



**Bristol Airport Expansion to 12 million  
passengers per annum**  
**The Bristol Airport Limited (Land at A38 and  
Downside Road) Compulsory Purchase Order  
2020**

**Proof of Evidence of Scott Witchalls**

On behalf of **Bristol Airport Limited**



Project Ref: 332110139/5502 | Rev: - | Date: June 2021

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## Document Control Sheet

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# 1 Introduction

## 1.1 Qualifications and Experience

- 1.1.1 My name is Scott Witchalls. I hold a Master of Science degree in Transportation Planning and Engineering from the University of Southampton. I am a Chartered Member of the Institute of Logistics and Transport, a Member of the Institution of Highways and Transportation, and a Member of the Transport Planning Society. I have over thirty-five years' experience in the field of transportation planning and engineering.
- 1.1.2 I have appeared as an expert witness at numerous Public Inquiries including CPO Inquiries, at the High Court, Court of Arbitration, Examinations in Public and in front of Parliamentary Committees.
- 1.1.3 I am a Director at Stantec UK. Stantec is a global multi-disciplinary development and infrastructure consultancy that advises public and private sector clients with respect to planning, design and construction of infrastructure and land development projects including airports. Stantec provides consultancy services in all areas of transportation planning and engineering.
- 1.1.4 I have worked on a variety of major transport infrastructure and land development projects, many of which have required the forecasting, assessment of impacts and design of transport and traffic management solutions. These include the major development projects at Wichelstowe, Swindon (4500 homes, 1Msq.ft employment), Ebbsfleet and Kent Thameside (international station, 30,000 homes and 50,00 jobs), Krakow hub regeneration (4.5Msq.ft station interchange, retail and commercial development), design of the Reading station train/bus interchange areas catering for over 15 million passengers per annum and the complex M4 Junction 11 upgrade scheme. I have also undertaken detailed assessments of the operation of airport roads and interchanges at Luton and Heathrow airports, having provided expert evidence in the case of *Arriva the Shires vs LLAOL* and *Purple Parking Limited and Meteor Parking Limited v Heathrow Airport Limited*.
- 1.1.5 I am familiar with the operation of Bristol Airport and its surface access provision, having been responsible for the preparation of the Transport Assessment Report that accompanied the application for expansion to 12 mppa. I have experience of airport and forecourt capacity and operations.
- 1.1.6 I was involved in early dialogue and throughout the planning process with North Somerset Council (NSC) and Highways England (HE) officers.

- 1.1.7 In undertaking my analysis for the purposes of preparing the transport assessment, transport assessment addendum and this expert report, I have been assisted by specialist technical teams at Stantec under my supervision.

## 1.2 Context of this Evidence

- 1.2.1 Bristol Airport Limited (BAL) made The Bristol Airport Limited (Land at A38 and Downside Road) Compulsory Purchase Order 2020 ('the Order') on 15 September 2020 under the provisions of the Airports Act 1986 (the Airports Act).
- 1.2.2 The Order is required to support BAL's planning application (reference 18/P/5118/OUT) for development to increase the passenger capacity at Bristol Airport from 10 million passengers per annum (mppa) to 12 mppa (the Appeal Proposal), which is the subject of an appeal (reference APP/D0121/W/20/3259234) against the refusal by North Somerset Council (NSC). Specifically, the Order is needed to acquire the land necessary for a proposed improvement to the A38 to accommodate an additional 2 mppa (the A38 Highway improvement scheme or scheme); this scheme forms a component of the Appeal Proposal.

## 1.3 Scope of Evidence

- 1.3.1 In this evidence, I deal with the transport and highways matters relating to the Order, as follows:
- there is a clear need for the scheme (**Section 2**);
  - the scheme cannot be delivered without third party land and is the optimum layout (**Sections 3 to 5**);
  - objections to the Order pertaining to highways matters cannot be sustained (**Section 6**); and
  - confirmation that the Order is justified (**Section 7**).
- 1.3.2 To avoid duplication, where appropriate I draw upon, and cross refer to, my evidence for the Planning Appeal (see Planning Appeal Document BAL/4/2). This annex should also be read alongside the Proofs of Evidence of Mr Melling (see Planning Appeal Document BAL/7/2), who deals with the planning aspects for the proposed highways improvements, and Mr Church, who deals with the acquisition of the Compulsory Purchase Order (CPO) land.
- 1.3.3 Overall, I conclude that there are no sound reasons as to why planning permission for the Appeal Proposal, including the proposed A38 highway improvement scheme (the Scheme), should be withheld, and that there are no objections pertaining to highway matters which mean that the Order should not be confirmed.

## 2 Need for the Scheme and Operational Capacity

### Passenger Demand Rationale

- 2.1.1 At an early stage in developing proposals for the expansion of Bristol Airport to accommodate 12 mppa, the need for improvements to the A38 between the main Bristol Airport access roundabout and West Lane to accommodate additional traffic generated by the Appeal Proposal was identified. This was informed by the traffic forecasts undertaken for the 10mppa application (09/P/1020/OT2), 2018 traffic surveys undertaken as part of the 12mppa application and preliminary junction testing.
- 2.1.2 The need for the Scheme is generated by the expected growth in passenger numbers at the Airport, and the resulting impact of those passengers and employees using the highway network, as well as additional background traffic resulting from growth in population, employment and new development in the area. There is no rail access at the Airport, therefore all passengers make use of the road network as their means of surface access (last mode), including those substantial numbers travelling by public transport on buses and coaches. Public transport use, and bus and coach service provision are assessed in detail in my Planning Appeal Proof of Evidence (Section 6). This shows a reliance on the A38 junctions with West Lane and Downside Road for the majority of public transport services to the Airport (Figure 6.1).
- 2.1.3 In 2019, the Airport handled 8.9 mppa, making it the fourth largest regional airport in the UK. Demand is expected to be strong over the next decade, as indicated in Mr. James Brass's evidence (see Planning Appeal Document BAL/1/2). At the time of the Application, the forecasts prepared by BAL and independently verified by Mott MacDonald indicated that passenger demand would reach the existing 10 mppa by 2021, increasing to 12 mppa by 2026.

### Effects of COVID-19

- 2.1.4 The onset of the global COVID-19 pandemic has significantly impacted the aviation sector and passenger throughput at the Airport has temporarily fallen. However, it is expected that demand will return as travel restrictions are lifted, passenger confidence returns and the economy recovers from the pandemic. Global passenger forecasts suggest that, internationally, traffic is expected to return to pre-pandemic levels by 2024 with recovery in the short haul market likely to be faster (see Proof of Evidence of Mr. James Brass on Air Traffic Forecasts included in Planning Appeal Document BAL/1/2).
- 2.1.5 Due to the COVID-19 pandemic, its impact on the aviation sector and temporarily suppressed passenger demand at the Airport, York Aviation Limited (**YAL**), on behalf of BAL, has updated

the passenger demand forecasts for the Appeal Proposal. It uses a forecast model that combines a 'bottom up' market intelligence driven assessment and an econometric model of demand growth and passenger behaviour, which includes a probability-based approach to modelling uncertainty in the inputs to the econometric model.

### Revised Forecasts

- 2.1.6 As set out in the Environmental Statement Addendum (ESA) submitted to the Council on 30 November 2020 (see Planning Appeal Document CD2.20.1) as part of the Planning Appeal documentation, the updated passenger demand forecasts, dealt with in Mr. James Brass's Proof of Evidence (see Planning Appeal Document BAL/1/2), have considered a range of different cases for future growth at the Airport. The 'core' case tested in the Transport Assessment Addendum (TAA) submitted post-refusal of the planning application (see Planning Appeal Document CD2.20.4), which has been taken forward for assessment, indicates that passenger demand will reach 10 mppa in around 2024, increasing to 12 mppa in 2030. The updated passenger demand forecasts also identify a reasonable 'faster growth' case and 'slower growth' case for sensitivity testing. The 'faster growth' case sees the Airport reach 10 mppa in 2022 and 12 mppa in 2027. The 'slower growth' case sees 10 mppa reached in 2028 and 12 mppa in 2034.
- 2.1.7 Overall, the updated forecasts demonstrate that there remains demand for additional capacity at the Airport despite the short-term impacts of the COVID-19 pandemic and, therefore, the need for the Appeal Proposal and, therefore, the A38 highway improvement scheme, is unaffected. The 'core' case indicates that the Airport will reach 10 mppa in around 2024 and 12 mppa in around 2030. This suggests that the Airport will need to provide greater operational capacity from around 2024. However, in all growth cases, the Order Land is required to allow delivery of the A38 Highway improvement scheme within three years of the Order being confirmed, since the junction was already shown to be at capacity in some areas in the 2018 base year (see 2.1.10 below).

### Junction Capacity Analysis

- 2.1.8 This section summarises the results of the junction capacity analysis carried out as part of the Transport Assessment submitted as part of the planning application (see Planning Appeal Document CD2.9.1), TAA submitted post-refusal (see Planning Appeal Document CD2.20.4) for the Core Scenario, which considers the following cases:
- 2030 Baseline (8.6mppa), growthed using TEMPro rates.
  - 2030 Reference Case (10mppa)
  - 2030 Test Case (12mppa)

2.1.9 This analysis was carried out for three highway network peak periods:

- AM peak between 08:00 and 09:00;
- IP between 13:00 and 14:00; and
- PM peak between 17:00 and 18:00

### Existing Layout

2.1.10 Junction capacity analysis set out in the TA submitted with the planning application (see Planning Appeal Document CD2.9.1) demonstrated that the junctions operate over capacity in PM peak period in the base year (2018), and will operate over capacity in the AM, PM and airport all peaks in the future under all scenarios considered. This analysis was repeated in the TAA (see Planning Appeal Document CD2.20.4) to reflect the updated passenger growth forecasts provided by YAL and mode share assumptions that form part of the current proposals.

2.1.11 The existing A38 junction with Downside Road and West Lane (numbered J4a and 4b in the TAA included in Planning Appeal Document CD2.20.4) are predicted to operate over capacity in the 2030 Baseline, 2030 Reference Case and 2030 Test Case without improvement. The junction testing results are summarised below in **Tables 2.1** and **2.2** showing negative practical reserve capacity at the existing Downside Road traffic signals and ratio of flow to capacity well above 1 at the existing West Lane priority junction (these are copies of **Table 5.4** and **5.5** of my Planning Appeal evidence (see Planning Appeal Document BAL/4/2).

Table 2.1 A38 / Downside Road Existing Layout - Capacity Results Summary

	Arm	2030 Baseline			2030 Reference Case			2030 Test Case		
		DOS	Queue	PRC	DOS	Queue	PRC	DOS	Queue	PRC
AM	A38 (S)	93.4%	48.4	-6.5	94.8%	52.5	-8.8	98.2%	64.9	-12.1
	Downside Road	94.0%	18.3		97.9%	20.9		99.3%	22.3	
	A38 (N)	95.9%	48.9		96.9%	52.4		100.9%	68.7	
IP	A38 (S)	80.1%	24.9	-0.6	89.0%	35.5	-10.9	96.5%	53.8	-20.7
	Downside Road	90.0%	12.7		99.5%	17.9		108.6%	27.5	
	A38 (N)	90.6%	34.0		99.8%	59.4		108.0%	110.1	

	Arm	2030 Baseline			2030 Reference Case			2030 Test Case		
		DOS	Queue	PRC	DOS	Queue	PRC	DOS	Queue	PRC
PM	A38 (S)	101.6%	126.8	-27.8	109.1%	198.8	-41.6	118.0%	294.1	-57.4
	Downsi de Road	114.9%	43.3		127.3%	63.1		140.3%	85.7	
	A38 (N)	115.0%	221.9		127.4%	335.1		141.6%	465.4	

DOS – Degree of Saturation, PRC – Practical Reserve Capacity

Table 2.2 A38 / West Lane Existing Layout - Capacity Results Summary

Time Period	Arm	2030 Baseline		2030 Reference Case		2030 Test Case	
		RFC	Queue	RFC	Queue	RFC	Queue
AM	West Lane (Left Turn)	0.96	7.4	0.96	20.2	1.82	64.9
	West Lane (Right Turn)	0.81	1.7	0.81	2.4	1.64	4.5
	A38 (S)	0.48	0.9	0.48	1.0	0.53	1.2
IP	West Lane (Left Turn)	0.65	1.8	2.34	72.1	Inf	141.3
	West Lane (Right Turn)	0.48	0.8	2.21	7.1	Inf	12.1
	A38 (S)	0.44	0.8	0.54	1.2	0.64	1.8
PM	West Lane (Left Turn)	Inf	175.5	Inf	342.3	Inf	462.8
	West Lane (Right Turn)	Inf	5.9	Inf	10.0	Inf	12.2
	A38 (S)	0.8	4.0	0.98	15.4	1.23	137.8

RFC – Ratio of Flow to Capacity

2.1.12 Although the junction testing applied in the TA and TAA is based on robust, worst case forecasts (as I explain in Section 5 of my Planning Appeal evidence included in the Planning Appeal Document BAL/4/2), the need for an improvement at this junction is clear since it is a key part of the strategic network accessing the Airport and is expected to operate well over capacity irrespective of whether the development goes ahead, as evidenced in **Tables 2.1 and 2.2**.

2.1.13 The improvement is necessary to both improve access for pedestrians and cyclists, and to create additional highway capacity to reduce delays and congestion for all traffic, including the significant number of bus and coach services that serve the Airport.

2.1.14 In my opinion, the above analysis, based on a range of forecast scenarios, demonstrates a compelling case in the public interest to deliver an improvement scheme. NSC officers have always supported the need for an improvement, have been involved in the scheme development, and have since included the proposals in their own A38 MRN scheme.

## Improvement Scheme

- 2.1.15 The proposed A38 Highway Improvement scheme involves widening the A38 carriageway and for approximately 520 metres running north from the main airport roundabout access to a point about 130m north of the West Lane junction. It is proposed to widen the A38 from 1 to 2 lanes through this whole section, widen Downside Road to 2 lanes approaching the junction, signalise the West Lane junction, provide a new pedestrian/cycle path between the airport roundabout and Downside Road, and provide new pedestrian and cycle crossing facilities at the signalised junctions (Appendix D - Improvement Proposals, Drawing Number C1124-SK-38-010 Rev11.0).
- 2.1.16 The process of developing the scheme to a preferred option is described in Sections 3 and 4 of this evidence. In this section, I provide a summary of the operational analysis of the preferred scheme developed for the same baseline, reference and test cases presented in **Tables 2.1** and **2.2**.
- 2.1.17 The capacity testing results for the improved layout are summarised in Table 2.3 below (a copy of Table 5.6 of my Planning Appeal evidence).

Table 2.3 A38 / West Lane & Downside Road Improvement Scheme - Capacity Results Summary

Table 2.10 A38 / West Lane & Downside Road Improvement Scheme – Capacity Results Summary					
Time Period	Junction	Arm	2030 Test Case		
			DOS	Queue	PRC %
AM	A38 / Downside Road	A38 (S) - Left & Ahead	62.6%	7.2	43.8
		A38 (S) - Ahead	42.6%	6.6	
		Downside Road - Left	59.9%	6.2	
		Downside Road – Right	59.9%		
		A38 (N) – Ahead	57.9%	3.8	
		A38 (N) – Ahead & Left	60.4%	4.2	
	A38 / West Lane	A38 (N) – Ahead	63.8%	7.9	41.1
		A38 (N) – Left	63.8%		
		West Lane – Left	53.3%	5.5	
		A38 (S) – Ahead	41.1%	2.2	
		A38 (S) – Ahead & Right	53.9%	11.0	
IP	A38 / Downside Road	A38 (S) - Left & Ahead	59.5%	7.9	51.3
		A38 (S) - Ahead	43.6%	7.2	
		Downside Road - Left	46.0%	4.0	
		Downside Road – Right	40.8%		
		A38 (N) – Ahead	57.3%	3.6	
		A38 (N) – Ahead & Left	58.9%	3.8	
	A38 / West Lane	A38 (N) – Ahead	75.9%	11.2	18.6
		A38 (N) – Left	75.9%		



Time Period	Junction	Arm	2030 Test Case		
			DOS	Queue	PRC %
		West Lane – Left	51.0%	5.9	
		A38 (S) – Ahead	42.9%	3.2	
A38 (S) – Ahead & Right	60.3%	11.9			
PM	A38 / Downside Road	A38 (S) - Left & Ahead	66.8%	6.0	2.1
		A38 (S) - Ahead	49.3%	5.3	
		Downside Road - Left	78.8%	4.1	
		Downside Road – Right	62.9%		
		A38 (N) – Ahead	82.4%	4.6	
		A38 (N) – Ahead & Left	88.2%	5.2	
	A38 / West Lane	A38 (N) – Ahead	89.7%	14.0	0.4
		A38 (N) – Left	89.7%		
		West Lane – Left	86.7%	8.5	
		A38 (S) – Ahead	48.6%	0.9	
		A38 (S) – Ahead & Right	64.1%	9.0	

DOS – Degree of Saturation, PRC – Practical Reserve Capacity

2.1.18 As can be seen, the improved signalised A38 junction with West Lane and Downside Road is predicted to operate within capacity in the 2030 Test Case scenario (12mppa). The Practical Reserve Capacity (PRC) is predicted to be well above 15% during the AM and IP periods, and between 0.4% and 2.1% in the PM peak period.

2.1.19 It can be seen that maximum queues in the reference case (**Tables 2.1** and **2.2**) are between 20 and over 300 vehicles, whereas in the test case with improvements, queues are reduced to a maximum of 14 vehicles. The proposed A38 Highway improvement scheme will therefore deliver a substantial reduction in queues and delays when compared with the 10mppa reference case scenario without improvement.

2.1.20 As a consequence of the above and as demonstrated in the Environmental Statement submitted as part of the planning application (see Planning Appeal Documents CD2.5.46) and ESA submitted post-refusal (see Planning Appeal Document CD2.20.1), the construction and operation of the scheme will not result in significant environmental impacts but instead will deliver improvements in terms of transport, as set out in Table 12.2 of the document.

2.1.21 The scheme would also deliver safety improvements as a result of the introduction of:

- Controlled pedestrian and cycle crossing facilities across Downside Road and the A38 south of Downside Road, controlled pedestrian crossing facility north of the junction with West Lane. At present there is only one pedestrian crossing point, south of the junction with Downside Road.

- Footway on the northern side of Downside Road, where there is currently no provision or safe crossing point.
- Shared foot/cycleway along the western edge of the A38 between the airport roundabout and Downside Road
- A formalised T-junction access into the Airport Tavern

### A38 Major Road Network Proposals

2.1.22 Furthermore, the A38 Major Road Network (MRN) scheme, a joint venture between NSC and Somerset County Council (SCC) identifies the need for improvements on the A38 between South Bristol Link (Colliters Way) in North Somerset and Edithmead roundabout at junction 22 of the M5 motorway in Somerset, noting that *'This route length has a number of junctions where vehicles regularly experience delays due to congestion plus locations with road safety issues'*.

2.1.23 The MRN scheme, under consultation at the time of writing, specifically identifies the A38 West Lane to Airport Terminal Roundabout as one such location, where improvements are required. An extract of these locations from the MRN consultation website ([West Lane to Airport Terminal Roundabout - Map \(a38mrn-engagement.com\)](https://a38mrn-engagement.com)) is presented in **Figures 2.1** and **2.2** below:

Figure 2.1 – MRN Scheme Extract (A38/ West Lane)

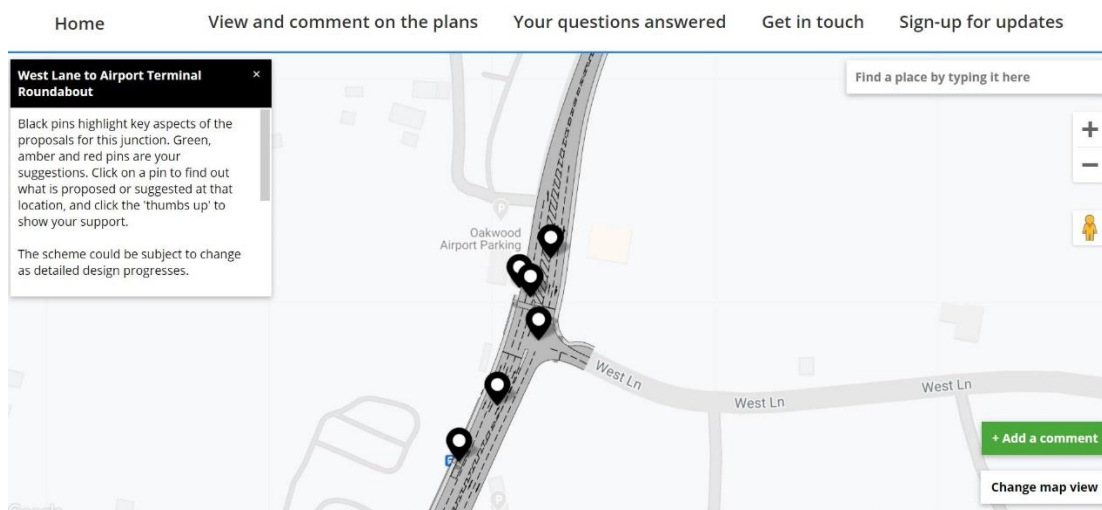
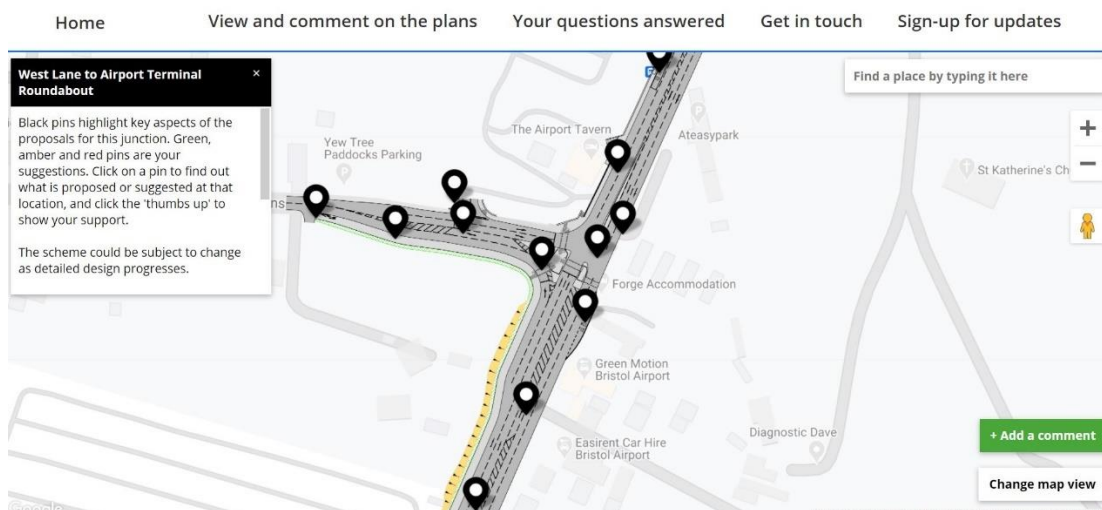


Figure 2.2 – MRN Scheme Extract (A38/ Downside Road)



## Summary

2.1.24 In summary, the scheme is needed due to the following:

- This section of the A38 near the airport is a key part of the strategic road network and is likely to operate well over capacity irrespective of whether the development goes ahead;
- Expected growth in exiting background traffic, including permitted Airport growth will increase queues and delays to unacceptable levels for all road users including public transport;
- Revised air forecasts that reflect the likely effects of the COVID-19 pandemic, which suggest that there is demand for additional capacity at the airport;
- Additional traffic as a result of the development;
- Improved access for pedestrian and cyclists is required

### 3 Options Considered

3.1.1 The development of proposals for the A38 Highway improvement scheme comprised of two stages: first, an appraisal of preliminary options; and second, a review of detailed options. These were developed through discussions with NSC during meetings which took place on:

- 14<sup>th</sup> February 2018, at Bristol Airport: Capita's presentation of options to C-TAS and NSC;
- 7<sup>th</sup> March 2018, at Bristol Airport: presentation of results of initial options to NSC;
- 16<sup>th</sup> April 2018, C-TAS's presentation of more detailed proposal of the two/ three lead options, responding to NSC's initial comments;
- 18<sup>th</sup> September 2018, on site with NSC officers: site meeting where C-TAS took NSC officers through the proposed scheme by walking the site with them and describing changes to the proposals.
- 6<sup>th</sup> February 2019, at NSC Office in Clevedon: meeting to discuss results of site meeting and to discuss process for delivering the project. Discussion was held about funding of the scheme via S278 or S106 process.
- 12<sup>th</sup> April 2019, at NSC Office in Clevedon: meeting to discuss NSC comments on the highway and transport elements of the airport proposals, with interim comments received on 28<sup>th</sup> March 2019.
- 22<sup>nd</sup> May 2019, at WSP Office in Bristol: meeting to discuss the A38 MRN bid and how the airport's scheme fitted into it, as well as additional information required.

