

Appendix D Proposed A38 / Downside Road Junction Layout & Associated Documents

Bristol Airport
A38 Junction Improvements
Walking, Cycling and Horse Riding Assessment and Review
(WCHAR)
October 2018

Document Version Status

Date	Purpose	Document Version	Author	Reviewer
30.10.18	Initial issue	1.0	Graham Smith	Chris Cowle

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1 Introduction

- 1.1. This report has been prepared by C-TAS on behalf of Bristol Airport (the applicant) to support the planning application for the expansion of the airport from the consented 10 Million Passengers Per Annum (MPPA) to 12 MPPA by 2026. As part of this application, Bristol Airport has submitted a Hybrid Planning Application that consists of a number of elements for the proposal.
- 1.2. An element of this application is for an Outline Planning Application for an improvement scheme to the A38, in order to better access the airport by all modes, and mitigate the vehicle impact of the overall proposals. This improvement scheme covers the section of the A38 between West Lane and Bristol Airport, including the approach arms on the associated junction's in-between. A copy of the emerging improvement scheme (Drawing C1124-SK-A38-010 rev 9.0) is contained within **Appendix A**.
- 1.3. As part of the pre-application process, discussion where had with North Somerset Council (NSC) over the proposed design and required documentation to support the planning application. On 18th September 2018, NSC formally issued pre-application comments to the design team, a copy of is enclosed within **Appendix B**. One of the comments within in this response was as follows,

"Design will need to be subject to a Stage 1/2 road safety audit & non-motorised user audit."
- 1.4. In May 2017, the Department for Transport has updated HD42/05 following the introduction of the Highways England Strategic Business Plan and Roads Investment Strategy as well as the Infrastructure Act 2015 coming into force. HD42/17 Walking, Cycling & Horse-Riding Assessment and Review (WCHAR) replace the process set out in HD42/05 Non-Motorised User Audit and the subsequent Interim Advice Note 143/11.
- 1.5. As the A38 is not a trunk road, the standards within the DMRB are not mandatory at this location. However, given the 'A' classification of the A38, and that it provides a strategic link between Bristol and Bristol Airport, the road is a considered a critical part of the local network. As such, the designer considers it appropriate to refer to (where appropriate) the DMRB as a design guide document for the proposed highway arrangements.
- 1.6. Therefore, with the reference to NSC response, this technical note has been prepared summarised the WCHAR in support of the new planning application in accordance with the current HD42/17.
- 1.7. This WCHAR should be read in conjunction with the submitted Transport Assessment and other supporting planning application documents. It is noted, that some of the requirements of the WCHAR have been referenced to the TA.
- 1.8. Paragraph 1.1 of HD42/17 sets out the scope and purpose of a WCHAR, this states:

"This Requirement and Advice Document (RAD) sets out the procedures required to implement Walking, Cycling & Horse-Riding Assessment and Review (WCHAR) for highway schemes on motorways and all- purpose trunk roads."
- 1.9. Paragraph 2.7 of HD42/17 states:

"The lead assessor shall take into account the size and complexity of a highway scheme to determine the level of detail required for the WCHAR process."

- 1.10. Based on the details set out within HD42/17 would suggest that the WCHAR would be subject to a large scale scheme, if the A38 was classified as a motorway or trunk road. As the proposals for the A38 improvements include creation of a shared use scheme with improved crossing facilities, addition of new traffic lanes, and implementation of new traffic signals.
- 1.11. However, as the A38 is not classified as a motorway or trunk road it is considered that a large scale approach would be excessive. Therefore, it is considered that a small scale WCHAR is sufficient.
- 1.12. As all the proposals comprises of changes to an existing all-purpose strategic road, maintained by the local highway authority, and not classified as a Motorway or Trunk road maintained by Highways England.
- 1.13. As this WCHAR is being submitted as part of an Outline Planning Application where the detailed designed aspect of the site access will be conditioned, therefore a Review report is not necessary as part of this WCHAR. However, initial reference a Highway Design Audit for the proposed site access junction has been appended to the TA.

2 Walking, Cycling & Horse Riding Assessment

Overview

- 2.1. Guidance with respect to WCHAR is contained within HD42/17 of the Design Manual for Roads and Bridges (DMRB). The purpose of HD42/17 is to facilitate the inclusion of all walking, cycling & horse-riding modes in the highway scheme design process for the earliest stage, enabling the design team to identify opportunities for improved facilities and integration with the local and national networks.
- 2.2. The completion of the WCHAR process is made up of two distinct parts. The first part is an assessment of the current or existing situation (Walking, Cycling & Horse-Riding Assessment); whilst the second part relates to an ongoing review of user opportunities throughout the design process (Walking, Cycling & Horse Riding Review).
- 2.3. Based on the justification set out above it is considered appropriate undertake this WCHAR following the requirements for a small scaled scheme.
- 2.4. As this WCHAR is being submitted as part of an outline planning application where the detailed designed aspect of the site access will be conditioned, therefore a Review report is not necessary as part of this WCHAR. However, initial reference a Highway Design Audit for the proposed site access junction has been appended to the TA.
- 2.5. The aims of the WCHAR Assessment are:

"..."
 - a) *To gain an appropriate understanding of all relevant existing facilities for pedestrians, cyclists and equestrians (users) in the local area.*

- b) *To provide background user information that can be referred to throughout the design process.*
- c) *To identify opportunities for improvements for users.”*

2.6. The requirements for the Assessment of a small scaled scheme are set out within paragraph 4.4 of HD42, and are as follows:

- Review of walking, cycling & horse-riding policies and strategies relevant to the scheme area.
- Collision data – analysis of all collisions in the study area.
- Description of local public transport services and interchange information.
- Description of key trip generators and local amenities;
- Evidence of site visit;
- Evidence of consultation with key stakeholders; and
- Description and review of existing walking, cycling and horse-riding network facilities within the local area.

2.7. The following text summarises the WCHAR Assessment phase.

Policy Review

2.8. For details please refer to the submitted Transport Assessment, which details the principles of the key national, regional and local policy documents relating to transport and air travel for Bristol Airport.

Collision Data

2.9. For full details please refer to the submitted Transport Assessment. However, during 2017 (the last full year of data) just 3 collisions took place on the immediately adjacent highway, one on Downside Road, one on Bridgwater Road at the junction with the Airport Tavern, and one at the Airports southern access onto the A38, all only involving slight injury.

Local Public Transport Service

2.10. Full details of local public transport facilities are set out in the Transport Assessment. However, the main bus stops are located directly outside the terminal building, with 6 services available covering Chew Stoke, Western-super-Mare, Bristol, Bedminster, Bath, Hengrove, Winford, Yatton, and Winscombe.

Local Amenities

2.11. For full details please refer to the submitted Transport Assessment. However, in addition to the passenger services available within the terminal building and Airport Hotel, a Motel and Public House is located on the adjacent section of the A38.

Evidence of Site Visit

2.12. The site visit was undertaken by C-TAS on 18th October 2018 between 11:00 and 14:00 during daylight hours. The site visit took the form of walking along the available pedestrian, cyclist and equestrian facilities within the vicinity of the scheme. The condition of the existing footway / cycleway was recorded and potential improvement and connections were noted. The weather during the site visit was dry and clear. The road and path surfaces were all noted to be dry.

2.13. The primary findings of the site visit were:

- The zebra crossing over the Bristol Airport access road was well used with passengers travelling between the airport and the informal parking areas in Lulsgate Bottom.



- The available width for the shared footway / cycleway on the eastern side of the A38, south of Well Lane was reduced (to approximately 0.7 metres) from its actual width (from approximately 3.0m) due to overgrown vegetation. It is worth noting at this stage that the maintenance responsibility of this vegetation is that of the NSC, as local highway authority.



- The shared cycle route along A38 starts on Well Lane adjacent to the give way line, however, the available width on the footway and visibility to both pedestrians and cyclists is reduced due to overgrown vegetation.



- The tactile paving and dropped kerb provision across Downside Road is covered by overgrown vegetation. This will have a detrimental impact on visually impaired users.



- Along the A38 there are double yellow lines that restrict on-street parking. On the eastern side of the carriageway, south of Downside road there is a 20 metre long stretch of parallel parking bay adjacent to the Forge Motel.

Under the double yellow line parking restrictions, vehicles are not allowed to park on the full width of the highway unless within designated parking areas.

During the site visit it was observed that drivers are not positioning their vehicle correctly within these spaces, and are therefore using up vital space within the shared footway / cycleway. As such these vehicles are reducing the available footway width and are causing an obstruction to pedestrians and cyclists.



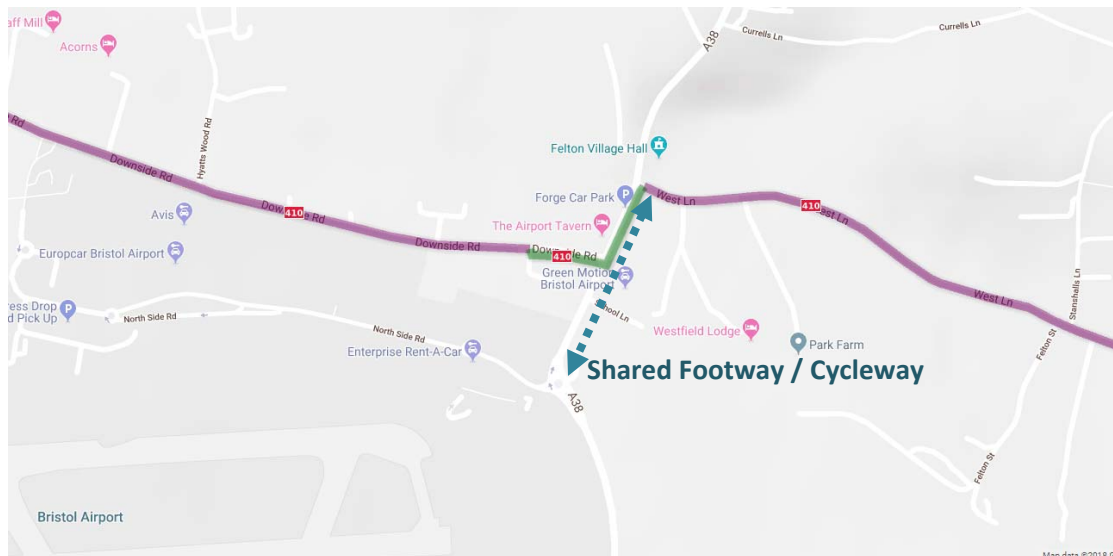
3 Evidence of Consultation

- 3.1. A copy of the formal response from the Local Highway Authority following the pre-application process is included within **Appendix B** of this report. This pre-application response included the request for the following pedestrian, cycle and horse riding elements to be added to the proposed design:

- The proposed scheme should provide details of pedestrian and cycle crossing facilities such as dropped kerbs and tactile paving; and
- The design needs to accommodate cycle route NCN 410 Avon Cycleway.

