SURREY
COUNTY COUNCIL

WOKING LOCAL PLAN

Woking Town Centre Modelling Assessment

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FOREWORD

The trip generation and distribution contained in this report are initial estimates to assist in the modelling work being carried out by Surrey County Council and should not be taken as agreed or finalised information during any future planning application.

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1 INTRODUCTION

1.1 Background

1.1.1 Woking Borough Council (WBC), along with Surrey County Council's (SCC) Transport Development Planning team (TDP), requested SCC's Transport Studies team undertake a cumulative assessment of WBC's Local Plan to allow a better understanding of its potential traffic impacts in the vicinity of Woking town centre. The best tool for this project is the SCC Woking S-Paramics model as it models the town centre in detail and represents the base year of 2014.

1.1.2 This report sets out the methodology and results of this testing and accompanies the following documents:

- *Woking Town Centre Microsimulation Model: Local Model Validation Report* (August 2015; document number 4B154001/04).
- *Woking Town Centre: Forecasting Proposal: Technical Guidance* (October 2015; document number 4B154001/05).
- *The Woking Borough Council Local Development Framework Green Belt Boundary Review Sensitivity Test, Strategic Transport Assessment* (January 2015; document number 53613T36/01)

1.2 Base Model

1.2.1 Surrey County Council's microsimulation model uses version 2014.1 of the S-Paramics software. S-Paramics is an internationally recognised microsimulation traffic modelling program. It simulates the individual components of traffic flow and congestion, and presents its output as a real-time visual display for traffic management and road network design.

1.2.2 **Figure 1.1** shows the extent of the model.

1.2.3 The model base year is 2014. It represents the average weekday AM and PM peak hours of 08:00 - 09:00 and 17:00 - 18:00.

1.2.1 The majority of traffic signals within Woking town centre are operated by SCOOT (Split Cycle Offset Optimisation Technique) UTC (Urban Traffic Control). SCOOT UTC is an online computer that continuously monitors traffic flows over the whole network and optimises signal timings to decrease delay and improve traffic flow. Some traffic signals in Woking are operated by MOVA (Microprocessor Optimised Vehicle Actuation). MOVA provides adaptive signal control for an individual junction that reacts to the on-street traffic conditions. As stated in the Local Model Validation Report, within the model average signal timings are used, sourced from the UTC database and MOVA logs where possible.

Figure 1.1: Model extent

2 MODEL FORECASTING METHODOLOGY

2.1 Methodology Overview

2.1.1 In order to derive traffic forecasts for use within the Paramics model, SCC's strategic county transport model, SINTRAM was used. SINTRAM is a strategic transport model that encapsulates the road network of Surrey and surrounding local authorities; at a national level the model incorporates all strategic roads in Great Britain. A strategic model uses aggregate descriptions of traffic interactions and is therefore appropriate for assessments of traffic impacts and generating strategic forecasts of future trip ends.

2.1.2 **Figure 2.1** shows the process of developing the Paramics model matrices.

2.1 Development Trip Generation

2.1.1 Information regarding the composition of both commercial and residential development sites in the whole of teh borough of Woking was provided by Woking Borough Council in the form of the county council's pro-forma. The pro-forma was finalised on 07/07/16.

2.1.2 Vehicle trips generated by each development site were calculated using the information contained within the pro-forma and the Trip Rate Information Computer Database (TRICS) version 2015 7.2.4.

2.1.3 TRICS is the national standard database system of trip generation and analysis used in the planning application process. The database holds thousands of trip rate surveys generated by different land uses and location type.

2.1.4 For all developments within the borough of Woking, the database was interrogated for sites of a similar geographical location and land use in line with guidance from the 2013 Good Practice Guide. The database produces trip rates per $100m^2$ gross floor area (GFA), site area (Ha), number of residents or by residential unit. The resulting trip rates were applied to the size and composition of each development to calculate the trip generation for each site. Consideration was also made to the previous or existing land use of the development site and the trips it would have created. These trips were deducted from those generated by the new development to prevent double counting.

2.1.5 The trip generation was calculated separately for vehicles arriving and departing each development site. This was also split into the vehicle types: car, LGV and HGV, similarly informed by the information contained within the TRICS database.

2.1.6 Historic information regarding the numbers of windfalls was supplied for the borough as a whole. Since the exact location of future windfall schemes is unknown, the relating trip generation was apportioned by population of SINTRAM zone initially, before being proportioned out again to Paramics zones.

2.1.7 At this stage, all development related trips have been assumed to be new trips, and as such can be considered to represent a worst case scenario. No allowance has been made for linked, pass-by, diverted or transferred trips.

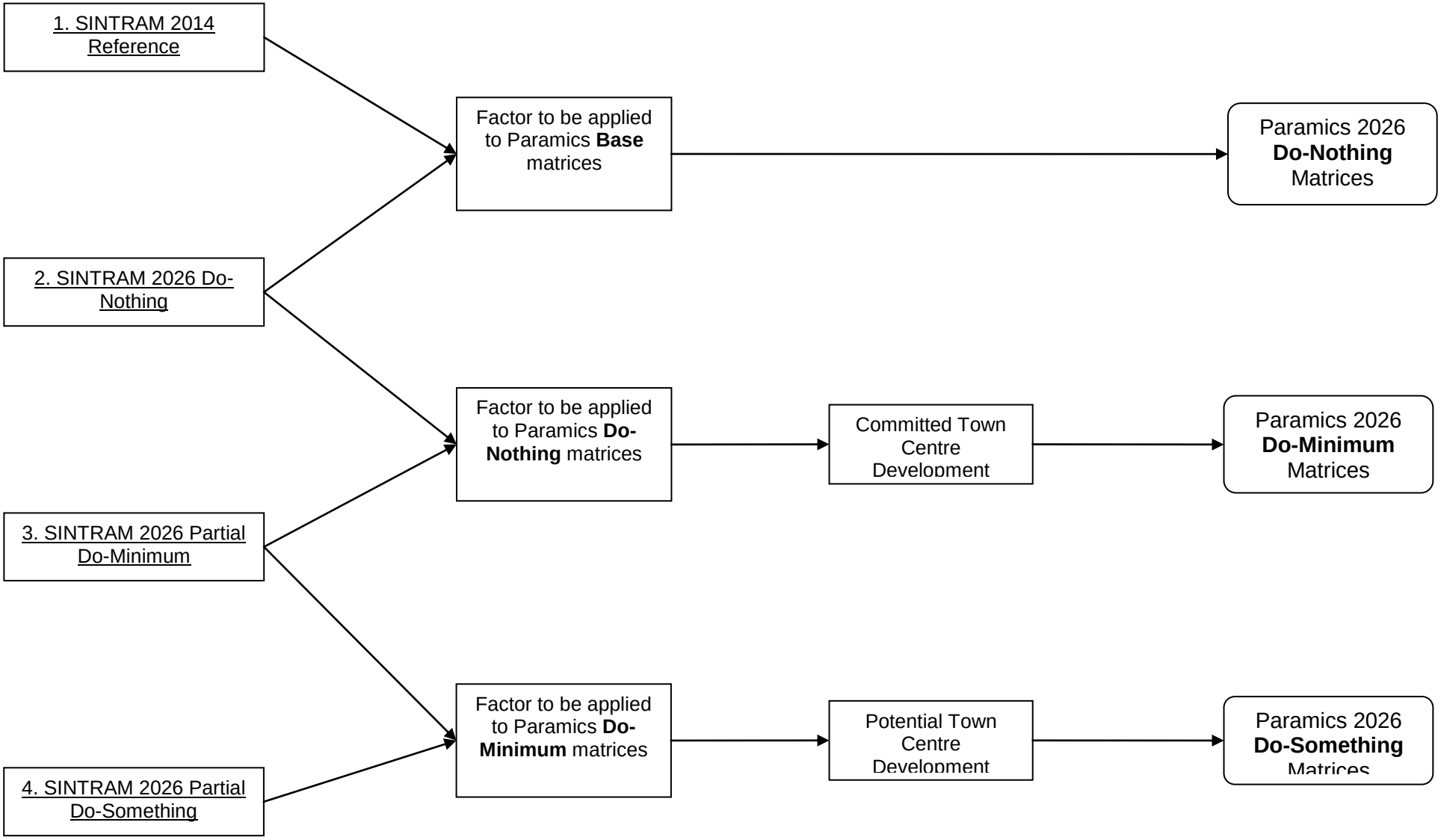


Figure 2.1: Forecasting method

2.2 SINTRAM Modelling Methodology

2.2.1 The generation of growth factors for use in Paramics was undertaken using SCC's strategic model, SINTRAM version 6 (18/01/17) with OmniTRANS modelling program, version 6.1.11.

2.2.2 SINTRAM makes use of Department for Transport's national forecast database, TEMPRO version 7.0 with the NTEM 7.0 dataset. The NTEM 7.0 dataset is based on the latest forecasting evidence base and is therefore the most up-to-date dataset available.

2.2.3 In order to derive forecasts for use within the Paramics model, four SINTRAM scenarios were used; a 2014 Reference, 2026 Do-Nothing, 2026 Partial Do-Minimum and 2026 Partial Do-Something. The development of these four scenarios is described below, whilst composition of the scenarios is summarised in **Table 2.1.** The 'Partial' SINTRAM scenarios exclude development in Woking town centre as this was added directly into the Paramics model and therefore not considered during the SINTRAM forecasting process.

Element	2014 Reference	2026 Do-Nothing	2026 Partial Do-Minimum	2026 Partial Do-Something
2009 Base flows factored to 2014	✓	✓	✓	✓
Full TEMPRO growth outside Woking borough	×	✓	✓	✓
Background traffic growth in borough of Woking (related to changes in demographics and car ownership)	×	✓	✓	✓
Highway network changes related to Victoria Square	×	×	✓	✓
Trips generated by committed developments in Woking borough (excluding town centre)	×	×	✓	✓
Trips generated by potential developments in Woking borough (excluding town centre)	×	×	×	✓

Table 2.1: SINTRAM Model Scenario definition

2014 Reference

2.2.4 The base year of the SINTRAM model is 2009. Given the model base year dates back more than 5 years prior to the current year, a 2014 reference year has been created. This is to bring the model base up to date and to reflect 2014 trends. A 2014 reference year also simplifies the forecasting process because TEMPRO version 7.0 only provides forecasts from 2014, and data in the pro-forma supplied by Woking is also from 2014 onwards.

2.2.5 64 observed counts within Surrey were extracted from the Department for Transport's manual classified count annual survey program for the years 2009 and

2014. From these, growth factors have been derived, as shown in **Table 2.2**, and applied to the 2009 validated trip matrices for each vehicle type.

	Car	LGV	HGV	All
Average AM peak hour (07:00 – 10:00)				
2009 Total Flow	154,686	26,131	12,383	193,201
2014 Total Flow	148,765	28,453	12,814	190,031
Growth Factor	**0.962**	**1.089**	**1.035**	**0.984**

Table 2.2: 2009 to 2014 growth factors

2.2.1 It can be seen that the number of cars has reduced during the weekday average AM peak hour between 2009 and 2014, but there has been a growth in the number of light and heavy goods vehicles.

2026 Do-Nothing

2.2.2 The 2026 Do-Nothing scenario was developed in order to establish what background growth will occur in the borough of Woking. The alternative planning assumptions functionality within TEMPRO was used to fix jobs and houses within Woking at 2014 levels. Outside the borough full TEMPRO growth is included. The resultant factor was applied to the 2014 reference matrices. The background growth in this scenario is attributed to changes in car ownership and is not related to development.

2026 Partial Do-Minimum

2.2.3 The 2026 Partial Do-Minimum Scenario incorporates full TEMPRO growth outside the borough of Woking and includes all commercial and residential development sites within Woking that have received planning permission, excluding those within the town centre. Trips generated by town entre developments are excluded as they are dealt with separately in the Paramics model and discussed in **section 2.3**.

2.2.4 A number of highway changes are incorporated within the SINTRAM do-minimum scenario. These are committed highway schemes affecting the strategic highway network.

