Hampshire County Council

Engineering Services

Western Avenue, Andover

Feasibility assessment – Western Avenue/West Street Junction

24 October 2024

Job number: R.J509237

Rev	Description	Date	Originator	Checked	Approved
D	Draft to Client	14.06.2024	RH (HES) LY/JM (ITS)	JS	GC
F	Final version	24.10.2024	RH (HES) LY/JM (ITS)	JS	GC

Contents

1 Glossary 3
2 Introduction 5
2.1 Background 5
2.2 Objectives of the study 5
2.3 Active Travel England (ATE) Junction Assessment Tool (JAT) 7
3 Existing site details 8
3.1 Active Travel England JAT – Existing layout 8
3.2 Bridge Parapets 9
4 Design options 10
4.1 Option 1 – 3.2m wide shared use controlled crossing and 2.4m width uncontrolled (pedestrian only) crossing set back into West Street 10
4.2 Option 2 – 3.2m wide shared use controlled crossing and 4m wide uncontrolled crossing in line with park promenade exit 12
4.3 Option 3 - 3.2m wide shared use controlled crossing and 4m wide uncontrolled crossing in line with park promenade exit including 3m refuge island 14
4.4 Option 4 – Set back stop line with shared use crossing east of bridge 16
4.5 Option 5 – Set back stop line with wide crossing across bridge deck 18
4.6 Junction Assessment Tool results comparison 20
5 Traffic Signal Modelling 21
5.1 Existing Flows Model Option 1 – Covers Design Options 1, 2 & 3 21
5.2 Existing flows Model Option 4 – Covers Design Options 4 & 5 21
5.3 2040 Growth Model 22
5.4 Do Minimum Growth Model Option 1 – Covers Design Options 1, 2 & 3 22
5.5 Do Minimum Growth Model Option 2 – Covers Design Options 4 & 5 23
6 Conclusions 24
6.1 Engineering Services 24
6.2 Traffic Signal Engineer 24
6.3 Road Safety Audit (RSA) 25
6.4 Summary 25
Appendix A – Options 1 & 2 27
Appendix B – Option 3 28
Appendix C – Options 4 & 5 29
Appendix D – Traffic Signal Model Option 1/ Model Option 2 Comparison 30
Appendix E – Traffic Signal Models Current Flows & 2040 Do Minimum Projections 31
Appendix F – Traffic Signal Staging Diagrams 33
Appendix G – Road Safety Audit Stage F 34

1 Glossary

Acronym/Abbreviation/Term	Definition
NMU / Non-Motorised User	Someone walking or cycling, or a horse rider. Within the context of this report the term relates to pedestrians and cyclists only.
ATE / Active Travel England	The Government's executive agency, sponsored by the Department of Transport, responsible for walking, wheeling and cycling
JAT / Junction Assessment Tool	Tool contained withing the ATE Route Check suite of tools. Used to assess pedestrian and cyclist movements at junctions
ITS / Intelligent Transport Systems	The application of advanced technology to manage aspects of traffic and transportation in order to create a safer, more efficient, greener and more responsive transport network. This includes Traffic Signals.
Linsig	A design and assessment tool for traffic signal junctions allowing modelling of traffic signals and their effect on traffic capacities and queuing
PCU / Passenger Car Units	The basic unit of traffic flow equal to the equivalent of a typical car plus headway to the adjacent car. Generally taken as 5.75 m.
Junction Intervisibility Zone	The area within which drivers and pedestrians should be able to see each other, at the stop lines and while waiting to cross.
TSM / Traffic Signs Manual	Department of Transport guidance on the use of traffic signs and road markings prescribed by the Traffic Signs Regulations
Interstage time	The period between the end of one traffic signal stage and the start of the next stage.
Intergreen time	Period between the end of the green signal for one phase to the start of green of a conflicting phase.

Acronym/Abbreviation/Term	Definition
Deg Sat / Degree of Saturation	The ratio of the actual flows to the maximum possible flows on the approaches to a junction, and will give a good indication of whether a junction will function well or be subject to delays. It is usually expressed as a percentage and is given by the following: Degree of saturation = (demand x cycle time) / (saturation flow x effective green time) Although degrees of saturation below 100% are within theoretical capacity (i.e. demand flow does not exceed capacity), random traffic arrivals throughout time may result in shorter time periods where the degree of saturation exceeds 100%. Therefore, an arm is generally considered to be over capacity once the degree of saturation exceeds 90%.
Av. Delay per PCU (s/pcu)	The average delay (seconds) per PCU to traffic on the Route caused by queuing.
PRC / Practical Reserve Capacity for Signalled Lanes (%)	The PRC is calculated from the maximum degree of saturation on a Lane controlled by the Stage Stream and is a measure of how much additional traffic could pass through a junction controlled by the Stage Stream whilst maintaining a maximum degree of saturation of 90% on all Lanes
Total Delay for Signalled Lanes (pcuHr)	The aggregate delay (seconds) to all traffic on the Route caused by queuing

2 Introduction

2.1 Background

2.1.1 The Andover Masterplan (2020) proposes the removal of the eastern arm of the Western Avenue gyratory and the creation of a new riverside park adjacent to the river Anton.

2.1.2 An initial feasibility study was carried out by a third-party consultant post the adoption of the Masterplan to investigate improvements that could be made on West Street in Andover to accommodate two-way vehicular traffic. This would allow the eastern arm of the Western Avenue gyratory between West Street and Waterloo Court to be removed in its entirety and replaced with green space and walking/cycling facilities, creating a larger linear park than that envisaged in the Masterplan.

2.1.3 The current vehicle access arrangements for West Street consist of two entry points, one from the existing Western Avenue circulatory, and a secondary access from Chantry Street to the East. Once traffic has entered West Street, egress is only possible using one junction which joins Western Avenue. This junction is situated between the Lidl supermarket and bus station, meaning that proposals for Western Avenue would prevent this movement from being possible. Consequently, with West Street being made two-way, a new junction is required to connect into the remaining section of Western Avenue.

2.1.4 In addition to the West Street changes to facilitate the riverside park, development of the Magistrates Court is also included in the Masterplan. This may include a new pedestrian/cycle route along the eastern side of the River Anton connecting into the existing footbridge over the river. The potential later construction of this route should be considered.

2.2 Objectives of the study

2.2.1 The overarching objective for the Western Avenue/West Street junction is to reach a design that has minimal compromise for individual user groups. Non-motorised user (NMU) desire lines are a key consideration, with the existing river crossing at West Street being one of the main access routes to the town centre. There are

potential future desire lines which could arise from forecast re-development in the area. Figure 1 shows the existing and future desire lines.

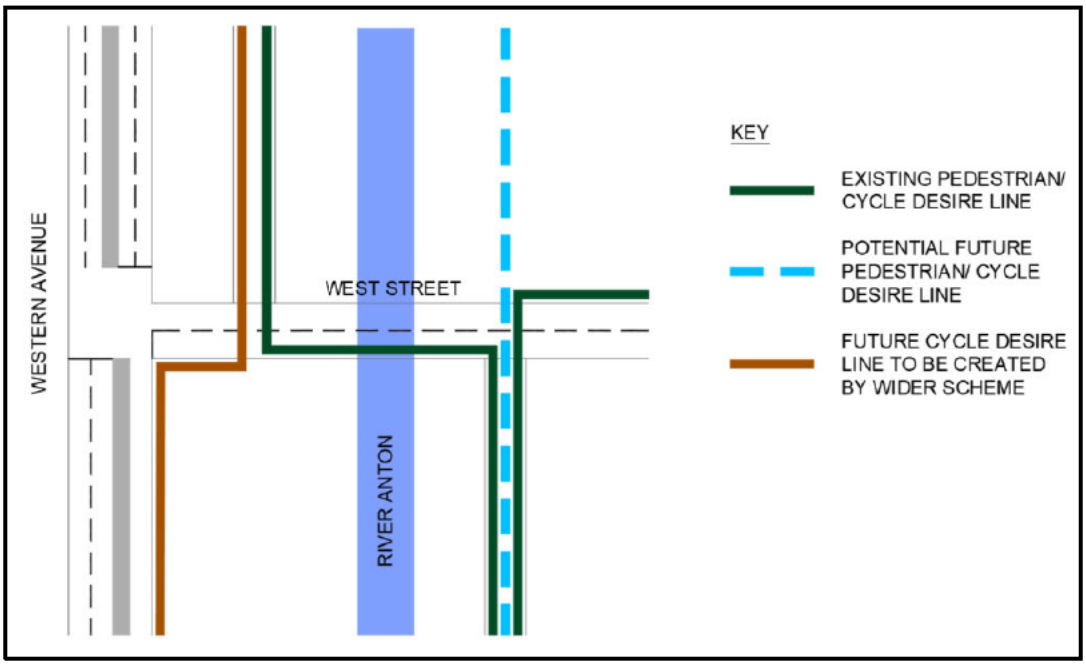


Figure 1 - West Street pedestrian & cycle desire lines

2.2.2 A second key consideration is the potential delay to bus services. Currently there is a peak flow of 24 buses each way/hour, with all buses that call at the bus station requiring to travel through this junction in both directions once the scheme is implemented.

2.2.3 The position of NMU crossing points will impact the directness of journeys and overall user experience. In the absence of any physical barriers such as vegetation or guardrail, pedestrians and cyclists may deviate from footways to reach their destination. The presence of traffic signals carries a risk of pedestrians emerging from between stationary vehicles to cross West Street, creating a potential conflict with vehicles moving in the other direction. Meanwhile, the position of the associated traffic signal stop lines will have an influence on the level of efficiency which the junction is able to operate at.

2.2.4 To establish the optimum layout, 5 potential options have been identified for the Western Avenue/West Street junction and will be assessed as part of this report. All options utilise the same layout for the Western Avenue approaches, and all include a dedicated cycle crossing with cycle signal equipment.

2.3 Active Travel England (ATE) Junction Assessment Tool (JAT)

2.3.1 Active Travel England's Junction Assessment Tool serves to assess pedestrian and cycle movements at junctions, based upon their safety, comfort and directness. Potential conflicts between user groups are also considered. Pedestrian and cycle movements are scored using the same colours but carry slightly different scoring criteria.

2.3.2 For pedestrians, **Green** movements signify the most optimum provision, with potential conflicts with vehicles almost entirely removed. **Amber** movements signify a provision which meets some but not all of the needs of its users, for example routes that are located away from desire lines or result in excessive waiting times for NMU users. **Red** movements signify a provision which is not fully accessible and/or doesn't protect NMU users from potential conflict with motor vehicles. Finally, **black** movements signify desire lines which are not catered for by a physical crossing. Further information on scoring pedestrian movements can be found in the ATE Route Check User Manual.

2.3.3 For cyclists, **Green** movements demonstrate a facility that is suitable for all potential and existing cyclists, with the potential for collisions removed or managed to a high standard. **Amber** movements demonstrate a facility that is acceptable for most cyclists but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. **Red** movements demonstrate a facility that is only suitable for confident existing cyclists and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Further information on scoring cycle movements can be found in LTN 1/20

3 Existing site details

3.1 Active Travel England JAT - Existing layout

3.1.1 To establish a baseline figure for the junctions NMU performance, a JAT assessment was carried out based upon the anticipated and potential desire lines. Figure 2 shows the results from the existing layout.

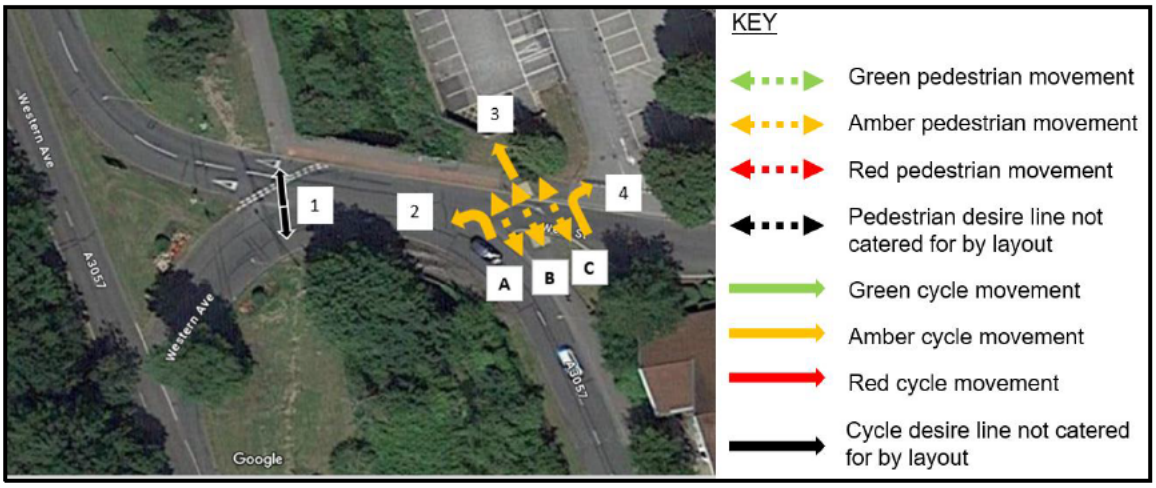


Figure 2 - Junction Assessment Tool (JAT) applied to existing layout

3.1.2 The movements covered within the assessment match those outlined in figure 1. All of these movements terminate at the proposed park promenade and require users to cross West Street to continue their journey.

3.1.3 Pedestrian movements assessed:

- To/from existing footway provision west of river
- To/from potential future continuation of park east of river
- To/from West Street in an easterly direction

3.1.4 Cycle movements are broadly identical, with an additional route for a continuation along Western Avenue, utilising the proposed high-speed cycle facility.

3.1.5 Results for the existing layout, demonstrating the junction's level of service, are outlined in table 1. These results will be reiterated alongside the scores of each option to allow for comparison.

Modes	Existing Layout
Walking & Wheeling	50%
Cycling	38%
All	43%

Table 1 - Existing layout level of service according to ATE JAT

3.2 Bridge Parapets

3.2.1 The existing river Anton bridge parapets are approximately 1.0m high which is adequate for adjacent pedestrian use but substandard for cyclists. The design requirement for cyclists is 1.5m minimum height to prevent cyclists toppling over during impact.

3.2.2 Given the age and condition of the existing parapets, and the location at the northern entrance into the proposed park, the Client has advised that they should both be considered for replacement to achieve the required height.

Figure 3 - River Anton Bridge Parapet (southern)

4 Design options

4.1 Option 1 – 3.2m wide shared use controlled crossing and 2.4m width uncontrolled (pedestrian only) crossing set back into West Street

4.1.1 Option 1 utilises a 3.2m wide controlled shared use crossing to capture the northwest pedestrian/cyclist desire line, with a section of shared use footway on the southern side of West Street to connect to the proposed park promenade.

4.1.2 The eastern desire line is catered for by an extension of the footway adjacent to the Lidl Supermarket, which would seek to take NMUs away from queuing traffic. Current proposals limit the eastern footway to pedestrians only due to the level difference between the existing kerb and highway boundary extents limiting the width available. Widening of the footway into a shared use provision could be explored with input from 3D data. Footway/cycleway continuation further east along the southern side of West Street is not possible without significant tree loss.

4.1.3 Perceived benefits

4.1.3.1 It is anticipated that this design option will cater sufficiently for desire lines to existing destinations, such as the railway station to the west, and the leisure centre and Andover college to the east. The traffic signal stop line is situated close to the junction bellmouth, maximising the efficiency of the traffic signal cycle and subsequently limiting delays to buses.