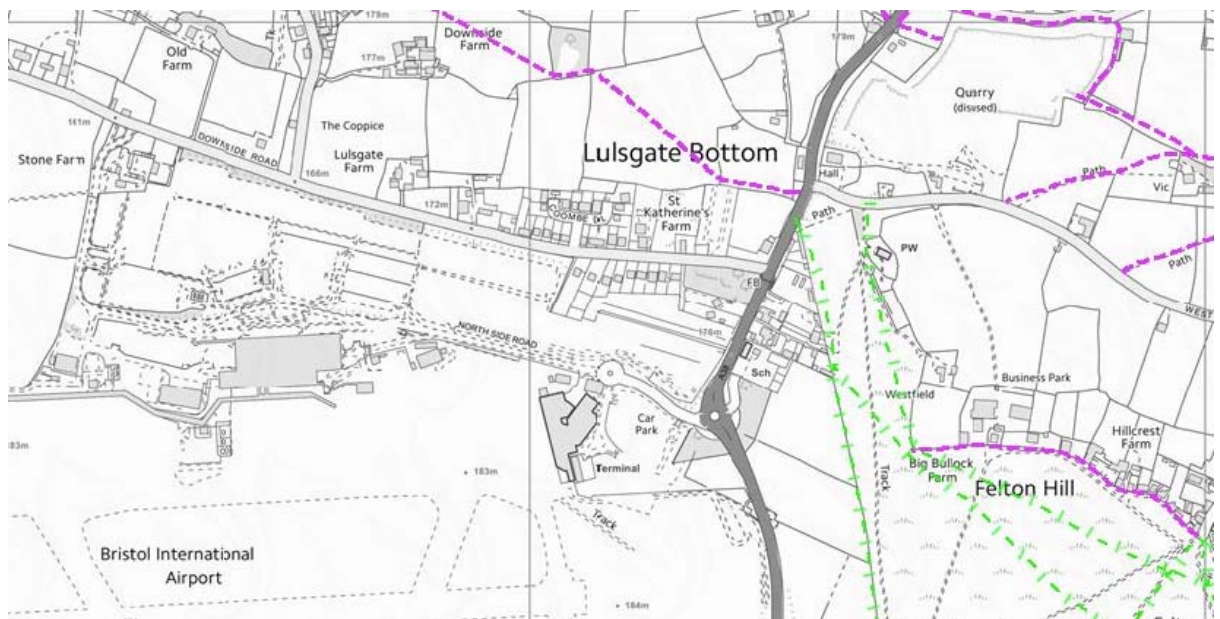
4 Existing Walking, Cycling & Horse Riding Network Facilities

- 4.1. The section of the A38 within the study area is subject to a 40 mile per hour speed limit. This section of the A38 is reasonably straight with clear visibility along the main road. The topography of the road dips within the middle at the A38 / Downside Road junction.
- 4.2. The A38 is fronted by a number of residential properties along the eastern side of the carriageway, and the Airport Tavern (public house) on the west. The Airport Tavern has circa 10 parking spaces that are directly accessed off the A38 and a small access point just north of Downside Road.
- 4.3. There are pedestrian footways facilities on both sides of the A38 within the study area. On the east side of the carriageway there is a shared footway / cycleway between West Lane and Bristol Airport, the available width varies between 2.5 metres and 0.7 metres. As mention above the actual width of this is reduced due to unmaintained vegetation encroaching over the footway. North of West Lane there is a pedestrian footway that continues north to Potters Hill that is approximately 1.2 metres wide.
- 4.4. On the western side of the carriageway there is a pedestrian footway that starts/ends opposite West Lane and runs alongside the carriageway to Downside Road that is approximately 3.0 metres and 1.4 metres wide. Along the southern edge of Downside Road there is a pedestrian footway that runs from the Former Quarry site access to and along A38 to Bristol Airport.
- 4.5. This footway is approximately 2.0 metres wide up to the approach of the Bristol Airport Roundabout, where the footway then converts into a shared footway/cycleway for the remaining 50 metres up to Bristol Airport Roundabout.
- 4.6. This shared footway/cycleway connects into the shared facility on the opposite side of the road through an informal dropped kerb crossing point with tactile paving, over the northern splitter island on the roundabout.
- 4.7. There is a formal signal controlled pedestrian crossing over the A38 within the traffic signals at Downside Road. Due to the operation set of these signals pedestrians are provide with a separate pedestrian red stage.
- 4.8. The shared footway/cycleway provide a traffic free route from West Lane to Bristol Airport, as shown below.



Sustrans National Cycle Network Route 410

- 4.9. The route between West Lane and Downside Road is designated as Route 410 of the National Cycle Network. The route is an large circuit round the City of Bristol, taking in several towns and villages, and conveniently linking to Route 4, the Bristol & Bath Cycle Path, Route 41, and other local routes into the city centre.
- 4.10. There is a public footpath to the west of the A38 that connects to the local highway network, north of the Airport Tavern site boundary. That connects to Downside in the west. To the east of the A38, there is a bridleway that connects to the A38 north the Lilac Cottages and another that connect to West Lane, approximately 80 metres to the east of the A38 / West Lane junction. These bridleways cross Felton Common and the common land.
- 4.11. An extract from the North Somerset Council Interactive Planning Map illustrates the location of these public footpaths (shown in purple) and bridleways (shown in green) in relation to the A38.



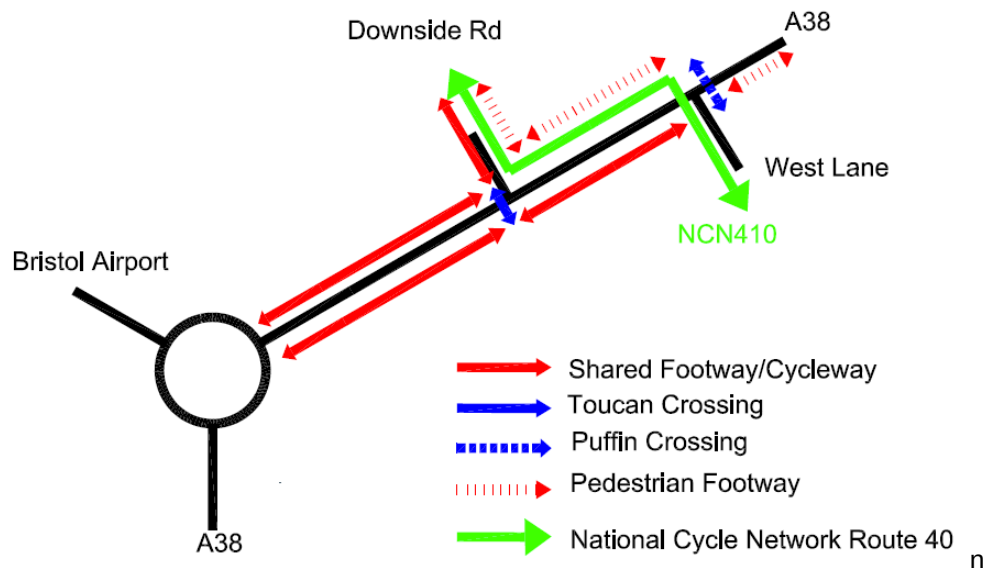
North Somerset Council – Interactive Planning Map – Public Rights of Way

- 4.12. At present there is a bus stop on both sides of the road that are provided within lay-bys. The northbound bus stop is accompanied by a bus shelter with bench, whilst the southbound bus flag only stop.
- 4.13. There are no dedicated provisions for horse riding along or across the A38. This is reflective of the lack of horses seen in the area. Due to the volume of traffic travelling along the A38, the limited highway space, and lack of on-ward connections it is unlikely that the area would see an increase in equestrian users. As such, it is considered unnecessary to provide any additional horse riding facilities over the existing provision.

5 Future Walking, Cycling & Horse Riding Network Facilities

- 5.1. A copy of the emerging improvement scheme (Drawing C1124-SK-A38-010) is contained within **Appendix A**.
- 5.2. The proposals for the A38 improvement scheme increases and enhances the provision for both pedestrians and cyclists through the following proposals.
- 5.3. Clearing vegetation on the existing shared footway / cycleway in order to re-instate the full width of the shared facility, and to improve the existing visibility issues for pedestrians / cyclists walking around the corner between the A38 and West Lane.
- 5.4. The proposed improvements to the A38 / Downside Road junction will add additional traffic lanes alongside the A38. As such, additional toucan crossings will be provided to improve pedestrian and cycle access across the A38.
- 5.5. These crossings will be provided in a staggered arrangement with dropped kerbs and tactile paving. It is proposed that the central islands of these crossings will guide and protect pedestrians through the use of guard railing. The inclusion of pedestrian refuge islands, allows for pedestrians to cross with traffic within the signal control staging.
- 5.6. A new 3.0 metre wide shared pedestrian / cycleway with a 0.5 metre wide protection strip will be provided along the western side of the A38 south of Downside Road. This will provide an alternative route for cyclists to access the airport via a traffic free route using the signal controlled crossing point over the A38.
- 5.7. Due to the inclusion of a new left turn filter out of the Airport on the A38 / Bristol Airport roundabout. There will be a need to close the existing informal pedestrian crossing on the northern splitter island. Therefore, it is proposed that a replacement informal crossing point is provided 85 metres north of its current position. It is proposed that this crossing will consist of a new pedestrian refuge island with associated dropped kerbs and tactile paving.
- 5.8. It is proposed that at each end of the shared pedestrian / cycle facilities adequate ladder and tramline tactile paving will be provided to indicate to visually impaired users the commencement of the shared provision.
- 5.9. An additional new signalised pedestrian crossing will be provided across the A38 north West Lane. It is proposed that this crossing will be incorporated within the signal design for the new traffic signals at the junction. This crossing will provide an additional location for pedestrians to cross, especially those that walk to the bus stops from West Lane.

