Appeal by: Bristol Airport Limited

Appeal Reference: APP/D0121/W/20/3259234

North Somerset Council Application Reference: 18/P/5118/OUT

Proof of evidence of
Tim Colles BEng (Hons)
Transport

Reference: NSC/W4/1

Atkins

ATKINS

Member of the SNC-Lavalin Group

Appeal APP/D0121/W/20/3259234
Application 18/P/5118/OUT

Development of Bristol Airport to enable throughput of 12 million passengers per annum

North Somerset Council

15 June 2021

Tim Colles BEng (Hons)

Proof of Evidence

TOWN AND COUNTRY PLANNING ACT 1990
APPEAL BY BRISTOL AIRPORT LIMITED
PROOF OF EVIDENCE ON BEHALF OF NORTH SOMERSET COUNCIL

Contents

1. Introduction

1.1. The Witness

1.1.1. My name is Tim Colles. I am a Senior Managing Consultant with Atkins Limited based in their Birmingham office. I have a Batchelor of Engineering Degree from the University of Wales and have over 20 years' experience as a Transport Planner, working for both the public and private sector, with experience in aviation and highway development control. My experience includes significant transport infrastructure projects in the UK and Middle East. This involved *inter alia* surface access studies for Birmingham Airport and East Midlands Airport, and masterplan development for Abu Dhabi Airport landside requirements. These projects involved the assessment and operation of highway capacity for set down and pick up areas, parking studies and sustainable mitigation measures to accommodate shortfall in staff and passenger parking. It also included optimisation of short and long stay parking capacity and the design and location for the provision of a bus interchange to maximise sustainable mode share. My work has also included studies for railway station connectivity at East Midlands Airport.

1.1.2. In addition to my aviation experience, I was an expert witness for the East West Rail 2 TWAO Inquiry as well as other planning appeals, hearings and examinations. I have also supported several local authorities with development control. This includes sustainable urban extensions, motorway service areas and major application reviews. These projects include highway mitigation, sustainability and safety.

1.1.3. Atkins Limited is an international design, engineering and project management consultancy working in a wide range of sectors including; infrastructure, transportation, nuclear and power, oil and gas, engineering and design.

1.1.4. In July 2020 I was approached by the Lead Transport Planner at North Somerset Council ("the Council") who requested support for a potential appeal by Bristol Airport Limited ("BAL"). I considered the application documents prior to instruction and in my professional opinion the case for refusal was reasonable and one which I could support consistently with my professional obligations. I was subsequently appointed in September 2020 following the lodging of the appeal by BAL.

1.1.5. I have reviewed the relevant material submitted by the Appellant and prepared my Proof of Evidence ("PoE") for this appeal. I confirm that the opinions expressed are my true and professional opinions.

1.1.6. I appear at this Inquiry on behalf of the Council to give evidence on transport planning matters.

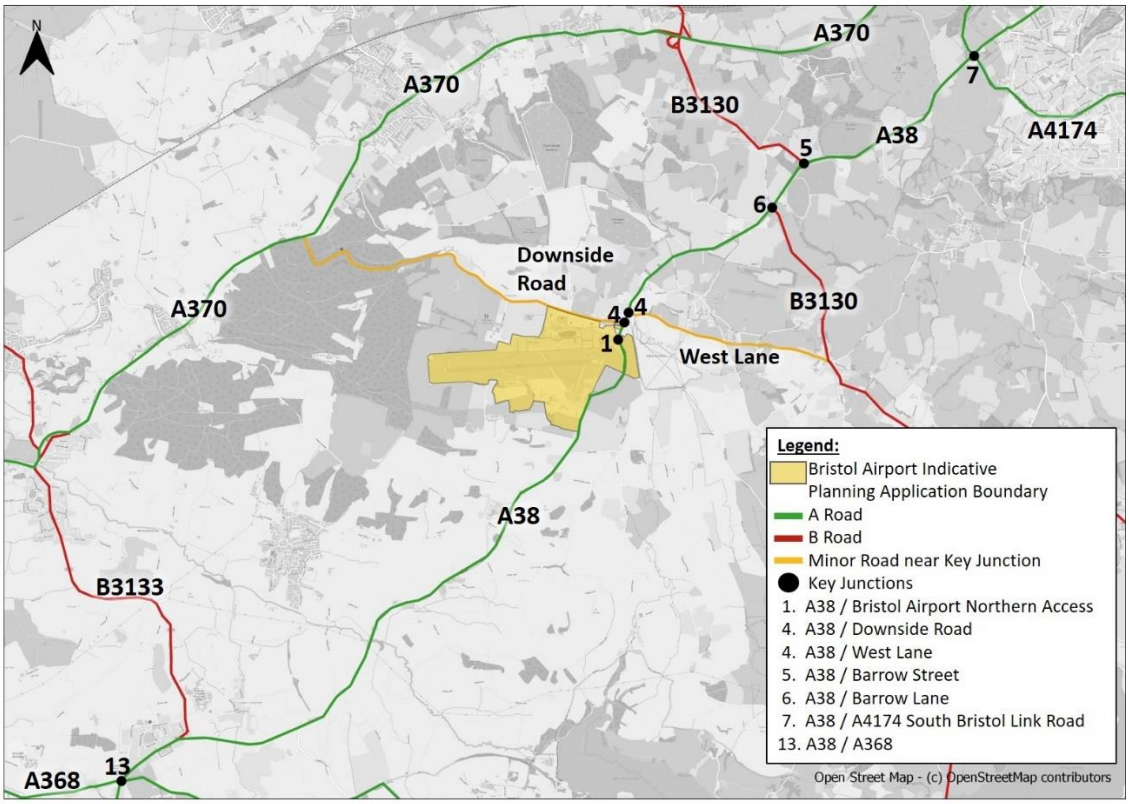
1.2. Background

1.2.1. This appeal is concerns the decision of the Council to refuse to grant outline planning permission, with some reserved matters included and others reserved for subsequent approval, for the

development of Bristol Airport ("BA") to enable a throughput of 12 million terminal passengers in any 12-month calendar period ("the Proposed Development"). Full details of the application and the Proposed Development are provided in the Statement of Common Ground ("SoCG"). I deal below with those parts of the application and the Proposed Development which bear on transport issues.

1.2.2. The appeal site comprises BA and land adjacent to it including land at the A38 highway, Downside Road and other private land. The site location and adjacent highway network are shown in Figure 1-1.

Figure 1-1 Site Location and Adjacent Highway Network



1.2.3. The A38 is particularly pertinent to this appeal as it provides the two main highway access points to BA and is subject to the proposed highway mitigation measures at BA Access Roundabout (Junction 1), Downside Road (Junction 4) and West Lane (Junction 4). The A38 also forms junctions at four other locations which are considered in the Transport Assessment Addendum ("TAA")

1.2.4. Although not locally designated as part of the Highways England's Strategic Road Network, the A38 performs a strategic function connecting Bristol with Somerset, Devon and Cornwall and has significant economic importance. The A38 compliments the Strategic Road Network providing resilience and connectivity to the M5. In the vicinity of the Proposed Development, the A38 is single carriageway subject to a 40mph speed limit and experiences congestion in peak periods (as identified in section 11 of TA 2018 Baseline results).

1.3. Information Reviewed

1.3.1. The information that I have reviewed in preparing my PoE is listed below. These documents form Core Documents to this Inquiry and have been given unique reference numbers. Following the initial application in 2018, further submissions have been made to include sensitivity tests and an addendum to reflect the impact of COVID-19. This PoE is based on the findings and conclusions of the most recent submissions noting that they are updates to earlier submissions and therefore have to be read in conjunction with them.

(a) CD 2.5.8 Documents forming Application Submission (Ref: 18/P/5118/OUT);

(b) CD2.9.1 to 16 Transport Assessment (December 2018) ("the TA");

(c) CD3.1 Transport Post-Submission Sensitivity Tests (January 2019);

(d) CD2.20.3 TA Addendum (Appendix 5A November 2020) ("the TAA");

(e) CD2.20.1 ES Addendum Main Report (Volume 1 November 2020);

(f) CD2.11 Parking Demand Study (2018);

(g) CD3.6.2 Parking Demand Study Addendum (2019); and

(h) CD2.23 Update to the Parking Demand Study (November 2020).

1.3.2. Whilst I have focussed on the documents listed above given their obvious importance to my evidence, I have also considered the application and appeal documents more widely in order to understand the background to the specific transport issues. For example, I have also considered the report prepared by the Council's officers and representations made by local residents on the issue of transport.

1.3.3. I visited the site and relevant highway network in June 2021 following relaxations to international travel. At this time a limited number of countries were on the Government's green list for international travel. Government guidance was for office workers to continue to work from home where they could. Consequently, airport activity was significantly below typical capacity and traffic levels on the highway network were not typical. I have been cognisant of this in my assessment.

1.4. Report Structure

1.4.1. My PoE uses the following structure:

(a) Section 2 – the scope of my PoE;

(b) Section 3 – Relevant policy, standards and guidance;

(c) Section 4 – Surface Access Infrastructure;

(d) Section 5 – Parking provision;

(e) Section 6 – Public Transport; and

(f) Section 7 - Summary and Conclusions.

2. Scope

2.1.1. My PoE considers:

(a) the impact of the Proposed Development on surface access infrastructure;

(b) parking demand and supply; and

(c) public transport provision.

2.1.2. My PoE addresses Reasons for Refusal 1, 4 and 5, as set out in the SoCG.

2.1.3. The proposed parking provision identified in the planning application includes parking spaces to be provided in the Green Belt. The requirement for car parking in the Green Belt is directly related to the overall quantity of parking required, the amount of parking which is (or is not) accommodated elsewhere within BA, and the phasing of the parking being implemented. My PoE considers the parking demand and phasing in relation to sustainable mode share but not the phasing impact on the Green Belt or the location of parking.

2.1.4. Matters of adverse impacts on communities, location of parking, and impact on the Green Belt (including the phasing impact on the Green Belt) will be addressed by Mr Gurtler. Matters regarding the interpretation and application of policy are also addressed by Mr Gurtler

3. Relevant Policy, Standards and Guidance

3.1. Policy Documents

3.1.1. The policy references identified in the Reasons for Refusal are provided below with corresponding Core Document Reference numbers. I do not recite policies in my PoE as they are all included in the Core Documents.

National Planning Policy Framework

3.1.2. The NPPF sets out the Government's planning policies for England and how these are expected to be applied. The purpose of the planning system is to contribute to the achievement of sustainable development in three mutually dependent dimensions: economic, social and environmental. It is recognised that transport policies have an important role to play in facilitating sustainable development, and also in contributing to wider sustainability and health objectives.

3.1.3. The following parts of the NPPF are material to my evidence:

(a) paragraph 102, a), b), c), d) and e);

(b) paragraph 103;

(c) paragraph 108, a), b) and c);

(d) paragraph 109;

(e) paragraph 110; and

(f) paragraph 111.

3.1.4. I recognise that paragraph 104 of the NPPF concerns large scale transport facilities such as airports. However, as it is concerned with plan making, rather than decision taking, I consider it to be of less direct relevance to my evidence and the issues in dispute, in particular as the Council's Core Strategy and Development Management Policies Sites and Policies Plan Part 1 contains policies concerning BA (see below).

Planning Policy Guidance – Travel Plans, Transport Assessments and Statements

3.1.5. The Planning Practice Guidance ("PPG") (CD5.9) provides advice on when Transport Assessments are required, what information they should contain, and why they are important.

3.1.6. The relevant sections of the PPG are:

(a) 'Travel Plans, Transport Assessments and Statements'; and

(b) 'Transport evidence bases in plan making and decision taking'.

3.1.7. In the section 'Travel Plans, Transport Assessments and Statements, all of the paragraphs are relevant.

3.1.8. In the section 'Transport evidence bases in plan making and decision taking', only paragraph 012 is of some general relevance, relating to paragraph 104 of the NPPF (as to which, see above).