4.1.4 Potential limitations

4.1.4.1 Although a provision has been created to cater for NMU movements in both east and west directions, there is a possibility that pedestrians and cyclists will continue in a straight line when travelling north along the park promenade, crossing the verge and ultimately crossing closer to the junction stop line. This creates a risk of conflict between NMUs and vehicular traffic entering West Street.

4.1.4.2 The proposed footway to the uncontrolled crossing to the east is shown as 2.0m wide which is below the required 3.0m minimum for shared use. This is because the existing ground slopes down to the Lidl store. Ideally a 3.0m side footway should be provided but 3D design is required to confirm if this is viable without a retaining structure.

4.1.5 Traffic Signal Engineer summary

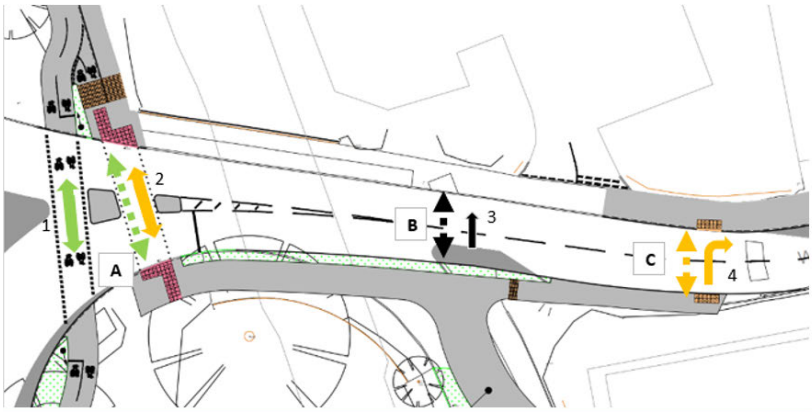
4.1.5.1 This option represents the ideal layout from a solely traffic signal perspective.

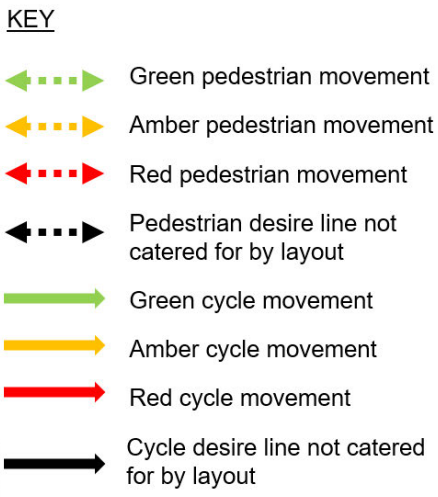
4.1.5.2 The uncontrolled pedestrian crossing on West Street is around 45m back from the stop line. The average maximum queue length from the signals would not usually extend back to the crossing.

4.1.5.3 The traffic signals would operate with a 'hold the left' arrangement for the traffic movement from Western Avenue (north) into West Street. This would maximise the opportunity for pedestrians and cyclists to cross West Street at the signals by providing around 15 seconds every minute to cross (25% of the available time).

4.1.6 Junction Assessment Tool results

4.1.6.1 Figure 4 shows the JAT diagram and performance scores, with a comparison made with the existing layout. A comparison of all proposed options is illustrated at the end of this section.





Junction Name	Modes	Existing Layout	Proposed Layout	Net difference
Option 1	Walking & Wheeling	50%	50%	0%
	Cycling	38%	38%	0%
	All	43%	43%	0%

Figure 4 - JAT results for Option 1

4.2 Option 2 – 3.2m wide shared use controlled crossing and 4m wide uncontrolled crossing in line with park promenade exit

4.2.1 Option 2 utilises an identical layout to option 1 for the controlled crossing and stop line position, whilst relocating the uncontrolled crossing facility to be in line with the proposed park promenade.

4.2.2 Perceived benefits

4.2.2.1 In addition to the benefits outlined for option 1, the alignment of proposed crossing points caters for all identified NMU desire lines through the junction.

4.2.3 Potential limitations

4.2.3.1 The primary limitation for option 2 is the additional risk of pedestrians and cyclists emerging from in between stationary traffic whilst trying to cross West Street. Due to the presence of large vehicles such as buses and goods vehicles completing deliveries, it would be difficult to achieve a safe uncontrolled crossing facility.

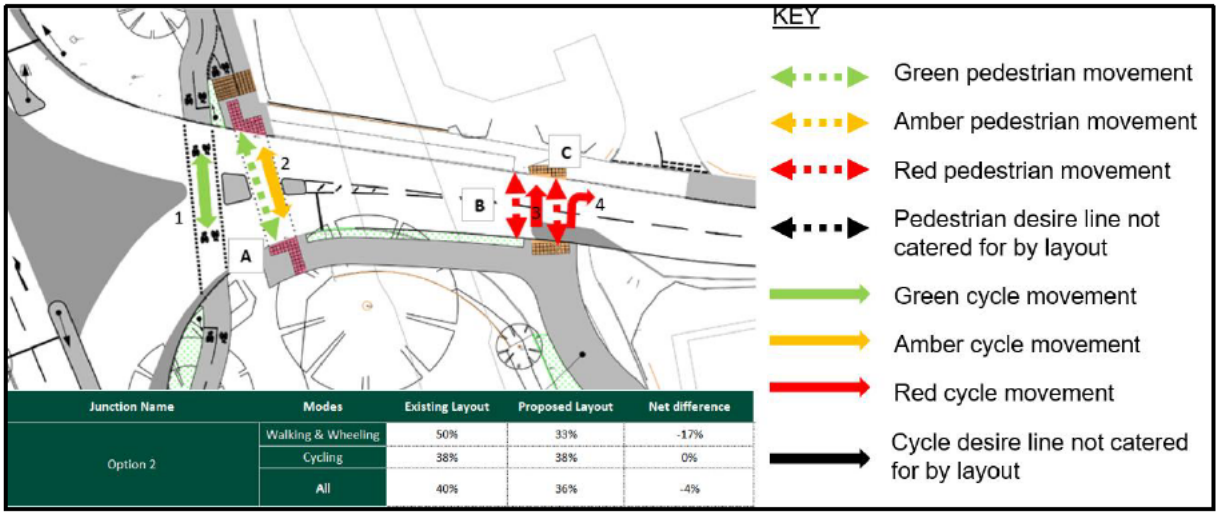
4.2.4 Traffic Signal Engineer summary

4.2.4.1 The uncontrolled crossing is around 23m back from the stop line on West Street. A queue of 4 Passenger Car Units (PCUs) would be expected to extend back to this crossing. The highest predicted Mean Maximum Queue on West Street is 5.9 PCUs (x5.75) = 33.93m. This is the typical queue that might be expected on the approach to signals on West Street. Additionally, this approach would be heavily used by buses, which could inflate the queue length even further since a bus is counted as 2 PCUs. With a single 12m long bus in the queue the overall queue would be 46m in length. It is expected at peak times and even during other less busy periods, that the queuing on West Street would block back through the proposed uncontrolled crossing. This would require users move away from the designated point or cross between queuing vehicles into the free-flowing eastbound lane.

4.2.4.2 The traffic signals would operate with a ‘hold the left’ arrangement for the traffic movement from Western Avenue (north) into West Street. This would maximise the opportunity for pedestrians and cyclists to cross West Street at the signals by providing around 15 seconds every minute to cross (25% of the available time).

4.2.5 Junction Assessment Tool results

4.2.5.1 Figure 5 shows the JAT diagram and performance scores, with a comparison made with the existing layout. Comparison of all proposed options is illustrated at the end of this section.



Junction Name	Modes	Existing Layout	Proposed Layout	Net difference
Option 2	Walking & Wheeling	50%	33%	-17%
	Cycling	38%	38%	0%
	All	40%	36%	-4%

Figure 5 - JAT results for Option 2

4.3 Option 3 - 3.2m wide shared use controlled crossing and 4m wide uncontrolled crossing in line with park promenade exit including 3m refuge island

4.3.1.1 The principal layout for option 3 shares similarities with option 2, once again utilising a controlled crossing facility adjacent to the cycle crossing, and an uncontrolled crossing in line with the proposed park promenade exit. The main difference is the addition of a refuge island with a depth of 3m to allow for use by pedestrians and cyclists.

4.3.2 Perceived benefits

4.3.2.1 Option 3 sufficiently captures all identified desire lines through its two crossing points. The location of the uncontrolled crossing caters for the eastern desire line along West Street, both for pedestrians and cyclists. The addition of the refuge island reduces or eliminates the risk to NMUs present in option 2.

4.3.3 Potential limitations

4.3.3.1 Vehicle tracking needs to be carefully considered with option 3, due to the refuge islands close proximity to the private car park entrance. Further investigation would be required to identify the largest vehicle to accommodate, with the right turn movement out of the car park being the greatest constraint. The geometry of West Street either side of the proposed refuge island results in a reasonable amount of deflection for vehicles, therefore it is important that checks are carried out to ensure large vehicles such as buses and HGVs are not negatively impacted.

4.3.3.2 There is potential that changes to the existing kerb line on the bridge deck will be required to achieve an optimum alignment. Investigation would be required to ensure that the existing construction of the bridge would not be compromised by any changes.

4.3.4 Traffic Signal Engineer Summary

4.3.4.1 Like Option 2 the crossing point is 23m back from the West Street stop line to align with the promenade. Like Option 2 it is expected, at peak times and even during less busy periods, that the queuing on West Street would extend back through the proposed uncontrolled crossing. It may result in users being unable to cross at the refuge.

4.3.4.2 The proposed refuge island on approach to the signal junction on West Street creates an awkward kink that could be difficult for larger vehicles to navigate at higher speeds whilst being aware to pedestrian movements. As part of the proposed signal staging, the traffic signals on West Street will be held at red for the majority for the signal cycle. The approaching traffic would, likely, be slowing down to stop until the signals change. Slower speeds on approach would make manoeuvring around the proposed island easier and safer for all users. With sufficient measures to keep speeds to a minimum and restrict vehicles from stopping inside the crossing area, this option would be acceptable

4.3.4.3 The traffic signals would operate with a 'hold the left' arrangement for the traffic movement from Western Avenue (north) into West Street. This would maximise the opportunity for pedestrians and cyclists to cross West Street at the signals by providing around 15 seconds every minute to cross (25% of the available time).

4.3.5 Junction Assessment Tool results

4.3.5.1 Figure 6 shows the JAT diagram and performance scores, with a comparison made with the existing layout. Comparison of all proposed options is illustrated at the end of this section.

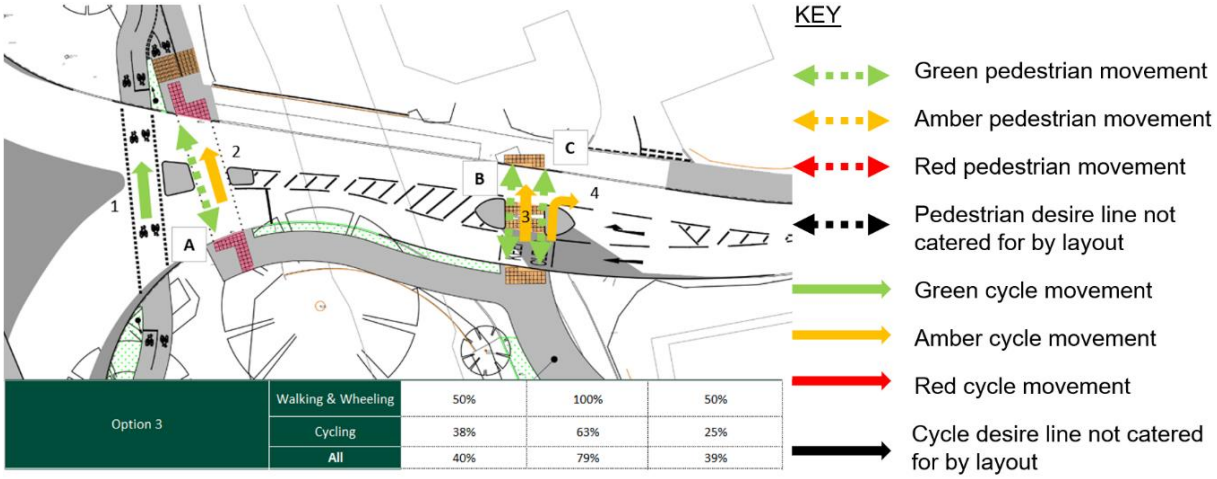


Figure 6 - JAT results for option 3

4.4 Option 4 – Set back stop line with shared use crossing east of bridge

4.4.1 Option 4 relocates the traffic signal stop line on West Street to the east of the bridge deck. This allows for the controlled crossing to also be relocated, with its alignment close to the exit of the park promenade

4.4.2 Perceived benefits

4.4.2.1 NMU desire lines, with the exception of the eastern route along West Street, are well catered for by the alignment of the crossing. The absence of any uncontrolled crossing facility removes risks and conflict associated with them.

4.4.3 Potential limitations

4.4.3.1 For pedestrians and cyclists, the main limitation is that the eastern desire line along West Street isn't fully catered for, which could result in NMUs tracking across the verge and crossing West Street in an alternative, potentially unsafe location. Although moving the crossing slightly further east could capture this desire line, it would result in the stop line being even further from the junction, further decreasing the signal cycle efficiency. The extended signal cycle has an impact on wait time for vehicles, including the buses serving the bus station. The substantial distance from the stop line to the bellmouth with Western Avenue may result in the junction being treated as a priority junction by some drivers exiting West Street.

4.4.4 Traffic Signal Engineer summary

4.4.4.1 The West Street stop line is set back around 45m from Western Avenue. This is 23m further back than where it is shown for Options 1, 2 and 3. It almost doubles the distance that West Street is set back. The substantially increased distance between the traffic signal stop line on West Street and the junction bell mouth may cause confusion and hesitation inside the junction. Drivers may end up stopping at the junction bell mouth expecting to give way given the distance covered since seeing the green signal.

4.4.4.2 For any cyclists travelling from West Street into the junction the hesitancy and uncertainty is greater still. It would be challenging to ensure that slower moving cyclists could be reliably detected over such a distance so they could safely clear the junction before the other approaches started.

4.4.4.3 The excessive distance between the traffic signal stop line and the bell mouth of the junction would likely require more detection, specifically All-Red detection, to provide slow moving vehicles such as buses variable time to clear the junction.

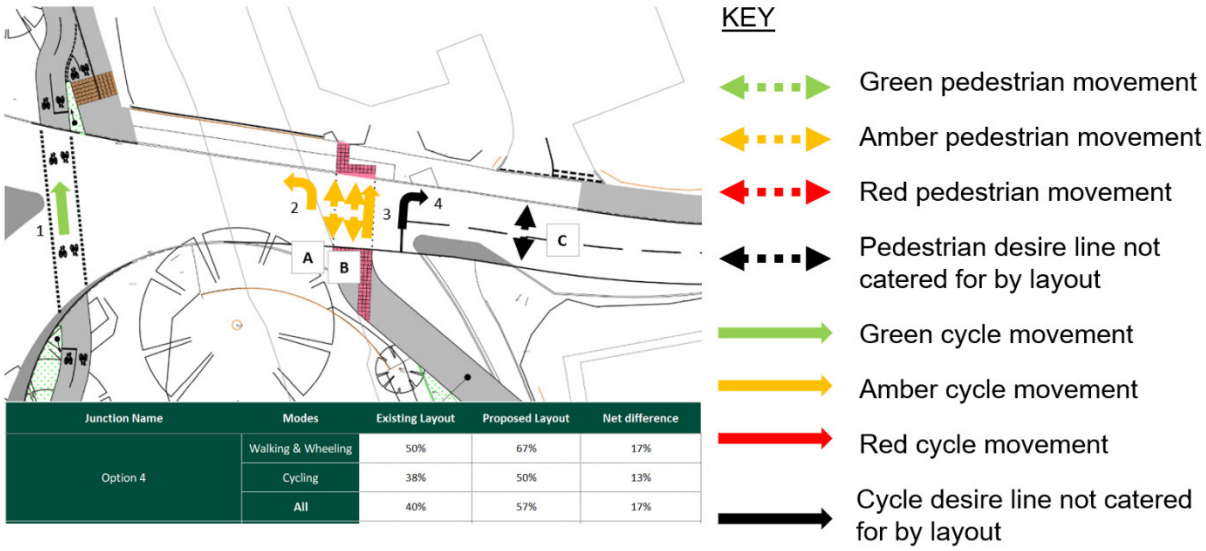
4.4.4.4 Vehicles exiting West Street Car Park, turning right towards the signal junction, may fail to react to signals changing given the relatively short distance between the traffic signal stop line.

