ | 83 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 99 | 84 |
|  | B | 183 | 0 | 7 |
|  | C | 71 | 12 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 2 | 1 |
|  | B | 3 | 0 | 0 |
|  | C | 0 | 9 | 0 |

THE FUTURE

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.01 | 5.87 | 0.0 | A |
| B-A | 0.38 | 11.01 | 0.6 | B |
| C-AB | 0.03 | 6.50 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

17:45-18:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 5 | 655 | 0.008 | 5 | 0.0 | 5.535 |  |
| B-A | 138 | 546 | 0.252 | 136 | 0.3 | 8 |  |
| C-AB | 10 | 565 | 0.018 | 10 | 0.0 | 6.483 | A |
| C-A | 53 |  | 53 |  |  | A |  |
| AB | 75 |  |  | 75 |  |  |  |
| AC | 63 |  | 63 |  |  |  |  |

18:00-18:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 6 | 641 | 0.010 | 6 | 0.0 | 5.670 |  |
| B-A | 165 | 538 | 0.306 | 164 | 0.4 | 9.606 |  |
| C-AB | 12 | 567 | 0.021 | 12 | 0.0 | 6.492 |  |
| C-A | 62 |  |  | 62 |  |  |  |
| AB | 89 |  |  | 76 |  |  |  |
| AC | 76 |  |  |  |  |  |  |

18:15-18:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathrm{hr})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 8 | 621 | 0.012 | 8 | 0.0 | 5.865 | A |
| B-A | 201 | 528 | 0.381 | 201 | 0.6 | 10971 | B |
| C-AB | 15 | 569 | 0.027 | 15 | 0.0 | 6.502 | A |
| C-A | 76 |  |  | 76 |  |  |  |
| AB | 109 |  |  | 109 |  |  |  |
| AC | 92 |  |  | 92 |  |  |  |

18:30-18:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 8 | 621 | 0.012 | 8 | 0.0 | 5.867 | A |
| B-A | 201 | 528 | 0.381 | 201 | 0.6 | 11014 | B |
| C-AB | 15 | 569 | 0.027 | 15 | 0.0 | 6.496 | A |
| C-A | 76 |  |  | 76 |  |  |  |
| AB | 109 |  |  | 109 |  |  |  |
| AC | 92 |  | 92 |  |  |  |  |

18:45-19:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 6 | 641 | 0.010 | 6 | 0.0 | 5.676 | A |
| B-A | 165 | 538 | 0.306 | 165 | 0.4 | 9.662 | A |
| C-AB | 12 | 567 | 0.021 | 12 | 0.0 | 6.481 | A |
| C-A | 62 |  |  | 62 |  |  |  |
| AB | 89 |  |  | 89 |  |  |  |
| AC | 76 |  | 76 |  |  |  |  |

19:00-19:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 5 | 655 | 0.008 | 5 | 0.0 | 5.543 |  |
| B-A | 138 | 546 | 0.252 | 138 | 0.3 | 8.843 | A |
| C-AB | 10 | 565 | 0.018 | 10 | 0.0 | 6.477 | A |
| C-A | 52 |  |  | 52 |  |  |  |
| AB | 75 |  |  | 75 |  |  |  |
| AC | 63 |  |  | 63 |  |  |  |

## Existing Layout - 2025 Base + Dev, AM 0700-0800

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Cranham Road | T-Junction | Two-way |  | 3.60 |  |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| D9 | 2025 Base + Dev | AM 0700-0800 | ONE HOUR | $06: 45$ | $08: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 406 | 100.000 |
| B |  | $\checkmark$ | 193 | 100.000 |
| C |  | $\checkmark$ | 154 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 344 | 62 |
|  | B | 192 | 0 | 1 |
|  | C | 145 | 9 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 4 | 2 |
|  | B | 6 | 0 | 0 |
|  | C | 3 | 0 | 0 |

THE FUTURE

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.00 | 6.13 | 0.0 | A |
| B-A | 0.44 | 13.50 | 0.8 | B |
| C-AB | 0.02 | 6.00 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

06:45-07:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 0.75 | 634 | 0.001 | 0.75 | 0.0 | 5.682 |  |
| B-A | 145 | 506 | 0.286 | 143 | 0.4 | 9.878 | A |
| C-AB | 8 | 610 | 0.014 | 8 | 0.0 | 5.982 | A |
| C-A | 108 |  |  | 108 |  |  |  |
| AB | 259 |  |  | 259 |  |  |  |
| AC | 47 |  |  | 47 |  |  |  |

07:00-07:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 0.90 | 615 | 0.001 | 0.90 | 0.0 | 5.859 | A |
| B-A | 173 | 494 | 0.349 | 172 | 0.5 | 11.158 | B |
| C-AB | 10 | 611 | 0.017 | 10 | 0.0 | 5.985 | A |
| C-A | 128 |  |  | 128 |  |  |  |
| AB | 309 |  |  | 309 |  |  |  |
| AC | 56 |  | 56 |  |  |  |  |

07:15-07:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 1 | 589 | 0.002 | 1 | 0.0 | 6.122 | A |
| B-A | 211 | 478 | 0.442 | 210 | 0.8 | 13.408 | B |
| C-AB | 13 | 614 | 0.022 | 13 | 0.0 | 5.990 | A |
| C-A | 156 |  |  | 156 |  |  |  |
| AB | 379 |  |  | 379 |  |  |  |
| AC | 68 |  |  | 68 |  |  |  |

07:30-07:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 1 | 589 | 0.002 | 1 | 0.0 | 6.126 | A |
| B-A | 211 | 478 | 0.442 | 211 | 0.8 | 13504 | B |
| C-AB | 13 | 614 | 0.022 | 13 | 0.0 | 5.996 | A |
| C-A | 156 |  |  | 156 |  |  |  |
| AB | 379 |  |  | 379 |  |  |  |
| AC | 68 |  | 68 |  |  |  |  |

07:45-08:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 0.90 | 615 | 0.001 | 0.90 | 0.0 | 5.865 | A |
| B-A | 173 | 494 | 0.349 | 174 | 0.5 | 11265 | B |
| C-AB | 10 | 611 | 0.017 | 10 | 0.0 | 5.996 | A |
| C-A | 128 |  |  | 128 |  |  |  |
| AB | 309 |  |  | 309 |  |  |  |
| AC | 56 |  |  | 56 |  |  |  |

08:00-08:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 0.75 | 633 | 0.001 | 0.75 | 0.0 | 5.691 | A |
| B-A | 145 | 506 | 0.286 | 145 | 0.4 | 9.993 | A |
| C-AB | 8 | 610 | 0.014 | 8 | 0.0 | 5.986 | A |
| C-A | 108 |  |  | 108 |  |  |  |
| AB | 259 |  |  | 259 |  |  |  |
| AC | 47 |  | 47 |  |  |  |  |

## Existing Layout - 2025 Base + Dev, AM 0745-0845

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Cranham Road | T-Junction | Two-way |  | 4.42 |  |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| D10 | 2025 Base + Dev | AM 0745-0845 | ONE HOUR | $06: 45$ | $08: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 438 | 100.000 |
| B |  | $\checkmark$ | 228 | 100.000 |
| C |  | $\checkmark$ | 174 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 324 | 114 |
|  | B | 224 | 0 | 4 |
|  | C | 167 | 7 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 3 | 3 |
|  | B | 4 | 0 | 25 |
|  | C | 2 | 0 | 0 |

THE FUTURE

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.01 | 8.07 | 0.0 | A |
| B-A | 0.52 | 16.02 | 1.1 | C |
| C-AB | 0.02 | 5.90 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

06:45-07:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 3 | 494 | 0.006 | 3 | 0.0 | 7.333 | A |
| B-A | 169 | 505 | 0.334 | 167 | 0.5 | 10591 | B |
| C-AB | 7 | 617 | 0.011 | 7 | 0.0 | 5.898 | A |
| C-A | 124 |  |  | 124 |  |  |  |
| AB | 244 |  |  | 244 |  |  |  |
| AC | 86 |  |  | 86 |  |  |  |

07:00-07:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 4 | 476 | 0.008 | 4 | 0.0 | 7.624 | A |
| B-A | 201 | 491 | 0.411 | 201 | 0.7 | 12383 | B |
| C-AB | 8 | 620 | 0.013 | 8 | 0.0 | 5.884 | A |
| C-A | 148 |  |  | 148 |  |  |  |
| AB | 291 |  |  | 291 |  |  |  |
| AC | 102 |  |  | 102 |  |  |  |

07:15-07:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathrm{hr})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 4 | 451 | 0.010 | 4 | 0.0 | 8.065 | A |
| B-A | 247 | 471 | 0.524 | 245 | 1.1 | 15823 | C |
| C-AB | 11 | 625 | 0.018 | 11 | 0.0 | 5.862 | A |
| C-A | 181 |  |  | 181 |  |  |  |
| AB | 357 |  |  | 357 |  |  |  |
| AC | 126 |  |  | 126 |  |  |  |

07:30-07:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 4 | 450 | 0.010 | 4 | 0.0 | 8.073 | A |
| B-A | 247 | 471 | 0.524 | 247 | 1.1 | 16024 | C |
| C-AB | 11 | 625 | 0.018 | 11 | 0.0 | 5.867 | A |
| C-A | 181 |  |  | 181 |  |  |  |
| AB | 357 |  |  | 357 |  |  |  |
| AC | 126 |  |  | 126 |  |  |  |

07:45-08:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 4 | 475 | 0.008 | 4 | 0.0 | 7.637 | A |
| B-A | 201 | 491 | 0.411 | 203 | 0.7 | 12578 | B |
| C-AB | 8 | 620 | 0.013 | 8 | 0.0 | 5.892 | A |
| C-A | 148 |  |  | 148 |  |  |  |
| AB | 291 |  |  | 291 |  |  |  |
| AC | 102 |  |  | 102 |  |  |  |

08:00-08:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathrm{hr})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 3 | 493 | 0.006 | 3 | 0.0 | 7.345 | A |
| B-A | 169 | 505 | 0.334 | 169 | 0.5 | 10.767 | B |
| C-AB | 7 | 617 | 0.011 | 7 | 0.0 | 5.904 | A |
| C-A | 124 |  |  | 124 |  |  |  |
| AB | 244 |  |  | 244 |  |  |  |
| AC | 86 |  | 86 |  |  |  |  |

## Existing Layout - 2025 Base + Dev, PM 1615-1715

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Cranham Road | T-Junction | Two-way |  | 19.21 | C |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| D11 | 2025 Base + Dev | PM 1615-1715 | ONE HOUR | $17: 45$ | $19: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 272 | 100.000 |
| B |  | $\checkmark$ | 397 | 100.000 |
| C |  | $\checkmark$ | 145 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 161 | 111 |
|  | B | 380 | 0 | 17 |
|  | C | 142 | 3 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 5 | 5 |
|  | B | 3 | 0 | 0 |
|  | C | 1 | 0 | 0 |

THE FUTURE

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.04 | 7.12 | 0.0 | A |
| B-A | 0.83 | 40.87 | 4.5 | E |
| C-AB | 0.01 | 5.73 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

17:45-18:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 13 | 594 | 0.022 | 13 | 0.0 | 6.191 | A |
| B-A | 286 | 527 | 0.543 | 282 | 1.1 | 14393 | B |
| C-AB | 3 | 631 | 0.004 | 3 | 0.0 | 5.726 | A |
| C-A | 106 |  |  | 106 |  |  |  |
| AB | 121 |  |  | 121 |  |  |  |
| AC | 84 |  | 84 |  |  |  |  |

18:00-18:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 15 | 566 | 0.027 | 15 | 0.0 | 6.536 | A |
| B-A | 342 | 517 | 0.661 | 339 | 1.8 | 19930 | C |
| C-AB | 3 | 637 | 0.005 | 3 | 0.0 | 5.684 | A |
| C-A | 127 |  |  | 127 |  |  |  |
| AB | 145 |  |  | 145 |  |  |  |
| AC | 100 |  |  | 100 |  |  |  |

18:15-18:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathrm{hr})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 19 | 528 | 0.035 | 19 | 0.0 | 7.074 | A |
| B-A | 418 | 502 | 0.834 | 409 | 4.1 | 35850 | E |
| C-AB | 4 | 644 | 0.007 | 4 | 0.0 | 5.625 | A |
| C-A | 155 |  |  | 155 |  |  |  |
| AB | 177 |  |  | 177 |  |  |  |
| AC | 122 |  |  | 122 |  |  |  |

18:30-18:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 19 | 524 | 0.036 | 19 | 0.0 | 7.116 | A |
| B-A | 418 | 502 | 0.834 | 417 | 4.5 | 40875 | E |
| C-AB | 4 | 644 | 0.007 | 4 | 0.0 | 5.628 | A |
| C-A | 155 |  |  | 155 |  |  |  |
| AB | 177 |  |  | 177 |  |  |  |
| AC | 122 |  |  | 122 |  |  |  |

18:45-19:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r )}$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 15 | 562 | 0.027 | 15 | 0.0 | 6.589 | A |
| B-A | 342 | 517 | 0.661 | 351 | 2.1 | 22866 | C |
| C-AB | 3 | 637 | 0.005 | 3 | 0.0 | 5.686 | A |
| C-A | 127 |  |  | 127 |  |  |  |
| AB | 145 |  |  | 145 |  |  |  |
| AC | 100 |  |  | 100 |  |  |  |

19:00-19:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 13 | 591 | 0.022 | 13 | 0.0 | 6.221 | A |
| B-A | 286 | 527 | 0.543 | 289 | 1.2 | 15345 | C |
| C-AB | 3 | 631 | 0.004 | 3 | 0.0 | 5.727 | A |
| C-A | 106 |  |  | 106 |  |  |  |
| AB | 121 |  |  | 121 |  |  |  |
| AC | 84 |  |  | 84 |  |  |  |

## Existing Layout - 2025 Base + Dev, PM 1800-1900

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Cranham Road | T-Junction | Two-way |  | 4.65 | A |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| D12 | 2025 Base + Dev | PM 1800-1900 | ONE HOUR | $17: 45$ | $19: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 223 | 100.000 |
| B |  | $\checkmark$ | 192 | 100.000 |
| C |  | $\checkmark$ | 81 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 140 | 83 |
|  | B | 185 | 0 | 7 |
|  | C | 70 | 11 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 5 | 1 |
|  | B | 5 | 0 | 0 |
|  | C | 0 | 9 | 0 |

THE FUTURE

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.01 | 5.94 | 0.0 | A |
| B-A | 0.40 | 11.64 | 0.7 | B |
| C-AB | 0.03 | 6.62 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

17:45-18:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 5 | 650 | 0.008 | 5 | 0.0 | 5.579 |  |
| B-A | 139 | 531 | 0.262 | 138 | 0.4 | 9.117 | A |
| C-AB | 9 | 558 | 0.016 | 9 | 0.0 | 6.562 |  |
| C-A | 52 |  |  | 52 |  |  |  |
| AB | 105 |  |  | 105 |  |  |  |
| AC | 62 |  |  | 62 |  |  |  |