North Somerset Council Core Strategy

3.1.9. The Council's Core Strategy (CD5.6) sets out the broad long-term vision, objectives and strategic planning policies for North Somerset up to 2026. Its scope focuses on place shaping and the creation of sustainable communities, and demonstrating links to related issues such as health, education and wellbeing.

3.1.10. The Core Strategy should be read as a whole. The following parts of the Core Strategy are material to my evidence:

(a) Vision 1 North Somerset Vision;

(b) Priority objectives;

(c) policy CS1: Addressing climate change and carbon reduction;

(d) policy CS10: Transportation and movement; and

(e) policy CS23: Bristol Airport.

3.1.11. Policies CS1, CS10 and CS23 should be read together with their supporting text.

Development Management Policies Sites and Policies Plan Part 1

3.1.1. The Council's Development Management Policies Sites and Policies Plan Part 1 ("DMP1") (CD5.4) contains the detailed development plan policies which complement the strategic context set out in the Core Strategy (see p. 5). DMP1 should be read as a whole. The following parts of DMP1 are material to my evidence:

(a) policy DM26: Travel Plans; and

(b) policy DM50: Bristol Airport.

Joint Local Transport Plan 4

3.1.1. Joint Local Transport Plan 4 ("JLTP4") (CD7.5) was produced by the West of England Combined Authority, working with Bath & North East Somerset Combined Authority, the Council, Bristol Council and South Gloucestershire Council. JLTP4 considers the period 2020 – 2036 and sets out how those local authorities aim to achieve a well-connected sustainable transport network that works for residents, businesses and visitors across the region; a greater network that offers greater, realistic travel choices and makes walking, cycling and public transport the natural way to travel (see p. 4). JLTP4 should be read as a whole. The following parts of JLTP4 are material to my evidence:

(a) pp. 5 – 7 concerning the climate change context for transport issues;

(b) pp. 37 – 39 concerning connectivity beyond the West of England and BA in particular; and

(c) pp. 49 – 61 concerning connectivity within the West of England as well as mass transit and bus connections to BA (see also Appendix 3).

Aviation Policy Framework

3.1.2. The Aviation Policy Framework ("APF") (CD6.1) set out the Government's objectives and principles to guide plans and decisions involving aviation at the local and regional level, to the extent that it is relevant to that area (see p.5). The APF should be read as a whole. The following parts are particularly material to my evidence:

(a) paragraphs 1.96 – 1.98 – 'Improving surface access to airports';

(b) Chapter 4 – 'Working together', especially paragraphs 4.20 – 4.24 concerning airport surface access strategies; and

(c) Annex B – 'Guidance on master plans, airport transport forums and airport surface access strategies', especially paragraph B.13 concerning Airport Surface Access Strategies.

Beyond the horizon

3.1.1. Beyond the horizon (April 2018 and June 2018) (CD6.3 and CD6.4) does not deal with transport matters in detail, but I note paragraphs 6.40 – 6.47 (call for evidence - April 2018) which sets out the Government's recognition of the importance of surface transport to airports for passengers and the wider policy statement at paragraphs 1.25 – 1.29 (next steps document - June 2018).

Aviation 2050 The future of UK aviation

3.1.1. Aviation 2050 (CD6.5) forms part of the government's final consultation on the policy proposals for the Aviation Strategy (see p.8). Aviation 2050 explains *inter alia* the need for sustainable growth (see, for example, p. 48). Further, whilst Aviation 2050 must be read as a whole, the following parts are particularly material to my evidence:

(a) paragraphs 3.67 – 3.68 concerning surface access;

(b) paragraphs 3.98 – 3.101 concerning sustainable journeys to the airport; and

(c) paragraphs 4.32 – 4,44 concerning airports as regional transport hubs.

3.2. Policy Overview

3.2.1. Surface access to the Proposed Development, engages the first, fourth and fifth reasons for refusal. I have set out above the parts of local and national policy which are relevant to considering the issues raised in these reasons for refusal.

National aviation policy

3.2.2. The need to ensure that growth in aviation is undertaken in a sustainable manner and with appropriate mitigation of adverse effects is a consistent thread running through national aviation policy. For example, APF explains at paragraph 5 that growth in aviation will be supported 'within a framework which maintains a balance between the benefits of aviation and its costs, particularly its contribution to climate change and noise'. Similarly, Beyond the Horizon (June 2018) states at paragraph 1.26 that 'as part of any planning application airports will need to demonstrate how they will mitigate against local environmental issues, taking account of relevant national policies, including any new environmental policies emerging from the Aviation Strategy', and that such matters are to be resolved by local planning authorities. Most recently, in Aviation 2050, the Government has made clear that 'growth must be sustainable – with affected communities supported and the environment protected' (see p. 48).

3.2.3. Surface access is an essential part of achieving such sustainable growth, especially because it is an important component in combatting climate change and because the effects of inadequate surface access are often felt acutely by local communities (and users of airports). This role for, and importance of, surface access is recognised throughout national aviation policy.

3.2.4. APF recognises the contribution made by '*high quality, efficient and reliable road and rail access to airports'* to the experience of passengers, freight operators and people working at airports, as well as the potential for surface access to contribute to the reduction in harmful impacts, such as carbon emissions, congestion and air quality (see paragraph 196). Similarly, Beyond the Horizon (April 2018) reiterates the importance of surface access, in particular the role of good quality and choice of road and rail links (see paragraph 6.40) and Aviation 2050 confirms that 'it is important to have good surface access links with airports' (see paragraph 3.67).

3.2.5. Taken together, the following surface access themes are readily apparent in national aviation policy:

(a) the role of surface access in reducing emissions, in particular carbon emissions (see APF at paragraph 1.96 and 4.22; and Aviation 2050 at paragraphs 3.67 and 3.101);

(b) the need to reduce congestion related to airports (see APF at paragraphs 1.96 and 5.11; and Aviation 2050 at paragraph 3.67 and 3.101);

(c) the need to increase the use of public transport to access airports (see APF at paragraphs 4.20 and 5.11; Beyond the Horizon (April 2018) at paragraph 6.40; and Aviation 2050 at paragraphs 3.67, 3.99); and

(d) the importance of up to date surface access strategies which underpin the attainment of these aims (see APF at paragraphs 4.20 – 4.30 and Annex B; Aviation 2050 at paragraphs 3.67 – 3.68, 3.99 and 4.32 – 4.40).

National Planning Policy Framework and the Planning Practice Guidance

3.2.6. The same themes are apparent in the NPPF and PPG.

3.2.7. First, the need to manage the environmental impacts of traffic and transport infrastructure is made clear in paragraph 102(d). This is also consistent with paragraph 103 and 110(e), both of which recognise the ability of transport to reduce emissions.

3.2.8. Secondly, the need to reduce the impacts of development on transport networks is of repeated importance. This includes both congestion and highway safety. See paragraphs 102(a), 108(b) and (c), and 110(c). These paragraphs should be read together with paragraph 109.

3.2.9. Thirdly, the need to increase sustainable travel is dealt with in detail. Opportunities to promote walking, cycling and public transport use should be identified and pursued in development proposals (see paragraph 102(c)). Further, developments should offer a genuine choice of transport modes, such that sustainable transport solutions are maximised, having regard to the location and type of the development (see paragraphs 103 and 108(a)).

3.2.10. Fourthly, the focus on surface access strategies in national aviation policy is consistent with the requirement in paragraph 111 for all developments that will generate a significant amount of movement to provide a travel plan. The PPG provides guidance on such travel plans which is consistent with the guidance for surface access strategies in APF.

3.2.11. In addition to the above matters, the NPPF details (1) the need to assess the impact of developments through a transport statement or transport assessment where the development will generate a significant amount of movement (see paragraph 111 and the detailed guidance in the PPG); and (2) the need to ensure that transport options are inclusive (see especially paragraphs 108(b) and 110(a) – (c). both of these matters are relevant to the assessment of the Proposed Development as well.

Local policy

3.2.12. These themes are also apparent in local policy, both generally and in respect of BA specifically.

3.2.13. The context to relevant local plan policies is entirely aligned with national policy discussed above. For example, Vision 1 North Somerset Vision of the Core Strategy highlights the need to balance the benefits of growth of BA with the impacts on local communities and the natural environment. This is the aligned with the balance in national policy noted above. Further, as explained below, surface access is a key consideration in the balance. Similarly, the policy objectives highlight the need for access improvements to BA (see the second priority) and the need to improve accessibility so that people are encouraged to make more sustainable transport choices (see the ninth priority). These priorities are aligned with the imperatives in national policy noted above.

3.2.14. Policy CS1 of the Core Strategy encompasses both the reduction of carbon emissions and the maximisation of opportunities for sustainable transport, so as to facilitate a modal shift.

3.2.15. Policy CS10 of the Core Strategy provides detailed requirements for transport schemes, including the need to improve safety, reduce congestion, reduce emissions and ensure that a more connected and inclusive transport network is achieved.

3.2.16. Policies CS23 of the Core Strategy and DM50 of DMP1 both consider BA specifically. It is notable that both policies highlight the impact of growth on surface access infrastructure as an issue which needs to be satisfactorily resolved (whereas other impacts are dealt with collectively). This underlines the importance of surface access, consistently with national aviation policy.

3.2.17. Policy DM26 requires a travel plan to be provided from all developments which generate significant amounts of movement. This is consistent with the NPPF and the focus on surface access strategies in national aviation policy.

3.2.18. Finally, JLTP4 outlines a vision for the West of England which is founded on the same principles, in particular the reduction of carbon emissions and a modal shift to sustainable transport. Notably specific ambitions are set out for BA, in particular improvements to bus and coach services serving the airport (including a metrobus extension) and a high frequency mass transit corridor (see pp. 37 – 39 and 50 – 54). These ambitions represent the manifestation of the policy imperatives noted above in local and national policy.

3.3. Conclusion

3.3.1. Taking the above matters together, there are consistent objectives in both national and local policy, in particular: (1) the role of surface access planning in reducing carbon emissions; (2) the need to effectively mitigate other adverse effects (including congestion and safety) of surface access to airports; (3) the need for a modal shift in public access to airports; and (4) the need for up to date surface access strategies (i.e. travel plans) to identify and secure the improvements in surface access to airports. Those objectives are set out at a high level in national policy and are tied to BA in detail in local policy.

3.4. Applicable Standards and Guidance

3.4.1. The technical concerns identified in my PoE primarily relate to junctions with the A38. The A38 is a primary route serving Bristol and the South West and although not locally part of Highways England's Strategic Road network, given its strategic and significant function, it is considered that Design Manual for Roads and Bridges ("DMRB") is the appropriate design standard for the proposed mitigation.

3.4.2. The following standards and guidance are applicable to the proposed surface access infrastructure mitigation.

Design Manual for Roads and Bridges

3.4.3. DMRB contains the current standards relating to the design, assessment and operation of motorway and all-purpose roads in the United Kingdom and is published by the Department for Transport ("DfT"). The following documents are relevant to the surface access infrastructure:

(a) CD-109 – Highway Link Design;

(b) CD116 - Geometric design of roundabouts;

(c) CD123 – Geometric design of at-grade priority and signal-controlled crossings;

(d) CD143- Designing for walking, cycling and horse-riding;

(e) GG119 – Road safety audit; and

(f) GG124- Walking, cycling and horse-riding assessment and review.

Local Transport Note 1/20 July 2020 Cycle Infrastructure Design

3.4.4. This Local Transport Note provides guidance and good practice for the design of cycle infrastructure, in support of the Cycling and Walking Investment Strategy. Table 6.3 specifies that the minimum width of a shared use cycle and pedestrian routes is 3.0m.

North Somerset Highways Development Design Guide October 2020

3.4.5. The Highways Development Design Guide provides advice on the procedures the Council will follow when assessing planning proposals that affect the transportation infrastructure and highway network in North Somerset. It sets out the standards and approach to design in connection with highways, paths, accesses and a range of other aspects of highway design.