4.4.4.5 The Junction Intervisibility Zone for this design option would be a significantly larger area than that of design options 1, 2 and 3. There is a likelihood that more vegetation would have to be cut back and trees cut down to ensure this area is clear of obstruction.

4.4.4.6 To facilitate the installation of signal equipment on the east side of the river, ducting would be required across the bridge deck. It is likely that the required depth of said ducting would not be achievable.

4.4.5 Junction Assessment Tool results

4.4.5.1 Figure 7 shows the JAT diagram and performance scores, with a comparison made with the existing layout. Comparison of all proposed options is illustrated at the end of this section.



Junction Name	Modes	Existing Layout	Proposed Layout	Net difference
Option 4	Walking & Wheeling	50%	67%	17%
	Cycling	38%	50%	13%
	All	40%	57%	17%

Figure 7 - JAT results for option 4

4.5 Option 5 - Set back stop line with wide crossing across bridge deck

4.5.1 Option 5 utilises the same stop line position as option 4, but with a significantly wider (16m total width) shared use crossing which spans much of the bridge deck.

4.5.2 Perceived benefits

4.5.2.1 This options shares many of the benefits from option 4, with the addition of greater pedestrian and cycle freedom for east and north desire lines due to the width of the crossing. The increased crossing width may also bring marginal psychological benefit to drivers of vehicles, with the additional tactile paving and road markings highlighting that they are still within a controlled junction. This could slightly reduce the probability of drivers treating the bellmouth as if it was a priority junction.

4.5.3 Potential limitations

4.5.3.1 Similar to option 4, this option carries the drawbacks associated with positioning the stop line a significant distance from the junction bellmouth. The eastern NMU desire line is also still not catered for due to the eastern extent of the crossing matching that of option 4.

4.5.4 Traffic Signal Engineer Summary

4.5.4.1 The West Street stop line is set back the same distance as Option 4 and the same issues exist. The substantially increased distance between the traffic signal stop line on West Street and the junction bell mouth may cause confusion and hesitation inside the junction. Drivers may end up stopping at the junction bell mouth expecting to give way given the distance covered since seeing the green signal.

4.5.4.2 Like Option 4 cyclists entering the junction from West Street would face the same concerns. The excessive distance between the traffic signal stop line and the bell mouth of the junction would likely require more detection, specifically All-Red detection, to provide slow moving vehicles such as buses variable time to clear the junction.

4.5.4.3 The proposed pedestrian signal crossing on West Street is shown to be approximately 15 metres wide. This is more than the maximum permitted width of 10 metres as defined by TSM Chapter 6. It would also be impossible to cover with

on-crossing detection, a safety necessity for Toucan crossings. For this reason, this option is unsuitable in safety terms.

4.5.4.4 Pedestrians and cyclists waiting towards the middle of the crossing area would struggle to see the Toucan indicators located on the traffic signal poles on either side of the tactile paving. Those waiting could be up to 7m away from the indicators and have difficulty in knowing when they could cross.

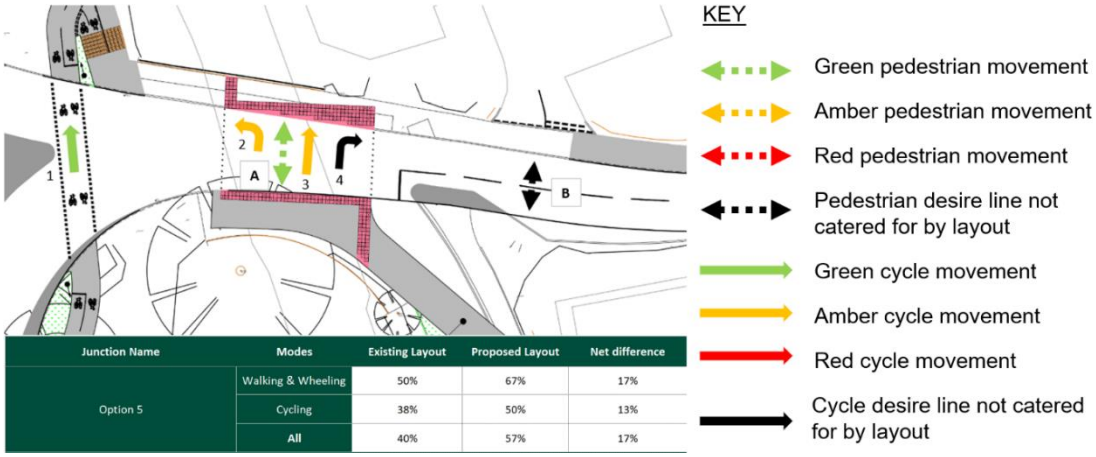
4.5.4.5 Vehicles exiting West Street Car Park, turning right towards the signal junction, may fail to react to signals changing given the relatively short distance between the traffic signal stop line.

4.5.4.6 The Junction Intervisibility Zone for this design option would be a significantly larger area than that of design options 1, 2 and 3. There is a likelihood that more vegetation would have to be cut back and trees cut down to ensure this area is clear of obstruction.

4.5.4.7 To facilitate the installation of signal equipment on the east side of the river, ducting would be required across the bridge deck. It is likely that the required depth of said ducting would not be achievable.

4.5.5 Junction Assessment Tool Results

4.5.5.1 Figure 8 shows the JAT diagram and performance scores, with a comparison made with the existing layout. Comparison of all proposed options is illustrated at the end of this section.



Junction Name	Modes	Existing Layout	Proposed Layout	Net difference
Option 5	Walking & Wheeling	50%	67%	17%
	Cycling	38%	50%	13%
	All	40%	57%	17%

Figure 8 - JAT results for option 5

4.6 Junction Assessment Tool results comparison

4.6.1 Table 2 shows a comparison between all options alongside the JAT parameters. The existing layout, and subsequent net difference is the same for all options.

Junction Name	Modes	Existing Layout	Proposed Layout	Net difference
Option 1	Walking & Wheeling	50%	50%	0%
	Cycling	38%	38%	0%
	All	43%	43%	0%
Option 2	Walking & Wheeling	50%	33%	-17%
	Cycling	38%	38%	0%
	All	40%	36%	-4%
Option 3	Walking & Wheeling	50%	100%	50%
	Cycling	38%	63%	25%
	All	40%	79%	39%
Option 4	Walking & Wheeling	50%	67%	17%
	Cycling	38%	50%	13%
	All	40%	57%	17%
Option 5	Walking & Wheeling	50%	67%	17%
	Cycling	38%	50%	13%
	All	40%	57%	17%

Table 2 - JAT results comparison

4.6.2 The greatest overall uplift was achieved by option 3, with a 39% overall improvement from the existing layout. Option 3 was also the only option to achieve a 100% level of service for pedestrians. Due to some crossing points being shared with pedestrians, it was not possible to score 100% level of service for cycles. However, the intended use of the park promenade, along with the high-speed cycle provision along the remaining section of Western Avenue demonstrate acceptable mitigation.

4.6.3 Options 1 and 2 were the lowest scoring, with the primary reason for this being risk of conflict at the uncontrolled crossing points. There is the potential for a minor improvement on the score for option 1, if it was found that the footway extension on the southern side of West Street could be designed to cater for cyclists in the form of a 3.0m wide shared use path. If the cycle movement were to be given an amber score, the improvement for cyclists would increase to 13%, and subsequently the overall score would reach 7%.

5 Traffic Signal Modelling

5.1 Existing Flows Model Option 1 – Covers Design Options 1, 2 & 3

Options 1, 2 & 3 - NCP2 - 2024 Survey - AM Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		6.8	
1/2 - A3057 Western Avenue Northbound Right	29.7	25.3	2.6
2/2 - A3057 Western Avenue Southbound Ahead		17	
2/1 - A3057 Western Avenue Southbound Left	53.4	26	5.6
3/1 - West Street Left Right	54.3	33.3	3.5
PRC for Signalled Lanes (%)	65.6		
Total Delay for Signalled Lanes (pcuHr)	5.51		
Cycle Time	60		

Options 1, 2 & 3 - NCP2 - 2024 Survey - PM Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		9.5	
1/2 - A3057 Western Avenue Northbound Right	38.8	25.9	3.8
2/2 - A3057 Western Avenue Southbound Ahead		23.3	
2/1 - A3057 Western Avenue Southbound Left	69.5	25.8	7.6
3/1 - West Street Left Right	67.5	31.6	5.9
PRC for Signalled Lanes (%)	29.5		
Total Delay for Signalled Lanes (pcuHr)	8.47		
Cycle Time	60		

Options 1, 2 & 3 - NCP2 - 2024 Survey - SAT Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		9	
1/2 - A3057 Western Avenue Northbound Right	31.4	25.5	3
2/2 - A3057 Western Avenue Southbound Ahead		20.8	
2/1 - A3057 Western Avenue Southbound Left	58.1	23.7	5.8
3/1 - West Street Left Right	55.4	27.9	4.5
PRC for Signalled Lanes (%)	54.9		
Total Delay for Signalled Lanes (pcuHr)	6.2		
Cycle Time	60		

Table 3 - Model Option 1 Results (using 2024 traffic survey data)

5.1.1 Modelling results show that the junction operates with plenty of spare capacity, 29.5% in the busiest peak period (PM Peak) based on 2024 survey data. Delay around the junction is relatively low across all scenarios, the heaviest delay being 8.47pcuHr, again in the PM Peak.

5.2 Existing flows Model Option 4 – Covers Design Options 4 & 5

Options 4 & 5 - NCP2 - 2024 Survey - AM Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		7.9	
1/2 - A3057 Western Avenue Northbound Right	31.2	25.4	2.8
2/2 - A3057 Western Avenue Southbound Ahead		19.1	
2/1 - A3057 Western Avenue Southbound Left	57.3	27.5	5.9
3/1 - West Street Left Right	54.3	33.3	3.5
PRC for Signalled Lanes (%)	57.1		
Total Delay for Signalled Lanes (pcuHr)	5.9		
Cycle Time	60		

Options 4 & 5 - NCP2 - 2024 Survey - PM Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		10.2	
1/2 - A3057 Western Avenue Northbound Right	39.9	26	3.9
2/2 - A3057 Western Avenue Southbound Ahead		25	
2/1 - A3057 Western Avenue Southbound Left	72.2	28.4	7.9
3/1 - West Street Left Right	72.3	35.3	6.3
PRC for Signalled Lanes (%)	24.5		
Total Delay for Signalled Lanes (pcuHr)	9.22		
Cycle Time	60		

Options 4 & 5 - NCP2 - 2024 Survey - SAT Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		9.6	
1/2 - A3057 Western Avenue Northbound Right	32.3	25.6	3.1
2/2 - A3057 Western Avenue Southbound Ahead		22.1	
2/1 - A3057 Western Avenue Southbound Left	60.4	25.9	6
3/1 - West Street Left Right	59.3	30.2	4.7
PRC for Signalled Lanes (%)	49.1		
Total Delay for Signalled Lanes (pcuHr)	6.64		
Cycle Time	60		

Table 4 - Model Option 4 Results (using 2024 traffic survey data)

5.2.1 Although modelling results are all positive and the junction would operate well within capacity, the results show that Model Option 4 does not perform as well as Model Option 1. Appendix D shows a comparison of the two sets of results and illustrates how this option suffers across the board due to the increased intergreen periods between the traffic signal phases.

5.2.2 The interstage time is the lost green time between stages defined by the longest intergreen period. In this option, the total interstage time is 25 seconds. For 15

seconds of this time, representing 25% of the cycle time, all traffic, pedestrians, and cyclists shall be stopped at the same time. In comparison Model Option 1 has a total interstage time of 21 seconds, 13 seconds of which all traffic, pedestrians and cyclists shall be stopped, equating to 22% of the cycle time.

5.3 2040 Growth Model

5.3.1 As part of the Transport Modelling for the Andover Masterplan, Atkin's developed Do Minimum (DM) and Do Something scenarios. Refer to that report for further information about the background and basis for the modelling. Given the Do Something scenarios were based on the full masterplan being implemented, and that current traffic flows are unlikely to be back to pre-covid levels, the Do Minimum growth factor is applied.

5.4 Do Minimum Growth Model Option 1 – Covers Design Options 1, 2 & 3

Options 1, 2 & 3 - NCP2 - 2040 DM Growth - AM Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		7.1	
1/2 - A3057 Western Avenue Northbound Right	34.8	25.6	3.2
2/2 - A3057 Western Avenue Southbound Ahead		18.6	
2/1 - A3057 Western Avenue Southbound Left	62.6	27.2	7
3/1 - West Street Left Right	63.4	36.3	4.3
PRC for Signalled Lanes (%)	42		
Total Delay for Signalled Lanes (pcuHr)	6.94		
Cycle Time	60		

Options 1, 2 & 3 - NCP2 - 2040 DM Growth - PM Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		10.1	
1/2 - A3057 Western Avenue Northbound Right	45.4	26.4	4.6
2/2 - A3057 Western Avenue Southbound Ahead		28.2	
2/1 - A3057 Western Avenue Southbound Left	81.3	30.1	10
3/1 - West Street Left Right	78.8	38	7.7
PRC for Signalled Lanes (%)	10.7		
Total Delay for Signalled Lanes (pcuHr)	11.62		
Cycle Time	60		

Options 1, 2 & 3 - NCP2 - 2040 DM Growth - SAT Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		9.4	
1/2 - A3057 Western Avenue Northbound Right	36.8	25.7	3.6
2/2 - A3057 Western Avenue Southbound Ahead		23	
2/1 - A3057 Western Avenue Southbound Left	67.9	25.4	7.3
3/1 - West Street Left Right	64.7	30.6	5.5
PRC for Signalled Lanes (%)	32.6		
Total Delay for Signalled Lanes (pcuHr)	7.86		
Cycle Time	60		

5.4.1 The 2040 DM flows applied to the models result in more delay and queuing on all arms of the proposed junction. This being said, the Practical Reserve Capacity (PRC%) in all new scenarios are still positive indicating that the junction will continue to perform well up to 2040 design year.

