Three Bridges Station Improvements

Traffic Modelling Summary Report

For Crawley Borough Council

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Crawley Borough Council

PROJECT CENTRE

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1. INTRODUCTION

1.1 Project Centre (PCL) were commissioned by Crawley Borough Council (CBC) to develop in more detail the design proposals to redevelop the Three Bridges Station forecourt and create improved access and drop-off facilities ("the scheme") as part of the Crawley Growth Programme.

1.2 The aims and objectives of the proposed scheme are to:

- Improve the physical environment of the station forecourt area and taxi rank
- Improve provision for picking up/dropping off passengers by car and taxi
- Improve the transport interchange facilities, bus connectivity, pedestrian and cycle links
- Improve access to the station by sustainable forms of transport
- Improve passenger flow by creating a new entrance/exit point at platform 5
- Review parking facilities at the station.

It should be noted that there is a commitment to minimise any adverse impacts on traffic flows and vehicle journey times from the delivery of these key aims and objectives, as illustrated by the decision taken by Crawley Borough Council and endorsed by West Sussex County Council to require Project Centre to undertake a traffic modelling exercise in order to assess how the scheme would impact traffic volumes.

1.3 Part of these proposals would require the existing adjacent highway and junction layouts to be altered and this may have an impact on traffic on the surrounding roads. PCL were therefore also commissioned to carry out the traffic modelling exercise to assess the traffic impact of the possible changes to the road network around Three Bridges Station.

1.4 This report outlines the modelling strategy / methodology and summarises the key findings and outputs from the detailed modelling report and shows the outcome of the predicted traffic impact of the various design options considered. The traffic impact modelling for the scheme was reviewed and approved by the Local Highway Authority, West Sussex County Council (WSCC) at key stages.

1.5 This report also includes details of additional assessments following the results of the previous public consultation process, which took place in spring 2018 (12th February to 5th March 2018).

2. MODELLING STRATEGY AND METHODOLOGY

2.1 The Methodology, extent and scope of traffic modelling was agreed with West Sussex County Council as the Highway Authority. The agreed methodology and related delivery process is outlined below:

2.2 Study Area (see Section 3)

West Sussex County Council agreed the extent of the study area based on the interrogation of the strategic network model and the likely extent of any traffic impact.

2.3 Data Collection

The assessment required a comprehensive and extensive collection of existing traffic survey data and signal timings within the agreed study area to allow a 'base' traffic model to be produced. These traffic surveys were also used to identify the peak periods on the main network.

2.4 Agreed Modelling Software

The assessment made use of a combination of specialist modelling software packages LinSig3 and VISSIM. LinSig3 focuses mainly on individual junctions to help test changes in geometric layout and signal staging design but it lacks the ability to accurately simulate complex interactions such as exit blocking, yellow box, keep clear, bus stops and others, hence the need to combine with VISSIM. VISSIM, which is a micro-simulation software, has the best capability to simulate complex and congested traffic conditions, such as situations around Three Bridges Station during the peak hours. Both LinSig3 and VISSIM are regularly utilised by WSCC Highways to model the projected impacts on traffic flow conditions of road layout changes and they are standard traffic modelling software tools.

2.5 Base Model

A Base traffic model was prepared utilising the traffic survey data including a calibration and validation process allowing WSCC to approve the model. The key outputs were journey times on strategic routes through the study area for each peak period and for both general traffic and bus traffic.

2.6 Proposed Models

For each of the scheme options considered (see section 6) a separate proposed traffic model was prepared utilising the above modelling software, existing peak traffic flows and any traffic reassignment due to changes in the layout. The key outputs were the journey times on the same strategic routes as the base model for each peak period and for both general traffic and bus traffic.

2.7 Assessment of Options

The traffic assessment is a direct comparison of existing journey times determined by the traffic survey data and proposed journey times, arising from the various scheme design options, which have been modelled and calculated using the above software. This assessment was accordingly carried out at peak traffic times on the main network to identify "worst case scenario" for impacts on traffic flows and journey times.

3. STUDY AREA

3.1 The agreed study area for the modelling focuses around 7 signal-controlled junctions and give-way junctions in the road network along A2220 Haslett Avenue East. The signalised junctions within the modelling extent are:

- 3628 – A2220 Haslett Avenue East / Worth Road;
- 3627 – A2220 Haslett Avenue East / St. Mary's Drive;
- 3626 – A2220 Haslett Avenue East / Station Hill;
- 3625 – A2220 Haslett Avenue East / Station Forecourt;
- 3624 – A2220 Haslett Avenue East / Hazelwick Avenue;
- 3623 – A2220 Haslett Avenue East / Three Bridges Road; and
- 3622 – A2220 Haslett Avenue East / Stephenson Way.

4. DATA COLLECTION

4.1 To inform the existing traffic flow and journey times, which form part of the assessment, full classified turning count surveys were undertaken at all signal-controlled junctions within the study area (listed above), including queue length surveys. These were carried out from Tuesday 10th July through to Thursday 12th July and Saturday 14th July 2018 using video data collection.

4.2 In addition, a series of automatic traffic counters (ATCs) were installed to collect directional traffic volumes and speed data during the full week of 8th July to 15th July 2018 (24 hours a day).

4.3 Additional assessments were carried out to verify and clarify that the above period of Data collection in July represented typical traffic flow volumes. This was carried out by looking at the permanent Automatic Traffic Counters (ATC) data at 9 sites within Crawley collected by WSCC and to review the yearly variation in traffic flows. This review highlighted that traffic flows were relatively consistent throughout the year with the exception of January and August where traffic flows are significantly reduced during the traditional holiday periods. This concluded that the traffic survey data collected during the week of 8th July to 15th July 2018 represented typical peak flows throughout the year and the use of this data is therefore appropriate for the traffic modelling exercise. These assessments were examined and endorsed by West Sussex County Council who are the Highway Authority.

4.4 Analysis of the survey data concluded that the road network peak time traffic flows in the study area were:

- Tuesday morning peak hour (AM): 08:00 - 09:00; and
- Wednesday evening peak hour (PM): 16:30 - 17:30.

4.5 Bus timetables and route information were obtained for service routes 3, 4, 5, 84, 272, 281, 291, 400, 606, Fastway 20 and Fastway 100 which run and call at the bus stops in the study area.

4.6 Journey Time surveys for general traffic and bus journeys were also completed on the same days and time periods as the turning count surveys (see section 4.1). WSCC provided signal timing data for all signal-controlled junctions in the study area during the above survey period.

5. BASE MODEL

5.1 The LinSig3 and VISSIM base models were developed and aimed to accurately replicate the real-life existing traffic conditions.

5.2 The LinSig3 model was validated against observed lane operating capacities from the surveys and compared against the modelling results. The VISSIM model was validated by comparing modelled traffic flows and journey times with on-site measurements for both general traffic and buses.

5.3 As the modelling exercise was progressed, it was concluded that modelling of the proposed options should mainly be focussed on VISSIM. This is because the junctions in the study area operate on MOVA, with dynamic or constant changing signal data that responds to real time traffic demand. As such, the existing fixed average signal values (obtained through recorded data) are bound to change. Furthermore, VISSIM presents impacts based on impact to journey times which is of most concern to most road users. VISSIM therefore formed the main basis for assessment of the impacts of the proposed options.