3.1.2 In total, 16 possible options were considered which are described in-turn below.

#### 3.2 Preliminary options

3.2.1 A total of six preliminary options were identified as part of the early design process and were subject to discussion with NSC. These are set out in Appendix A. The options identified included:

- Options A and B sought to generate capacity increases by providing two lanes in both directions from Potters Hill to the main Bristol Airport roundabout by removing traffic islands and carriageway widening north of West Lane. However, implementing this change resulted in the absence of a right-hand turning lane into West Lane; following this design, it also remained as a priority junction. Downside Road remained unwidened

and as such the scheme would likely have insufficient capacity for the demand flows. No traffic splitter islands or pedestrian/cycle crossing facilities were able to be provided.

- Option C introduced improvements to the Downside Road area with an enhanced left turn facility. While this improved the capacity at that junction, the removal of the right turn lane into West Lane was not considered to be acceptable due the relatively high level of demand for this turn and lack of suitable alternative routes.
- Option D introduced traffic islands and kept the right turn into West Lane delivering significant potential benefits in terms of capacity and pedestrian/cycle crossing facilities. However, this proposal did require some Common Land.
- Option E introduced a roundabout at the Downside Road junction as an alternative to traffic signal control. This proposal would have required the demolition of the Airport Tavern located along the western side of the A38 approximately 30m north of the junction with Downside Road, along with potentially limited longer-term capacity. No controlled pedestrian / cycle crossings could be accommodated.
- Option F introduced traffic signal control to both junctions, with carriageway widening proposed further west, away from the Common. It also introduced a new right turn from the A38 into Downside Road. While this provided significant improvements, the impact on additional third-party land was extensive with the option also requiring the demolition of the Airport Tavern, Oakwood House and a static caravan, located along the western side of the A38 approximately 45m north of the junction with West Lane. In consequence, it was felt that a reduced scale scheme should be explored to establish whether similar benefits could be achieved with lesser land requirements (i.e. a hybrid of options D and F).

3.2.2 Analysis of the above options led to a clear preference to explore traffic signal solutions with localised widening to meet the need to improve the A38/Downside Road/West Lane junctions.

### 3.3 Detailed options

3.3.1 Following the consideration of the preliminary options, and the objectives to increase capacity whilst minimising (where possible) impacts on third party properties, a further 10 options were subsequently developed. These options sought to minimise land take but increase overall capacity and safety to be able to accommodate 12mppa. They were again subject to discussion with NSC. The detailed options identified are set out in **Appendix B** and were as follows:

- Option 1 provided an all-movement junction at Downside Road, tying it back to a priority junction at West Lane and removing the northbound and southbound bus lay-bys. Access to the Airport Tavern and its car park was relocated to a new all moves junction on

Downside Road to improve safety and capacity (as is the case with all of the detailed options). While the Downside Road junction was predicted to have sufficient capacity, unsatisfactory results were obtained in terms of the following:

- northbound merge, back down to a single lane;
- new bus stop positions;
- only minor changes at the West Lane junction; and
- reduction in priority right turn lane storage on the A38.

This option mainly required land at the Airport Tavern and part of the former quarry located south of Downside Road and west of the A38, and would require at least part demolition of the Airport Tavern.

- Option 2 moved the proposed all movement Downside Road junction with the A38 further south to increase the length of two-lane section on the A38 northbound and enable further southbound widening, before tapering back down to the existing West Lane junction. While this offered potentially significant improvement at the Downside Road junction, the bus stop position on the A38 would still have been too close to Downside Road, only minor changes at the West Lane junction were proposed and the reduction in priority right turn lane storage on the A38 was unsatisfactory. This option mainly required land at the Airport Tavern, passed through the centre of the quarry, and would have required at least part demolition of the Airport Tavern.
- Option 3 introduced traffic signals at West Lane to improve capacity including widening to two full lanes on the A38 southbound approach and section through to Downside Road and a right turn ban out of West Lane. While the Downside Road junction would likely have sufficient capacity, the northbound merge back down to a single lane before West Lane and bus stop position would likely have caused operational and queueing problems. This option mainly required land at the Airport Tavern, part of the quarry, and the Common Land on the corner of the A38/West Lane. This option would still have necessitated at least partial demolition of the Airport Tavern, as well removal/demolition of the static caravan on the Oakwood House land, but only provided one lane northbound on the A38 at West Lane. All further options (4-10) involved widening on the corner of the A38/West Lane thereby requiring the acquisition of some Common Land, and the removal/demolition of the static caravan on the Oakwood House land.
- Option 4 was broadly similar to Option 3 but moved the Downside Road junction further south to increase the distance over which the northbound lanes on the A38 narrowed from two into one, but suffered similar issues to Option 2 and still required at least partial

demolition of the Airport Tavern. This option mainly required land at the Airport Tavern, passed through the centre of the quarry, and required Common Land on the corner of the A38/West Lane.

- Option 5 was broadly similar to Option 4 but introduced some additional widening on Downside Road for left turners and a bus lay-by on the A38 just north of Downside Road to provide two full lanes at this point. Whilst this removed the potential issue of the northbound bus stop location, it only had a single northbound lane at the West Lane junction and still required at least partial demolition of the Airport Tavern.
- Option 6 amended the alignment of the A38, reduced the width of Downside Road (compared with Option 5) and sought to increase taper lengths (from two to one lane on A38 northbound). The concern remained of only a single northbound ahead lane at West Lane on the A38, and the layout still required at least partial demolition of the Airport Tavern and part of the Forge Motel.
- Option 7 was similar to Option 6 but amended the Downside Road junction to align better with the Forge Motel access and reduce the need for demolition.
- Option 8 was designed to overcome the problem of a single northbound A38 lane at the proposed West Lane junction to provide two full lanes in both directions on the A38 through the improved junction, plus a right turn facility into West Lane at the signals. This option would perform well in capacity terms but required at least partial demolition of the Airport Tavern and part of the Forge Motel. In addition, the northbound bus stop position was deemed to be too close the Downside Road signals.
- Option 9 was similar to Option 8 but with the removal of the right turn into Downside Road from the A38. This would require those wishing to make this turn to continue to the Airport northern roundabout and make a U-turn as they do currently. The removal of the right turn lane would have limited impact on operational capacity but avoided the need to at least partly demolish the Airport Tavern.
- Option 10 maintained Downside Road on its existing alignment but with widening on the south side. This minimised impact on the former quarry land and prevented the need to alter access (or partially demolish) to the Forge Motel. As with all other options, a new junction was provided into the Airport Tavern to improve access and safety. Option 10 was taken forward as the preferred option for the A38 Highway improvement scheme.



### 3.4 Rationale for the Selection of the Preferred Scheme

3.4.1 A summary of the detailed options considered and the rationale for selection of Option 10 is set out in Table 3.1.

Table 3.1 Options Selection Summary

Option	Extra Capacity at West Lane Junction	Extra Capacity at Downside Road	2 through lanes on A38 N/B S/B		New Pedestrian/Cycle crossings on A38, Downside Road and West Lane	Permanent Land Required	Property Demolition
1	x	✓	X	X	x	AT, Q (p)	AT
2	x	✓	X	X	x	AT, Q	AT
3	✓	✓	X	✓	x	AT, C, Q (p)	AT, SCV
4	✓	✓	X	✓	✓	AT, C, Q, F	AT, SCV
5	✓	✓	X	✓	✓	AT, C, Q, F	AT, SCV
6	✓	✓	X	✓	✓	AT, C, Q, F	AT, SCV, F
7	✓	✓	X	✓	✓	AT, C, Q, F	AT, SCV
8	✓	✓	✓	✓	✓	AT, C, Q, F	AT, SCV, F
9	✓	✓	✓	✓	✓	AT, C, Q, F	F, SCV
10	✓	✓	✓	✓	✓	AT, C, Q(p)	SCV

(p) – partial area where other options require whole area  
AT – Airport Tavern  
Q – Quarry  
C – Common Land  
SCV – Oakwood House Static Caravan  
F – Forge Motel

3.4.2 It should be noted that all options would deliver a new pedestrian and cycle lane on the western side of the A38 between the Airport roundabout and Downside Road. In addition to



the above, the comments and feedback from NSC officers was taken on board in developing the final Scheme. This is reflected in the design amendments shown on the Scheme drawing (Appendix D)

- 3.4.3 Overall, Option 10 has been selected as the preferred option for the proposed A38 highway improvements due to the benefits it delivers in terms of access and safety, whilst minimising impact on the former quarry land and preventing need to alter access to the Forge Motel.
- 3.4.4 The TAA (see Planning Appeal Document CD2.20.4) therefore tested Option 10 using the latest passenger forecasts provided by YAL, as described in detail in Section 5.4 of my Planning Appeal evidence and summarised in Section 2 of this evidence. As has been demonstrated, Option 10 provides sufficient capacity to accommodate the traffic associated with an additional 2 mppa and delivers safety improvements whilst minimising impact on third party land.
- 3.4.5 In my view, this option represents the optimum layout of those considered by BAL, as it delivers a significant improvement to the A38 that will provide the necessary capacity to accommodate an additional 2 mppa, substantially reducing queueing and delays for all road users and adding and improving pedestrian/cycle facilities. The scheme also provides benefits to bus operators due to reduced and more reliable journey times throughout the day, resulting in enhanced network resilience.
- 3.4.6 It is important to note that NSC officers came to the same conclusion in their consideration of the planning application for the Appeal Proposal. Indeed, officers had approved this scheme layout prior to planning committee, as noted in Issue 10, Highway Works, page 135 of the Officers' Report included in Planning Appeal Document CD4.1a (repeated below):
- 'It is considered that these works would improve traffic flow and safety in the immediate vicinity of the airport and are proportionate mitigation in relation to the projected impacts arising from the proposed development.'*
- 3.4.7 In my view, nothing in the revised forecasting analysis should have altered that position. Importantly, it should be noted that the design of the A38 improvements is not a Reason for Refusal of the planning application for the Appeal Proposal.
- 3.4.8 The resulting land required to deliver the A38 Highway improvement scheme and included within the Order to be compulsorily acquired is shown edged red and coloured pink on the Order Map (**Appendix C**, the **Order Land**). The total area of land to be compulsorily acquired is approximately 9,293 square metres.
- 3.4.9 The Order Land comprises the plots described in Table 3.2 and shown on the Order Map:

Table 3.2 Order Land

Plot	Description and present use of Order Land
1	The western portion of woodland and former quarry (south of Downside Road and west of Bridgwater Road, A38)
2	Woodland and former quarry (south of Downside Road and west of Bridgwater Road, A38) fronting the highways
3	Hardstanding between A38 highway and Airport Tavern building, hedgerow and shrubbery within field to the north of the Airport Tavern
4	Enclosed parking area adjacent to Downside Road and hedgerow (Airport Tavern)
5	Field, hedgerow and shrubbery (Airport Tavern) and public footpath (LA2/37/10/X)
6	Field, hedgerow and shrubbery (Airport Tavern) and public footpath (LA2/37/10/X)
7	Footway (north eastern corner Downside Road)
8	Hardstanding between A38 highway and Airport Tavern building
9	Hardstanding between A38 highway and Airport Tavern building, hedgerow and shrubbery within field to the north of the Airport Tavern
10	Hedgerow (land south of Oakwood House) and public footpath (LA2/37/10/X)
11	Hedgerow (land south of Oakwood House) and public footpath (LA2/37/10/X)
12	Caravan, garden and hedgerow (land south of Oakwood House) and public footpath (LA2/37/10/X)
13	Caravan, garden and hedgerow (land south of Oakwood House) and public footpath (LA2/37/10/X)
14	Garden and hedgerow (Oakwood House)
15	Garden and hedgerow (Oakwood House)
16	Grassed verge footway and shrubbery (north west of Felton Village Hall and east of Bridgwater Road, A38)
17	Grassed verge and footway (north west of Felton Village Hall and east of Bridgwater Road, A38)
18	Grassed verge footway and shrubbery (west of Felton Village Hall and east of Bridgwater Road, A38)
19	Grassed verge footway and shrubbery (west of Felton Village Hall and east of Bridgwater Road, A38)
20	Grassed verge footway and shrubbery (south west of Felton Village Hall and east of Bridgwater Road, A38)
21	Common land comprising grassed verge and footway on the corner of Bridgwater Road A38 and West Lane
22	Carriageway (east of Bridgwater Road, A38 leading to Lilac Cottages) and verge (east of Bridgwater Road, A38)

3.4.10 In order to ensure that the Scheme can take place in a timely manner to allow delivery of the scheme, I believe it is clear that it will be necessary for BAL to compulsorily acquire the Order Land, albeit with a continued commitment to seek to acquire the interests by agreement. This is discussed further in the CPO evidence of Mr. Henry Church.

## 4 Specific Design Considerations

### 4.1 Scheme Description

- 4.1.1 BAL is proposing to undertake a significant improvement of the A38 between the main airport access road and West Lane. The detailed scheme drawing is included as **Appendix D** (Drawing Number C1124-SK-38-010 Rev11.0).
- 4.1.2 The main A38 carriageway over the length of the scheme will be increased in width to allow two through lanes to be provided on each carriageway. The widening will be mainly undertaken on the western side of the road providing an overall width varying between c14.5m and 20.5m. A new shared pedestrian/cycleway has also been added to the western side of the road of c 3.5m width.
- 4.1.3 All traffic lanes are provided at a minimum of 3.0m in width, widening to 3.5m where possible. To the south of Downside Road on the A38, the nearside lane is wider (3.9m) to allow more width for cyclists travelling up the incline to be passed.
- 4.1.4 The improvements taper back to join the existing carriageway some 130m beyond West Lane. The existing left turn lane from the A38 into Downside Road is replicated in the widened section on the western side of the A38, along with a right turn lane into West Lane at the new West Lane traffic signals.
- 4.1.5 The centre of the carriageway will be hatched or have traffic islands in order to separate traffic flows, as necessary. A new 3.0m ghost island right turn facility will be provided into School Lane from the A38.
- 4.1.6 Downside Road will be widened to two lanes for c.80m prior to the junction with the A38 to provide additional capacity and storage space for two lanes of traffic to queue thereby significantly reducing the length of traffic queues on Downside Road.
- 4.1.7 A new access is to be provided into the Airport Tavern car park from Downside Road to replace the current access from the A38 which does not reflect typical standards for a road of this nature. Direct access to the Airport Tavern forecourt parking and to the main car park access is currently provided along the A38 by means of a dropped kerb all the way along the Airport Tavern frontage immediately adjacent to the traffic signal junction. The rationalisation of this layout as part of the proposals into a single formalised T-junction access from Downside Road provides a safety improvement for all road users.
- 4.1.8 The junction with Downside Road will remain controlled by traffic signals but will be linked to new signals controlling the West Lane junction. The junctions will monitor traffic approaching

the junctions and, using Microprocessor Optimised Vehicle Actuation (MOVA), will adjust the timings to enhance traffic flow and reduce queuing.

- 4.1.9 Traffic will only be able to turn left out of West Lane, while traffic travelling southbound will remain unable to turn right into Downside Road and will continue to double back at the main airport roundabout with the A38. The West Lane traffic surveys undertaken as part of the TA in July 2018 indicate that only between 10 and 20 vehicles make this right turn movement in the peak hours.
- 4.1.10 The existing footway / cycleway will remain on the eastern side of the A38 with a new footway provided north of the West Lane junction. As noted in para 4.1.2, an enhanced footway / cycleway will be provided on the western side of the road between the Airport and Downside Road, with a footway provided for the section north of Downside Road tying in with the existing facility north of West Lane.
- 4.1.11 There is only an existing 'single stage' pedestrian crossing on the A38 just south of Downside Road on the A38. There are no controlled crossing facilities elsewhere on the A38 or on Downside Road or West Lane. New pedestrian and cycle crossing facilities will be provided within the Downside Road junction, by means of a 2 stage crossing of both the A38 and Downside Road with new refuge islands provided. A new 2 stage crossing will be provided north of West Lane on the A38 as well as across West Lane itself. Access will also be maintained to the public footpath which runs along the northern boundary of land at the Airport Tavern towards Lulsgate Bottom.
- 4.1.12 A new northbound bus stop will be provided on the A38 some 90m beyond the junction stoplines. This bus stop is passed by a service approximately once every 8 minutes but only required if a passenger is waiting to board or wishes to alight a service at this stop, so is unlikely to cause disruption to traffic flows. The existing bus layby to the south of Downside Road on the A38 southbound is to be maintained. Again, this stop is used by a limited number of services on an on-demand basis so is unlikely to cause disruption to traffic flows. Analysis of the July 2018 video surveys shows that no buses used the layby during the PM peak period (see results in **Appendix E**).
- 4.1.13 It is proposed to maintain access to the properties on the east side of the A38 (Lilac Cottages, The Forge) as per the existing arrangement.
- 4.1.14 At each of the above new junction configurations, visibility has been checked to ensure that it complies with design standards for the observed vehicle speeds and the necessary land required has been include in the Order, as appropriate. These visibilities are shown on Drawing C1124-SK-38-010 Rev11.0 in **Appendix D**.

- 4.1.15 As is often the case in complex environments such as the A38 where numerous existing frontage accesses and land constraints exist, there are some areas of the scheme where it has not been possible to fully accord with DMRB design Guidance. This arises in areas where, for example, access to existing properties must be maintained, and where it would have been unjustified to acquire land and property for very limited benefit to the scheme layout or design.
- 4.1.16 However, these matters were discussed and agreed with NSC ([Appendix I](#)), and any that may need to be further explored due to potential safety implications picked up as part of the Road Safety Audit process described in Section 4.3.

## 4.2 Drainage

- 4.2.1 The Appeal Proposal includes extensive measures to fully manage flood risk at Bristol Airport, fully meeting the requirements of the NPPF and current flood risk management best practice has been incorporated in the design. These measures will result in no off-site increase in flood risk. Furthermore, improvements to the A38's drainage system are included in the proposals, such as to provide a slight betterment over the existing drainage system. On this basis, the surface water and flood risk assessment contained in Chapter 12 of the ES (see Planning Appeal Document CD 2.5.30) concludes that, with mitigation, the Appeal Proposal will not increase flood risk to offsite receptors.
- 4.2.2 A highway drainage strategy has been developed to ensure that the increased impermeable area will not lead to any increase in discharge of surface water run-off (see Planning Appeal Documents CD2.14.1-2.14.2). A flood risk assessment has also been undertaken (see Planning Appeal Documents CD2.13.1 – 2.13.3), and these demonstrate an overall reduction in run-off rate through the drainage mitigation measures proposed. These measures require land in plots 2, 5 and 6 of the Order. Whilst the overall impermeable area increases, the flow into each attenuation and infiltration area has been reduced. This has been achieved using sustainable drainage techniques by diverting some of the existing run-off into a new attenuation storage area and soakaway in the land south of Downside Road (plot 2) in which the run-off from the new (and some existing) impermeable area will discharge.

## 4.3 Ecological and Landscape Requirements

- 4.3.1 The Scheme has also considered the requirement to protect and enhance the identified bat habitat in the former quarry land, and to provide enhanced landscape and ecological potential. This mainly affects plot 1, as described in Section 5.2

## 4.4 Road Safety Audit and Designers Response

- 4.4.1 In accordance with Design Manual for Roads and Bridges (DMRB) Highways Directive (HD) 19/15 (the appropriate standard at the time), an independent Road Safety Audit (RSA) of the

proposals as they were developed at the time (Drawing C1124-SK-38-010 Rev 8.0) was carried out by qualified road safety auditors, namely Sterling Road Safety LLP (23<sup>rd</sup> Oct 2018, [Appendix F](#)).

- 4.4.2 The auditors were independent of the project design team and none of the Team Members had any involvement with the project. The auditors were: Team Leader - Tim Sterling BEng MCIHT MSoRSA; and Team Member - Martin Morley BSc (Hons), MCIHT, MSoRSA (Certificate of Competency in Road Safety Audit gained in February 2013).
- 4.4.3 As would be expected in a scheme of this nature which involves upgrading an existing corridor, the RSA identified a number of areas in the scheme where potential safety issues may arise and these were considered in the Designers Response report ([Appendix G](#)). This should be read alongside NSC's response to similar points raised by their officers and their accepted position ([Appendix I](#)). Some minor proposed alterations have been incorporated into the scheme or will be developed as part of the detailed design process, as follows:
- New Airport Tavern Access – concern over levels difference and visibility splays. Sufficient land is proposed to be acquired to regrade the access to ensure safe access and sightlines can be achieved.
  - Concern over relocation of pedestrian crossing at the Airport roundabout – this is no longer proposed to be relocated.
  - Concern over level differences to properties on east side of A38 – these are existing level differences, and no changes are proposed in this location. Accident analysis did not show any incidents relating to this. NSC has agreed that these existing accesses do not need to be changed. Any significant level differences at the southern end of the scheme (adjacent to the Airport access roundabout) would be assessed and suitable vehicle restraint system installed, if required.
  - Check requirement of forward visibility on A38 to West Lane in southbound direction. 85<sup>th</sup> percentile speed check undertaken and sight line in accordance with DMRB requirements.
  - Indiscriminate parking alongside A38 blocking footway/cycleway. This is an existing situation where no changes are proposed. Parking enforcement is a matter for NSC where this falls in the public highway as is believed to be the case alongside the Forge. New double yellow lines are proposed where possible (e.g. Downside Road) to reinforce parking restrictions to prevent sightlines being affected. This is agreed with NSC and the proposed draft S106 enforcement contribution could be used to reduce this risk.

- Concern over skidding resistance of cattle grid on West Lane, an existing issue that the scheme can help address. Proposed to introduce high skid resistant surface on approaches on either side to cattle grid.
- No controlled pedestrian crossing on West Lane. Proposed to introduce an 'on demand' crossing signal at this location. At present, no controlled pedestrian crossing is available across West Lane, which represents a safety risk.
- Clarity over pedestrian/cycle lanes and markings for continuity. These have been incorporated into the current design.
- Concern over buses using southbound bus layby overhanging into carriageway. This may require some changes to lining in the final scheme. There is clear width of c.7m at this point plus a 3m hatched area, and very few buses stop at this location.
- Right turn ban out of West Lane could lead to abuse. Very low flows undertake this movement (13 vehicles in the AM and 9 vehicles in the PM, as observed in the traffic surveys carried out in 2018). Improved layout will mean U-turn via Airport roundabout will not add to delays. Island aligned and extended to further prevent abuse.
- Check width of West Lane right turn island for traffic signals. Confirmed island could accommodate primary signals within 1.5m width, subject to detailed design and stage 2 RSA.
- Need to provide suitable scheme lighting. Agreed to be developed as part of detailed design.
- Forward visibility to West Lane signals blocked by vegetation. Need to cut back vegetation acknowledged in addition to checking vehicle approach speeds and actual forward visibility suitable for c 30mph speed.

4.4.4 The above changes are reflected in the submitted design (Rev 11) included in **Appendix D**, and the scheme is considered to resolve the vast majority of points raised in the RSA, improving both capacity and safety at the junction, but with a number of minor points to be picked up at the detailed design stage. All issues can be resolved within the CPO site and red line boundary.

4.4.5 The safety of the scheme was confirmed by NSC officers, as reflected in the Committee Report, Issue 10 Highway Works, page 135 (see Planning Appeal Document CD4.1a).



*'It is considered that these works would improve traffic flow and safety in the immediate vicinity of the airport and are proportionate mitigation in relation to the projected impacts arising from the proposed development. The detailed drawings submitted with the application showing the proposed highway works are acceptable, although some final specifications will need to be agreed before works can commence. This can be controlled by planning condition.'*

- 4.4.6 The above 'final specifications' refer to the detailed design and Technical Approval process where it is common for design refinements to arise e.g. slight amendments to geometries, change of materials, signage specification, etc. These are typically small in magnitude and will not affect the CPO process or planning requirements for the improvements and will not affect (or reduce) the land required for the Order.
- 4.4.7 Once the scheme has been progressed to detailed level, this will be submitted by BAL to NSC for approval prior to construction, as per the draft planning conditions (see Appendix 3 of the CR included in Planning Appeal Document CD4.1a).

#### **4.5 Walking, Cycling and Horse Riding Assessment Review (WCHAR)**

- 4.5.1 In addition to the RSA, a WCHAR (May 2019) was undertaken in accordance with DMRB requirements (**Appendix H**). This explored in detail the existing facilities for pedestrians, cyclists and equestrians in the local area, and provided background information that has been referred to throughout the design process to date and will be a source of reference for the detailed design stage. The report also identified the improvements for vulnerable users provided by the proposed highway scheme.