5.4.2 The worst performing scenario is the 2040 DM PM Peak. The new mean maximum queue length for the West Street arm is 7.7 PCUs (~45 metres). This would result in the proposed uncontrolled crossing refuge sitting within the traffic queue. It is worth noting that the cycle time for the junction has been deliberately kept low, a fixed 60 seconds. The junction's method of control will allow some flexibility with this to reduce the severity of queuing off peak and, as further mitigation, it would be possible to implement a Hurry Call (HC) function to prioritise the West Street arm if a maximum extent of queuing is present. Appendix E shows a comparison of the existing flows and projected 2040 growth for both models

5.5 Do Minimum Growth Model Option 2 – Covers Design Options 4 & 5

Options 4 & 5 - NCP2 - 2040 DM Growth - AM Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		8.3	
1/2 - A3057 Western Avenue Northbound Right	36.6	25.7	3.4
2/2 - A3057 Western Avenue Southbound Ahead		21.2	
2/1 - A3057 Western Avenue Southbound Left	67.2	29.2	7.6
3/1 - West Street Left Right	63.4	36.3	4.3
PRC for Signalled Lanes (%)	34		
Total Delay for Signalled Lanes (pcuHr)	7.48		
Cycle Time	60		

Options 4 & 5 - NCP2 - 2040 DM Growth - PM Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		10.9	
1/2 - A3057 Western Avenue Northbound Right	46.6	26.5	4.9
2/2 - A3057 Western Avenue Southbound Ahead		31.6	
2/1 - A3057 Western Avenue Southbound Left	84.4	34.3	10.8
3/1 - West Street Left Right	84.5	45.9	8.6
PRC for Signalled Lanes (%)	6.5		
Total Delay for Signalled Lanes (pcuHr)	13.27		
Cycle Time	60		

Options 4 & 5 - NCP2 - 2040 DM Growth - SAT Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		10	
1/2 - A3057 Western Avenue Northbound Right	37.8	25.9	3.7
2/2 - A3057 Western Avenue Southbound Ahead		24.7	
2/1 - A3057 Western Avenue Southbound Left	70.6	28	7.7
3/1 - West Street Left Right	69.3	33.8	5.8
PRC for Signalled Lanes (%)	27.5		
Total Delay for Signalled Lanes (pcuHr)	8.52		
Cycle Time	60		

5.5.1 Design option 4 & 5 also experience increased delay and queue times on all arms of the proposed junction. Nevertheless, the Practical Reserve Capacity (PCR%) remains positive indicating that the junction will perform well up to the 2040 design year.

5.5.2 The worst performing scenario is the 2040 DM PM peak, where West Street experiences an 8.6 PCU mean max queue, resulting in queing traffic reaching the proposed uncontrolled crossing refuge. Appendix E shows a comparison of the existing flows and projected 2040 growth for both models

6 Conclusions

6.1 Engineering Services

6.1.1 Considering the benefits and limitations outlined in section 3, and the ATE Junction Assessment Tool results, it is believed that option 3 provides the optimum layout for the highest proportion of junction users. The JAT demonstrates that this option provides the safest and most versatile arrangement for pedestrians and cyclists travelling through the junction. NMU desire lines have been catered for without significant compromise for carriageway traffic, allowing the junction to operate at maximum efficiency.

6.1.2 Options 4 and 5 provide the next greatest uplift for pedestrians and cyclists, but the compromise made for carriageway traffic including buses may outweigh these benefits. Option 1 has the potential to provide a reasonable solution in the absence of a refuge island, but factors such as traffic queue lengths would require careful consideration to ensure that the uncontrolled crossing provision doesn't create a conflict point at busy times. Option 2 is unlikely to be acceptable due to the potential for conflict being high.

6.1.3 Any options which are taken forward would benefit from swept path analysis being carried out to identify any potential flaws in relation to movement of vehicles. This is particularly key for option 3, as previously mentioned. Regardless of the option(s) progressed, site investigation surrounding the bridge deck will be key to informing the final alignment of the carriageway through the junction.

6.2 Traffic Signal Engineer

6.2.1 The Linsig modelling proves that the junction would operate well under any of the design option layouts however there are some fundamental operational and safety issues that differentiate the options suitability.

6.2.2 We recommend that options 4 and 5 are rejected for their many safety and operational flaws as listed individually above.

6.2.3 Option 1 may not meet the objectives of the brief in providing a continuous north – south NMU route east of the river, should the development of the Magistrates

Court come forward. Whilst this option is unsuitable for the long term, it is suitable in the short term before the north – south NMU route is installed.

6.2.4 Whilst Option 2 goes some way in providing a desirable uncontrolled route across West Street east of the river, the option is flawed due to the likely necessity for NMUs to cross between queued vehicles into a live traffic lane. This option should be rejected.

6.2.5 Option 3 provides a junction that is suitable for purpose and a crossing facility that meets the requirements set out in the brief. In contrast to option 2, NMUs have a safe refuge to wait before continuing their crossing movement into the live exit lane. If the issues surrounding the traffic queue blocking the crossing can be mitigated further, then option 3 represents the only viable option to provide a crossing linking the new "promenade" to the new path as part of the Magistrate Court redevelopment. The awkward alignment of the road, as a consequence of squeezing the refuge in, should be sought to be improved, if possible.

6.3 Road Safety Audit (RSA)

6.3.1 A feasibility stage RSA was carried out on the whole scheme with the five West Street/Western Avenue junction options also included for consideration. Refer to Appendix G.

6.3.2 The only problem raised relates to Option 2, with the recommendation being not to take it forward. This is due to safety concerns associated with users crossing between queuing traffic, as explained above.

6.4 Summary

6.4.1 Options 1 and 3 are the only options that should be considered due to the reasons outlined.

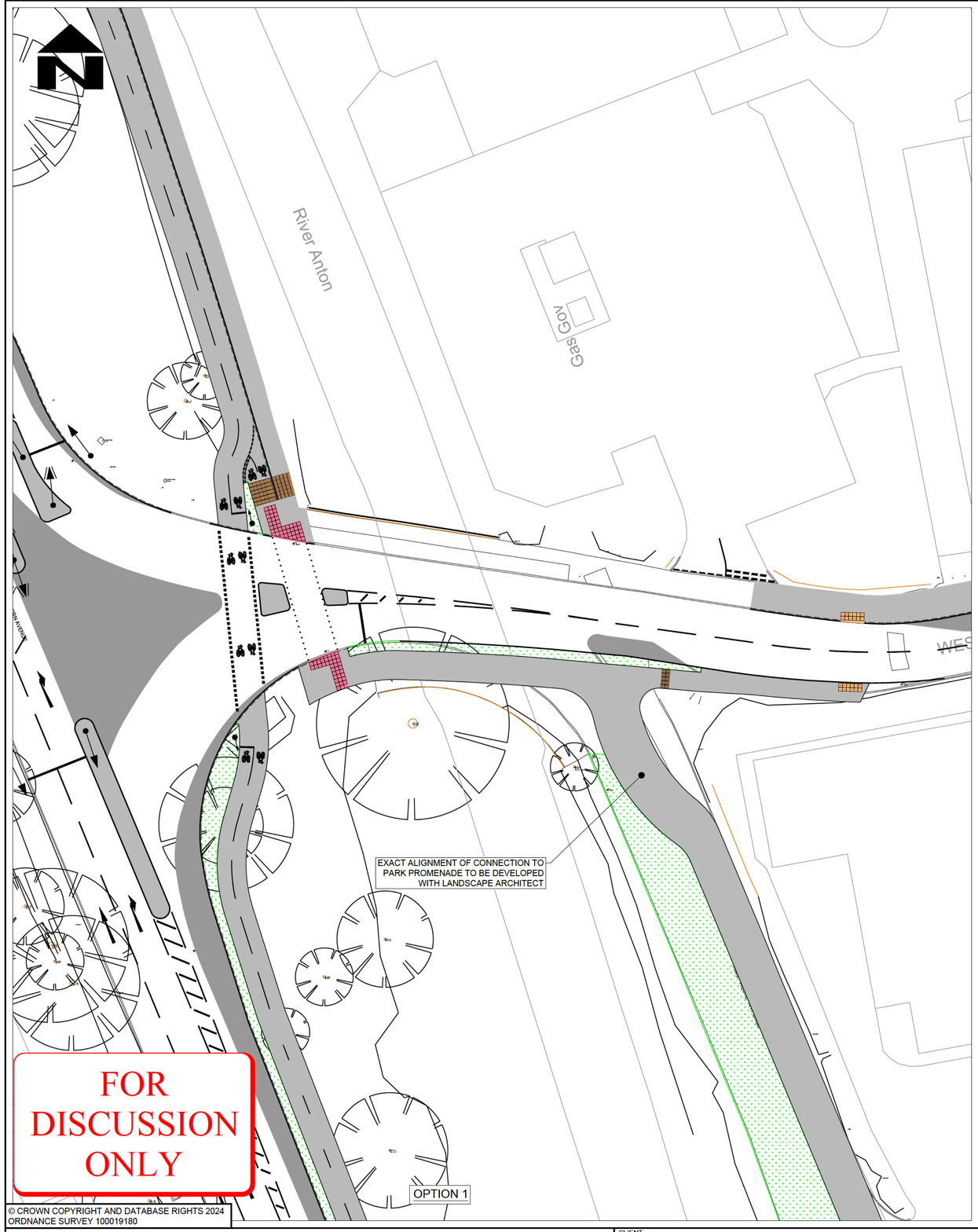
6.4.2 Option 1 does not offer the best level of service in terms of NMU provision however this could be improved by providing a wider shared footway to the east, from the park promenade to the uncontrolled crossing. This would be subject to 3D design confirming the wider footway could be constructed to the north of Lidl, where the existing ground slopes down to the store building. Should the development of the Magistrates court and future NMU connection along the east

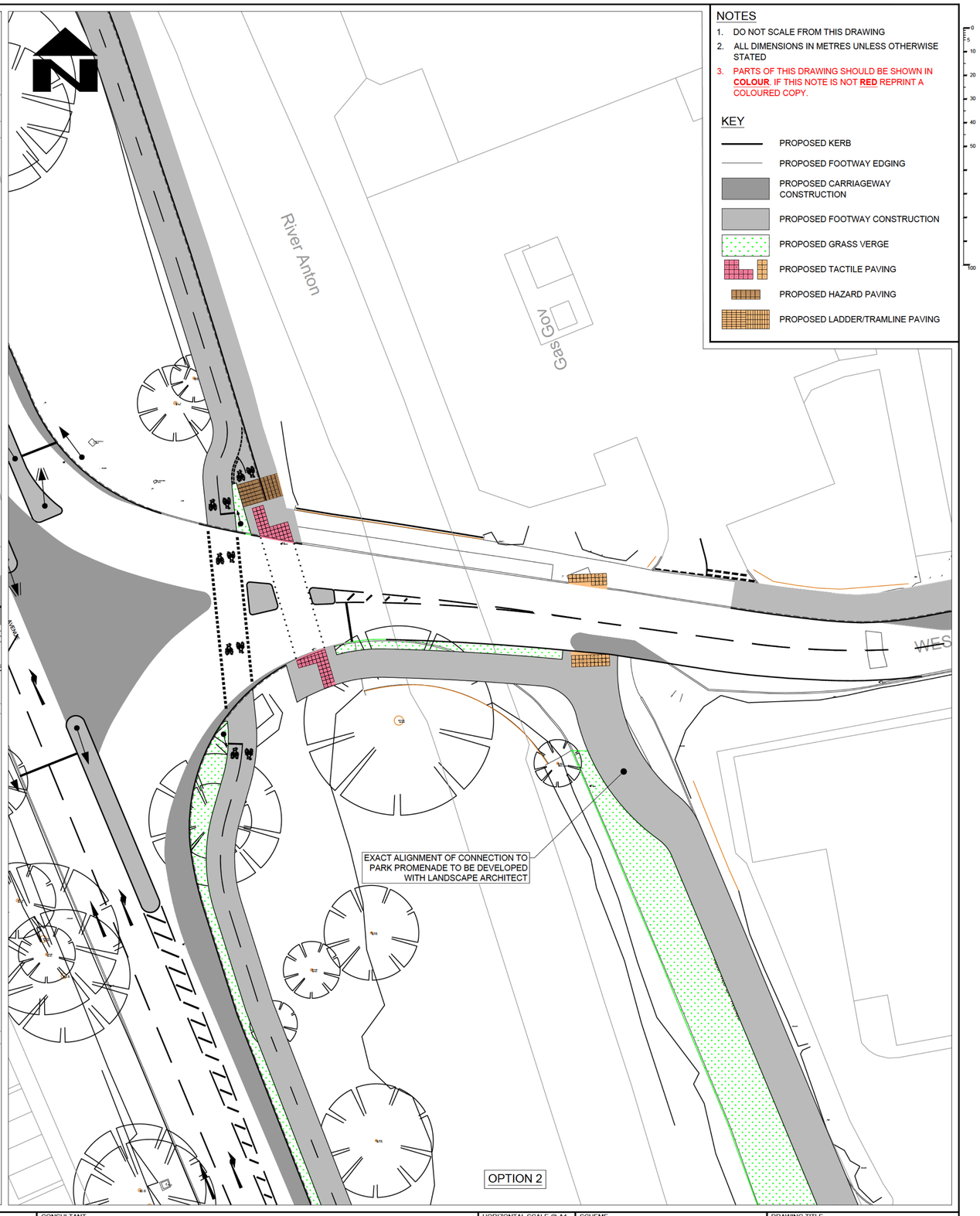
of the river Anton not be forthcoming in the short/medium term, this option could be the most viable in terms of cost and buildability.

6.4.3 Option 3 offers the best NMU level of service, especially when considering future proofing of the Magistrates Court development. However, the alignment of the carriageway passed the proposed refuge island of the uncontrolled crossing should be confirmed to cater for all vehicle movements and improved for the reasons outlined. This option may be more costly if kerbs over the bridge deck require replacing and there could be buildability issues associated with cover and waterproofing.

Appendix A – Options 1 & 2

- RJ509237-HEH-HGN-40012558-SK-CH-2501 WEST STREET JUNCTION OPTIONS 1 & 2





NOTES

1. DO NOT SCALE FROM THIS DRAWING
2. ALL DIMENSIONS IN METRES UNLESS OTHERWISE STATED
3. PARTS OF THIS DRAWING SHOULD BE SHOWN IN **COLOUR**. IF THIS NOTE IS NOT **RED** REPRINT A COLOURED COPY.