Manual for Streets and Manual for Streets 2

3.4.6. Manual for Streets ("MfS1") was jointly published in 2007 by DfT and the Department for Communities and Local Government ("DCLG").

3.4.7. Page 5 of MfS1 confirms that it supersedes previous guidance in Design Bulletin 32 and Places Streets and Movement and complements PPS3. It provides guidance primarily on the design of residential streets and its aims are to assist the creation of streets that (MfS1 Paragraph 1.1.5):

(a) help to build and strengthen the communities they serve;

(b) meet the needs of all users, by embodying the principles of inclusive design;

(c) form part of a well-connected network;

(d) are attractive and have their own distinctive identity;

(e) are cost effective to construct and maintain; and are safe.

3.4.8. Manual for Streets 2: Wider Application of the Principles ("MfS2") was published in September 2010 by the Chartered Institution of Highways and Transportation ("CIHT"), and endorsed by DfT, the Homes and Community Agency ("HCA"), the Welsh Assembly Government ("WAG"),

Commission for Architecture and the Built Environment ("CABE"), the Association of Directors of Environment, Economy, Planning and Transport ("ADEPT") (formerly the County Surveyors Society) and English Heritage.

3.4.9. MfS2 does not supersede the guidance in MfS1 but explains how the principles can be applied on the wider highway network.

3.4.10. MfS2 recommends that MfS 1 and 2 should be the starting point for any scheme affecting non-trunk roads (MfS2 Paragraph 1.3.2). Paragraph 1.3.3 further recommends that DMRB or other standards should only be used where the guidance in MfS1 and MfS2 is not sufficient or where particular evidence suggests that MfS1 and MfS2 are not applicable.

Junctions 9 User Guide

3.4.11. Transport Research Laboratory ("TRL") produce Junctions 9 which is the latest version of an industry standard software application for predicting capacities, queue lengths and delays at non-signalised roundabouts and priority intersections. Junctions 9 contains both Assessment of Roundabout Capacity and Delay ("ARCADY") and Priority Intersection Capacity And Delay ("PICADY") modules for assessing non-signalised roundabouts and priority junctions respectively.

3.4.12. The Junctions 9 User Guide describes in detail the features that the program incorporates. This includes how the models should be specified, how to measure and enter data, as well as describing the output data and how it should be interpreted.

3.4.13. Priority junction capacity analysis results are expressed in terms of the Ratio of Flow to Capacity ("RFC") and delay (seconds). The theoretical capacity of each approach is taken at the RFC value of 1.0 and the acceptable capacity threshold is taken at an RFC value of 0.85 (i.e. 85% of the theoretical capacity). A priority junction is therefore considered to operate within acceptable capacity thresholds if all approaches have an RFC of less than 0.85.

3.4.14. PICADY reports queuing delay in seconds for each approach to a junction, but also as a Level Of Service ("LOS"). LOS is taken from the Highway Capacity Manual ("HCM 2000") and outputs show the LOS values based on the Average Delay per Arriving Vehicle. The transportation LOS system uses the letters A through F, using the definitions below:

A = Free flow

B = Reasonably free flow

C = Stable flow

D = Approaching unstable flow

E = Unstable flow

F = Forced or breakdown flow

3.4.15. LOS of F equates to 'Forced or breakdown flow'. HCM2000 defines 'Forced or breakdown flow' as:

'*Every vehicle moves in lockstep with the vehicle in front of it, with frequent slowing required. Travel time cannot be predicted, with generally more demand than capacity. A road in a constant traffic jam is at this LOS because LOS is an average or typical service rather than a constant state. For example, a highway might be at LOS D for the AM peak hour, but have traffic consistent with LOS C some days, LOS E or F others, and come to a halt once every few weeks. Most design or planning authorities typically use service flow rates at LOS C or D, to ensure an acceptable operating service for facility users*.'

3.4.16. LOS F is therefore unacceptable performance for a junction.

TfL Traffic Modelling Guidelines Version 3

3.4.17. Transport for London ("TfL") Traffic Modelling Guidelines Version 3 contains technical guidance relating to the use of modelling software. Software-specific sections provide guidance on modelling best practice for the corresponding software which is applicable to all junctions, not just those in London.

3.4.18. Section 2.6.1.4 explains the limits of practical capacity for signalised and unsignalised junctions to ensure acceptable junction performance and is replicated below.

'It is useful to be aware of the relationship between traffic delay and DoS in order to best optimise junction performance during proposal development. The relationship illustrated within Figure 8 strengthens the considerations outlined in Part A, which highlight the role stable network performance can play in maintaining journey time reliability. Engineers should be mindful that delay begins to increase exponentially above approximately 85% DoS. At junctions operating close to zero Practical Reserve Capacity (PRC), corresponding to approximately 90% DoS, small reductions in capacity can result in a significant increase in delay. For this reason a DoS of 90% represents an upper limit of practical capacity for signalised junctions. Unsignalised junctions typically have a lower practical capacity limit, with DoS in the range 80-85%. Junction capacity relationships are important when designing schemes in order to ensure that new proposals perform capably within the existing network.'

3.4.19. Any junction performing in excess of a DoS of 90% for signalised junctions or 85% for unsignalised junctions would therefore be unacceptable and not provide the easy and reliable access for passengers, as required by Aviation 2050 The Future of UK Aviation.

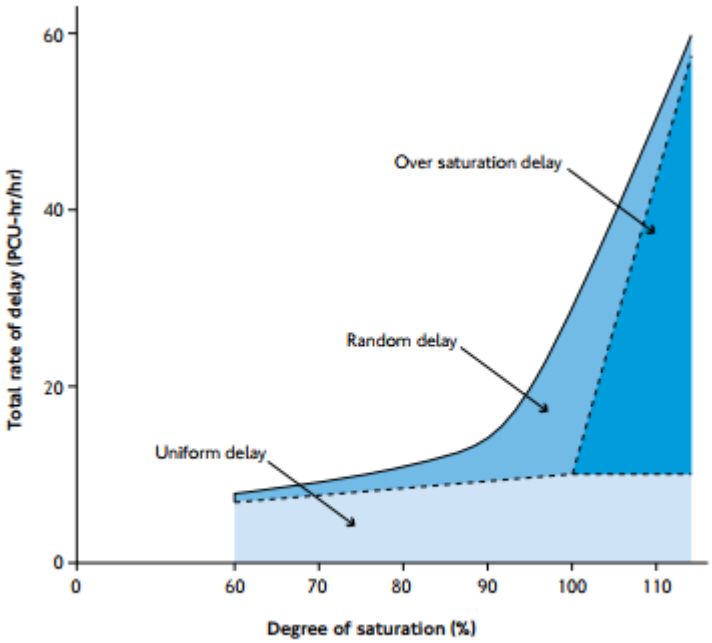


Figure 8: Relationship between junction delay and degree of saturation.

3.4.20. It is therefore necessary for junctions to operate within a DoS of 90% for signalised junctions or within an RFC of 0.85 for unsignalised junctions to ensure there aren't significant increases in delay and the impacts don't become severe.

IStrucE Design recommendations for multi-storey and underground car parks (Fourth edition) (March 2011)

3.4.21. IStrucE Design recommendations for multi-storey and underground car parks is intended for structural engineers, although some sections include notes that are appropriate to other construction professionals and car park owners/operators. The report has been established to provide chapters relating to key areas of design considerations in increasing detail, reflecting the typical considerations at various stages of design development.

3.4.22. The report complements existing standards and codes of practice by offering design guidance that is specific to car park design and construction. The guidance seeks to identify good practice and clarify interpretation of commonly used UK and European reference standards.

4. Surface Access Infrastructure

4.1. Introduction

4.1.1. This section considers the issue of surface access infrastructure which forms part of Reason for Refusal 1.

4.1.2. Several junctions considered in my PoE have measures proposed to mitigate the impacts from the development. In proposing mitigation, it is implicit that in not providing adequate mitigation, the Proposed Development's impact would be sufficiently severe as to be unacceptable. This is also apparent from the approach of the TA: mitigation is only proposed by BAL for junctions which are exceeding capacity.

4.1.3. In order to determine the impacts of the Proposed Development, including the cumulative impacts, the junction capacity modelling has to be accurate to enable a comparison between the Baseline, Development and Proposed mitigation scenarios.

4.1.4. Industry standard software packages have been used by BAL to assess capacity for the following junction types:

(a) Roundabouts - ARCADY module of Junctions 9, produced by TRL;

(b) Priority - PICADY module of Junctions 9, produced by TRL; and

(c) Traffic Signals - LinSig, produced by JCT Consultancy.

4.1.5. The software packages are reliant on the correct data being input into the programs to determine the resultant queues, delays and capacity for the junction.

4.2. Assessment of BAL's Evidence

4.2.1. NPPF paragraph 111 states: 'All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed.'

4.2.2. Applying this paragraph, in this case it is accepted by BAL that the Proposed Development 'will generate significant amounts of movement'. Moreover, there was clearly a requirement, as part of a transport assessment, for junction capacity to be assessed accurately and correctly in order to determine the likely impacts of the Proposed Development on the transport network (and to ensure mitigation to an acceptable degree). It must also be demonstrated that any mitigation is acceptable in terms of safety. These two aspects form critical tests (amongst others) in considering the adequacy of the surface access infrastructure.

4.2.3. The Core Strategy requires road and personal safety to be improved, increased traffic congestion to be mitigated and proposals for the development of Bristol Airport to demonstrate the satisfactory

resolution of environmental issues, including the impact of growth on surrounding communities and surface access infrastructure. This further supports the requirement for these critical tests.

4.2.4. BAL's TA and TAA submissions have a number of deficiencies which do not allow the effects of the Proposed Development to be fully understood. This results in an incomplete and inaccurate understanding of the effects of the Proposed Development.

4.2.5. The deficiencies were initially identified in the Council's Statement of Case ("SoC"). They were further discussed at the SoCG meeting between the main parties' consultants which took place on 23rd April 2021 and reiterated again by email from me via Richard Kent of the Council to Liz Higgins at BAL on 19th May 2021. A partial response was received from BAL on 8th June 2021 but this was too late to be considered fully in preparing this proof. I will consider this additional information in my rebuttal proof of evidence.

4.2.6. The junctions assessed in the TAA are provided below and have been allocated the same junction reference number as used in the TAA:

(a) A38 / Bristol Airport Northern Roundabout (Junction 1);

(b) (ii) A38 / Downside Road (Junction 4 (part));

(c) (iii) A38 / West Lane (Junction 4 (part));

(d) (iv) A38 / Barrow Street (Junction 5);

(e) (v) A38 / Barrow Lane (Junction J6);

(f) (vi) A38 / A4174 South Bristol Link Road (SBL) (Junction 7); and

(g) (vii) A38 / A368 (Junction 13).

In the following paragraphs I set out the deficiencies that I have identified in these junctions.

4.3. Traffic Flow Turning Movements

4.3.1. Traffic flow turning movements were not provided in the TAA therefore it could not be determined if the base traffic flows and trip generation have been correctly applied and incorporated into the junction capacity models undertaken for the junctions listed above in 4.2.6. Any errors in relation to the traffic flow build up or data entry into the capacity models could result in worse junction performance in reality than under the assessment. The junctions are already operating at, close to, or exceeding their practical capacity. Any underassessment of the Proposed Development's effects could further increase unacceptable queuing and delay and therefore the effects of the Proposed Development would not be mitigated to an acceptable degree, contrary to NPPF paragraphs 109 and 111. The Proposed Development would also fail to mitigate against increased traffic congestion as required by policy CS10 of the Core Strategy and would fail to satisfactorily resolve the impact of growth at BA on surrounding communities and surface access infrastructure as required by policy CS23 of the Core Strategy (and which is reflected in policy DM50 of DMP1).