18:00-18:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 6 | 635 | 0.010 | 6 | 0.0 | 5.725 |  |
| B-A | 166 | 524 | 0.318 | 166 | 0.5 | 10050 |  |
| C-AB | 11 | 558 | 0.020 | 11 | 0.0 | 6.587 |  |
| C-A | 62 |  |  | 62 |  |  |  |
| AB | 126 |  |  | 75 |  |  |  |
| AC | 75 |  |  |  |  |  |  |

18:15-18:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 8 | 614 | 0.013 | 8 | 0.0 | 5.938 | A |
| B-A | 204 | 513 | 0.397 | 203 | 0.6 | 11584 | B |
| C-AB | 14 | 559 | 0.025 | 14 | 0.0 | 6.617 | A |
| C-A | 75 |  |  | 75 |  |  |  |
| AB | 154 |  |  | 154 |  |  |  |
| AC | 91 |  |  | 91 |  |  |  |

18:30-18:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 8 | 614 | 0.013 | 8 | 0.0 | 5.940 | A |
| B-A | 204 | 513 | 0.397 | 204 | 0.7 | 11639 | B |
| C-AB | 14 | 559 | 0.025 | 14 | 0.0 | 6.614 | A |
| C-A | 75 |  |  | 75 |  |  |  |
| AB | 154 |  |  | 154 |  |  |  |
| AC | 91 |  |  | 91 |  |  |  |

18:45-19:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 6 | 635 | 0.010 | 6 | 0.0 | 5.731 | A |
| B-A | 166 | 524 | 0.318 | 167 | 0.5 | 10.117 | B |
| C-AB | 11 | 558 | 0.020 | 11 | 0.0 | 6.575 | A |
| C-A | 62 |  |  | 62 |  |  |  |
| AB | 126 |  |  | 126 |  |  |  |
| AC | 75 |  | 75 |  |  |  |  |

19:00-19:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 5 | 650 | 0.008 | 5 | 0.0 | 5.584 | A |
| B-A | 139 | 531 | 0.262 | 140 | 0.4 | 9.202 | A |
| C-AB | 9 | 558 | 0.016 | 9 | 0.0 | 6.559 | A |
| C-A | 52 |  |  | 52 |  |  |  |
| AB | 105 |  |  | 105 |  |  |  |
| AC | 62 |  |  | 62 |  |  |  |

## Appendix G2 - Junction Modelling Results B1137 Main Road/ Waltham Road

## Junctions 9

## PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462
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Filename: LSF - MR_WR Junction_2021+2025_DIRECT AM_301121.j9
Path: \lcm-man-002\C̄TB_CHE_eng ITransport Consultancy Projects\Job Folders_606160640215 - Longfield Solar Farml400TechnicallModelling
Report generation date: 30/11/2021 16:29:52
"Existing Layout, B 110\% - 2021 Base, AM 0700-0800
"Existing Layout, B 110\% - 2021 Base, AM 0745-0845
"Existing Layout, B 110\% - 2025 Base, AM 0700-0800
"Existing Layout, B 110\% - 2025 Base, AM 0745-0845

## Summary of junction performance

|  | AM 0700-0800 |  |  |  |  | AM 0745-0845 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Set ID | Queue (Veh) | Delay (s) | RFC | Los | Set ID | Queue (Veh) | Delay (s) | RFC | Los |
|  | Existing Layout, B 110\%-2021 Base |  |  |  |  |  |  |  |  |  |
| Stream B-C | D1 | 5.9 | 142.80 | 0.98 | F | D2 | 7.6 | 138.76 | 0.98 | F |
| Stream B-A |  | 10.3 | 130.54 | 0.97 | F |  | 10.4 | 135.68 | 0.97 | F |
| Stream C-AB |  | 3.3 | 16.80 | 0.73 | C |  | 3.1 | 15.37 | 0.73 | C |
|  | Existing Layout, B 110\% - 2025 Base |  |  |  |  |  |  |  |  |  |
| Stream B-C | D3 | 8.4 | 202.04 | 1.03 | F | D4 | 11.6 | 206.20 | 1.03 | F |
| Stream B-A |  | 15.1 | 179.68 | 1.03 | F |  | 16.1 | 208.54 | 1.03 | F |
| Stream C-AB |  | 3.9 | 18.98 | 0.76 | C |  | 3.6 | 17.36 | 0.76 | C |

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary
File Description

| Title | Main Road/ Waltham Road Junction |
| :--- | :--- |
| Location | As above |
| Site number | 3 |
| Date | $30 / 11 / 2021$ |
| Version |  |
| Status | UPDATED DRAFT |
| Identifier |  |
| Client | Longfield Solar Farm |
| Jobnumber | 60640215 |
| Enumerator | NAlchris.burlton |
| Description |  |

## Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units | Average delay units | Total delay units | Rate of delay units |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| m | kph | Veh | Veh | perHour | s | -Min | perMin |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
| :--- | :---: | :---: | :---: | :---: |
|  |  | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time period length (min) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| D1 | 2021 Base | AM 0700-0800 | DIRECT | $06: 45$ | $08: 15$ | 9 | 15 |
| D2 | 2021 Base | AM 0745-0845 | DIRECT | $07: 30$ | $09: 00$ | 90 |  |
| D3 | 2025 Base | AM 0700-0800 | DIRECT | $06: 45$ | $08: 15$ | 90 | 15 |
| D4 | 2025 Base | AM 0745-0845 | DIRECT | $07: 30$ | $09: 00$ | 90 | 15 |

Analysis Set Details

| ID | Name | Network flow scaling factor (\%) |
| :---: | :---: | :---: |
| A1 | Existing Layout, B 110\% | 100000 |

## Existing Layout, B 110\% - 2021 Base, AM 0700-0800

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Main Road/ Waltham Road | T-Junction | Two-way |  | 43.46 | $E$ |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Arms

## Arms

| Arm | Name | Description | Arm type |
| :---: | :--- | :--- | :--- |
| A | Main Road (West) |  | Major |
| B | Waltham Road |  | Minor |
| C | Main Road (East) |  | Major |

## Major Arm Geometry

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| C | 6.30 |  |  | 250.0 | $\checkmark$ | 0.00 |

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

## Minor Arm Geometry

| Arm | Minor arm <br> type | Width at give- <br> way $(\mathbf{m})$ | Width at <br> $\mathbf{5 m}(\mathbf{m})$ | Width at <br> $\mathbf{1 0 m}(\mathbf{m})$ | Width at <br> $\mathbf{1 5 m}(\mathbf{m})$ | Width at <br> $\mathbf{2 0 m}(\mathbf{m})$ | Estimate flare <br> length | Flare length <br> $\mathbf{( P C U})$ | Visibility to <br> left $(\mathbf{m})$ | Visibility to <br> right $(\mathbf{m})$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B | One lane plus <br> flare | 10.00 | 6.70 | 4.80 | 3.90 | 3.40 | $\checkmark$ | 2.00 | 39 | 72 |

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

| Stream | Intercept <br> (Veh/hr) | Slope <br> for <br> AB | Slope <br> for <br> AC | Slope <br> for <br> C-A | Slope <br> for <br> C-B |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B-A | 566 | 0.102 | 0.257 | 0.162 | 0.368 |
| B-C | 696 | 0.105 | 0.266 | - | - |
| C-B | 719 | 0.275 | 0.275 | - | - |

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time period length (min) | Time segment length (min) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| D1 | 2021 Base | AM 0700-0800 | DIRECT | 06:45 | 08:15 | 90 | 15 |


| Vehicle mix varies over time | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
| :---: | :---: | :---: | :---: |
| $\checkmark$ | HV Percentages | 2.00 | $\checkmark$ |

Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 100.000 |
| B |  | $\checkmark$ | 110.000 |
| C |  | $\checkmark$ | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

06:45-07:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 104 | 88 |
|  | B | 124 | 0 | 88 |
|  | C | 144 | 292 | 0 |

Demand (Veh/hr)

07:00-07:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 104 | 88 |
|  | B | 124 | 0 | 88 |
|  | C | 144 | 292 | 0 |

Demand (Veh/hr)

07:15-07:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 148 | 136 |
|  | B | 116 | 0 | 60 |
|  | C | 252 | 364 | 0 |

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 148 | 112 |
|  | B | 180 | 0 | 96 |
|  | C | 284 | 392 | 0 |

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 164 | 232 |
|  | B | 236 | 0 | 128 |
|  | C | 324 | 332 | 0 |

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 172 | 220 |
|  | B | 276 | 0 | 148 |
|  | C | 352 | 284 | 0 |

Vehicle Mix

06:45-07:00
Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | $\mathbf{B}$ | $\mathbf{C}$ |
|  | A | 0 | 4 | 9 |
|  | B | 6 | 0 | 23 |
|  | C | 6 | 3 | 0 |

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 4 | 9 |
|  | B | 6 | 0 | 23 |
|  | C | 6 | 3 | 0 |

Heavy Vehicle Percentages

07:15-07:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 5 | 6 |
|  | B | 7 | 0 | 13 |
|  | C | 6 | 3 | 0 |

Heavy Vehicle Percentages

07:30-07:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 7 |
|  | B | 7 | 0 | 13 |
|  | C | 4 | 0 | 0 |

Heavy Vehicle Percentages

07:45-08:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 5 | 5 |
|  | B | 10 | 0 | 6 |
|  | C | 4 | 5 | 0 |

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 2 |
|  | B | 0 | 0 | 8 |
|  | C | 2 | 4 | 0 |

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.98 | 142.80 | 5.9 | F |
| B-A | 0.97 | 130.54 | 10.3 | F |
| C-AB | 0.73 | 16.80 | 3.3 | C |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

THE FUTURE

## Main Results for each time segment

06:45-07:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 97 | 477 | 0.203 | 96 | 0.3 | 9.417 |  |
| B-A | 136 | 371 | 0.367 | 134 | 0.6 | 15035 |  |
| C-AB | 363 | 733 | 0.496 | 359 | 1.1 | 9.551 |  |
| C-A | 73 |  |  | 73 |  |  |  |
| AB | 104 |  | 104 |  |  |  |  |
| AC | 88 |  | 88 |  |  |  |  |

07:00-07:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh $/ \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 97 | 475 | 0.204 | 97 | 0.3 | 9.513 |  |
| B-A | 136 | 370 | 0.369 | 136 | 0.6 | 15391 | C |
| C-AB | 364 | 733 | 0.497 | 364 | 1.1 | 9.780 | A |
| C-A | 72 |  |  | 72 |  |  |  |
| AB | 104 |  |  | 104 |  |  |  |
| AC | 88 |  |  | 88 |  |  |  |

07:15-07:30

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 66 | 477 | 0.138 | 66 | 0.2 | 9.303 |  |
| B-A | 128 | 320 | 0.399 | 127 | 0.6 | 18547 | C |
| C-AB | 540 | 779 | 0.694 | 534 | 2.6 | 14517 | B |
| C-A | 76 |  |  | 76 |  |  |  |
| AB | 148 |  |  | 148 |  |  |  |
| AC | 136 |  |  | 136 |  |  |  |

07:30-07:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh $/ \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 106 | 400 | 0.264 | 105 | 0.4 | 12.153 | B |
| B-A | 198 | 311 | 0.636 | 194 | 1.6 | 29.779 | D |
| C-AB | 603 | 825 | 0.730 | 600 | 3.3 | 16.799 | C |
| C-A | 73 |  |  | 73 |  |  |  |
| AB | 148 |  |  | 148 |  |  |  |
| AC | 112 |  |  | 112 |  |  |  |

07:45-08:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 141 | 173 | 0.814 | 129 | 3.2 | 78393 | F |
| B-A | 260 | 274 | 0.948 | 242 | 6.0 | 79098 | F |
| C-AB | 568 | 796 | 0.715 | 569 | 3.2 | 15.482 |  |
| C-A | 88 |  |  | 88 |  |  |  |
| AB | 164 |  |  | 164 |  |  |  |
| AC | 232 |  |  | 232 |  |  |  |

08:00-08:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 163 | 167 | 0.976 | 151 | 6.2 | 142.797 | F |
| B-A | 304 | 311 | 0.968 | 284 | 10.9 | 130.539 | F |
| C-AB | 504 | 825 | 0.610 | 507 | 2.3 | 11875 | B |
| C-A | 132 |  |  | 132 |  |  |  |
| AB | 172 |  |  | 172 |  |  |  |
| AC | 220 |  |  |  |  |  |  |

## Existing Layout, B 110\%-2021 Base, AM 0745-0845

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Main Road/ Waltham Road | T-Junction | Two-way |  | 48.17 | $E$ |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time period length (min) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| D2 | 2021 Base | AM $0745-0845$ | DIRECT | $07: 30$ | $09: 00$ | 90 | 15 |


| Vehicle mix varies over time | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
| :---: | :---: | :---: | :---: |
| $\checkmark$ | HV Percentages | 2.00 | $\checkmark$ |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 100.000 |
| B |  | $\checkmark$ | 110.000 |
| C |  | $\checkmark$ | 100.000 |

## Origin-Destination Data

|  | Demand (Veh/hr) |
| :---: | :---: |
| 07:30-07:45 |  To    <br> From  A B C <br>  A 0 148 112 <br>  B 180 0 96 <br>   C 284 392 |

Demand (Veh/hr)

07:45-08:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 164 | 232 |
|  | B | 236 | 0 | 128 |
|  | C | 324 | 332 | 0 |

Demand (Veh/hr)

08:00-08:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 172 | 220 |
|  | B | 276 | 0 | 148 |
|  | C | 352 | 284 | 0 |

08:15-08:30
Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 192 | 172 |
|  | B | 232 | 0 | 188 |
|  | C | 272 | 320 | 0 |

Demand (Veh/hr)

08:30-08:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 220 | 228 |
|  | B | 216 | 0 | 128 |
|  | C | 196 | 248 | 0 |

Demand (Veh/hr)

08:45-09:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 172 | 168 |
|  | B | 256 | 0 | 184 |
|  | C | 228 | 184 | 0 |

## Vehicle Mix

07:30-07:45
Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 7 |
|  | B | 7 | 0 | 13 |
|  | C | 4 | 0 | 0 |

Heavy Vehicle Percentages

07:45-08:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | $\mathbf{A}$ | $\mathbf{B}$ | $\mathbf{C}$ |
|  | $\mathbf{A}$ | 0 | 5 | 5 |
|  | $\mathbf{B}$ | 10 | 0 | 6 |
|  | C | 4 | 5 | 0 |

Heavy Vehicle Percentages

08:00-08:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | $\mathbf{B}$ | $\mathbf{C}$ |
|  | A | 0 | 0 | 2 |
|  | B | 0 | 0 | 8 |
|  | C | 2 | 4 | 0 |

Heavy Vehicle Percentages

08:15-08:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 2 | 0 |
|  | B | 7 | 0 | 13 |
|  | C | 4 | 4 | 0 |

Heavy Vehicle Percentages

08:30-08:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 4 | 5 |
|  | B | 4 | 0 | 9 |
|  | C | 4 | 8 | 0 |