5.10. The figure below illustrates the proposed pedestrian / cycle facilities.



5.11. As mentioned, there are no additional proposals provided for equestrian users.

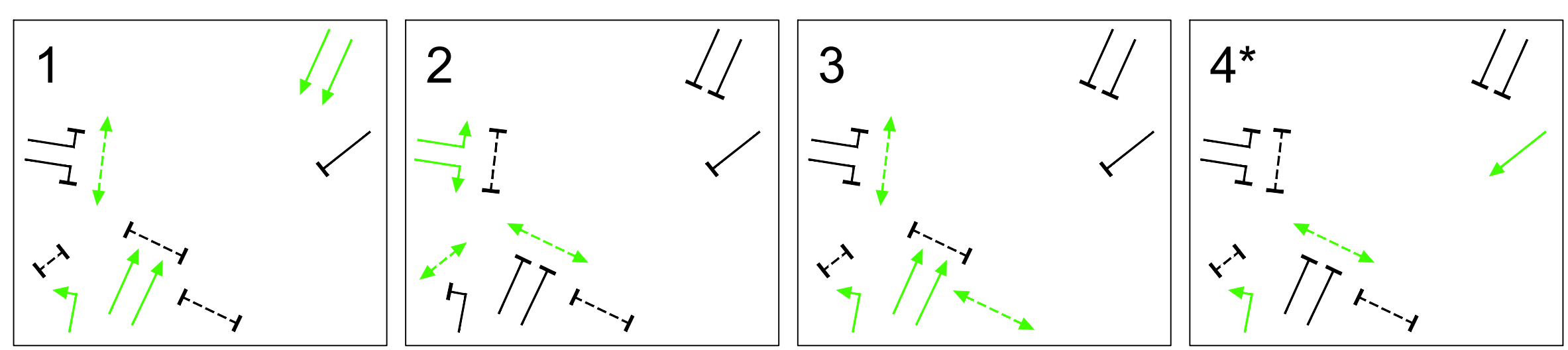
6 Summary and Conclusion

- 6.1. This report has been prepared as the Walking, Cycling and Horse-Riding Assessment Report undertaken as part of the WCHAR process. In response to NSC's request for a non-motorised user audit to support the A38 improvement scheme.
- 6.2. Walking, Cycling and Horse-Riding Assessment Report has summarised the existing facilities for pedestrians, cyclist and equestrian in the local area, provided background information that can be referred to throughout the design process, and has identified opportunities for improvements to users.

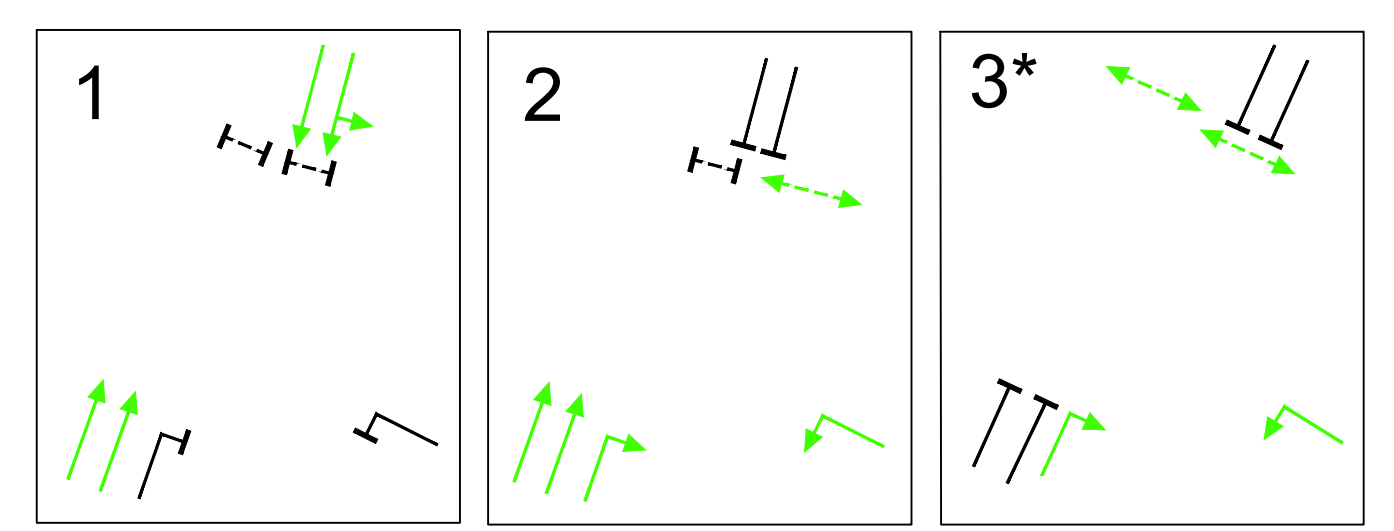
Appendix A

Proposed A38 Improvement Scheme

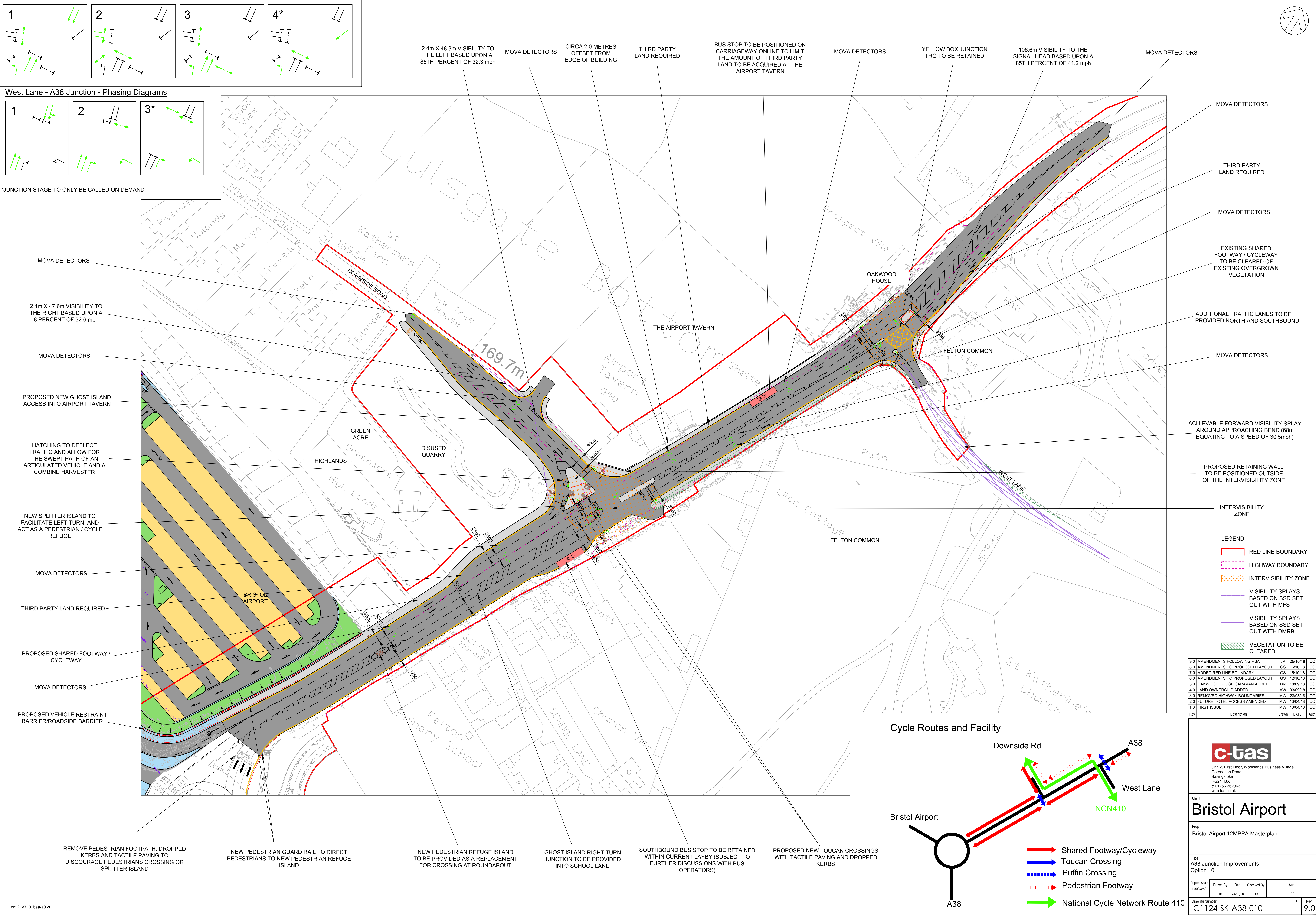
Downside Road - A38 Junction - Phasing Diagrams