5.4 The comparison of the observed and model journey times concluded that the base model represented an accurate simulation of the existing traffic conditions during the weekday for the extent of the VISSIM study area, for the morning (AM) and evening (PM) peak hours.

5.5 Figures 1 and 2 below ilustrates the extent of the VISSIM and LinSig3 models.

Figure 1: VISSIM Structure for Base Model

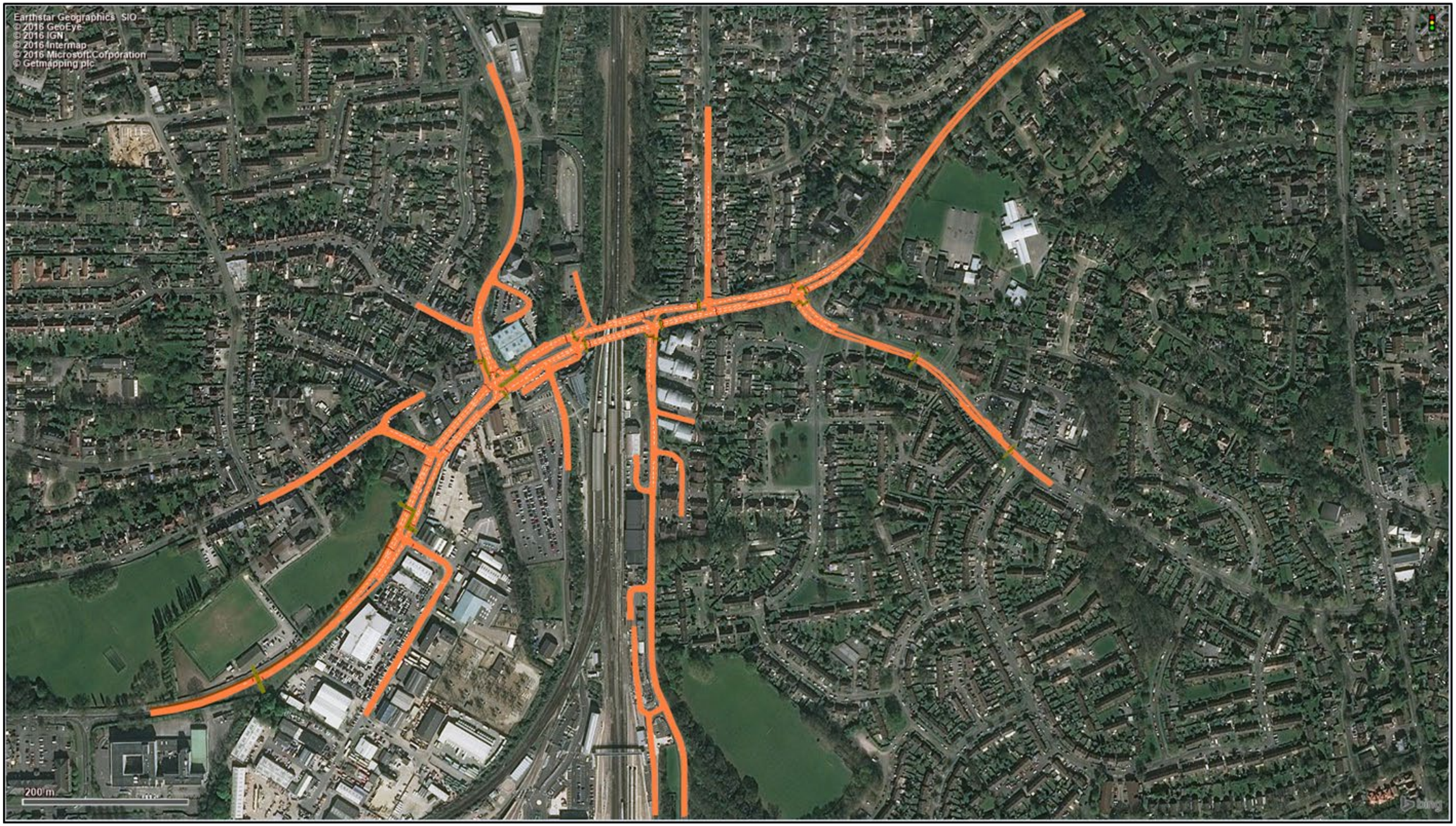
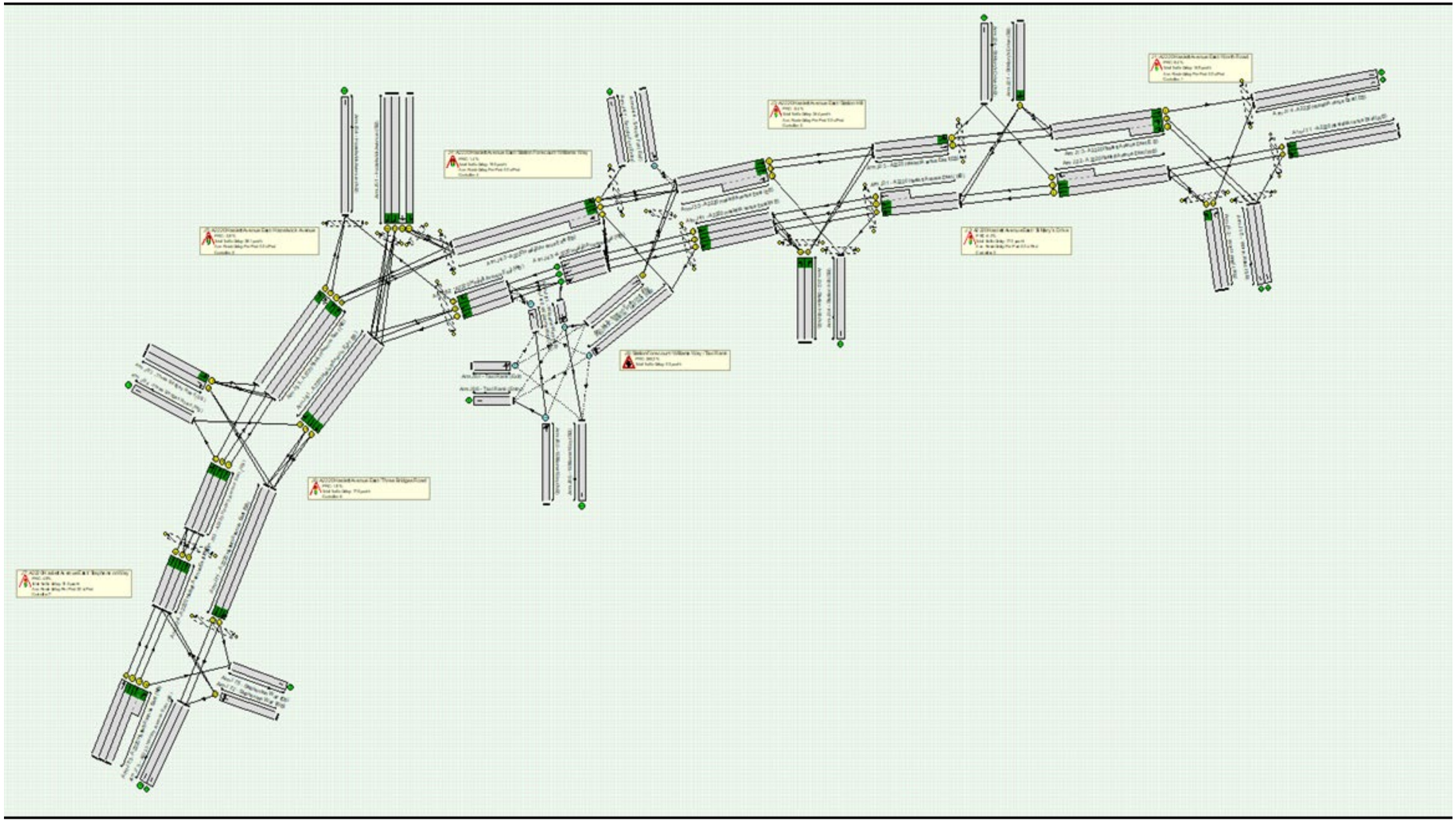