- M25 junction 16 to 23 widening of the carriageway from dual 3 lanes to dual 4 lanes;
- M25 junction 27 to 30 widening of the carriageway from dual 3 lanes to dual 4 lanes;
- M25 New Barn Farm Service Station *at* Cobham that can be accessed from both sides of the carriageway and will permit u-turns between junctions 9 and 10; and
- A3 Hindhead tunnel and associated local junction alterations.
- Malden Rushett signal junction of A243 Leatherhead Road with B280 Fair Oak Lane capacity improvements;
- M3 hard shoulder running junction 2 to 4a;
- A325 Portsmouth Road Frimley, widening from one to two lanes between Toshiba and Hospital roundabouts;
- East Street development, Farnham;

- Redhill 'balanced network', conversion of Cromwell Road, St Matthews' Road and Queensway to two-way;
- Runnymede roundabout improvements;
- Epsom 'Plan E';
- Sheerwater Link Road;
- Conversion of 'Hospital Roundabout' Guildford to signals; and
- Waitrose Dorking new signal junction on A25 South Street.

2.2.5 In addition to these strategic highway network changes, network changes resulting from the Victoria Square development were incorporated. Within the SINTRAM model, the highway network is simplified and consequently the network changes are also simplified to an extent.

2.2.6 Network changes made in the model as a result of the Victoria Square development were identified from drawings contained within the Transport Assessment for the planning application (*drawings 110069/A89.1-4 revision L*). These reflect the latest agreed layouts and are shown within **Appendix A** of this report. Changes are as follows:

- Cawsey Way closed to traffic and High Street joined directly to A320 Victoria Way with new signal junction;
- High street converted to one-way Westbound between Victoria Way and Chertsey Road;
- The Broadway converted to one-way westbound between Duke Street and Chertsey Road
- A320 Victoria Way between Church Street West and High Street changed to two lanes in each direction with the bus lane removed;
- Left turn from A320 Victoria Way to Church Street West converted to a bus-only turn;
- Bus lay-by added on Church Street West;
- A320 Victoria Way northbound between Church Street and Forge End reduced to 2 lanes;
- A320 Victoria Way southbound between Forge End and Church Street reduced to 2 lanes;
- Bus lane added on A320 Victoria Way eastbound near Peacocks car park entrance; and
- New zebra crossings on High Street near A320 Victoria Way and The Broadway near Chertsey Road.

2026 Partial Do-Something

2.2.7 The 2026 Partial Do-Something model is a direct copy of the 2026 Do-Minimum scenario, but with the addition of potential development trips within the borough of Woking excluding the town centre.

SINTRAM Growth Factors

2.2.8 In order to derive growth factors for the microsimulation model area, a cordon was drawn within the SINTRAM model to match the study area within Paramics. Cordon matrices were extracted each scenario. The resulting factors are shown in **Table 2.3**.

	AM Peak		PM Peak	
	Car/LGV	**HGV**	**Car/LGV**	**HGV**
2014 Reference – 2026 Do Nothing	1.015	1.075	1.004	0.988
2026 Do-Nothing – 2026 Partial Do-Minimum	1.017	1.012	1.016	1.007
2026 Partial Do-Minimum – 2026 Partial Do-Something	1.013	1.010	1.010	1.012

Table 2.3 Growth factors derived from SINTRAM

2.3 Paramics Modelling Methodology

2.3.1 Within Paramics, three scenarios have been set up; a 2026 Do-Nothing, 2026 Do-Minimum and 2026 Do-Something. Note that the 2026 Do-Nothing has not been assessed but is merely required in order to develop the other scenarios. To identify the traffic impacts of the Local Plan, the 2026 Do-Minimum and 2026 Do-Something have been assessed. Development of these scenarios is described below and summarised in **Table 2.4.**

Element	Do-Nothing	Do-Minimum	Do-Something
Background traffic growth	✓	✓	✓
Highway network changes related to Victoria Square	×	✓	✓
Trips generated by committed developments	×	✓	✓
Trips generated by potential developments	×	×	✓

Table 2.4: Scenario definition

2026 Do-Nothing

2.3.2 The 2026 Do-Nothing scenario within Paramics has been developed by applying the 2014 - 2026 Do-Nothing growth factor derived from SINTRAM to the 2014 Base Paramics Matrices. This factor includes background growth in the borough of Woking and full TEMPRO growth in the rest of the country. This scenario is not assessed within Paramics but is used as a starting point in the development of the Do-Minimum and Do-Something scenarios to ensure that background growth is captured. **Appendices A** and **B** contain the final do-something matrices which were the output of this process. Matrix level 1 contains cars and light goods vehicles, while matrix level 2 contains heavy goods vehicles. Matrix totals are shown in **Table 2.5**.

2026 Do-Minimum

2.3.3 The 2026 Do-Minimum scenario includes all commercial and residential development sites within Woking that have received planning permission and highway network changes related to the Victoria Square development. It was developed by applying a growth factor derived from the SINTRAM 2026 Do-Nothing and 2026 Partial Do-Minimum models to the 2026 Do-Nothing matrices. This incorporated committed developments within the borough of Woking but excluding the town centre. Trips generated by the town centre committed developments were subsequently added directly to the Paramics matrices.

2.3.4 Trips generated by the committed town centre developments were applied to the matrices via the *Furness* method. Development trips were assigned to the closest appropriate zone to minimise complexity in the model and to reflect the fact that detailed access arrangements are not necessarily known at this stage. Since the *Furnessing* procedure only converges when row and column totals match, the two estimates of the total trips in the matrix (origins and destinations) were reconciled. This was achieved by factoring column totals (destinations) to row totals (origins) in the AM peak and vice versa in the PM peak. **Appendices C** and **D** contain the do-minimum matrices which were the output of this process. Matrix level 1 contains cars and light goods vehicles, while matrix level 2 contains heavy goods vehicles. Matrix totals are shown in **Table 2.5**.

2.3.5 Highway network changes relating to the Victoria Square committed development were included as described in **section 2.2.6**. Further detailed amendments made within the Paramics model to reflect the operation of the network with Victoria Square in place are as follows:

- Bus routes and stops were altered to match drawings within the Transport Assessment for Victoria Square. Dwell times for new stops were based on observed data for stops in similar locations.
- Where hazard overrides were no longer required due to nodes being deleted they were removed from the model.
- Zone 25 (Chapel Street) is now located within an area that can no longer be accessed vehicles during the modelled time periods. Trips to and from this zone were redistributed to zones 16 (Victoria Way Car Park), 20 (Peacocks Car Park), 21 (Shoppers Car Park), 22 (Church Street East) and 23 (Chertsey Road on-street parking / loading).
- Following a discussion with Tim Lawrence of Vectos (email dated 12.10.2016), the stopline on the High Street approach to its junction with A320 Victoria Way, was moved back 8.2m from the position shown in the drawing within the Transport Assessment. This reflects an update to the design subsequent to the submission of the planning application.
- Timings for altered / new junctions were taken from the Transyt modelling undertaken by Vectos whilst all other junctions' timings remain consistent with the base model unless specified in **Section 2.5**.

2.3.6 Further changes were made to the do-minimum model to reflect the future demand and network. With the exception of zone 25 mentioned previously, no changes were made to zoning in the model.

2.3.7 Profiles were not changed in the future scenarios because the assignment of trips resulted in 'mixed use' zones, containing residential, retail and office trips. The arrival and departure profiles for these uses would vary significantly due to the nature of the trips involved. Further data and analysis would be required in order to reflect this accurately. Currently it is not felt that the benefit of this extra work would outweigh the time involved in undertaking it.

2.3.8 Visibilities for give-way movements at new junctions were based on banding into categories of 'no visibility', 'poor', 'medium' and 'good' in line with the approach used in base model calibration.

2.3.9 Signal timings for the new junctions were extracted from the Transyt model produced by Vectos[1] . These were input into the model as fixed time junctions, with the exception of the High Street/Victoria Way junction which has a demand dependent stage for buses exiting the High Street. A new plans file was developed to reflect changes made to signal junctions as well as the new zebra crossings.

2026 Do-Something

2.3.10 The 2026 Do-Something Paramics model includes all of the sites contained in the do-minimum and the highway network changes related to the Victoria Square development with the addition of windfalls, sites yet to be awarded planning permission, and those comprising part of the Local Plan in Woking.

2.3.11 The do-something model is simply a copy of the do-minimum model with the demands amended to include potential developments. No network changes have been made. It was developed by applying a growth factor derived from the SINTRAM 2026 Do-Partial Do-Minimum and 2026 Partial Do-Something models to the Paramics 2026 Do-Minimum matrices. This incorporated proposed development within the borough of Woking but excluding the town centre. Trips generated by the town centre proposed developments were subsequently added directly to the Paramics matrices.

2.3.12 As with the Do-Minimum scenario, trips generated by the proposed town centre developments were applied to the matrices via the *Furness* method. **Appendices D** and **E** contain the final do-something matrices which were the output of this process. Matrix level 1 contains cars and light goods vehicles, while matrix level 2 contains heavy goods vehicles. Matrix totals are shown in **Table 2.5**.

2.4 Summary of Paramics Demand Matrices

2.4.1 **Table 2.5** below shows a summary of the matrix totals for each scenario. Note that the matrices are for the three hour modelled periods 07:00 – 10:00 and 16:00 – 19:00.

2.4.2 **Table 2.5** shows that growth between the base and do-minimum is between 3 & 4% whilst the growth between the base and do-something is between 4 and 5%. Growth between the do-minimum scenario and the do-something is 1.4% in the AM and 1.3% in the PM, indicating that the bulk of the growth in trips is coming from developments that have already been approved.

[1] *H:\Modelling\.paramics\3689_TDP\Woking\Victoria Square\Info supplied post-submission of planning application\Revised Transyt Model received 080714\Transyt Files (T37b).zip*

Matrix Totals	AM	PM
2014 Base	16365	18663
2026 Do-Minimum	16983	19229
2026 Do-Something	17225	19476
% Difference to Base	**AM**	**PM**
2026 Do-Minimum	3.8%	3.0%
2026 Do-Something	5.3%	4.4%

Table 2.5: Scenario matrix totals

2.5 Calibration of Paramics Models

2.5.1 When the do-minimum model was run, observations showed that the level of congestion during the AM peak was unrealistic. The model runs fixed signal timings and is therefore not as adaptive to changes in flow as the signals on street which run SCOOT and are therefore able to adapt timings. Consequently, it was necessary to calibrate signal timings at a number of junctions to improve the operation of the model despite the fact that this would not normally be considered best practice.

2.5.2 In response to congestion on the Guildford Road 'gyratory', at the junction of Station Approach with A320 Guildford Road (Node 62), green time for stage 1 was increased from 20 seconds to 23 seconds, whilst stage 2 was reduced from 25 seconds to 22 seconds. These changes fall within the parameters in the controller specification for the junction (J429).

2.5.3 In order to improve the traffic flow on the Guildford Road gyratory, changes to the frequency of pedestrian activation of the crossings were also required. The zebra crossing outside Evans was classified within the base model as having a high level of activations. This was reduced to medium in the do- minimum model between 07:00 and 08:00. Outside of this hour the activations were unchanged from the base. Activations of the toucan crossings south of Victoria Arch were also calibrated as part of this process. Outside of the peak hour (i.e. 07:00 to 08:00 and 09:00 – 10:00) activation frequency was altered from high/very high to medium. In the peak hour 08:00 – 09:00 activation frequency was changed from very high to high for the crossing across southbound traffic. This matches the frequency within the base model for the activation of the toucan crossing across the northbound traffic in this location.

2.5.4 Changes were also made to the frequency of the activation of the toucan crossings south of Victoria Arch during the PM peak. Outside the PM peak hour of 17:00 – 18:00 activations were reduced from high to medium, whilst during the peak hour they were reduced from very high to high.

2.5.5 Timings for the junction of Chobham Road with Victoria Way were adjusted in response to congestion in the model (node 160). Stage 1 green time was increased from 31 to 36 seconds. All other stage times remain the same as the base. These changes fall within the parameters in the controller specification for the junction (J424).

2.5.6 Timings for the junction of A320 Victoria Way with Forge End were obtained from the Transyt modelling undertaken by Vectos for the Victoria Square planning application. Observation of the model showed unrealistic congestion in this area, consequently, timings were adjusted with stage 1 green time increased from 48

seconds to 50 seconds and stage 2 green time reduced from 35 seconds to 33 seconds. In practice timings would be adaptive and any new junction would be calibrated on street to ensure optimal operation

2.5.7 The changes made to signals within the model highlight the fact that in order for development to be accommodated within Woking, extensive and regular revalidation of signals will be required to ensure that their operation is optimised for the traffic conditions as much as possible. The changes made to the frequency of activations of the pedestrian crossings on the Guildford Road gyratory indicates that the interaction of pedestrians/cyclists and vehicles is a key issue for Woking to ensure that their competing needs can be balanced.