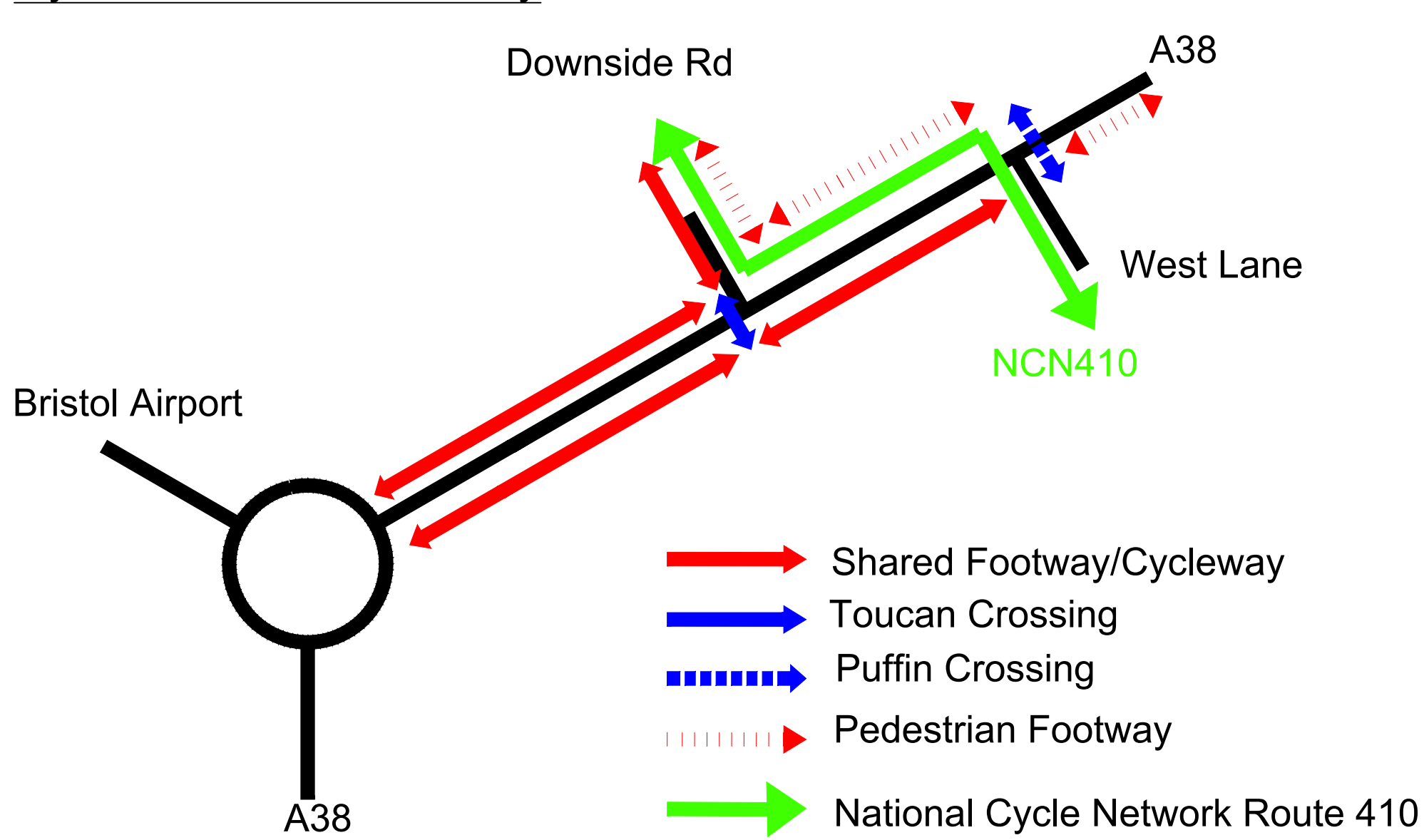
West Lane - A38 Junction - Phasing Diagrams



*JUNCTION STAGE TO ONLY BE CALLED ON DEMAND



Cycle Routes and Facility



9.0	AMENDMENTS FOLLOWING RSA	JP	26/10/18	CC
8.0	AMENDMENTS TO PROPOSED LAYOUT	GS	18/10/18	CC
7.0	ADDED RED LINE BOUNDARY	GS	15/10/18	CC
6.0	AMENDMENTS TO PROPOSED LAYOUT	GS	12/10/18	CC
5.0	OAKWOOD HOUSE CARAVAN ADDED	DR	18/09/18	CC
4.0	LAND OWNERSHIP ADDED	AW	03/09/18	CC
3.0	REMOVED HIGHWAY BOUNDARIES	MW	23/08/18	CC
2.0	FUTURE HOTEL ACCESS AMENDED	MW	13/04/18	CC
1.0	FIRST ISSUE	MW	13/04/18	CC
Rev	Description	Drawn	DATE	Auth



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Client	Bristol Airport				
Project	Bristol Airport 12MPPA Masterplan				
Title					
A38 Junction Improvements Option 10					
Original Scale 1:500@A0	Drawn By TO	Date 24/10/18	Checked By DR	Auth CC	
Drawing Number C1124-SK-A38-010					Rev 9.0

Appendix B

NSC Highways and Transport - Pre-application Comments

INTERNAL MEMORANDUM

FROM: D&E HIGHWAYS & TRANSPORT

Date: 18/09/2018

Development Control Case Officer: Neil Underhay

Application No: Pre-application advice on Bristol Airport expansion to 12mppa
Location: A38 / Downside Road / West Lane junction
Proposal: A38 junction improvements

Pre-application comments from Highways Development Management

Note: we would normally expect a mitigation scheme after we reach agreement on the impact so whilst we are happy to provide early comments on the design of the scheme this is on the understanding that we will need to agree the impacts before reaching any conclusion on this scheme.

These comments have been produced based on plan titled A38 Junction Improvements Option 10 Drawing No.C1124-SK-A38-010 Rev 2.0

The Site

A38 / Downside Road / West Lane junction subject to a 40 mph speed limit. Downside Road and West Lane are C class highway.

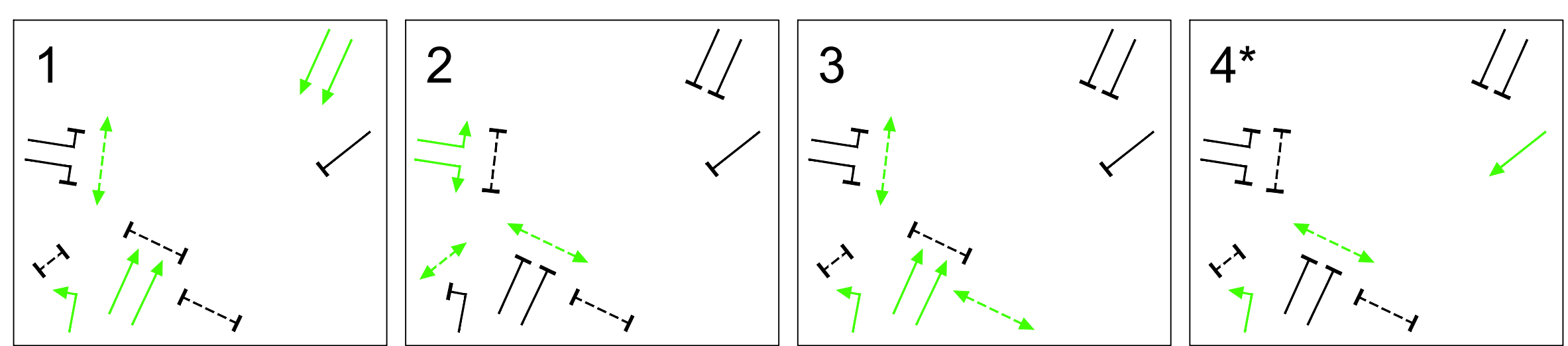
Highway considerations

- The green line does not match with North Somerset Council (NSC) records for the adopted highway. For example, NSC records indicate the adopted highway only extends to the back of the footway on the east side of the A38 opposite the Downside Road junction.
- We would wish to see further details of the proposed access to the existing Airport Tavern public house. The new access may require alterations to the internal layout of the car park, and details such as this will need to be submitted to ensure vehicles can easily enter and exit the premises and not create a new road safety issue on Downside Road. Furthermore, tracking plots should be provided which show delivery vehicles can make use of this access. We would like to see clarification on whether the A38 access for the pub will be stopped up.
- The proposals also seem to be removing car parking from the front of the pub – we will need to be satisfied that adequate parking will remain across the site and will not lead to any parking on the public highway.
- All private access points need to be shown on plan. Vehicle tracking is needed for private accesses. How will servicing of premises along route be achieved?

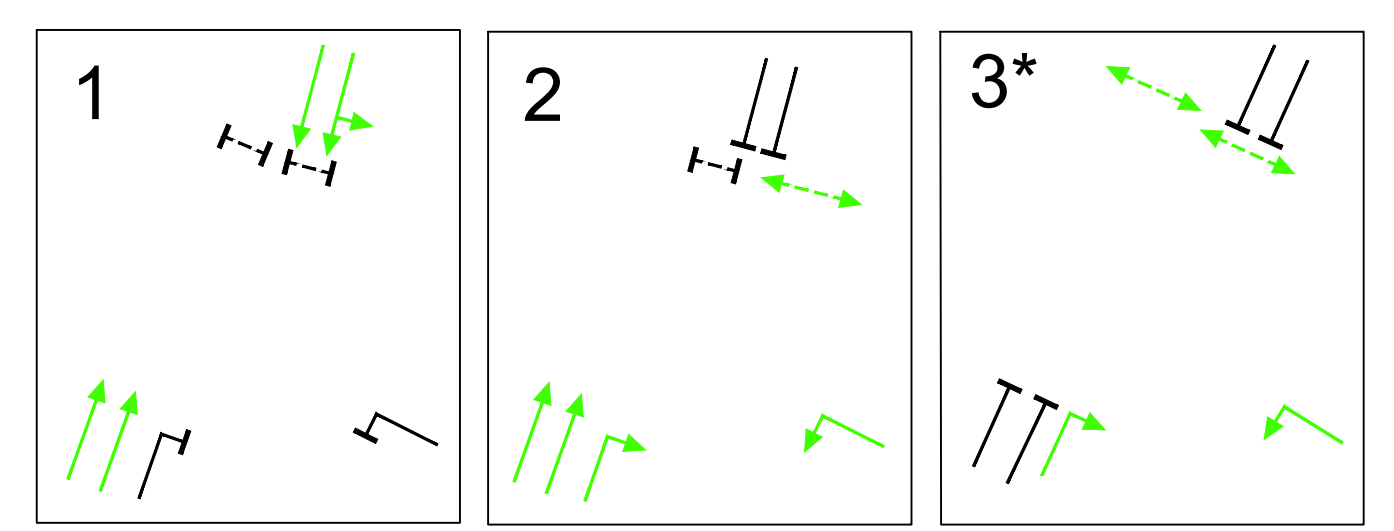
- The proposed scheme does not provide any details of pedestrian and cycle crossing facilities such as dropped kerbs and tactile paving.
- The design needs to accommodate cycle route NCN 410 Avon Cycleway. New sections of shared path on west side of A38 appears to be under 3.5m wide. It would be useful to clarify which parts are shared use and what entry and exit points are. Consider providing advance stop lines and feeder lanes. Sustrans should be consulted by the designers.
- The gap in hatching on Downside Road is approx. 2m wide. Not wide enough for a ghost right turn lane this may result in rear end shunt type collisions.
- Swept path analysis needed for all highway movements. Right turn out of Downside Road looks very tight as does right turn into West Lane.
- On A38 north-bound and Downside Road there are 2no. lanes approx. 3m wide. Actual lane widths should be provided across the scheme together with swept path analysis to enable us to judge whether these are sufficient.
- Lane marking will need to be reviewed and may need changes on roundabout. Consideration of how lane marking will affect road safety and capacity.
- North bound bus stop near the Airport Tavern is not in a lay by. The operation of this stop will need to be considered (i.e. frequency of services layover) and we will need to understand the impact this has on safety and capacity.
- We will need confidence that the scheme is deliverable in respect of:
 - Use of third party land
 - Engineering challenges
 - Utilities – has conflict with utilities been checked?
- **Plan** is option 10 - can we see other options? Signalised junction at West Lane will need to be justified.