THE FUTURE

Heavy Vehicle Percentages

08:45-09:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 5 | 2 |
|  | B | 0 | 0 | 11 |
|  | C | 4 | 13 | 0 |

## Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.98 | 138.76 | 7.6 | F |
| B-A | 0.97 | 135.68 | 10.4 | F |
| C-AB | 0.73 | 15.37 | 3.1 | C |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

## 07:30-07:45

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 106 | 408 | 0.259 | 104 | 0.3 | 11811 | B |
| B-A | 198 | 315 | 0.630 | 192 | 1.6 | 28091 | D |
| C-AB | 598 | 823 | 0.727 | 586 | 3.1 | 14.764 | B |
| C-A | 78 |  |  | 78 |  |  |  |
| AB | 148 |  |  | 148 |  |  |  |
| AC | 112 |  |  | 112 |  |  |  |

07:45-08:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 141 | 174 | 0.807 | 130 | 3.1 | 76604 | F |
| B-A | 260 | 274 | 0.947 | 242 | 5.9 | 78568 | F |
| C-AB | 568 | 795 | 0.715 | 568 | 3.1 | 15367 | C |
| C-A | 88 |  |  | 88 |  |  |  |
| AB | 164 |  |  | 164 |  |  |  |
| AC | 232 |  |  | 232 |  |  |  |

08:00-08:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 163 | 167 | 0.977 | 151 | 6.1 | 138.760 | F |
| B-A | 304 | 311 | 0.967 | 284 | 10.9 | 130.408 | F |
| C-AB | 503 | 825 | 0.610 | 507 | 2.3 | 11832 | B |
| C-A | 133 |  |  | 133 |  |  |  |
| AB | 172 |  |  | 172 |  |  |  |
| AC | 220 |  |  | 220 |  |  |  |

08:15-08:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 207 | 218 | 0.953 | 202 | 7.4 | 137.211 | F |
| B-A | 255 | 282 | 0.916 | 259 | 9.8 | 135.682 | F |
| C-AB | 497 | 775 | 0.641 | 497 | 2.3 | 12972 |  |
| C-A | 95 |  |  | 95 |  |  |  |
| AB | 192 |  |  | 192 |  |  |  |
| AC | 172 |  |  | 172 |  |  |  |

08:30-08:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 141 | 286 | 0.489 | 166 | 1.1 | 37.195 |  |
| B-A | 238 | 324 | 0.730 | 263 | 3.4 | 73248 |  |
| C-AB | 351 | 683 | 0.514 | 355 | 1.3 | 10807 |  |
| C-A | 93 |  |  | 93 |  |  |  |
| AB | 220 |  | 220 |  |  |  |  |
| AC | 228 |  | 228 |  |  |  |  |

08:45-09:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 202 | 341 | 0.593 | 201 | 1.4 | 25024 |  |
| B-A | 282 | 366 | 0.769 | 281 | 3.4 | 45344 |  |
| C-AB | 274 | 708 | 0.387 | 275 | 0.8 | 8.177 |  |
| C-A | 138 |  |  | 138 |  |  |  |
| AB | 172 |  |  | 172 |  |  |  |
| AC | 168 |  |  |  |  |  |  |

## Existing Layout, B 110\% - 2025 Base, AM 0700-0800

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Main Road/ Waltham Road | T-Junction | Two-way |  | 5880 | F |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time period length (min) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| D3 | 2025 Base | AM $0700-0800$ | DIRECT | $06: 45$ | $08: 15$ | 90 | 15 |


| Vehicle mix varies over time | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
| :---: | :---: | :---: | :---: |
| $\checkmark$ | HV Percentages | 2.00 | $\checkmark$ |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 100.000 |
| B |  | $\checkmark$ | 110.000 |
| C |  | $\checkmark$ | 100.000 |

## Origin-Destination Data

06:45-07:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 107 | 91 |
|  | B | 128 | 0 | 91 |
|  | C | 149 | 302 | 0 |

Demand (Veh/hr)

07:00-07:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 107 | 91 |
|  | B | 128 | 0 | 91 |
|  | C | 149 | 302 | 0 |

Demand (Veh/hr)

07:15-07:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 153 | 140 |
|  | B | 120 | 0 | 62 |
|  | C | 260 | 376 | 0 |

Demand (Veh/hr)

07:30-07:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 153 | 116 |
|  | B | 186 | 0 | 99 |
|  | C | 293 | 405 | 0 |

Demand (Veh/hr)

07:45-08:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 169 | 240 |
|  | B | 244 | 0 | 132 |
|  | C | 335 | 343 | 0 |

Demand (Veh/hr)

08:00-08:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 178 | 227 |
|  | B | 285 | 0 | 153 |
|  | C | 363 | 293 | 0 |

## Vehicle Mix

06:45-07:00
Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 4 | 9 |
|  | B | 6 | 0 | 23 |
|  | C | 6 | 3 | 0 |

Heavy Vehicle Percentages

07:00-07:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 4 | 9 |
|  | B | 6 | 0 | 23 |
|  | C | 6 | 3 | 0 |

Heavy Vehicle Percentages

07:15-07:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 5 | 6 |
|  | B | 7 | 0 | 13 |
|  | C | 6 | 3 | 0 |

Heavy Vehicle Percentages

07:30-07:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | $\mathbf{B}$ | $\mathbf{C}$ |
|  | A | 0 | 0 | 7 |
|  | B | 7 | 0 | 13 |
|  | C | 4 | 0 | 0 |

Heavy Vehicle Percentages

07:45-08:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 5 | 5 |
|  | B | 10 | 0 | 6 |
|  | C | 4 | 5 | 0 |

THE FUTURE

Heavy Vehicle Percentages

08:00-08:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 2 |
|  | B | 0 | 0 | 8 |
|  | C | 2 | 4 | 0 |

## Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 1.03 | 202.04 | 8.4 | F |
| B-A | 1.03 | 179.68 | 15.1 | F |
| C-AB | 0.76 | 18.98 | 3.9 | C |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

## 06:45-07:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 100 | 472 | 0.212 | 99 | 0.3 | 9.619 |  |
| B-A | 141 | 366 | 0.385 | 138 | 0.6 | 15679 | C |
| C-AB | 379 | 734 | 0.516 | 374 | 1.2 | 9.901 | A |
| C-A | 72 |  |  | 72 |  |  |  |
| AB | 107 |  |  | 107 |  |  |  |
| AC | 91 |  | 91 |  |  |  |  |

07:00-07:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 100 | 470 | 0.213 | 100 | 0.3 | 9.730 | A |
| B-A | 141 | 364 | 0.387 | 141 | 0.6 | 16097 | C |
| C-AB | 380 | 735 | 0.517 | 380 | 1.2 | 10.167 | B |
| C-A | 71 |  |  | 71 |  |  |  |
| AB | 107 |  |  | 107 |  |  |  |
| AC | 91 |  |  | 91 |  |  |  |

07:15-07:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 68 | 469 | 0.145 | 69 | 0.2 | 9.541 | A |
| B-A | 132 | 312 | 0.423 | 132 | 0.7 | 19.740 | C |
| C-AB | 566 | 782 | 0.724 | 558 | 3.0 | 15849 | C |
| C-A | 70 |  |  | 70 |  |  |  |
| AB | 153 |  |  | 153 |  |  |  |
| AC | 140 |  |  | 140 |  |  |  |

07:30-07:45

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 109 | 378 | 0.288 | 108 | 0.4 | 13277 | B |
| B-A | 205 | 303 | 0.675 | 200 | 1.9 | 33545 | D |
| C-AB | 632 | 829 | 0.763 | 629 | 3.9 | 18984 | C |
| C-A | 66 |  |  | 66 |  |  |  |
| AB | 153 |  |  | 153 |  |  |  |
| AC | 116 |  |  | 116 |  |  |  |

07:45-08:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 145 | 141 | 1.029 | 120 | 6.6 | 141.018 | F |
| B-A | 268 | 265 | 1.014 | 243 | 8.1 | 99349 | F |
| C-AB | 600 | 801 | 0.750 | 600 | 3.9 | 17556 | C |
| C-A | 78 |  |  | 78 |  |  |  |
| AB | 169 |  |  | 169 |  |  |  |
| AC | 240 |  |  | 240 |  |  |  |

08:00-08:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 168 | 170 | 0.996 | 160 | 8.8 | 202.036 | F |
| B-A | 314 | 300 | 1.032 | 282 | 16.0 | 179.685 | F |
| C-AB | 531 | 830 | 0.639 | 536 | 2.6 | 12936 | B |
| C-A | 125 |  |  | 125 |  |  |  |
| AB | 178 |  |  | 178 |  |  |  |
| AC | 227 |  | 227 |  |  |  |  |

## Existing Layout, B 110\% - 2025 Base, AM 0745-0845

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Main Road/ Waltham Road | T-Junction | Two-way |  | 71.12 |  |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time period length (min) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| D4 | 2025 Base | AM $0745-0845$ | DIRECT | $07: 30$ | $09: 00$ | 90 | 15 |


| Vehicle mix varies over time | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
| :---: | :---: | :---: | :---: |
| $\checkmark$ | HV Percentages | 2.00 | $\checkmark$ |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 100.000 |
| B |  | $\checkmark$ | 110.000 |
| C |  | $\checkmark$ | 100.000 |

## Origin-Destination Data

|  | Demand (Veh/hr) |
| :---: | :---: |
| 07:30-07:45 |  To    <br> From  A B C <br>  A 0 153 116 <br>  B 186 0 99 <br>   C 293 405 |

Demand (Veh/hr)

07:45-08:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 169 | 240 |
|  | B | 244 | 0 | 132 |
|  | C | 335 | 343 | 0 |

Demand (Veh/hr)

08:00-08:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 178 | 227 |
|  | B | 285 | 0 | 153 |
|  | C | 363 | 293 | 0 |

08:15-08:30
Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 198 | 178 |
|  | B | 240 | 0 | 194 |
|  | C | 281 | 330 | 0 |

Demand (Veh/hr)

08:30-08:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 227 | 235 |
|  | B | 223 | 0 | 132 |
|  | C | 202 | 256 | 0 |

Demand (Veh/hr)

08:45-09:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 178 | 173 |
|  | B | 264 | 0 | 190 |
|  | C | 235 | 190 | 0 |

## Vehicle Mix

07:30-07:45
Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 7 |
|  | B | 7 | 0 | 13 |
|  | C | 4 | 0 | 0 |

Heavy Vehicle Percentages

07:45-08:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | $\mathbf{A}$ | $\mathbf{B}$ | $\mathbf{C}$ |
|  | $\mathbf{A}$ | 0 | 5 | 5 |
|  | $\mathbf{B}$ | 10 | 0 | 6 |
|  | C | 4 | 5 | 0 |

Heavy Vehicle Percentages

08:00-08:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | $\mathbf{B}$ | $\mathbf{C}$ |
|  | A | 0 | 0 | 2 |
|  | B | 0 | 0 | 8 |
|  | C | 2 | 4 | 0 |

Heavy Vehicle Percentages

08:15-08:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 2 | 0 |
|  | B | 7 | 0 | 13 |
|  | C | 4 | 4 | 0 |

Heavy Vehicle Percentages

08:30-08:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 4 | 5 |
|  | B | 4 | 0 | 9 |
|  | C | 4 | 8 | 0 |

THE FUTURE

Heavy Vehicle Percentages

08:45-09:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 5 | 2 |
|  | B | 0 | 0 | 11 |
|  | C | 4 | 13 | 0 |

## Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 1.03 | 206.20 | 11.6 | F |
| B-A | 1.03 | 208.54 | 16.1 | F |
| C-AB | 0.76 | 17.36 | 3.6 | C |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

## 07:30-07:45

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 109 | 388 | 0.281 | 107 | 0.4 | 12.770 | B |
| B-A | 205 | 307 | 0.667 | 197 | 1.8 | 31247 | D |
| C-AB | 627 | 827 | 0.759 | 613 | 3.6 | 16262 | C |
| C-A | 71 |  |  | 71 |  |  |  |
| AB | 153 |  |  | 153 |  |  |  |
| AC | 116 |  |  | 116 |  |  |  |

07:45-08:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 145 | 141 | 1.028 | 120 | 6.6 | 140.290 | F |
| B-A | 268 | 265 | 1.013 | 243 | 8.0 | 98509 | F |
| C-AB | 599 | 800 | 0.749 | 599 | 3.6 | 17359 | C |
| C-A | 79 |  |  | 79 |  |  |  |
| AB | 169 |  |  | 169 |  |  |  |
| AC | 240 |  | 240 |  |  |  |  |

08:00-08:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 168 | 170 | 0.995 | 160 | 8.8 | 196.244 | F |
| B-A | 314 | 301 | 1.031 | 282 | 15.9 | 179.355 | F |
| C-AB | 530 | 830 | 0.639 | 535 | 2.6 | 12854 | B |
| C-A | 126 |  |  | 126 |  |  |  |
| AB | 178 |  |  | 178 |  |  |  |
| AC | 227 |  |  | 227 |  |  |  |

08:15-08:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 213 | 211 | 1.021 | 203 | 11.3 | 206.200 | F |
| B-A | 264 | 278 | 0.964 | 265 | 15.7 | 208.543 | F |
| C-AB | 521 | 779 | 0.669 | 521 | 2.6 | 14036 | B |
| C-A | 90 |  |  | 90 |  |  |  |
| AB | 198 |  | 198 |  |  |  |  |
| AC | 178 |  |  | 178 |  |  |  |

08:30-08:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 145 | 189 | 0.760 | 170 | 5.0 | 180.800 |  |
| B-A | 245 | 306 | 0.796 | 284 | 6.1 | 147.332 |  |
| C-AB | 367 | 684 | 0.536 | 372 | 1.4 | 11373 |  |
| C-A | 91 |  |  | 91 |  |  |  |
| AB | 227 |  | 227 |  |  |  |  |
| AC | 235 |  | 235 |  |  |  |  |

08:45-09:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 209 | 291 | 0.720 | 218 | 2.8 | 52055 |  |
| B-A | 290 | 346 | 0.835 | 291 | 6.1 | 72892 |  |
| C-AB | 286 | 710 | 0.403 | 289 | 0.9 | 8.387 |  |
| C-A | 139 |  |  | 139 |  |  |  |
| AB | 178 |  |  | 178 |  |  |  |
| AC | 173 |  |  |  |  |  |  |

## Junctions 9

## PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462
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Filename: LSF - MR_WR Junction_2021+2025_DIRECT PM_301121.j9
Path: \lcm-man-002\C̄TB_CHE_eng ITransport Consultancy Projects\Job Folders_606160640215 - Longfield Solar Farml400TechnicallModelling
Report generation date: 30/11/2021 16:32:19
"Existing Layout, B 95\% - 2021 Base, PM 1645-1745
"Existing Layout, B 95\% - 2021 Base, PM 1800-1900
"Existing Layout, B 95\% - 2025 Base, PM 1645-1745
"Existing Layout, B 95\%-2025 Base, PM 1800-1900