4.3.2. The traffic flow turning movements were subsequently provided on 8th June 2021 but this was too late to be reviewed in time for inclusion with my PoE. I will address these matters in my Rebuttal PoE.

4.4. Queue Surveys

4.4.1. Queue length surveys allow the baseline models to be validated and calibrated in order to provide confidence that the junction capacity models reflect the existing conditions and therefore can accurately predict proposed conditions and mitigation measures. It is understood that queue length surveys were undertaken for all the junctions at the same time as the traffic turning flow counts but the information has only been provided for Junction 13, the A38/A368 signalised junction. Queue length surveys would need to be provided for the all the remaining junctions to interrogate whether the models have accurately predicted proposed conditions. The junctions are already operating at, close to, or exceeding their practical capacity. Any errors in validation and calibration may cause the effects of the Proposed Development to be underassessed, leading to further increases in unacceptable queuing and delay. Such queuing and delay would indicate that the effects of the Proposed Development have not been mitigated to an acceptable degree (contrary to the requirements of the Core Strategy and the NPPF).

4.4.2. In the absence of the queue length survey data within the TA or the TAA, I do not consider that the conclusions of the TA or TAA can relied upon as they have not been interrogated. NPPF paragraph 111 requires a transport assessment of developments that will generate significant amounts of movements, such as the Proposed Development, so that the likely impacts of the proposal can be assessed. The PPG advises that the scope of the transport assessment should consider 'data about current traffic flows on links and at junctions (including by different modes of transport and the volume and type of vehicles) within the study area and identification of critical links and junctions on the highways network' (paragraph reference 42-015-20140306). Such data would include queue length surveys. Accordingly, at present the TA (and TAA) fails to accord with these provisions. Further, in circumstances where the junctions are already operating at, close to or exceeding their practical capacity, there is a high risk that the effects of the Proposed Development will be unacceptable. In the absence of data on queue length surveys, it has not been demonstrated that the impacts of the Proposed Development have been mitigated in accordance with NPPF paragraphs 109 and 111, and policies CS10 and CS23 of the Core Strategy (the latter of which is reflected in policy DM50 of DMP1).

4.5. A38 Proposed Mitigation Drawing

4.5.1. The TAA refers to the proposed A38 mitigation drawing in Appendix D of the TA, Drawing Number C1124-SK-A38-010 Rev 9.0. This mitigation drawing shows a dedicated left turn slip lane from the Airport Access Roundabout (J1) which is not assessed within the TAA.

4.5.2. It was subsequently confirmed by BAL on 8th June 2021 that that the correct mitigation is Drawing Number C1124-SK-A38-010 Rev 11.0 (which was provided with the further environmental information but which is not referred to in the TAA) showing widening of the existing airport exit. The drawing was not provided in sufficient detail as part of the further environmental information therefore I was unable to check the dimensions accurately or that they comply with standards to ensure safety. Appropriate drawings were provided by BAL on 8th June 2021 but there has not been sufficient time to review them for inclusion in my PoE. I will review them in preparing my Rebuttal PoE.

4.5.3. NPPF paragraphs 102. d), 108. c), 109, 110. c and 110. d) require that 'appropriate opportunities for avoiding and mitigating any adverse effects' are taken into account' and 'any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree', 'Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe', 'create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles', and 'allow for the efficient delivery of goods, and access by services and emergency vehicles'. Without being able to check the drawings accurately, it has not been demonstrated that the Proposed Development complies with these provisions in the NPPF or policies CS10 and CS23 of the Core Strategy (the latter of which is reflected in policy DM50 of DMP1).

4.5.4. Further, on the information that I have been able to review to date, I am of the opinion that there are deficiencies in the proposed mitigation in terms of substandard footway and cycleway provision, substandard merge length, substandard splitter island provision and sufficient width for vehicles to negotiate junctions safely. Substandard mitigation would have a detrimental impact on highway safety. This affirms my conclusion that the Proposed Development does not comply with the aforementioned provisions of the NPPF or policies CS10 and CS 23 of the Core Strategy.

4.6. Swept Path Analysis

4.6.1. Swept Path Analysis was not provided for proposed mitigation drawing C1124-SK-A38-010 Rev 11.0 (which relates to the A38 junctions with BA Northern Roundabout, Downside Road and West Lane.

4.6.2. Swept Path Analysis is undertaken using computer software and allows junction designers to test proposed layouts to ensure that vehicles can navigate roundabouts without overrunning the kerbs

and endangering pedestrians, and without overrunning their lanes and colliding with other vehicles negotiating the roundabout. DMRB (CD 116) provides the following requirements for swept path analysis at paragraphs 3.14.3 – 31.14.4 (on p. 36):

'*3.14.3 Vehicle swept paths should be assessed using the largest design vehicle that is anticipated to use each entry lane.*

3.14.4 Vehicle swept paths should be assessed on multi-lane entries to ensure sufficient width is provided for each entry lane.'

4.6.3. Swept path analysis was subsequently provided by BAL on 8th June 2021 for movements in to and out of Downside Road but did not include all possible turning movements at all the junctions within the mitigation scheme. This was requested again on 9th June 2021 and no further response has been received.

4.6.4. Without comprehensive swept path analysis it cannot be determined that sufficient width is provide for vehicles to negotiate junctions safely. The Swept Path Analysis needs to be undertaken to ensure the proposed mitigation can be negotiated safely, without vehicles colliding with each other, or vulnerable road users. In my opinion, at the junctions referred to in 4.6.1, vehicles are likely to collide, which could cause accidents or result in reduced junction capacity if vehicles take evasive action. Accordingly, without comprehensive swept path analysis, it has not been demonstrated that the Proposed Development is acceptable for the purposes of NPPF paragraph 108. c) or policies CS10 and CS23 of the Core Strategy. Further, given the conclusions that I have reached on the available data, I consider that there would be an unacceptable impact on highway safety for the purposes of NPPF paragraph 109.

4.7. Road Safety Audit

4.7.1. A Stage 1 Road Safety Audit is required as part of the planning application process (Section 2.5 of the Council's Highways Development Design Guide October 2020).

4.7.2. A Stage 1 Road Safety Audit (RSA) has only been undertaken for Option 10 Rev 8.0 and not the current proposed drawing C1124-SK-A38-010 Rev 11.0 and therefore it has not been demonstrated that potential road safety issues have been identified or addressed. Without such an assessment, an unacceptable impact on highway safety cannot be ruled out, particularly in circumstances where I consider there is a high risk of such impacts because of the reasons in 4.7.4

4.7.3. DMRB GG 119 provides governance on Road Safety Audits and requires in paragraph 4.21 that:

'Where the Overseeing Organisation deems a repeat RSA to be necessary, the repeated RSA shall only be concerned with the elements of the scheme that have been changed. NOTE The design organisation or Overseeing Organisation can request a RSA stage to be repeated where multiple changes or significant changes to the highway scheme are likely to have an impact on road user behaviour or the outcome of a collision.'

4.7.4. It is my professional opinion that due to the change in Bristol Airport Northern Roundabout Junction 1 layout and impact on pedestrian and cycle crossing facilities, the proposed scheme has changed significantly from the audited version to require the RSA to be updated to ensure there are no safety issues that cannot be addressed and to ensure compliance with NPPF 102. c), d), 108. c), 110. a) and c) and policies CS10 and CS23 or the Core Strategy. Items of concern are the removal of the left turn merge lane and the approach increasing to three lanes. The nature and type of collisions and behaviours which might arise on the new layout would be different to those considered by the previous RSA. In addition, whilst retention of the uncontrolled pedestrian crossing might be viewed as a positive, it does add pedestrians into the necessary considerations. BAL's response to the request for the RSA to be repeated, received on 8th June 2021, was that a further RSA will be undertaken through detailed design post consent. This will be too late to ensure the proposed mitigation scheme is safe and deliverable and could result in the impact not being adequately mitigated. Accordingly, without such a further RSA, I am of the opinion that it has not been demonstrated that the effects of the Proposed Development have been adequately mitigated so there could be an unacceptable impact on highway safety, contrary to the provisions of the NPPF and the development plan which I have just set out.

4.8. Collision Analysis

4.8.1. At the time of submission of the Addendum TA updated collision data was not available from the Council due to technical issues. The data is now available and revised collision analysis is required to identify if there are any existing safety issues which need to be addressed or taken account of in the proposed mitigation measures to ensure there aren't any significant impacts on highway safety. This is required to meet NPPF policies 102. d), and 108. c). and the CS10. Updated collision analysis has been provided on 8th June 2021 but this was too late to be reviewed in time for inclusion with my PoE. I will consider this updated analysis when preparing my rebuttal PoE.

4.9. Walking, Cycling and Horse Riding Assessment and Review

4.9.1. A Walking, Cycling and Horse-riding Assessment and Review ("WCHAR") is undertaken to facilitate the inclusion of all walking, cycling and horse-riding modes in the highway scheme development process from the earliest stage, enabling opportunities for new or improved facilities and their integration with the local and national network. This is required to maximise sustainable transport which lies at the core of the policy documents, see above at 3.2.

4.9.2. GG 142 - Walking, Cycling and Horse-riding Assessment and Review (formerly HD 42/17) specifies that WCHAR's are required to review the development, impact and opportunities of the proposed highway scheme design:

'The process is made up of two distinct parts - the assessment and review.

The aims of carrying out a walking, cycling and horse-riding assessment are:

1) to gain an appropriate understanding of all relevant existing facilities for pedestrians, cyclists and equestrians (users) in the local area;

2) to provide background user information that can be referred to throughout the development of the highway scheme;

3) to identify opportunities for improvement for users.

The aims of carrying out a walking, cycling and horse-riding review are:

1) to continually review proposals for pedestrians, cyclists and equestrians throughout the development of the highway scheme design;

2) to review the potential impact of the proposed highway scheme on users in the area and on existing facilities;

3) to identify new opportunities for improvement (or removal of constraints) for users that may arise from the development of the highway scheme that were not evident during the assessment phase.'

4.9.3. A WCHAR has only been undertaken for Drawing Number C1124-SK-A38-010 Rev 9.0 and therefore does not provide a review of the proposed scheme in Drawing Number C1124-SK-A38-010 Rev 11.0. In my opinion, the scheme has changed significantly enough to warrant an updated WCHAR in order to ensure continual review of the proposals for pedestrians and cyclists; to review the potential impact of the Proposed Development; and to identify new opportunities. Without undertaking a review of the proposed mitigation scheme, the potential impact of the proposed highway scheme and opportunities for improvement have not been assessed. This is a fundamental requirement when maximising sustainable transport opportunities to the airport given the increased carriageway widths and alternative route for pedestrians and cyclists. Further, this is necessary to meet the requirements of the NPPF and the Core Strategy referred to above at 3.2. BAL responded to the Council's request for the WCHAR to be repeated, on 8th June 2021by stating that it would be updated as part of the detailed design, post consent.

4.10. Growth Scenarios

4.10.1. The TAA assesses the junction capacity for the 2030 Test Case which assumes 12mppa is achieved in 2030. Faster and Slower Growth Scenarios have been considered where 12mppa is achieved in 2027 for the Faster Growth scenario and 2034 for the Slower Growth scenario. Despite the uncertainty of when 12mppa will be achieved, these alternative growth scenarios have not been assessed. The Slower Growth Scenario will result in additional background traffic growth which will worsen the performance of junctions. It is therefore necessary for this assessment to be undertaken to ensure the surface access infrastructure is adequate. This is required to satisfy NPPF and the CS and to ensure significant impacts from the development on the transport network can be cost effectively mitigated (NPPF 108. c).

4.10.2. Instead of assessing the scenarios, the TAA undertakes a qualitive assessment therefore the actual impact of Slower Growth on the highway network is not modelled and it cannot therefore be determined if any significant impacts from the Proposed Development can be cost effectively mitigated to an acceptable degree, or mitigate against increased traffic congestion (see policies CS10 and CS23).