Figure 2: LinSig3 Structure for Base Model



5.6 The validation exercise concluded that the base LinSig3 and VISSIM models for the AM and PM peak hours are robust models. The model validation was reviewed and approved by WSCC. The approved base models were therefore used to develop models for the proposals to ascertain the traffic impact of the Three Bridges Station Improvement scheme options.

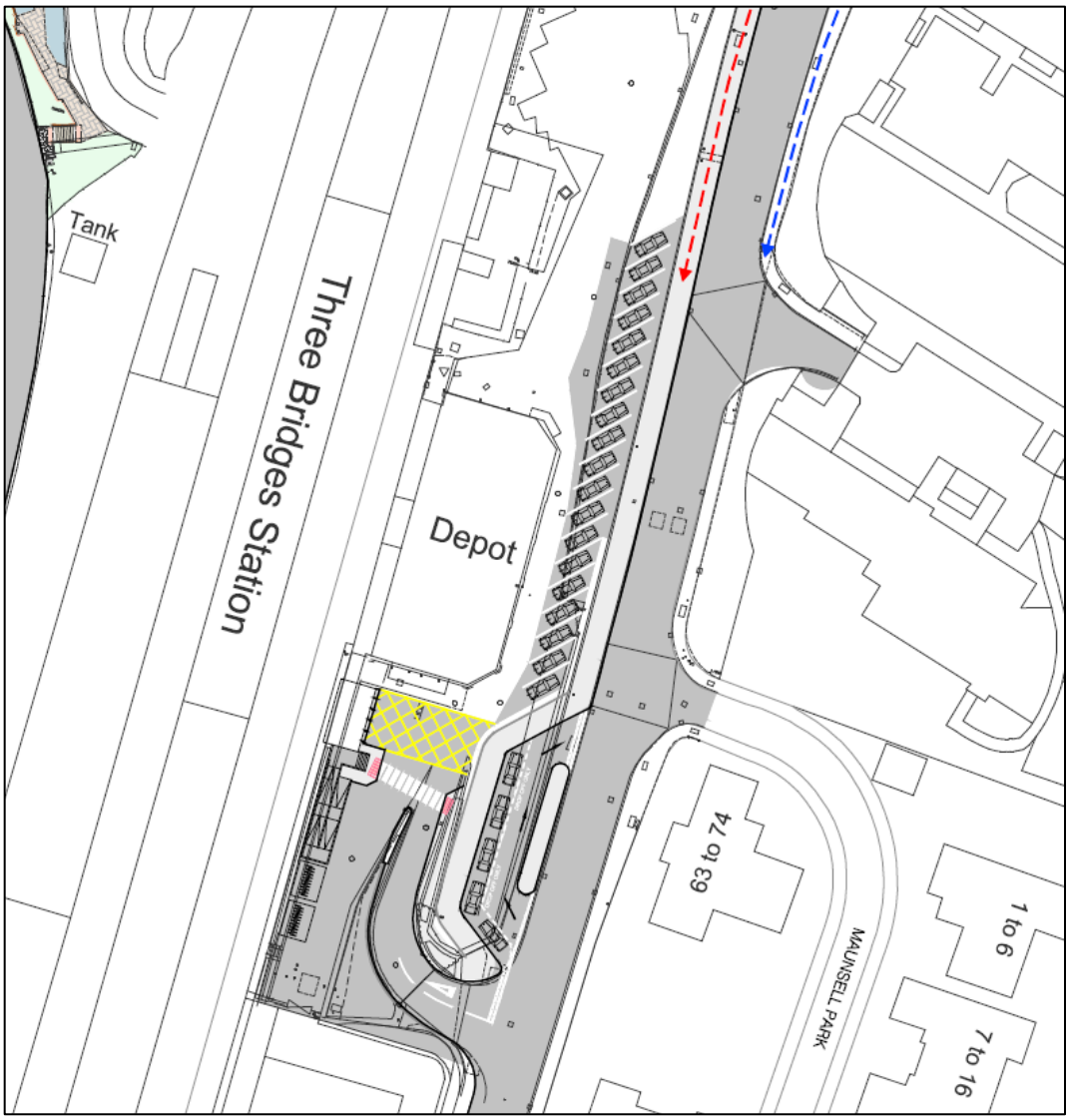
6. MODELLED OPTIONS

6.1 Two broad options were progressed for traffic modelling, both of which were assessed with and without an eastern vehicular drop-off;

- Option 0A – No Right Turn from Station Forecourt with eastern vehicular drop-off;
- Option 0B – No Right Turn from Station Forecourt with pedestrian only eastern access i.e. without eastern vehicular drop-off;
- Option 3A – Right Turn from Williams Way with eastern vehicular drop-off; and
- Option 3B – Right Turn from Williams Way with pedestrian only eastern access i.e. without eastern vehicular drop-off.

6.2 Options 0A and 3A both incorporated the same layout for the eastern access off Station Hill. This is shown in Figure 3