## 5 Construction Requirements & Order Land Summary

### 5.1 Construction Requirements

- 5.1.1 The scheme has not been developed to a fully detailed design stage as yet, and so there is no fixed construction methodology or programme. However, the majority of the scheme is 'on-line' widening to the western carriageway edge and fairly standard traffic signal installation that can typically be built by means of off-peak localised lane narrowing and some use of temporary traffic signals.
- 5.1.2 It should be noted that along significant sections of the western edge, the existing ground level is lower than the road level, so additional land is required to facilitate the provision of earth embankments and retaining structures. Topographic surveys have been used to establish the need for, and likely extent of such structures. This has been allowed for in both the red line and Order Land in order to ensure that the junction is deliverable.
- 5.1.3 Allowance has also been made in the Order land areas (based on experience of similar highways schemes) to allow sufficient space for works access, site compounds and construction activities to take place. Whilst these may only be needed temporarily, I understand that it is a requirement of legislation to acquire the areas as part of the Order. It is BAL's intent to offer such areas back to their former owners, subject to the retention of any necessary rights (e.g. for diverted utilities) and the agreement of compensation.
- 5.1.4 In addition, utilities searches have been undertaken to establish the location of any existing statutory undertakers plant that may need to be diverted or protected as part of the improvement scheme. In each case, an allowance has been made to enable the creation of revised utility routes away from the main carriageway, as appropriate, and suitable land requirements taken into account in the Order.
- 5.1.5 A Construction Traffic Management Plan will be developed to ensure that any potentially negative scheme impacts during construction can be mitigated. This would typically cover matters such as:
- Access to properties;
  - Treatment of materials;
  - The routing of construction vehicles and management of their movement into and out of the site by a qualified and certificated banksman;
  - Access arrangements and times of movement of construction vehicles (to minimise the impact on the surrounding highway network);

- Details of wheel cleaning / wash facilities to prevent mud, etc. from migrating on to the adjacent highway;
- Contact details for the Site Supervisor responsible for on-site works;
- Travel initiatives for site related worker vehicles;
- Parking provision for site related worker vehicles;
- Engagement with local residents;
- Measures to ensure that all HGVs operating and entering the site are of a minimum of acceptable emission standard;
- Measures to ensure regular fleet maintenance is in place and that construction transport operators are members of schemes such as the Fleet Operator Recognition Scheme (FORS); and
- Measures to ensure construction material consolidation is used so as to ensure the number of vehicles waiting and circulating is reduced as far as possible.

5.1.6 A wider Construction Environmental Management Plan has been prepared (set out Appendix 2B of the ES included in Planning Appeal Document CD2.5.3) to manage any potential adverse environmental impacts during construction and operation.

5.1.7 Should the Appeal Proposal be allowed and the Order confirmed, it is expected that NSC would actually undertake the highway works in its role as Highway Authority, and the above duties would fall to them for the A38 Highway improvement scheme. The proposed mechanism for delivery of the scheme would be in line with Issue 10 'Highway Works' of the Committee Report (see Planning Appeal Document CD4.1a):

*"At this time, it is expected that NSC would carry out the highway works at BAL's expense as soon as is practical. If, however, for any reason the BAL's proposed highway works are not commenced within 3 years post-consent, then its delivery would revert to a 'Section 278' process in which BAL would be responsible for carrying out the highway works to the Council's satisfaction. These scenarios, including the transfer of funds, are set out in the proposed Section 106 legal agreement."*

## 5.2 Order Land Summary

5.2.1 The combined Order land requirements and intended use are summarised in Table 5.1 below. In each case, this shows whether land is required for:

- The permanent scheme (road and associated equipment/signage/lighting/signals/retaining structures, walls, embankments, footway/cycleway, drainage);
- New/replacement access and regrading of ground as necessary;

- Landscaping & replacement features (e.g. wall, post box);
- Environmental mitigation;
- Contractors working space;
- Space for utilities diversions.

Table 5.1 Plot proposed use

Plot No.	Notes / Proposed usage
1	Provide additional space for contractor to construct new road / footway Continued use as a bat habitat through reinforcement works as part of the Integrated/Embedded Landscape, Visual and Ecology Mitigation Masterplan Safe working space around old quarry workings
2	Construction of new carriageway Construction of new footway and cycle track Erection of street lighting and traffic signals Construction of new surface water soak-away Diversion of buried statutory services Soft landscaping following conclusion of construction works
3	Construction of new carriageway Diversion of buried statutory services Construction of new public footway and pedestrian access (both steps and ramp) to The Airport Tavern Construction of structural retaining wall Erection of street lighting, traffic signals and bus shelter Relocation of post box
4	Creation of new junction and vehicular entrance into the Airport Tavern from Downside Road Re-grading of the parking area to accommodate change in level between existing parking area and Downside Road New white lining within property Amendments to existing surface water drainage system (private drainage for property)
5	Foundations for retaining wall Landscaping and associated earthworks Works to existing highway surface water soak away and connections
6	Provide additional construction space for contractor to safely construct new road / footway / retaining wall Undertake changes to existing surface water soak away
7	Construction of new carriageway and footway

Plot No.	Notes / Proposed usage
	Diversion of buried statutory services
8	Construction of new carriageway and footway Diversion of buried statutory services
9	Construction of new carriageway and footway Diversion of buried statutory services
10	Construction of new carriageway Construction of new footway Diversion of buried statutory services Erection of street lighting Provision of new public footpath stile
11	Provide additional construction space for contractor to construct new carriageway / footway Re-grading of earth embankment Creation of new steps for public right of way
12	Construction of new carriageway Construction of new footway Diversion of buried statutory services Erection of street lighting and traffic signals
13	Provide additional space for contractor to safely construct new road / footway Re-grading of earth embankment New fencing as boundary treatment
14	Diversion of buried statutory services Construction of new carriageway Construction of new footway Erection of street lighting and traffic signals Re-provision of stone wall
15	Provide additional space for contractor to safely construct new road / footway Re-grading of earth embankment Re-provision of shrubbery
16	Construction of new carriageway Construction of new footway Diversion of buried statutory services Erection of street lighting
17	Provide additional construction space for contractor to safely construct new road / footway Provide additional space for service diversions

Plot No.	Notes / Proposed usage
18	Construction of new carriageway Construction of new footway Diversion of buried statutory services Erection of street lighting
19	Construction of new carriageway
20	Construction of new carriageway Construction of new footway Diversion of buried statutory services Erection of street lighting and traffic signals
21	Construction of new footway Diversion of buried statutory services Construction of new carriageway Erection of street lighting
22	Provide additional space for contractor to safely construct new carriageway / footway Provide additional space for service diversions Upgrading of street lighting, existing traffic signals and related equipment

## 6 CPO Objections

### 6.1 Introduction

6.1.1 This section of my evidence summarises comments raised by objectors, along with my responses to these. BAL received 32 objections to the CPO, of which 9 related to transport and traffic issues. All remaining objections are dealt with in the CPO Proofs of Evidence of Mr. Alex Melling (see Planning Appeal Document BAL/7/2, Appendix C) and Mr. Henry Church.

6.1.2 Transport and traffic objections broadly concern the following themes:

- The Appeal Proposal being contrary to planning policy;
- Traffic impacts;
- Impacts on local residents regarding access;
- Lack of rail or motorway link
- Safety of Airport Tavern access
- Impact on the A38 MRN project

6.1.3 Transport and traffic objections were raised by:

- Hawthorn Leisure;
- Tracy Harding;
- NSC;
- Parish Councils Airport Association (PCAA);
- Backwell Parish Council (BPC);
- Sir John and Lady Beringer;
- Tim Hollins;
- Colin and Christine Turton; and
- Kate Bird.

6.1.4 It should be noted that objections in respect of an interest in land have been addressed in Mr. Henry Church's Proof of Evidence, whilst objections to the order pertaining to planning matters have been addressed in Mr. Alex Melling's Proof of Evidence (see Planning Appeal Document BAL/7/2, Appendix C).

## 6.2 Responses to comments raised by objectors

6.2.1 **Table 6.1** provides a summary of comments raised by objectors for each theme identified above, as well as other specific issues. Responses to each of these matters are dealt with in turn in **Section 6.3** onwards.

Table 6.1 Summary of Comments raised by Objectors

Theme	No	Objector	Ref
Contrary to planning policy	6	PCAA	CD 7.6
	8	BPC	CD 7.8
	9	Sir John and Lady Beringer	CD 7.9
Traffic Impacts	2	The Trustees of the Sir J V Wills Will Trust	CD7.2
	4	NSC	CD7.4
	11	Colin and Christine Turton	CD7.11
	16	Kate Bird	CD 7.16
Impact on local residents regarding access	8	BPC	CD 7.8
No motorway or railway links	3	Tracy Harding	CD7.3
Safety concerns over Airport Tavern exit	11	Colin and Christine Turton	CD7.11

### Contrary to Planning Policy

#### Objection

6.2.2 The PCAA's Letter of Objection (LoO) (CD 7.6) states:

*"It is questionable whether it complies with policies within the North Somerset Core Strategy relating to the Environment, Climate and Sustainability, policies CS1, CS3, CS4 and CS6."*

6.2.3 BPC's LoO (CD 7.8) states:

*"The CPO does not comply with NSC's Core Strategy relating to the Environment, Climate Change and Sustainability CS1, CS3, CS4 and CS6. As we guard our environment and realise the preciousness of our natural surrounding this loss of green belt and its negative impact on habitat, wildlife, pollution, noise and lighting is concerning."*

## Response

- 6.2.4 As I have demonstrated in para. 3.3.1 of my proof of evidence for the Planning Appeal, the Appeal Proposal accords with Policy CS1 (4) by the introduction of a comprehensive Airport Surface Access Strategy (ASAS) including measures aimed at reducing the number of car trips to Bristol Airport, evidenced by BAL's ongoing investment into public transport services, and a hierarchy aimed at discouraging drop-off and taxi trips (two-way trips) in favour of car parking (one-way trips) and public transport use.
- 6.2.5 Bristol Airport is well served by public transport and is proposing to invest in further improvements as part of the new ASAS. The airport already achieves a PT mode share of some 22% according to 2019 CAA survey data, significantly higher than many other regional airports, and has set an ambitious target to increase this further by 2.5%.
- 6.2.6 The proposed ASAS measures, as set out in the Draft S106 Heads of Terms can achieve a further 2.5% increase in the proportion of passenger trips made by public transport.
- 6.2.7 Policies CS3 partly relates to flood risk. The scheme's drainage strategy has been designed to ensure no increase in surface water runoff will arise through the adoption of sustainable drainage techniques thereby complying with CS3.
- 6.2.8 The compliance of the Appeal Proposal, including the proposed A38 Highway improvement scheme, with Policies CS 1, 3, 4 and 6 of the Development Plan (including those elements of the policies that are not highway specific) is considered in Mr. Alex Melling's Proof of Evidence (see Planning Appeal Document BAL/7/2).

## Traffic Impacts

### Objection

- 6.2.9 The Trustees of the Sir J V Wills Will Trust LoO (CD 7.2) states:

*"The proposed highway improvements do not adequately address accommodating a further 4 million passengers so this proposal needs to give greater consideration as to how to address the additional vehicle movements this would generate, particularly at peak times.*

*The majority of visitors to the airport travel by private car due to the lack of public transport links to any major settlements, which is also a major factor that should constrain the expansion of the airport.*

*The further provision of public transport to the airport has not been suitably addressed within the proposal."*



6.2.10 NSC's LoO (CD 7.4) states:

*"The proposed A38 MRN [Major Road Network] Scheme is a series of discrete packages of interventions along the A38 to meet criteria established by the Department for Transport for the MRN and to address the key issues identified within the SOBC work. The interventions vary in nature and scope with the critical proposals to secure maximum benefits along the A38 corridor lying at Downside Road and Edithmead Roundabout at J22 of the M5."*

*"The [A38 Major Road Network Scheme] SOBC [Strategic Outline Business Case] provided evidence that, without the A38 MRN Scheme, pressure would be placed on the M5 (the SRN) as well as the local highway network resulting in increased congestion."*

*"Should BAL's CPO be confirmed as things currently stand this will jeopardise the whole MRN project to the detriment of the A38 corridor and wider communities including additional resilience to the SRN network."*

6.2.11 Colin and Christine Turton's LoO (CD 7.11) states:

*"Does nothing to improve the significant volume of traffic/noise/pollution of the Downside Road area and East/West feeder roads- will make these problems worse."*

*"The high volume of cars which hover and park temporarily around the airport entrance will move off into the lanes and laybys locally, including Downside Road and the area around the village hall and church spoiling, blocking and adding danger and further eyesore to this area."*

6.2.12 Kate Bird's LoO (CD 7.16) states:

*"Local people are already suffering problems with illegal and roadside parking near the Airport, and increased traffic problems around the existing Airport. We do not need or want more traffic."*

**Response**

6.2.13 In response to CD7.2, Bristol Airport is not applying for a further 4mppa. The airport is applying for a further 2mppa from its current consent of 10mppa; this is a further 3.1mppa from its 2019 passenger throughput (8.9mppa).

6.2.14 Detailed traffic forecast and junction testing has been undertaken as part of the application on the basis of an approach agreed with NSC and Highways England, as set out in Section 5 of my Planning Appeal proof. This included junction capacity analysis at the proposed A38/ Downside Road/ West Lane junction, as repeated in Section 2 of this evidence. Overall, I have demonstrated that the highways impacts are either mitigated by way of the proposed scheme

or can be accommodated within the existing network without severe impact, in accordance with the National Planning Policy Framework (NPPF).

6.2.15 The ESA (see Planning Appeal Documents CD2.19 to CD2.20.6 has demonstrated that the air quality and noise impacts of the Appeal Proposal will not be significant, and a range of measures will be implemented to mitigate the impacts associated with an additional 2mppa.

6.2.16 The A38 Highway improvement scheme forms part of the overall package of Access Surface Access Strategy (ASAS) measures proposed by BAL, which are set out in the draft Section 106 Heads of Terms and described in Section 4.5.4 of my Planning Appeal evidence (see Planning Appeal Document BAL/4/2). These measures include (inter alia):

- Key Performance Indicators (KPI);
- Steering Group, formed by representatives from BAL and NSC to oversee and ensure delivery of the agreed S106 measures. The steering group would manage funding, where appropriate, and report to the Airport Transport Forum on progress;
- Continuation of the 10mppa Public Transport Fund and new 12mppa Public Transport Improvement Fund;
- Continuation of the 10mppa Strategic Public Transport Services;
- Public Transport Publicity and Promotions;
- Metrobus Service Integration and Network Improvements;
- Weston Flyer Improvements;
- New Public Transport Services;
- Coach Services – Service and Infrastructure Improvements;
- Multimodal Pricing Review;
- Public Transport Interchange (PTI);
- Staff Travel Measures;
- Low Emission Strategy;
- Parking Management;
- Local Parking Controls;
- Review of Drop-Off Zone (DOZ) Charges;
- Innovation;
- Monitoring;
- Highway Improvement Fund;
- A38/ Downside Road/ West Lane Improvement Scheme;
- Feasibility Study for the A370/ South Bristol Link;
- Electric Vehicle infrastructure and provision.

- 6.2.17 The conclusions of the Officers' Report (see Planning Appeal Document CD4.1a) were that the Appeal Proposal would not have an unacceptable effect in terms of vehicle trip numbers and impacts, subject to the agreed mitigation. I am of the view that these conclusions should not have changed based on the revised forecasts assessed in the TAA (see Planning Appeal Document CD2.20.4) and ESA (see Planning Appeal Document CD2.20.1), which included a review of public transport current mode share estimated at 21% (highest public transport share of all regional airports outside London) and ambitious targets to increase this by 2.5% by the time the airport reaches 12mppa. Based on the recommendations from NSC officers included in the Committee Report (see Planning Appeal Document CD4.1a) I conclude that the transport objections raised in CD7.2, CD7.4, CD7.11 and 7.16 are unreasonable and therefore I reject them.
- 6.2.18 Turning to the NSC objection regarding the MRN, this project is a development of the A38 corridor scheme outlined in Joint Local Transport Plan 4 (JLTP4) (see Planning Appeal Document CD7.5), of which NSC is a key participant. Importantly, the detailed design of the A38 improvements is not a Reason for Refusal of the planning application and nor is potential prejudice to the MRN project.
- 6.2.19 The overall scheme (in development as potential early investment schemes under development, Ref E1, p173), is for a new multimodal corridor between the M5 and the A38, Bristol Airport, South Bristol and Bristol City Centre to improve connectivity and overall network resilience. BAL was the main funder of the Bristol South West Economic Link Study (BSWEL), a transport study covering the A38/ A368/ A371 corridor between the M5 at Weston-super-Mare and the edge of Bristol. This study informed the MRN project, and BAL has supported this throughout.
- 6.2.20 The above includes, (in Package 2), A38 online improvements between A368 to Bristol Airport, along with Downside Road junction improvements. NSC is consulting on these proposals at the time of writing (see 2.1.22 above), and BAL is proposing to deliver the A38/Downside Road junction improvements as part of the development, so it is inconceivable to suggest that these *'will jeopardise the whole MRN project to the detriment of the A38 corridor'*.
- 6.2.21 Furthermore, Highways England has re-confirmed that it accepts BAL's proposals stating that:
- "Highways England has reviewed the Transport Assessment Addendum (Appendix 5A Environmental Statement Addendum Volume 1) prepared by Stantec, dated 18 November 2020 (TAA) submitted in support of the appeal reference 20/P/2896/APPCON. The TAA provides revised development traffic impacts associated with the uplift from 10mppa to 12mppa for M5 junctions 18-22 inclusive under different growth scenarios. Highways England*

*remains satisfied that for M5 junctions 18-21 inclusive the increase in traffic demand associated with the development is not significant and is unlikely to adversely impact existing performance and/or operation."*

- 6.2.22 In addition to this, it is proposed that NSC would implement the junction improvements on behalf of BAL in their role as Highways Authority, and the detailed design and technical approval process will ensure that the MRN project is not jeopardised. It should also be noted that at no point during determination of the application did NSC raise concerns about the Order in relation to the MRN project. In light of this, it is considered that NSC's objection is misconceived.
- 6.2.23 With regard to the objection raised in CD7.16 on illegal and roadside parking, it is acknowledged that short-term parking and waiting occurs at the roadside in lay-bys and other locations near to the airport which results in adverse impacts on highway safety and the amenity of local residents. In response to this issue, BAL has already increased charging at its drop-off car park in order to reduce demand for this product whilst the issue of on-street parking is being addressed by BAL and NSC through actions arising from a Parking Summit. BAL has also committed through the draft S106 Heads of Terms (HoTs) to review charges further in order to actively discourage drop-off and to support the implementation of local parking controls. Success in this area will result in a growth in demand for parking spaces on-site.

## Impact on local residents regarding access

### Objection

- 6.2.24 BPC's LoO (CD 7.8) states:

*"Thirdly and finally Backwell Parish Council is concerned for the local residents who may have restrictions placed upon them in regard to access to their own properties based on the layout and vastness of the proposed works. The local neighbours have been continually impacted by the continuous expansion and land grab by the airport over the last 15 years and have restricted and controlled many of the routes around the airport, we want to ensure that residents accessing their homes either via this proposed new Airport Property or if preferably if the land is then handed to North Somerset Council again (which would be unlikely) could potentially could lead to future legal issues in regards to access. This would also affect the existing services that the airport encounters such as the existing bus routes which many rely on for work, and social."*

### Response

- 6.2.25 BPC have previously supported the Appeal Proposal, on the basis that traffic and transport issues are addressed. Their second comments on Bristol Airport Planning 18/P/5118/OUT were as follows:

*"The majority of the building work during construction will be on the north side of the Airport, so our residents will be subjected to construction disturbance and every attempt must be made to reduce noise and light pollution during that time. The Airport must also continue to acknowledge the need to address improvements to traffic movement on the A38 and Downside Road and the amelioration of the additional problems that will be caused by the larger number of passengers.*

*Specific requirements of Backwell residents include the following: avoiding excess traffic speed, need for pavements, avoiding parking of taxis and private cars in and around the perimeters, avoiding light and noise pollution, addressing the need for bus availability, requirements for acoustic barriers and reducing house-selling blight.*

*Our support has been given with the understanding that the above issues will be addressed, and they must continue to be priorities not only during construction but throughout the operation of the expanded airport. The climate risks and transport and other infra-structure deficiencies must be ameliorated and measured, with the resulting data made public, before any future further expansion is even proposed."*

- 6.2.26 The A38 Highway improvement scheme would be a key element to address concerns raised by BPC. It is proposed that NSC would implement the highway improvement scheme and that all relevant areas would become adopted highway or revert back to their former use. No restrictions will be placed on residents regarding access to property, other than any that may already exist. During construction, a Construction Management Plan (CMP) would be developed and implemented to ensure that impacts on local residents and access restrictions are kept to a minimum.

### **No motorway or railway links**

#### **Objection**

- 6.2.27 Tracy Harding's LoO (CD 7.3) states:

*"Given the airport locally, this proposed roadworks does not address the fact that there are still no motorway or railway links to serve a proposed expansion."*

#### **Response**

- 6.2.28 As demonstrated in my Planning Appeal evidence (see paras. 9.4.5 – 9.4.7 of Planning Appeal Document BAL/4/2) a rail link is not a practical or cost effective solution for the Appeal

Proposal. Furthermore, no motorway is required to support the Appeal Proposal nor is it a prerequisite for an airport. The proposed scheme is part of a comprehensive set of mitigation measures, including public transport improvements (enhancement of existing services, new services and measures to support these) which are proposed as part the Draft Section 106 Heads of Terms, as described in Section 4 of my Planning Appeal evidence (see Planning Appeal Document BAL/4/2), and summarised in 6.2.16 above.

- 6.2.29 Bristol Airport Limited (BAL) is supportive of improving surface connectivity by public transport. As recognised in JLTP4 (see Planning Appeal Document CD7.5), BAL has worked with the transport authorities and already invested significantly in improved surface access provision, and will introduce further measures as part of the development. BAL proposes to fund improvements in public transport services, with a target to achieve a further 2.5% increase in public transport use from passengers between 10mppa and 12mppa, as well as measures to promote more sustainable travel by employees.

### **Safety concerns over the Airport Tavern Exit**

#### **Objection**

- 6.2.30 Colin and Christine Turton's LoO (CD 7.11) states:

*"The new exit of the Airport Tavern onto Downside Road will bring added danger to what is a high volume narrow road as large volumes of cars parking at the Tavern will use the new exit 24/7 entering the road at the same point as the traffic build up for the junction."*

#### **Response**

- 6.2.31 The proposed new access into the Airport Tavern from Downside Road reflects a significant improvement compared with the existing situation (direct access from the A38), as I describe in Section 4.1.7. The road will be widened to reduce queueing and a new right turn lane into the Airport Tavern provided on Downside Road.
- 6.2.32 NSC officers confirmed this in the Officers' Report (quoted in para 4.3.6 above)

## 7 Conclusions

7.1.1 The proposed A38 Highway improvement scheme will deliver:

- A major improvement over the 'do nothing' scenario as a result of the additional capacity to accommodate a further 2 mppa and relieve significant congestion that would arise in the absence of the Scheme and Development, in accordance with NPPF (see Planning Appeal Document CD 5.8) and CS10 of NSC's Local Plan (see Planning Appeal Document CD 5.6);
- Better facilities for pedestrians and cyclists, which would improve accessibility and safety to local residents by sustainable modes;
- Improvements at the A38/Downside Road junction as a result of the proposed new access arrangements to the Airport Tavern;
- A scheme that accords with the A38 MRN corridor upgrade proposals outlined in JLTP4;
- Substantially reduced delays for all road users and improved journey time reliability for public transport services; and
- A scheme in balance with the wider BAL proposed environmental enhancements, including public transport improvements and traffic management proposals, that will form part of the ASAS.

7.1.2 The detailed design of the proposed A38 Highway improvement scheme is not a Reason for Refusal of the planning application of the Appeal Proposal and nor is the potential prejudice to the MRN project.

7.1.3 A significant number of options were explored to deliver the benefits outlined above whilst minimising 3<sup>rd</sup> party land requirements and effects to property and the environment. The improvement scheme proposed is the optimum layout of some 10 detailed schemes explored.