4.11. Outstanding Technical Concerns

4.11.1. In addition to the deficiencies identified above, I have identified additional concerns about the effect of the Proposed Development on junction performance which I consider in the following sections. Some of the issues have previously been raised by the Council's Highway Officers but have not been addressed by BAL or are new issues that I have identified and in my opinion are of significant concern and need to be addressed. The issues need to be resolved prior to determination to ensure that the impact of the Proposed Development can be mitigated to an acceptable degree without significant impacts on highway safety.

4.12. A38 / Bristol Airport Northern Roundabout (Junction 1)

Geometry

4.12.1. Local Transport Note 1/20 July 2020, Cycle Infrastructure Design specifies that the minimum width of a shared use cycle and pedestrian routes as being 3.0m in Table 6.3.

4.12.2. Although insufficient detail was provided in the proposed mitigation drawing, the width of the proposed shared use pedestrian and cycle routes on either side of the A38 appears to be substandard which would not facilitate the increased walking and cycling mode share ambition, and would raise safety concerns as there wouldn't be sufficient room for pedestrian and cyclists pass safely.

4.12.3. Local carriageway widening is required to achieve the proposed mitigation. The land required for the widening is at a lower level than the existing carriageway and it has not been demonstrated if the level differences can be achieved either using retaining walls or embankments. Without this level of detail, it cannot be determined if the scheme is deliverable and therefore the impact of the Proposed Development may not be adequately mitigated.

Capacity

4.12.4. The junction capacity analysis in the TAA relates to the proposed mitigation scheme shown in Drawing Number C1124-SK-A38-010 Rev 11.

4.12.5. The capacity results for the PM peak hour are provided in Table 5.1 of the TAA and confirm that the A38 exceeds acceptable capacity thresholds on the A38 Northern and Southern approaches. The northern arm operates with an RFC of 0.94 and the southern arm with an RFC of 0.89. Exceedance of acceptable capacity thresholds on a road performing a significant and strategic

function is not acceptable and contrary to policies NPPF paragraph 108 c) and policies CS10 and CS23, and would result in an unstable network affecting journey time reliability and resulting in unacceptable queues and delays.

4.12.6. The qualitive assessment considers that the junction capacity would be worse for Slower Growth Scenario but would perform satisfactorily once double counting of traffic growth has been considered. The analysis needs to be undertaken accurately to determine the actual performance of the junction to allow the appropriateness of the mitigation proposals to be determined.

Conclusion

4.12.7. It is concluded that there are significant concerns about the deliverability of the proposed scheme in terms of suitability of proposed pedestrian and cycle routes and vertical alignment. This would result in the impacts of the development not being mitigated and opportunities for promoting sustainable transport not being maximised.

4.12.8. Acceptable capacity thresholds are exceeded for the 2030 Test Case and would be further exceeded in the Slower Growth Scenario resulting in unacceptable impact contrary to policies CS10 and CS23.

4.13. A38 / Downside Road (Junction 4)

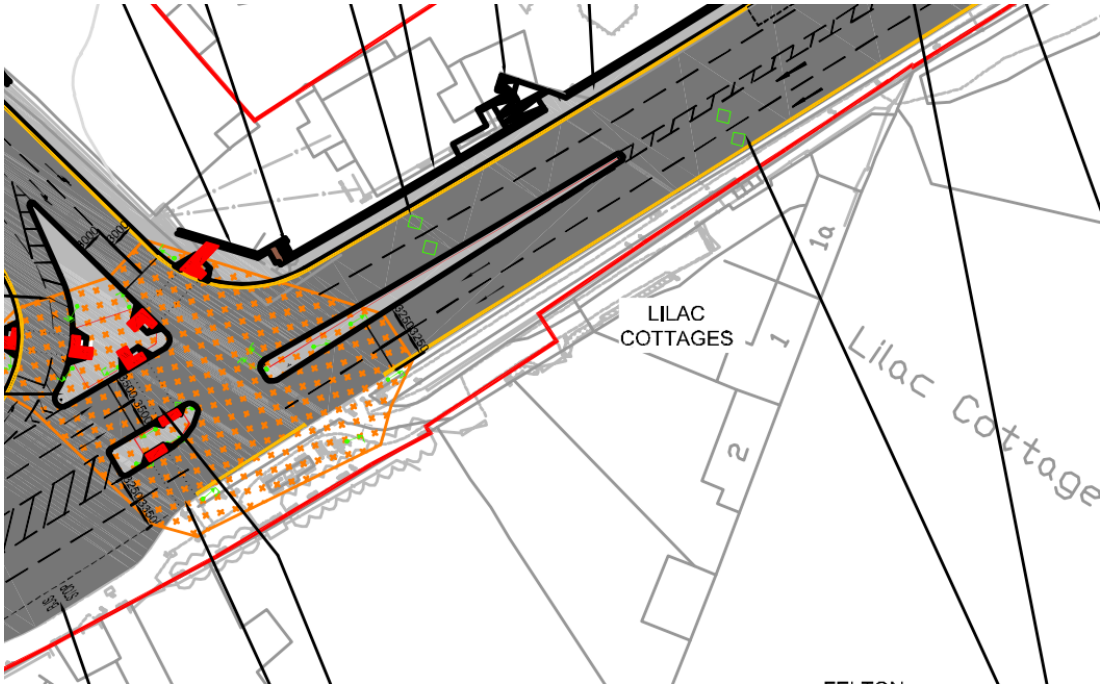
Geometry

4.13.1. Although insufficient detail was provided in the proposed mitigation drawing, the width of the proposed shared use pedestrian and cycle routes on either side of the A38 appears to be substandard which would not facilitate the increased walking and cycling mode share ambition, and would be raise safety concerns as there would not be sufficient room for pedestrian and cyclists to pass safely.

4.13.2. Local carriageway widening is required to achieve the proposed mitigation. The land required for the widening is at a lower level than the existing carriageway and it has not been demonstrated if the levels difference can be achieved either using retaining walls or embankments. Without this level of detail, it cannot be determined if the scheme is deliverable.

4.13.3. The access road to Lilac Cottages is located within the proposed junction improvement scheme. Access only appears to be possible from the A38 North, and egress to the to the A38 South. This manoeuvre appears to be very tight and there is no swept path analysis to demonstrate if this manoeuvre can be made. An extract of C1124-SK-A38-010 Rev 11 shows the proposed access to Lilac Cottages and is replicated in Figure 4-1.

Figure 4-1 Extract from C1124-SK-A38-010 Rev 11 showing access road to Lilac Cottages



Capacity

4.13.4. The junction capacity results for the PM peak hour are provided in Table 5.7 of the TAA and confirm that the A38 (N) is very close to the Practical Reserve Capacity ("PRC") of 90%. The northern arm operates with a DoS of 88.2%. The A38 junction with Downside Road incorporates the main pedestrian and cycle crossing facilities from east to west but they are not accounted for in the operation of the signals. The provision of enhanced walking and cycle facilities is to accommodate increased sustainable mode share, therefore this must be considered in any junction capacity analysis to ensure it is assessed correctly. Given that the junction is shown already to be very close to capacity, the addition of pedestrian crossing facilities is likely to result in the junction exceeding the acceptable PRC and experiencing long queues and delays. Exceedance of PRC on a road performing a significant and strategic function is not acceptable and contrary to NPPF Paragraph 108. c). and policies CS10 and CS23, and would result in an unstable network affecting journey time reliability resulting in unacceptable queues and delays.

4.13.5. The qualitive assessment considers that the junction capacity would be worse for the Slower Growth Scenario but would perform satisfactorily once double counting of traffic growth has been considered. The analysis needs to be undertaken to determine the actual performance of the junction to allow the appropriateness of the proposals to be determined.

Conclusion

4.13.6. I have concluded that there are significant concerns about the deliverability of the proposed scheme in terms of vertical alignment and suitability of proposed pedestrian and cycle routes as

well as the feasibility of access to Lilac Cottages. This would result in the impacts of the development not being mitigated and opportunities for promoting sustainable transport not being made, contrary to NPPF paragraphs 102, 103, 108, 109 and 110. and policies CS10 and CS23.

4.13.7. Acceptable capacity thresholds are likely to be exceeded for the 2030 Test Case and would be further exceeded in the Slower Growth Scenario resulting in unacceptable impact contrary to the NPPF and the CS.

4.14. A38 / West Lane

Geometry

4.14.1. Although insufficient detail was provided in the proposed mitigation drawing, the width of the proposed shared use pedestrian and cycle routes on either side of the A38 appears to be substandard which would not facilitate the increased walking and cycling mode share ambition, and would be unsafe as there would not be sufficient room for pedestrian and cyclists to pass safely.

4.14.2. The proposed junction improvements incorporate two ahead lanes in the signalised junction to the A38 North which merge to a single lane after the junction. Sufficient length is required to allow vehicles to merge in turn safely. If the merge length is not sufficient safety will be compromised or vehicles will not use the outside lane reducing the capacity at the signals.

4.14.3. DMRB CD 123 - Geometric Design of At-grade Priority and Signal-controlled Junctions at paragraph 7.10.1 states:

'Where it is necessary to reduce the number of lanes on the exit arm, a single lane should be reduced over a distance of 100 metres starting at or beyond the limit of the junction intervisibility zone, as illustrated in Figure 7.10.1'

4.14.4. Figure 7.10.1 is reproduced below.

Figure 7.10.1 Lane continuity through junction intervisibility zone

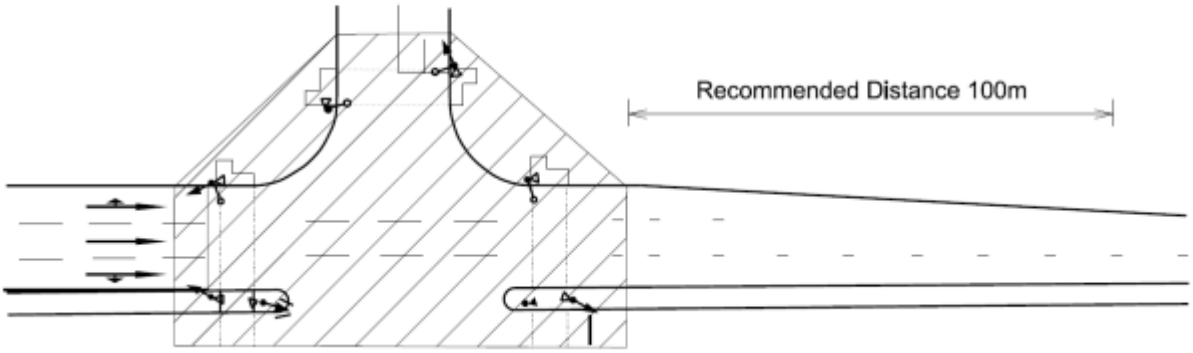
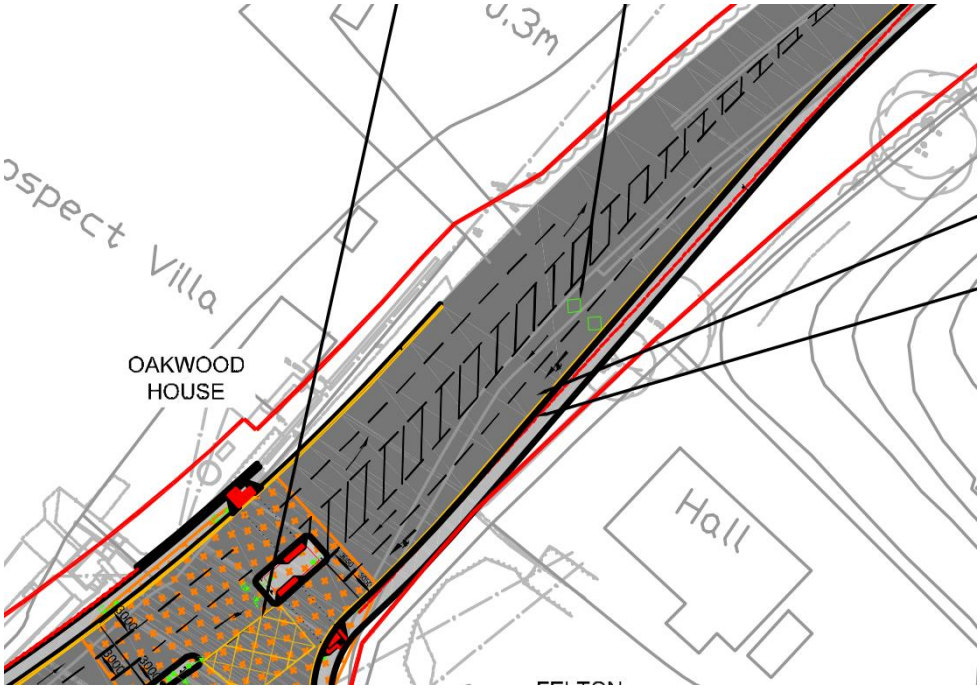


Figure 4-2 Extract from C1124-SK-A38-010 Rev 11 showing the A38 N merge



4.14.5. The merge length has been measured to be approximately 60m and therefore a third short than required and is therefore substandard. This would therefore either be unsafe or result in reduced junction capacity, both of which are contrary to NPPF paragraphs 102, 108 and 109 and policies CS10 and CS23 of the Core Strategy.