## Summary of junction performance

|  | PM 1645-1745 |  |  |  |  | PM 1800-1900 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Set ID | Queue (Veh) | Delay (s) | RFC | LOS | Set ID | Queue (Veh) | Delay (s) | RFC | LOS |
|  | Existing Layout, B 95\% - 2021 Base |  |  |  |  |  |  |  |  |  |
| Stream B-C | D1 | 4.9 | 46.62 | 0.88 | E | D2 | 0.7 | 11.85 | 0.40 | B |
| Stream B-A |  | 5.1 | 66.03 | 0.90 | F |  | 1.2 | 21.24 | 0.57 | C |
| Stream C-AB |  | 0.9 | 7.45 | 0.38 | A |  | 0.6 | 6.31 | 0.31 | A |
|  | Existing Layout, B 95\%-2025 Base |  |  |  |  |  |  |  |  |  |
| Stream B-C | D3 | 9.6 | 117.27 | 0.99 | F | D4 | 0.7 | 12.68 | 0.43 | B |
| Stream B-A |  | 8.2 | 135.46 | 1.00 | F |  | 1.4 | 23.04 | 0.60 | C |
| Stream C-AB |  | 0.9 | 7.62 | 0.40 | A |  | 0.7 | 6.41 | 0.32 | A |

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary
File Description

| Title | Main Road/ Waltham Road Junction |
| :--- | :--- |
| Location | As above |
| Site number | 3 |
| Date | $30 / 11 / 2021$ |
| Version |  |
| Status | UPDATED DRAFT |
| Identifier |  |
| Client | Longfield Solar Farm |
| Jobnumber | 60640215 |
| Enumerator | NAlchris.burlton |
| Description |  |

## Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units | Average delay units | Total delay units | Rate of delay units |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| m | kph | Veh | Veh | perHour | s | -Min | perMin |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
| :--- | :---: | :---: | :---: | :---: |
|  |  | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time period length (min) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| D1 | 2021 Base | PM 1645-1745 | DIRECT | $16: 30$ | $18: 00$ | 90 | 15 |
| D2 | 2021 Base | PM 1800-1900 | DIRECT | $17: 45$ | $19: 15$ | 90 | 15 |
| D3 | 2025 Base | PM 1645-1745 | DIRECT | $16: 30$ | $18: 00$ | 90 | 15 |
| D4 | 2025 Base | PM 1800-1900 | DIRECT | $17: 45$ | $19: 15$ | 90 | 15 |

Analysis Set Details

| ID | Name | Network flow scaling factor (\%) |
| :---: | :---: | :---: |
| A1 | Existing Layout, B 95\% | 100.000 |

## Existing Layout, B 95\% - 2021 Base, PM 1645-1745

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Main Road/ Waltham Road | T-Junction | Two-way |  | 2154 | $C$ |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Arms

## Arms

| Arm | Name | Description | Arm type |
| :---: | :--- | :--- | :--- |
| A | Main Road (West) |  | Major |
| B | Waltham Road |  | Minor |
| C | Main Road (East) |  | Major |

## Major Arm Geometry

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| C | 6.30 |  |  | 250.0 | $\checkmark$ | 0.00 |

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

## Minor Arm Geometry

| Arm | Minor arm <br> type | Width at give- <br> way $(\mathbf{m})$ | Width at <br> $\mathbf{5 m}(\mathbf{m})$ | Width at <br> $\mathbf{1 0 m}(\mathbf{m})$ | Width at <br> $\mathbf{1 5 m}(\mathbf{m})$ | Width at <br> $\mathbf{2 0 m}(\mathbf{m})$ | Estimate flare <br> length | Flare length <br> $(\mathbf{P C U})$ | Visibility to <br> left (m) | Visibility to <br> right $(\mathbf{m})$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{B}$ | One lane plus <br> flare | 10.00 | 6.70 | 4.80 | 3.90 | 3.40 | $\checkmark$ | 2.00 | 39 | 72 |

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

| Stream | Intercept <br> (Veh/hr) | Slope <br> for <br> AB | Slope <br> for <br> AC | Slope <br> for <br> C-A | Slope <br> for <br> C-B |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B-A | 543 | 0.098 | 0.247 | 0.155 | 0.353 |
| B-C | 725 | 0.110 | 0.277 | - | - |
| C-B | 719 | 0.275 | 0.275 | - | - |

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time period length (min) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| D1 | 2021 Base | PM 1645-1745 | DIRECT | $16: 30$ | $18: 00$ | 90 |  |


| Vehicle mix varies over time | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
| :---: | :---: | :---: | :---: |
| $\checkmark$ | HV Percentages | 2.00 | $\checkmark$ |

Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 100.000 |
| B |  | $\checkmark$ | 95.000 |
| C |  | $\checkmark$ | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

16:30-16:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 88 | 260 |
|  | B | 268 | 0 | 344 |
|  | C | 300 | 180 | 0 |

Demand (Veh/hr)

16:45-17:00

17:00-17:15
Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 148 | 360 |
|  | B | 240 | 0 | 300 |
|  | C | 268 | 152 | 0 |

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 124 | 344 |
|  | B | 236 | 0 | 332 |
|  | C | 348 | 152 | 0 |

Demand (Veh/hr)


Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 136 | 228 |
|  | B | 220 | 0 | 204 |
|  | C | 316 | 156 | 0 |

Vehicle Mix

16:30-16:45
Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | $\mathbf{B}$ | $\mathbf{C}$ |
|  | A | 0 | 0 | 0 |
|  | B | 4 | 0 | 5 |
|  | C | 4 | 9 | 0 |

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 1 |
|  | B | 1 | 0 | 0 |
|  | C | 0 | 0 | 0 |

Heavy Vehicle Percentages

17:00-17:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 5 | 2 |
|  | B | 2 | 0 | 0 |
|  | C | 1 | 8 | 0 |

Heavy Vehicle Percentages

17:15-17:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 0 |
|  | B | 2 | 0 | 2 |
|  | C | 1 | 0 | 0 |

Heavy Vehicle Percentages

17:30-17:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 3 |
|  | B | 0 | 0 | 0 |
|  | C | 1 | 0 | 0 |

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 4 |
|  | B | 0 | 0 | 2 |
|  | C | 3 | 0 | 0 |

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.88 | 46.62 | 4.9 | E |
| B-A | 0.90 | 66.03 | 5.1 | F |
| C-AB | 0.38 | 7.45 | 0.9 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

THE FUTURE

## Main Results for each time segment

16:30-16:45

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 327 | 373 | 0.875 | 308 | 4.7 | 46616 | E |
| B-A | 255 | 282 | 0.903 | 235 | 5.0 | 62024 | F |
| C-AB | 294 | 773 | 0.381 | 291 | 0.8 | 7.452 | A |
| C-A | 186 |  |  | 186 |  |  |  |
| AB | 88 |  |  | 88 |  |  |  |
| AC | 260 |  |  | 260 |  |  |  |

16:45-17:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 258 | 373 | 0.690 | 266 | 2.7 | 39.125 | E |
| B-A | 255 | 323 | 0.786 | 257 | 4.5 | 60295 | F |
| C-AB | 270 | 810 | 0.334 | 271 | 0.8 | 7.076 | A |
| C-A | 202 |  |  | 202 |  |  |  |
| AB | 120 |  |  | 120 |  |  |  |
| AC | 280 |  |  | 280 |  |  |  |

17:00-17:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 285 | 384 | 0.742 | 285 | 2.7 | 35938 | E |
| B-A | 228 | 294 | 0.777 | 230 | 3.9 | 58.437 | F |
| C-AB | 243 | 722 | 0.337 | 243 | 0.7 | 7.260 | A |
| C-A | 177 |  |  | 177 |  |  |  |
| AB | 148 |  |  | 148 |  |  |  |
| AC | 360 |  |  | 360 |  |  |  |

17:15-17:30

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh $/ \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 315 | 390 | 0.810 | 312 | 3.5 | 42.416 | E |
| B-A | 224 | 277 | 0.809 | 224 | 3.9 | 66033 | F |
| C-AB | 265 | 823 | 0.322 | 265 | 0.7 | 6.686 | A |
| C-A | 235 |  |  | 235 |  |  |  |
| AB | 124 |  |  | 124 |  |  |  |
| AC | 344 |  |  | 344 |  |  |  |

17:30-17:45

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 277 | 437 | 0.634 | 284 | 1.9 | 25003 | D |
| B-A | 220 | 314 | 0.701 | 225 | 2.7 | 44091 | E |
| C-AB | 317 | 836 | 0.379 | 316 | 0.9 | 6.941 | A |
| C-A | 215 |  |  | 215 |  |  |  |
| AB | 144 |  |  | 144 |  |  |  |
| AC | 260 |  |  | 260 |  |  |  |

17:45-18:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 194 | 481 | 0.403 | 199 | 0.7 | 12.735 | B |
| B-A | 209 | 367 | 0.569 | 214 | 1.4 | 24269 | C |
| C-AB | 255 | 822 | 0.310 | 256 | 0.6 | 6.353 | A |
| C-A | 217 |  |  | 217 |  |  |  |
| AB | 136 |  |  | 136 |  |  |  |
| AC | 228 |  |  | 228 |  |  |  |

## Existing Layout, B 95\% - 2021 Base, PM 1800-1900

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Main Road/ Waltham Road | T-Junction | Two-way |  | 631 | A |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time period length (min) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| D2 | 2021 Base | PM 1800-1900 | DIRECT | $17: 45$ | $19: 15$ | 90 | 15 |


| Vehicle mix varies over time | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
| :---: | :---: | :---: | :---: |
| $\checkmark$ | HV Percentages | 2.00 | $\checkmark$ |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 100.000 |
| B |  | $\checkmark$ | 95.000 |
| C |  | $\checkmark$ | 100.000 |

## Origin-Destination Data

|  | Demand (Veh/hr) |
| :---: | :---: |
| 17:45-18:00 | To     <br>   A B C <br>  A 0 136 228 <br>  From 220 0 204 <br>  C 316 156 0 |

18:00-18:15
Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 108 | 244 |
|  | B | 192 | 0 | 232 |
|  | C | 236 | 80 | 0 |

Demand (Veh/hr)

18:15-18:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 116 | 240 |
|  | B | 144 | 0 | 204 |
|  | C | 204 | 88 | 0 |

## Demand (Veh/hr)

18:30-18:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 84 | 184 |
|  | B | 120 | 0 | 148 |
|  | C | 176 | 124 | 0 |

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 60 | 136 |
|  | B | 88 | 0 | 88 |
|  | C | 136 | 88 | 0 |

Demand (Veh/hr)

19:00-19:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 60 | 136 |
|  | B | 88 | 0 | 88 |
|  | C | 136 | 88 | 0 |

## Vehicle Mix

17:45-18:00
Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 4 |
|  | B | 0 | 0 | 2 |
|  | C | 3 | 0 | 0 |

Heavy Vehicle Percentages

18:00-18:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | $\mathbf{B}$ | $\mathbf{C}$ |
|  | $\mathbf{A}$ | 0 | 0 | 2 |
|  | $\mathbf{B}$ | 0 | 0 | 0 |
|  | C | 2 | 10 | 0 |

Heavy Vehicle Percentages

18:15-18:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | $\mathbf{B}$ | $\mathbf{C}$ |
|  | A | 0 | 3 | 2 |
|  | B | 0 | 0 | 0 |
|  | C | 0 | 5 | 0 |

Heavy Vehicle Percentages

18:30-18:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | $\mathbf{B}$ | $\mathbf{C}$ |
|  | A | 0 | 5 | 2 |
|  | B | 3 | 0 | 0 |
|  | C | 5 | 3 | 0 |

Heavy Vehicle Percentages

18:45-19:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 0 |
|  | B | 0 | 0 | 0 |
|  | C | 0 | 0 | 0 |

THE FUTURE

Heavy Vehicle Percentages

19:00-19:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 0 |
|  | B | 0 | 0 | 0 |
|  | C | 0 | 0 | 0 |

## Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.40 | 11.85 | 0.7 | B |
| B-A | 0.57 | 21.24 | 1.2 | C |
| C-AB | 0.31 | 6.31 | 0.6 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

17:45-18:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 194 | 493 | 0.393 | 191 | 0.6 | 11854 | B |
| B-A | 209 | 369 | 0.566 | 204 | 1.2 | 21239 | C |
| C-AB | 254 | 821 | 0.309 | 251 | 0.6 | 6.310 | A |
| C-A | 218 |  |  | 218 |  |  |  |
| AB | 136 |  |  | 136 |  |  |  |
| AC | 228 |  |  | 228 |  |  |  |

18:00-18:15

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 220 | 546 | 0.404 | 220 | 0.7 | 11218 | B |
| B-A | 182 | 397 | 0.460 | 184 | 0.9 | 17025 | C |
| C-AB | 119 | 726 | 0.164 | 121 | 0.3 | 5.691 | A |
| C-A | 197 |  |  | 197 |  |  |  |
| AB | 108 |  |  | 108 |  |  |  |
| AC | 244 |  |  | 244 |  |  |  |

18:15-18:30

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 194 | 585 | 0.331 | 194 | 0.5 | 9.228 | A |
| B-A | 137 | 400 | 0.342 | 138 | 0.5 | 13829 | B |
| C-AB | 123 | 726 | 0.169 | 123 | 0.3 | 6.095 | A |
| C-A | 169 |  |  | 169 |  |  |  |
| AB | 116 |  |  | 116 |  |  |  |
| AC | 240 |  |  | 240 |  |  |  |

18:30-18:45

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 141 | 608 | 0.231 | 141 | 0.3 | 7.723 | A |
| B-A | 114 | 405 | 0.282 | 115 | 0.4 | 12.176 | B |
| C-AB | 163 | 736 | 0.222 | 163 | 0.4 | 6.284 | A |
| C-A | 137 |  |  | 137 |  |  |  |
| AB | 84 |  | 84 |  |  |  |  |
| AC | 184 |  | 184 |  |  |  |  |

18:45-19:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 84 | 634 | 0.132 | 84 | 0.2 | 0.5 |  |
| B-A | 84 | 462 | 0.181 | 84 | 0.2 | 9.744 |  |
| C-AB | 108 | 751 | 0.143 | 108 | 0.2 |  |  |
| C-A | 116 |  |  | 116 |  |  |  |
| AB | 60 |  | 60 |  |  |  |  |
| AC | 136 |  | 136 |  |  |  |  |

19:00-19:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 84 | 634 | 0.132 | 84 | 0.2 | 6.542 |  |
| B-A | 84 | 462 | 0.181 | 84 | 0.2 | 9.507 |  |
| C-AB | 108 | 751 | 0.143 | 108 | 0.2 | 5.602 |  |
| C-A | 116 |  |  | 116 |  |  |  |
| AB | 60 |  | 60 |  |  |  |  |
| AC | 136 |  | 136 |  |  |  |  |

## Existing Layout, B 95\% - 2025 Base, PM 1645-1745

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Main Road/ Waltham Road | T-Junction | Two-way |  | 4694 | $E$ |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time period length (min) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| D3 | 2025 Base | PM 1645-1745 | DIRECT | $16: 30$ | $18: 00$ | 90 | 15 |


| Vehicle mix varies over time | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
| :---: | :---: | :---: | :---: |
| $\checkmark$ | HV Percentages | 2.00 | $\checkmark$ |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 100.000 |
| B |  | $\checkmark$ | 95.000 |
| C |  | $\checkmark$ | 100.000 |