2.5.8 Aside from the changes to pedestrian crossing activations, no changes were made to the signal timings in the PM peak models.

2.5.9 All changes made in the do-minimum model were carried through to the do-something model to ensure clarity when comparing the outputs.

2.6 Audit

2.6.1 All Paramics models were audited following the standard process used by SCC's Transport Studies Team.

3 RESULTS & ANALYSIS

3.1.1 Evaluation of the scenarios took place exclusively within the microsimulation model. **Section 2** describes how the matrices were developed for each scenario.

3.2 Model Stability

3.2.1 Random numbers govern many aspects of microsimulation modelling, such as the allocation of certain types of driver behaviour to a particular vehicles and the time at which the vehicle is released. Each time the model is simulated, a unique stream of random numbers is applied, with each different random number generating a different output. This makes the simulation more authentic, because in reality traffic flow is not the same, at the same time, everyday. For this reason, the model was seeded with a value of 0 which ensures that this occurs.

3.2.2 The option model was run twenty times to capture this daily variation in traffic flow. All reported model results are an average of runs undertaken.

3.2.3 **Table 3.1** sets out the model stability acceptability guidelines, taken from the Department for Transport's TAG unit 3.19 'Highway Assignment Modelling', which have been used to assess the stability of the option model, as well as the base over multiple runs.

Measure	Acceptability Guideline
Delta	Less than 0.1% or at least stable with convergence fully documented and all other criteria met.
Percentage of links with flow change (P)<1%	Four consecutive iterations greater than 98%.
Percentage change in total user costs (V)	Four consecutive iterations less than 0.1%.

Table 3.1: Model stability acceptability guidelines

3.2.4 **Tables 3.2** and **3.3** presents the model stability results of the option model for the AM and PM peak hours for the last ten of the twenty model runs. The absolute

average difference (AAD) and relative absolute average difference (RAAD) in link flows as well as the standard deviation are also presented.

3.2.5 Model assignment stability results provide an indication of the stability of the model outcomes between consecutive runs.

Tables 3.2 and **3.3**	**AAD**	**RAAD**	**%FLOW**	**STDEV**	**DELTA**	**V**
AM PEAK HOUR (08:00 – 09:00)						
6	10.41	1.5	95.6	100	0.84	0.06
7	7.56	1.13	95.89	100	0.6	1.33
8	8.25	1.01	97.36	100	0.59	1.64
9	6.6	0.85	99.12	100	0.49	0.41
10	3.5	4.05	95.89	99.41	0.21	2.2
11	3.39	0.57	98.83	100	0.22	0.73
12	4.47	0.54	98.83	100	0.34	0.19
13	3.15	0.47	98.83	100	0.23	0.47
14	2.52	0.45	98.83	100	0.18	0.78
15	2.29	0.4	98.83	100	0.21	0.19
Criteria Met			✓		×	×
PM PEAK HOUR (17:00 – 18:00)						
6	4.55	0.84	97.35	99.71	0.23	0.01
7	3.79	0.5	100	99.12	0.21	0.02
8	3.61	0.61	98.23	100	0.2	0.78
9	2.77	0.49	99.41	100	0.15	0.6
10	2.75	0.5	96.76	100	0.21	0.63
11	2.28	0.32	98.53	100	0.12	0.37
12	2.26	0.51	97.94	99.41	0.16	1.87
13	1.54	0.32	98.53	100	0.1	0.96
14	2.06	0.3	99.41	100	0.13	0.25
15	1.63	0.3	99.41	100	0.1	0.5
Criteria Met			✓		~	×

Table 3.2: Do-Minimum model AM and PM peak hour model stability results

Comparison	**AAD**	**RAAD**	**%FLOW**	**STDEV**	**DELTA**	**V**
AM PEAK HOUR (08:00 – 09:00)						
6	4.93	1.03	95.31	99.12	0.37	2.5
7	4.41	0.87	95.89	100	0.29	1.2
8	4.02	0.81	96.19	100	0.22	1.07
9	2.98	0.65	96.48	100	0.16	1.18
10	3.54	0.63	97.36	100	0.23	1.12
11	2.22	1.06	96.77	100	0.15	2.22
12	2.91	0.55	97.36	100	0.19	0.11
13	2.56	0.53	98.24	100	0.14	0.6
14	2.3	0.44	98.83	100	0.13	0.95
15	1.34	0.33	98.83	100	0.08	0.16
Criteria Met			~		×	×
PM PEAK HOUR (17:00 – 18:00)						
6	6.17	2.81	95.6	97.95	0.45	6.42
7	4.01	0.7	97.36	99.71	0.24	0.94
8	3.85	0.73	96.77	100	0.23	0.29
9	2.82	0.65	97.36	100	0.16	1.35
10	2.99	0.73	98.53	100	0.18	0.31
11	2.21	0.41	98.53	100	0.14	0.33
12	2.1	0.4	98.83	100	0.12	0.25
13	2.23	0.44	98.53	100	0.14	0.88
14	1.97	0.5	97.95	100	0.13	0.27
15	1.99	0.36	98.83	100	0.13	0.32
Criteria Met			~		~	×

Table 3.3: Do-Something model AM and PM peak hour model stability results

3.3 Network Summary Statistics

3.3.1 Network summary statistics for the scenario test models are presented in **Tables 3.4** and **3.5**. The results indicate the delay and average network conditions for each scenario.

3.3.2 **Table 3.4** shows that in the AM peak, there is a small positive impact on network performance in the do-something model when compared against the do-minimum model, with total network delay and mean travel time decreasing by approximately 1% and 4% respectively, and a corresponding increase in mean speed of approximately 4%.

3.3.3 **Table 3.5** outlines the PM peak summary results. There is a small deterioration in network performance in the do-something model compared against the do-minimum. The scale of the impact is of a similar magnitude, but with *increases* in total network delay and mean travel time of approximately 4%, and a corresponding decrease in mean speed of 4.2%.

	2026 Do-Min	**2026 Do-Sth**
Total demand (07:00 - 10:00)	16983	17225
Total no. of completed trips	5,498	5,668
Total network delay (days)	20.79	20.62
Total distance travelled (km)	8,192	8,421
Mean speed (km/hr)	16.5	17.1
Mean Travel Time (mins)	00:05:27	00:05:15
Mean distance (km)	1.49	1.49
Absolute Difference from do-min	**2026 Do-Min**	**2026 Do-Sth**
Total demand (07:00 - 10:00)	-	241
Total no. of completed trips	-	171
Total network delay (days)	-	-0.2
Total distance travelled (km)	-	229
Mean speed (km/hr)	-	0.6
Mean Travel Time (mins)	-	-00:00:12
Mean distance (km)	-	0.00
Relative Difference from do-min	**2026 Do-Min**	**2026 Do-Sth**
Total demand (07:00 - 10:00)	-	1.4%
Total no. of completed trips	-	3.1%
Total network delay (days)	-	-0.8%
Total distance travelled (km)	-	2.8%
Mean speed (km/hr)	-	3.8%
Mean Travel Time (mins)	-	-4%
Mean distance (km)	-	-0.3%

Table 3.4 AM peak network summary statistics

Note that the number of completed trips is lower than the total demand. This is because demand relates to the three hour *period* and the total number of completed trips is for the peak *hour*

	2026 Do-Min	2026 Do-Sth
Total demand (16:00 - 19:00)	19229	19476
Total no. of completed trips	6,409	6,405
Total network delay (days)	16.83	17.44
Total distance travelled (km)	8,664	8,579
Mean speed (km/hr)	21.5	20.6
Mean Travel Time (mins)	00:03:47	00:03:55
Mean distance (km)	1.35	1.34
Absolute Difference from do-min	**2026 Do-Min**	**2026 Do-Sth**
Total demand (16:00 - 19:00)	-	246
Total no. of completed trips	-	-4
Total network delay (days)	-	0.6
Total distance travelled (km)	-	-85
Mean speed (km/hr)	-	-0.89
Mean Travel Time (mins)	-	00:00:09
Mean distance (km)	-	-0.01
Relative Difference from do-min	**2026 Do-Min**	**2026 Do-Sth**
Total demand (16:00 - 19:00)	-	1.3%
Total no. of completed trips	-	-0.1%
Total network delay (days)	-	3.7%
Total distance travelled (km)	-	-1.0%
Mean speed (km/hr)	-	-4.2%
Mean Travel Time (mins)	-	3.8%
Mean distance (km)	-	-0.9%

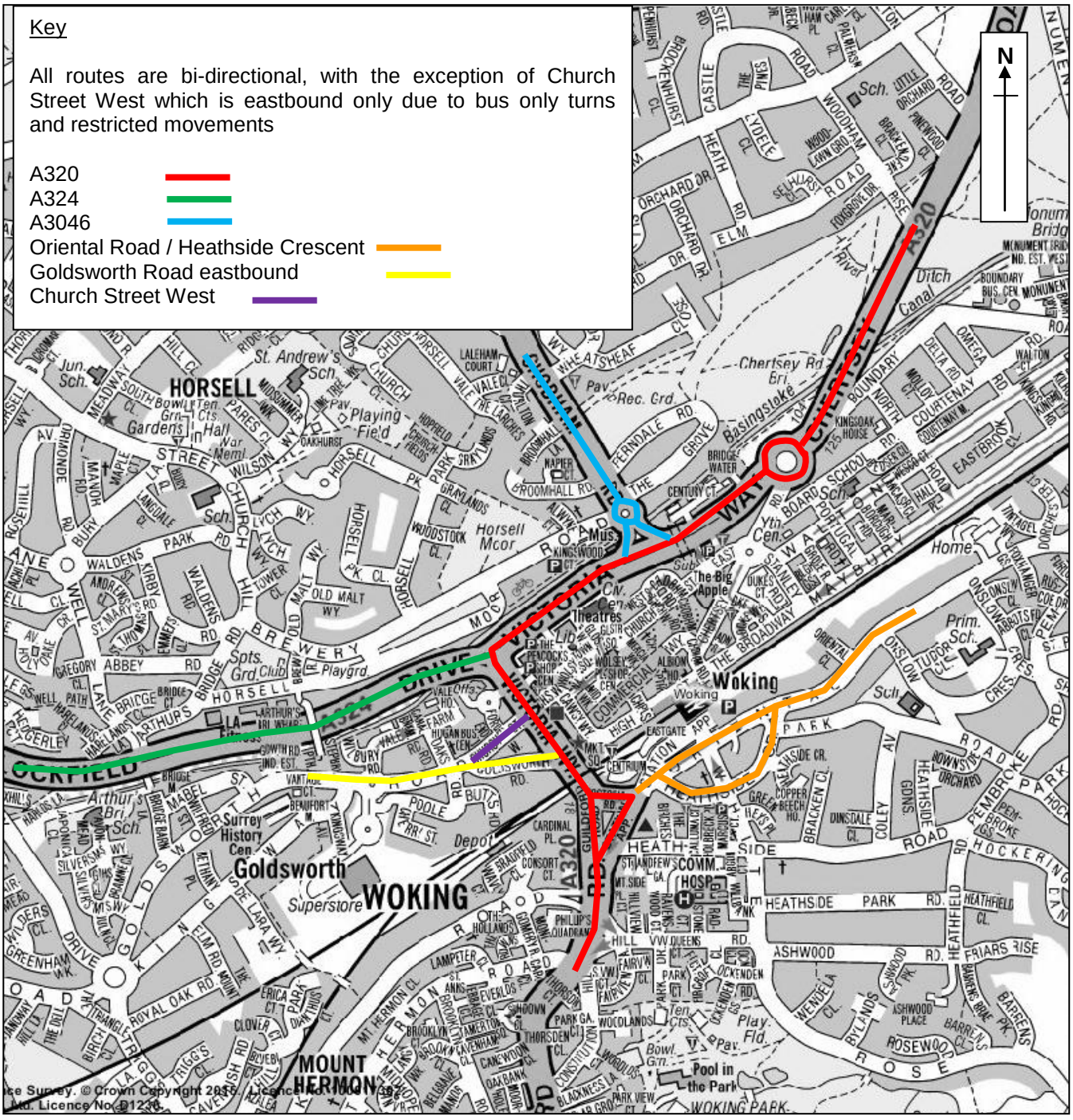
Table 3.5 PM peak network summary statistics

Note that the number of completed trips is lower than the total demand. This is because demand relates to the three hour *period* and the total number of completed trips is for the peak *hour*

3.3.4 The AM peak results appear counterintuitive, in that a positive impact on network performance would not be expected as a result of the additional development. This is likely due to the change in the trip distribution in the model as a result of the developments. It is likely that as a driver the minimal changes occurring in the do-something scenario would not be noticed as they are within the realms of what would be considered normal daily variation in the performance of the network.