4.14.6. Splitter islands are provided within the junction to accommodate traffic signals. Although sufficient detail has not been provided to measure the widths, they appear to be substandard and not sufficient to accommodate the signal heads, or allow the safe maintenance of signal heads, therefore making the proposed scheme undeliverable.

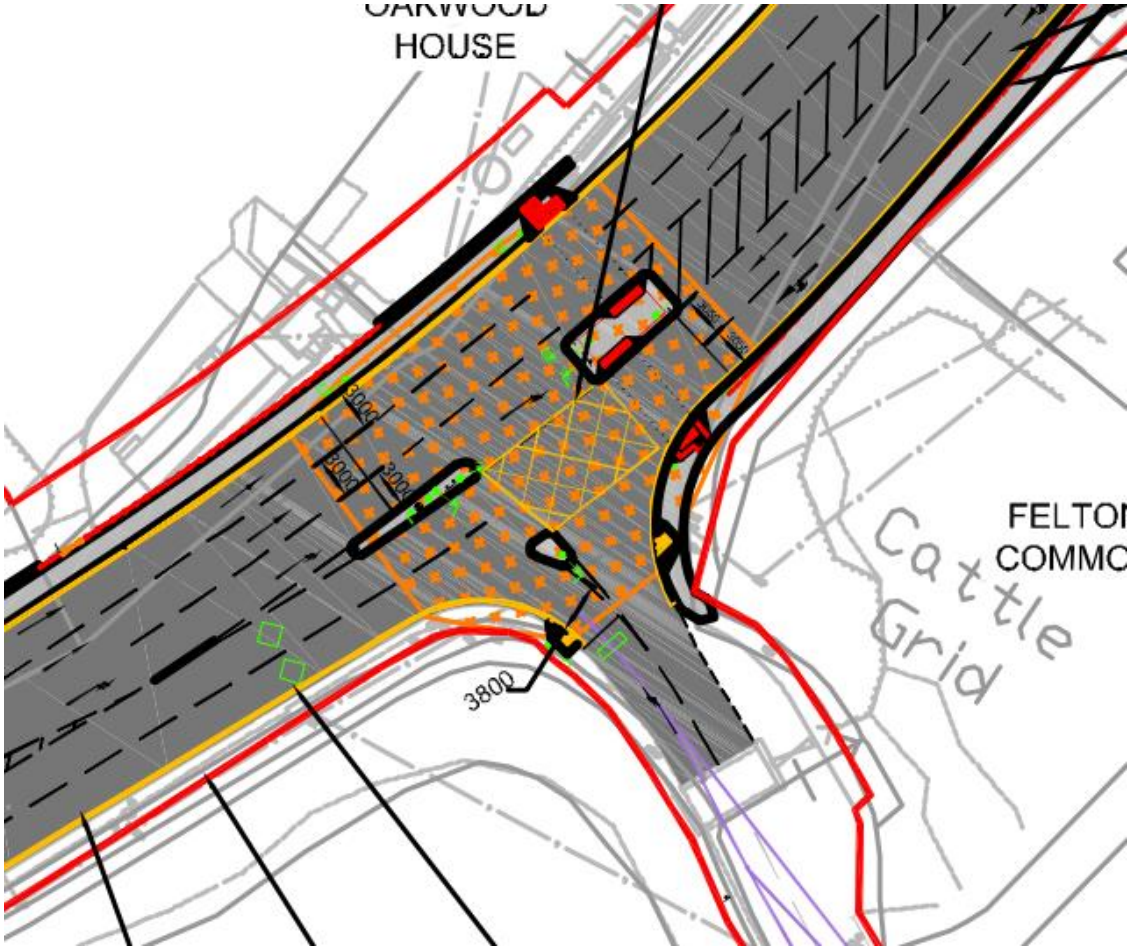
4.14.7. The splitter island in the centre of West Lane appears to be along the alignment of the A38 kerb line but is required to be set back by 1.5m to ensure vehicles don't collide with it. Setting the splitter island in the correct position will further reduce the area to accommodate the signal head resulting in the proposed scheme not being deliverable.

4.14.8. DMRB CD 123 - Geometric Design of At-grade Priority and Signal-controlled Junctions at paragraph 7.13 states:

'The nosing of central reserves and pedestrian refuges shall be set back a minimum distance of 1.5m from the edge of carriageway of the intersecting road.'

4.14.9. It does not appear that the splitter island could be provided in the correct position and therefore the proposed scheme would not be deliverable. The splitter island location is shown in Figure 4-3.

Figure 4-3 Extract from C1124-SK-A38-010 Rev 11 showing substandard splitter island



Capacity

4.14.10. The results for the PM peak hour are provided in Table 5.7 of the TAA and confirm that the A38 (N) is very close to the PRC of 90%. The northern arm operates with a DoS of 89.7%. The A38 junction with Western Road incorporates pedestrian and cycle crossing facilities from east to west but they are not accounted for in the capacity analysis. The provision of enhanced walking and cycle facilities is to accommodate increased sustainable mode share, it therefore must be considered in any junction capacity analysis to ensure it is assessed correctly. Given that the junction is shown to already be very close to capacity, the addition of pedestrian crossing facilities is likely to result in the junction exceeding the PRC. Exceedance of PRC on a road performing a significant and strategic function is not acceptable and contrary to policies NPPF Paragraph 108. c), 109 and CS10 and CS23 resulting in an unstable network affecting journey time reliability resulting in unacceptable queues and delays.

4.14.11. The qualitive assessment considers that the junction capacity would be worse for Slower Growth Scenario but would perform satisfactorily once double counting of traffic growth has been considered. The analysis needs to be undertaken to determine the actual performance of the junction to allow the appropriateness of the proposals to be determined.

Conclusion

4.14.12. It is concluded that there are significant concerns about the deliverability of the proposed scheme in terms of achieving the required merge length and accommodating the required signal heads. This would result in the scheme not being deliverable and impacts of the Proposed Development not being mitigated and opportunities for promoting sustainable transport not being maximised.

4.14.13. Acceptable capacity thresholds are likely to be exceeded for the 2030 Test Case and would be further exceeded in the Slower Growth Scenario resulting in unacceptable impact contrary to NPPF and CS10 and CS23.

4.15. A38 / Barrow Street (Junction 5)

The A38 / Barrow Street signalised junction has been assessed in LinSig. The default saturation flow calculation based on geometry (RR67) has not been used and instead user defined saturation flows have been entered which are higher than would be calculated using RR67. No explanation or justification has been provided for this. The A38 Bridgewater Road arm operates at 89.9% in the PM peak hour with a PRC of 0.2. Without justification for the user defined saturation flows, this junction would also exceed capacity and experience unacceptable queues and delays, contrary to policies NPPF Paragraph 108. c). and the CS10 and CS23 and would result in an unstable network affecting journey time reliability resulting in unacceptable queues and delays.

4.16. A38 / Barrow Lane (Junction 6)

4.16.1. The junction capacity results for the 2030 Test Case scenario exceed capacity for the AM, Inter Peak and PM peak scenarios with the worst result being the PM peak which is forecast to experience an RFC of 2.86, a queue of 80.5 PCUs (equivalent to approximately half a kilometre) and a LoS of F (TAA Table 5.9 and Appendix H). This is clearly insufficient performance for a junction but no mitigation is proposed. NPPF states that (Para 108. c) ‘It should be ensured that any significant any significant impacts from the development on the transport network (in terms of capacity or congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree and therefore this has not been met.

4.16.2. The TAA in paragraph 5.7.2 states that ‘It was noted in site observations that traffic is able to emerge from the junction due to gaps in the traffic, partly caused by the ‘platooning’ effect of traffic from the Barrow Street signalised junction located north of the junction. In reality therefore, more gaps in traffic arise than the PICADY model predicts.’ However, the PICADY model already has capacity corrections using slope and intercept corrections to account for the platooning of traffic from the upstream junction and therefore no further benefits to performance would be expected.

This junction would have an unacceptable severe impact on traffic which could harm highway safety as vehicles experiencing long delays are more likely to take risks when seeking gaps in traffic.

This junction significantly exceeds capacity and experience severe queues and delays, contrary to policies NPPF Paragraph 108. c)., 109, CS10 and CS23 and would result in an unstable network affecting journey time reliability and safety.

4.17. A38 / A4174 South (Junction 7)

4.17.1. This junction is a signalised roundabout and is modelled in LINSIG. The junction capacity results reported in Table 5.10 of the Addendum TA do not fully reflect the results provided in Appendix J, with the 2030 Reference case AM Peak hour results reported in Inter Peak 2030 Base scenario.

When assessing signalised roundabouts, it is essential queues forming on the circulatory carriageway don't exceed the lane lengths, otherwise the roundabout circulatory flows block the entry arms. The results provided in Appendix J show that in the AM and PM peak hours, internal queues exceed the lane lengths on several arms. The signalised roundabout would therefore become blocked and not operate within capacity. The junction capacity analysis therefore needs to be corrected which is expected to demonstrate the junction does not work within capacity and would therefore be contrary to policies NPPF Paragraph 108. c), CS10 and CS23 and would result in an unstable network affecting journey time reliability resulting in unacceptable queues and delays.

4.18. A38/A368 (Junction 13)

4.18.1. The results for the AM and PM peak hours are provided in Table 5.11 of the Addendum TA and confirm that the A38 Bristol Road, A38 New Road and A368 Bath Road exceed the Practical Reserve Capacity with maximum DoS of 99.8% and Queues of 35 vehicles/PCUs.

The Bonus Green feature in LinSig has been used at this junction to increase performance above that determined by LinSig. No explanation or justification has been provided for this and the impact would be that the 2030 Test Case is shown to operate better than the actual situation. Given that the 90% Practical Reserve Capacity has been exceeded on most arms for most scenarios, it is expected that the junction will exceed capacity. Exceedance of PRC on a road performing a significant and strategic function is not acceptable and contrary to Policy the CS10, CS23 and NPPF Paragraph 108. c). and 109 and has not been appropriately mitigated.

4.19. Conclusion

4.19.1. It has not been demonstrated that the impact of the Proposed Development on congestion and safety has been mitigated to an acceptable degree as required by the NPPF and the CS.