## Origin-Destination Data

16:30-16:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 91 | 269 |
|  | B | 277 | 0 | 356 |
|  | C | 310 | 186 | 0 |

Demand (Veh/hr)

16:45-17:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 124 | 290 |
|  | B | 277 | 0 | 281 |
|  | C | 314 | 174 | 0 |

Demand (Veh/hr)

17:00-17:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 153 | 372 |
|  | B | 248 | 0 | 310 |
|  | C | 277 | 157 | 0 |

## Demand (Veh/hr)

17:15-17:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 128 | 356 |
|  | B | 244 | 0 | 343 |
|  | C | 360 | 157 | 0 |

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 149 | 269 |
|  | B | 240 | 0 | 302 |
|  | C | 360 | 190 | 0 |

Demand (Veh/hr)

17:45-18:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 141 | 236 |
|  | B | 227 | 0 | 211 |
|  | C | 327 | 161 | 0 |

## Vehicle Mix

16:30-16:45
Heavy Vehicle Percentages

|  | To |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |  |
|  | A | 0 | 0 | 0 |  |
|  | B | 4 | 0 | 5 |  |
|  | C | 4 | 9 | 0 |  |

Heavy Vehicle Percentages

16:45-17:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | $\mathbf{A}$ | $\mathbf{B}$ | $\mathbf{C}$ |
|  | $\mathbf{A}$ | 0 | 0 | 1 |
|  | $\mathbf{B}$ | 1 | 0 | 0 |
|  | $\mathbf{C}$ | 0 | 0 | 0 |

Heavy Vehicle Percentages

17:00-17:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 5 | 2 |
|  | B | 2 | 0 | 0 |
|  | C | 1 | 8 | 0 |

Heavy Vehicle Percentages

17:15-17:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 0 |
|  | B | 2 | 0 | 2 |
|  | C | 1 | 0 | 0 |

Heavy Vehicle Percentages

17:30-17:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 3 |
|  | B | 0 | 0 | 0 |
|  | C | 1 | 0 | 0 |

THE FUTURE

Heavy Vehicle Percentages

17:45-18:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 4 |
|  | B | 0 | 0 | 2 |
|  | C | 3 | 0 | 0 |

## Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.99 | 117.27 | 9.6 | F |
| B-A | 1.00 | 135.46 | 8.2 | F |
| C-AB | 0.40 | 7.62 | 0.9 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

16:30-16:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 338 | 340 | 0.995 | 304 | 8.5 | 73967 |  |
| B-A | 263 | 264 | 0.996 | 233 | 7.5 | 83838 |  |
| C-AB | 310 | 777 | 0.398 | 306 | 0.9 | 7.621 |  |
| C-A | 186 |  |  | 186 |  |  |  |
| AB | 91 |  |  | 91 |  |  |  |
| AC | 269 |  |  |  |  |  |  |

16:45-17:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 267 | 309 | 0.859 | 267 | 8.5 | 117.267 | F |
| B-A | 263 | 297 | 0.882 | 263 | 7.6 | 108.699 | F |
| C-AB | 285 | 813 | 0.350 | 285 | 0.8 | 7.238 | A |
| C-A | 203 |  |  | 203 |  |  |  |
| AB | 124 |  |  | 124 |  |  |  |
| AC | 290 |  | 290 |  |  |  |  |

17:00-17:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 295 | 326 | 0.904 | 294 | 8.6 | 107.948 | F |
| B-A | 236 | 264 | 0.895 | 236 | 7.6 | 119.288 | F |
| C-AB | 256 | 724 | 0.353 | 256 | 0.7 | 7.415 | A |
| C-A | 178 |  |  | 178 |  |  |  |
| AB | 153 |  |  | 153 |  |  |  |
| AC | 372 |  | 372 |  |  |  |  |

17:15-17:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 326 | 345 | 0.947 | 322 | 9.5 | 112.537 | F |
| B-A | 232 | 251 | 0.923 | 229 | 8.2 | 135.462 | F |
| C-AB | 280 | 828 | 0.338 | 279 | 0.8 | 6.813 | A |
| C-A | 237 |  |  | 237 |  |  |  |
| AB | 128 |  | 128 |  |  |  |  |
| AC | 356 |  | 356 |  |  |  |  |

17:30-17:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 287 | 371 | 0.772 | 308 | 4.2 | 68.483 |  |
| B-A | 228 | 285 | 0.798 | 240 | 5.1 | 91926 |  |
| C-AB | 334 | 841 | 0.397 | 333 | 0.9 | 7.112 |  |
| C-A | 216 |  |  | 216 |  |  |  |
| AB | 149 |  |  | 149 |  |  |  |
| AC | 269 |  |  |  |  |  |  |

17:45-18:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 200 | 453 | 0.443 | 214 | 0.8 | 15549 | C |
| B-A | 216 | 357 | 0.604 | 230 | 1.6 | 30813 | D |
| C-AB | 268 | 826 | 0.325 | 269 | 0.7 | 6.458 | A |
| C-A | 220 |  |  | 220 |  |  |  |
| AB | 141 |  |  | 141 |  |  |  |
| AC | 236 |  |  | 236 |  |  |  |

## Existing Layout, B 95\% - 2025 Base, PM 1800-1900

## Data Errors and Warnings

No errors or warnings

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Main Road/ Waltham Road | T-Junction | Two-way |  | 6.75 | A |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time period length (min) | Time segment length (min) |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| D4 | 2025 Base | PM 1800-1900 | DIRECT | $17: 45$ | $19: 15$ | 90 | 15 |


| Vehicle mix varies over time | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
| :---: | :---: | :---: | :---: |
| $\checkmark$ | HV Percentages | 2.00 | $\checkmark$ |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 100.000 |
| B |  | $\checkmark$ | 95.000 |
| C |  | $\checkmark$ | 100.000 |

## Origin-Destination Data

| Demand (Veh/hr) |  |
| :---: | :---: |
| 17:45-18:00 |  To    <br>   A B C <br>  A 0 141 236 <br>  B 227 0 211 <br>  Crom 327 161 0 |

18:00-18:15
Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 112 | 252 |
|  | B | 199 | 0 | 240 |
|  | C | 244 | 83 | 0 |

Demand (Veh/hr)

18:15-18:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 120 | 248 |
|  | B | 149 | 0 | 211 |
|  | C | 211 | 91 | 0 |

## Demand (Veh/hr)

18:30-18:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 87 | 190 |
|  | B | 124 | 0 | 153 |
|  | C | 182 | 128 | 0 |

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 62 | 141 |
|  | B | 91 | 0 | 91 |
|  | C | 141 | 91 | 0 |

Demand (Veh/hr)

19:00-19:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 62 | 141 |
|  | B | 91 | 0 | 91 |
|  | C | 141 | 91 | 0 |

## Vehicle Mix

17:45-18:00
Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 4 |
|  | B | 0 | 0 | 2 |
|  | C | 3 | 0 | 0 |

Heavy Vehicle Percentages

18:00-18:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 2 |
|  | B | 0 | 0 | 0 |
|  | C | 2 | 10 | 0 |

Heavy Vehicle Percentages

18:15-18:30

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 3 | 2 |
|  | B | 0 | 0 | 0 |
|  | C | 0 | 5 | 0 |

Heavy Vehicle Percentages

18:30-18:45

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | $\mathbf{B}$ | $\mathbf{C}$ |
|  | A | 0 | 5 | 2 |
|  | B | 3 | 0 | 0 |
|  | C | 5 | 3 | 0 |

Heavy Vehicle Percentages

18:45-19:00

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 0 |
|  | B | 0 | 0 | 0 |
|  | C | 0 | 0 | 0 |

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Heavy Vehicle Percentages

19:00-19:15

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 0 | 0 |
|  | B | 0 | 0 | 0 |
|  | C | 0 | 0 | 0 |

## Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.43 | 12.68 | 0.7 | B |
| B-A | 0.60 | 23.04 | 1.4 | C |
| C-AB | 0.32 | 6.41 | 0.7 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

17:45-18:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 200 | 479 | 0.418 | 198 | 0.7 | 12675 | B |
| B-A | 216 | 361 | 0.597 | 210 | 1.4 | 23041 | C |
| C-AB | 267 | 825 | 0.323 | 264 | 0.7 | 6.405 | A |
| C-A | 221 |  |  | 221 |  |  |  |
| AB | 141 |  |  | 141 |  |  |  |
| AC | 236 |  |  | 236 |  |  |  |

18:00-18:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 228 | 536 | 0.426 | 228 | 0.7 | 11877 | B |
| B-A | 189 | 390 | 0.484 | 191 | 1.0 | 18.190 | C |
| C-AB | 126 | 729 | 0.172 | 127 | 0.3 | 5.731 | A |
| C-A | 201 |  |  | 201 |  |  |  |
| AB | 112 |  |  | 112 |  |  |  |
| AC | 252 |  |  | 252 |  |  |  |

18:15-18:30

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 200 | 579 | 0.346 | 201 | 0.5 | 9.557 | A |
| B-A | 142 | 395 | 0.359 | 143 | 0.6 | 14.406 | B |
| C-AB | 128 | 728 | 0.176 | 128 | 0.3 | 6.133 | A |
| C-A | 174 |  |  | 174 |  |  |  |
| AB | 120 |  |  | 120 |  |  |  |
| AC | 248 |  |  | 248 |  |  |  |

18:30-18:45

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 145 | 604 | 0.241 | 146 | 0.3 | 7.882 |  |
| B-A | 118 | 400 | 0.295 | 118 | 0.4 | 12528 | A |
| C-AB | 170 | 738 | 0.231 | 170 | 0.4 | 6.342 | A |
| C-A | 140 |  |  | 140 |  |  |  |
| AB | 87 |  | 87 |  |  |  |  |
| AC | 190 |  | 190 |  |  |  |  |

18:45-19:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 86 | 631 | 0.137 | 87 | 0.2 | 0.628 |  |
| B-A | 86 | 459 | 0.188 | 87 | 0.2 |  |  |
| C-AB | 112 | 752 | 0.149 | 113 | 0.2 | 5.912 |  |
| C-A | 120 |  |  | 120 |  |  |  |
| AB | 62 |  |  | 141 |  |  |  |
| AC | 141 |  |  |  |  |  |  |

19:00-19:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 86 | 631 | 0.137 | 86 | 0.2 | 6.611 |  |
| B-A | 86 | 459 | 0.188 | 86 | 0.2 | 9.664 |  |
| C-AB | 112 | 752 | 0.149 | 112 | 0.2 | 4.628 |  |
| C-A | 120 |  |  | 120 |  |  |  |
| AB | 62 |  |  | 141 |  |  |  |
| AC | 141 |  |  |  |  |  |  |

## Appendix G3 - Junction Modelling Results Proposed Site Access

THE FUTURE

## Junctions 9

## PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462
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Filename: LSF - Proposed Site Access_051021.j9
Path: \Icm-man-002\CTB_CHE_eng\Transport Consultancy Projects\Job Folders_606160640215 - Longfield Solar Farml400TechnicallModelling
Report generation date: 05/10/2021 16:45:26
"Proposed Layout - 2025 Base + Dev, AM 7-8
»Proposed Layout - 2025 Base + Dev, PM 18-19
Summary of junction performance

|  | AM 7-8 |  |  |  |  | PM 18-19 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Set ID | Queue (Veh) | Delay (s) | RFC | LOS | Set ID | Queue (Veh) | Delay (s) | RFC | LOS |
|  | Proposed Layout - 2025 Base + Dev |  |  |  |  |  |  |  |  |  |
| Stream B-C | D1 | 0.0 | 11.87 | 0.01 | B | D2 | 0.1 | 6.68 | 0.08 | A |
| Stream B-A |  | 0.0 | 22.27 | 0.04 | C |  | 0.1 | 11.24 | 0.13 | B |
| Stream C-AB |  | 0.4 | 5.24 | 0.17 | A |  | 0.0 | 8.80 | 0.01 | A |

There are warnings associated with one or more model runs - see the Data Errors and Warnings tables for each Analysis or Demand Set.
Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary
File Description

| Title | Waltham Road/ Site Access Junction |
| :--- | :--- |
| Location | Site Access |
| Site number | 1 |
| Date | $05 / 10 / 2021$ |
| Version |  |
| Status | UPDATED DRAFT |
| Identifier |  |
| Client | Longfield Solar Farm |
| Jobnumber | 60640215 |
| Enumerator | NAlchris.burlton |
| Description |  |

Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units | Average delay units | Total delay units | Rate of delay units |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| m | kph | Veh | Veh | perHour | s | -Min | perMin |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
| :--- | :---: | :---: | :---: | :---: |
|  |  | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| D1 | 2025 Base + Dev | AM 7-8 | ONE HOUR | $06: 45$ | $08: 15$ | 15 |
| D2 | 2025 Base + Dev | PM 18-19 | ONE HOUR | $17: 45$ | $19: 15$ | 15 |

## Analysis Set Details

| ID | Name | Network flow scaling factor (\%) |
| :---: | :---: | :---: |
| A1 | Proposed Layout | 100.000 |

THE FUTURE

## Proposed Layout - 2025 Base + Dev, AM 7-8

Data Errors and Warnings

| Severity | Area | Item | Description |
| :--- | :--- | :--- | :--- |
| Warning | Major arm width | Arm C - Major arm <br> geometry | For two-way major roads, please interpret results with caution if the total major carriageway width is less than <br> 6 m. |

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Site Access | T-Junction | Two-way |  | 1.13 | A |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Arms

## Arms

| Arm | Name | Description | Arm type |
| :---: | :--- | :--- | :--- |
| A | Waltham Road (North) |  | Major |
| B | Site Access |  | Minor |
| C | Waltham Road (South) |  | Major |

Major Arm Geometry

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| C | 5.80 |  |  | 128.0 | $\checkmark$ | 0.00 |

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

## Minor Arm Geometry

| Arm | Minor arm type | Lane Width (Left) (m) | Lane Width (Right) (m) | Visibility to left (m) | Visibility to right (m) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B | Two lanes | 420 | 3.20 | 27 | 24 |

Slope / Intercept / Capacity
Priority Intersection Slopes and Intercepts

| Stream | Intercept <br> (Veh/hr) | Slope <br> for <br> AB | Slope <br> for <br> AC | Slope <br> for <br> C-A | Slope <br> for <br> C-B |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B-A | 508 | 0.093 | 0.236 | 0.148 | 0.337 |
| B-C | 716 | 0.111 | 0.280 | - | - |
| C-B | 648 | 0.253 | 0.253 | - | - |

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

## Traffic Demand

Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| D1 | 2025 Base + Dev | AM 7-8 | ONE HOUR | $06: 45$ | $08: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 337 | 100.000 |
| B |  | $\checkmark$ | 9 | 100.000 |
| C |  | $\checkmark$ | 459 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 58 | 279 |
|  | B | 6 | 0 | 3 |
|  | C | 400 | 59 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 11 | 3 |
|  | B | 100 | 0 | 100 |
|  | C | 2 | 5 | 0 |