3.4 Journey Times

3.4.1 **Figure 3.1** shows the journey time routes within the model. Journey times for each scenario are shown in **Table 3.6**.


Key
All routes are bi-directional, with the exception of Church Street West which is eastbound only due to bus only turns and restricted movements
A320
A324
A3046
Oriental Road / Heathside Crescent
Goldsworth Road eastbound
Church Street West
N
HORSELL
WOKING
Goldsworth
MOUNT HERMON
Woking
A320
A324
A3046
Chertsey Rd
Basingstoke
Canal
Ditch
River
Theatres
The Big Apple
Horsell Moor
Pool in the Park
WOKING PARK
HEATHSIDE PARK RD.
ASHWOOD RD.
FRIARS RISE
ROSEWOOD
Surrey History Cen.
Superstore
Depot
Sch.
Mus.
Ytn Cen.
Prim. Sch.
Spts. Grd
Playing Field
Rec. Grd
Play Fld.
Bowl. Grn.
Ten. Cts.
War Meml
Jun. Sch.
Home
Boundary
Monument
Bridg
Ch.
Pav.
Sub
Gdns.
Cres.
Rd.
Ave.
Dr.
Cl.
Ct.
Pl.
Wk.
Gro.
Ln.
La.
Sq.
Ter.
Mt.
Ctr.
Cen.
Ind. Est.
Gdns.
Grn.
Hosp.
Comm.
Lib.
Offs.
Gallery
Ctr.
Ctrl.
Sta.
Bri.
Ave.
Pk.
Ho.
Ct.
Cl.
Rd.
Dr

Route	Average Do-Minimum Journey Time (s)	Average Do-Something Journey Time (s)	Absolute difference (s)	Percentage Difference
AM Peak Hour 08:00 – 09:00				
A320 Victoria Way	251	257	6	2%
A320 Victoria Way	244	249	5	2%
A324 Lockfield Drive	85	88	3	3%
A324 Lockfield Drive	72	71	-1	-1%
A3046 Chobham Road	33	33	0	0%
A3046 Chobham Road	59	59	0	0%
Oriental Road eastbound	48	49	1	1%
Heathside Crescent	71	74	2	3%
Goldsworth Road eastbound	33	33	0	0%
Goldsworth Road westbound	53	53	0	1%
Church Street West	37	38	1	2%
PM Peak Hour 17:00 – 18:00				
A320 Victoria Way	276	279	3	1%
A320 Victoria Way	243	247	5	2%
A324 Lockfield Drive	84	95	11	13%
A324 Lockfield Drive	90	90	0	0%
A3046 Chobham Road	35	35	0	0%
A3046 Chobham Road	59	64	4	7%
Oriental Road eastbound	43	43	0	1%
Heathside Crescent	77	76	-1	-1%
Goldsworth Road eastbound	34	34	0	1%
Goldsworth Road westbound	57	57	0	0%
Church Street West	37	37	1	2%

Table 3.6 AM & PM Peak Journey Time Comparison

3.4.2 **Table 3.6** shows minimal differences in journey times on all routes. Journey time comparison is also presented graphically in **Appendix F**. These graphs show 95% confidence intervals, which allow conclusions to be drawn as to whether any differences are statistically significant.

3.4.3 In graphs such as these, where confidence intervals overlap, this indicates that the journey times cannot be considered to be different at the 95% statistical significance level. Where this occurs it cannot be confirmed whether the difference in average journey time is within the confines of simple daily variation in traffic conditions, or is a result of the impact of any changes in the model.

3.4.4 **Appendix F** shows that when the do-minimum is compared against the do-something, the confidence intervals overlap to some extent for all journey time routes. Consequently, at the 95% confidence interval we cannot say whether the differences are statistically significant i.e. whether they are due to changes made within the model.

3.4.5 Analysis of journey time data can be summarised by saying that the model shows slight differences in journey times between the two scenarios (a maximum of 11 seconds on any route); but that these differences are not statistically significant as they are within the confines of daily variation.

4 SUMMARY & RECOMMENDATIONS

4.1.1 Modelling was undertaken for a future year of 2026 with two scenarios in order to assess the impact of Woking's Local Plan on Woking Town Centre. The do-minimum scenario contains committed developments, and the do-something scenario contains committed as well as potential developments. Forecasting was undertaken using SCC's strategic SINTRAM model, whilst assessment of the scenarios was carried out in an S-Paramics microsimulation model.

4.1.2 Matrix totals showed that as a proportion of the total growth, the Local Plan growth (i.e. the do-something scenario) is relatively small. The bulk of the increase in trips is attributed to the developments which already have planning permission.

4.1.3 Initial observations of the do-minimum model showed that the level of demand from the committed developments could not be accommodated as unrealistic levels of congestion were occurring, resulting in gridlock just south of Victoria Arch on the Guildford Road gyratory. Consequently calibration of the operation of the traffic signals within the model was required. This highlights the need for a comprehensive revalidation of the traffic signals within the town as part of any future development. Without this, the impact of the permitted development trips alone would result in significant and severe congestion. It is generally recommended that in areas of high traffic flows, revalidation of signals is undertaken on a regular basis. Revalidation should also be undertaken where a significant change to the network or traffic flows is expected.

4.1.4 The amended signal timings were carried through to the do-something model. Twenty runs were undertaken of each model for both the AM and PM peak periods and the results averaged. Network summary statistics showed a minor positive impact on the operation of the network as a result of the potential developments in the AM peak, with a minor adverse impact in the PM peak. The AM peak results appear counterintuitive given that more trips were added to the network, but the results are thought to be due to the change in trip distribution as a result of the additional development.

4.1.5 Journey time statistics showed very small changes to journey times which were not significant at the 95% confidence level and are therefore within the realms of normal daily variation. In summary, the addition of non-approved development trips has a negligible impact on the operation of the highway network in the model.

4.1.1 In addition to the recommendation that a programme of regular traffic signal revalidation is required, consideration will need to be given to mitigation of the impacts of individual developments as part of the planning application process. Any highway improvements should be included within a broader package of mitigation measures. Measures such as effective travel plans, car sharing schemes and improvements to pedestrian and cycling facilities, amongst others, should suppress car trips as far as possible and encourage the use of sustainable modes.

4.1.2 Finally, the development characteristics used in this assessment were not finalised and are subject to potential modification in terms of size, land use class, car parking provision and access arrangements. Consequently, whilst these results provide an insight into their potential impacts, they should be treated with caution until the exact details are known. Any future planning application would need to bear this in mind, and undertake a full transport assessment based on up to date information.

Appendix A: Victoria Square Layout

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.
3. Tactile paving not shown here, except for emphasis, but to be provided at relevant locations as standard.

Lockfield Drive
Victoria Way
Peacocks Centre
(Shopping Centre)
Multistorey Car Park
Outline of Energy Centre above (columns at ground level)
Ramp Gradient = 1:12 (up to +4.5m, then 1:10)
Bandstand Mall
Peacock Walk
Steps/railings to be set back a minimum of 8.4m from existing Toys R Us shop front (0.6m back from emergency access route)
Raised uncontrolled pedestrian crossing
No U-turns
Toys 'R' Us at ground level ('Red' Car Park above)
Toys R Us shop front possibly built out to here
Emergency access route
Existing column to remain
Export House
Forge End
Maintenance and emergency access route
Wolsey Walk West
Raised uncontrolled pedestrian crossing
Canopy
Cawsey Way
Commercial Way
No right turn
Cap Gemini House
No left turn
Victoria Way
Forge End
Parking bays to be widened and redesignated for blue badge holders
Goldvale House
Hogan Business Centre
No left turn except for buses
Service route exit
Layby for coach/taxis
Location and size of access currently under construction is shown indicatively.
Victoria Way
High Street
Church Street West
Allianz Cornhill House
Minimum island width = 5.0m
Taxi rank
Existing cycle parking on east side of turning head to be relocated here
High Street one-way southwestbound with contra-flow cycle lane
Parking bays to be removed
Goldsworth Road
Fire tender path
Bus shelter
Relocated Fire Station
Bridge House
Guildford Road
No right turn

M 1:500
0 5 10 15 20 25 30 35 40 45 50 [m]

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REV.	DETAILS	DRAWN	CHECKED	DATE
.	.	.	.	.

CLIENT:
Bandstand Square Developments Ltd

PROJECT:
VICTORIA SQUARE WOKING

DRAWING TITLE:
Proposed Highway Layout Victoria Way (South)
OPTION 4L

SCALES:
1:500 at A1

DRAWN:	CHECKED:	DATE:
DSN	.	15.4.2014

vectos transport planning specialists
Network Building, 97 Tottenham Court Road, London W1T 4TP
t: 020 7580 7373 e: enquiries@vectos.co.uk

DRAWING NUMBER: 110069/A/89.1
REVISION: L

Notes:

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High signal poles to ensure buses do not obstruct visibility

Proposed bus stop and shelter with link to new bridge (possibly on structure)

Stopline moved forward

Stoplines moved forward

Existing traffic signs to be remounted with greater pole separation to maximise footway width

Relocated height restriction barrier

Dividing wall to be cut back 5.0m to end here

Peacocks Centre Access

Peacocks Centre

WWF Headquarters

The Lightbox

Civic Offices

Gloucester Square

St Andrews House

Library

Bank

The Peacocks (Shopping Centre)

Multistorey Car Park

Victoria Way

Chobham Road

Basingstoke Canal

Towing Path

Track

Path (um)

CAR PARK

M 1:500
0 5 10 15 20 25 30 35 40 45 50 [m]

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REV.	DETAILS	DRAWN	CHECKED	DATE

CLIENT:
Bandstand Square Developments Ltd

PROJECT:
VICTORIA SQUARE WOKING

DRAWING TITLE:
Proposed Highway Layout
Victoria Way (North)
OPTION 4L

SCALES:
1:500 at A1

DRAWN:	CHECKED:	DATE:
DSN	.	15.4.2014

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REVISION: L

Notes:

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Multistorey Car Park

Bandstand Mall

Peacock Walk

Export House

Wolsey Walk West

Commercial Way

Church Path

Harland House

Bank

Cheltsey Road

Existing minicab office with parking

1 to 15

43 to 49

51

Restricted access except for buses, bicycles, taxis and access only

TCBs

High Street

Woking Railway Station

Subway

Raised uncontrolled pedestrian crossing

Chapel Street

Cycle parking

Parking bays to be widened and redesignated for blue badge holders with one 10m long loading bay. Buildout to be removed and replaced with extra parking space.