KEY

- PROPOSED KERB
- PROPOSED FOOTWAY EDGING
- PROPOSED CARRIAGEWAY CONSTRUCTION
- PROPOSED FOOTWAY CONSTRUCTION
- PROPOSED GRASS VERGE
- PROPOSED TACTILE PAVING
- PROPOSED HAZARD PAVING
- PROPOSED LADDER/TRAMLINE PAVING

0 5 10 20 30 40 50 100

FOR DISCUSSION ONLY

SUIT	REV	PURPOSE OF ISSUE AND DESCRIPTION OF AMENDMENTS	DATE	DESIGNER	CAD	CHKD	APPD

CLIENT

HAMPSHIRE COUNTY COUNCIL
UNIVERSAL SERVICES DIRECTORATE
TRANSPORT IMPLEMENTATION

CONSULTANT

Hampshire County Council
Engineering Services

TIM LAWTON BEng CEng FICE FCIHT : ASSISTANT DIRECTOR OF UNIVERSAL SERVICES

HORIZONTAL SCALE @ A1: 1:250
VERTICAL SCALE @ A1: N/A
SHEET NUMBER: 1 OF 3

SCHEME: ANDOVER - WESTERN AVENUE

JOB No. RJ509237.01

DRAWING TITLE: WEST STREET JUNCTION OPTIONS 1 & 2

HCC CAD PLOT: 10/5/2024 13:58:51

RJ509237-HEH-HGN-40012558-SK-CH-2501

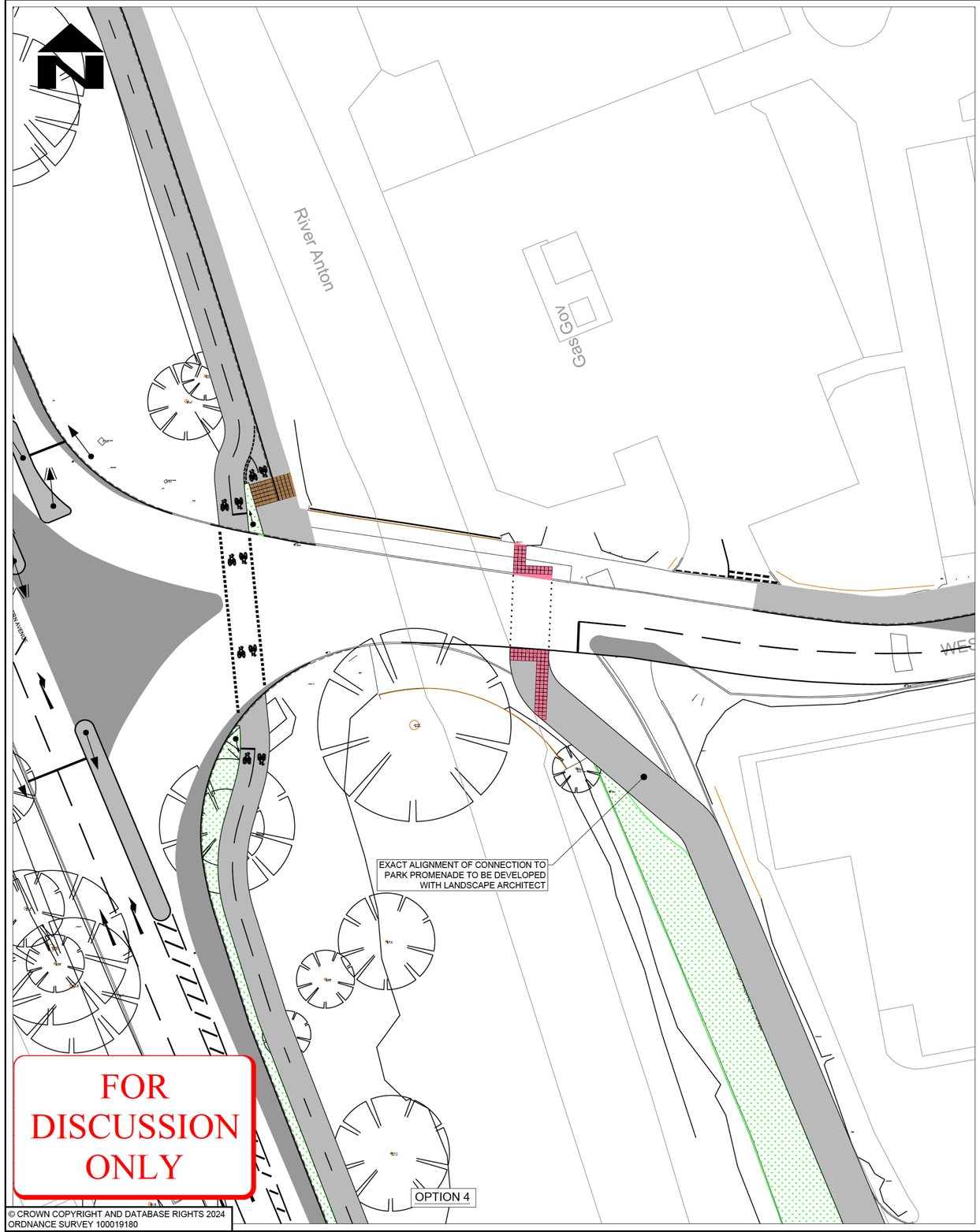
SUIT S2 | REV P01

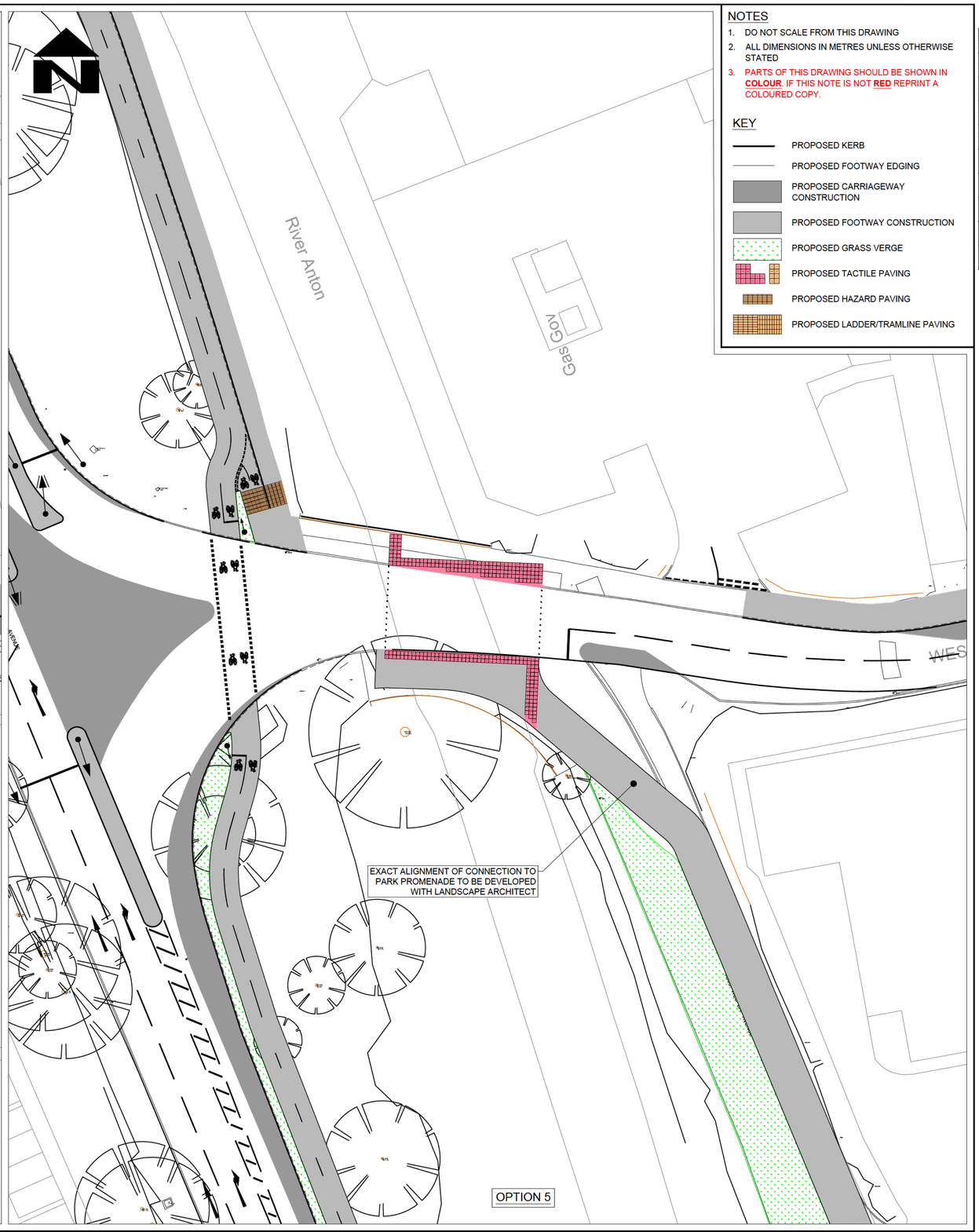
HCC CAD FILE: K:\Eng\Roads\Schemes\RJ509237 Andover – Western Avenue\01-WIP\01-Lead Team\06-Working\01-Sketches\RJ509237-HEH-HGN-40012558-SK-CH-2501-2503 WEST STREET JUNCTION OPTIONS.dwg

STATUS OF DRAWING AT SUITABILITY - RED BACKGROUND = WORK IN PROGRESS, AMBER BACKGROUND = SHARED NON-CONTRACTUAL, GREEN BACKGROUND = EARLY PUBLISH & PUBLISHED CONTRACTUAL

Appendix B – Option 3

- RJ509237-HEH-HGN-40012558-SK-CH-2502 WEST STREET JUNCTION OPTION 3





NOTES

1. DO NOT SCALE FROM THIS DRAWING
2. ALL DIMENSIONS IN METRES UNLESS OTHERWISE STATED
3. PARTS OF THIS DRAWING SHOULD BE SHOWN IN **COLOUR**. IF THIS NOTE IS NOT **RED** REPRINT A COLOURED COPY.

KEY

- PROPOSED KERB
- PROPOSED FOOTWAY EDGING
- PROPOSED CARRIAGEWAY CONSTRUCTION
- PROPOSED FOOTWAY CONSTRUCTION
- PROPOSED GRASS VERGE
- PROPOSED TACTILE PAVING
- PROPOSED HAZARD PAVING
- PROPOSED LADDER/TRAMLINE PAVING

0 5 10 20 30 40 50 100

FOR DISCUSSION ONLY

SUIT	REV	PURPOSE OF ISSUE AND DESCRIPTION OF AMENDMENTS	DATE	DESIGNER	CAD	CHKD	APPD

CLIENT

HAMPSHIRE COUNTY COUNCIL
UNIVERSAL SERVICES DIRECTORATE
TRANSPORT IMPLEMENTATION

CONSULTANT

Hampshire County Council
Engineering Services

TIM LAWTON BEng CEng FICE FCIHT : ASSISTANT DIRECTOR OF UNIVERSAL SERVICES

HORIZONTAL SCALE @ A1	1:250
VERTICAL SCALE @ A1	N/A
SHEET NUMBER	3 OF 3

SCHEME: ANDOVER - WESTERN AVENUE
JOB No. RJ509237.01

DRAWING TITLE: WEST STREET JUNCTION OPTIONS 4 & 5
HCC CAD PLOT: 10/5/2024 14:01:26

RJ509237-HEH-HGN-40012558-SK-CH-2503

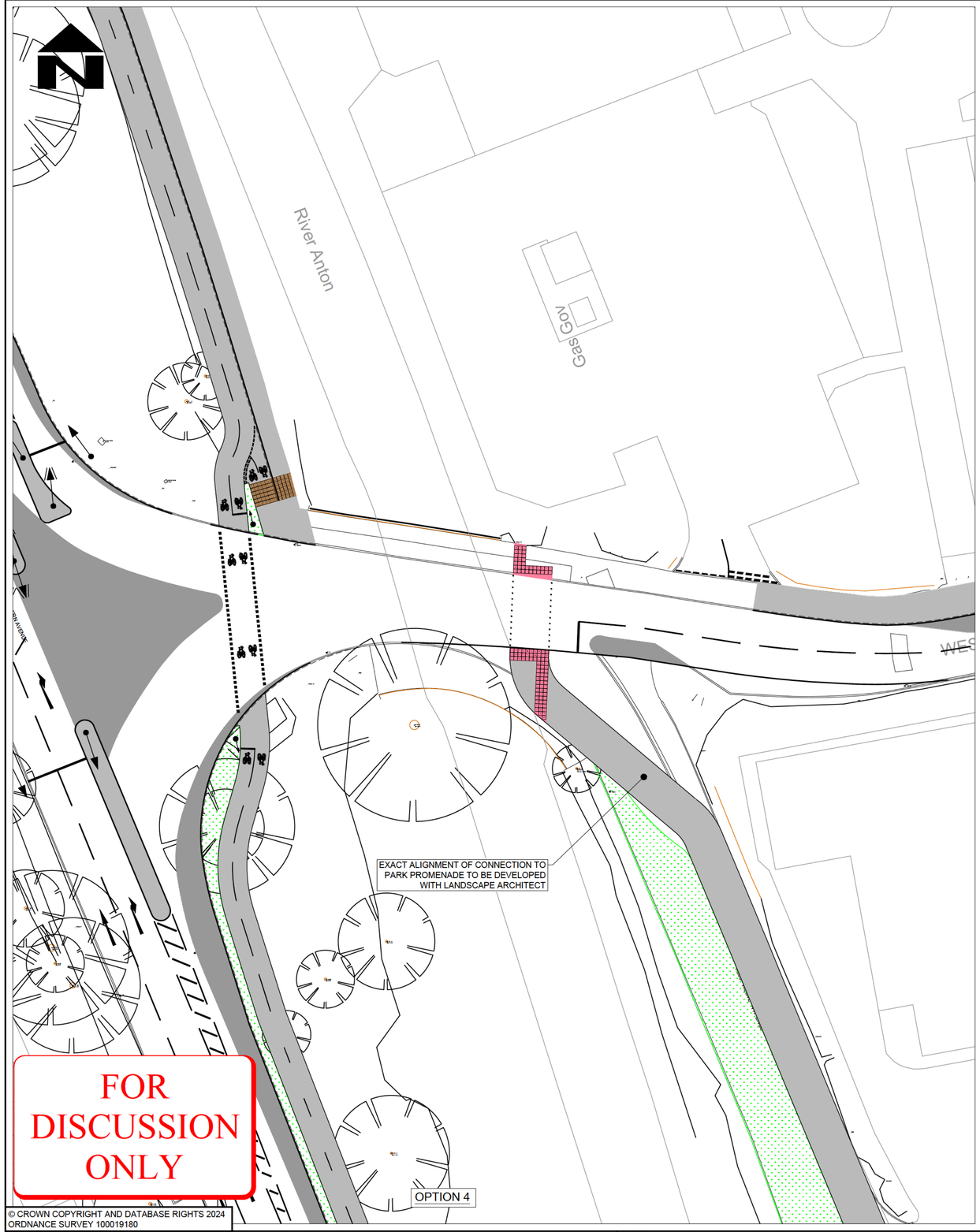
SUIT S2 | REV P01

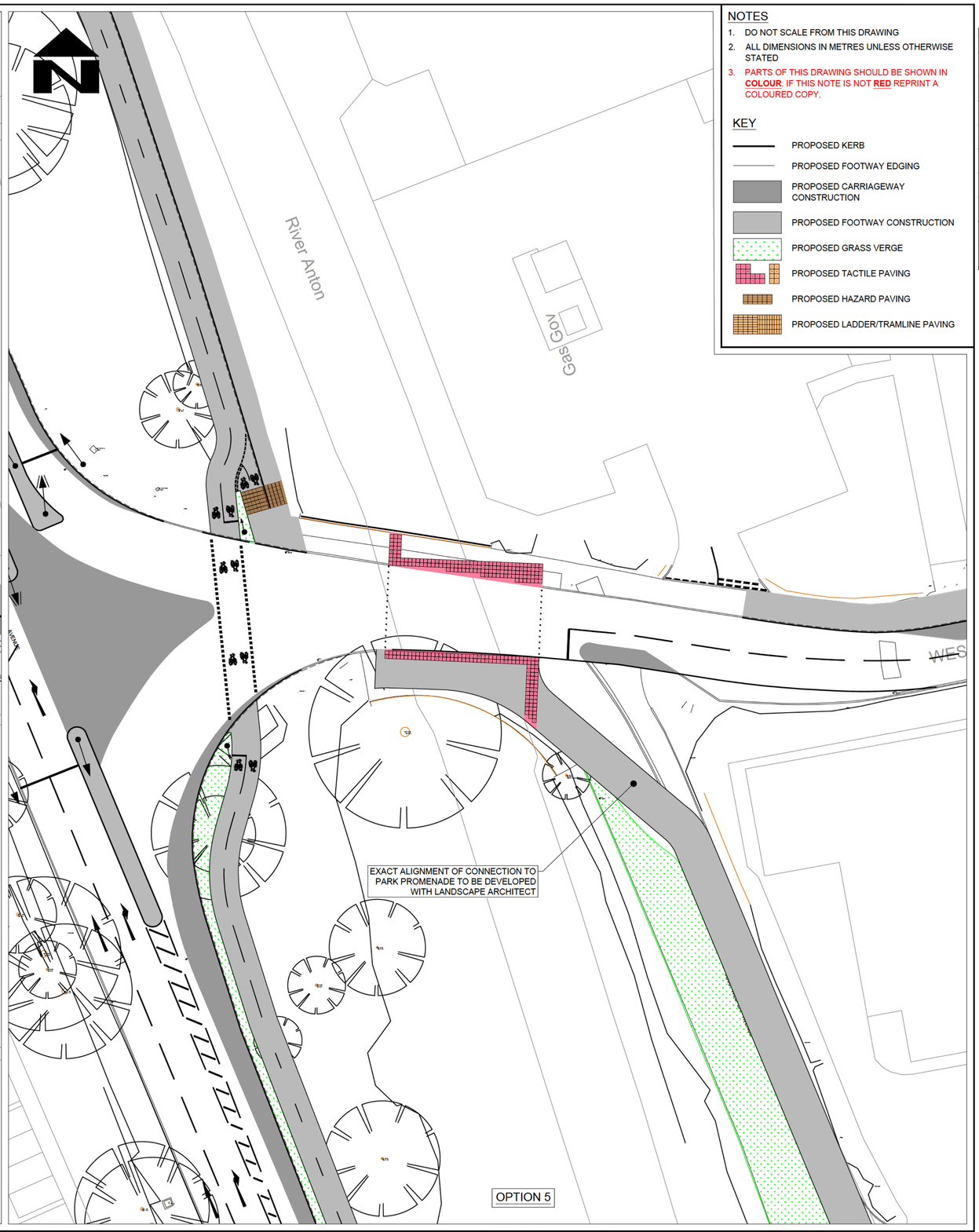
HCC CAD FILE: K:\Eng\Roads\Schemes\RJ509237 Andover – Western Avenue\01-WIP\01-Lead Team\06-Working\01-Sketches\RJ509237-HEH-HGN-40012558-SK-CH-2501-2503 WEST STREET JUNCTION OPTIONS.dwg