Design will need to be subject to a Stage 1/2 road safety audit & non-motorised user audit.

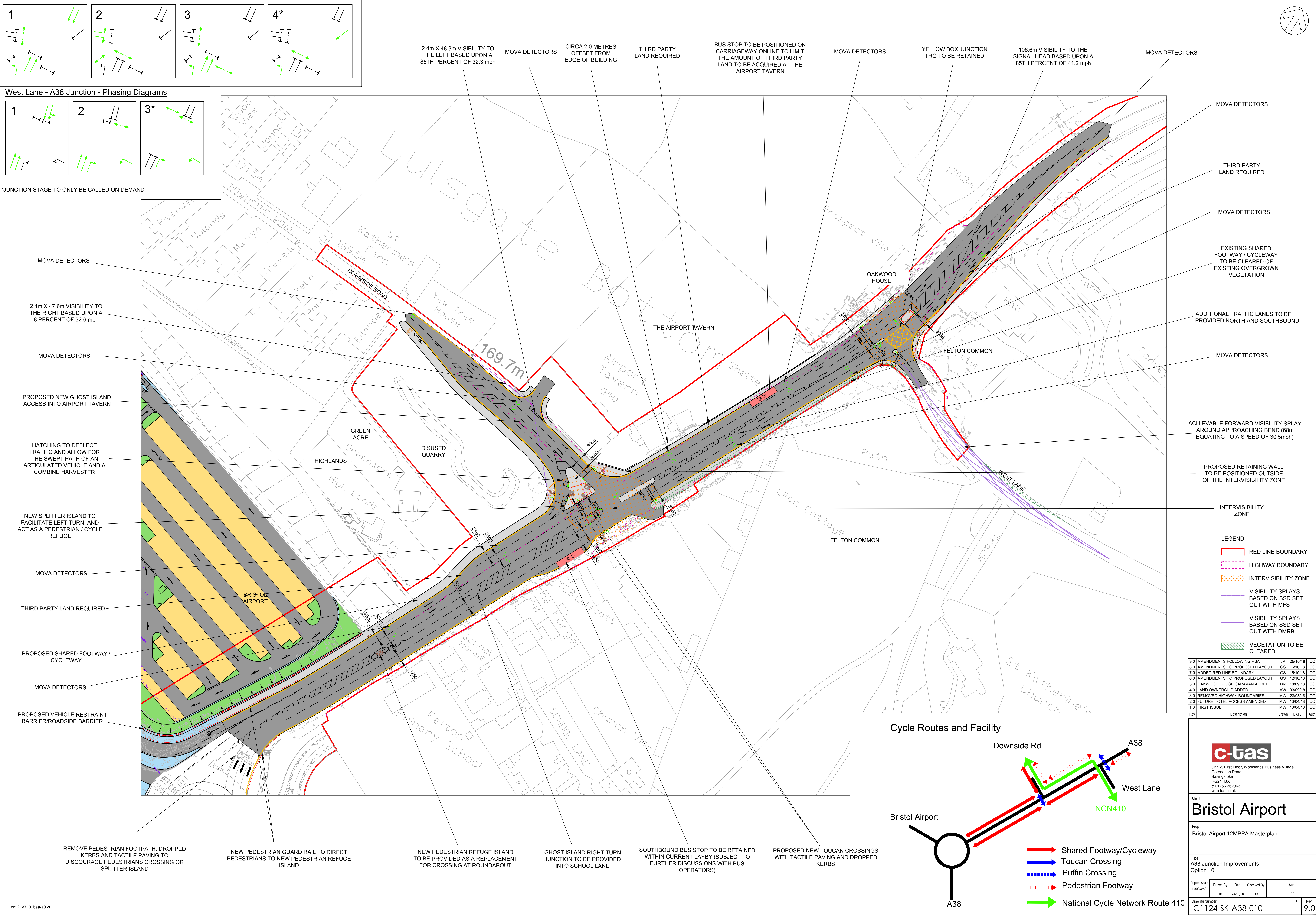
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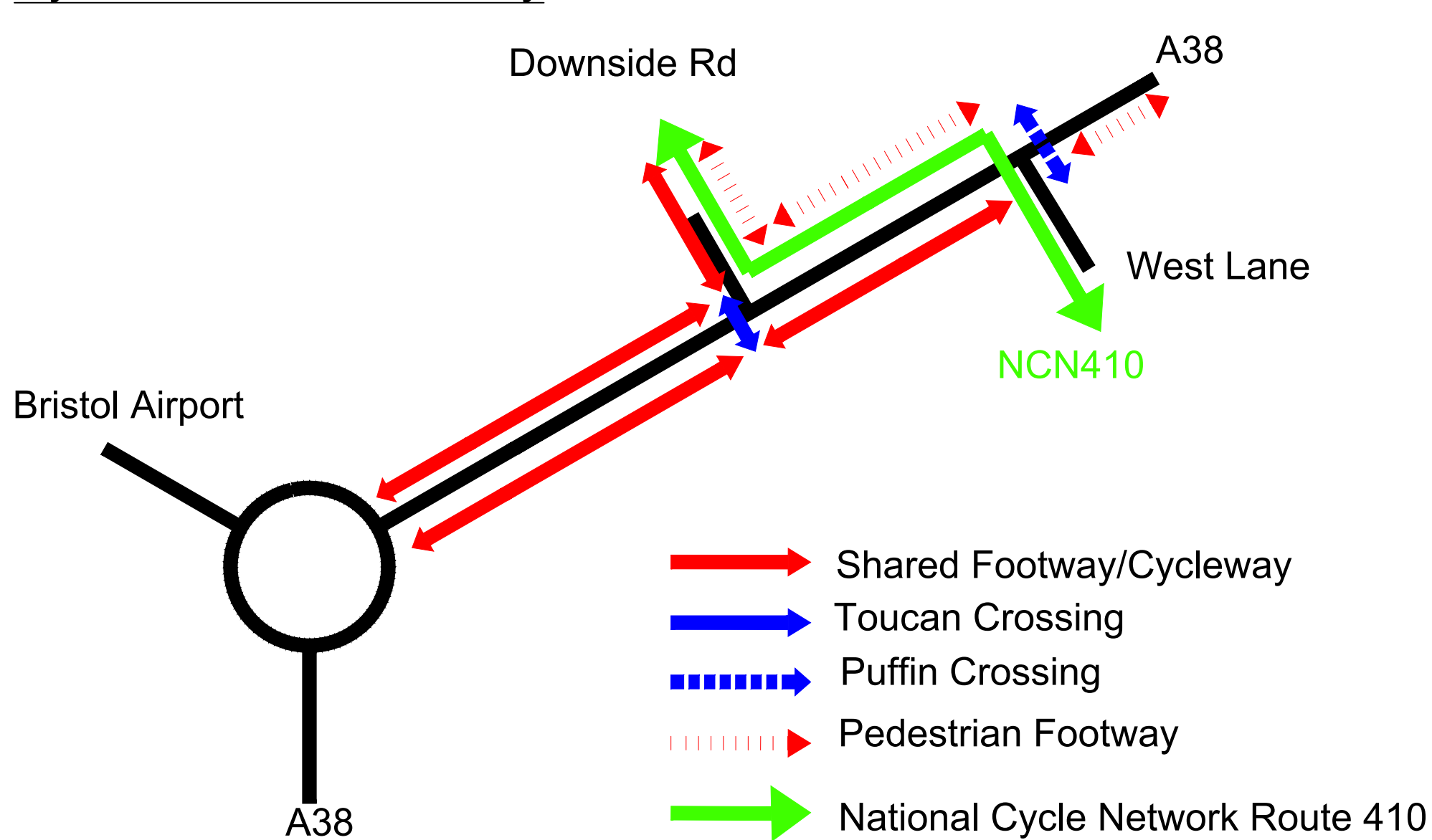
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Title					
A38 Junction Improvements Option 10					
Original Scale 1:500@A0	Drawn By TO	Date 24/10/18	Checked By DR	Auth CC	
Drawing Number C1124-SK-A38-010					Rev 9.0



Sterling Road Safety

A38 Junctions with Downside Road and West Lane, Lulsgate Bottom, North Somerset

Proposed Widening, Signalisation and Modification of Existing Signals

Stage 1 Road Safety Audit

SRS/TJS/2018/023

Sterling Road Safety LLP

ROAD SAFETY AUDIT REPORT

SRS/TJS/2018/023

Stage 1 Road Safety Audit of Proposed Widening, Signalisation and Modification of Existing Signals at Lulsgate Bottom in North Somerset

Prepared by:

Sterling Road Safety LLP

Prepared for: c-tas, First Floor Unit 2, Woodlands Business Village, Basingstoke, Hampshire, RG21 4JX.