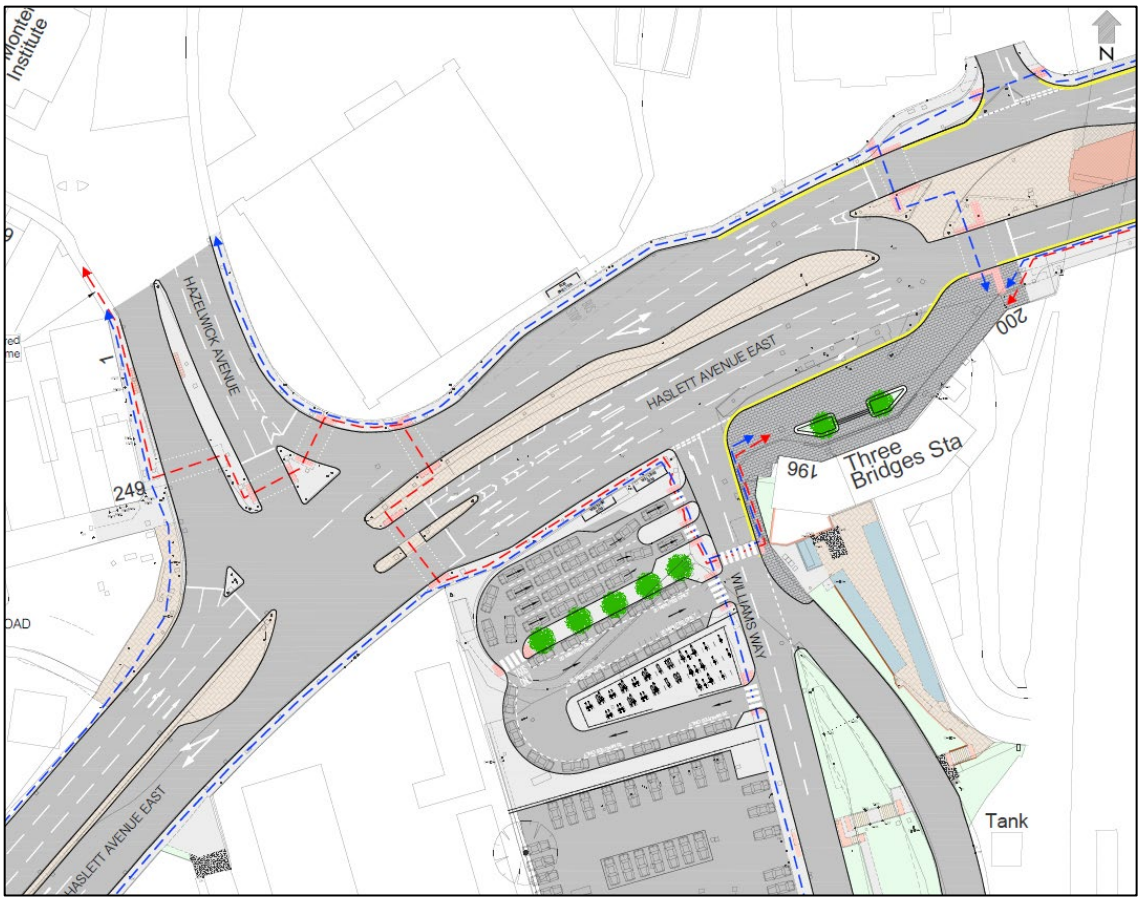
Figure 3: Layout Option for eastern access vehicular drop-off



6.3 The two main options 0 and 3 are illustrated in Figures 4 and 5.

Option 0

Figure 4: Option 0



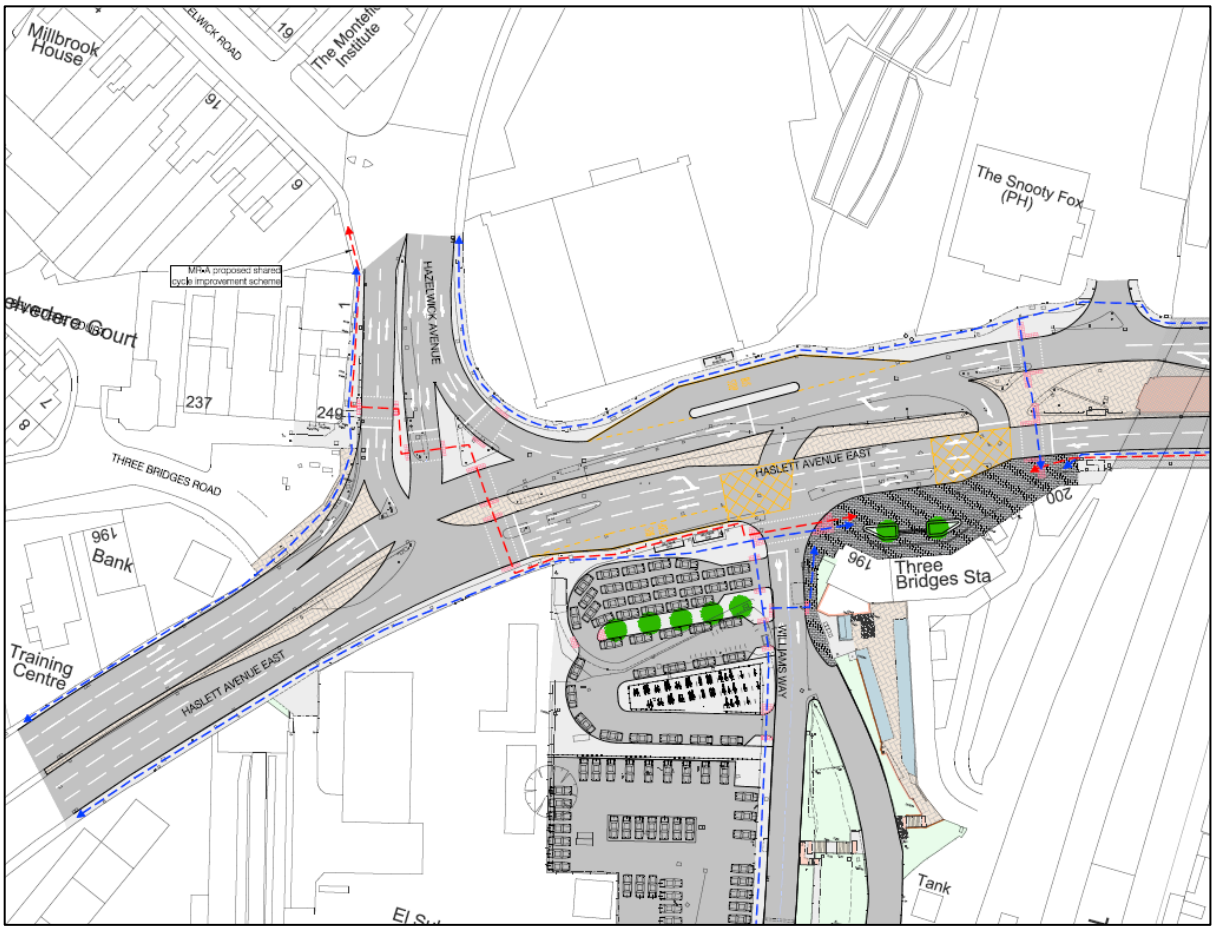
Note: This layout was used in the modelling exercise. The internal station layout has since been developed further, however the main highway layout has remained unchanged.

6.4 The Option 0 design proposal includes converting the existing Station Forecourt to a pedestrian area. The design also shows changing the existing signalised junction which has a right-turn lane from Haslett Avenue eastbound to a U-turn movement to accommodate traffic heading for Williams Way or the taxi rank or station drop off area from the west. The Haslett Avenue East westbound approach is proposed to be reduced from three to two lanes, which would then widen to four lanes where the nearside lane is left-turn only onto Williams Way, continuing onto the bus stop.

6.5 The Williams Way approach remains as a give-way and the traffic would likely exit the approach during the inter-green time at the Station Forecourt junction. For this design, the eastbound traffic from Williams Way and the Taxi Rank / public drop off area would initially have to turn left onto Haslett Avenue East and then use alternative routes if their destination is to the east.

Option 3

Figure 5: Option 3



6.6 The Option 3 design shows a similar layout for the pedestrianisation of the Station Forecourt along with a similar parking, drop-off and taxi layout as Option 0, but the Williams Way junction is proposed to be signalised to maintain the right-turning traffic heading eastbound.

6.7 The Haslett Avenue East westbound approach is designed as signalised with three lanes approximately 30m from the Station Forecourt junction. The eastbound traffic has a stop-line to allow the right-turners from Williams Way. The yellow boxes are proposed to ensure that westbound queuing traffic on Haslett Avenue East do not block eastbound right turning traffic from Haslett Avenue East and Williams Way.