STATUS OF DRAWING AT SUITABILITY - RED BACKGROUND = WORK IN PROGRESS, AMBER BACKGROUND = SHARED NON-CONTRACTUAL, GREEN BACKGROUND = EARLY PUBLISH & PUBLISHED CONTRACTUAL

Appendix C – Options 4 & 5

- RJ509237-HEH-HGN-40012558-SK-CH-2503 WEST STREET JUNCTION OPTIONS 4 & 5





NOTES

1. DO NOT SCALE FROM THIS DRAWING
2. ALL DIMENSIONS IN METRES UNLESS OTHERWISE STATED
3. PARTS OF THIS DRAWING SHOULD BE SHOWN IN **COLOUR**. IF THIS NOTE IS NOT **RED** REPRINT A COLOURED COPY.

KEY

- PROPOSED KERB
- PROPOSED FOOTWAY EDGING
- PROPOSED CARRIAGEWAY CONSTRUCTION
- PROPOSED FOOTWAY CONSTRUCTION
- PROPOSED GRASS VERGE
- PROPOSED TACTILE PAVING
- PROPOSED HAZARD PAVING
- PROPOSED LADDER/TRAMLINE PAVING

0 5 10 20 30 40 50 100

FOR DISCUSSION ONLY

SUIT	REV	PURPOSE OF ISSUE AND DESCRIPTION OF AMENDMENTS	DATE	DESIGNER	CAD	CHKD	APPD

CLIENT

HAMPSHIRE COUNTY COUNCIL
UNIVERSAL SERVICES DIRECTORATE
TRANSPORT IMPLEMENTATION

CONSULTANT

Hampshire County Council
Engineering Services

TIM LAWTON BEng CEng FICE FCIHT : ASSISTANT DIRECTOR OF UNIVERSAL SERVICES

HORIZONTAL SCALE @ A1	1:250
VERTICAL SCALE @ A1	N/A
SHEET NUMBER	3 OF 3

SCHEME: ANDOVER - WESTERN AVENUE
JOB No. RJ509237.01

DRAWING TITLE: WEST STREET JUNCTION OPTIONS 4 & 5
HCC CAD PLOT: 10/5/2024 14:01:26

RJ509237-HEH-HGN-40012558-SK-CH-2503

SUIT S2 | REV P01

HCC CAD FILE: K:\Eng\Roads\Schemes\RJ509237 Andover – Western Avenue\01-WIP\01-Lead Team\06-Working\01-Sketches\RJ509237-HEH-HGN-40012558-SK-CH-2501-2503 WEST STREET JUNCTION OPTIONS.dwg

STATUS OF DRAWING AT SUITABILITY - RED BACKGROUND = WORK IN PROGRESS, AMBER BACKGROUND = SHARED NON-CONTRACTUAL, GREEN BACKGROUND = EARLY PUBLISH & PUBLISHED CONTRACTUAL

Appendix D – Traffic Signal Model Option 1/ Model Option 2 Comparison

Options 1, 2 & 3 - NCP2 - AM Peak			
Lane Description	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
A3057 Western Avenue Northbound Ahead	26.7	6.9	2.6
A3057 Western Avenue Northbound Right	25	32.9	1.1
A3057 Western Avenue Southbound Ahead Left	53.4	18.8	5.6
West Street Left Right	54.3	33.3	3.5
PRC for Signalled Lanes (%)	65.6		
Total Delay for Signalled Lanes (pcuHr)	5.65		
Cycle Time	60		

Options 1, 2 & 3 - NCP2 - PM Peak			
Lane Description	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
A3057 Western Avenue Northbound Ahead	35.4	9.6	3.7
A3057 Western Avenue Northbound Right	28.2	33.3	1.3
A3057 Western Avenue Southbound Ahead Left	69.5	23.9	7.6
West Street Left Right	67.5	31.6	5.9
PRC for Signalled Lanes (%)	29.5		
Total Delay for Signalled Lanes (pcuHr)	8.62		
Cycle Time	60		

Options 1, 2 & 3 - NCP2 - Saturday Peak			
Lane Description	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
A3057 Western Avenue Northbound Ahead	28.1	8.4	2.8
A3057 Western Avenue Northbound Right	20.6	32.2	0.9
A3057 Western Avenue Southbound Ahead Left	56	20.6	5.7
West Street Left Right	59.3	30.2	4.7
PRC for Signalled Lanes (%)	51.7		
Total Delay for Signalled Lanes (pcuHr)	6.31		
Cycle Time	60		

Options 4 & 5 - NCP2 - AM Peak			
Lane Description	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
A3057 Western Avenue Northbound Ahead	27.4	7.4	2.6
A3057 Western Avenue Northbound Right	25	32.9	1.1
A3057 Western Avenue Southbound Ahead Left	55.3	19.5	5.7
West Street Left Right	59.8	36.9	3.7
PRC for Signalled Lanes (%)	50.5		
Total Delay for Signalled Lanes (pcuHr)	5.99		
Cycle Time	60		

Options 4 & 5 - NCP2 - PM Peak			
Lane Description	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
A3057 Western Avenue Northbound Ahead	36.5	10.3	3.9
A3057 Western Avenue Northbound Right	28.2	33.3	1.3
A3057 Western Avenue Southbound Ahead Left	72.2	25.9	7.9
West Street Left Right	72.3	35.3	6.3
PRC for Signalled Lanes (%)	24.5		
Total Delay for Signalled Lanes (pcuHr)	9.37		
Cycle Time	60		

Options 4 & 5 - NCP2 - Saturday Peak			
Lane Description	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
A3057 Western Avenue Northbound Ahead	29.8	9.7	3
A3057 Western Avenue Northbound Right	20.6	32.2	0.9
A3057 Western Avenue Southbound Ahead Left	60.4	23	6
West Street Left Right	59.3	30.2	4.7
PRC for Signalled Lanes (%)	49.1		
Total Delay for Signalled Lanes (pcuHr)	6.74		
Cycle Time	60		

Difference - NCP2 - AM Peak			
Lane Description	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
A3057 Western Avenue Northbound Ahead	-0.7	-0.5	0
A3057 Western Avenue Northbound Right	0	0	0
A3057 Western Avenue Southbound Ahead Left	-1.9	-0.7	-0.1
West Street Left Right	-5.5	-3.6	-0.2
PRC for Signalled Lanes (%)	-15.1		
Total Delay for Signalled Lanes (pcuHr)	-0.34		
Cycle Time	0		

Difference - NCP2 - PM Peak			
Lane Description	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
A3057 Western Avenue Northbound Ahead	-1.1	-0.7	-0.2
A3057 Western Avenue Northbound Right	0	0	0
A3057 Western Avenue Southbound Ahead Left	-2.7	-2	-0.3
West Street Left Right	-4.8	-3.7	-0.4
PRC for Signalled Lanes (%)	-5		
Total Delay for Signalled Lanes (pcuHr)	-0.75		
Cycle Time	0		

Difference - NCP2 - Saturday Peak			
Lane Description	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
A3057 Western Avenue Northbound Ahead	-1.7	-1.3	-0.2
A3057 Western Avenue Northbound Right	0	0	0
A3057 Western Avenue Southbound Ahead Left	-4.4	-2.4	-0.3
West Street Left Right	0	0	0
PRC for Signalled Lanes (%)	-2.6		
Total Delay for Signalled Lanes (pcuHr)	-0.43		
Cycle Time	0		

Appendix E – Traffic Signal Models Current Flows & 2040 Do Minimum Projections

Options 1, 2 & 3 - NCP2 - 2024 Survey - AM Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		6.8	
1/2 - A3057 Western Avenue Northbound Right	29.7	25.3	2.6
2/2 - A3057 Western Avenue Southbound Ahead		17	
2/1 - A3057 Western Avenue Southbound Left	53.4	26	5.6
3/1 - West Street Left Right	54.3	33.3	3.5

PRC for Signalled Lanes (%)	65.6
Total Delay for Signalled Lanes (pcuHr)	5.51
Cycle Time	60

Options 1, 2 & 3 - NCP2 - 2024 Survey - PM Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		9.5	
1/2 - A3057 Western Avenue Northbound Right	38.8	25.9	3.8
2/2 - A3057 Western Avenue Southbound Ahead		23.3	
2/1 - A3057 Western Avenue Southbound Left	69.5	25.8	7.6
3/1 - West Street Left Right	67.5	31.6	5.9

PRC for Signalled Lanes (%)	29.5
Total Delay for Signalled Lanes (pcuHr)	8.47
Cycle Time	60

Options 1, 2 & 3 - NCP2 - 2024 Survey - SAT Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		9	
1/2 - A3057 Western Avenue Northbound Right	31.4	25.5	3
2/2 - A3057 Western Avenue Southbound Ahead		20.8	
2/1 - A3057 Western Avenue Southbound Left	58.1	23.7	5.8
3/1 - West Street Left Right	55.4	27.9	4.5

PRC for Signalled Lanes (%)	54.9
Total Delay for Signalled Lanes (pcuHr)	6.2
Cycle Time	60

Options 1, 2 & 3 - NCP2 - 2040 DM Growth - AM Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		7.1	
1/2 - A3057 Western Avenue Northbound Right	34.8	25.6	3.2
2/2 - A3057 Western Avenue Southbound Ahead		18.6	
2/1 - A3057 Western Avenue Southbound Left	62.6	27.2	7
3/1 - West Street Left Right	63.4	36.3	4.3

PRC for Signalled Lanes (%)	42
Total Delay for Signalled Lanes (pcuHr)	6.94
Cycle Time	60

Options 1, 2 & 3 - NCP2 - 2040 DM Growth - PM Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		10.1	
1/2 - A3057 Western Avenue Northbound Right	45.4	26.4	4.6
2/2 - A3057 Western Avenue Southbound Ahead		28.2	
2/1 - A3057 Western Avenue Southbound Left	81.3	30.1	10
3/1 - West Street Left Right	78.8	38	7.7

PRC for Signalled Lanes (%)	10.7
Total Delay for Signalled Lanes (pcuHr)	11.62
Cycle Time	60

Options 1, 2 & 3 - NCP2 - 2040 DM Growth - SAT Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		9.4	
1/2 - A3057 Western Avenue Northbound Right	36.8	25.7	3.6
2/2 - A3057 Western Avenue Southbound Ahead		23	
2/1 - A3057 Western Avenue Southbound Left	67.9	25.4	7.3
3/1 - West Street Left Right	64.7	30.6	5.5

PRC for Signalled Lanes (%)	32.6
Total Delay for Signalled Lanes (pcuHr)	7.86
Cycle Time	60

Difference - NCP2 - AM Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		-0.3	
1/2 - A3057 Western Avenue Northbound Right	-5.1	-0.3	-0.6
2/2 - A3057 Western Avenue Southbound Ahead		-1.6	
2/1 - A3057 Western Avenue Southbound Left	-9.2	-1.2	-1.4
3/1 - West Street Left Right	-9.1	-3	-0.8

PRC for Signalled Lanes (%)	-23.6
Total Delay for Signalled Lanes (pcuHr)	-1.43
Cycle Time	0

Difference - NCP2 - PM Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		-0.6	
1/2 - A3057 Western Avenue Northbound Right	-6.6	-0.5	-0.8
2/2 - A3057 Western Avenue Southbound Ahead		-4.9	
2/1 - A3057 Western Avenue Southbound Left	-11.8	-4.3	-2.4
3/1 - West Street Left Right	-11.3	-6.4	-1.8

PRC for Signalled Lanes (%)	-18.8
Total Delay for Signalled Lanes (pcuHr)	-3.15
Cycle Time	0

Difference - NCP2 - SAT Peak

Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		-0.4	
1/2 - A3057 Western Avenue Northbound Right	-5.4	-0.2	-0.6
2/2 - A3057 Western Avenue Southbound Ahead		-2.2	
2/1 - A3057 Western Avenue Southbound Left	-9.8	-1.7	-1.5
3/1 - West Street Left Right	-9.3	-2.7	-1

PRC for Signalled Lanes (%)	-22.3
Total Delay for Signalled Lanes (pcuHr)	-1.66
Cycle Time	0

Options 4 & 5 - NCP2 - 2024 Survey - AM Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		7.9	
1/2 - A3057 Western Avenue Northbound Right	31.2	25.4	2.8
2/2 - A3057 Western Avenue Southbound Ahead		19.1	
2/1 - A3057 Western Avenue Southbound Left	57.3	27.5	5.9
3/1 - West Street Left Right	54.3	33.3	3.5
PRC for Signalled Lanes (%)	57.1		
Total Delay for Signalled Lanes (pcuHr)	5.9		
Cycle Time	60		

Options 4 & 5 - NCP2 - 2024 Survey - PM Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		10.2	
1/2 - A3057 Western Avenue Northbound Right	39.9	26	3.9
2/2 - A3057 Western Avenue Southbound Ahead		25	
2/1 - A3057 Western Avenue Southbound Left	72.2	28.4	7.9
3/1 - West Street Left Right	72.3	35.3	6.3
PRC for Signalled Lanes (%)	24.5		
Total Delay for Signalled Lanes (pcuHr)	9.22		
Cycle Time	60		

Options 4 & 5 - NCP2 - 2024 Survey - SAT Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		9.6	
1/2 - A3057 Western Avenue Northbound Right	32.3	25.6	3.1
2/2 - A3057 Western Avenue Southbound Ahead		22.1	
2/1 - A3057 Western Avenue Southbound Left	60.4	25.9	6
3/1 - West Street Left Right	59.3	30.2	4.7
PRC for Signalled Lanes (%)	49.1		
Total Delay for Signalled Lanes (pcuHr)	6.64		
Cycle Time	60		