(Contact: Graham Smith)

This report has been prepared for c-tas for the sole purpose of reviewing the road safety of highways works associated with proposed widening and traffic signals works on the A38 in Lulsgate Bottom in North Somerset. The views expressed are those of the author(s) and not necessarily those of c-tas.

Revision Status	Prepared by (name):	Checked by (name):	Approved by (signature):	Date approved:
Original	Tim Sterling	Martin Morley		23 rd October 2018

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1 Introduction

- 1.1 This report concerns a Stage 1 Road Safety Audit (RSA) carried out on proposed highways works associated with the signalisation of the A38 junction with West Lane, improvements to the signalised junction of the A38 with Downside Road in Lulsgate Bottom and changes to A38 / Airport Roundabout in North Somerset.
- 1.2 The A38 at Lulsgate Bottom runs alongside Bristol International Airport and the south-western extent of the site is at the junction with a roundabout that provides access to the airport (the 'airport roundabout'). The A38 is subject to a 40mph speed limit.
- 1.3 The junction with Downside Road is about 220m to the north-east of the airport roundabout and is currently signalised. Widening of the carriageway on the northern side will allow for an extra lane south-west bound (towards the airport) along with a new left-turn lane for north-east bound traffic and an additional lane for through traffic. An extra lane would also be provided for traffic leaving Downside Road along with various changes to pedestrian crossing provision. These works would also involve the closure of the existing access from the A38 to Airport Tavern public house and a new access from Downside Road.
- 1.4 The junction of the A38 with West Lane is not currently signalised and comprises a simple give-way T-junction with a right-turn lane from the A38 and a single through lane in each direction. The proposal is to signalise the junction and add a through lane in each direction.
- 1.5 This Stage 1 RSA was carried out at the request of c-tas and a brief and emailed instructions were provided by Graham Smith.
- 1.6 The Audit Team was established by Sterling Road Safety LLP and a site inspection was undertaken on Friday 22nd October 2018 between 11:00am and 12:00 noon. The weather was dry and sunny and the road surface was dry. Traffic conditions were moderately heavy.
- 1.7 The Audit Team was independent of the project design team and none of the Team Members has had any involvement with the project.
- 1.8 The Auditors were:

Team Leader : Tim Sterling BEng MCIHT MSoRSA

Team Member : Martin Morley BSc (Hons), MCIHT, MSoRSA (Certificate of Competency in Road Safety Audit gained in February 2013)

-
- 1.9 The report has been prepared in accordance with the Design Manual for Roads and Bridges (DMRB) Highways Directive (HD) 19/15.
- 1.10 Issues relating to the health & safety of operatives constructing, operating or maintaining the highway are not covered by Road Safety Audit. Only issues relating to the design and construction of facilities for highway maintenance that may potentially contribute to a Road Safety Matter are considered by the Road Safety Audit process.
- 1.11 Road Safety Audit is not a technical check that the design conforms to Standards and/or best practice guidance. Design Organisations are responsible for ensuring that their designs have been subjected to the appropriate design reviews (including, where applicable, Walking, Cycling, Horse-Riding Assessment and Reviews) prior to Road Safety Audit.
- 1.12 Road Safety Audit is also not a check that the scheme has been constructed in accordance with the design.
- 1.13 Whilst reference may be made to certain design standards where safety is considered to be compromised by non-compliance, this report is not intended to assess compliance with standards or provide a design check. The Auditors have only reported on matters that might have an adverse effect on road safety in the context of the chosen design. No attempt has been made to comment on the justification of the scheme or the appropriateness of the design. Consequently, the Auditors accept no responsibility for the design or construction of the scheme.
- 1.14 The recommendations in this report are aimed at addressing identified road safety problems; however there may be other alternative acceptable ways to overcome a specific problem, when local knowledge or other practical issues are considered. The recommendations in this report do not absolve the Designer of his/her responsibilities.
- 1.15 The Auditors would be pleased to discuss the acceptability of alternative solutions to problems identified during the Audit and would encourage the Designer to consult them on this matter.
- 1.16 The response to the RSA should be formally recorded so that a record of the Audit process is contained in the As Built design pack on final completion.
- 1.17 All problems identified in this Road Safety Audit Report are indicated on a location plan in Appendix A.

2 Items Considered

2.1 The Auditors were provided with the following information and documentation:

- Emailed instructions and brief to undertake the road safety audit (received 8th October 2018);
- Stats 19 personal injury accident/collision data for an extensive area that includes the vicinity of the audit site and covering the period from the start of 2014 to the end of June 2018;
- Peak hour and off-peak traffic flow data;
- Drawing ref: C1124-SK-A38-010 Revisions: 5.0, 6.0 and 8.0 (all dated 13/04/18 and titled 'A38 Junction Improvements Option 10'). Revision 8.0 is understood to be the most recent and has been relied upon during this audit.

2.2 It is not clear when the signals at the junction with Downside Road were installed or whether any other significant changes have occurred during the period from January 2014 to June 2018. Nevertheless, personal injury collision/accident data for the length of the A38 between the airport roundabout and the scheme boundary to the north of West Lane plus the immediate approaches from the two side roads (Downside Road and West Lane) shows the following.

2.3 During 2014 there were three collisions, refs: 141409086 (at the airport roundabout), 141403139 (near Downside Road) and 141409980 (some way to the north).

- 141409086 involved a collision between southbound vehicles entering the airport roundabout. The proposed layout is not significantly different to the existing layout at this point.
- 141403139 involved a car exiting Downside Road and turning left being in collision with a northbound pedal cycle on the A38. It was daylight, the road was dry and slight injuries resulted.
- 141409980 occurred some way to the north and is of note because it involved a southbound vehicle colliding with the rear of queuing traffic.

-
- 2.4 During 2015, two accidents occurred at the airport roundabout, two near the Downside Road junction and three near the West Lane junction.
- 151505060 involved a collision between southbound vehicles entering the airport roundabout. The proposed layout is not significantly different to the existing layout at this point.
 - 151506892 involved falling within a bus at the airport roundabout.
 - Both 151505406 and 151504786 involved a car emerging and turning right from Downside Road being in collision with a northbound car on the A38. It was daylight, a dry road and slight injuries resulted.
 - 151502129 involved a nose-to-tail collision between two cars at a queue associated with an access to airport parking near West Lane. It was daylight, a dry road and slight injuries resulted.
 - 151503414 was a fatal accident that involved a southbound motorcyclist striking the kerb and losing control near the junction with West Lane. It was daylight and the road was dry.
 - 151505909 involved a collision between a car turning right into West Lane and an oncoming car. It was daylight, a dry road and slight injuries resulted.
- 2.5 During 2016, there were two slight injury accidents.
- 161603632 involved a collision between two northbound vehicles, associated with a manoeuvre into and out of a bus stop near West Lane. It was daylight, a dry road and slight injuries resulted.
 - 161608616 involved a van emerging from Downside Road and colliding with a northbound car on the A38. It was dark and wet and slight injuries resulted.
- 2.6 During 2017, there was one slight injury accident, reference 171703864. This involved a car turning right into the airport tavern and colliding with an oncoming car. It was dark, the road was dry and slight injuries resulted.
- 2.7 During the first six months of 2018, there was one recorded injury accident. This occurred at the junction of Downside Road with Combe Dale and being about 290m from the A38 is considered to be beyond the scope of this investigation.

- 2.8 Traffic flow data did not include speed measurements and it is not known whether or not significant numbers of vehicles travel in excess of 40mph in this area. It is similarly not known whether or not visibility splays were determined on the basis of actual measured speeds.
- 2.9 No departures from standards have been identified within the Road Safety Audit Brief. No other information was provided to the Audit Team.

3 Matters Arising From This Stage 1 Audit

- 3.1 **Location:** The northern side of Downside Road close to the junction with the A38.

Problem: Steep gradient at proposed access to the Airport Tavern.

A new vehicular access is proposed to the Airport Tavern and there is a significant level difference between the road and the car park. If there is a steep gradient at or near the give-way line then this could restrict sightlines or result in problems when emerging, resulting in risks of collisions with traffic on Downside Road.

Recommendation: It is recommended that the gradient is minimised so as to ensure sufficient sightlines and to ensure that traffic emerges onto Downside Road from a suitably level approach.

- 3.2 **Location:** The existing uncontrolled pedestrian crossing near the airport roundabout.

Problem: There is a notable desire line at this point and the proposal is to close this crossing.



A significant number of pedestrians were observed crossing at this point. Some of these appeared to be airport personnel. Others were passengers who were crossing either from, or to, vehicles that were parked in

contravention of restrictions in the short road that leads east from the airport roundabout or were walking to Easirent Car Hire.

A new crossing point is proposed about 100m to the north of the roundabout, but pedestrians are notoriously reluctant to deviate from the most direct route and it seems highly likely that crossing movements will continue near to the roundabout. The proposal includes the addition of a filter lane, or segregated left-turn lane, and the deletion of the dropped kerbing and tactile paving. Consequently, pedestrians who cross at this point will be at increased collision risk.

Recommendation:

It is recommended that this pedestrian movement is either prevented or provided for. Prevention could include the provision of extensive pedestrian guard railings on both sides of the road. Alternatively, a suitable additional pedestrian crossing facility could be provided for pedestrians crossing the new filter lane.

- 3.3 **Location:** At the roadside generally, but particularly alongside the new roundabout filter lane and to the east of the junction with Downside Road.

Problem: There are some significant level differences.

At this early stage there are no details available concerning vehicle restraint systems / roadside barrier. In the absence of suitable protection, the occupants of errant vehicles are at increased risk if their vehicle leaves the carriageway and collides with an unforgiving roadside feature or crosses down a steep slope.

Recommendation: It is recommended that suitable assessments are carried out and that barriers are provided where necessary.

- 3.4 **Location:** The A38 to the north-east of West Lane.

Problem: The realignment of the carriageway could result in an increased risk of nose-to-tail collisions.

Widening at this point is on the south-east of the A38 and this will increase the curvature of the left-hand bend (for south-west bound traffic). New traffic signals will be provided at West Lane and queuing for these will occur.

If the sightline to these queuing vehicles is insufficient then there is a risk of nose-to-tail collisions occurring.