7. TRAFFIC REASSIGNMENT

7.1 For Option 0, the proposed removal of the right turn movement would result in vehicles wishing to travel eastbound out of Williams Way exiting left and either turning at an appropriate opportunity, or rerouting their journey depending on their end destination.

7.2 Additional sensitivity testing was carried out to look at the impact if all right turning traffic was reassigned to use St Mary's Drive to travel eastwards. For the testing, it was assumed that 100% of the diverted traffic would use St. Mary's Drive, however, traffic travelling eastbound on Worth Park Avenue will use Chaucer Road and Grattons Drive and therefore avoid St. Mary's Drive junction with Haslett Avenue East.

7.3 For the AM Peak, the Base Model has an average queue length of 1 car, with a maximum queue length of 8 cars. In the test model, the results showed no change to the average queue but an increase of 2 cars to the maximum queue length (from 8 to 10 cars). In the PM peak, the Base Model had an average of 2 cars with a maximum of 12 in queue length. The test model showed an average increase in queue length of 1 car (from 2 to 3 cars) up to a maximum increase of 8 cars.

7.4 According to the traffic survey (see section 4) during the identified AM road network Peak traffic volume time: 08:00 – 09:00 there were 69 vehicles turning right and 109 vehicles turning left out of Williams Way, giving a total of 178 Vehicles exiting Williams Way.

7.5 According to the traffic survey data, during the identified PM road network Peak traffic volume time: 16:30 – 17:30 (see section 4) there were 128 vehicles turning right and 146 vehicles turning left out of Williams Way, giving a total of 274 Vehicles exiting Williams Way.

7.6 For the purpose of the modelling, the traffic re-assignment methodology assumed that the diverted traffic would use a variety of routes on the surrounding roads and turn back to the study area to travel eastbound or find an alternative route to their destination.

7.7 The proportion of vehicles diverted was estimated using the existing turning count surveys at the junctions (see section 4) to coincide with the current traffic behaviour in the study area.

7.8 It was noted from the traffic survey that the peak time traffic flows exiting Williams Way differed from the above road network peak time flows. The Williams Way peaks occurred between 07:00 – 08:00 and 18:00 – 19:00.

7.9 During the Williams Way AM peak hour (07:00 to 08:00) there were 234 vehicles exiting Williams Way. Although this represents an increase of 56 vehicles exiting Williams Way, this occurred at a period when the main network traffic volume through the junction was significantly less, compared to the network peak hours of 08:00 to 09:00. There were 675 fewer vehicles on Haslett Avenue East passing through the Williams Way Junction between 07:00 to 08:00 compared to the 2,750 vehicles from 08:00 to 09:00.

7.10 During the Williams Way PM Peak hour (18:00 to 19:00) there were 452 vehicles exiting Williams Way. Although this represents an increase of 178 vehicles exiting Williams Way, this occurred at a period when the main network traffic volume through the junction was significantly less, compared to the network peak hours of 16:30 to 17:30. 391 fewer vehicles were passing through Williams Way Junction from 18:00 to 19:00 compared to 3,000 vehicles from 16:30 to 17:30.

7.11 Therefore, it was considered that the traffic assessment should be carried out during the main network peaks, when traffic volumes in the study area (see section 3) were greatest, so capturing the “worst case scenario” journey time impact for the Options.

8. MODEL RESULTS

8.1 The results of the modelling are presented below in Tables 1 (for bus journey times) and 2 (for general traffic). These show the predicted changes to the traffic journey times in seconds for various routes in relation to each of the proposed 4 scheme design options (presented in section 6 above).

Figure 6 Journey Time Section Plan shows the location and extent of the various route sections used in the assessment of the journey times in Tables 1 and 2.

Table 1: Bus Journey Time Impacts

Bus Journey Times: AM Peak									
Origin	Destination	Direction	Section	Distance (m)	Base Model Journey Time (s)	Change for Option 0 (s)		Change for Option 3(s)	
						0A With Station Hill drop-off	0B No Station Hill drop-off	3A With Station Hill drop-off	3B No Station Hill drop-off
Haslett Avenue East (Stephenson Way)	Worth Park Avenue Road (Grattons Drive)	Eastbound	A1	1055	261	-1	-3	0	+4
Worth Park Avenue Road (Grattons Drive)	Haslett Avenue East (Stephenson Way)	Westbound	A2	1046	355	-18	+2	+56	+64
Hazelwick Avenue (from Henson Road)	Haslett Avenue East	Southbound	B1	310	66	+2	-5	-4	-2
Hazelwick Avenue (from Haslett Avenue East)	Henson Road	Northbound	B2	296	77	-5	-9	-8	-10
Station Hill (from Billinton Dr / Network Rail access junction)	Haslett Avenue East	Northbound	C1	311	89	-29	-18	+23	+40
Station Hill (from Haslett Avenue East)	Billinton Dr / Network Rail access junction	Southbound	C2	323	24	0	+1	+2	+1
Worth Road (from Pound Hill Parade)	Haslett Avenue East	Northwest Bound	D1	290	184	+10	+32	+35	+48
Worth Road (from Haslett Avenue East)	Pound Hill Parade	Southeast Bound	D2	282	36	0	+3	0	+1