Options 4 & 5 - NCP2 - 2040 DM Growth - AM Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		8.3	
1/2 - A3057 Western Avenue Northbound Right	36.6	25.7	3.4
2/2 - A3057 Western Avenue Southbound Ahead		21.2	
2/1 - A3057 Western Avenue Southbound Left	67.2	29.2	7.6
3/1 - West Street Left Right	63.4	36.3	4.3
PRC for Signalled Lanes (%)	34		
Total Delay for Signalled Lanes (pcuHr)	7.48		
Cycle Time	60		

Options 4 & 5 - NCP2 - 2040 DM Growth - PM Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		10.9	
1/2 - A3057 Western Avenue Northbound Right	46.6	26.5	4.9
2/2 - A3057 Western Avenue Southbound Ahead		31.6	
2/1 - A3057 Western Avenue Southbound Left	84.4	34.3	10.8
3/1 - West Street Left Right	84.5	45.9	8.6
PRC for Signalled Lanes (%)	6.5		
Total Delay for Signalled Lanes (pcuHr)	13.27		
Cycle Time	60		

Options 4 & 5 - NCP2 - 2040 DM Growth - SAT Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		10	
1/2 - A3057 Western Avenue Northbound Right	37.8	25.9	3.7
2/2 - A3057 Western Avenue Southbound Ahead		24.7	
2/1 - A3057 Western Avenue Southbound Left	70.6	28	7.7
3/1 - West Street Left Right	69.3	33.8	5.8
PRC for Signalled Lanes (%)	27.5		
Total Delay for Signalled Lanes (pcuHr)	8.52		
Cycle Time	60		

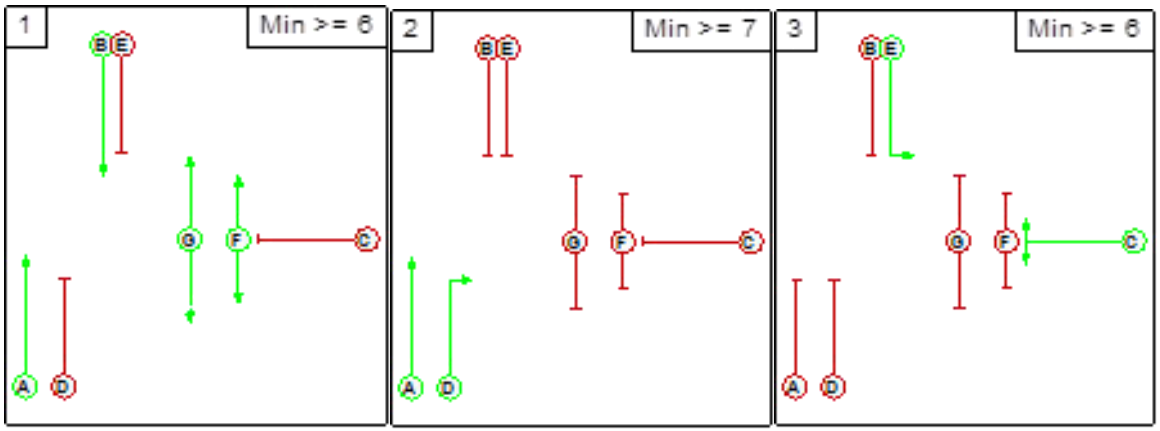
Difference - NCP2 - AM Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		-0.4	
1/2 - A3057 Western Avenue Northbound Right	-5.4	-0.3	-0.6
2/2 - A3057 Western Avenue Southbound Ahead		-2.1	
2/1 - A3057 Western Avenue Southbound Left	-9.9	-1.7	-1.7
3/1 - West Street Left Right	-9.1	-3	-0.8
PRC for Signalled Lanes (%)	-23.1		
Total Delay for Signalled Lanes (pcuHr)	-1.58		
Cycle Time	0		

Difference - NCP2 - PM Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		-0.7	
1/2 - A3057 Western Avenue Northbound Right	-6.7	-0.5	-1
2/2 - A3057 Western Avenue Southbound Ahead		-6.6	
2/1 - A3057 Western Avenue Southbound Left	-12.2	-5.9	-2.9
3/1 - West Street Left Right	-12.2	-10.6	-2.3
PRC for Signalled Lanes (%)	-18		
Total Delay for Signalled Lanes (pcuHr)	-4.05		
Cycle Time	0		

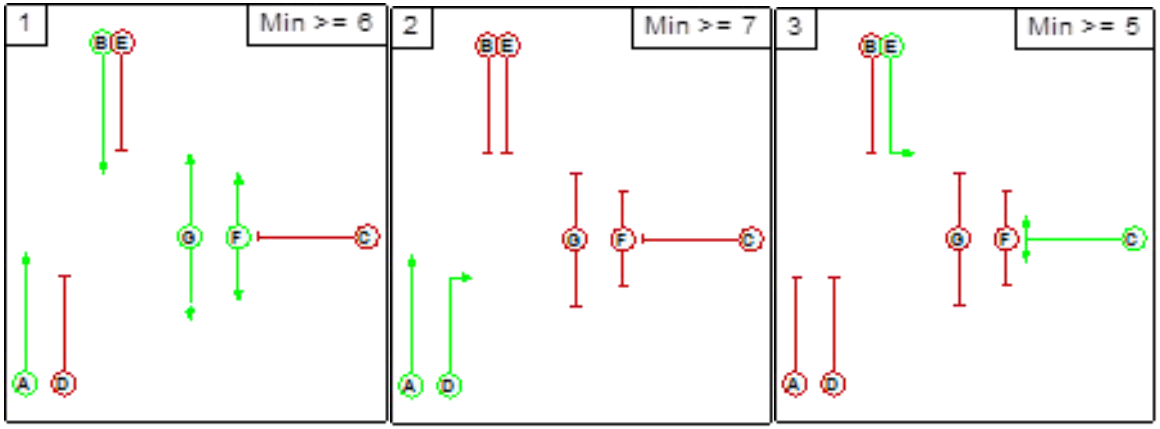
Difference - NCP2 - SAT Peak			
Lane Description (Arm/Lane - Name)	Deg Sat (%)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
1/1 - A3057 Western Avenue Northbound Ahead		-0.4	
1/2 - A3057 Western Avenue Northbound Right	-5.5	-0.3	-0.6
2/2 - A3057 Western Avenue Southbound Ahead		-2.6	
2/1 - A3057 Western Avenue Southbound Left	-10.2	-2.1	-1.7
3/1 - West Street Left Right	-10	-3.6	-1.1
PRC for Signalled Lanes (%)	-21.6		
Total Delay for Signalled Lanes (pcuHr)	-1.88		
Cycle Time	0		

Appendix F – Traffic Signal Staging Diagrams

Options 1, 2 & 3



Options 4 & 5



Appendix G – Road Safety Audit Stage F

Road Safety Audit Stage F

Western Way, Andover

June 2024

Document reference: 04/278

Client reference: R.J509237.01

Road User Audit Team
Hampshire County Council
The Castle
Winchester SO23 8UD

roaduseraudit@hants.gov.uk

www.hants.gov.uk/engineeringservices

Hampshire County Council

1 Introduction

1.1 This report results from a feasibility Stage Road Safety Audit carried out on a proposed scheme to transform a large gyratory on Western Avenue in Andover into a green space that is accessible to the public. To accommodate this, the eastern side of the gyratory will be closed to traffic and changes will be made to West Street and Waterloo Court. It is also proposed to provide active travel improvements between Folly roundabout and Bridge Street.

1.2 The Road Safety Audit Team membership was as follows: -

Audit Team Leader:	Steve Willoughby MCIHT MSoRSA Hampshire Engineering Services
Audit Team Member:	Ross Rawlings MCIHT MSoRSA Hampshire Engineering Services

1.3 The Road Safety Audit comprised an examination of the documents provided, as listed in the attached Road Safety Audit Brief. The Audit Team visited the site together, on 22 May 2024 at 2:00pm. During the visit the weather was fine and dry, and the existing road surface was dry. Traffic conditions were moderate with low levels of pedestrian and cycle activity observed during the site visit.

1.4 The audit has been carried out in accordance with the requirements specified in Hampshire County Council's Technical Guidance Note 18. The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the design to any other criteria.

1.5 All problems described in this report are considered by the Audit Team to require action in order to improve the safety of the scheme.

1.6 All references to diagram numbers refer to the Traffic Signs Regulations and General Directions 2016 (TSRGD).

2 Departures from Standards

2.1 All Departures from Standard are listed in the attached Road Safety Audit Brief.

3 Items raised at previous stage audits

3.1 The Audit Team has not been made aware of any previous road safety audits on this scheme.

4 Items raised at this Stage F Audit

4.1 Problem

Location: The proposed parallel Crossing on Chalton Road, on the approach to Folly roundabout.

Summary: The risk of collisions between vehicles and pedestrians/cyclists.

The intervisibility between cyclists/pedestrians approaching the south side of the parallel crossing and vehicles travelling north along Chalton Road may be restricted by the bridge parapet and vegetation. This will increase the risk of collisions between vehicles and cyclists/pedestrians on the crossing or shunt type collisions on the approach.

Recommendation: Ensure that there is adequate visibility for drivers and cyclists/pedestrians.

4.2 Problem

Location: The proposed Parallel Crossing on Charlton Road, on the exit from Folly roundabout.

Summary: The risk of collisions between vehicles and pedestrians/cyclists.

The proposed parallel crossing is located close to the exit from a large roundabout with high traffic speeds, and pedestrians/cyclists may be unable to determine the speed and direction of approaching vehicles. This will increase the risk of collisions between vehicles/pedestrians on the crossing, or shunt type collisions on the roundabout circulatory.

Recommendation: Unless the roundabout can be redesigned to constrain speeds and control the path of vehicles, a parallel crossing should not be provided.

4.3 Problem

Location: The proposed uncontrolled crossing on West Street (alternative option 2).

Summary: The risk of pedestrians crossing between queuing traffic, increasing the risk of vehicle/pedestrian collisions.

The proposed uncontrolled crossing is located in close proximity to the proposed signalised junction, in an area where vehicles (including a high volume of buses) are likely to be queuing. As a result, pedestrians may cross between vehicles and there is a risk of collisions with eastbound vehicles.

Recommendation: Do not progress with this option.

4.4 **Problem**

Location: The proposed priority crossing on Waterloo Court, at the junction with Western Avenue.

Summary: The risk of conflict between vehicles and cyclists on the crossing.

The large kerb radius on the north side of the junction will not adequately restrict the speed of vehicles turning left into Waterloo Court, and this will increase the risk of collisions with cyclists on the priority crossing.

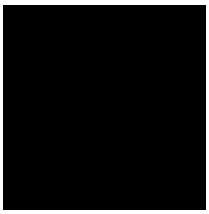
Recommendation: Tighten up the junction radius to reduce vehicle entry speeds.

5 Audit team statement

We certify that the terms of reference of the audit are as described Hampshire County Council's Technical Guidance Note 18.

Audit Team Leader

Steve Willoughby MCIHT, MSoRSA, HE RSA Cert. Comp.
Group Engineer,
Road User Audit Team
Hampshire County Council

Signed:  Date: 04/06/2024

Audit Team Member

Ross Rawlings MCIHT, MSoRSA, HE RSA Cert. Comp.
Principal Engineer,
Road User Audit Team
Hampshire County Council

Signed:  Date: 05/06/2024

Hampshire County Council

Road Safety Audit Brief

Scheme Name:	Andover – Western Avenue				
Job Number:	RJ509237				
Road Safety Audit Stage: *(X as appropriate)*	Feasibility (F) X	Preliminary (1)	Detailed (2)	Combined (1/2)	As Built (3)

Site & Scheme Description

The scheme, which is being designed in collaboration with multiple third parties, seeks to transform a large gyratory found on Western Avenue, Andover into a green space that is accessible to the public. To accommodate this, the Eastern side of the gyratory is to be closed to traffic and converted into park space, with landscaping works and changes to the River Anton. HES have been commissioned to design the required highway changes, which mainly focus on West Street including the bus station, along with Waterloo Court. Both roads require new junctions to connect with the remaining section of Western Avenue which will become two-way adjacent to the park.

There are other smaller elements being designed by HES, such as a high-speed cycle provision that'll run on the Western side of the new park, and improvements to the existing pedestrian/cycle provision North and South of the proposed park, including an improved crossing facility across Charlton Road, adjacent to Folly Roundabout.

Existing conditions of roads within design extents:

Road name	Existing speed limit	Existing peak hour traffic volume
A3057 Western Avenue	40mph	Northbound peak: 645 Southbound peak 590
Folly Roundabout	40mph	No data
Charlton Road	40mph for first 60m from Folly Rbt, 30mph thereafter	No data
West Street	30mph	348
Chantry Street	30mph	No data
Waterloo Court	30mph	383

Western_Avenue_Andover_ATC_JM.xlsx

ANPR Origin Destination surveys indicated a peak flow of 347 vehicles exiting West Street onto Western Avenue, recorded in the 16:45 to 17:45 window.
ID-0224-0098 Western Avenue Andover - ANPR OD Report - 18_04_2024.xlsx
ID-0224-0098 Western Avenue Andover - ANPR OD Report - 20_04_2024.xlsx

Although there had been early discussion entertaining a reduction in speed limit on Western Avenue to 30mph, it is unknown if this will be supported by all relevant parties. The current design is suitable for a speed limit of 40mph, with 1.0m horizontal separation between carriageway and cycleway, reduced to the absolute minimum of 0.5m at constraints.

Non-Motorised Users
There is a significant pedestrian desire line in a North/South direction through the Lidl Car park, with pedestrian traffic typically travelling to or from the Chantry Centre and bus station. Andover train station is located to the West of the scheme, with sign-posted pedestrian and cycle routes crossing the river at West Street before crossing Western Avenue through an underpass. There is also a separate footbridge adjacent to the underpass. Andover Leisure Centre and Andover College are situated close to West Street, with pedestrian movements that travel around the eastern side of West Street to and from these destinations.

Collision Data

RJ509237-HEH-SiteInfo-Accident Stats-Plot 2018-2022.pdf
RJ509237-HEH-SiteInfo-Accident Stats-Details 2018-2022.pdf

Departures & Relaxations

- Potential issue surrounding crossing facility type for Charlton Road, if a reduction in speed limit is not possible.