Recommendation: It is recommended that the forward sightline is sufficient for actual traffic speeds and for the predicted queue lengths.

3.5 **Location:** The footways alongside the A38 and Downside Road.

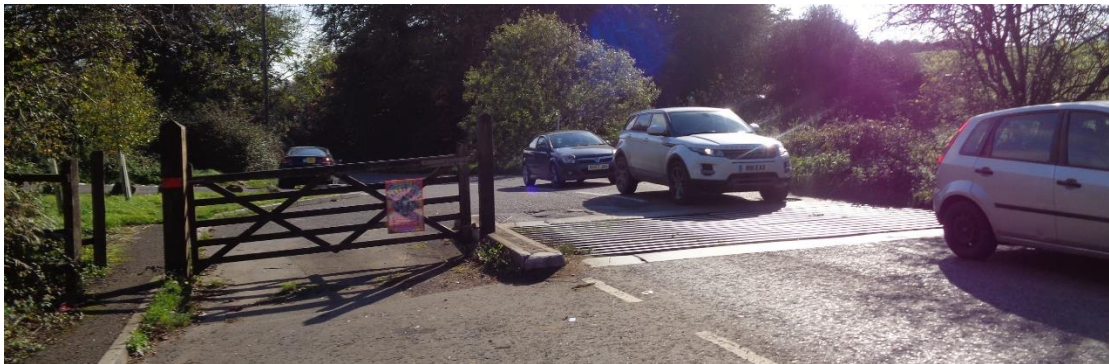
Problem: Cars were observed parked in various locations, obstructing and impeding the passage of pedestrians and cyclists.



The proposal includes a number of improvements to footways and shared cycle/footways. If these facilities are parked on then pedestrians and cyclists will be forced into the carriageway and placed at risk of collision.

Recommendation: It is recommended that explicit and enforceable restrictions are introduced to prohibit such parking.

3.6 **Location:** The cattle grid in West Lane.



Problem: Sufficiency of skidding resistance on the approach to traffic signals.

The cattle grid is approximately 20m from the proposed West Lane Stop Line. At present, drivers approaching the give-way line know that they must yield and their speeds are consequently low. Once signalised, some drivers will approach with a green light ahead of them; their speed may well be higher. If these vehicles need to brake due to the lights changing to red then the cattle grid may not afford sufficient skidding resistance for them to stop safely.

Recommendation: It is recommended that the sufficiency of the skidding resistance is assessed and that it is improved or that the cattle grid is moved further from the junction as necessary.

3.7 **Location:** The junction of West Lane with the A38.

Problem: There is no provision for pedestrian crossings across the newly signalised junction at West Lane.

The phasing diagram shows that there will be either a left-turn in, or a left-turn out, under all conditions. Pedestrians wishing to cross West Lane must therefore always do so in potential conflict with traffic that has a green light. Similarly, the northbound lane of the A38 will always show a green light and there is no provision for this pedestrian crossing movement.

Recommendation

It is recommended that suitable pedestrian provision is included for the crossings of the A38 and West Lane, possibly including a pedestrian refuge.

3.8 **Location:** General.

Problem: It is not clear which footways are shared-use.

Some footways are shown as 3.5m wide whereas others appear to be narrower. If provision is unclear, discontinuous or too narrow then there is a risk that vulnerable road users will be placed at unnecessary risk within the carriageway.

Recommendation: It is recommended that shared cycle/footways should form continuous routes and that they should be sufficiently wide and clearly signed.

3.9 **Location:** The south-west bound bus stop layby.

Problem: Buses overhanging the carriageway.

This bus lay-by includes a raised kerb for easier embarkation and disembarkation. However, because there is an access at this point, the raised kerb has been placed forward in the narrow lay-by such that the front offside of buses are likely to overhang the running lane.

This existing feature is not modified by the proposals. However, an additional lane is to be provided past it and there is consequently a risk of vehicles being 'squeezed' and colliding side-on when passing a bus at this bus stop.

Recommendation: It is recommended that the bus stop is enlarged or otherwise modified so that stationary buses do not overhang the running lane.

3.10 **Location:** The A38 to the south of West Lane.

Problem: Traffic from West Lane that wish to turn right may undertake u-turns.

The proposal involves prohibiting the right-turn from West Lane. There is an alternative route involving a u-turn 350m to the south at the airport roundabout. However, if there are queues then some traffic may attempt u-turns at the Downside Road signals or at other unsuitable locations.

Similarly, the prohibition of the right-turn may result in traffic being displaced to less suitable or less safe routes elsewhere (e.g. Currells Lane, Newditch Lane or Dial Lane).

Recommendation: It is recommended that an assessment of likely delays and the potential for unsuitable u-turning and traffic displacement is undertaken, with suitable mitigation measures developed as appropriate.

3.11 **Location:** The junction of West Lane and the A38.

Problem: The traffic island within the A38 and to the west of the junction may not be large enough to accommodate the proposed signal heads.

It is noted that the drawings considered are marked as 'Do Not Scale'. Nevertheless, this traffic island appears to be too narrow to accommodate the required signal heads. If there is insufficient clearance then there will be a risk of the signals being struck by passing traffic.

Recommendation: It is recommended that an assessment is undertaken to ensure that all signals can be accommodated with sufficient clearance.

3.12 **Location:** General.

Problem: Sufficiency of street lighting provision.

The scheme includes the addition of pedestrian phases, encouraging more cycling, more bus passengers and possibly more ad-hoc pick up / drop off activity on the wider A38 carriageway. Also, at present, neither Downside Road nor West Lane have lighting. If the lighting is insufficient then the increased pedestrian and cyclist activity could result in increased collision risk during darkness.

Recommendation: It is recommended that sufficient street lighting is provided.

3.13 Location: The junction of West Lane and the A38.

Problem: The forward sightline to the nearside primary signal head may not be sufficient.

Although the Audit Team were not aware of any departures from standards, it appeared that it will be necessary to clear extensive nearside vegetation in order to ensure sufficient forward visibility from West Lane to the nearside primary signal. If this visibility is not available then there will be a risk of vehicles overshooting the stop line and colliding with traffic on the A38.

Recommendation: It is recommended that sufficient clearance of vegetation and other roadside objects is undertaken to ensure that necessary sightlines are achieved.

4 Auditor Statement

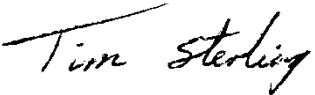
I certify that this audit has been carried out in accordance with HD19/15.

AUDIT TEAM LEADER

Name: **Tim Sterling**

Position: Partner & Principal Road Safety Audit Consultant

Organisation: Sterling Road Safety LLP
13 Bushy Park, Bristol, UK.
www.sterlingroadsafety.co.uk

Signed: 

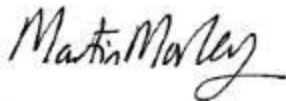
Date: 23rd October 2018

AUDIT TEAM MEMBER

Name: **Martin Morley**

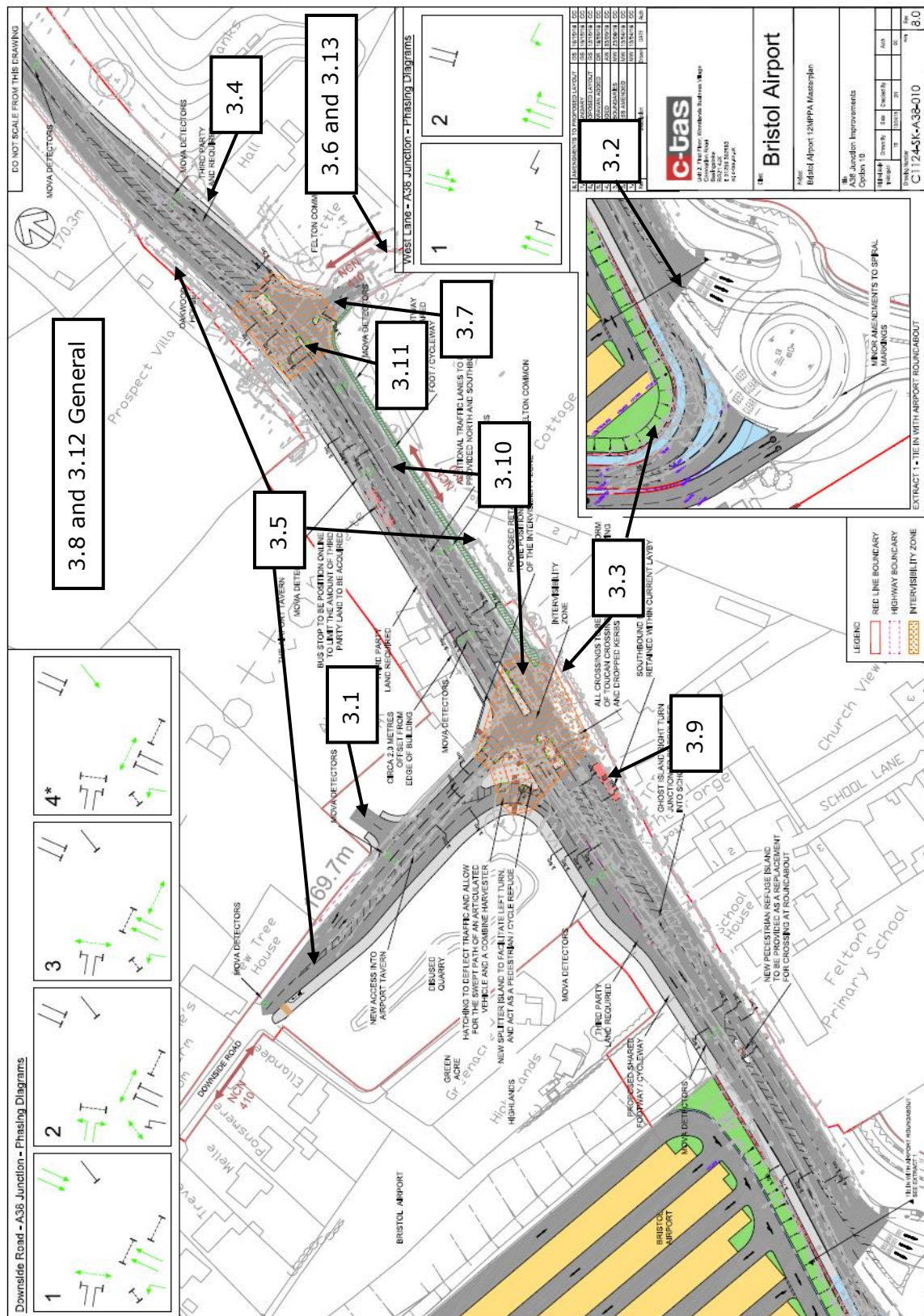
Position and Organisation: Partner at Road Safety Initiatives LLP acting as Consultant to Sterling Road Safety LLP

Signed:



Date: 23rd October 2018

A.1 Appendix A – Location Plan



A.2 Appendix B – Designers Response

Scheme: A38, Lulsgate Bottom, North Somerset - Proposed Carriageway Widening and Signals Works.