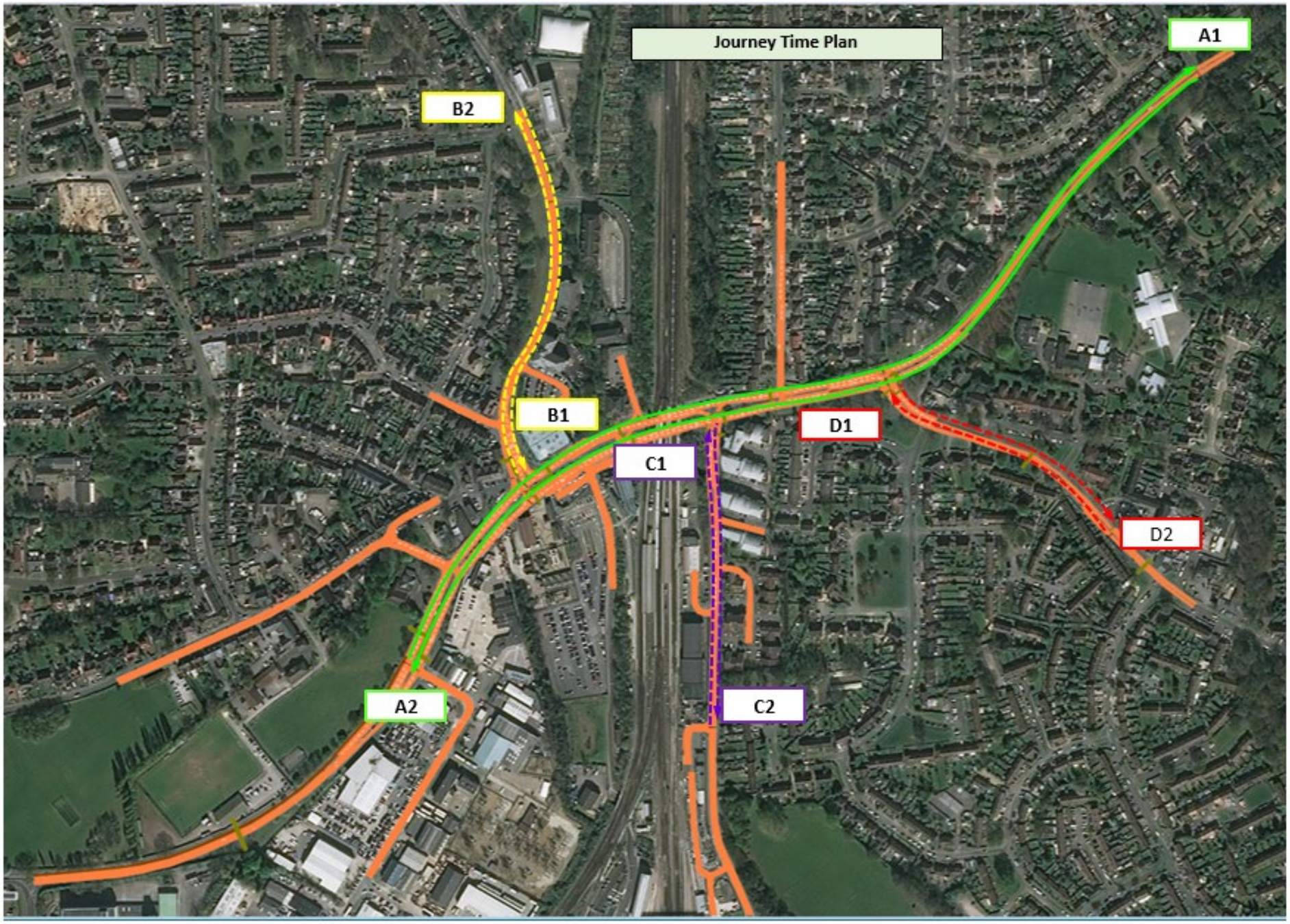
Bus Journey Times: PM Peak									
Origin	Destination	Direction	Section	Distance	Base Model Journey Time (s)	Change for Option 0 (s)		Change for Option 3 (s)	
						0A With Station Hill drop-off	0B No Station Hill drop-off	3A With Station Hill drop-off	3B No Station Hill drop-off
Haslett Avenue East (Stephenson Way)	Worth Park Avenue Road (Grattons Drive)	Eastbound	A1	1055	321	-1	+5	+1	+10
Worth Park Avenue Road (Grattons Drive)	Haslett Avenue East (Stephenson Way)	Westbound	A2	1046	292	-4	-6	+15	+27
Hazelwick Avenue (from Henson Road)	Haslett Avenue East	Southbound	B1	310	68	+7	+40	+4	+2
Hazelwick Avenue (from Haslett Avenue East)	Henson Road	Northbound	B2	296	26	0	0	0	0
Station Hill (from Billinton Dr / Network Rail access junction)	Haslett Avenue East	Northbound	C1	311	60	-2	-1	-1	0
Station Hill (from Haslett Avenue East)	Billinton Dr / Network Rail access junction	Southbound	C2	323	56	0	0	0	+1
Worth Road (from Pound Hill Parade)	Haslett Avenue East	Northwest Bound	D1	290	78	0	-2	-2	0
Worth Road (from Haslett Avenue East)	Pound Hill Parade	Southeast Bound	D2	282	34	+2	+1	+1	+1

Table 2: General Traffic Journey Time Impacts

General Traffic Journey Times: AM Peak									
Origin	Destination	Direction	Section	Distance (m)	Base Model Journey Time (s)	Change for Option 0 (s)		Change for Option 3 (s)	
						0A With Station Hill drop-off	0B No Station Hill drop-off	3A With Station Hill drop-off	3B No Station Hill drop-off
Haslett Avenue East (Stephenson Way)	Worth Park Avenue Road (Grattons Drive)	Eastbound	A1	1055	176	-8	-2	+9	+5
Worth Park Avenue Road (Grattons Drive)	Haslett Avenue East (Stephenson Way)	Westbound	A2	1046	222	-5	+27	+65	+71
Hazelwick Avenue (from Henson Road)	Haslett Avenue East	Southbound	B1	310	55	+1	0	-3	-4
Hazelwick Avenue (from Haslett Avenue East)	Henson Road	Northbound	B2	296	88	+2	-6	-7	-10
Station Hill (from Billinton Dr / Network Rail access junction)	Haslett Avenue East	Northbound	C1	311	72	-22	-20	+47	+58
Station Hill (from Haslett Avenue East)	Billinton Dr / Network Rail access junction	Southbound	C2	323	23	0	0	+1	0
Worth Road (from Pound Hill Parade)	Haslett Avenue East	Northwest Bound	D1	290	98	+11	+34	+41	+53
Worth Road (from Haslett Avenue East)	Pound Hill Parade	Southeast Bound	D2	282	31	+1	+1	+1	+2

General Traffic Journey Times: PM Peak									
Origin	Destination	Direction	Section	Distance	Base Model Journey Time (s)	Change for Option 0 (s)		Change for Option 3 (s)	
						0A With Station Hill drop-off	0B No Station Hill drop-off	3A With Station Hill drop-off	3B No Station Hill drop-off
Haslett Avenue East (Stephenson Way)	Worth Park Avenue Road (Grattons Drive)	Eastbound	A1	1055	257	-16	-6	+1	+19
Worth Park Avenue Road (Grattons Drive)	Haslett Avenue East (Stephenson Way)	Westbound	A2	1046	200	-11	-4	+2	+17
Hazelwick Avenue (from Henson Road)	Haslett Avenue East	Southbound	B1	310	68	+7	+18	-9	-7
Hazelwick Avenue (from Haslett Avenue East)	Henson Road	Northbound	B2	296	31	0	0	0	0
Station Hill (from Billinton Dr / Network Rail access junction)	Haslett Avenue East	Northbound	C1	311	52	+3	+1	+3	+5
Station Hill (from Haslett Avenue East)	Billinton Dr / Network Rail access junction	Southbound	C2	323	25	+1	+1	+1	+1
Worth Road (from Pound Hill Parade)	Haslett Avenue East	Northwest Bound	D1	290	50	+2	0	0	+3
Worth Road (from Haslett Avenue East)	Pound Hill Parade	Southeast Bound	D2	282	33	0	0	+1	0

Figure 6: Journey Time Section Plan



9. PROPOSED OPTION

9.1 The range of predicted journey time impacts for the various Options detailed in Tables 1 and 2 above can be summarised as follows:

Option 0A – No Right Turn from Station Forecourt with eastern vehicular drop-off

- Impact on Bus Journey Times between + 10 seconds and – 29 seconds
- Impact on General Journey Times between + 11 seconds and – 22 seconds

Option 0B – No Right Turn from Station Forecourt with pedestrian only eastern access

- Impact on Bus Journey Times between + 40 seconds and – 18 seconds
- Impact on General Journey Times between + 34 seconds and – 20 seconds

Option 3A – Right Turn from Williams Way with eastern vehicular drop-off

- Impact on Bus Journey Times between + 56 seconds and – 8 seconds
- Impact on General Journey Times between + 65 seconds and – 9 seconds

Option 3B – Right Turn from Williams Way with pedestrian only eastern access

- Impact on Bus Journey Times between + 64 seconds and – 10 Seconds
- Impact on General Journey Times between + 71 seconds and – 10 Seconds

9.2 It is noted that the provision of the eastern vehicular drop-off (Option OA), did provide marginal improvements in journey times on some routes, however there are significant engineering challenges and costs associated with the alteration to the existing large retaining wall on Station Hill which did not justify the progression of this option.