List of included documents and drawings

General Arrangement Sketches

RJ509237-HEH-HGN-40012558-SK-CH-0100 GA OVERVIEW & SHEET LAYOUT S2-P02.pdf
RJ509237-HEH-HGN-40012558-SK-CH-0101 GENERAL ARRANGEMENT S2-P02.pdf
RJ509237-HEH-HGN-40012558-SK-CH-0102 GENERAL ARRANGEMENT S2-P02.pdf
RJ509237-HEH-HGN-40012558-SK-CH-0103 GENERAL ARRANGEMENT S2-P02.pdf
RJ509237-HEH-HGN-40012558-SK-CH-0104 GENERAL ARRANGEMENT S2-P02.pdf
RJ509237-HEH-HGN-40012558-SK-CH-0105 GENERAL ARRANGEMENT S2-P02.pdf
RJ509237-HEH-HGN-40012558-SK-CH-0106 GENERAL ARRANGEMENT S2-P02.pdf

The above sketches provide the layout for the scheme as a whole with Optioneering work being focussed on West Street (inc Bus Station) and the West Street/Western Avenue junction:

West Street / Bus Station Preferred Layout
RJ509237-HEH-HGN-40012558-SK-CH-1001 - BUS STATION FORECOURT OPTION 1a BUS BAYS RETAINED S2 P03.pdf
RJ509237-HEH-HGN-40012558-SK-CH-0002 - WEST STREET OPTION 2 FOOTWAY & TAXI BAYS NARROWED S2-P02.pdf
RJ509237-HEH-HGN-40012558-SK-CH-0004 - WEST STREET OPTION 2 SWEPT PATH ANALYSIS S2-P02.pdf
RJ509237-HEH-HGN-40012558-SK-CH-0009 - West Street Loading Bay & Bus Stand Tracking S2 P01.pdf
RJ509237-HEH-HGN-40012558-SK-CH-0010 - WEST ST CHANTRY ST HGV & DELIVERY MOVEMENTS S2-P01.pdf
RJ509237-HEH-HGN-40012558-SK-CH-0107 RELOCATED TAXI BAY & BUS STAND OPTIONS S2 P01.pdf
RJ509237-HEH-HGN-40012558-SK-CH-0108 VEHICLE TRACKING FOR POSSIBLE BUS STAND LOCATIONS S2 P01.pdf

Plus the following sketches to be shared:
RJ509237-HEH-HGN-40012558-SK-CH-0006 Portland Grove Refuse Vehicle Access
RJ509237-HEH-HGN-40012558-SK-CH-2001 Lidl Car Park Layout Option 1
RJ509237-HEH-HGN-40012558-SK-CH-2002 Lidl Car Park Layout Option 2
RJ509237-HEH-HGN-40012558-SK-CH-2003 Lidl Car Park Layout Option 3

Following some initial feasibility work, the preferred arrangement for West Street and Andover Bus Station will see the entire eastern arm of the Western Avenue closed to traffic, to maximise space available for the Riverside Park. West Street will be made two-way with the southern connection onto Western Avenue also closed. All traffic will use the northern West Street/Western Avenue junction which will be signalised (see below).

Proposed layout drawings for the preferred options are included along with swept path analysis. Further sketches provide swept path analysis for the West St/Chantry St junction and the existing taxi bays/proposed bus stand and loading bay. A loading bay is being provided to accommodate delivery vehicles to the Bus Station Café (Costa) and a bus stand due to the loss of existing stands on Western Avenue.

A number of alternative bus stands locations are suggested, and a sketch is provided with the options.

Options have been provided for changes to the Lidl car park layout because the existing access onto Western Avenue will be closed. Whilst the audit relates to highway safety, any comment on the various layouts would be welcomed.

Western Avenue/West Street Junction Options:
RJ509237-HEH-HGN-40012558-SK-CH-2501 WEST STREET JUNCTION OPTIONS 1 & 2 S2-P01.pdf
RJ509237-HEH-HGN-40012558-SK-CH-2502 WEST STREET JUNCTION OPTION 3 S2-P01.pdf
RJ509237-HEH-HGN-40012558-SK-CH-2503 WEST STREET JUNCTION OPTIONS 4 & 5 S2-P01.pdf

5 potential options have been identified for the Western Avenue/West Street junction. All options utilise the same layout for the Western Avenue approaches, and all include a

dedicated cycle crossing with cycle signal equipment. The optioneering focuses on the West Street arm to facilitate pedestrian and cycle desire lines, which are constrained due to the location of the bridge. Consideration is also being made for the impact that the layouts have on bus service efficiency (primarily determined by set back of the stop line and subsequent delays with signal timings). The revised layout for West Street means that all buses travelling to and from the bus station (peak flow of 24 each way/hour) will travel through this junction.

Option 1 – Toucan crossing and uncontrolled (pedestrian only) crossing set back into West Street
Option 1 utilises a controlled toucan crossing to capture the Northwest ped/cycle desire line, with a section of shared use footway on the southern side of West Street to connect to the proposed park promenade. The Northeast desire line is catered for by an extension of the footway adjacent to the Lidl Supermarket, which would seek to take NMUs away from queuing traffic. Current proposals limit this to pedestrians only, but the footway could be widened into shared use if required, to connect to the shared facility on the North side of West Street. Footway/cycleway continuation along the Southern side of West Street is not possible without significant tree loss.

Option 2 – Toucan crossing and uncontrolled crossing in-line with park promenade
Option 2 shares many design features with option 1, with the exception of the uncontrolled facility within West Street, which is positioned to be in line with the exit to the proposed park promenade

Option 3 - Toucan crossing and uncontrolled crossing in-line with park promenade including 3m refuge
Option 3 utilises an uncontrolled crossing alignment similar to option 2, with the addition of a 3m refuge island on West Street, to reduce/remove potential risk of pedestrians emerging from between queuing traffic.

Option 4 – Setback stop line and toucan crossing to East of bridge deck
Option 4 relocates the stop line further into West Street, to capture the NMU desire line from the proposed park promenade. There is subsequent delay on the traffic signal cycle.

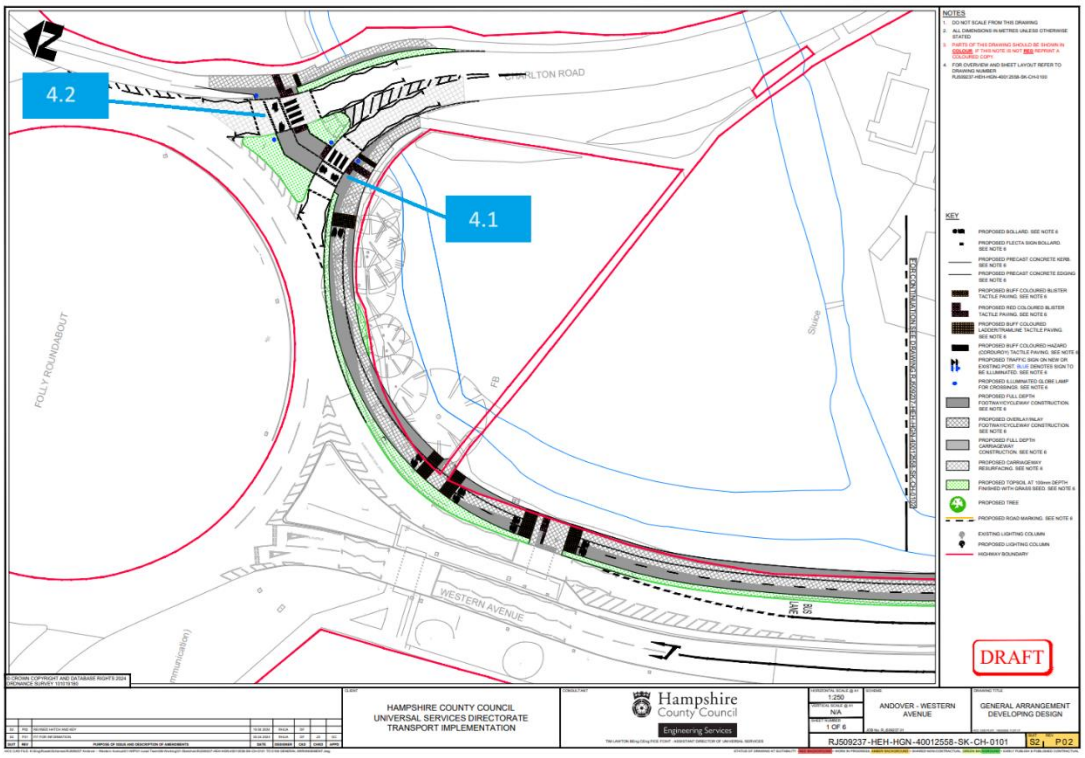
Option 5 – Setback stop line and wide toucan crossing across width of bridge deck
Option 5 utilises the same stop line positioning as option 4, but with a significantly wider pedestrian/cycle crossing which spans much of the bridge deck.

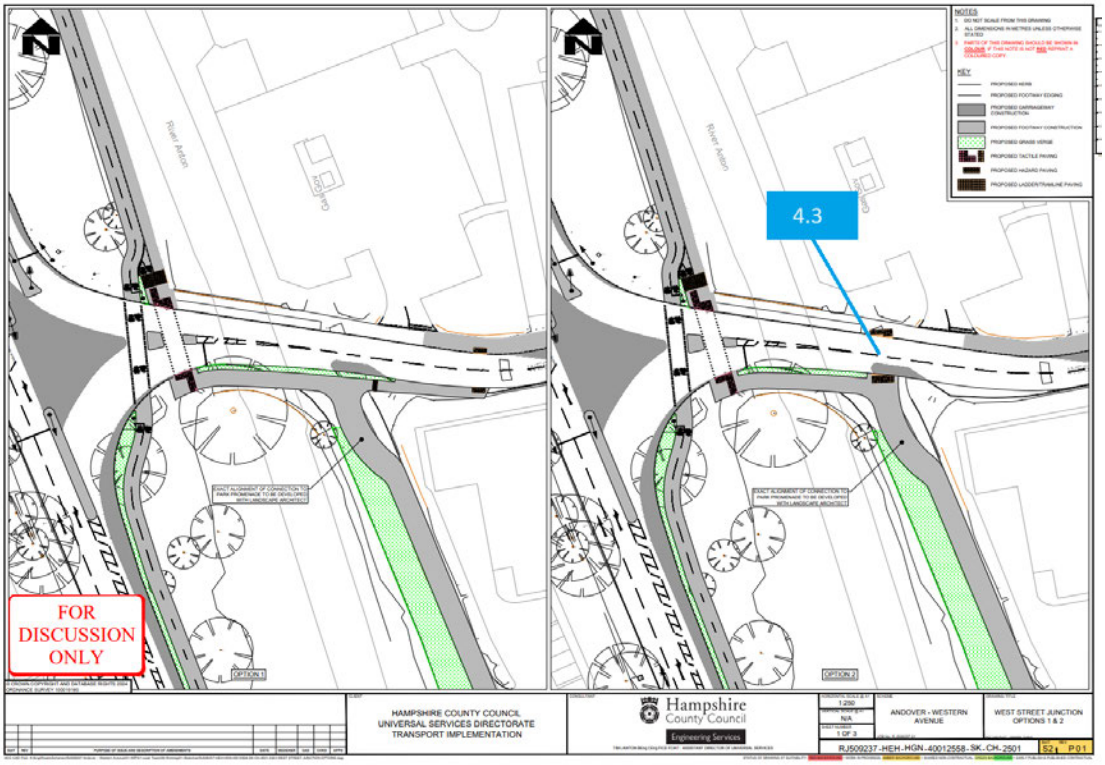
Scheme Specific Health & Safety Checklist and Risk Assessment
R.J509237-HES-HSCDM-Scheme Specific Checklist and Risk Assessment.docx R.J509237-HES-HSCDM-Scheme Specific Checklist and Risk Assessment.docx

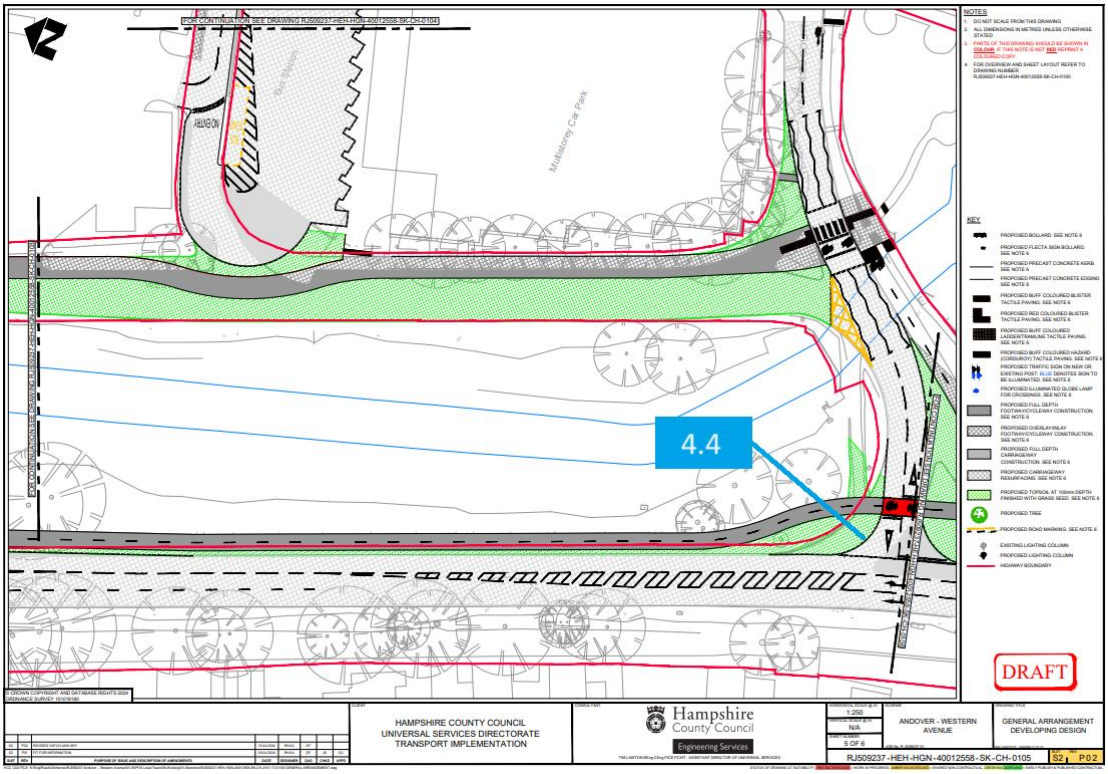
Prepared By:	
Name:	Ryan Humby
Signed:	[redacted]
Organisation:	HES Highways

Date:	13.05.2024

Annotated Plan






FOR CONTINUATION SEE DRAWING RJ509237-HEH-HGN-40012558-SK-CH-0104
ARLINGTON
Mattsbury Car Park
4.4
NOTES
KEY
DRAFT
HAMPSHIRE COUNTY COUNCIL
UNIVERSAL SERVICES DIRECTORATE
TRANSPORT IMPLEMENTATION
Hampshire County Council
Engineering Services
ANDOVER - WESTERN AVENUE
GENERAL ARRANGEMENT DEVELOPING DESIGN
RJ509237-HEH-HGN-40012558-SK-CH-0105
S2
P.02

Road Safety Audit Response Report

All the problems raised by the Road Safety Audit Team should be given due consideration.

Item No.	Problem Accepted (yes/no)	Recommendation Accepted (yes/no)	Designers Response
4.1	Yes	Yes	The proposed crossing is to be relocated further south along Charlton Road whether there will be an adequate visibility envelope entirely within the highway. There is adequate width available to maintain a grassed verge immediately in front of the bridge parapets which will provide sufficient separation to justify leaving the existing parapets in place (and not upgrading to 1.5m high). Consideration shall also be given to extending the existing 30mph speed limit north, so it is closer to Folly Roundabout, and the proposed parallel crossing located within it.
4.2	Yes	Yes	In conjunction with relocating the proposed crossing as per the response above, measures to reduce roundabout exit speeds will also be explored.
4.3	Yes	Yes	This option shall not be taken forward
4.4	Yes	Yes	Tracking is to be carried out to identify the tightest radius that can be used.

In accordance with Technical Guidance Note 18, should any of the problems and/or recommendations not be excepted, an Exception Report will be required. If there is more than one exception, then each must be considered and approved separately.

Prepared by:

Signed:……[redacted]…… (Design Team Leader)

Date:10/06/2024

Approved by:

Signed:……[redacted]……(Project Sponsor)

Date:……