4.19.2. Significant information was missing which does not allow the Proposed Development to be assessed sufficiently. The missing data included:

(a) Turning flow movement diagrams;

(b) Detailed proposed mitigation drawing;

(c) Swept Path Analysis;

(d) Road Safety Audit;

(e) Collision Analysis;

(f) Walking, Cycling and Horse Riding Audit; and

(g) Junction Modelling of Slower Growth Scenario.

4.19.3. Although some of the above information was received on 8th June 2021, it was not received in sufficient time to be included in my PoE.

4.19.4. The proposed A38 Junction Improvements scheme appears to have deficient pedestrian and cycle facilities. It has not been demonstrated that the levels differences for the land required to widen the carriageway can be achieved either using retaining walls or embankments. Without this level of detail, it cannot be determined if the scheme is deliverable.

4.19.5. The findings of the junction capacity analysis and proposed mitigation cannot accurately be determined. In the absence of a full and proper assessment with appropriate mitigation, the cumulative impact cannot be considered acceptable in terms of capacity and congestion and on highway safety.

4.19.6. It has therefore not been demonstrated that the impact of the proposed development on congestion and safety has been mitigated to an acceptable degree. This is contrary to NPPF Paragraph 108 c) which requires 'any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, to be cost effectively mitigated to an acceptable degree, Paragraph 109 states ' Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe. It is also contrary the CS10 which requires the Proposed Development to 'mitigate against increased traffic congestion' and the CS23 which requires 'proposals for the development of Bristol Airport will be required to demonstrate the satisfactory resolution of environmental issues, including the impact of growth on surrounding communities and surface access infrastructure'.

4.19.7. There is therefore inadequate surface infrastructure to accommodate the Proposed Development which supports Reason for Refusal 1.

5. Parking

5.1. Introduction

5.1.1. This section considers the proposed parking provision which is relevant to Reason for Refusal 4. The proposed requirement for a parking provision of 4200 additional spaces (Silver Zone Extension Phase 2 for 2700 spaces and MSCP 3 for 1500 spaces) to support the growth from 10mppa to 12mppa is identified in Parking Demand Study 2018, Parking Demand Study Addendum 2019 and November 2020 Update to the Parking Demand Study. The proposed parking provision for 12mppa would increase total parking provision to 22,200 spaces.

5.1.2. The Silver Zone parking provides lower cost parking within the airport site and is pre booked and block parked by valets. Block parking is very space efficient as cars are parked end to end with no need for cars to be independently added or removed from storage, therefore removing the need for circulation and access aisles. The Phase 2 extension is within the Green Belt.

5.1.3. Maximising sustainable transport lies at the core of the policy documents, as set out above at 3.2. The proposed parking demand is directly related to the vehicular trip generation of the airport and demand for sustainable transport. It therefore needs to be assessed consistently and accurately. Excessive parking provision will facilitate and encourage more passengers and staff to drive to the airport making unsustainable vehicular trips, whereas a lower provision will encourage more passengers and staff to use public transport to access the airport sustainably. Given the constraints on land in the Green Belt Inset for parking provision and the need to encourage sustainable transport, the parking provision needs to be restricted accordingly. The phasing of additional parking provision also needs to be linked to passenger growth and increasing sustainable mode share, so as to encourage (rather than undermine) sustainable transport.

5.1.4. The parking studies have assumed no change in the provision of unofficial offsite airport parking, It is my opinion that unofficial offsite car parking will always be able to undercut on site airport parking and therefore there will remain a demand for it and it will continue to be provided, either consented or otherwise, subject to the ability of the Council to take effective enforcement action.

5.1.5. My PoE identifies deficiencies in the Parking Demand Studies relating to mode share, lack of evidence and analysis, and unjustified occupancy levels. The phasing and location of parking provision is addressed in Mr Gurtler's PoE.

5.2. Assessment of BAL's Evidence

5.2.1. BAL's Parking Demand Assessments suffer from a number of deficiencies which do not allow the effects of the proposed parking provision to be fully understood. Additional analysis and detail used in the parking study was requested by email from me via Richard Kent of the Council to Liz Higgins at BAL on 19th May 2021. A response was received from BAL on 8th June 2021 confirming the available information was being collated. However, it was not provided and in any event it was

too late to be considered in my PoE. When the additional information is submitted it will be considered in my rebuttal PoE.

5.2.2. These deficiencies identified are provided in the following paragraphs.

5.2.3. The parking provision is based on applying a historic ratio of supply to demand at the airport (Parking Demand Study 2018, paragraph 1.6). The data used to determine the supply to demand has not been provided and the ratio is not given so it cannot be determined if it is appropriate or has been calculated correctly. If the ratio of supply to demand is not appropriate or incorrectly calculated, it could result in excessive parking provision which would undermine the required increase in sustainable transport mode share.

5.2.4. It has been agreed between BAL and the Council that the CAA mode share surveys are the most appropriate to be used to determine sustainable mode share at the airport and it also provides a comparison with other UK airports. The previous mode share identified by BAL was based on bus patronage data supplied by the core bus service operators whereas CAA data is based on passenger surveys.

5.2.5. The Parking Demand Study does not consider the latest CAA increased sustainable transport mode share data, which results in over-forecasting the parking demand and undermining the sustainable mode share targets in the Airport Surface Access Strategy. Whilst the November 2020 Update to the Parking Demand Study acknowledges the most recent 2019 CAA sustainable mode share data (see paragraph 1.2), it does not update the analysis to reflect this. The analysis is based on a 17.5% mode share (see paragraph 5.1) whereas the latest data confirms the existing mode share is already 21.8%. Even without taking account of the required increases to sustainable mode share, the analysis is already based on an over provision of 4.3% car mode share (Calculation provided in Appendix A). This would result in the over provision of 955 parking spaces and undermine the measures to encourage sustainable mode share.

5.3. Outstanding Technical Concerns

Operational Utilisation

5.3.1. The Parking Demand Study assumes a 95% operational utilisation to allow spare capacity for dynamic searching of empty spaces as they become vacant or occupied during a cars search for an empty space.

5.3.2. An operational utilisation of 95% is not justified in the Parking Demand Study but is considered in *IStrucE's Design recommendations for Multi-storey car parks and underground car parks*, dependant on the size and turnover of the car park. This is generally appropriate for, and related to, a high turnover car park of 100% vehicle turnover in an hour, as confirmed by paragraph 3.1.2 of IStrucE's Design Recommendations:

'3.1.2 Capacity: The number of spaces available in a car park is termed its storage, or static capacity, as distinct from the dynamic capacity, which is the maximum inflow or outflow of vehicles.

The largest single determining influence on dynamic capacity is usually the type of control employed at entry and exit, including the way any charges are collected. With minimal formalities on entry or exit, the dynamic capacity is determined by the capacity of the circulatory aisles but on larger car parks the capacity of the ramping system may be the governing factor. As a general rule, the dynamic capacity should be sufficient to permit up to 25% of the static capacity to enter or leave the car park within 15 minutes (i.e. up to 100% turnover in an hour) with sufficient provision for queuing at peak periods (see Section 3.2.5).

In addition, as cars are arriving and departing simultaneously, those already in the car park searching for a space may miss newly vacated spaces. Where entry is controlled, deliberate under capacity margins of about 5%, depending on size and turnover, are sometimes introduced to overcome this problem.'

5.3.3. Given BAL's parking provision is predominantly long stay, pre booked and approximately 50% manual block parked by valets, turnover would be low and predictable. The 95% operational utilisation is therefore unjustified in this situation and it would be expected to be much higher as parking can be managed very efficiently due to the high occurrence of pre booked spaces and valet block parking.

5.3.4. In my opinion, when at capacity, it should be possible to operate pre booked block parking at, or very close to 100% occupancy due to the low turnover, pre booking and valet block parking. For the proposed Silver Zone Extension Phase 2 of 2700 spaces, an increase from 95% utilisation to 100% utilisation is the equivalent of 135 spaces that wouldn't be required. For the existing Phase 1 car park with capacity of 3650 spaces, this would equate to a further 182 spaces that wouldn't be required (Calculations provided in Appendix A). The total of 317 parking spaces would equate to approximately 3500sqm of land that wouldn't be required.

5.3.5. Despite 95% operational utilisation being assumed, the actual utilisation experienced at the Airport appears to be much lower and is considered in the following section.

Demand to Capacity Ratio

5.3.6. The future airport capacity has been calculated by applying a historic demand to occupancy ratio and applying is to the forecast passenger numbers (Parking Demand Study, section 1.6). The demand to occupancy ratio is not provided and therefore it cannot be confirmed if it is appropriate and results in the appropriate number of parking spaces being provided.

5.3.7. The maximum parking demand is quoted as 15,000 cars in 2017 (Parking Demand Study, section 1.3) when the capacity was 16,800 spaces (Parking Demand Study, fig. 6). This equates to an operational utilisation of 89%. If this operational utilisation was applied to the proposed demand, it will result in a further significant overprovision in spaces.

5.3.8. Without taking account of the valet block parking which should exceed 95% occupancy, applying the 6% difference in occupancy from 89% to 95% to the proposed total parking provision of 22,200

spaces at the airport would equate to an overprovision of 1332 spaces (Calculation provided in Appendix A) which equates to approximately 15300sqm of land that wouldn't be required.

Growth in Parking Provision Relative to Passenger Numbers

5.3.9. The Parking Demand Study identifies the consented parking that will be operational with 10mppa. Table 3 confirms the parking provision for 10mppa is 18,100 spaces. The additional proposed parking is 4200 spaces (Table 4: 2700 + 1500). This results in a 23% increase in parking provision. Passenger growth of 10mppa to 12mppa equates to 20% growth. The proposed parking provision is therefore increasing at 15% more than passenger numbers despite the commitment to promote sustainable transport and increase the sustainable transport mode share (Calculation in Appendix A).

5.3.10. This will again encourage and facilitate more parking relative to passenger growth, therefore undermining the measures to encourage sustainable mode share and not meeting the NPPF and the Core Strategy requirements identified above at 3.2.

Sustainable Transport Mode Share

5.3.11. The Parking Demand Studies are based upon a Sustainable Transport Mode Share of 12.5% with a sensitivity test of an increase to 15% (Parking Demand Study 2018, section 1.8). The parking studies identified a requirement of parking supply of 4600 spaces (4200 in the November 2020 Update to the Parking Demand Study) at a 12.5% sustainable transport mode share, and 3900 spaces at 15% sustainable transport mode share (Parking Demand Study 2018, section 1.8). This equates to a reduction in parking spaces of 280 for every 1% increase in sustainable transport mode share. The latest CAA data confirms the sustainable transport mode share in 2019 is 21.8%. Applying the same ratio reduction in supply to a 21.8% sustainable transport mode share equates to a reduction of a further 2604 parking spaces (Calculation provided in Appendix A). This equates to a requirement for an additional 1996 spaces which is less than half of what is actually proposed (4600) (without taking account of further required increases in sustainable transport mode share) and therefore is a significant over provision of parking spaces which would result in increased vehicle trips and undermines the proposals to maximise the sustainable transport mode share. This is not compliant with NPPF and the Core Strategy requirements identified above at 3.2.

5.3.12. The Parking Demand Study considers a 'super sensitivity' scenario in Section 1.8 where a sustainable transport mode share of 29% would result in the Silver Zone Extension Phase 2 not being required. The Parking Demand Study considers a 29% sustainable transport mode share to be an unrealistic scenario but the latest CAA data of a 21.8% mode share shows that it could be achievable if sustainable mode share is maximised, resulting in the Silver Zone Extension Phase 2 not being required.

Inconsistencies with Transport Assessment

5.3.13. The Parking Demand Study states in section 1.2 that 'One of the key reasons why the parking demand has increased at the airport is the introduction of new airline routes and higher

frequencies, attracting passengers from a wider catchment area. Customers drawn from beyond the immediate Bristol area are considerably more likely to drive to the airport due to the comparative availability of direct parking transport links.' This is at odds with the TAA (2.3.6) which has assumed the increase in passenger numbers will have an increased sustainable mode share. It is my opinion that passengers will be attracted from a wider catchment area as the airport grows and therefore less likely to benefit from sustainable transport opportunities and this should be reflected in the TAA.