9.3 Option 0B was recommended as the proposed option being: No Right Turn from Station Forecourt with pedestrian only eastern access i.e. without eastern vehicular drop-off. This is because the traffic flow impact assessment summarised above shows that amongst the four options considered, this option would provide the least impact, in terms of journey times, for the vast majority of people.

9.4 The selection of the above as the proposed option was subject to a high level assessment of the impact on journey times of the removal of the right hand turn for traffic exiting Williams Way,

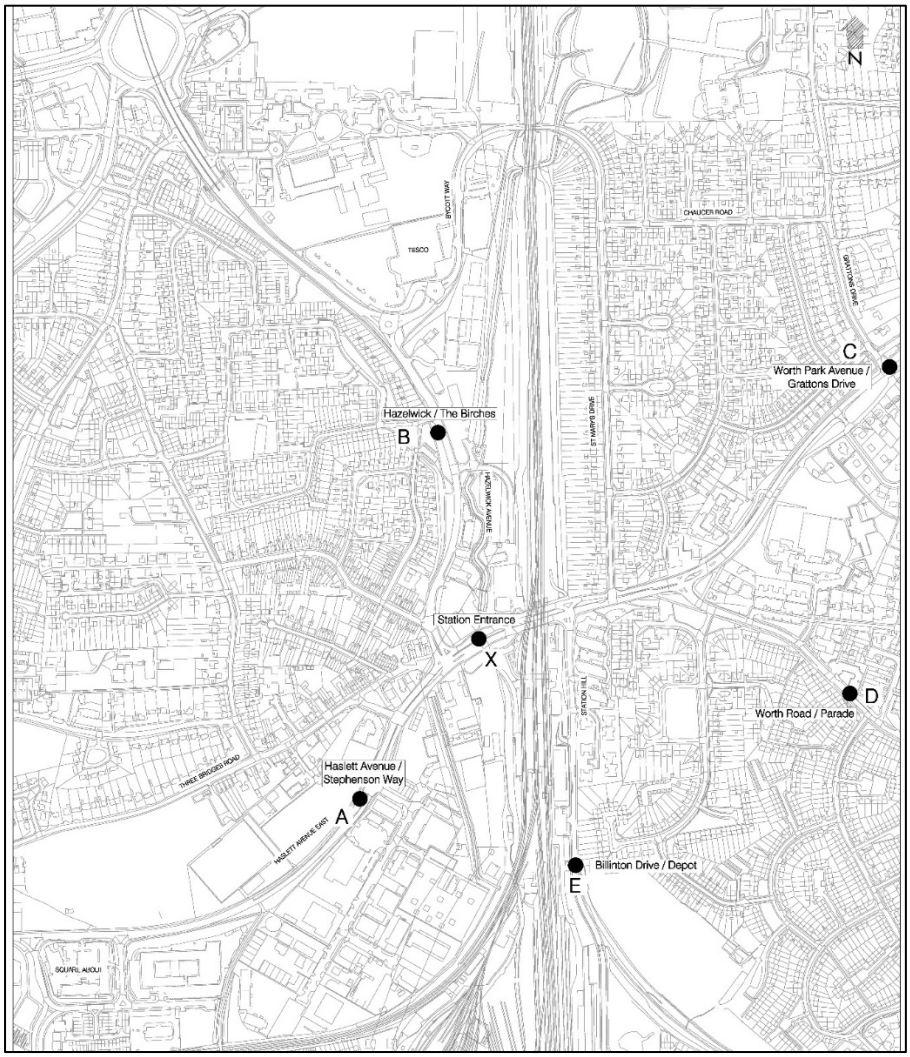
10. HIGH LEVEL SUMMARY OF JOURNEY TIME IMPACTS

10.1 Following the selection of the proposed option additional high-level assessments were carried out to look at the changes in overall journey times of additional routes and combined routes through the study area, particularly for the small number of reassigned 'right turning' vehicles.

10.2 The routes considered were to and from the following locations as shown in Figure 7:

- A - Haslett Avenue / Stephenson Way Junction
- B – Hazelwick Avenue / The Birches Junction
- C - Haslett Avenue / Grattons Drive Junction
- D – Worth Road by Pound Hill Parade
- E – Billinton Drive by NR Depot
- X – Station Entrance

Figure 7: Journey Time locations



10.3 It is proposed to sign two alternative routes for vehicles exiting the Station wishing to travel eastbound, which would be via the Paymaster General's Roundabout to the west and the Bycroft Way roundabout to the north. However, it is acknowledged that drivers would choose to take a variety of different diversion routes in addition to those signed, based on individual destinations and traffic conditions.

10.4 The journey time impacts via these routes have been estimated based on surveyed average speeds on the links and modelled journey times where applicable within the study area. These are presented in Figure 8 overleaf.

Figure 8: Overall Journey Time Impact for Option

TRAVEL TIME DIFFERENCE (POST-DEVELOPMENT)

DEPARTURE FROM	ARRIVAL AT: A - Haslett Avenue / Stephenson Way	B - Hazelwick / The Birches	C - Worth Park Avenue / Grattons Drive	D - Worth Road / Parade	E - Billinton Drive / Depot	X - Station Entrance
A - Haslett Avenue / Stephenson Way		-4 +7	-2 -6	-1 -6	0 +2	+2 +7
B - Hazelwick / The Birches	-1 +13		-3 +6	-3 +5	-2 +13	0 +18
C - Worth Park Avenue / Grattons Drive	+27 -4	+22 -4		+18 +1	+23 -1	+28 -4
D - Worth Road / Parade	+44 -4	+39 -5	+35 +1		+40 -2	+45 -5
E - Billinton Drive / Depot	-16 -2	-21 -3	-21 -2	-21 -3		-15 -3
X - Station Entrance	-1 +1	-6 0	+143 +143	+193 +192	+289 +184	
			+168 +166	+169 +166	+170 +174	

LEGEND

AM PEAK - TRAVEL TIME DIFFERENCE (s)

PM PEAK - TRAVEL TIME DIFFERENCE (s)

- via Chaucer Road and Grattons Drive
- via St Mary's Drive
- via Tesco roundabout
- via Square About

10.5 According to the high level assessment, the largest impacts to journey times will be amongst vehicles wishing to leave the station from Williams Way and travel eastbound (currently right-turn onto Haslett Avenue East), with additional journey times of typically 2-3 minutes, up to a maximum of 6 minutes (occurring on one diversion route) depending on time of day and alternative route taken.

10.6 The largest increases to journey times for the vast majority of vehicles travelling through the study area on the road network are amongst vehicles travelling from Worth Road during the AM peak hour with an increase of up to 45 seconds

10.7 The largest decrease to journey times for vehicles travelling on the road network through the study area are amongst vehicles travelling from Billinton Drive northbound or eastbound during the AM peak with a decrease of up to 21 seconds

11. SUMMARY AND CONCLUSION

11.1 This traffic modelling exercise was undertaken to help assess the traffic impact of the proposed changes to the road network within the vicinity of Three Bridges Station for the various design options for Three Bridges Station Improvement scheme. The first stage of the modelling exercise was to develop Base Models that provide accurate representation of the existing traffic conditions on the road network and in relation to the road junctions along the A2220 Haslett Avenue East near Three Bridges train station during the weekday morning and evening peak hours (see sections 4 and 5). Following the Base Models approval by West Sussex County Council, they were then used to develop models for two proposed design options reflecting the changes to the road network and predict the traffic impact of the scheme (see sections 6, 7 and 8).