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.01 | 11.87 | 0.0 | B |
| B-A | 0.04 | 22.27 | 0.0 | C |
| C-AB | 0.17 | 5.24 | 0.4 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

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## Main Results for each time segment

06:45-07:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 2 | 323 | 0.007 | 2 | 0.0 | 11223 |  |
| B-A | 5 | 196 | 0.023 | 4 | 0.0 | 18832 |  |
| C-AB | 73 | 761 | 0.097 | 73 | 0.2 | 5.226 |  |
| C-A | 272 |  |  | 272 |  |  |  |
| AB | 44 |  |  | 44 |  |  |  |
| AC | 210 |  |  |  |  |  |  |

07:00-07:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 3 | 316 | 0.009 | 3 | 0.0 | 11.486 | B |
| B-A | 5 | 184 | 0.029 | 5 | 0.0 | 20.145 | C |
| C-AB | 98 | 792 | 0.123 | 97 | 0.2 | 5.193 | A |
| C-A | 315 |  |  | 315 |  |  |  |
| AB | 52 |  |  | 52 |  |  |  |
| AC | 251 |  |  | 251 |  |  |  |

07:15-07:30

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 3 | 307 | 0.011 | 3 | 0.0 | 11872 | B |
| B-A | 7 | 168 | 0.039 | 7 | 0.0 | 22253 | C |
| C-AB | 138 | 835 | 0.166 | 138 | 0.4 | 5.176 | A |
| C-A | 367 |  |  | 367 |  |  |  |
| AB | 64 |  |  | 64 |  |  |  |
| AC | 307 |  |  | 307 |  |  |  |

07:30-07:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $($ Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 3 | 306 | 0.011 | 3 | 0.0 | 11873 | B |
| B-A | 7 | 168 | 0.039 | 7 | 0.0 | 22272 | C |
| C-AB | 138 | 835 | 0.166 | 138 | 0.4 | 5.179 | A |
| C-A | 367 |  |  | 367 |  |  |  |
| AB | 64 |  |  | 64 |  |  |  |
| AC | 307 |  |  | 307 |  |  |  |

07:45-08:00

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathrm{hr})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 3 | 316 | 0.009 | 3 | 0.0 | 11.488 | B |
| B-A | 5 | 184 | 0.029 | 5 | 0.0 | 20.169 | C |
| C-AB | 98 | 792 | 0.123 | 98 | 0.3 | 5.194 | A |
| C-A | 315 |  |  | 315 |  |  |  |
| AB | 52 |  | 52 |  |  |  |  |
| AC | 251 |  |  | 251 |  |  |  |

08:00-08:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 2 | 323 | 0.007 | 2 | 0.0 | 11227 |  |
| B-A | 5 | 195 | 0.023 | 5 | 0.0 | 18869 |  |
| C-AB | 74 | 762 | 0.097 | 74 | 0.2 | 5.237 |  |
| C-A | 272 |  |  | 272 | 4 |  |  |
| AB | 44 |  |  | 210 |  |  |  |
| AC | 210 |  |  |  |  |  |  |

## Proposed Layout - 2025 Base + Dev, PM 18-19

Data Errors and Warnings

| Severity | Area | Item | Description |
| :--- | :--- | :--- | :--- |
| Warning | Major arm width | Arm C - Major arm <br> geometry | For two-way major roads, please interpret results with caution if the total major carriageway width is less than <br> 6 m. |

## Junction Network

## Junctions

| Junction | Name | Junction type | Major road direction | Use circulating lanes | Junction Delay (s) | Junction LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | Waltham Road/ Site Access | T-Junction | Two-way |  | 1.64 | A |

## Junction Network Options

| Driving side | Lighting |
| :---: | :---: |
| Left | Normal/unknown |

## Traffic Demand

Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH mm) | Finish time (HH mm) | Time segment length (min) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| D2 | 2025 Base + Dev | PM 18-19 | ONE HOUR | $17: 45$ | $19: 15$ | 15 |


| Vehicle mix source | PCU Factor for a HV (PCU) |
| :---: | :---: |
| HV Percentages | 2.00 |

Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (\%) |
| :---: | :---: | :---: | :---: | :---: |
| A |  | $\checkmark$ | 255 | 100.000 |
| B |  | $\checkmark$ | 87 | 100.000 |
| C |  | $\checkmark$ | 182 | 100.000 |

## Origin-Destination Data

Demand (Veh/hr)

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 5 | 250 |
|  | B | 43 | 0 | 44 |
|  | C | 180 | 2 | 0 |

## Vehicle Mix

Heavy Vehicle Percentages

|  | To |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From |  | A | B | C |
|  | A | 0 | 100 | 2 |
|  | B | 11 | 0 | 5 |
|  | C | 2 | 100 | 0 |

THE FUTURE

## Results

Results Summary for whole modelled period

| Stream | Max RFC | Max Delay (s) | Max Queue (Veh) | Max LOS |
| :---: | :---: | :---: | :---: | :---: |
| B-C | 0.08 | 6.68 | 0.1 | A |
| B-A | 0.13 | 11.24 | 0.1 | B |
| C-AB | 0.01 | 8.80 | 0.0 | A |
| C-A |  |  |  |  |
| AB |  |  |  |  |
| AC |  |  |  |  |

## Main Results for each time segment

17:45-18:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathbf{h r})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 33 | 618 | 0.054 | 33 | 0.1 | 6.152 |  |
| B-A | 32 | 396 | 0.082 | 32 | 0.1 | 9.895 | A |
| C-AB | 2 | 411 | 0.005 | 2 | 0.0 | 8.798 | A |
| C-A | 135 |  | 135 |  |  |  |  |
| AB | 4 |  | 4 |  |  |  |  |
| AC | 188 |  | 188 |  |  |  |  |

18:00-18:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 40 | 605 | 0.065 | 40 | 0.1 | 6.365 |  |
| B-A | 39 | 384 | 0.101 | 39 | 0.1 | 10.427 |  |
| C-AB | 3 | 429 | 0.007 | 3 | 0.0 | 8.554 |  |
| C-A | 161 |  |  | 161 |  |  |  |
| AB | 4 |  | 225 |  |  |  |  |
| AC | 225 |  |  |  |  |  |  |

18:15-18:30

| Stream | Total Demand <br> $(\mathbf{V e h} / \mathbf{h r})$ | Capacity (Veh/hr) | RFC | Throughput <br> $(\mathbf{V e h} / \mathrm{hr})$ | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 48 | 587 | 0.083 | 48 | 0.1 | 6.682 | A |
| B-A | 47 | 367 | 0.129 | 47 | 0.1 | 11236 | B |
| C-AB | 4 | 454 | 0.009 | 4 | 0.0 | 8.133 | A |
| C-A | 196 |  |  | 196 |  |  |  |
| AB | 6 |  | 6 |  |  |  |  |
| AC | 275 |  |  | 275 |  |  |  |

18:30-18:45

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 48 | 587 | 0.083 | 48 | 0.1 | 6.682 |  |
| B-A | 47 | 367 | 0.129 | 47 | 0.1 | 11245 | B |
| C-AB | 4 | 454 | 0.009 | 4 | 0.0 | 8.005 | A |
| C-A | 196 |  |  | 196 |  |  |  |
| AB | 6 |  |  | 6 |  |  |  |
| AC | 275 |  |  | 275 |  |  |  |

18:45-19:00

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 40 | 605 | 0.065 | 40 | 0.1 | 6.370 |  |
| B-A | 39 | 384 | 0.101 | 39 | 0.1 | 10.442 | A |
| C-AB | 3 | 430 | 0.007 | 3 | 0.0 | 8.262 |  |
| C-A | 161 |  |  | 161 | 4 |  |  |
| AB | 4 |  |  | 225 |  |  |  |
| AC | 225 |  |  |  |  |  |  |

19:00-19:15

| Stream | Total Demand <br> (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput <br> (Veh/hr) | End queue (Veh) | Delay (s) | Unsignalised <br> level of service |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B-C | 33 | 618 | 0.054 | 33 | 0.1 | 6.159 |  |
| B-A | 32 | 395 | 0.082 | 32 | 0.1 |  |  |
| C-AB | 2 | 412 | 0.005 | 2 | 0.0 | 8 |  |
| C-A | 135 |  |  | 135 |  |  |  |
| AB | 4 |  | 4 |  |  |  |  |
| AC | 188 |  | 188 |  |  |  |  |

## Appendix H1 - Proposed Site Layout



## Appendix H2 - Proposed Site Access Arrangements



## Appendix H3 - HGV Routing Plan



## Appendix I1 - Proposed Site Access Layout and Visibility Splays



## Appendix I2 - Swept Paths for Proposed Site Access



## Appendix J1 - Bulls Lodge Substation Access Arrangements



## Appendix J2 - Bulls Lodge Substation Access Visibility Splays

(DESIRABLE MINIMUM)

4VB061A
VERGE OFFSET 1 m FROM VIIIBILTY SPLAY FOR MAINTENANCE PURPOSE


## Appendix J3 - Bulls Lodge Substation Access Swept Paths




## Appendix K - Noakes Lane Crossing Points and Visibility Splays



## Appendix L - Proposed Carriageway Widening

| Section | Plan(s) | Road | Location | Proposed Widening (based on OS Mapping) |  |  |  |  |  |  | Review (Site Visit) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Northern Side |  | Southern Side |  | Total Approx. Area (sqm) | Existing Kerb/ Verge | Total Width |  |
|  |  |  |  | Length | Max Widening | Length | Max Widening |  |  |  |  |
| 1 | 101 \& 110 | Wheelers Hill | Kingswood | - | - | 9.7m | 0.22 m | 1 sqm | kerb | 5.5 m | OS mapping appears to be representative |
| 2 | 101 | Wheelers Hill | East of Kingswood | 90 m | 1.2 m | 35 m | 0.5 m | 60 sqm | verge (both sides) | 6.0 m | Carriageway appears to be wider, at least 5.5m |
| 3 | 102 | Wheelers Hill | West of Shuttlew orth Hall | 20 m | 0.25 m | - | - | 2 sqm | verge | 6.0m | OS mapping appears to be representative |
| 4 | 102 | Wheelers Hill | Shuttleworth Hall | - | - | 10m | 0.1m | 1 sqm | verge | 6.0m | OS mapping appears to be representative |
| 5 | 103 | Wheelers Hill | Shouderstick Haul | 240m | 1.2 m | 80m | 0.5m | 175 sqm | some kerb (northern), verge (southern) | 6.0 m | OS mapping appears to be representative |
| 6 | 104 | Wheelers Hill | West of Domsey Lane | 10m | 0.1m | - | - | 1 sqm | verge | 6.0m | OS mapping appears to be representative |
| 7 | 104 | Cranham Road | East of Domsey Lane | - | - | 135m | 0.95m | 60 sqm | verge | 6.0 m | Carriageway appears to be wider, at least 5.5 m |
| 8 | 105 | Cranham Road | East of Caravan Park | 90 m | 0.8m | - | - | 50 sqm | verge | 6.0 m | Carriageway appears to be wider, at least 5.5 m |
| 9 | 105 | Cranham Road | East of Caravan Park | 150m | 0.9m | - | - | 72 sqm | verge | 6.0 m | Carriageway appears to be wider, at least 5.5 m |
| 10 | 106 | Cranham Road | West of Combe | 20m | 0.3 m | - | - | 3 sqm | verge | 6.0 m | OS mapping appears to be representative |
| 11 | 106 | Cranham Road | West of Combe | 55m | 0.6m | - | - | 17 sqm | verge | 6.0m | OS mapping appears to be representative |
| 12 | 106 \& 107 | Cranham Road | Combe and Boscombe | 170m | 1.8m | 300m | 1.75m | 480 sqm | verge (both sides) | 6.0 m | Carriageway appears to be significantly wider, at least 5.5 m |
| 13 | 107 | Cranham Road | East of Boscombe | 35m | 0.55m | - | - | 10 sqm | verge | 6.0m | OS mapping appears to be representative |
| 14 | 108 | Cranham Road | West of War Memorial | - | - | 70m | 0.4 m | 23 sqm | verge | 6.0 m | OS mapping appears to be representative |
| 15 | 108 | Cranham Road | East of War Memorial | - | - | 75 m | 1.0 m | 39 sqm | verge | 6.0 m | Carriageway appears to be wider, at least 5.5 m |
| 16 | 108 | Cranham Road | East of War Memorial | 120m | 1.0 m | - | - | 63 sqm | verge | 6.0 m | Carriageway appears to be wider, at least 5.5 m |
| 17 | 109 | Cranham Road | West of Waltham Road | 230 m | 1.55 m | - | - | 168 sqm | kerb (majority) | 6.0 m | Carriageway appears to be wider, at least 5.5 m |
| 18 | 109 | Waltham Road | South of Cranham Road | 120 m | 0.8m | - | - | 48 sqm | verge | 6.0m | OS mapping appears to be representative |




WOOEV
201-૪yI-\&101-sızot909

 CIRCA. 90M IN LENGTH)

> WIDENING WITHIN HIGHWAY BOUNDARY ON NORTHERN SIDE OF CRANHAM ROAD (UP TO 0.9M ADDITIONAL WIDTH, OVER CIRCA. 150M IN LENGTH)
woser


## LEGEND

EXISTING CARRIAGEWAY HIGHWAY BOUNDARY
$\square$ INDICATIVE CARRIAGEWAY WIDENING
$\begin{aligned} & \text { ON NORTHERN SIDE OF CRANHAM ROAD } \\ & \text { (UP TO O.8M ADDITIONAL WIDTH, OVER }\end{aligned}$

|  | $\rightarrow z$ |
| :---: | :---: |
| CUTLINE: 60640215-1013-TRA-106 |  |

WIDENING WITHIN HIGHWAY BOUNDARY ON NORTHERN BIDE OF CRANHAM ROAD (UP SIDE OF CRANHAM ROAD (UP OVER CIRCA. 20M IN LENGTH)

WIDENING WITHIN HIGHWAY BOUNDARY ON NORTHERN SIDE OF CRANHAM ROAD (UP TO 0.6M ADDITIONAL WIDTH, OVER CIRCA. 55M IN LENGTH)

WIDENING WITHIN HIGHWAY BOUNDARY ON NORTHERN SIDE OF CRANHAM ROAD (UP TO 1.8M ADDITIONAL WIDTH, CIRCA 170M IN LENGTH)





## Appendix M - PRoW Management (Construction Phase)



## Appendix N - Census Data

## WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)

ONS Crown Copyright Reserved [from Nomis on 1 February 2021]
population
units
date
place of work