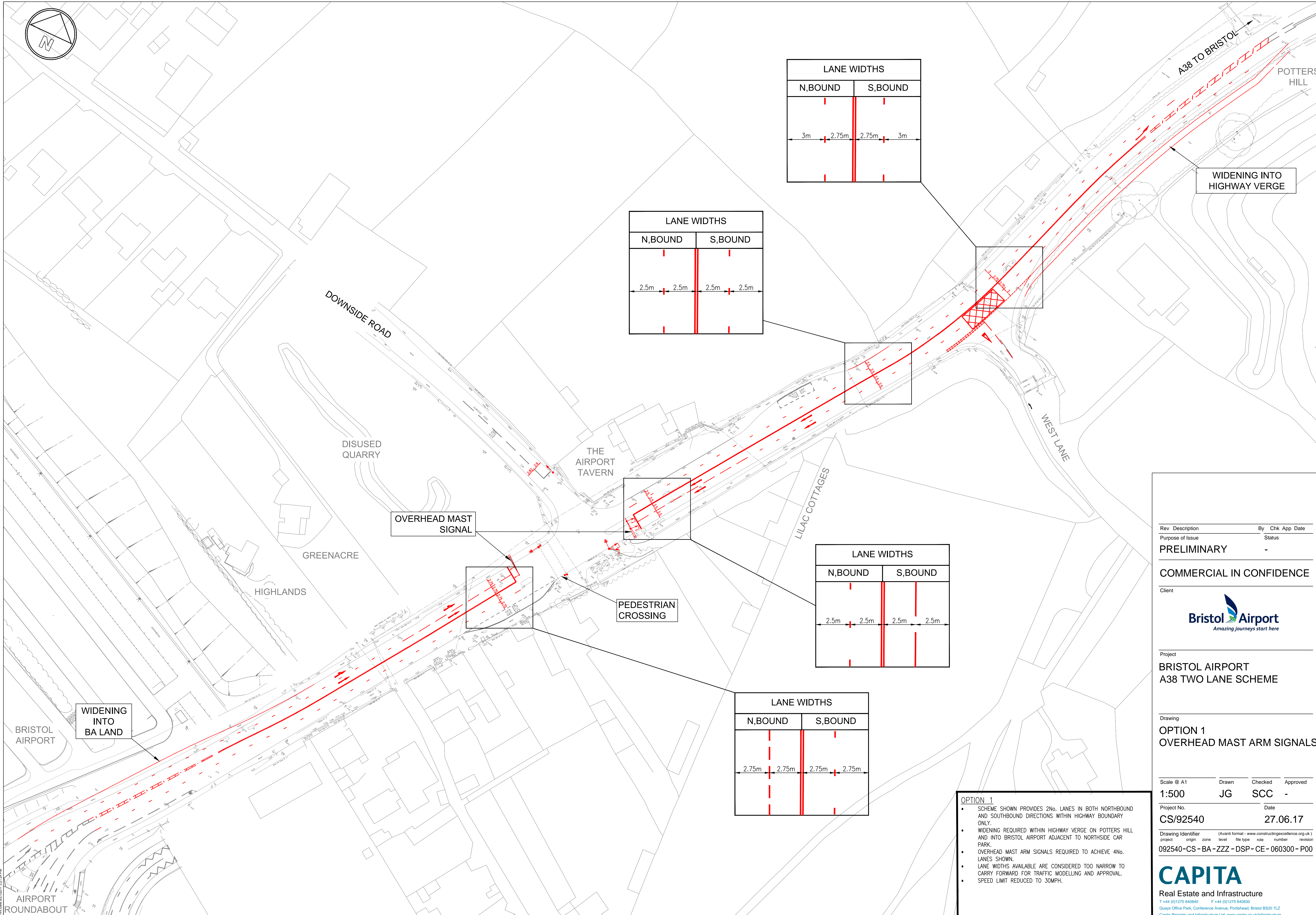
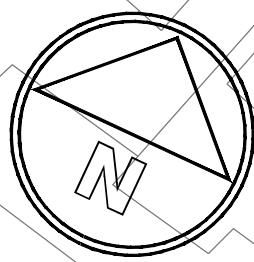
7.1.4 The scheme can be built within the red line and Order Land areas allowing for requirements for embankments and retaining structures.

7.1.5 I believe that the significant public benefit derived from the A38 improvement scheme will outweigh the private loss, that there is a compelling case in the public interest to implement this scheme, and that the CPO requirements for the scheme have been fully justified.

- 7.1.6 Overall, I conclude that BAL is able to demonstrate that there are no sound reasons as to why planning permission for the Appeal Proposal, including the proposed A38 highway improvement scheme, should be withheld.
- 7.1.7 Further, there are no objections pertaining to highway matters which mean that the Order should not be confirmed. I therefore request that, subject to the planning appeal being allowed, the Order should be confirmed.



## **Appendix A      Preliminary Options A to F (Labelled 1 – 6 on drawings)**



LANE WIDTHS	
N,BOUND	S,BOUND
3m	2.75m
2.75m	2.75m
3m	2.75m

LANE WIDTHS	
N,BOUND	S,BOUND
2.5m	2.5m
2.5m	2.5m
2.5m	2.5m

LANE WIDTHS	
N,BOUND	S,BOUND
2.5m	2.5m
2.5m	2.5m
2.5m	2.5m

LANE WIDTHS	
N,BOUND	S,BOUND
2.75m	2.75m
2.75m	2.75m
2.75m	2.75m

- OPTION 1**
- SCHEME SHOWN PROVIDES 2No. LANES IN BOTH NORTHBOUND AND SOUTHBOUND DIRECTIONS WITHIN HIGHWAY BOUNDARY ONLY.
  - WIDENING REQUIRED WITHIN HIGHWAY VERGE ON POTTERS HILL AND INTO BRISTOL AIRPORT ADJACENT TO NORTHSIDE CAR PARK.
  - OVERHEAD MAST ARM SIGNALS REQUIRED TO ACHIEVE 4No. LANES SHOWN.
  - LANE WIDTHS AVAILABLE ARE CONSIDERED TOO NARROW TO CARRY FORWARD FOR TRAFFIC MODELLING AND APPROVAL.
  - SPEED LIMIT REDUCED TO 30MPH.

Rev	Description	By	Chk	App	Date
Purpose of Issue					Status

PRELIMINARY -

COMMERCIAL IN CONFIDENCE

Client



Project

BRISTOL AIRPORT  
A38 TWO LANE SCHEME

Drawing

OPTION 1  
OVERHEAD MAST ARM SIGNALS

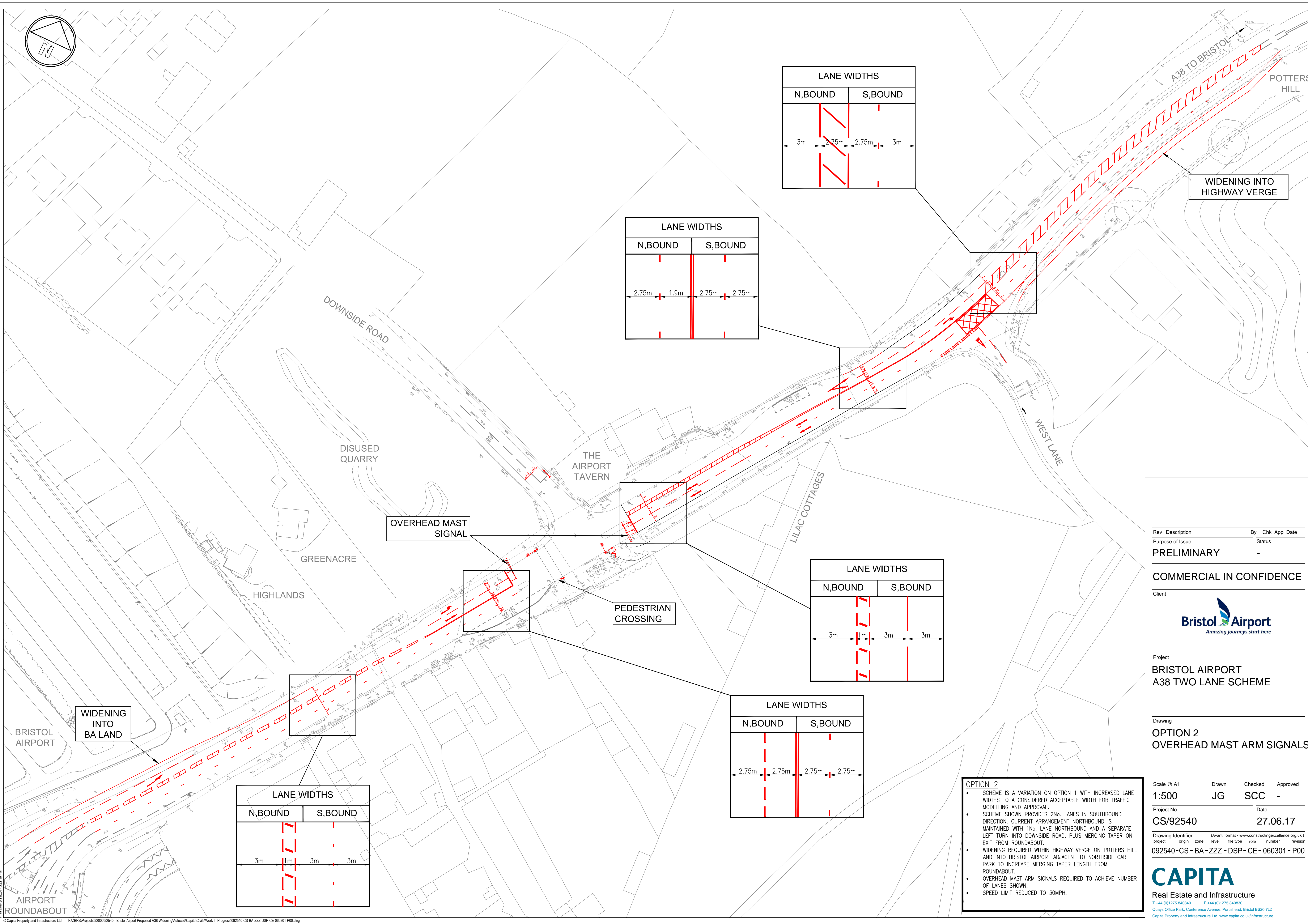
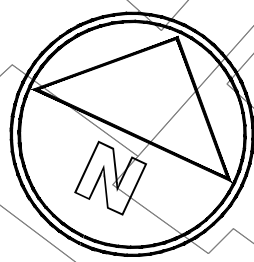
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Project No.	Date
CS/92540	27.06.17

Drawing Identifier	(Avanti format - www.constructingexcellence.org.uk)
project	origin zone level file type role number revision
092540-CS-BA-ZZZ-DSP-CE-060300-P00	

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LANE WIDTHS	
N,BOUND	S,BOUND

LANE WIDTHS	
N,BOUND	S,BOUND

LANE WIDTHS	
N,BOUND	S,BOUND

LANE WIDTHS	
N,BOUND	S,BOUND

LANE WIDTHS	
N,BOUND	S,BOUND

- OPTION 2**
- SCHEME IS A VARIATION ON OPTION 1 WITH INCREASED LANE WIDTHS TO A CONSIDERED ACCEPTABLE WIDTH FOR TRAFFIC MODELLING AND APPROVAL.
  - SCHEME SHOWN PROVIDES 2No. LANES IN SOUTHBOUND DIRECTION. CURRENT ARRANGEMENT NORTHBOUND IS MAINTAINED WITH 1No. LANE NORTHBOUND AND A SEPARATE LEFT TURN INTO DOWNSIDE ROAD, PLUS MERGING TAPER ON EXIT FROM ROUNDABOUT.
  - WIDENING REQUIRED WITHIN HIGHWAY VERGE ON POTTERS HILL AND INTO BRISTOL AIRPORT ADJACENT TO NORTHSIDE CAR PARK TO INCREASE MERGING TAPER LENGTH FROM ROUNDABOUT.
  - OVERHEAD MAST ARM SIGNALS REQUIRED TO ACHIEVE NUMBER OF LANES SHOWN.
  - SPEED LIMIT REDUCED TO 30MPH.

Rev	Description	By	Chk	App	Date
	Purpose of Issue				Status

PRELIMINARY

COMMERCIAL IN CONFIDENCE

Client



Project

BRISTOL AIRPORT  
A38 TWO LANE SCHEME

Drawing

OPTION 2  
OVERHEAD MAST ARM SIGNALS

Scale @ A1	Drawn	Checked	Approved
1:500	JG	SCC	-

Project No.	Date
CS/92540	27.06.17

Drawing Identifier		(Avanti format - <a href="http://www.constructingexcellence.org.uk">www.constructingexcellence.org.uk</a> )					
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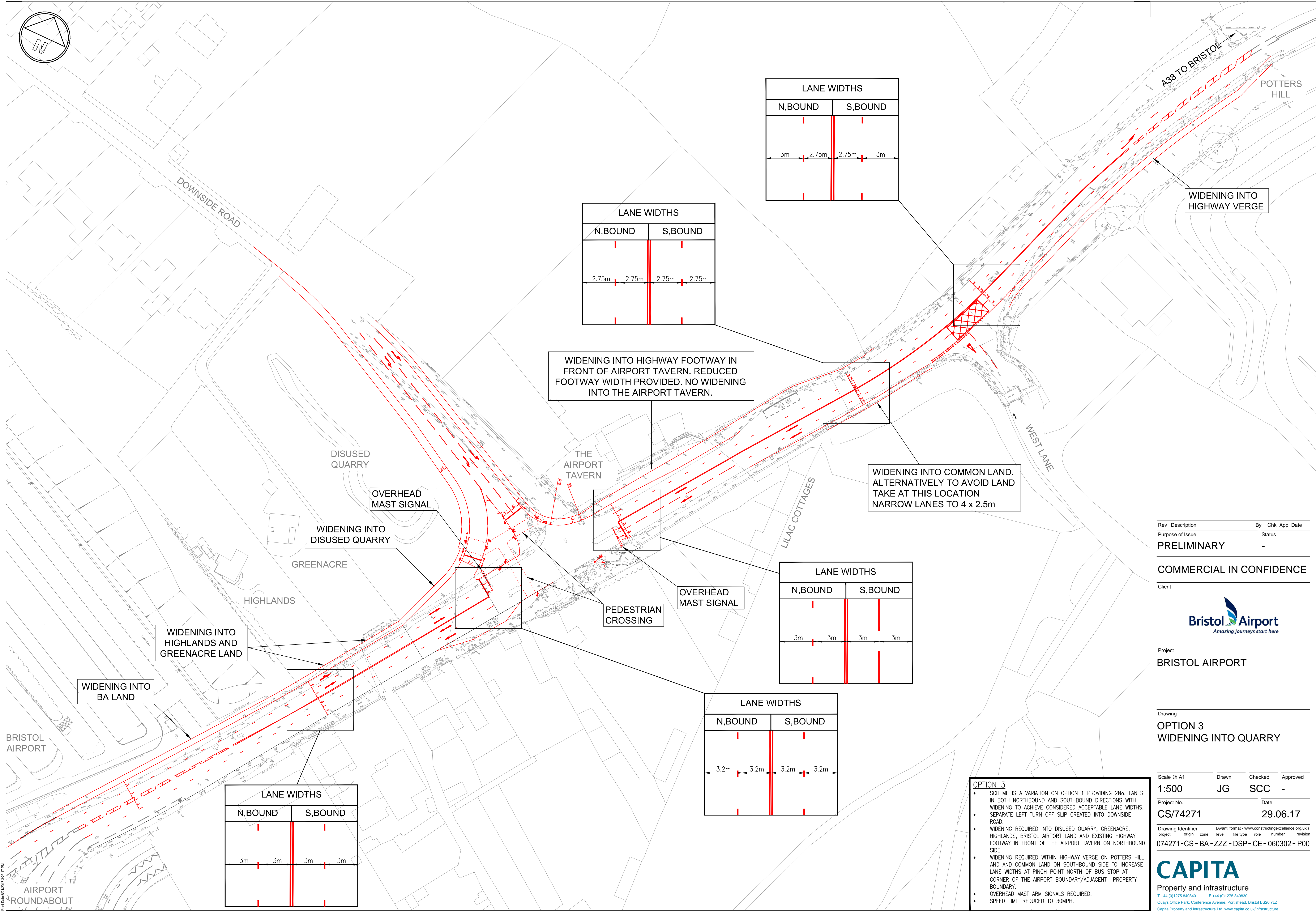
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LANE WIDTHS	
N,BOUND	S,BOUND
2.75m	2.75m
2.75m	2.75m

LANE WIDTHS	
N,BOUND	S,BOUND
3m	2.75m
2.75m	3m

LANE WIDTHS	
N,BOUND	S,BOUND
3m	3m
3m	3m

LANE WIDTHS	
N,BOUND	S,BOUND
3.2m	3.2m
3.2m	3.2m

LANE WIDTHS	
N,BOUND	S,BOUND
3m	3m
3m	3m

**OPTION 3**

- SCHEME IS A VARIATION ON OPTION 1 PROVIDING 2No. LANES IN BOTH NORTHBOUND AND SOUTHBOUND DIRECTIONS WITH WIDENING TO ACHIEVE CONSIDERED ACCEPTABLE LANE WIDTHS. SEPARATE LEFT TURN OFF SLIP CREATED INTO DOWNSIDE ROAD.
- WIDENING REQUIRED INTO DISUSED QUARRY, GREENACRE, HIGHLANDS, BRISTOL AIRPORT LAND AND EXISTING HIGHWAY FOOTWAY IN FRONT OF THE AIRPORT TAVERN ON NORTHBOUND SIDE.
- WIDENING REQUIRED WITHIN HIGHWAY VERGE ON POTTERS HILL AND AND COMMON LAND ON SOUTHBOUND SIDE TO INCREASE LANE WIDTHS AT PINCH POINT NORTH OF BUS STOP AT CORNER OF THE AIRPORT BOUNDARY/ADJACENT PROPERTY BOUNDARY.
- OVERHEAD MAST ARM SIGNALS REQUIRED.
- SPEED LIMIT REDUCED TO 30MPH.

Rev	Description	By	Chk	App	Date
Purpose of Issue					Status
PRELIMINARY					-

COMMERCIAL IN CONFIDENCE

Client



Project  
BRISTOL AIRPORT

Drawing  
OPTION 3  
WIDENING INTO QUARRY

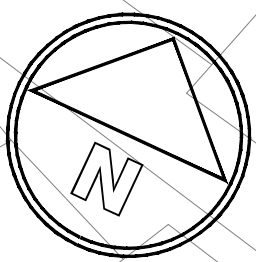
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Project No.	Date
CS/74271	29.06.17

Drawing Identifier	(Avanti format - www.constructingexcellence.org.uk.)
074271-CS-BA-ZZZ-DSP-CE-060302-P00	project origin zone level file type role number revision

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WIDENING INTO  
BA LAND

WIDENING INTO  
HIGHLANDS AND  
GREENACRE LAND

WIDENING INTO  
QUARRY LAND

BUS STOP MOVED ONTO  
ROAD DUE TO  
PEDESTRIAN CROSSING

WIDEN FOOTWAY /  
CYCLEWAY

WIDENING INTO  
COMMON LAND

WIDENING INTO  
HIGHWAY VERGE

LANE WIDTHS					
N,BOUND			S,BOUND		
2.5m	3m	3m	2.75m	2.75m	

LANE WIDTHS					
N,BOUND			S,BOUND		
3m	2.75m		2.75m	3m	

LANE WIDTHS					
N,BOUND			S,BOUND		
3m	2.75m		2.75m	3m	

LANE WIDTHS					
N,BOUND			S,BOUND		
3m	2.75m	2.5m	2.75m	3m	

LANE WIDTHS					
N,BOUND			S,BOUND		
3m	3m		2.75m	3m	

LANE WIDTHS					
N,BOUND			S,BOUND		
3m	3m		2.75m	2.75m	

DISCREPANCY BETWEEN LAND OWNERSHIP  
BOUNDARY OF PLOT / HIGHWAY BOUNDARY NOT  
CLEAR ON LAND REGISTRY PLAN. NEEDS FURTHER  
DETAILED INVESTIGATION AND CONFIRMATION.

#### OPTION 4

- SCHEME IS A VARIATION ON OPTION 3 PROVIDING 2No. LANES IN BOTH NORTHBOUND AND SOUTHBOUND DIRECTIONS PLUS A DEDICATED LEFT TURN LANE PROVIDED INTO DOWNSIDE ROAD. INCREASED PEDESTRIAN AND CYCLING PROVISION PROVIDED ON THE SOUTHBOUND SIDE.
- STAGGERED SIGNAL CONTROLLED CROSSING PROVIDED DUE TO CARRIAGEWAY WIDTH.
- WIDENING REQUIRED INTO DISUSED QUARRY, GREENACRE, HIGHLANDS, BRISTOL AIRPORT LAND AND THE AIRPORT TAVERN ON NORTHBOUND SIDE.
- WIDENING REQUIRED WITHIN HIGHWAY VERGE ON POTTERS HILL AND COMMON LAND ON SOUTHBOUND SIDE TO INCREASE LANE WIDTHS AT PINCH POINT NORTH OF BUS STOP AT CORNER OF THE AIRPORT BOUNDARY/ADJACENT PROPERTY BOUNDARY.
- STANDARD SIGNALS REQUIRED.
- SPEED LIMIT REDUCED TO 30MPH.

P01 WEST LANE JUNCTION AMENDED JG SCC - 05.09.17  
TO SHOW RIGHT TURN LANE

Rev Description By Chk App Date  
Purpose of Issue Status

PRELIMINARY -

COMMERCIAL IN CONFIDENCE

Client



Project

BRISTOL AIRPORT

Drawing

OPTION 4  
WIDENING INTO QUARRY &  
AIRPORT TAVERN

Scale @ A1 Drawn Checked Approved

1:500 JG SCC -

Project No. Date

CS/92540 04.07.17

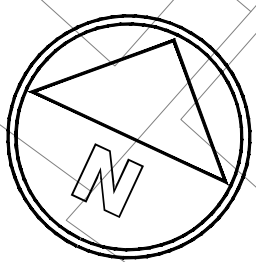
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project origin zone level file type role number revision  
092540-CS-BA-ZZZ-DSP-CE-060303-P01

CAPITA

Property and infrastructure

T +44 (0)1275 840840 F +44 (0)1275 840830  
Quays Office Park, Conference Avenue, Portishead, Bristol BS20 7LZ  
Capita Property and Infrastructure Ltd. www.capita.co.uk/infrastructure





DOWNSIDE ROAD

A38 TO BRISTOL

POTTERS HILL

WIDENING INTO HIGHWAY VERGE

LANE WIDTHS	
N,BOUND	S,BOUND
3m	2.27m
2.75m	3m

LANE WIDTHS	
N,BOUND	S,BOUND
3m	3m
3m	3m

90m SSD VISIBILITY SPLAY

90m SSD VISIBILITY SPLAY

DISUSED QUARRY

THE AIRPORT TAVERN

COMMON LAND

WEST LANE

LILAC COTTAGES

GREENACRE

HIGHLANDS

WIDENING / LAND TAKE REQUIRED FOR SSD VISIBILITY SPLAY

90m SSD VISIBILITY SPLAY

WIDENING INTO BA LAND

LANE WIDTHS	
N,BOUND	S,BOUND
3m	2.75m
3m	2.5m

LANE WIDTHS	
N,BOUND	S,BOUND
3m	2.5m
3m	2.75m

BRISTOL AIRPORT

AIRPORT ROUNDABOUT

Rev	Description	By	Chk	App	Date
Purpose of Issue		Status			
PRELIMINARY		-			

COMMERCIAL IN CONFIDENCE

Client



Project

BRISTOL AIRPORT

Drawing

OPTION 5  
ROUNDABOUT QUARRY &  
AIRPORT TAVERN

Scale @ A1	Drawn	Checked	Approved
1:500	JG	SCC	-

Project No.	Date
CS/92540	05.07.17

Drawing Identifier	(Avanti format - www.constructingexcellence.org.uk)
project	origin zone level file type role number revision
092540-CS-BA-ZZZ-DSP-CE-060304-P00	



OPTION 5

- SCHEME SHOWN TO INDICATE WIDENING REQUIRED INTO ADJACENT LAND ONLY.
- TRAFFIC MODELLING REQUIRED TO CONFIRM IF ROUNDABOUT IS VIABLE AND IF SIGNALS WOULD BE REQUIRED ON ROUNDABOUT-THIS OPTION NOT BEING MODELLED AT THIS STAGE.
- SPEED LIMIT REDUCED TO 30MPH.