Taxi rank to be relocated to The Broadway and road realigned (kerb to be 1.0m from wall)

Service route exit

High Street one-way southwestbound with contra-flow cycle lane

Signal Box

Taxi rank

High Street one-way southwestbound with contra-flow cycle lane

Eastgate

1 to 61

Telephone Exchange

Hotel

MP 24.5 Bus shelter

Station Approach

1 to 49 The Exchange

Oriental Road

M 1:500
0 5 10 15 20 25 30 35 40 45 50 [m]

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REV.	DETAILS	DRAWN	CHECKED	DATE

CLIENT:
Bandstand Square Developments Ltd

PROJECT:
VICTORIA SQUARE WOKING

DRAWING TITLE:
Proposed Highway Layout
High Street
OPTION 4L

SCALES:
1:500 at A1

DRAWN:	CHECKED:	DATE:
DSN	.	15.4.2014

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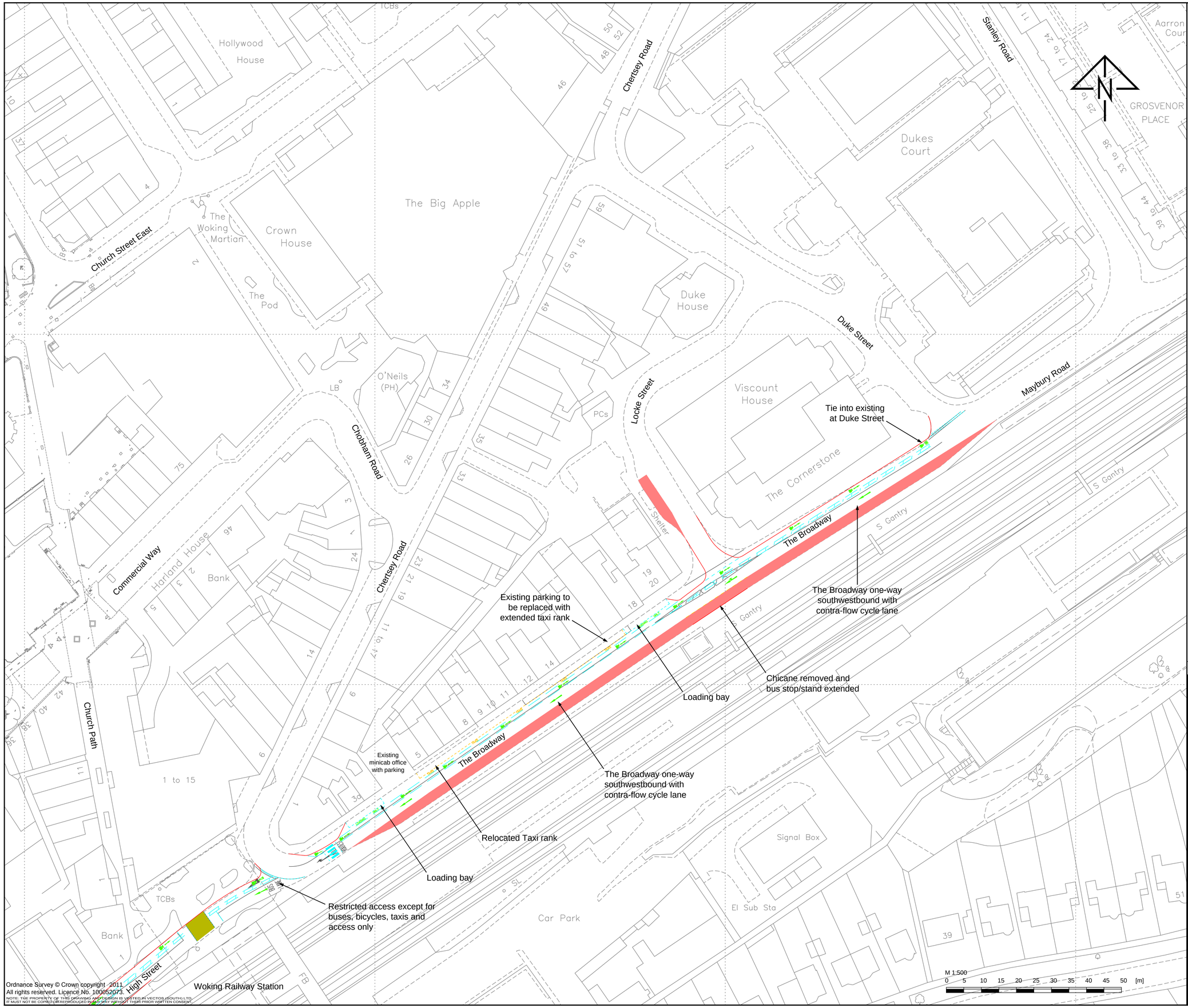
REVISION: L



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REV.	DETAILS	DRAWN	CHECKED	DATE

CLIENT:
Bandstand Square Developments Ltd

PROJECT:
VICTORIA SQUARE WOKING

DRAWING TITLE:
Proposed Highway Layout
The Broadway
OPTION 4L

SCALES:
1:500 at A1

DRAWN:	CHECKED:	DATE:
DSN	.	15.4.2014

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DRAWING NUMBER: 110069/A/89.4
REVISION: L

Appendix B: Weekday AM Peak Period Do Minimum Demand Matrices

Matrix Level 1 – 07:00 - 10:00

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total
1	0	275	78	157	560	107	56	194	16	26	300	64	41	55	3	79	32	75	51	367	30	95	43	13	0	**2717**
2	324	0	8	17	39	4	5	21	2	3	32	6	9	6	0	0	1	8	0	0	0	7	0	0	0	**494**
3	32	0	0	125	180	42	53	56	4	8	78	19	25	16	34	72	5	23	12	18	2	30	23	0	0	**856**
4	47	0	100	0	294	27	69	95	7	12	132	32	40	27	21	204	27	38	60	106	13	47	43	9	0	**1450**
5	203	0	70	201	0	69	73	89	14	25	206	57	46	56	4	192	0	79	21	429	62	60	136	0	0	**2094**
6	12	0	8	21	40	0	7	12	2	3	29	7	9	7	0	0	0	9	0	0	0	8	29	0	0	**205**
7	74	0	26	78	72	0	0	19	3	5	49	22	56	47	1	0	0	14	0	0	0	23	178	43	0	**710**
8	154	0	32	75	176	21	21	0	7	54	36	30	41	61	2	0	63	94	94	34	0	34	0	0	0	**1029**
9	13	0	13	38	89	10	10	48	0	139	359	16	21	16	1	0	0	13	0	0	0	18	0	0	0	**804**
10	23	0	16	33	38	9	9	105	65	0	31	13	18	13	1	0	1	205	116	27	0	15	0	0	0	**741**
11	59	0	34	104	173	25	25	113	15	8	0	18	103	37	2	52	67	19	18	146	0	42	11	44	0	**1115**
12	32	0	22	60	128	17	17	37	4	5	67	0	65	24	2	0	5	16	18	0	0	28	11	0	0	**558**
13	44	0	26	68	88	29	132	27	37	19	179	43	0	379	3	30	21	53	6	28	0	129	51	62	0	**1455**
14	7	0	10	20	50	6	28	13	2	4	40	8	301	0	1	0	0	11	0	0	0	9	0	0	0	**512**
15	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**27**
16	6	0	0	4	32	0	12	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	**62**
17	0	0	0	0	1	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
18	69	0	15	56	71	8	8	67	20	133	24	13	17	11	1	14	0	0	4	0	0	27	0	0	0	**556**
19	26	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**38**
20	66	0	0	23	58	0	0	11	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**180**
21	0	0	0	0	0	0	0	14	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**42**
22	31	0	8	25	51	4	36	34	2	3	25	6	36	6	0	0	0	10	0	0	0	0	0	18	0	**297**
23	60	0	0	21	40	0	0	35	0	0	34	0	93	0	0	0	0	0	0	0	0	64	0	18	0	**365**
24	22	0	0	9	0	0	0	0	0	0	0	0	54	18	0	0	0	0	0	0	0	0	0	0	0	**103**
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**1305**	**275**	**493**	**1135**	**2180**	**378**	**563**	**1005**	**202**	**447**	**1673**	**353**	**984**	**780**	**76**	**644**	**222**	**668**	**400**	**1155**	**107**	**638**	**525**	**206**	**0**	**16416**

Matrix Level 2 – 07:00 - 10:00

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total
1	0	6	2	4	13	2	2	1	1	0	7	1	0	0	0	0	0	0	0	10	0	2	6	7	0	**65**
2	3	0	0	1	4	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**11**
3	2	0	0	0	6	1	1	0	1	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**15**
4	2	0	4	0	7	1	1	0	1	0	4	0	0	0	0	0	0	0	0	1	0	0	5	7	0	**33**
5	7	0	3	8	0	3	3	2	3	1	14	2	0	0	0	0	0	0	0	8	0	1	5	0	0	**61**
6	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
7	1	0	0	1	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	20	0	0	**27**
8	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
9	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
10	1	0	0	1	2	0	0	0	2	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**8**
11	5	0	2	5	17	2	2	1	2	0	0	0	0	0	0	0	0	0	0	2	0	0	5	10	0	**54**
12	1	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	**10**
13	0	0	0	0	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	6	11	10	0	**33**
14	1	0	0	1	2	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	**8**
15	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
18	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
20	8	0	0	0	8	0	0	1	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**23**
21	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
22	5	0	0	0	10	0	0	0	0	0	7	0	6	0	0	0	0	0	0	0	0	0	0	3	0	**31**
23	30	0	0	10	7	0	0	10	0	0	39	0	35	0	0	0	0	0	0	0	0	20	0	3	0	**154**
24	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	3	3	3	3	0	0	**20**
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**67**	**6**	**11**	**35**	**88**	**9**	**10**	**15**	**10**	**1**	**93**	**3**	**54**	**1**	**1**	**0**	**0**	**0**	**0**	**26**	**3**	**32**	**60**	**41**	**0**	**567**

Appendix C: Weekday PM Peak Period Do Minimum Demand Matrices

Matrix Level 1 – 16:00 - 19:00

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total
1	0	377	83	148	268	13	76	163	7	12	132	18	23	7	0	11	0	73	26	111	66	28	22	13	0	**1675**
2	380	0	6	11	28	3	3	14	1	2	21	4	6	10	0	0	1	6	0	0	0	5	0	0	0	**504**
3	50	0	0	211	56	48	20	26	6	10	30	15	21	14	48	0	0	6	0	0	0	6	0	0	0	**567**
4	164	0	227	0	220	17	64	61	15	14	101	26	55	88	99	6	0	24	0	47	0	21	50	8	0	**1307**
5	561	0	179	293	0	40	70	175	45	29	319	61	87	83	0	102	1	35	0	63	46	45	71	0	0	**2305**
6	133	0	41	26	69	0	0	51	5	7	23	11	29	9	0	22	0	8	0	45	0	4	0	0	0	**483**
7	43	0	52	68	73	7	0	21	5	7	23	12	129	47	0	43	0	8	0	44	0	66	258	0	0	**906**
8	148	0	74	112	88	12	18	0	29	97	228	32	26	16	0	0	1	64	12	40	0	20	0	0	0	**1015**
9	20	0	6	11	23	3	4	7	0	145	317	5	28	4	0	0	0	20	22	0	0	3	0	0	0	**620**
10	10	0	8	6	12	3	5	53	69	0	46	4	9	6	0	0	0	107	22	0	0	3	0	0	0	**365**
11	234	0	77	131	206	29	48	75	89	0	0	33	144	106	0	0	1	94	0	107	0	15	0	0	0	**1389**
12	76	0	28	47	86	10	31	91	11	0	45	0	63	58	0	0	0	55	0	30	0	10	0	27	0	**671**
13	25	0	19	31	35	7	45	31	9	10	126	43	0	291	0	32	0	12	0	0	0	36	17	49	0	**818**
14	43	0	15	27	57	7	46	61	7	10	74	17	716	0	0	0	0	11	0	0	0	6	0	20	0	**1118**
15	56	0	91	30	5	1	2	3	0	1	3	1	4	1	0	0	0	1	0	0	0	1	0	0	0	**201**
16	197	0	0	0	185	47	82	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**535**
17	21	0	4	22	0	0	0	64	0	1	51	4	17	0	0	0	0	0	0	0	0	0	0	0	0	**183**
18	60	0	23	38	80	9	14	47	6	117	66	11	53	20	0	0	0	0	0	0	0	10	0	0	0	**554**
19	41	0	10	49	18	0	0	76	0	77	14	11	5	0	0	0	0	3	0	0	0	0	0	0	0	**306**
20	440	0	23	147	437	0	82	30	0	15	240	0	31	0	0	0	0	0	0	0	0	0	0	0	0	**1444**
21	0	0	0	0	0	0	0	9	0	10	285	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**304**
22	45	0	23	38	37	8	64	21	8	7	34	19	86	71	0	0	0	17	0	0	0	0	92	0	0	**568**
23	91	0	55	87	134	42	169	0	0	0	57	8	55	0	0	24	0	0	0	0	0	0	0	0	0	**720**
24	5	0	0	4	0	0	21	0	0	0	20	0	30	0	0	0	0	0	0	0	0	22	22	0	0	**124**
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**2843**	**377**	**1045**	**1539**	**2116**	**305**	**863**	**1078**	**313**	**570**	**2279**	**337**	**1616**	**831**	**147**	**239**	**4**	**544**	**81**	**487**	**112**	**302**	**532**	**118**	**0**	**18680**