All usual residents aged 16 and over in employment the week before the census
Persons
2011
E02004489 : Chelmsford 005 (2011 super output area - middle layer)

| Method of travel to work | Usual Residence | Proportion |
| :--- | :---: | :---: |
|  | England and Wales |  |
| All categories: M ethod of travel to work | 5,379 | $100.0 \%$ |
| Work mainly at or from home | 0 | - |
| Underground, metro, light rail or tram | 12 | $0.2 \%$ |
| Train | 76 | $1.4 \%$ |
| Bus, minibus or coach | 138 | $2.6 \%$ |
| Taxi | 11 | $0.2 \%$ |
| M otorcycle, scooter or moped | 46 | $0.9 \%$ |
| Driving a car or van | 4,379 | $81.4 \%$ |
| Passenger in a car or van | 286 | $5.3 \%$ |
| Bicycle | 150 | $2.8 \%$ |
| On foot | 259 | $4.8 \%$ |
| Other method of travel to work | 22 | $0.4 \%$ |



## Appendix O - Proposed Landscape Masterplan (Operational Phase)




## Appendix P1 - Trip Generation Calculations

## Solar Farm Site - Peak Construction Vehicle Movements - Winter Profile

| 500 | M aximum Daily Staff (confirmed 28/07/21) |  |  |
| :---: | :---: | :---: | :---: |
| 287.3 | 10 hour shift (08:00-18:00, arrive 07:00-08:00, depart 18:00-19:00) | 287 | Civil Works/ Structures |
| 101.0 | Early 8 hour shift (08:00-16:00, arrive 07:00-08:00, depart 16:00-17:00) | 95\% | Remainder (8 hour shift) |
| 101.0 | Late 8 hour shift (09:00-17:00, arrive 08:00-09:00, depart 17:00-18:00) |  |  |
| 10.6 | Ad hoc (staggered, arrive 09:00-12:00, depart 14:00-17:00) | 5\% | Remainder (ad hoc) |
| 500 | Total |  |  |


| $45 \%$ | Local Staff |
| :---: | :--- |
| 125.9 | 10 hour shift (08:00-18:00) |
| 44.3 | Early 8 hour shift (08:00-16:00) |
| 44.3 | Late 8 hour shift (09:00-17:00) |
| 10.6 | Ad hoc (staggered) |
| $\mathbf{2 2 5}$ | Total |

## Mode Share (Local Staff)

| $95 \%$ | Car |
| :---: | :--- |
| $5 \%$ | Other e.g. cycle |

1.5 Average car occupancy

## Daily Vehicles (Local Staff)

| Daily Vehicles (Local Staff) |
| :--- |
| 80 Cars - Arr 07:00-08:00, Dep 18:00-19:00 <br> 28 Cars - Arr 07:00-08:00, Dep 16:00-17:00 <br> 28 Cars - Arr 08:00-09:00, Dep 17:00-18:00 <br> 7 Cars - Arr 09:00-12:00, Dep 14:00-17:00 <br> $\mathbf{1 4 3}$ Total |


| $55 \%$ | Non-Local Staff |
| :---: | :--- |
| 161.5 | 10 hour shift (08:00-18:00) |
| 56.8 | Early 8 hour shift (08:00-16:00) |
|  | Late 8 hour shift (09:00-17:00) |
| 0.0 | Ad hoc (staggered) |
|  | $\mathbf{2 7 5}$ |
| Total |  |

Mode Share (Non-Local Staff)
100\% Shuttle bus (worker accommodation, for shift staff)

## 25 Average shuttle bus occupancy

## Daily Vehicles (Non-Local Staff)

Daily Vehicles (Non-Local Staff)

| 6 | Shuttle buses - Pick-up 07:00-08:00, Drop-off 18:00-19:00 |
| :---: | :--- |
| 2 | Shuttle buses - Pick-up 07:00-08:00, Drop-off 16:00-17:00 |
| 2 | Shuttle buses - Pick-up 08:00-09:00, Drop-off 17:00-18:00 |
| 0 | Cars - Arr 09:00-12:00, Dep 14:00-17:00 |
| $\mathbf{1 1}$ | Total |

On-Site Parking Demand (Staff)
On-Site Parking Demand (Staff)

| 5 | Shuttles Buses |
| :---: | :--- |
| 143 | Cars |
| $\mathbf{1 4 8}$ | Total |

Daily Vehicle Profile

| Time | Cars |  |  | Shuttle Buses |  |  | Total HGVs |  |  | Total Vehicles |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Arr | Dep | Total | Arr | Dep | Total | Arr | Dep | Total | Arr | Dep | Total |
| 06:00-07:00 |  |  | 0.0 |  |  | 0.0 |  |  | 0.0 | 0.0 | 0.0 | 0.0 |
| 07:00-08:00 | 107.7 |  | 107.7 | 8.7 | 8.7 | 17.5 |  |  | 0.0 | 116.5 | 8.7 | 125.2 |
| 08:00-09:00 | 28.0 |  | 28.0 | 2.3 | 2.3 | 4.5 |  |  | 0.0 | 30.3 | 2.3 | 32.6 |
| 09:00-10:00 | 2.2 |  | 2.2 |  |  | 0.0 | 7.1 |  | 7.1 | 9.4 | 0.0 | 9.4 |
| 10:00-11:00 | 2.2 |  | 2.2 |  |  | 0.0 | 7.1 | 7.1 | 14.3 | 9.4 | 7.1 | 16.5 |
| 11:00-12:00 | 2.2 |  | 2.2 |  |  | 0.0 | 7.1 | 7.1 | 14.3 | 9.4 | 7.1 | 16.5 |
| 12:00-13:00 |  |  | 0.0 |  |  | 0.0 | 7.1 | 7.1 | 14.3 | 7.1 | 7.1 | 14.3 |
| 13:00-14:00 |  |  | 0.0 |  |  | 0.0 | 7.1 | 7.1 | 14.3 | 7.1 | 7.1 | 14.3 |
| 14:00-15:00 |  | 2.2 | 2.2 |  |  | 0.0 | 7.1 | 7.1 | 14.3 | 7.1 | 9.4 | 16.5 |
| 15:00-16:00 |  | 2.2 | 2.2 |  |  | 0.0 | 7.1 | 7.1 | 14.3 | 7.1 | 9.4 | 16.5 |
| 16:00-17:00 |  | 30.3 | 30.3 | 2.3 | 2.3 | 4.5 |  | 7.1 | 7.1 | 2.3 | 39.7 | 42.0 |
| 17:00-18:00 |  | 28.0 | 28.0 | 2.3 | 2.3 | 4.5 |  |  | 0.0 | 2.3 | 30.3 | 32.6 |
| 18:00-19:00 |  | 79.7 | 79.7 | 6.5 | 6.5 | 12.9 |  |  | 0.0 | 6.5 | 86.2 | 92.6 |
| 19:00-20:00 |  |  | 0.0 |  |  | 0.0 |  |  | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 142.5 | 142.5 | 285.0 | 22.0 | 22.0 | 44.0 | 50.0 | 50.0 | 100.0 | 214.5 | 214.5 | 429.0 |

## Bulls Lodge Substation Site - Peak Construction Vehicle Movements - Winter Profile

| 33 | M aximum Daily Staff (confirmed 17/01/22) |
| :---: | :--- |
| 19.0 | 10 hour shift (08:00-18:00, arrive 07:00-08:00, depart 18:00-19:00) |
| 6.7 | Early 8 hour shift (08:00-16:00, arrive 07:00-08:00, depart 16:00-17:00) |
| 6.7 | Late 8 hour shift (09:00-17:00, arrive 08:00-09:00, depart 17:00-18:00) |
| 0.7 | Ad hoc (staggered, arrive 09:00-12:00, depart 14:00-17:00) |
| $\mathbf{3 3}$ | Total |


| $100 \%$ | Local Staff |  |
| :---: | :--- | :---: |
| 19.0 | 10 hour shift (08:00-18:00) |  |
| 6.7 | Early 8 hour shift (08:00-16:00) |  |
| 6.7 | Late 8 hour shift (09:00-17:00) |  |
| 0.7 | Ad hoc (staggered) |  |
| $\mathbf{3 3}$ | Total |  |

Mode Share (Local Staff)

| $95 \%$ | Car |
| :---: | :--- |
| $5 \%$ | Other e.g. cycle |


| 1.2 |
| :--- |
| Average car occupancy |

Daily Vehicles (Local Staff)

| 15 | Cars - Arr 07:00-08:00, Dep 18:00-19:00 |
| :---: | :--- |
| 5 | Cars - Arr 07:00-08:00, Dep 16:00-17:00 |
| 5 | Cars - Arr 08:00-09:00, Dep 17:00-18:00 |
| 1 | Cars - Arr 09:00-12:00, Dep 14:00-17:00 |
| $\mathbf{2 6}$ | Total |


| 46 | M ax Daily HGVs (arrive 09:00-16:00, depart 10:00-17:00) |
| :---: | :---: |
| 22 | M ax Daily LGVs (arrive 09:00-16:00, depart 10:00-17:00) |

Daily Vehicle Profile

| Time | Cars |  |  | LGVs |  |  | Total HGVs |  |  | Total Vehicles |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Arr | Dep | Total | Arr | Dep | Total | Arr | Dep | Total | Arr | Dep | Total |
| 06:00-07:00 |  |  | 0.0 |  |  | 0.0 |  |  | 0.0 | 0.0 | 0.0 | 0.0 |
| 07:00-08:00 | 20.3 |  | 20.3 |  |  | 0.0 |  |  | 0.0 | 20.3 | 0.0 | 20.3 |
| 08:00-09:00 | 5.3 |  | 5.3 |  |  | 0.0 |  |  | 0.0 | 5.3 | 0.0 | 5.3 |
| 09:00-10:00 | 0.2 |  | 0.2 | 3.1 |  | 3.1 | 6.6 |  | 6.6 | 9.9 | 0.0 | 9.9 |
| 10:00-11:00 | 0.2 |  | 0.2 | 3.1 | 3.1 | 6.3 | 6.6 | 6.6 | 13.1 | 9.9 | 9.7 | 19.6 |
| 11:00-12:00 | 0.2 |  | 0.2 | 3.1 | 3.1 | 6.3 | 6.6 | 6.6 | 13.1 | 9.9 | 9.7 | 19.6 |
| 12:00-13:00 |  |  | 0.0 | 3.1 | 3.1 | 6.3 | 6.6 | 6.6 | 13.1 | 9.7 | 9.7 | 19.4 |
| 13:00-14:00 |  |  | 0.0 | 3.1 | 3.1 | 6.3 | 6.6 | 6.6 | 13.1 | 9.7 | 9.7 | 19.4 |
| 14:00-15:00 |  | 0.2 | 0.2 | 3.1 | 3.1 | 6.3 | 6.6 | 6.6 | 13.1 | 9.7 | 9.9 | 19.6 |
| 15:00-16:00 |  | 0.2 | 0.2 | 3.1 | 3.1 | 6.3 | 6.6 | 6.6 | 13.1 | 9.7 | 9.9 | 19.6 |
| 16:00-17:00 |  | 5.5 | 5.5 |  | 3.1 | 3.1 |  | 6.6 | 6.6 | 0.0 | 15.2 | 15.2 |
| 17:00-18:00 |  | 5.3 | 5.3 |  |  | 0.0 |  |  | 0.0 | 0.0 | 5.3 | 5.3 |
| 18:00-19:00 |  | 15.0 | 15.0 |  |  | 0.0 |  |  | 0.0 | 0.0 | 15.0 | 15.0 |
| 19:00-20:00 |  |  | 0.0 |  |  | 0.0 |  |  | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 26.1 | 26.1 | 52.3 | 22.0 | 22.0 | 44.0 | 46.0 | 46.0 | 92.0 | 94.1 | 94.1 | 188.3 |

## Appendix P2 - Trip Distribution Calculations

| population | All usual residents aged 16 and over in employment the week before the census |
| :--- | :--- |
| units | Persons |
| date | 2011 |
| method of travel to work | Driving a car or van |


| usual residence | place of work |
| :---: | :---: |
|  | E02004489 : Chelmsford 005 |
| E02004446 : Braintree 001 | 4 |
| E02004447 : Braintree 002 | 7 |
| E02004448 : Braintree 003 | 11 |
| E02004449 : Braintree 004 | 17 |
| E02004450 : Braintree 005 | 12 |
| E02004451 : Braintree 006 | 20 |
| E02004452 : Braintree 007 | 36 |
| E02004453: Braintree 008 | 17 |
| E02004454 : Braintree 009 | 26 |
| E02004455 : Braintree 010 | 36 |
| E02004456 : Braintree 011 | 40 |
| E02004457 : Braintree 012 | 46 |
| E02004458: Braintree 013 | 66 |
| E02004459 : Braintree 014 | 29 |
| E02004460 : Braintree 015 | 70 |
| E02004461 : Braintree 016 | 31 |
| E02004462 : Braintree 017 | 65 |
| E02004463 : Braintree 018 | 98 |
| E02004485: Chelmsford 001 | 71 |
| E02004486 : Chelmsford 002 | 103 |
| E02004487 : Chelmsford 003 | 81 |
| E02004488: Chelmsford 004 | 148 |
| E02004489 : Chelmsford 005 | 216 |
| E02004490 : Chelmsford 006 | 96 |
| E02004491: Chelmsford 007 | 140 |
| E02004492 : Chelmsford 008 | 126 |
| E02004493: Chelmsford 009 | 93 |
| E02004494 : Chelmsford 010 | 66 |
| E02004495 : Chelmsford 011 | 60 |
| E02004496 : Chelmsford 012 | 67 |
| E02004497 : Chelmsford 013 | 90 |
| E02004498: Chelmsford 014 | 94 |
| E02004499 : Chelmsford 015 | 83 |
| E02004500 : Chelmsford 016 | 76 |
| E02004501: Chelmsford 017 | 53 |
| E02004502 : Chelmsford 018 | 35 |
| E02004503: Chelmsford 019 | 44 |
| E02004504 : Chelmsford 020 | 62 |
| E02004505 : Chelmsford 021 | 27 |
| Hartlepool | 1 |
| Middlesbrough | 0 |
| Redcar and Cleveland | 0 |
| Stockton-on-Tees | 0 |
| Darlington | 0 |
| County Durham |  |
| Northumberland | 1 |
| Gateshead | 0 |
| Newcastle upon Tyne | 0 |
| North Tyneside | 0 |
| South Tyneside | 0 |
| Sunderland | 0 |
| Halton | 0 |
| Warrington | 0 |
| Blackburn with Darwen | 0 |
| Blackpool |  |
| Cheshire East | 1 |
| Cheshire West and Chester | 0 |
| Allerdale | 0 |
| Barrow-in-Furness | 1 |
| Carlisle | 0 |
| Copeland | 0 |
| Eden | 0 |
| South Lakeland | 0 |
| Burnley | 0 |
| Chorley | 0 |
| Fylde | 0 |
| Hyndburn | 0 |
| Lancaster | 0 |
| Pendle | 0 |
| Preston | 0 |