Auditors: Tim Sterling (Team Leader) & Martin Morley (Team Member).

Date Audit Completed: 23rd October 2018.

This response is to a Stage 1 Road Safety Audit to the design standard detailed within HD19/15 of Volume 5, Section 2, Part 2, of the Design Manual for Roads and Bridges, as detailed by Highways England.

Problem No. in Safety Audit Report	Problem Accepted (Yes/No)	Recommended Measure Accepted (Yes/No)	Alternative Measure (Detail Description)
3.1	Yes	Yes	It is agreed that the gradient will be minimised where possible to ensure that sufficient sightlines and to ensure that traffic emerges onto Downside Road at a suitable level. Details of proposed levels will be confirmed as part of the detailed design process and provided to the auditor for consideration as part of a future Stage 2 Road Safety Audit. In addition to this, the proposed visibility splays to the left and right at this junction have been added on to Drawing C1124-SK-A38-010 Rev 9.0 as additional information. The visibility splays shown have been based on the recorded 85th percentile speeds recorded in the east and westbound direction, using the visibility splay calculator set out within

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			Manual for Street (MfS). The visibility splays have also been calculated on the observed vehicles speeds and have not had a wet weather reduction applied as detailed within the Department for Transport TA 22/81 "Vehicle Speed Measurements on All Purpose Trunk Roads". Therefore, the visibility splays are greater than those required, if a wet weather reduction was applied in accordance with guidance.
3.2	Yes	Yes	Due to the new left turn filter lane exiting Bristol Airport, and the limited land constraints it is not possible to realign the existing informal crossing point across the A38 (north) arm of the roundabout. As such it is proposed that the current tactile paving, dropped kerbs and central footway within the splitter island will be removed. It is considered that the addition of the new filter land and associated additional traffic lane will act as an addition form of severance to discourage pedestrians from crossing the A38 in this location. Additional pedestrian guard railing will be provided to prevent pedestrians attempting to crossing in this location. In addition to this, it is proposed that adequate signage will be provided to direct pedestrians to a new informal pedestrian crossing 85 metres to the south if they wish do not wish to cross the A38 at the signalised crossing at the A38 / Downside Road junction. The proposed new pedestrian refuge island is considered to be located in a suitable location, as there is no significant developments / amenities directly opposite the current crossing that would generate the pedestrian footfall.
3.3	Yes	Yes	The significant level differences to the east of the junction with Downside Road are not proposing to be altered as part of the proposals, and the review of the accident data within Section 2 of this report has not

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			highlighted any accidents that are caused due to these changes in levels. The proposed changes alongside the new roundabout filter lane, it is proposed that a vehicle restraint barrier / roadside barrier will be provide along the back edge of the pedestrian footway at the top of the proposed embankment, as shown on Drawing C1124-SK-A38-010 rev 9.0. Details of proposed levels and protection barriers will be confirmed as part of the detailed design process and provided to the auditor for consideration as part of a future Stage 2 Road Safety Audit.
3.4	Yes	Yes	Noted. A review of the Automatic Traffic Counts has indicated the actual 85th percentile speeds for the southbound approach is 41.2 miles per hour. Based on the SSD calculations set out within DMRB this equates to a SSD of 106.6 metres, which has been shown on the on Drawing C1124-SK-A38-010 Rev 9.0 to demonstrate that these sightlines can be achieved.
3.5	Yes	Yes	Noted. Along the A38, there are double yellow lines parking restrictions on both sides of the carriageway. The double yellow line restriction indicates that parking is prohibited. The restriction imposed by these markings applies from the centre of the road to the highway boundary on the side of the road that the marking is laid, as set out within Chapter 5 of the Traffic Signs Manual (TSM). From the information provided by North Somerset Council, the highway boundary where this parking was observed is up to the edge of the Forge Motel Building. However, it must be noted that where this parking is occurring there are faded marking indicating a stretch of parking bays. Based on a legal

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			standing it is considered that the design of this bay does not conform to the requirements set out in the TSM. Therefore, there is an element of confusion if these parking bays are currently exempt, as this may be a historic arrangement. In either circumstance parking outside of this parking bay (as observed), either completely or partly outside of the visible marking enforcement is possible. As the Civil Parking Enforcement authority in this area, North Somerset Council have the powers to issue a penalty charge notice to drivers that park carelessly in breach of traffic regulations. Solving this existing issue through design has not been possible, as the details of the bay yet to be confirmed by NSC. However, with this in mind and through the wider improvements a new shared footway / cycleway has been proposed on the western side of the A38 in order to provide an alternative route to Bristol Airport with a consistent width of 3.0 metres. With regards to the parking observed along Downside Road, it is proposed that new double yellow line markings are provide alongside both sides of the road along the extents of the improvements. The enforcement of this new restriction will be the responsibility of NSC.
3.6	Yes	Yes	Noted. It is proposed that anti-skid surfacing on approach to the proposed West Lane stop line. Due to land constraints it is not possible to relocate the cattle grid. Therefore it is proposed that additional anti-skid markings will be provided over the standard requirements to compensate for the position of the cattle grid. Details of proposed anti-skid surfacing will be confirmed as part of the detailed design process and provided to the auditor for consideration as part of a future Stage 2 Road Safety Audit.

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3.7	Yes	Yes	Noted. A pedestrian crossing has been shown across the A38 (north) arm of the junction, utilising the proposed traffic island. Due to the limited demand for pedestrians crossing the A38 in this location, it is proposed that the pedestrian crossing over the northbound traffic lane will only operate on a demand. The junction staging diagram has been altered to reflect this.
3.8	Yes	Yes	For confirmation, a pedestrian / cycle facility diagram has been included on Drawing C1124-SK-A38-010 Rev 9.0. In addition to this, additional labels and ladder and tramline tactile paving have been added to denote the shared footway / cycleway facilities.
3.9	Yes	No	Noted. As part of the detailed design, additional consultation is required with the bus operators to determine the optimum solution for the lay-by to be taken forward.
3.10	Yes	Yes	The associated impacts for the no right turn restriction at West Lane are to be completed by Peter Brett Associates as part of the Transport Assessment for the Hybrid Planning Application, for which the A38 Improvement scheme is an element of. Based on the results of the 2018 traffic surveys only 11 and 13 vehicles currently turn right from West Lane northbound along the A38 in the AM and PM peak hours respectively. For these users to continue to travel north along the A38, they will need to divert and u-turn at the Bristol Airport roundabout, if they do not decide to re-assign to an alternative route from the route origin to avoid to do so. The design of both the left turn from West Lane, and the southbound approach at the A38 / Downside Road junction has been designed to

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			restrict as much as possible the opportunity for drivers to perform prohibited movements.
3.11	Yes	Yes	The width of the traffic island is at its widest point 1.5 metres, this is sufficient width to accommodate a 2 aspect signal head with backing boards. It is proposed that this signal will act as the primary head for the right turn into West Lane. With the primary head signals for the northbound ahead movement being provided on the nearside. It is proposed that to reduce confusion a double 3-aspect signal head will be provided on the refuse island opposite the stop line to act as the secondary signals. Details of proposed the proposal traffic signals will be confirmed as part of the detailed design process and provided to the auditor for consideration as part of a future Stage 2 Road Safety Audit.
3.12	Yes	Yes	Details of proposed lighting will be confirmed as part of the detailed design process and provided to the auditor for consideration as part of a future Stage 2 Road Safety Audit.
3.13	Yes	Yes	The approach to the West Lane traffic signal is subject to the national speed limit (60 miles per hour). A speed survey has not been undertaken to determine the actual 85th percentile speed in this location. Based on the Table 3 within TD 9/93, the desirable minimum stopping sight distance required for the forward visibility and visibility to the existing give way line should be 215 metres. However, West Lane is a semi-rural road with tight bends and restricted visibility. As such, within the existing constraints of the highway boundary the actual achievable forward visibility around the bend approaching the current give way is only 68 metres. This equates to a maximum travelling speed of approximately 30.5 miles per hour. As it is outside the means of this proposal to acquire additional land

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			along West Lane. It is not possible to achieve the increase the slight line distance as part of the proposal. Therefore, in order to mitigate this issue, and increase the awareness to driver about the approaching new traffic signals. It is proposed that: • All vegetation is cut back to edge of the highway boundary in order to maximize visibility around approaching bend. • Additional anti-skid surfacing to be provided on approach to the stop line. • Discussion with NSC over the potential to relocate the change of speed limit further along West Lane. • Provide adequate signage indicating tight bend, and new road layout ahead. Details of proposed these mitigation will be confirmed as part of the detailed design process and provided to the auditor for consideration as part of a future Stage 2 Road Safety Audit.
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Principal Engineer's / Audit Project Sponsor's Statement:

Road Safety Audit for: A38, Lulsgate Bottom, North Somerset - Proposed Carriageway Widening and Signals Works.

I certify that I have considered the items raised in the Stage 1 Road Safety Audit Report and I am content to accept all of its recommendations except for the ones listed above. I have stated my reasons for not accepting them and I seek the Chief Engineer's endorsement of my proposals.

..... Date.....

Principal Engineer

Chief Engineer's / Director's Decision:

I accept these proposals by the Principal Engineer.

..... Date.....

Chief Engineer