Matrix Level 2 – 16:00 - 19:00

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total
1	0	3	2	2	7	0	1	0	0	1	5	1	0	1	0	0	0	1	0	28	2	7	25	0	0	**86**
2	6	0	0	1	4	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**14**
3	2	0	0	4	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**11**
4	4	0	0	0	8	0	1	0	0	1	5	1	0	1	3	0	0	0	0	0	0	0	10	0	0	**34**
5	13	0	6	7	0	1	3	1	2	2	17	3	2	2	0	0	0	0	0	10	1	6	8	0	0	**83**
6	2	0	1	1	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**9**
7	2	0	1	1	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**9**
8	1	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**5**
9	1	0	1	1	3	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
10	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
11	7	0	3	4	14	1	2	1	1	1	0	0	1	1	0	0	0	1	0	22	0	1	0	0	0	**60**
12	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
13	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	33	26	10	0	**73**
14	0	0	0	0	0	0	0	0	0	0	10	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**11**
15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	**2**
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
20	11	0	0	1	8	0	0	0	0	1	2	0	2	0	0	0	0	0	0	0	0	0	0	4	0	**28**
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
22	1	0	0	0	1	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	20	2	0	**29**
23	6	0	0	5	5	0	20	0	0	0	5	5	12	0	0	0	0	0	0	0	0	0	0	2	0	**60**
24	4	0	0	4	0	0	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	2	2	0	0	**22**
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**61**	**3**	**15**	**31**	**64**	**2**	**28**	**2**	**3**	**8**	**60**	**10**	**28**	**8**	**3**	**0**	**0**	**2**	**0**	**60**	**2**	**49**	**91**	**20**	**0**	**549**

Appendix D: Weekday AM Peak Period Do Something Demand Matrices

Matrix Level 1 – 07:00 - 10:00

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total
1	0	276	80	158	565	107	51	197	17	26	305	65	39	66	3	82	32	76	47	368	30	98	47	17	0	**2752**
2	329	0	9	17	39	4	5	21	2	3	32	6	9	8	0	0	1	8	0	0	0	7	0	0	0	**501**
3	33	0	0	127	182	42	48	57	4	8	80	19	24	19	34	75	5	23	12	18	2	31	25	0	0	**868**
4	48	0	102	0	297	27	63	97	7	12	135	32	38	32	21	210	27	38	56	106	13	48	47	12	0	**1469**
5	206	0	71	202	0	69	67	90	14	25	209	57	43	68	4	197	0	79	20	428	61	62	149	0	0	**2121**
6	12	0	8	21	40	0	6	12	2	3	30	7	9	9	0	0	0	9	0	0	0	8	32	0	0	**208**
7	69	0	24	72	67	0	0	18	3	5	46	20	49	52	1	0	0	13	0	0	0	22	180	53	0	**694**
8	158	0	33	76	178	21	20	0	7	54	36	31	38	74	2	0	64	94	88	34	0	35	0	0	0	**1043**
9	13	0	13	38	90	11	9	49	0	140	365	16	20	19	1	0	0	13	0	0	0	18	0	0	0	**815**
10	24	0	17	34	39	9	8	109	67	0	32	14	17	16	1	0	1	209	110	27	0	16	0	0	0	**751**
11	60	0	34	104	174	25	23	114	16	8	0	18	96	45	2	53	67	19	16	145	0	43	12	58	0	**1131**
12	34	0	23	62	131	17	16	38	4	5	70	0	62	29	2	0	5	16	17	0	0	29	13	0	0	**574**
13	42	0	25	65	84	28	114	26	35	18	172	41	0	433	3	30	20	51	6	26	0	125	53	78	0	**1474**
14	8	0	12	22	55	7	29	15	2	5	44	9	312	0	1	0	0	13	0	0	0	11	0	0	0	**544**
15	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**22**
16	6	0	0	4	31	0	11	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	**60**
17	0	0	0	0	1	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
18	70	0	15	57	71	8	7	68	20	133	24	13	16	14	1	14	0	0	4	0	0	28	0	0	0	**563**
19	11	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**17**
20	54	0	0	18	46	0	0	9	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**145**
21	0	0	0	0	0	0	0	11	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**34**
22	32	0	9	26	52	4	33	35	2	3	26	6	34	8	0	0	0	10	0	0	0	0	0	24	0	**302**
23	64	0	0	23	43	0	0	37	0	0	36	0	92	0	0	0	0	0	0	0	0	69	0	25	0	**390**
24	37	0	0	15	0	0	0	0	0	0	0	0	84	36	0	0	0	0	0	0	0	0	0	0	0	**173**
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**1310**	**276**	**495**	**1138**	**2188**	**379**	**510**	**1009**	**203**	**449**	**1685**	**355**	**987**	**928**	**76**	**660**	**223**	**670**	**376**	**1154**	**107**	**652**	**557**	**267**	**0**	**16654**

Matrix Level 2 – 07:00 - 10:00

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total
1	0	6	2	4	13	2	2	1	1	0	7	1	0	0	0	0	0	0	0	10	0	2	6	7	0	**65**
2	3	0	0	1	4	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**11**
3	2	0	0	0	6	1	1	0	1	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**15**
4	2	0	4	0	7	1	1	0	1	0	4	0	0	0	0	0	0	0	0	1	0	0	5	7	0	**34**
5	7	0	3	8	0	3	3	2	3	1	14	2	0	0	0	0	0	0	0	8	0	1	5	0	0	**61**
6	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
7	1	0	0	1	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	20	0	0	**28**
8	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
9	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
10	1	0	0	1	2	0	0	0	2	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**8**
11	5	0	2	5	17	2	2	1	2	0	0	0	0	0	0	0	0	0	0	2	0	0	5	10	0	**54**
12	1	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	**10**
13	0	0	0	0	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	6	12	10	0	**34**
14	1	0	0	1	2	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	**8**
15	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
18	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
20	8	0	0	0	8	0	0	1	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**23**
21	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
22	5	0	0	0	10	0	0	0	0	0	7	0	6	0	0	0	0	0	0	0	0	0	0	3	0	**31**
23	30	0	0	10	7	0	0	10	0	0	39	0	35	0	0	0	0	0	0	0	0	20	0	3	0	**155**
24	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	3	3	3	3	0	0	**20**
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**67**	**6**	**11**	**36**	**89**	**9**	**10**	**15**	**10**	**1**	**94**	**3**	**54**	**1**	**1**	**0**	**0**	**0**	**0**	**26**	**3**	**32**	**61**	**41**	**0**	**570**

Appendix E: Weekday PM Peak Period Do Something Demand Matrices

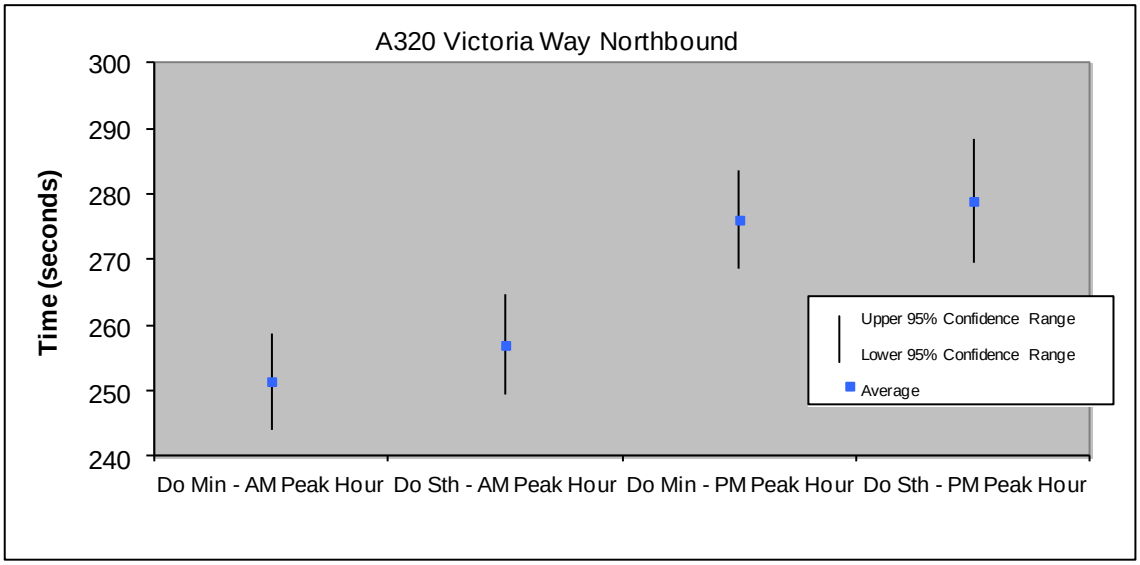
Matrix Level 1 – 16:00 - 19:00

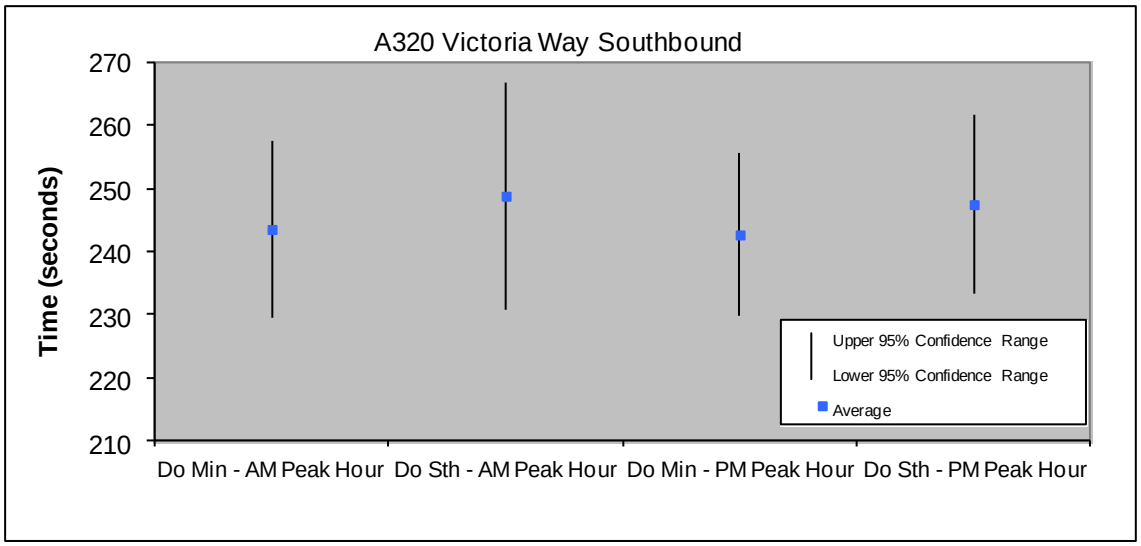
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total
1	0	381	84	149	270	12	70	166	7	13	133	19	21	7	0	10	0	73	24	103	61	27	22	29	0	**1680**
2	382	0	6	11	28	3	3	15	1	2	21	4	6	11	0	0	1	6	0	0	0	5	0	0	0	**505**
3	51	0	0	214	57	48	19	26	6	10	30	16	19	15	44	0	0	6	0	0	0	6	0	0	0	**569**
4	166	0	230	0	222	17	59	62	16	14	102	27	52	94	92	6	0	24	0	44	0	20	48	17	0	**1311**
5	568	0	181	297	0	40	65	178	45	29	323	64	82	88	0	102	1	35	0	59	43	44	69	0	0	**2312**
6	135	0	41	27	69	0	0	52	5	7	23	12	27	10	0	22	0	8	0	41	0	4	0	0	0	**484**
7	44	0	52	68	73	7	0	21	5	7	24	13	120	50	0	43	0	8	0	40	0	64	250	0	0	**888**
8	150	0	75	113	89	12	16	0	29	99	229	33	24	17	0	0	1	64	11	37	0	19	0	0	0	**1019**
9	20	0	6	11	23	3	4	8	0	148	319	6	26	4	0	0	0	20	20	0	0	3	0	0	0	**622**
10	10	0	8	6	12	3	5	54	70	0	47	4	9	7	0	0	0	108	20	0	0	3	0	0	0	**366**
11	238	0	79	133	210	29	44	77	90	0	0	35	136	114	0	0	1	96	0	100	0	15	0	0	0	**1399**
12	74	0	27	46	84	10	28	90	11	0	44	0	57	60	0	0	0	53	0	27	0	10	0	57	0	**678**
13	23	0	17	29	32	7	38	29	9	10	116	42	0	285	0	29	0	12	0	0	0	32	15	97	0	**820**
14	49	0	18	31	66	8	48	70	8	12	85	21	766	0	0	0	0	13	0	0	0	7	0	50	0	**1252**
15	55	0	90	30	5	1	2	3	0	1	3	1	4	1	0	0	0	1	0	0	0	1	0	0	0	**197**
16	203	0	0	0	191	48	78	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**545**
17	21	0	4	22	0	0	0	64	0	1	51	4	16	0	0	0	0	0	0	0	0	0	0	0	0	**184**
18	60	0	23	39	81	9	13	47	6	119	67	12	50	21	0	0	0	0	0	0	0	9	0	0	0	**556**
19	37	0	9	44	16	0	0	69	0	71	12	11	4	0	0	0	0	3	0	0	0	0	0	0	0	**276**
20	436	0	23	146	432	0	75	30	0	15	237	0	28	0	0	0	0	0	0	0	0	0	0	0	0	**1420**
21	0	0	0	0	0	0	0	9	0	10	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**299**
22	47	0	24	40	38	8	61	21	9	7	35	21	83	78	0	0	0	17	0	0	0	0	91	0	0	**580**
23	95	0	58	91	140	43	163	0	0	0	60	8	54	0	0	24	0	0	0	0	0	0	0	0	0	**737**
24	9	0	0	8	0	0	34	0	0	0	36	0	50	0	0	0	0	0	0	0	0	38	38	0	0	**214**
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**2872**	**381**	**1056**	**1554**	**2137**	**308**	**823**	**1091**	**317**	**576**	**2303**	**355**	**1632**	**862**	**136**	**236**	**4**	**549**	**75**	**452**	**104**	**307**	**533**	**251**	**0**	**18915**