Print Date: 8/21/2017 3:24:36 PM

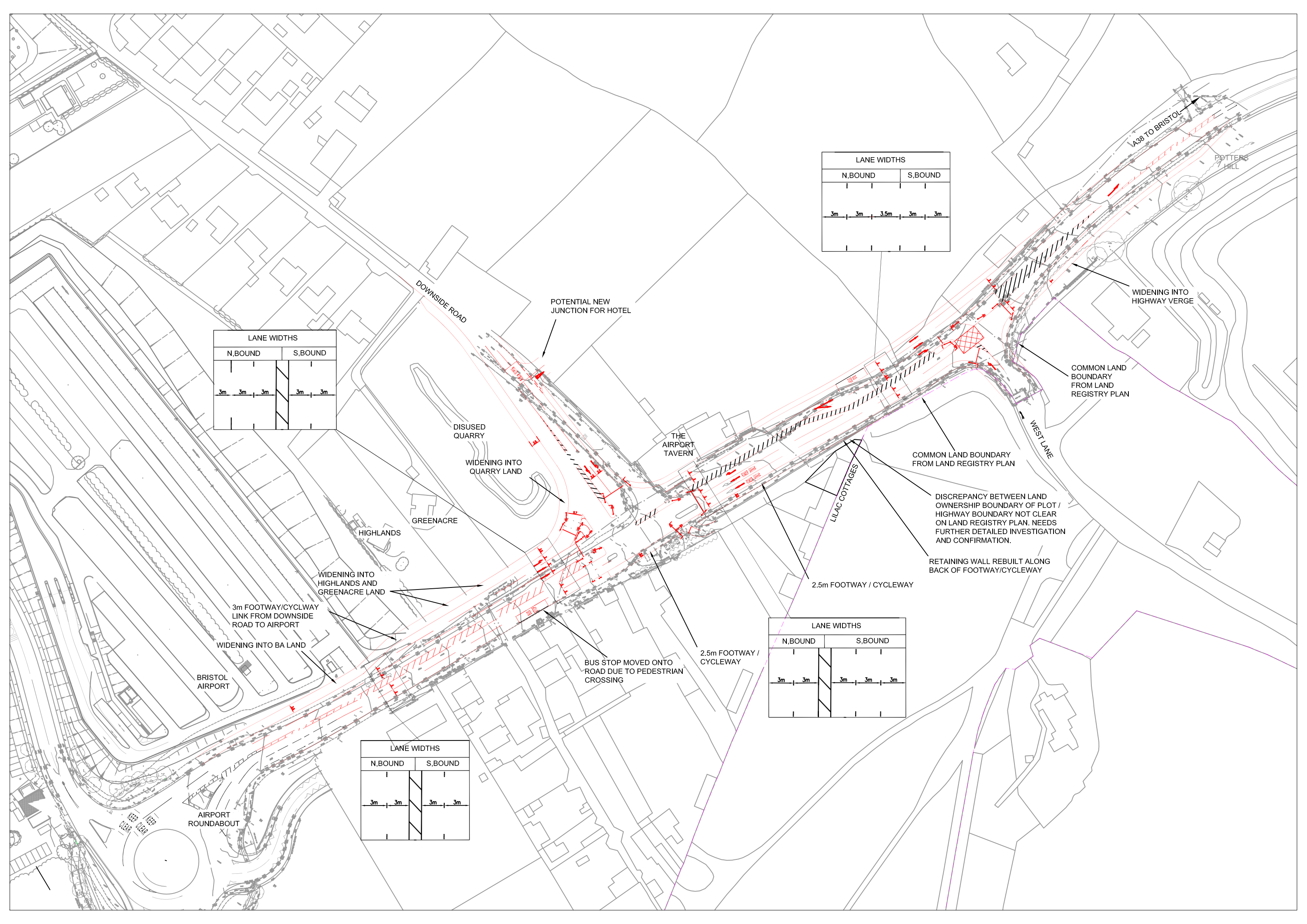


LANE WIDTHS	
N,BOUND	S,BOUND
3m	3m
3m	3.5m
3m	3m
3m	3m

LANE WIDTHS	
N,BOUND	S,BOUND
3m	3m
3m	3m
3m	3m

LANE WIDTHS	
N,BOUND	S,BOUND
3m	3m
3m	3m
3m	3m

LANE WIDTHS	
N,BOUND	S,BOUND
3m	3m
3m	3m
3m	3m



A38 / Downside Road Traffic Signal Controlled Junction

Comparison of Options

AM Peak Period (07:15 to 08:15 hours) Wednesday 19th July 2017		Exiting Layout				Option 2				Option 3										Option 4					
										A38 NB Lanes Evenly Used				A38 NB 70:30 Split (inside:outside lanes)				A38 NB right turners only in outside lane							
		Flow	DoS	Queue	Delay (s/pcu)	Flow	DoS	Queue	Delay (s/pcu)	Flow	DoS	Queue	Delay (s/pcu)	Flow	DoS	Queue	Delay (s/pcu)	Flow	DoS	Queue	Delay (s/pcu)	Flow	DoS	Queue	Delay (s/pcu)
A38 (south)	Lane 1 (left turn & straight)	1313	92.7%	50.1	30.9	1313	92.8%	40.3	28.4	802	71.2%	9.5	14.0	998	84.4%	15.0	18.4	1229	88.8%	26.6	19.7	862.0	55.9%	6.0	7.5
	Lane 2 (outside)									511	46.6%	5.4	10.7	315	27.1%	2.6	7.9	84	6.1%	0.6	5.0	451.0	42.1%	3.9	9.2
Downside Road		312	91.1%	17.1	106.8	312	90.3%	13.9	90	312	72.1%	5.4	36.0	312	85.2%	7.0	53.6	312	87.9%	9.7	71.9	312.0	60.1%	4.0	24.6
A38 (north)	Lane 1 (inside)	992	84.3%	31.0	23.7	496	43.3%	7.1	9.7	496	58.1%	6.3	14.3	496	54.7%	6.0	13.0	496	44.3%	5.8	8.8	496.0	59.6%	5.4	13.7
	Lane 2 (outside)					496	43.3%	7.1	9.7	496	58.1%	6.3	14.3	496	54.7%	6.0	12.9	496	44.3%	5.8	8.8	496.0	59.6%	5.4	13.7
Cycle Time		155 seconds				120 seconds				60 seconds				60 seconds				90 seconds				50 seconds			
Practical Reserve Capacity (PRC)		-3.0%				-3.2%				24.8%				5.6%				1.4%				49.8%			

PM Peak Period (16:45 to 17:45 hours) Thursday 20th July 2017		Existing Layout				Option 2				Option 3										Option 4					
										A38 NB Lanes Evenly Used				A38 NB 70:30 Split (inside:outside lanes)				A38 NB right turners only in outside lane							
		Flow	DoS	Queue	Delay (s/pcu)	Flow	DoS	Queue	Delay (s/pcu)	Flow	DoS	Queue	Delay (s/pcu)	Flow	DoS	Queue	Delay (s/pcu)	Flow	DoS	Queue	Delay (s/pcu)	Flow	DoS	Queue	Delay (s/pcu)
A38 (south)	Lane 1 (left turn & straight)	1337	88.9%	49.1	22.5	1337	91.2%	36.6	23.1	980	78.3%	12.1	13.6	1031	82.5%	14.2	15.6	1160	89.3%	16.3	17.9	1092	65.2%	7.4	6.9
	Lane 2 (outside)									357	29.1%	2.8	7	306	25.0%	2.4	6.8	177	14.0%	1	4.9	245	20.0%	1.5	5.6
Downside Road		278	99.7%	22.5	183.2	278	90.2%	12.7	95.6	278	74.1%	4.3	40	278	74.1%	4.3	40	278	69.4%	3.2	28.9	278	61.7%	3.2	28.1
A38 (north)	Lane 1 (inside)	1278	101.6%	91.1	91.1	639	53.8%	9.6	9.9	639	66.6%	8.3	13.2	639	66.6%	8.3	13.3	639	64.4%	6.4	11.1	639	66.6%	6.8	12
	Lane 2 (outside)					639	53.8%	9.6	9.9	639	66.6%	8.3	13.2	639	66.6%	8.3	13.3	639	64.4%	6.4	11.1	639	66.6%	6.8	12
Cycle Time		187 seconds				120 seconds				60 seconds				60 seconds				50 seconds				50 seconds			
Practical Reserve Capacity (PRC)		-12.9%				-1.3%				9.9%				9.0%				0.8%				31.1%			

Key to Tables  
DoS = Degree of saturation (0.90% or below within capacity; 0.90% to 1.00% at capacity; 1.00%+ overcapacity)  
Queue = Predicted Mean Maximum Queue in pcus  
Delay = Average delay per pcu in seconds  
pcu = passenger car unit, roughly equates to 1 car  
Practical Reserve Capacity = if positive has reserve capacity; if negative no reserve capacity

In Summary

It has been assumed that the 2 A38 southbound lanes would be equally used by traffic as the existing road marking layout on the approach to the downstream A38 / Bristol Airport roundabout traffic allows traffic to evenly split across the lanes.

**Option 2**  
Queues on the A38 northbound approach are predicted to be slightly shorter than the existing situation. However, these queues will still extend back to the A38 / Bristol Airport roundabout and affect roundabout operation. The roundabout would experience similar queues and delays as the existing situation.

**Option 3**  
How traffic would use the 2 lane A38 northbound approach is difficult to predict due to no right turn lane being provided on the A38 at the downstream A38 / West Lane priority junction. Various lane usage has been tested from equal lane usage to only right turning traffic from the A38 into West Lane using the outside straight ahead lane. There is the potential especially during the AM peak period that if only A38 to West Lane right turning traffic use the outside straight ahead then queues could extend back and affect the operation of the A38 / Bristol Airport roundabout.

**Option 4**  
Due to the dedicated right turn lane being provided at the downstream A38 / West Lane priority junction, it is likley traffic would more evenly use the 2 northbound straight ahead lanes.



## A38 / Downside Road Traffic Signal Controlled Junction

### Comparison of Options using Existing Cycle Time

	AM			PM		
	Cycle Time	PRC	Delay (pcu-hr)	Cycle Time	PRC	Delay (pcu-hr)
Existing Layout	155	-3.0%	27.06	187	-12.9%	54.84
Option 2	155	-1.7%	22.47	187	-0.2%	22.79
Option 3: A38 NB lanes used evenly	155	40.7%	16.22	187	24.6%	15.54
Option 3: A38 NB lanes 70:30 split	155	19.9%	16.33	187	21.6%	15.73
Option 3: only West Lane right turners in outside lane	155	4.9%	17.68	187	17.3%	15.31
Option 4	155	38.6%	14.3	187	36.6%	15.67

#### Key to Tables

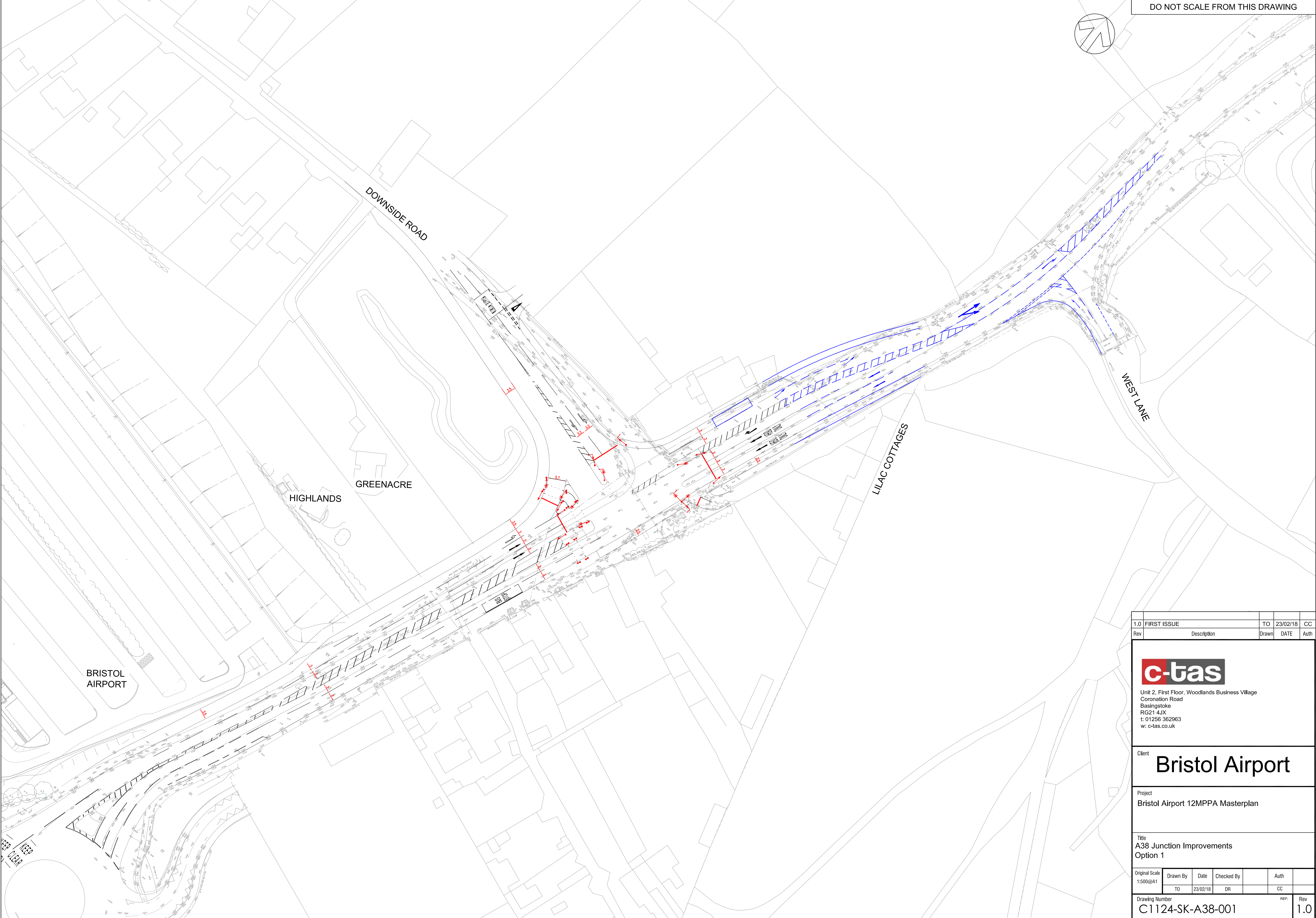
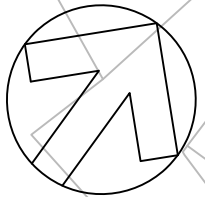
Delay (pcu-hr) = The total aggregate delay suffered by traffic using the junction (the sum of uniform, uniform storage and random and overdsaturation delay)

pcu = passenger car unit, roughly equates to 1 car

PRC = Practical Reserve Capacity; if positive has reserve capacity; if negative no reserve capacity

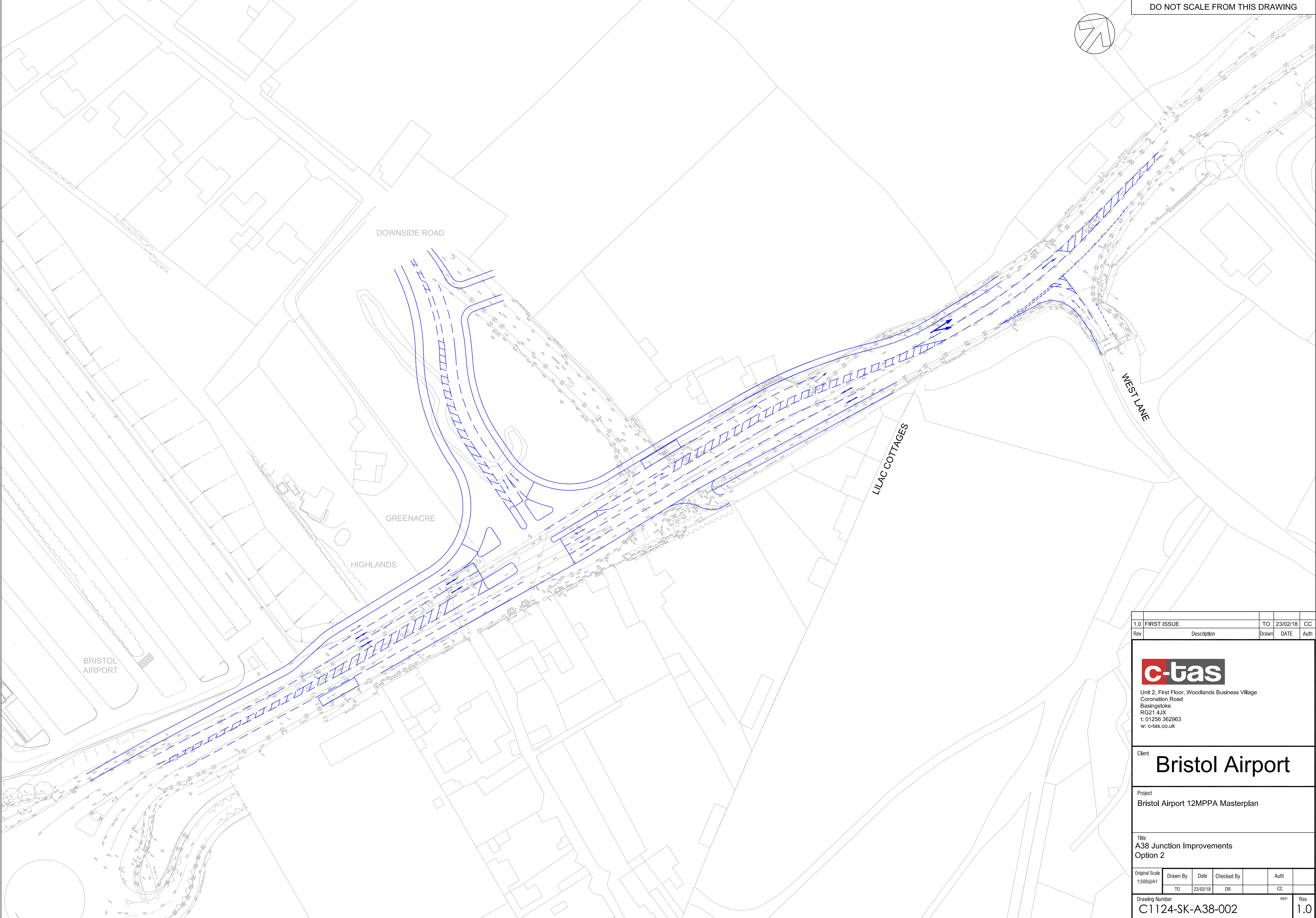
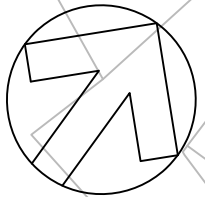
## **Appendix B      Detailed Options 1- 10**





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Rev	Description	Drawn	DATE	Auth
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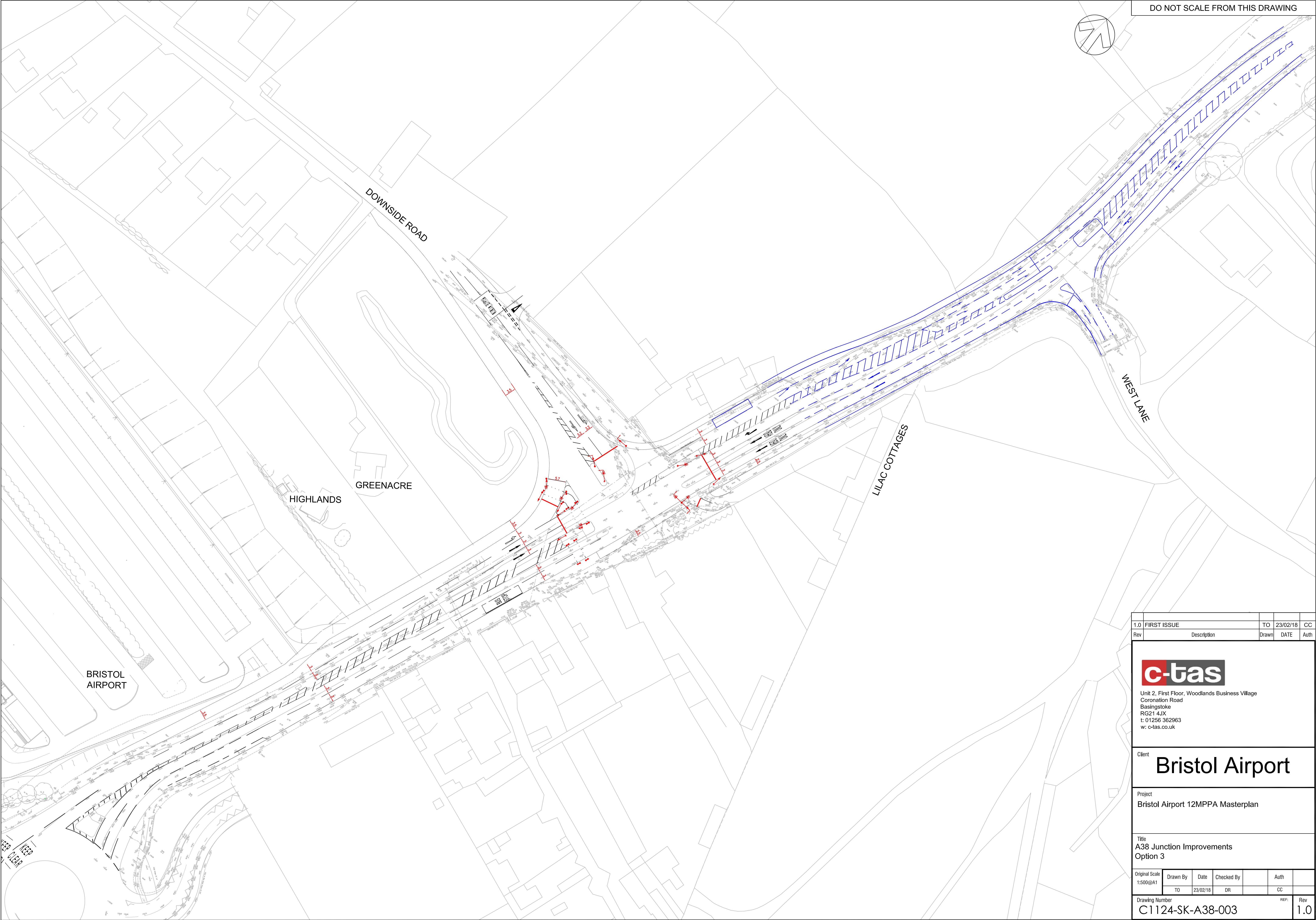
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Rev	Description	Drawn	DATE	Auth



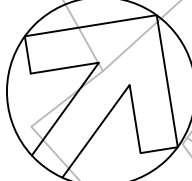
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Coronation Road  
Basingstoke  
RG21 4JX  
t: 01256 362963  
w: c-tas.co.uk

Client				
Bristol Airport				
Project				
Bristol Airport 12MPPA Masterplan				
Title				
A38 Junction Improvements Option 2				
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Drawing Number				REF.
C1124-SK-A38-002				Rev
				1.0



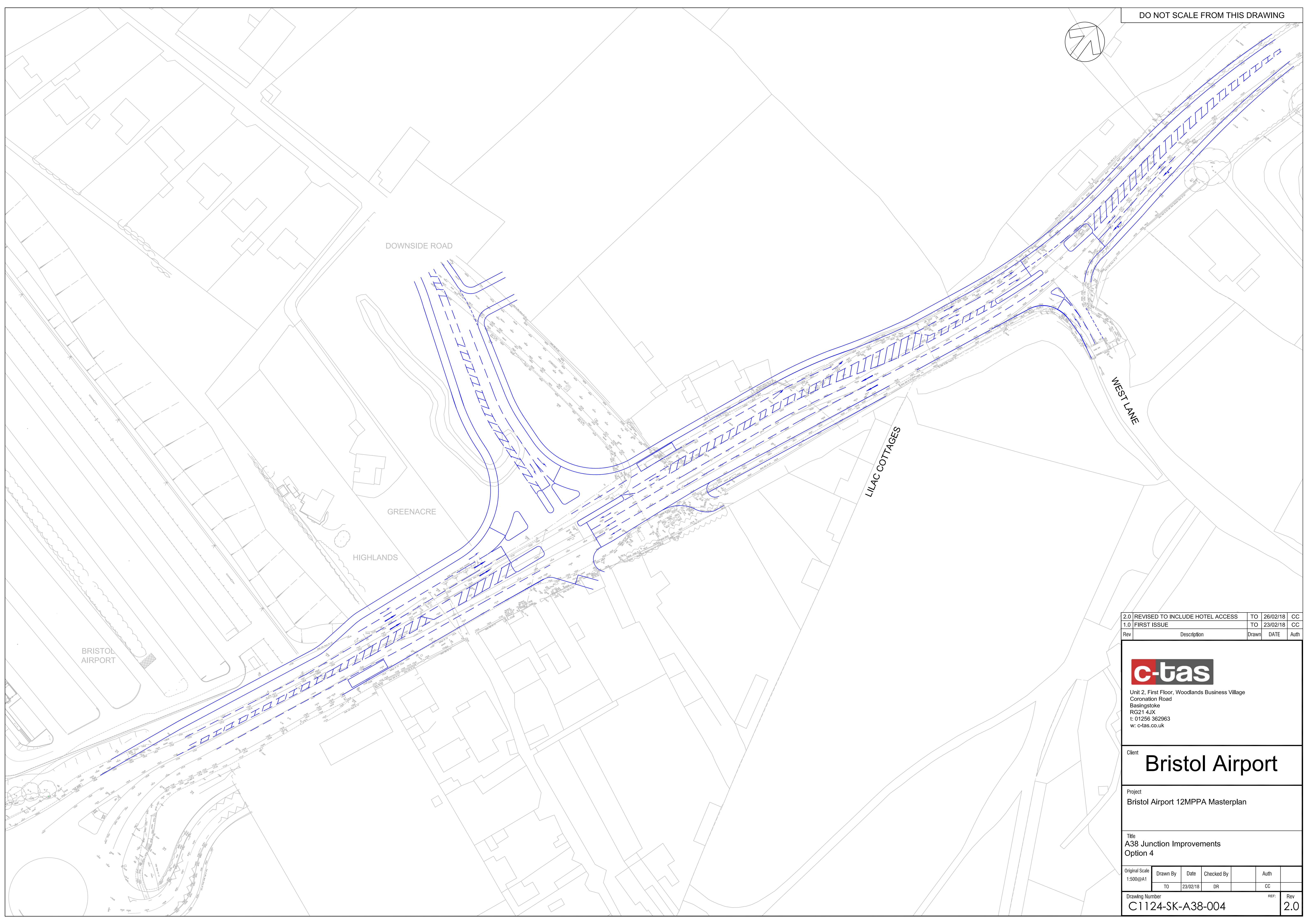
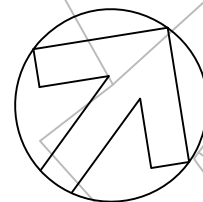


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Rev	Description	Drawn	DATE	Auth
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2.0	REVISED TO INCLUDE HOTEL ACCESS	TO	26/02/18	CC
1.0	FIRST ISSUE	TO	23/02/18	CC

Rev	Description	Drawn	DATE	Auth
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Client  
**Bristol Airport**