| usual residence | place of work | usual residence | place of work |
| :---: | :---: | :---: | :---: |
|  | E02004489 : Chelmsford 005 |  | E02004489 : Chelmsford 005 |
| Ribble Valley | 0 | Kettering | 0 |
| Rossendale | 0 | Northampton | 0 |
| South Ribble | 0 | South Northamptonshire | 0 |
| West Lancashire | 0 | Wellingborough | 0 |
| Wyre | 0 | Ashfield | 0 |
| Bolton | 0 | Bassetlaw | 0 |
| Bury | 1 | Broxtowe | 0 |
| M anchester | 0 | Gedling | 0 |
| Oldham | 0 | M ansfield | 0 |
| Rochdale | 0 | Newark and Sherwood | 0 |
| Salford | 0 | Rushcliffe | 0 |
| Stockport | 0 | Herefordshire, County of | 0 |
| Tameside | 0 | Telford and Wrekin | 0 |
| Trafford | 0 | Stoke-on-Trent | 0 |
| Wigan | 0 | Shropshire | 0 |
| Knowsley | 0 | Cannock Chase | 0 |
| Liverpool | 0 | East Staffordshire | 0 |
| St. Helens | 0 | Lichfield | 0 |
| Sefton | 0 | Newcastle-under-Lyme | 0 |
| Wirral | 0 | South Staffordshire | 1 |
| Kingston upon Hull, City of | 1 | Stafford | 0 |
| East Riding of Yorkshire | 2 | Staffordshire M oorlands | 0 |
| North East Lincolnshire | 0 | Tamworth | 0 |
| North Lincolnshire | 0 | North Warwickshire | 0 |
| York | 0 | Nuneaton and Bedworth | 0 |
| Craven | 0 | Rugby | 0 |
| Hambleton | 0 | Stratford-on-Avon | 0 |
| Harrogate | 0 | Warwick | 1 |
| Richmondshire | 0 | Bromsgrove | 0 |
| Ryedale | 0 | M alvern Hills | 0 |
| Scarborough | 0 | Redditch | 0 |
| Selby | 0 | Worcester | 0 |
| Barnsley | 0 | Wychavon | 0 |
| Doncaster | 0 | Wyre Forest | 0 |
| Rotherham | 0 | Birmingham | 0 |
| Sheffield | 0 | Coventry | 0 |
| Bradford | 0 | Dudley | 0 |
| Calderdale | 0 | Sandwell | 1 |
| Kirklees | 0 | Solihull | 0 |
| Leeds | 0 | Walsall | 0 |
| Wakefield | 0 | Wolverhampton | 0 |
| Derby | 0 | Peterborough | 3 |
| Leicester | 0 | Luton | 0 |
| Rutland | 0 | Southend-on-Sea | 96 |
| Nottingham | 1 | Thurrock | 65 |
| Amber Valley | 0 | Bedford | 0 |
| Bolsover | 0 | Central Bedfordshire | 4 |
| Chesterfield | 0 | Cambridge | 0 |
| Derbyshire Dales | 0 | East Cambridgeshire | 2 |
| Erewash | 1 | Fenland | 1 |
| High Peak | 0 | Huntingdonshire | 0 |
| North East Derbyshire | 0 | South Cambridgeshire | 8 |
| South Derbyshire | 0 | Basildon | 261 |
| Blaby | 0 | Braintree | 631 |
| Charnwood | 0 | Brentwood | 128 |
| Harborough | 0 | Castle Point | 86 |
| Hinckley and Bosworth | 0 | Chelmsford | 1,831 |
| Melton | 0 | Colchester | 258 |
| North West Leicestershire | 0 | Epping Forest | 34 |
| Oadby and Wigston | 0 | Harlow | 20 |
| Boston | 0 | M aldon | 325 |
| East Lindsey | 0 | Rochford | 97 |
| Lincoln | 0 | Tendring | 74 |
| North Kesteven | 0 | Uttlesford | 66 |
| South Holland | 1 | Broxbourne | 5 |
| South Kesteven | 0 | Dacorum | 3 |
| West Lindsey | 0 | East Hertfordshire | 22 |
| Corby | 0 | Hertsmere | 3 |
| Daventry | 0 | North Hertfordshire | 2 |
| East Northamptonshire | 2 | St Albans | 4 |

WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)
ONS Crown Copyright Reserved [from Nomis on 1 February 2021]

| population | All usual residents aged 16 and over in employment the week before the census |
| :--- | :--- |
| units | Persons |
| date | 2011 |
| method of travel to work | Driving a car or van |


| usual residence | place of work |
| :---: | :---: |
|  | E02004489 : |
|  | Chelmsford 005 |
| Stevenage | 3 |
| Three Rivers | 1 |
| Watford | 0 |
| Welwyn Hatfield | 1 |
| Breckland | 1 |
| Broadland | 0 |
| Great Yarmouth | 1 |
| King's Lynn and West Norfolk | 0 |
| North Norfolk | 1 |
| Norwich | 4 |
| South Norfolk | 3 |
| Babergh | 49 |
| Forest Heath | 5 |
| Ipswich | 35 |
| Mid Suffolk | 16 |
| St Edmundsbury | 11 |
| Suffolk Coastal | 15 |
| Waveney | 0 |
| Barking and Dagenham | 7 |
| Barnet | 0 |
| Bexley | 2 |
| Brent | 0 |
| Bromley | 6 |
| Camden | 0 |
| Croydon | 1 |
| Ealing | 0 |
| Enfield | 6 |
| Greenwich | 4 |
| Hackney | 3 |
| Hammersmith and Fulham | 0 |
| Haringey | 3 |
| Harrow | 0 |
| Havering | 50 |
| Hillingdon | 0 |
| Hounslow | 2 |
| Islington | 3 |
| Kensington and Chelsea | 0 |
| Kingston upon Thames | 0 |
| Lambeth | 0 |
| Lewisham | 1 |
| M erton | 0 |
| Newham | 9 |
| Redbridge | 17 |
| Richmond upon Thames | 0 |
| Southwark | 0 |
| Sutton | 0 |
| Tower Hamlets | 4 |
| Waltham Forest | 3 |
| Wandsworth | 2 |
| Westminster, City of London | 0 |
| Medway | 4 |
| Bracknell Forest | 0 |
| West Berkshire | 0 |
| Reading | 0 |
| Slough | 0 |
| Windsor and M aidenhead | 0 |
| Wokingham | 0 |
| Milton Keynes | 0 |
| Brighton and Hove | 1 |
| Portsmouth | 3 |
| Southampton | 1 |
| Isle of Wight | 0 |
| Aylesbury Vale | 1 |
| Chiltern | 1 |
| South Bucks | 1 |
| Wycombe | 1 |
| Eastbourne | 0 |
| Hastings | 1 |
| Lewes | 3 |
| Rother | 0 |


| usual residence | place of work |
| :---: | :---: |
|  | E02004489: |
|  | Chelmsford 005 |
| Wealden | 2 |
| Basingstoke and Deane | 0 |
| East Hampshire | 0 |
| Eastleigh | 0 |
| Fareham | 0 |
| Gosport | 0 |
| Hart | 0 |
| Havant | 0 |
| New Forest | 1 |
| Rushmoor | 0 |
| Test Valley | 3 |
| Winchester | 0 |
| Ashford | 2 |
| Canterbury | 1 |
| Dartford | 10 |
| Dover | 0 |
| Gravesham | 3 |
| M aidstone | 1 |
| Sevenoaks | 2 |
| Shepway | 1 |
| Swale | 2 |
| Thanet | 0 |
| Tonbridge and M alling | 2 |
| Tunbridge Wells | 0 |
| Cherwell | 0 |
| Oxford | 0 |
| South Oxfordshire | 1 |
| Vale of White Horse | 1 |
| West Oxfordshire | 0 |
| Elmbridge | 0 |
| Epsom and Ewell | 0 |
| Guildford | 0 |
| M ole Valley | 0 |
| Reigate and Banstead | 3 |
| Runnymede | 0 |
| Spelthorne | 0 |
| Surrey Heath | 0 |
| Tandridge | 1 |
| Waverley | 1 |
| Woking | 1 |
| Adur | 0 |
| Arun | 0 |
| Chichester | 1 |
| Crawley | 0 |
| Horsham | 1 |
| Mid Sussex | 0 |
| Worthing | 0 |
| Bath and North East Somerset | 0 |
| Bristol, City of | 0 |
| Cornwall,Isles of Scilly | 2 |
| Wiltshire | 0 |
| North Somerset | 0 |
| South Gloucestershire | 0 |
| Plymouth | 0 |
| Torbay | 0 |
| Bournemouth | 0 |
| Poole | 0 |
| Swindon | 0 |
| East Devon | 0 |
| Exeter | 0 |
| Mid Devon | 0 |
| North Devon | 0 |
| South Hams | 0 |
| Teignbridge | 0 |
| Torridge | 0 |
| West Devon | 0 |
| Christchurch | 0 |
| East Dorset | 1 |
| North Dorset | 0 |
| Purbeck | 0 |


| usual residence | place of work |
| :--- | :---: |
|  | E02004489: <br> Chelmsford 005 |
| West Dorset | 0 |
| Weymouth and Portland | 1 |
| Cheltenham | 0 |
| Cotswold | 0 |
| Forest of Dean | 0 |
| Gloucester | 1 |
| Stroud | 0 |
| Tewkesbury | 0 |
| Mendip | 0 |
| Sedgemoor | 0 |
| South Somerset | 0 |
| Taunton Deane | 0 |
| West Somerset | 0 |
| Isle of Anglesey | 0 |
| Gwynedd | 0 |
| Conwy | 0 |
| Denbighshire | 0 |
| Flintshire | 0 |
| Wrexham | 0 |
| Ceredigion | 0 |
| Pembrokeshire | 0 |
| Carmarthenshire | 0 |
| Swansea | 1 |
| Neath Port Talbot | 0 |
| Bridgend | 0 |
| The Vale of Glamorgan | 0 |
| Cardiff | 0 |
| Rhondda Cynon Taf | 0 |
| Caerphilly | 0 |
| Blaenau Gwent | 0 |
| Torfaen | 0 |
| Monmouthshire | 0 |
| Newport | 0 |
| Powys | 0 |
| Merthyr Tydfil | 0 |
| Total | 0 |
| n ordel | 0 |

In order to protect against disclosure of personal information, records have been swapped between different geographic areas. Some counts will be affected, particularly small counts at the lowest geographies.


All Origins (Local Authority Level)

| Local Authority | \# | Route |
| :--- | :---: | :---: |
| Chelmsford | 1,831 | LOCAL |
| Braintree | 631 | LOCAL |
| M aldon | 325 | A12(S) |
| Basildon | 261 | A12(S) |
| Colchester | 258 | A12(N) |
| Brentwood | 128 | A12(S) |
| Rochford | 97 | A12(S) |
| Southend-on-Sea | 96 | A12(S) |
| Castle Point | 86 | A12(S) |
| Tendring | 74 | A12(N) |
| Uttlesford | 66 | Al30(N) |
| Thurrock | 65 | A12(S) |
| Havering | 50 | A12(S) |
| Babergh | 49 | Al30(N) |
| Ipswich | 35 | A12(N) |
| Epping Forest | 34 | A12(S) |
| East Hertfordshire | 22 | Al30(N) |
| Harlow | 20 | Al30(N) |
| Redbridge | 17 | A12(S) |
| Mid Suffolk | 16 | A12(N) |
| Suffolk Coastal | 15 | Al2(N) |
| St Edmundsbury | 11 | Al30(N) |
| Dartford | 10 | A12(S) |
| Newham | 9 | A12(S) |
| South Cambridgeshire | 8 | Al30(N) |
| Barking and Dagenham | 7 | A12(S) |
| Bromley | 6 | A12(S) |
| Enfield | 6 | A12(S) |
| Broxbourne | 5 | A130(N) |
| Forest Heath | 5 | A130(N) |
| Medway | 4 | A12(S) |
| Norwich | 4 | A12(N) |
| Greenwich | 4 | A12(S) |
| Central Bedfordshire | 4 | A130(N) |
| St Albans | 4 | A12(S) |
| Tower Hamlets | 4 | A12(S) |
| Total | $\mathbf{4 , 2 6 7}$ | $\mathbf{9 7 . 4 \%}$ |
|  |  |  |

*excludes locations with 3 or fewer (2.6\%)

MSOA Level (Chelmsford and Braintree)


## Regional Distribution - Summary

| Route | $\#$ | $\%$ |
| :---: | :---: | :---: |
| $\mathrm{~A} 12(\mathrm{~S})$ | 1,600 | $37.5 \%$ |
| $\mathrm{Al30}(\mathrm{~S})$ | 1,241 | $29.1 \%$ |
| $\mathrm{~A} 12(\mathrm{~N})$ | 632 | $14.8 \%$ |
| $\mathrm{Al30}(\mathrm{~N})$ | 795 | $18.6 \%$ |
| Total | $\mathbf{4 , 2 6 7}$ | $\mathbf{1 0 0 . 0} \%$ |

## Appendix Q - Traffic Growth Factors

## Longfield Solar Farm - TEM PRO Growth Factors - 2019 to 2025

Dataset Version: 72
Result Type: Trip ends by time period
Base Year:
Future Year:
Trip Purpose Group:
2019
2025

Trip End Type:
All purposes
Alternative Assumptions Applied: No
Travel M ode:
Dataset:
Car Driver
RTF 2018 - Scenario 1 (Reference)

| Level | Area | Road <br> Type | Local Growth Figure (2019 to 2025) <br>  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | (0700-0959) | Weekday PM peak <br> $\mathbf{( 1 6 0 0 - 1 8 5 9 )}$ | Average Weekday |
| Authority | Chelmsford | Trunk | 1.05911 | 1.06031 | 1.06687 |
|  |  | Principal | 1.04844 | 1.04963 | 1.05612 |
|  |  | Minor | 1.04829 | 1.04948 | 1.05597 |

## Longfield Solar Farm - TEM PRO Growth Factors - 2021 to 2025

Dataset Version: 72
Result Type: Trip ends by time period
Base Year:
Future Year:
Trip Purpose Group:
2021

Trip End Type:
2025

Alternative Assumptions Applied: No
Travel M ode:
Car Driver
Dataset:
RTF 2018 - Scenario 1 (Reference)

| Level |  | Local Growth Figure (2021 to 2025) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Area |  | Weekday AM Peak <br> $(\mathbf{0 7 0 0}-\mathbf{0 9 5 9})$ | Weekday PM peak <br> $(\mathbf{1 6 0 0}-\mathbf{1 8 5 9})$ | Average Weekday |
| Authority | Chelmsford |  | 1.03266 | 1.03405 | 1.03839 |

## Appendix R - Traffic Flow Diagrams



## 2019 Baseline (08:00-09:00)



## 2019 Baseline (17:00-18:00)



## $\underline{2019 \text { Baseline (18:00-19:00) }}$





## 2021 Baseline (08:00-09:00)



## $\underline{2021 \text { Baseline (17:00-18:00) }}$



## 2021 Baseline (18:00-19:00)




## Iand North of Cranham Road - Total Vehicle Link Flows (17:00-18:00)



## Land North of Cranham Road - Total Vehicle Link Flows (24 hours)






















[^0]:    $\square$
    1 steke-7E:Y

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    = tosispuabionoss
    IF Focercr Subataion
    
    Longfielda
    Solar Farm

[^1]:    AMBER rating

[^2]:    Front seat

[^3]:    Front seat

[^4]:    Not car passenger

[^5]:    Front seat

[^6]:    Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