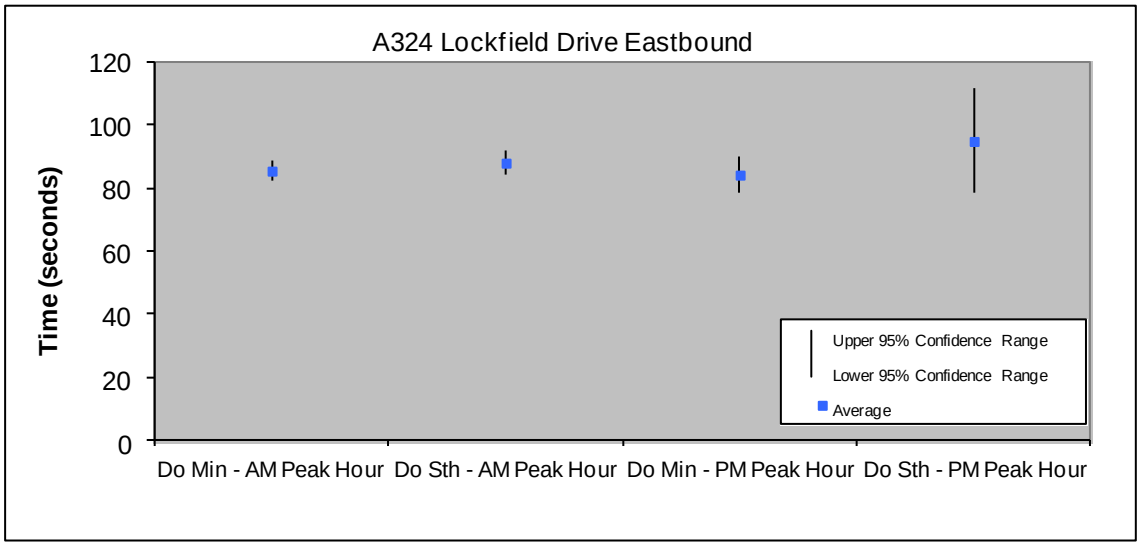
Matrix Level 2 – 16:00 - 19:00

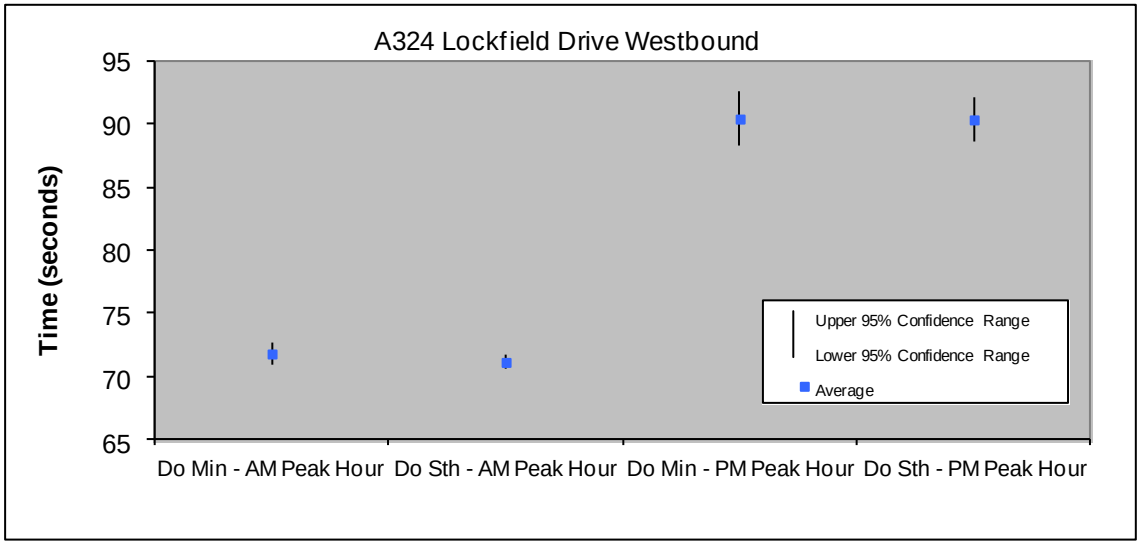
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total
1	0	3	2	2	7	0	1	0	0	1	5	1	0	1	0	0	0	1	0	28	2	7	26	0	0	**87**
2	6	0	0	1	4	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**14**
3	2	0	0	4	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**11**
4	4	0	0	0	8	0	1	0	0	1	5	1	0	1	3	0	0	0	0	0	0	0	10	0	0	**35**
5	13	0	6	7	0	1	3	1	2	2	17	3	2	2	0	0	0	0	0	10	1	6	8	0	0	**84**
6	2	0	1	1	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**9**
7	2	0	1	1	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**9**
8	1	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**5**
9	1	0	1	1	3	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
10	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
11	7	0	3	4	14	1	2	1	1	1	0	0	1	1	0	0	0	1	0	22	0	1	0	0	0	**61**
12	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
13	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	34	27	10	0	**74**
14	0	0	0	0	0	0	0	0	0	0	10	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**11**
15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	**2**
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
20	11	0	0	1	8	0	0	0	0	1	2	0	2	0	0	0	0	0	0	0	0	0	0	4	0	**29**
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
22	1	0	0	0	1	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	20	2	0	**29**
23	7	0	0	5	5	0	20	0	0	0	5	5	12	0	0	0	0	0	0	0	0	0	0	2	0	**62**
24	4	0	0	4	0	0	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	2	2	0	0	**22**
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**62**	**3**	**15**	**32**	**65**	**2**	**28**	**2**	**3**	**8**	**61**	**10**	**28**	**8**	**3**	**0**	**0**	**2**	**0**	**62**	**2**	**50**	**93**	**20**	**0**	**561**