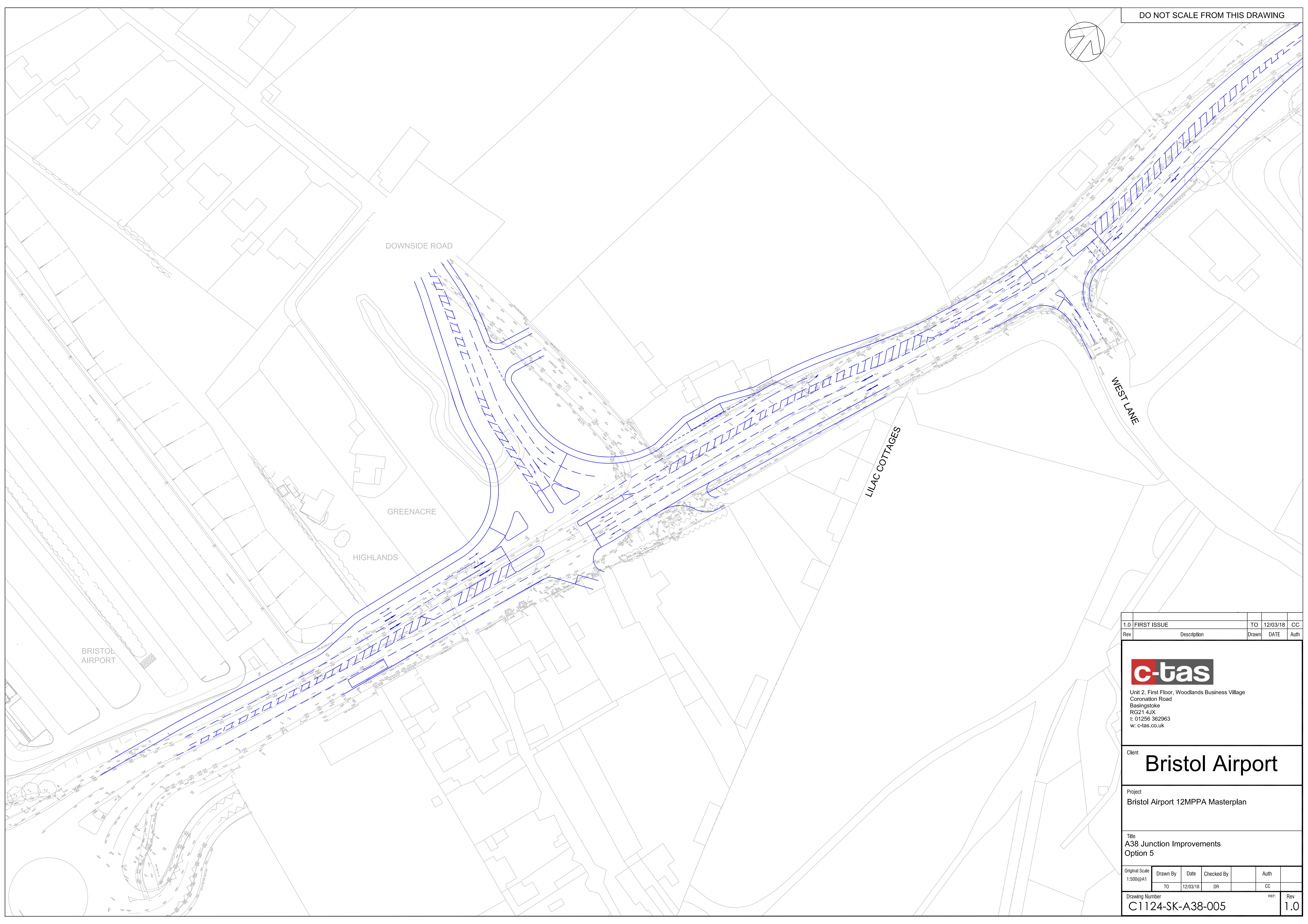
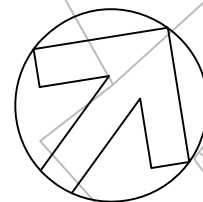
Project  
Bristol Airport 12MPPA Masterplan

Title  
A38 Junction Improvements  
Option 4

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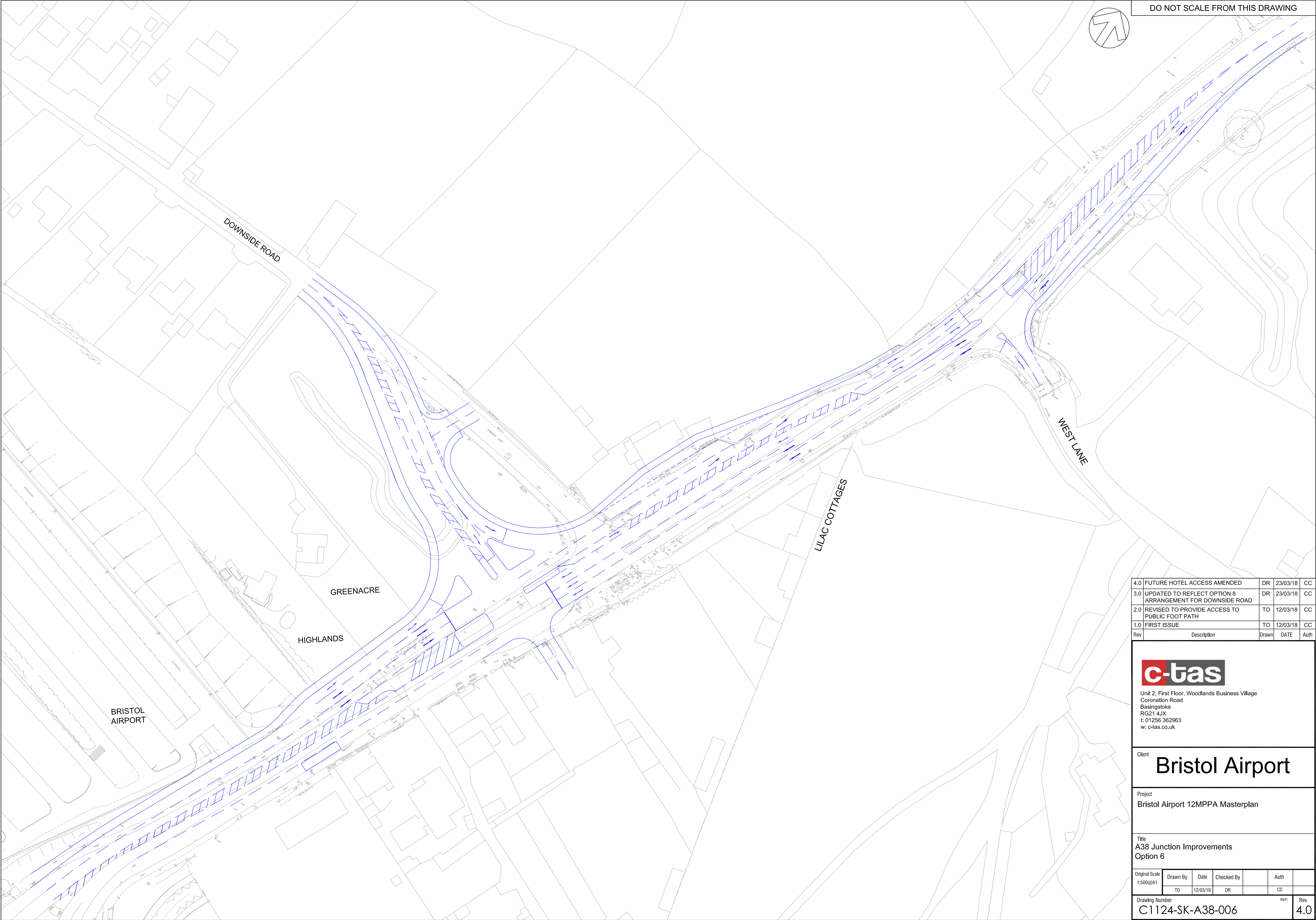
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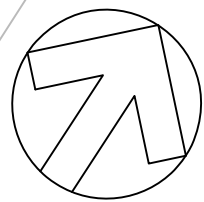


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4.0	FUTURE HOTEL ACCESS AMENDED	DR	23/03/18	CC
3.0	UPDATED TO REFLECT OPTION 8 ARRANGEMENT FOR DOWNSIDE ROAD	DR	23/03/18	CC
2.0	REVISED TO PROVIDE ACCESS TO PUBLIC FOOT PATH	TO	12/03/18	CC
1.0	FIRST ISSUE	TO	12/03/18	CC

Rev	Description	Drawn	DATE	Auth
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Client  
**Bristol Airport**

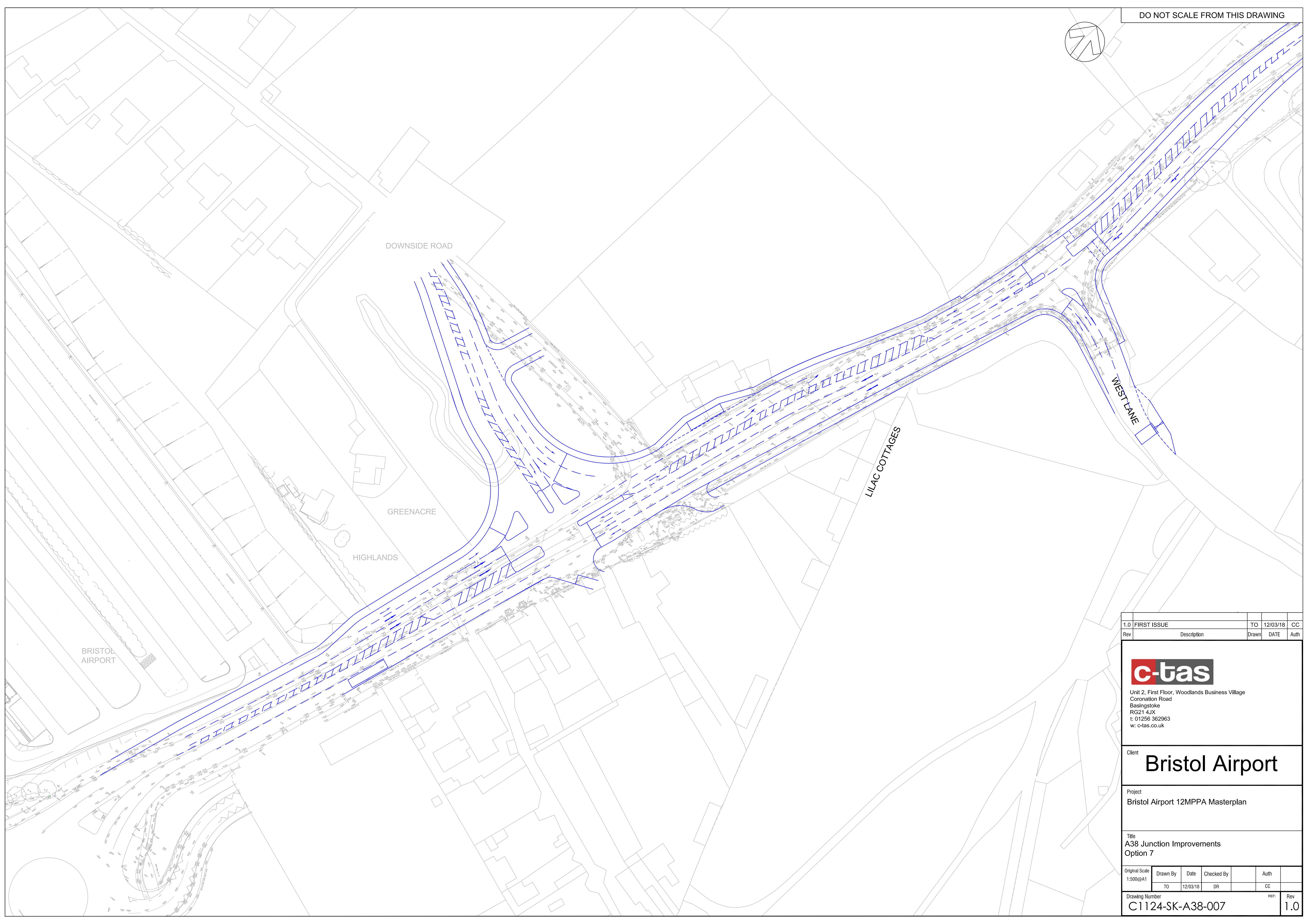
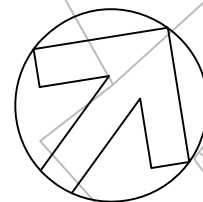
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Title  
A38 Junction Improvements  
Option 6

Original Scale 1:500@A1	Drawn By TO	Date 12/03/18	Checked By DR	Auth CC	
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Drawing Number C1124-SK-A38-006	REF. Rev 4.0
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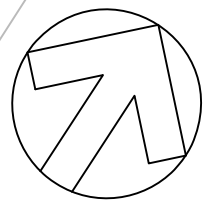


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2.0	FUTURE HOTEL ACCESS AMENDED	MW	13/04/18	CC
1.0	FIRST ISSUE	TO	23/03/18	CC

Rev	Description	Drawn	DATE	Auth
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Client  
**Bristol Airport**

Project  
Bristol Airport 12MPPA Masterplan

Title  
A38 Junction Improvements  
Option 8

Original Scale 1:500@A1	Drawn By	Date	Checked By	Auth	
	TO	23/03/18	DR	CC	

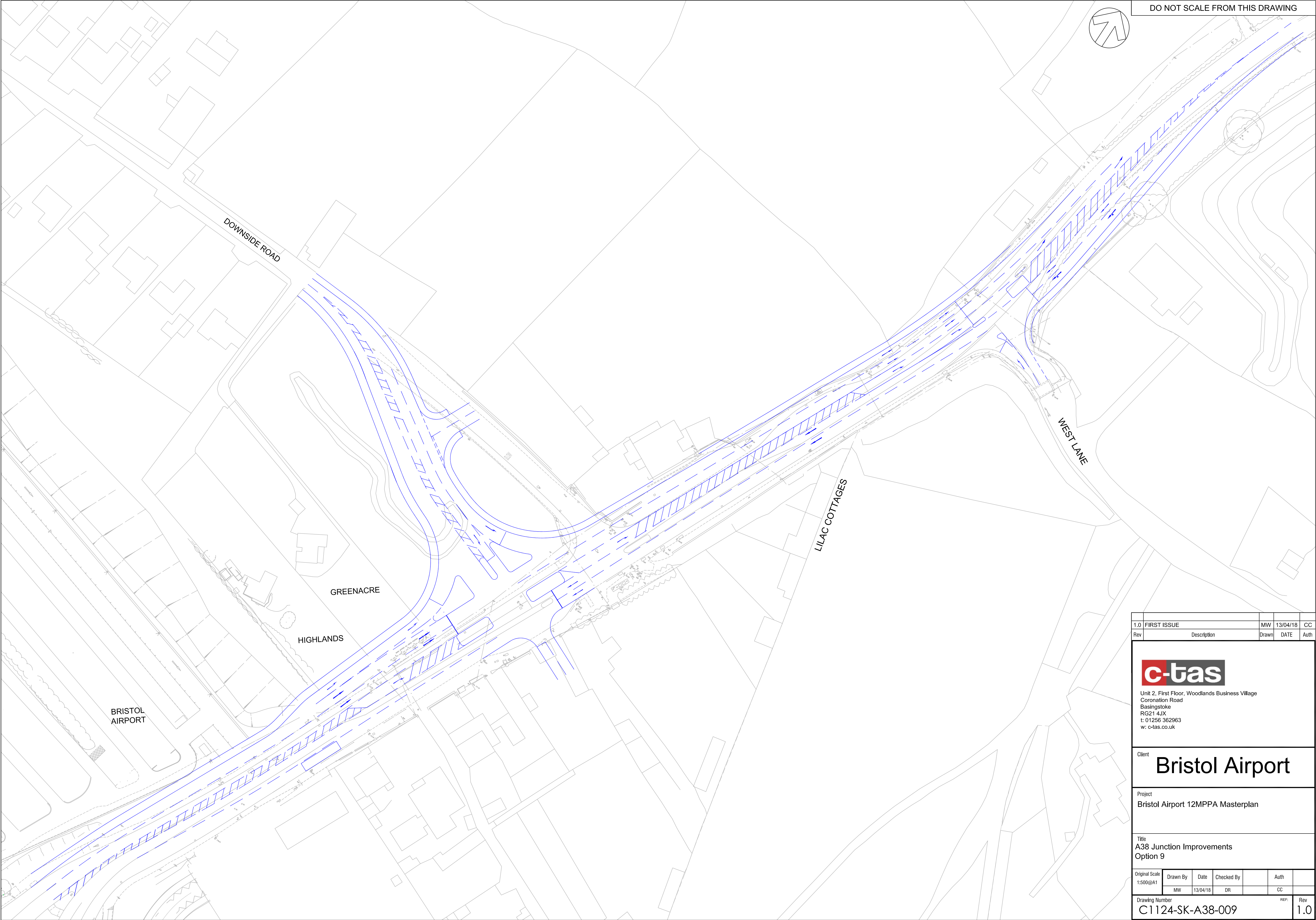
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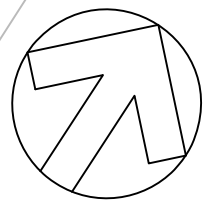
HIGHWAYS ENGLAND COMPANY LTD BOUNDARY

ADOPTED PUBLIC HIGHWAY - NORTH SOMERSET DISTRICT COUNCIL





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Rev	Description	Drawn	DATE	Auth



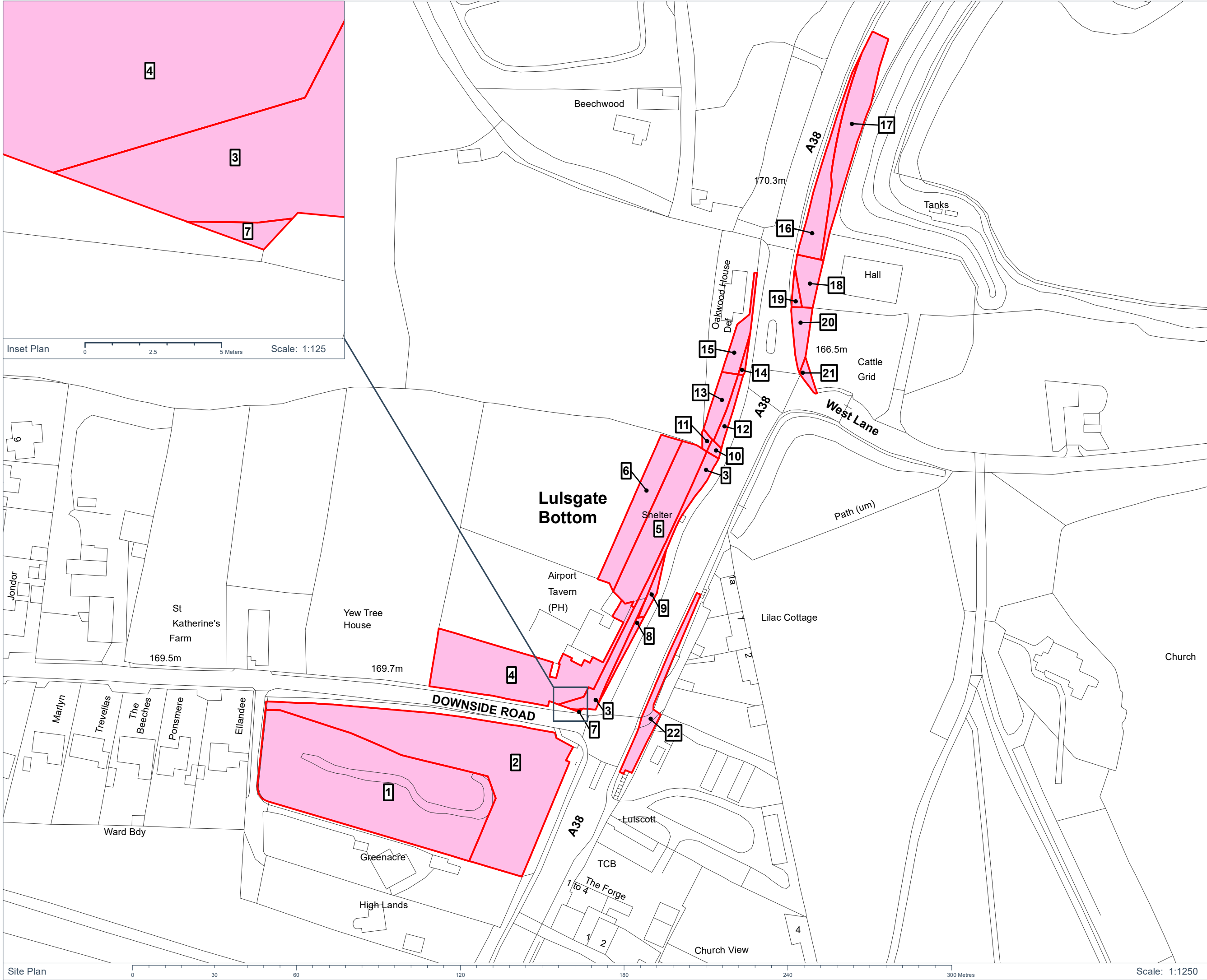
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Basingstoke  
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Client					
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Project					
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Drawing Number C1124-SK-A38-009					Rev 1.0

## Appendix C    Order Land



Drawing Location: C:\Users\luis.mendes\Documents\Bristol Airport Limited\194590\_CPO\_Land\_Plans\_v4.mxd



DM

DALCOUR  
MACLAREN

Key:

Permanent Acquisition

Date:

Executed by **Bristol Airport Limited** acting by a director and a director/secretary:

Director

Director

Notes:

Coordinate System: British National Grid  
Projection: Transverse Mercator  
Datum: OSGB 1936

Location:

A38, Lulsgate Bottom, North Somerset, BS40 9XA

Coords:

351,352 165,725

Scheme Name:

A38 Land Referencing

Drawing Name:

Map referred to in the Bristol Airport Limited (Land at A38 and Downside Road) Compulsory Purchase Order 2020

Drawing No:

194590\_PLN\_CPO\_306.1\_D

Rev	Date	Description
-	22.07.2020	First Issue
D	24.07.2020	Amendment to Template and Plot
B	30.07.2020	Plot Amendments
C	14.08.2020	Plot Amendments & Renumbering

Drawn:

PR

Approved:

OK

Sheet No:

1 of 1

Sheet Size:

A3

N

Bristol Airport

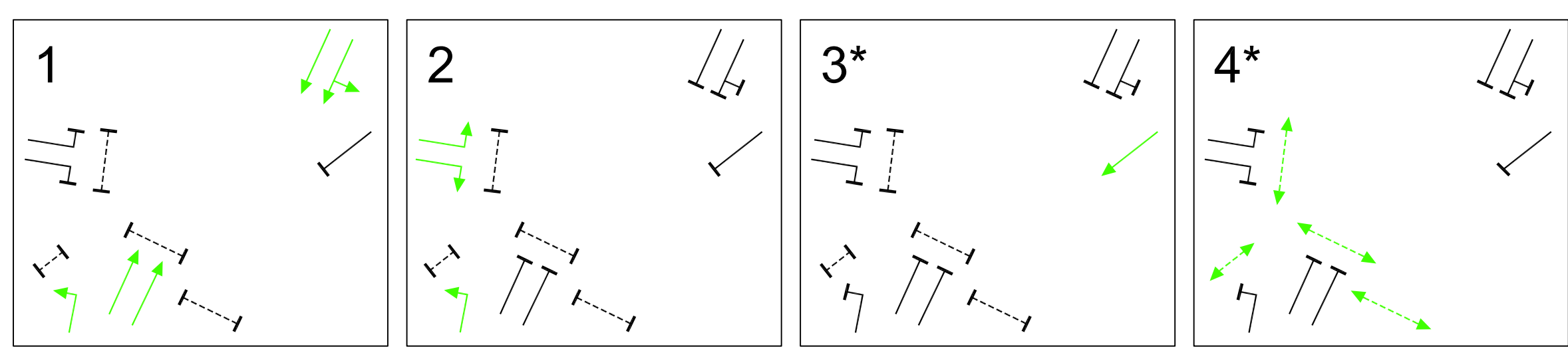
Amazing Journeys start here

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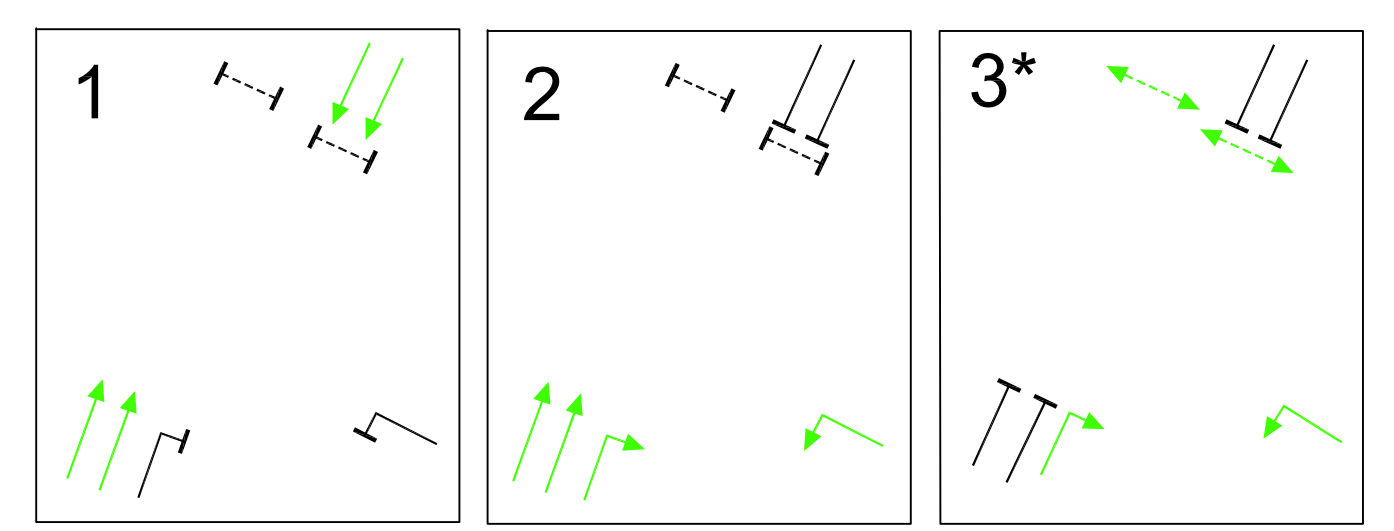
## **Appendix D      Improvement Proposals, Drawing Number C1124-SK-38-010 Rev11.0**