11.2 The resulting outputs from the VISSIM models have been analysed to show the impact to traffic journey times against the approved validated base model results. The results have been presented separately for buses and general traffic and segregated into various routes along the network (see Tables 1 and 2 and Figures 6).

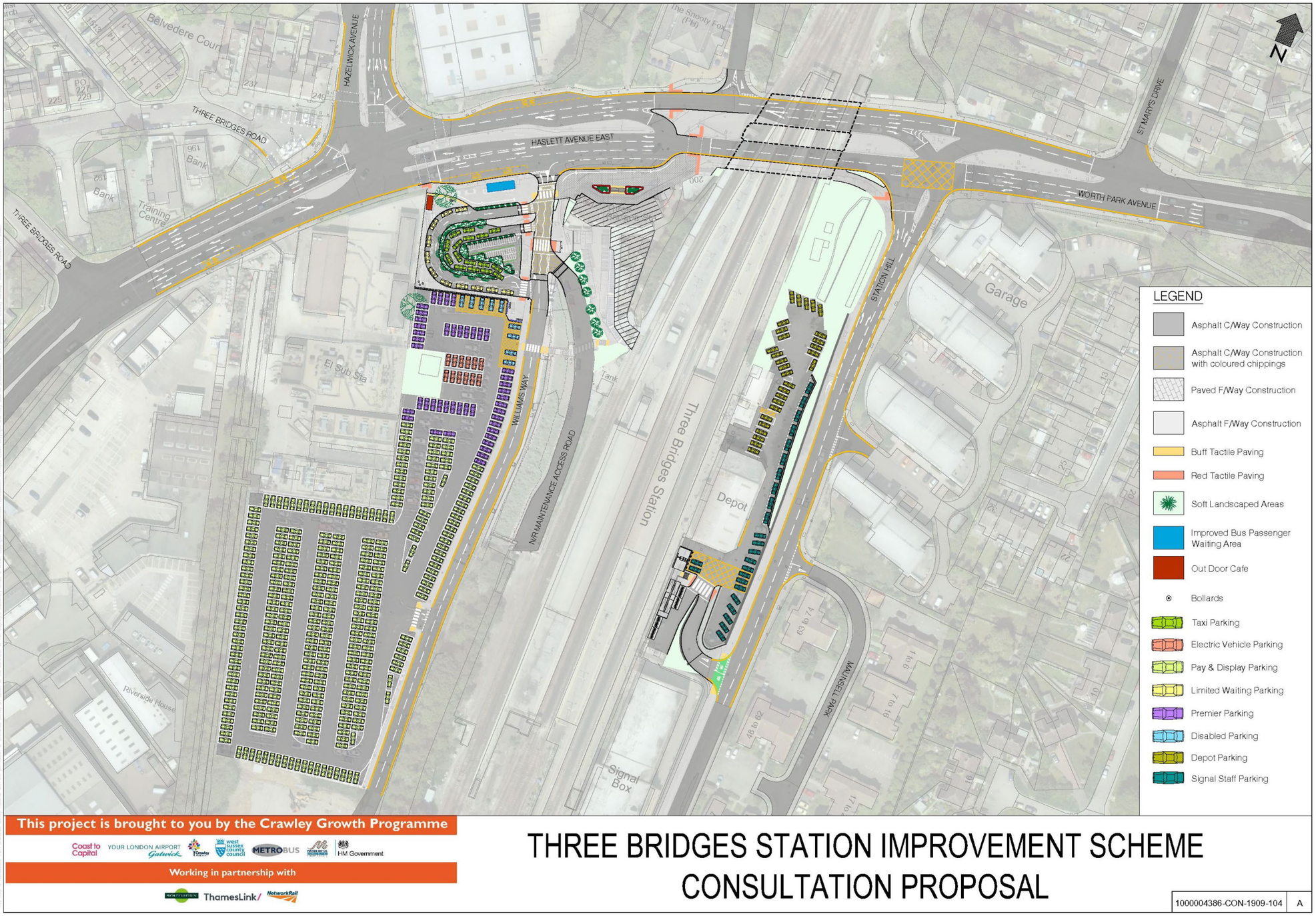
11.3 The proposed options looked specifically at two different designs for removing the Station Forecourt road outside of Three Bridges station, with and without the alternatives of having a vehicular drop-off on Station Hill. The two design options considered having the Williams Way junction with Haslett Avenue East as either a give-way junction (Option 0) or a signalled junction (Option 3), where the proposed signalled junction would allow a direct route for eastbound traffic from William's Way to Haslett Avenue East. The options are described as:

- Option 0A – No Right Turn from Station Forecourt with eastern vehicular drop-off;
- Option 0B – No Right Turn from Station Forecourt with pedestrian only eastern access i.e. without eastern vehicular drop-off;
- Option 3A – Right Turn from Williams Way with eastern vehicular drop-off;
- Option 3B – Right Turn from Williams Way with pedestrian only eastern access i.e. without eastern vehicular drop-off.

11.4 Following the completion of the proposed VISSIM modelling for the design options discussed above, a meeting involving Crawley Borough Council, West Sussex County Council and PCL was held where the traffic modelling results for the design options were discussed (see sections 8, 9 and 10). Based on the predicted journey time impact for the options, the outcome of the meeting was to favour Option 0B as the proposed option. A high level assessment was then undertaken to assess the impact on journey times of the removal of the right hand turn on a number of routes (see section 10.2 and Figure 8), in particular for traffic exiting Williams Way in front of the station and wishing to turn right, eastbound along Haslett Avenue East. This assessment concluded that the additional journey time for right turners out of Williams's Way would typically be 2-3 additional minutes up to a maximum of 6 minutes.

11.5 This layout was developed further and was taken to public consultation in October and November 2019. The final consultation layout is included in Figure 8 below.

Figure 8: Final Consultation Layout



Quality

It is the policy of Project Centre to supply Services that meet or exceed our clients' expectations of Quality and Service. To this end, the Company's Quality Management System (QMS) has been structured to encompass all aspects of the Company's activities including such areas as Sales, Design and Client Service.

By adopting our QMS on all aspects of the Company, Project Centre aims to achieve the following objectives:

- Ensure a clear understanding of customer requirements;
- Ensure projects are completed to programme and within budget;
- Improve productivity by having consistent procedures;
- Increase flexibility of staff and systems through the adoption of a common approach to staff appraisal and training;
- Continually improve the standard of service we provide internally and externally;
- Achieve continuous and appropriate improvement in all aspects of the company;

Our Quality Management Manual is supported by detailed operational documentation. These relate to codes of practice, technical specifications, work instructions, Key Performance Indicators, and other relevant documentation to form a working set of documents governing the required work practices throughout the Company.

All employees are trained to understand and discharge their individual responsibilities to ensure the effective operation of the Quality Management System.

Award Winning

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