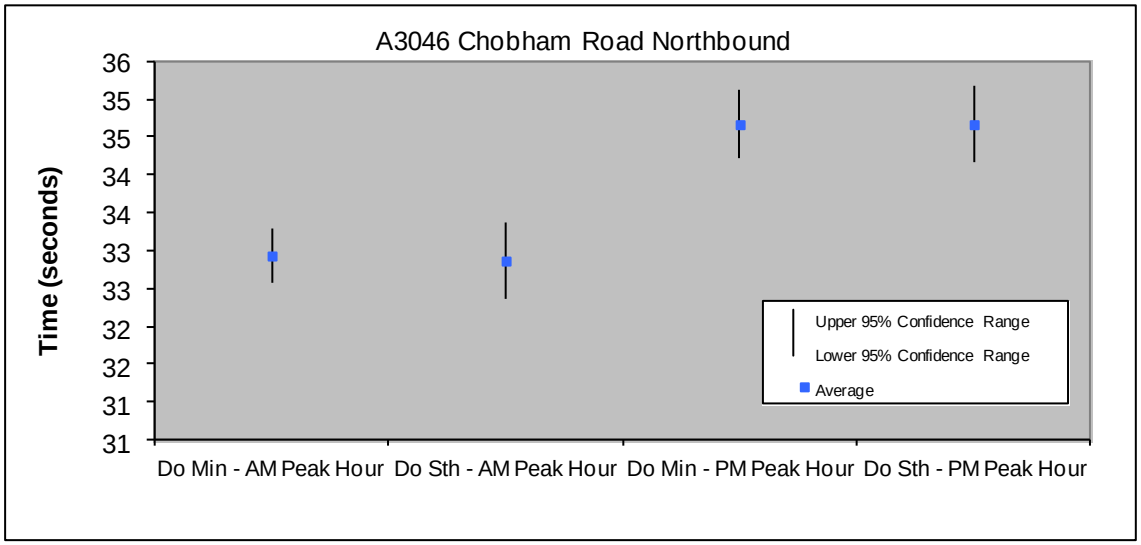
Appendix F: Journey time Graphs

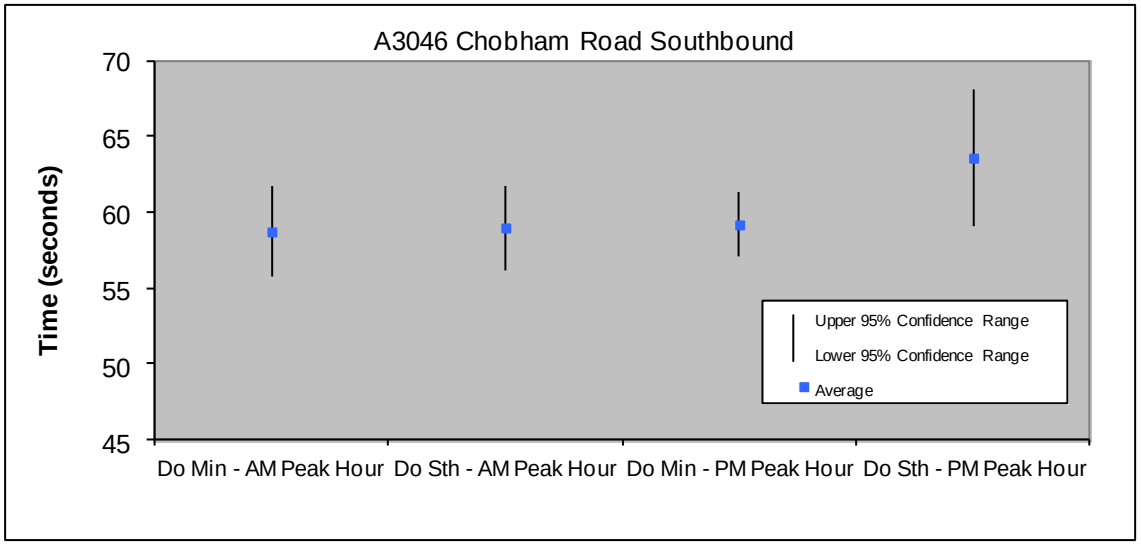


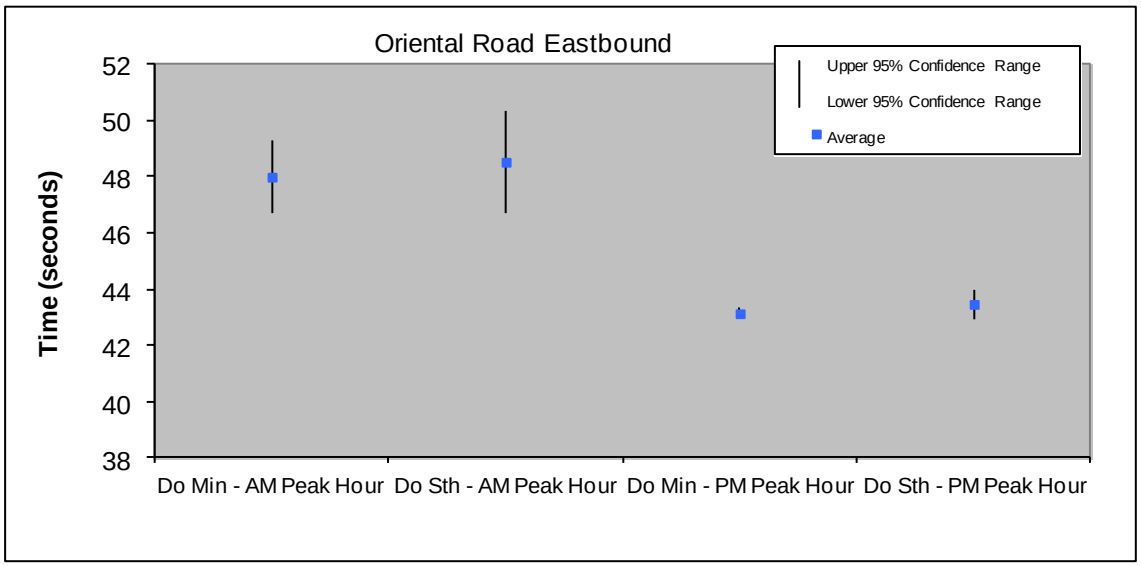


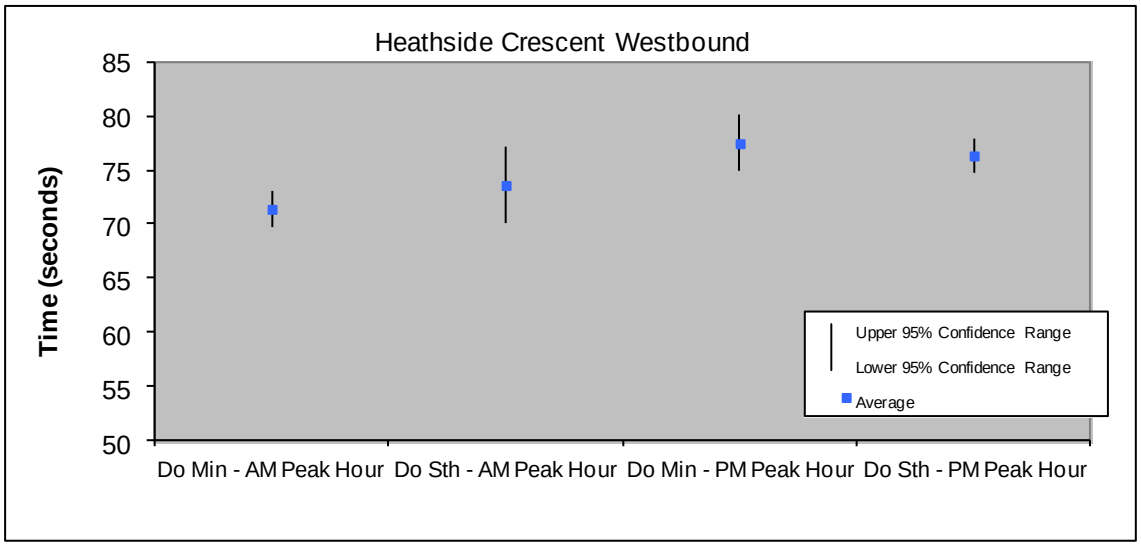


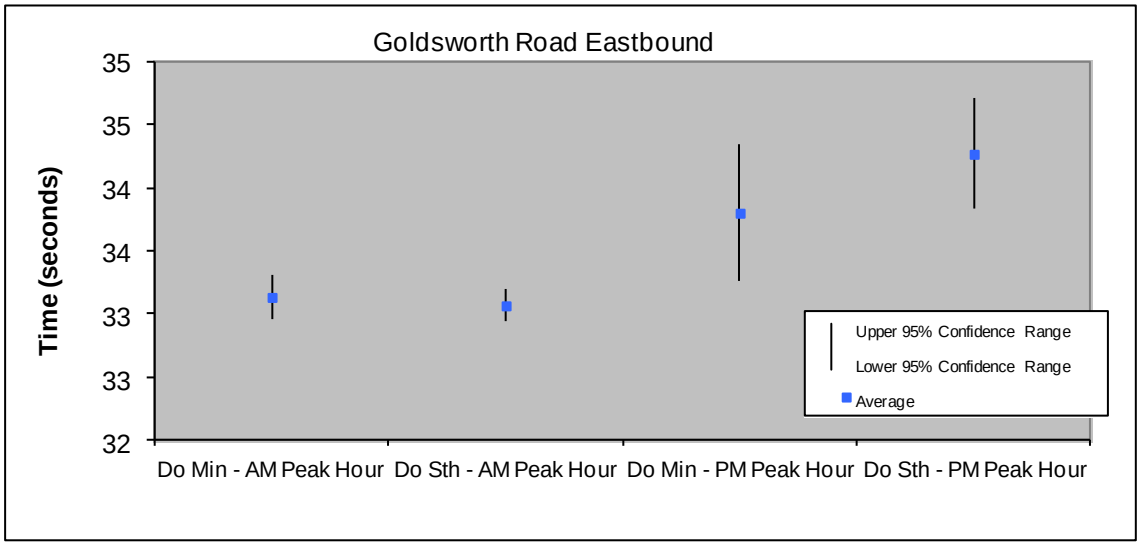

A324 Lockfield Drive Westbound
Time (seconds)
95
90
85
80
75
70
65
Upper 95% Confidence Range
Lower 95% Confidence Range
Average
Do Min - AM Peak Hour
Do Sth - AM Peak Hour
Do Min - PM Peak Hour
Do Sth - PM Peak Hour

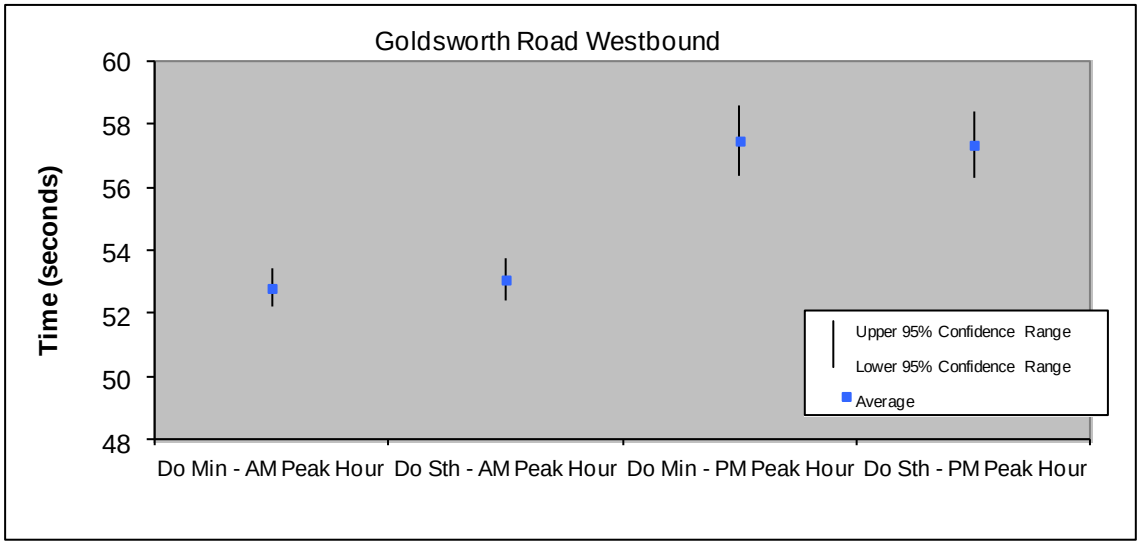

A3046 Chobham Road Northbound
Time (seconds)
36
35
35
34
34
33
33
32
32
31
31
Upper 95% Confidence Range
Lower 95% Confidence Range
Average
Do Min - AM Peak Hour
Do Sth - AM Peak Hour
Do Min - PM Peak Hour
Do Sth - PM Peak Hour

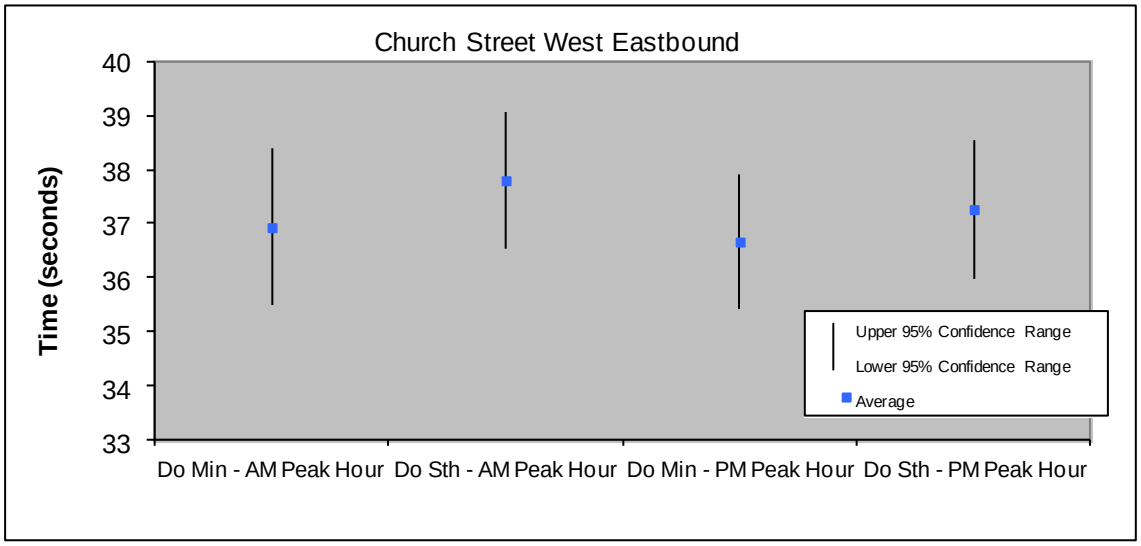

A3046 Chobham Road Southbound
Time (seconds)
70
65
60
55
50
45
Upper 95% Confidence Range
Lower 95% Confidence Range
Average
Do Min - AM Peak Hour
Do Sth - AM Peak Hour
Do Min - PM Peak Hour
Do Sth - PM Peak Hour


Oriental Road Eastbound
Time (seconds)
52
50
48
46
44
42
40
38
Upper 95% Confidence Range
Lower 95% Confidence Range
Average
Do Min - AM Peak Hour
Do Sth - AM Peak Hour
Do Min - PM Peak Hour
Do Sth - PM Peak Hour


Heathside Crescent Westbound
Time (seconds)
85
80
75
70
65
60
55
50
Upper 95% Confidence Range
Lower 95% Confidence Range
Average
Do Min - AM Peak Hour
Do Sth - AM Peak Hour
Do Min - PM Peak Hour
Do Sth - PM Peak Hour


Goldsworth Road Eastbound
Time (seconds)
35
35
34
34
33
33
32
Upper 95% Confidence Range
Lower 95% Confidence Range
Average
Do Min - AM Peak Hour
Do Sth - AM Peak Hour
Do Min - PM Peak Hour
Do Sth - PM Peak Hour


Goldsworth Road Westbound
Time (seconds)
60
58
56
54
52
50
48
Upper 95% Confidence Range
Lower 95% Confidence Range
Average
Do Min - AM Peak Hour
Do Sth - AM Peak Hour
Do Min - PM Peak Hour
Do Sth - PM Peak Hour


Church Street West Eastbound
Time (seconds)
40
39
38
37
36
35
34
33
Upper 95% Confidence Range
Lower 95% Confidence Range
Average
Do Min - AM Peak Hour
Do Sth - AM Peak Hour
Do Min - PM Peak Hour
Do Sth - PM Peak Hour