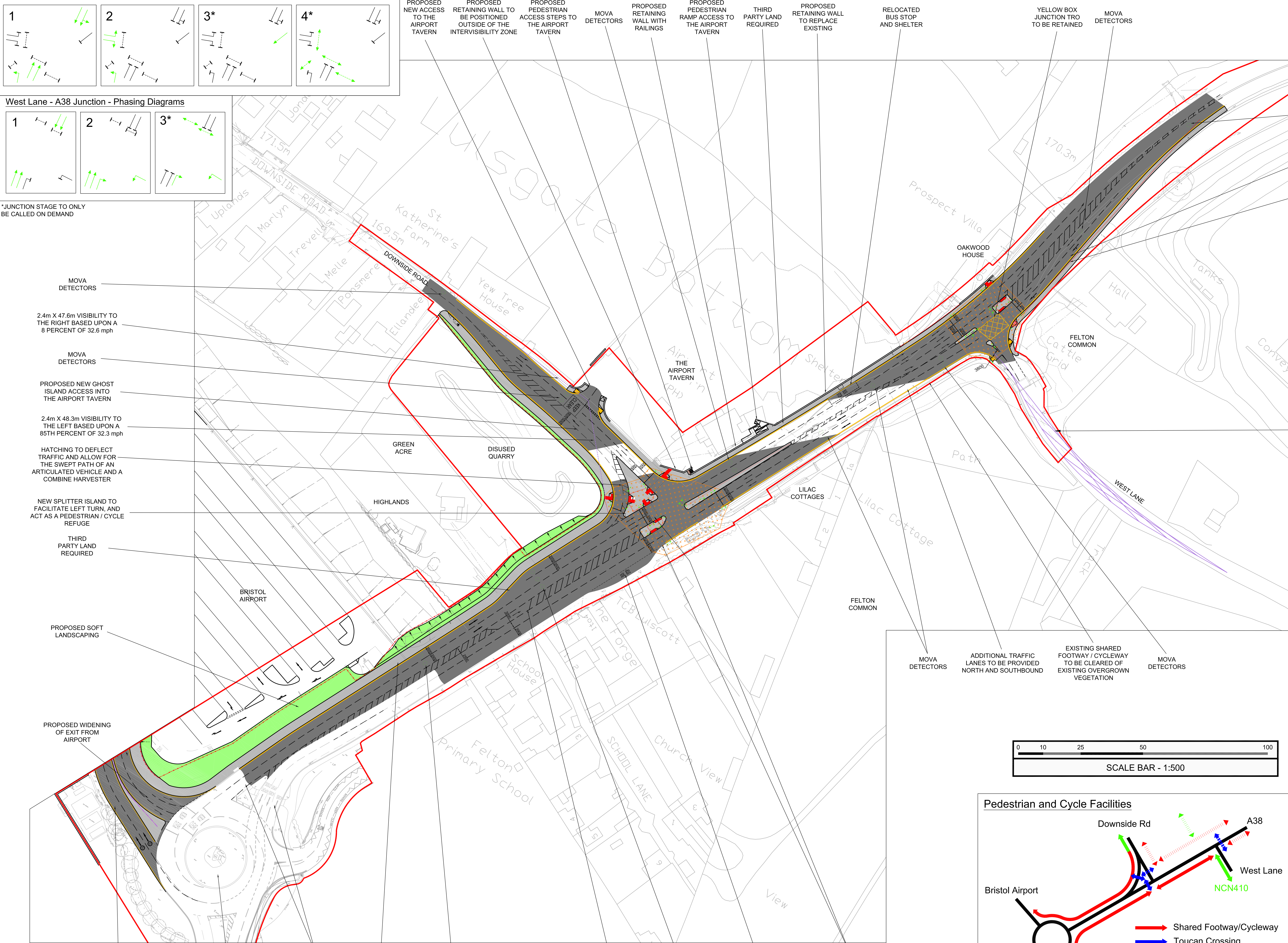
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West Lane - A38 Junction - Phasing Diagrams



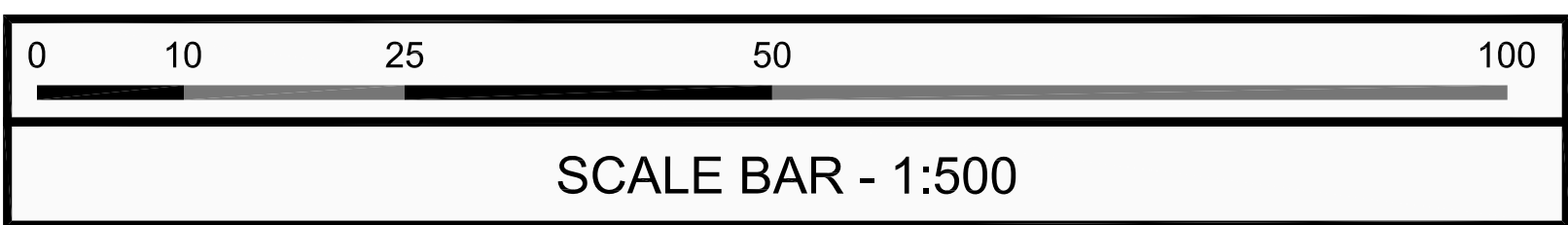
\*JUNCTION STAGE TO ONLY BE CALLED ON DEMAND



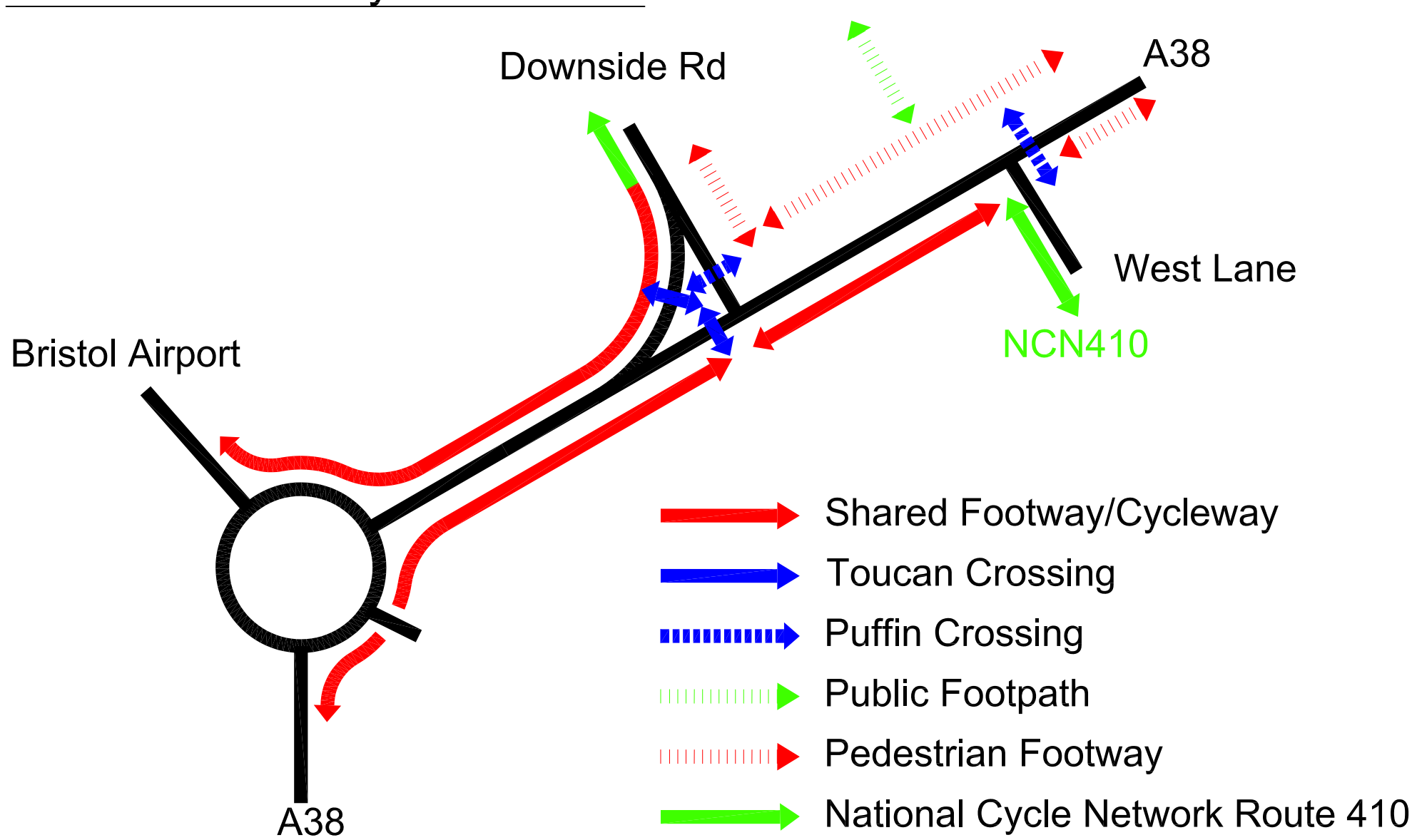
LEGEND

- RED LINE BOUNDARY
- HIGHWAY BOUNDARY
- INTERVISIBILITY ZONE
- VISIBILITY SPLAYS BASED ON SSD SET OUT WITH MFS
- VISIBILITY SPLAYS BASED ON SSD SET OUT WITH DMRB

11.0	AIRPORT EXIT ONTO ROUNDABOUT AND WEST LANE STOP LINE AND SIGNALS AMENDED. TACTILE PAVING AND WORKS AROUND THE AIRPORT TAVERN UPDATED. A38 SOUTHBOUND LANE WIDTHS ALTERED	DR	18/04/19	CC
10.0	AMENDMENTS FOLLOWING ANALYSIS	JP	20/11/18	CC
9.0	AMENDMENTS FOLLOWING RSA	JP	25/10/18	CC
8.0	AMENDMENTS TO PROPOSED LAYOUT	GS	16/10/18	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



Pedestrian and Cycle Facilities



Unit 2, First Floor, Woodlands Business Village  
Coronation Road  
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Client  
**Bristol Airport**

Project  
Bristol Airport 12MPPA Masterplan

Title  
A38 Junction Improvements  
Option 10

Original Scale	Drawn By	Date	Checked By	Auth	
1:500@A0	TO	24/10/18	DR	CC	
Drawing Number	Rev				
C1124-SK-A38-010	11.0				



## **Appendix E      Pedestrian, Cycle and Bus Use 2018 Video Survey Counts**



#### Southbound

10/07/2018	Time In	Time Out	Vehicle
	17:25:45	17:45:37	Taxi
	17:34:03	17:41:15	Taxi

#### Northbound

10/07/2018	Time In	Time Out	Vehicle	
	17:47:36	17:48:28	Car	Reversed from layby back onto footway.

A38 / Downside  
10/07/2018

AM	Time	Road	Number of people
	08:01:00	A38	1
	08:05:43	Downside	1
	08:11:11	Downside	1
	08:12:59	Downside	1
	08:18:59	Downside	2
	08:20:38	Downside	2
	08:24:07	Downside	2
	08:33:19	Downside	2
	08:46:14	A38	2

Cycle

Inter	Time	Road	Number of people
	13:20:24	A38	2
	13:22:21	A38	1
	13:32:30	Downside	1
	13:33:23	Downside	1
	13:58:24	Downside	1
	13:58:24	Downside	1

Not at crossing  
Not at crossing

PM	Time	Road	Number of people
	17:01:49	Downside	1
	17:03:13	A38	1
	17:05:31	A38	3
	17:06:26	Downside	3
	17:11:18	Downside	3
	17:26:06	Downside	1
	17:32:20	A38	1
	17:33:28	Downside	2
	17:48:43	A38	2
	17:52:48	A38	1
	17:54:03	Downside	1

Not at crossing

Not at crossing

Not at crossing

	Downside Road	A38		Total
		Crossing	Not at Crossing (between downside and West lane)	
AM	7	2	0	9
Inter	4	0	2	6
PM	6	2	3	11
Total	17	4	5	26
		9		

Crossing Road between Airport and Downside Lane  
10/07/2018

AM	Time	Road	Number of people
	08:34:54	A38	1

Crossed back at 08:34:02

Inter	Time	Road	Number of people
	13:31:36	A38	1

PM	Time	Road	Number of people
	17:08:45	A38	1
	17:35:52	A38	1

	Crossing Road between Airport and Downside Lane	Total
AM	1	1
Inter	1	1
PM	2	2
Total	4	4

West Lane  
10/07/2018

AM	Time	Road	Number of people
	08:12:50	West lane	1

Inter	Time	Road	Number of people
	No Movemens recorded		

PM	Time	Road	Number of people
	17:28:45	West Lane	2

	West Lane	A38	Total
AM	1	0	1
Inter	0	0	0
PM	1	0	1
Total	2	0	2

Airport Roundabout  
10/07/2018

AM	Time	Road	Number of people
	08:10:43	at junction	2
	08:19:21	at junction	2
	08:20:50	at junction	1
	08:27:35	at junction	1
	08:27:35	at junction	3
	08:46:33	at junction	1

Inter	Time	Road	Number of people
	13:05:53	at junction	6
	13:53:04	at junction	1

PM	Time	Road	Number of people
	17:03:19	at junction	4

	Airport Rb	Total
AM	6	6
Inter	2	2
PM	1	1
Total	9	9

## **Appendix F      Road Safety Audit**



# Sterling Road Safety

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## **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 <sup>rd</sup> October 2018

## Contents

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<b>3</b>	<b>Matters Arising From This Stage 1 Audit</b>	<b>9</b>
<b>4</b>	<b>Auditor Statement</b>	<b>16</b>

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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 22<sup>nd</sup> 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.



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## 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 8<sup>th</sup> 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](http://www.sterlingroadsafety.co.uk)

Signed: 

Date: 23<sup>rd</sup> 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: 23<sup>rd</sup> October 2018



## 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: 23<sup>rd</sup> 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			
3.2			
3.3			
3.4			
3.5			
3.6			
3.7			
3.8			

---

Problem no. in safety audit report	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Alternative measure (detail description)
3.9			
3.10			
3.11			
3.12			
3.13			

---

**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

## **Appendix G     Designers Response**



## 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: 23<sup>rd</sup> 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	<p>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.</p> <p>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.</p> <p>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 85<sup>th</sup> percentile speeds recorded in the east and westbound direction, using the visibility splay calculator set out within</p>

SRS/TJS/2018/023

			<p>Manual for Street (MfS).</p> <p>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.</p>
3.2	Yes	N/A	This comment has been superseded by the latest design revision. The existing pedestrian crossing is no longer being relocated.
3.3	Yes	Yes	<p>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 highlighted any accidents that are caused due to these changes in levels.</p> <p>The proposed changes alongside the new roundabout filter lane, it is proposed that a vehicle restraint barrier / roadside barrier will be provided 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.</p> <p>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.</p>
3.4	Yes	Yes	<p>Noted.</p> <p>A review of the Automatic Traffic Counts has indicated the actual 85<sup>th</sup> 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.</p>
3.5	Yes	Yes	Noted.

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			<p>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).</p> <p>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.</p> <p>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 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.</p> <p>In either circumstance parking outside of this parking bay (as observed), either completely or partly outside of the visible marking enforcement is possible.</p> <p>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.</p> <p>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.</p>
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SRS/TJS/2018/023

			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	<p>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.</p> <p>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.</p>
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	<p>For confirmation, a pedestrian / cycle facility diagram has been included on Drawing C1124-SK-A38-010 Rev 9.0.</p> <p>In addition to this, additional labels and ladder and tramline tactile paving have been added to denote the shared footway / cycleway facilities.</p>
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

SRS/TJS/2018/023

			<p>Assessment for the Hybrid Planning Application, for which the A38 Improvement scheme is an element of.</p> <p>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.</p> <p>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.</p> <p>The design of both the left turn from West Lane, and the southbound approach at the A38 / Downside Road junction has been designed to restrict as much as possible the opportunity for drivers to perform prohibited movements.</p>
3.11	Yes	Yes	<p>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.</p> <p>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.</p> <p>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.</p>
3.12	Yes	Yes	<p>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.</p>

SRS/TJS/2018/023

3.13	Yes	Yes	<p>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 85<sup>th</sup> 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.</p> <p>As it is outside the means of this proposal to acquire additional land 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:</p> <ul style="list-style-type: none"> <li>• All vegetation is cut back to edge of the highway boundary in order to maximize visibility around approaching bend.</li> <li>• Additional anti-skid surfacing to be provided on approach to the stop line.</li> <li>• Discussion with NSC over the potential to relocate the change of speed limit further along West Lane.</li> <li>• Provide adequate signage indicating tight bend, and new road layout ahead.</li> </ul> <p>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.</p>
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## **Appendix H      Walking, Cycling and Horse Riding Assessment**

Bristol Airport  
A38 Junction Improvements  
Walking, Cycling and Horse Riding Assessment and Review  
(WCHAR)  
May 2019



**Document Version Status**

Date	Purpose	Document Version	Author	Reviewer
30.10.18	Initial issue	1.0	Graham Smith	Chris Cowle
28.05.19	Updated following further meetings & comments from NSC	2.0	Caroline Moore	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 current improvement scheme (Drawing C1124-SK-A38-010 rev 11.0) is contained within **Appendix A**.

1.3. As part of the pre-application process, discussions were had with North Somerset Council (NSC) over the proposed design and required documentation to support the planning application. On 18<sup>th</sup> September 2018, NSC formally issued pre-application comments to the design team. One of the comments within 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 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 reference to the NSC response, this technical note has been prepared summarising 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 (TA) 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. 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. 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.
- 1.11. 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 to 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 to undertake this WCHAR following the requirements for a small scaled scheme.
- 2.4. 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.”*
- 2.5. 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.

2.6. The following text summarises the WCHAR Assessment phase.

Policy Review

2.7. 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

2.8. 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

2.9. 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

2.10. 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 are located on the adjacent section of the A38.

Evidence of Site Visit

2.11. A site visit was undertaken by C-TAS on 18<sup>th</sup> 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.

2.12. The primary findings of the site visit were:

- A zebra crossing over the Bristol Airport access road was well used with passengers travelling between the airport and the offsite parking operator / motel 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 0.7m) 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, the local highway authority.





- A shared cycle route along A38 starts on West 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 20.0m 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. The pre-application response from NSC included the request for the following pedestrian, cycle and horse riding elements to be added to the proposed design:

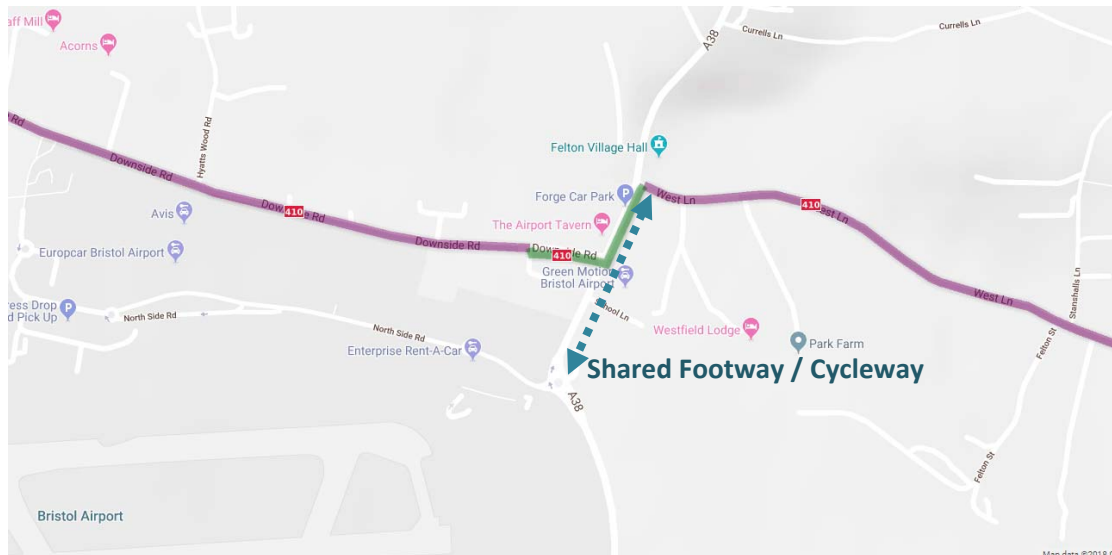
- The proposed scheme should provide details of pedestrian and cycle crossing facilities such as dropped kerbs and tactile paving; and
- The design needs to accommodate cycle route NCN 410 Avon Cycleway.

### 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 / West Lane junction.
- 4.2. The A38 is fronted by a number of residential and commercial 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 eastern side of the carriageway there is a shared footway / cycleway between West Lane and Bristol Airport, the available width varies between 2.5m and 0.7m. As mentioned previously, the actual width of this is reduced due to unmaintained vegetation encroaching over the footway. To the north of West Lane, there is a pedestrian footway that continues north to Potters Hill that is approximately 1.2m wide.
- 4.4. On the western side of the carriageway there is a pedestrian footway that starts/ends just north of Oakwood House and runs alongside the carriageway to Downside Road which is between 1.4m and 3.0m wide. Along the southern edge of Downside Road there is a pedestrian footway that runs between the Former Quarry site access and Bristol Airport. This footway is approximately 2.0m wide up to the approach of the Bristol Airport Roundabout, where the footway then converts into a shared footway/cycleway for the remaining 50.0m up to Bristol Airport Roundabout. 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.

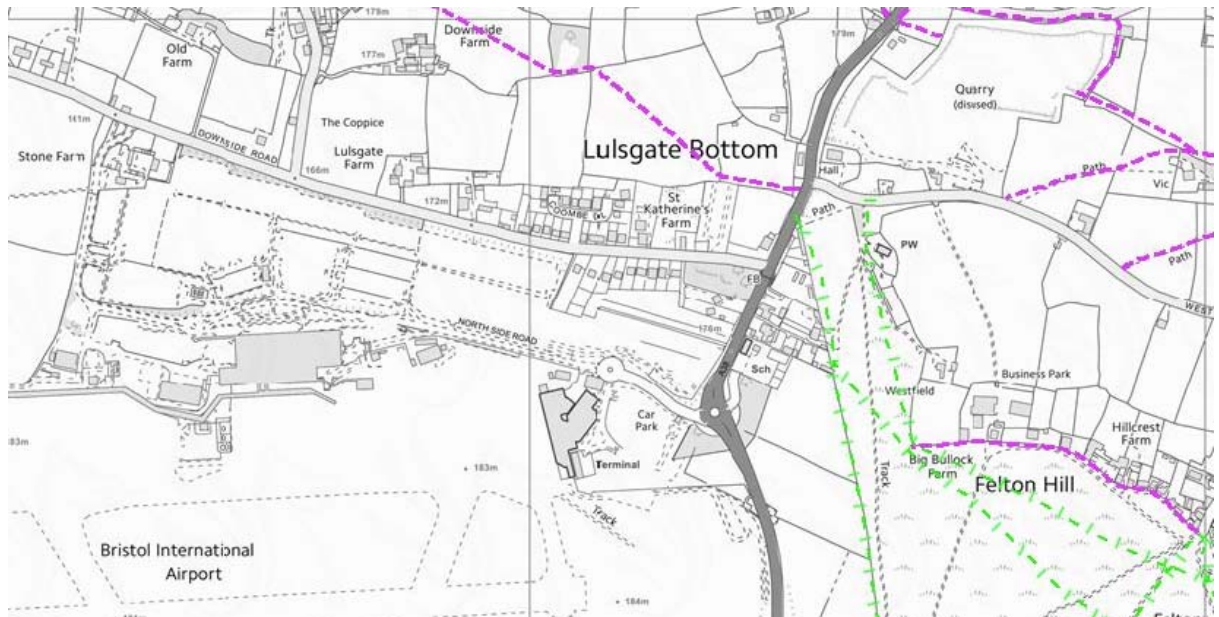


- 4.5. There is a formal signal controlled pedestrian crossing over the A38 within the traffic signals at Downside Road. Due to the operation set of these signals pedestrians are provided with a separate pedestrian stage.
- 4.6. The shared footway/cycleway provides a traffic free route from West Lane to Bristol Airport, as shown below.



Sustrans National Cycle Network Route 410

- 4.7. The route between West Lane and Downside Road is designated as Route 410 of the National Cycle Network. The route is a large circuit around 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.
- 4.8. 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. To the east of the A38, there is a bridleway that connects to the A38, north of the Lilac Cottages and another that connects to West Lane, approximately 80.0m to the east of the A38 / West Lane junction. These bridleways cross Felton Common and the common land.
- 4.9. 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

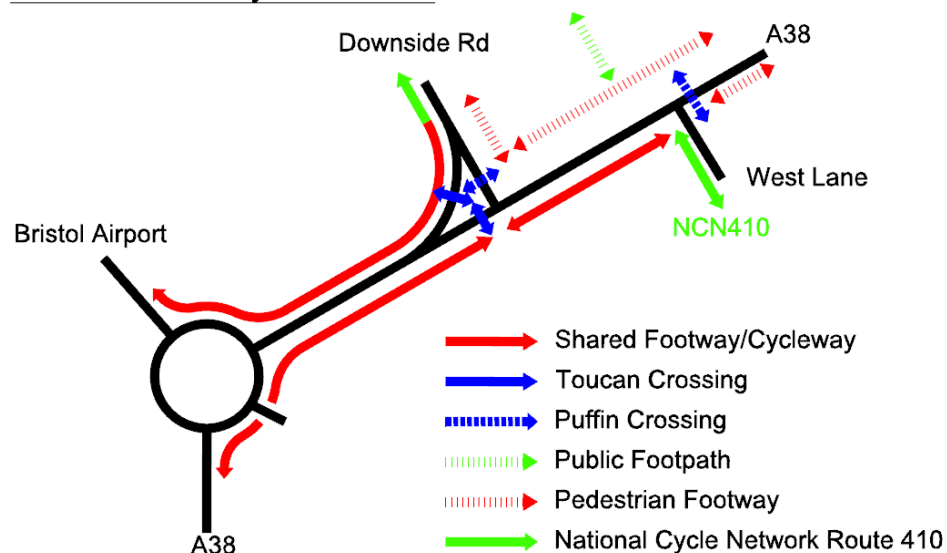
- 4.10. At present there is a bus stop on both sides of the road that are provided within lay-bys. The northbound bus stop is accompanied by a bus shelter with bench, whilst the southbound bus flag only stop.
- 4.11. There are no dedicated provisions for horse riding along or across the A38. This is reflected of by 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. There is also a cattle grid across the first section of West Lane, which would restrict access.

## 5 Future Walking, Cycling & Horse Riding Network Facilities

- 5.1. A copy of the proposed improvement scheme (Drawing C1124-SK-A38-010 v11.0) 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 improves 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 3.0m wide shared pedestrian / cycleway with a 0.5m 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. 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.
- 5.8. An additional new signalised pedestrian crossing will be provided across the A38 to the north of 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.
- 5.9. The figure below illustrates the proposed pedestrian / cycle facilities.

#### Pedestrian and Cycle Facilities



- 5.10. 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. The 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. The report has also identified improvements for users which are provided by the proposed highway scheme.

## **Appendix A**

Proposed A38 Improvement Scheme





## **Appendix I      NSC's Comments on Highway Mitigation Scheme**

MOS comments shown in green made on behalf of NSC road safety engineering team on 08/05/2019.

C-TAS comments shown in red made on behalf of Bristol Airport, updated following meeting with NSC on 12<sup>th</sup> April 2019.

## INTERNAL MEMORANDUM



### FROM: D&E HIGHWAYS & TRANSPORT INTERIM COMMENTS

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**Date:** 28<sup>th</sup> March 2019

**Development Control Case Officer:** Neil Underhay

<b>Application No:</b> 18/P/1518/OUT
<b>Location:</b> Bristol Airport North Side Road Felton Wrington BS48 3DP
<b>Proposal :</b> Outline planning application (with reserved matters details for some elements included and some elements reserved for subsequent approval) for the development of Bristol Airport to enable a throughput of 12 million terminal passengers in any 12 month calendar period, comprising: 2no. extensions to the terminal building and canopies over the forecourt of the main terminal building; erection of new east walkway and pier with vertical circulation cores and pre-board zones; 5m high acoustic timber fence; construction of a new service yard directly north of the western walkway; erection of a multi-storey car park north west of the terminal building with five levels providing approximately 2,150 spaces and wind turbines atop; enhancement to the internal road system including gyratory road with internal surface car parking and layout changes; enhancements to airside infrastructure including construction of new eastern taxiway link and taxiway widening (and fillets) to the southern edge of Taxiway GOLF; the year-round use of the existing Silver Zone car park extension (Phase 1) with associated permanent (fixed) lighting and CCTV; extension to the Silver Zone car park to provide approximately 2,700 spaces (Phase 2); improvements to the A38; operating within a rolling annualised cap of 4,000 night flights between the hours of 23:30 and 06:00 with no seasonal restrictions; revision to the operation of Stands 38 and 39; and landscaping and associated works.

## 1. Highway Mitigation Measures

Highways has reviewed the proposed improvement scheme to Downside Road/A38 junction and provides further comments below.

### 1.1 Road Safety Comments

These comments have been provided to identify potential issues that could occur to all road users following the proposed changes at Downside road. The Road Safety Engineering Team carried out a desktop study of the site and drawing proposals on the 22 January 2019. The Road Safety Engineering Team have assessed the changes based on drawing no. C1124-SK-A38-010 - A38 Junction Improvements, Option 10.

Although the proposals were assessed based on the principles of GG119 and by members qualified to carry out Road Safety Audits, the Road Safety Engineering Team has not carried out an official Road Safety Audit, therefore this report has been produced. Whilst it is recognised that some of these issues could be dealt with at the detailed design stage, a designer's response to these concerns must be provided by the applicant.

### 1.2 Accident History:

CrashMap indicates there have been 9 slight accidents and 1 fatal accident in the last 3 years 2015-2017 within the vicinity of the junction improvement scheme.

### 1.3 Comments:

#### 1. Risk of side swipe and merge type accidents

The layout gives priority to vehicles leaving the airport which will result in weaving of vehicles travelling from the A38 to Downside Road. The merge off the roundabout is very short and does not allow much time for vehicles to merge (which is existing), but with the additional lane coming from the airport the merging and weaving will increase. The dedicated exit from the airport could result in squeezing vehicles exiting the roundabout, should there be a give way on the airport exit.

In addition, cyclists travelling along the A38 towards Bristol will end up in lane 2 and must merge into lane 1, crossing the path of faster moving vehicles.

It is required that the arrangement is redesigned so airport traffic must give way to A38 traffic which will reduce the merging and weaving risk of accidents.

BAL have examined a number of alternative layouts which seek to address the issues raised by NSC. Drawing C1124-SK-A38-010 rev 11.0 indicates a revised design for the A38 / Airport access roundabout. The layout provides two lanes leaving the airport which widen to three at the roundabout. This layout provides sufficient capacity to support BAL's proposals. The new layout retains more of the current boundary planting and keeps the existing pedestrian crossing point on the A38 north arm.

Accepted

#### 2. Risk of pedestrian accidents

There are proposals for a refuge island to be provided to replace the crossing facility lost at the roundabout. Currently use of these facilities is likely to be minimal, however there are proposals for 49 rooms at The Forge hotel and on the old primary



school site. (Some are replacing existing rooms). The proposed refuge will become a primary route for pedestrian access to the airport, crossing is slower whilst carrying luggage, which could increase the risk of pedestrian accidents.

It is required that a crossing assessment is carried out to ensure the correct facility and appropriate widths are provided. If this layout is deemed acceptable the pedestrian island on the A38 approach to the airport needs to be a minimum width of 2.00 metres.

The existing pedestrian crossing point closer to the A38 / Airport Access junction is retained as part of the response to point 1 above. The additional island closer to the Forge is therefore no longer required and has therefore been removed.

A crossing assessment should still be carried out on the existing crossing point to ensure suitability, and the visibility to the crossings should be improved. This can be undertaken post consent.



3. Risk of 'nose to tail' and 'side junction to main road merge' type collisions.

The proposed right turn lane into School lane will serve both the hotel proposals and current School Lane access. The right turn lane is approx. 40m in length for School Lane, however the access into the proposed hotel is approx. 20-25m from the start of the right turn lane. This will result in harsher braking and the potential for a following vehicle heading to School Lane colliding into the rear of the vehicle turning

into the hotel access. There is also a risk of vehicles entering the main road injudiciously across the 5 lanes when turning right.

It is required that the right turn lane is redesigned to consider the 2 access points and that the accesses are left out only to avoid vehicles crossing multiple lanes.

Examining both applications in detail, it appears the developers have proposed to operate the access points as left in / left out. It is understood from the meeting that NSC will undertake further reviews of these third party access proposals as necessary and will advise what measures the developers will be asked to provide now that the comprehensive airport scheme has been developed. BAL can add these proposals to their plans once they have been agreed and supplied in sufficient detail. In the meantime, the number of gaps within the hatch area have been reduced to one, catering for access into School Lane.

Accepted – the proposed hatching width should be maintained at 2.5m or more to future proof for any right turn proposals.

#### 4. Risk of cyclist accidents

The lane widths through the site vary from 3.0m-3.5m which could cause overtaking vehicles to squeeze cyclists, particularly around the 3.5m width and whilst travelling uphill.

It is required that lane 1 in both directions are widened as much as possible (ideally to 4.25m or above) to keep a consistent approach and take account of slower moving cyclists, particularly uphill. Where widths are not possible 3m running lanes will suffice meaning drivers must make a conscious decision to overtake and will slow until there is an opportunity to do so.

BAL are not proposing to change the position of the Eastern kerb of the A38 other than the section north of west Lane. There are constraints posed by land ownership and dwellings which prevent further road widening. The removal of the additional traffic island on the A38 between Downside Road and Airport Access (point 2 above) has allowed the hatching between the north and south bound lanes to be reduced. The nearside southbound lane (uphill) has been widened to 3.9m to provide additional width for vehicle to pass cyclists. It should be noted that there is also a shared cycle track over this section of the A38.

Although the lane widths aren't ideal and are inconsistent, the area that can be improved has been as much as possible within the physical highway constraints.

#### 5. Risk of side swipe accidents

It is not fully understood how vehicles are expected to access Lilac Cottages and whether they are left in left out only. Vehicles turning left in might swing out wide into lane 2 due to the acute angle which could result in a side swipe/nose to tail with the vehicle overtaking in lane 2. There is also a risk that drivers might turn right in/out in between the islands into the path of another vehicle. There are also no dropped kerbs/tactiles for pedestrians/cyclists crossing the 'bell-mouth'.

It is required that this access is looked at in more detail to fully understand vehicle movements and that track runs are carried out. Dropped kerbs/tactiles should also be provided.

While additional lanes have been added to the A38 in both directions, access to / from Lilac Cottages remains unchanged from the current situation.

Accepted

#### 6. Risk of pedestrian accidents

There are not any dropped kerbs/tactiles shown on the new access into the Airport Tavern, this could result in pedestrian trips or fall.

It is required to review the pedestrian flows and installed dropped kerbs and tactile paving at this junction.

Drop kerbs and tactile paving have been added to the junction layout drawing. To be confirmed as part of the detailed design.

Accepted

#### 7. Risk of cyclist accidents

Cyclist could ride out into the path of vehicles heading NE on Downside Road where they are told to re-join the carriageway.

It is required to improve the signing and lining in this area to ensure it is clear to cyclists that they do not have priority and they are to give way at this location.

The Northeast bound carriageway has been locally widened and giveaway markings added to the latest drawing. Traffic signs will be added and can be confirmed as part of the detailed design.

Accepted

#### 8. Risk of overtake and side swipe accidents

Due to the busy nature of the A38 and the multiple lanes there is an increased risk of side swipe type accidents caused by vehicles overtaking a bus at the bus stop.

It is required to locate the bus stop within a layby to reduce the risk of overtake / side swipe accidents.

The provision of online bus stops is common place and prevents buses having to wait to re-join the main carriageway. This arrangement is the preference of the bus operators. The provision of a lay-by in this location would also require additional land.

Reasons are understood but there is still concern for overtake accidents during busy periods this should be addressed in any road safety audit post consent.

#### 9. Risk of pedestrian and cyclist accidents

The existing shared footway/cycleway is very narrow for shared use which could result in cyclists colliding with pedestrians or riding into the road to avoid pedestrians.

It is required to widen this shared footway/cycleway to a minimum of 2.5m to avoid pedestrian and cyclist conflicts. (This is subject to NSC Area Officer checks on condition and width of the facility)

The share cycle track to the eastern side of the A38 is an existing facility. It is understood that NSC are looking to remove the existing undergrowth which extended from the common therefore narrowing the footway / cycleway which will maximise its width. It would not be possible to provide any additional width as this would require land from the common, or moving the road further west impacting on additional third party dwellings / land.

Accepted – signing and lining should be improved to raise awareness that it is a shared facility. See photo example below:



#### 10. Risk of pedestrian accidents

Pedestrians could be injured whilst trying to cross West Lane due to there being no refuge island or pedestrian phase on the signals.

It is required that a crossing assessment is carried out to ensure the correct facility is provided.

No pedestrian movements were counted at this junction during the survey period. The revised junction drawing does indicate an implied crossing point with lowered kerbs either side of the junction. To aid users the stop line on West Lane is also pulled further back slightly and realigned. Provisions for pedestrians at this point can be confirmed at the detailed design stage.

Accepted – facilities should be improved as much as reasonably practical.

#### 11. Risk of accidents from debris in the road

The traffic island looks to be around 1.0m wide with 3 signal heads on it, if enough clearance is not provided there is a risk that high sided vehicles could hit the signal heads and they fall into the path of a vehicle or motorcycle.

It is required that the island is redesigned so it can accommodate all 3 signal heads whilst providing sufficient clearance from vehicles.

The latest layout indicates a wider traffic island and the signals separated on to 3 separate posts. The information will be provided as part of the detailed design.

Accepted

#### 12. Risk of accidents from U-turns

With the banned right turn from West Lane there is a risk that drivers might turn right in/out in between the islands or do a U-turn around the NW island into the path of another vehicle.

It is required that the islands are designed to reduce the risk of vehicles turning right or carrying out U-turns as much as possible.

Traffic using the A38 is likely to prevent traffic attempting to U turn at this point. The revised drawing shows a slightly extended traffic island further west to provide an increased physical deterrent.

Accepted – island should be extended as much as reasonably practical.

#### 13. Risk of overtaking and side swipe type accidents

The merge NE bound looks to be approx. 50m in length which is likely to be under used or encourage aggressive overtaking/merging manoeuvres, which could result in side swipe type accidents. It is required to increase the length of the merge as much as possible (preferably 100m in length) to give vehicles more time to merge safely. If this is not possible then merge signage should be considered.

The two-lane section of the A38 extend 67m beyond the stop line with West Lane junction this then tapers back to the main carriageway over a further 50m. The total merge area is therefore longer than 100m. The requirement for signage can be reviewed at the detailed design stage.

At what distance from the stop line does the carriageway width reduce below 4.5m within the taper?

14. If extra traffic will be using the airport roundabout to 'u' turn is there enough capacity, are there any safety issues? A safety audit is required.

The supporting traffic assessment (TA) indicates traffic flows and junction performance.

Could not find, please summarise.

15. Right turn out of Downside appears tight. It is required splay are tracked, or confirmation of tracking should be provided by BAL.

The junction layout enables access for normal road going vehicles as well as road legal farm equipment. The supporting traffic assessment (TA) indicates the vehicle swept path analysis which has been undertaken.

Accepted – could not find all the track runs.

16. Tactiles are required across the highway access into the Airport Tavern on the desire line, as well as tactiles across the West Lane bell-mouth on the desire line.

Point 6 above addresses these observations.

Accepted

17. Planning has been granted for 2 new developments 16/P/1581/F (School site) 17/P/1245/F (The Forge) these have not been incorporated into the drawings, can the 4<sup>th</sup> leg of the roundabout be used? (right turns in / out should be a banned movements).

Point 3 above partially covers this item. The new access arrangements can be added to the proposed layout once suitably approved detailed drawings have been received from NSC. The eastern side of A38 / Airport Access roundabout remains unchanged from existing.

Accepted

#### 1.4 General comments

Design Standards to be as per DMRB due to the road being one of North Somerset's principle 'A' roads. There is an existing problem with vehicles parking and blocking the shared footway/ cycleway outside the Forge Motel. This should be enforced to maintain the width using TRO's.

Enforcement of existing parking offences in this location is currently the responsibility of NSC. However, the measures proposed as part of the wider S106 package would include a contribution towards ensuring dedicated resources for the purpose of enforcement.

Accepted



The two signalised junctions need to be linked together properly to maximise traffic flows using MOVA etc.

This is the proposed operation, the details of which will be provided as part of detailed design

Accepted

A yellow box marking would be required on the A38 where traffic enters from Downside Road to ensure NE bound traffic heading towards Bristol is not blocked between light sequences.

Traffic modelling indicates this road marking is not required. However, it could be added and this can be confirmed as part of the detailed design stage.

OK – can be reviewed

The left only out of West Lane is likely to put additional traffic onto Currells Lane, Newditch Lane or Dial Lane junctions with the A38, potentially creating collisions problems at these sites.

Changes to the local traffic routes and the impact on adjacent junctions is included within the transport assessment (TA).

Could not find, please summarise.

Visibility splays to signal heads are not shown, these need to meet DMRB standards.

There is good visibility provided to all signal heads. The location of the heads can be finalised as part of detailed design stage.

Please provide a plan showing visibility splays.

- Section 278 required to include 2 x commuted sums required for the signals,
- Inspection fee 4% of the bond.
- Full Technical approval package required to be approved
- AIP required for the new retaining wall

These requirements will form part of S278 negotiations

## 1.5 Highways & Electrical Comments (Lighting/Signals)

The 'Design and access statement – Part 4 – 6.2.3' refers to the external lighting strategy. To confirm that the ULR should be <2.5% for an E2 environment and not <5% as suggested.

This point is noted. Lighting issues will be addressed in full as part of the detailed design stage.

The 'Lighting assessment – Part 1 – 3.3.1' refers to 6m columns, however all the lighting columns on the A38 adjacent to the airport are 10m, with no lighting on Downside Rd, so we seek clarification as to what this is referring to.

The A38 will continue to have street lighting which will be extended to cover the additional carriageway and footway. The street lighting will be extended along Downside Road to the end of the proposed cycle track. The nature of the lighting will be agreed as part of detailed design.



The 'Lighting assessment – Part 1 – 4.4.1' makes recommendations for additional mitigation. I would propose that the A38 lighting has back shielding implemented to further reduce light spill onto the woodland area.

Bats have been found to frequent the abandoned quarry alongside Downside Road. Suitable mitigating measures are therefore required and will be agreed as part of detailed design.

The 'Lighting assessment – Part 1 – 4.4.1' again suggests a ULR of <5% when it should <2.5% for a E2 environmental zone.

This point is noted. Lighting issues will be addressed in full as part of the detailed design stage.

The 'lighting assessment' indicates that an initial lighting design proposal has been carried out, but the lux contour plans for these have not been included. These will need to be provided to ensure that parameters are met, along with prescribed design levels and mitigation calculations to meet the requirements of ILP GN01:2011 and requirements for bats.

Plans including location of columns will be provided as part of detailed design.

'Lighting assessment – Part 2 – Appendix D – Plan 09194-HYD-XX-GF-DR-E-9013' gives an indication of the proposed lighting at the Junction of Downside Rd with the A38. It is a requirement that for detailed design that the proposed lighting for Downside Rd is extended further to take in the further lane split and provided adequate lighting on approach to the conflict area. Similar foresight needs to be given to West Lane and appropriate lighting including on the West lane approach to the proposed traffic signal junction.

Plans including location of columns will be provided as part of detailed design.

## 1.6 Traffic Signals – Proposed Improvements

Given the extent of the works proposed to the existing traffic signal junction, is banning the right turn into Downside Rd still the best solution for optimising traffic flows? A number of revisions leading to the proposed design have been carried, what are the alternatives and the benefits/dis-benefits that have led to this being the best solution?

The Design and Access Statement contained within the TA describes the other options considered as part of the junction improvement scheme development process.

Need to further understand the decision to ban right turn movements out of West Lane as this will increase traffic on the roundabout at the main entrance of the airport or redistribute traffic to other un-signalised junctions along the A38, which may increase safety concerns etc.

The effect on the roundabout and other local roads is described and analysed as part of the TA.

Concerns with ingress/egress from various properties along the A38 adjacent to the traffic signals, waiting areas in hatched areas, right turn movements across multiple lanes, lilac cottages access (space is inadequate as a waiting area).

This comment is addressed as part of points covered earlier in this document.

Requirement to further understand the need for traffic signals at the A38/West Lane part of the proposal. The TA indicates that the proposal for the crossing is to allow pedestrians using the bus lane to cross the A38 to West Lane. Given that the numbers of pedestrians would be minimal, it could be argued a refuge island would be sufficient. If this is the case and the right turn out is banned from West Lane with minimal interactions, has a proposal been considered without this node signalised?

The performance of West Lane is described within the TA.

Confirmation as to whether the front access to the Airport Tavern will be shut with the new proposed entrance in place.

The scheme includes the closure of the existing Airport Tavern access from the A38 frontage, with a new access provided from Downside Road.

The queue for Downside Rd is indicated as 8.3 at its worse approx. 50m of cars which would take it past the new entrance for the Airport Tavern. Without information on the number of users entering the site, some concerns with vehicles turn right into the new entrance impeding the flow of traffic for those turning left into Downside Road from the A38.

A keep clear marking has been provided on the revised layout drawing.

The proposals indicate rough positions of the traffic loops proposed to manage the operation of the traffic through the signals, however nothing indicated for West Lane. Will need to understand what this will look like and how it will be designed given the presence of a cattle grid.

Traffic signal loops to be developed as part of detailed design. We discussed the ongoing requirement for the cattle grid and NSC agreed to review if it was still required now the A38 has been de-trunked.

The queue for traffic turning right is indicated as 15.7 approx. 90m of cars. Unsure if this is split across both lanes or the resultant queue for vehicles waiting to turn right. This does raise concerns of traffic backing up into the next node, even more so if a bus as waiting at the bus stop.

The queue is split and the signal timings will prevent blocking back. The details of which form part of the TA.

Need to ensure adequate width on West Lane turning left between the kerb and the island is wide enough for larger vehicles to make the movement and to ensure the island is sufficient in size for the proposed traffic signal.

The vehicle swept path is contained within the TA.

Stop line detection will need to be installed on many approaches as it is likely some residents joining the A38 will have joined beyond the proposed MOVA loops and

would end up stuck if the lights have reverted to all red, with no other demands for those approaches.

Not all traffic loops are shown at this stage, final layout will be developed as part of detailed design.

If the proposed layout is taken forward consideration should be made for the A38/West Lane junction to operate dual stream, separating the A38 BA to Bristol and its associated crossing from the rest of the staging.

This will be agreed as part of detailed design.

Consideration should be made as to whether the left turn into Downside Rd and its associated crossing could be separately streamed from the rest of the junction.

This can be undertaken but slip lane is relatively short so full benefit might not be realised. This will be agreed as part of detailed design.

Confirmation as to whether the Downside Rd right turn movement is also to allow vehicles to enter Lilac Cottages. If they are allowed, then consideration of the road marking and signalisation need to be considered.

This movement is not permitted as part of the design, in line with the current operation.

There is no indication of maintenance bay provision for engineers carrying out maintenance of the traffic signals. Presume this will be indicated in the detailed design along with controller positions?

Location of controller and maintenance bay can be agreed as part of detailed design.

We will need to understand the co-ordination between the two junctions to ensure that they will operate without internal lock up, so ensuring that internal approaches clear effectively each cycle.

This is covered as part of the Transport Assessment.

In addition to the improvement scheme identified at Downside Road, North Somerset Council and Bristol City Council has requested BAL provide further information and data on the following locations:

- SBL junction with A370 (BCC)
- Dundry Lane junction with A38

This is covered as part of the Transport Assessment and separate ongoing discussions.

Depending on the conclusions of the data provided, further contributions to mitigation and design at these locations may be required. It is not expected the airport would pay for the mitigation works in entirety, rather contribute to feasibility and/or a residual contribution to the scheme based on its proportion of passenger use at these specific locations.

This is covered as part of the Transport Assessment and separate ongoing discussions.

From reviewing the responses to the BAL application for 12 mppa, a proportion of residents and stakeholders have requested the scale of the application and expansion warrants providing mass transit post 10 mppa. Although a contribution for this would be merited for feasibility/design, this is to ensure mass transit could be progressed to meet the changing and future requirements of passengers to the airport, it is not envisaged by officers a contribution would be for providing mass transit solution at this stage. Instead we would wish to see this come forward as a residual contribution within the major project S106 contribution within the heads of terms.

This is covered as part of the Transport Assessment and separate ongoing discussions.