5.3.14. In the Updated Parking Demand Study (paragraph 4.8) BAL assumes that the demographic for the increase in passenger numbers will be less likely to use public transport due to increased age, wealth and car ownership, therefore increasing the car mode share. It is considered that this assumption is reasonable. This again is at odds with the assumptions in the TAA which means it would underestimate vehicle trips and impact.

5.3.15. The result of the discrepancies in the assessment methodology set out above is that proposed parking provision increases at a rate higher than the growth in passenger numbers. This disproportionate growth in parking will undermine the measures proposed to encourage a shift to more sustainable modes of transport and results in the Transport Assessment under estimating car trips to and from the airport. The methodology should be consistent in the Parking Study and the Transport Assessment. In my opinion, it is considered the Parking Study adopts a more reasonable approach and this should be reflected in the Transport Assessment which would result in an increased trip generation which would result in increased delays and congestion on the surface access infrastructure.

5.4. Conclusion

5.4.1. Maximising sustainable transport lies at the core of the policy documents, as explained above at 3.2. Excessive parking provision will facilitate and encourage more passengers and staff to drive to the airport making unsustainable vehicular trips and undermining the maximisation of sustainable mode share.

5.4.2. Additional analysis and detail used in the parking study is still required to fully understand the methodology and calculations used to determine the proposed parking provision.

5.4.3. In the absence of the additional analysis and detail, it is my professional opinion that the number of parking spaces is over provided due to:

(a) The operational utilisation percentage used;

(b) The demand to capacity ratio used;

(c) Growth in parking provision relative to passenger numbers; and

(d) Current sustainable mode share not assessed.

5.4.4. In my professional opinion, based on the information before me, I consider that the proposed parking provision is over provided to the extent that the Phase 2 Silver Zone extension would not be required.

6. Public Transport

6.1. Introduction

6.1.1. This section considers public transport which is relevant to Reason for Refusal 5.

6.1.2. The TA commits to ensuring sustainable transport modes are encouraged by developing a 'new and ambitious Airport Surface Access Strategy'. Opportunities have been identified in the TA to improve public transport but there is no analysis of the proposed improvements or evidence that the sustainable transport mode share has been maximised. The provision of adequate surface access infrastructure is a core requirement of the policy documents, as set out above at 3.2. Increasing public transport use, or setting targets alone, does not achieve the requirement to maximise public transport use; rather this requires a process of assessment and evaluation, to understand what it possible, using a range of different options.

6.1.3. BAL have not updated their ASAS as part of the application but state it would be secured through the proposed Section 106 Agreement. This does not convey ambition to maximise sustainable mode share and is a missed opportunity to demonstrate their commitment. It also doesn't meet the policy requirements of the APF and Aviation 2050 to have an up to date surface access strategy.

6.1.4. NPPF, PPG, APF and DM26 all require a travel plan to be submitted for developments which generate significant amounts of movement, as is the case for the Proposed Development. A draft Staff Travel Plan has been submitted but this does not address the most significant trip generation generated by the passengers. The policy requirements for NPPF, PPG, APF and DM26 have therefore not been met.

6.2. Deficiencies in Evidence

6.2.1. BAL's Transport Assessments suffer from a number of deficiencies which do not allow the effects of the Proposed Development in relation to public transport to be fully understood. This result in an inaccurate understanding of the effects of the Proposed Development. These deficiencies are identified in the following paragraphs.

6.2.2. Despite the reliance on buses to provide an additional 2.5% mode share for passengers, BAL has not provided any analysis or evidence to demonstrate geographically where the unmet demand is. There is also no analysis of existing patronage, available capacity or service shortfalls provided in order to determine where future investment and provision is required.

6.2.3. Without this information, it is not possible to determine the maximum sustainable mode share that could be achieved.

6.2.4. It is clear that the relevant policies require the sustainable mode share to be maximised but there is no evidence in the TA of what the maximum is, or that it will be achieved by the proposals.

6.2.5. The lack of an up to date surface access strategy and passenger travel plan is contrary to NPPF, PPG, APF, DM26 and Aviation 2050 and does not ensure sustainable transport has been maximised (CS1)

6.3. Additional Opportunities

6.3.1. Having regard to the latest CAA existing sustainable mode share data of 21.8% for BA, the proposed mode share target should be applied to 21.8% and not the previous mode share identified by BAL, based on bus patronage data supplied by the core bus service operators.

6.3.2. The 2019 CAA sustainable mode share data wasn't available at the time of the original planning application and therefore mode share targets were set based on patronage data supplied by the core bus service operators. The bus patronage data mode share of 12.5% was used at the time to determine future targets but it is now superseded and needs to be updated to reflect the current 21.8% mode share and requirement to maximise sustainable transport travel to the Airport.

6.3.3. The deficiencies were initially identified in the Council's Statement of Case. They were further discussed at the SoCG meeting between the main parties' consultants which took place on 23rd April 2021 and reiterated again by email from me via Richard Kent of the Council to Liz Higgins at BAL on 19th May 2021. A response was received from BAL on 8th June 2021 that the analysis of patronage and mode shift would be provided but has not yet been received and is therefore too late to be considered in my PoE. The additional information will be considered in my rebuttal PoE.

6.3.4. A Passenger Transport Interchange (PTI) was proposed and required as a condition of the 10mppa permission. The PTI would integrate the existing rural services which don't currently access the airport and have to stop at Lulsgate Bottom. The PTI would provide much greater convenience, a better passenger experience, increase uptake of bus travel and encourage more sustainable transport usage. The PTI is therefore a significant means to maximising the sustainable mode share and therefore required to maximise sustainable mode share.

6.3.5. The PTI was proposed to be provided on the top level of MSCP 2 which has yet to be constructed and is not currently proposed until after the construction of MSCP 3 and the Silver Zone Phase 2 car park and therefore wouldn't provide any sustainable benefits prior to all the parking being provided. A temporary PTI is therefore proposed adjacent to the terminal buildings on the site of the current 'Drop and Go' express car park. The temporary PTI is not included in the current 12mppa application and would require separate planning permission (I understand from Mr Gurtler that the PTI cannot be delivered under permitted development rights at present). There is therefore no way that the temporary PTI can be provided as part of the current application. Without the PTI, sustainable mode share cannot be maximised and the requirements of policy CS1 are not met.

6.3.6. The continued support of existing services to the Airport is important, as are the proposals for new demand responsive services for Clevedon and Nailsea, but the analysis of passenger and employee trip assumptions has not been extended to further public transport opportunities to the airport. This is required to maximise sustainable mode share.

6.3.7. The identified increase in trips from Somerset authority areas are assumed to be by car or car drop-off, with corresponding low proportions of trips made by public transport. Maps of employee home locations show clusters of staff, particularly in Mendips and Sedgemoor areas. Use of this data to reflect wider programmes of determination of potential for additional bus or coach services has not yet been provided but should form the basis for the scoping of opportunities for modal shift. Bus services to capture this demand must be provided to maximise sustainable mode shift.

6.3.8. The value of the Public Transport Improvement Fund should be increased, to provide for on-going review of employee and passenger mode share data, and the undertaking of studies to identify where additional opportunities may be emerging for additional direct bus or coach services to the airport. These may be tied into key arrival, departure or staffing patterns, so as to provide value-for-money whilst patronage builds, with a longer-term ambition of becoming fully commercial. New or improved routes to the south and south-east should be implemented, serving destinations such as Cheddar, Wells, Shepton Mallet, Midsomer Norton and the Chew Valley.

6.3.9. All services, existing and future, will need to be considered within the context of the recent National Bus Strategy, ensuring they are integrated with the wider bus network. This will facilitate improved connectivity through common ticketing arrangements, and support regional connectivity objectives to support equitable access to employment and leisure opportunities.

6.3.10. There are also significant alternative measures that could be taken to increase sustainable mode share which have not been considered in the Transport Assessment. An example of such a measure which should be explored further is the proposed mass transit scheme from Central Bristol to the Airport as identified in Appendix 3 of JLTP4.

6.3.11. The mass transit system would move significant volumes of passengers across the wider region using rapid segregated routes, either over, or underground and is currently proposed to run alongside the A38. The scheme is in the early feasibility stages and if implemented, would facilitate a significant step change in the sustainable mode share able to access the Airport. Whilst this is a longer-term scheme, it is important. To maximise sustainable mode share, I would expect the BAL TA and TAA to consider this option in detail and the airport to take all possible steps to achieve this. This hasn't been done. As a minimum, to maximise sustainable mode share, the Airport should be supporting the development of the scheme to facilitate connectivity with BA and contributing funding towards the feasibility studies to maximise the potential and benefit to BA.

6.3.12. A local congestion charge should also be explored to deter traffic from the congested areas in the vicinity of BA and encourage passengers and staff to utilise sustainable modes of transport. I would expect the BAL TA and TAA to consider this option in detail and the airport to take all possible steps to achieve this. This hasn't been done.

6.3.13. Section 6 of the TAA sets out the proposed funding commitments for the proposed sustainable transport proposals but there is no evidence of how this has been costed. In the response from BAL received on 8th June 2021, it is stated *'The contributions agreed in the Draft Heads of Terms were the subject of lengthy negotiations with NSC over the course of the planning application*

determination period. These were agreed as a reasonable contribution to mitigate the impact of the proposed development.' The contributions are required to maximise sustainable mode share therefore mitigating the impact is not sufficient to meet the NPPF and the CS tests. A fully detailed and costed funding contribution is required to demonstrate that the required improvements are adequately funded and can be delivered. Without this, the NPPF and the CS tests to maximise bus services and maximise the use of sustainable transport solutions is not met.

6.3.14. When considering the above opportunities to improve and enhance existing services, increase bus frequency, catchment, patronage, PTI, pricing and walking and cycle facilities, it is my opinion that a mode share increase of at least an additional 5% could be achieved. This is a qualitative judgement as BAL have not provided a quantitative assessment or sensitivity test for the proposed or potential measures, which is a significant failing in BAL's approach to this issue, but nevertheless, I consider this judgment to be sound in the context of the existing mode share and the potential for improvement. To mitigate the impact of the forecast passenger growth to 2030, BAL should target at least a 1% annual increase in mode share.

6.4. Conclusion

6.4.1. Neither the TA nor the TAA provides any analysis or evidence to demonstrate geographically where the unmet public transport demand is. There is also no analysis of existing patronage, available capacity or service shortfalls provided in order to determine where future investment and provision is required.

6.4.2. No ASAS or passenger travel plan has been submitted with the application to demonstrate commitment to maximising sustainable mode share.

6.4.3. The mode share targets have not been updated to reflect the latest CAA sustainable mode share data and therefore are not ambitious enough. It is considered at least an additional 5% should be achievable to maximise sustainable mode share.

6.4.4. There is no commitment or certainty that the required PTI will be delivered.

6.4.5. Further opportunities are not being taken up to maximise public transport, such as the feasibility of the proposed mass transit scheme.

6.4.6. Further justification for the proposed funding is required.

6.4.7. The level of public transport provision for the Proposed Development is therefore inadequate, does not take account of all the opportunities to maximise sustainable transport solutions, does not deliver a genuine choice of transport modes and will not sufficiently reduce the reliance on the car to access the Appeal Site. It does not therefore satisfy the NPPF and the CS which supports Reason for Refusal 5.

7. Summary and Conclusion

7.1. Summary of Findings

7.1.1. My PoE has demonstrated that:

(a) The policies address two distinct requirements, maximising opportunities to promote and facilitate sustainable travel in the forms of walking, cycling and public transport, and mitigating adverse impact and effects on the highway to relevant standards to ensure safety and acceptable capacity.

(b) It has not been demonstrated that the impact of the Proposed Development on congestion and safety has been mitigated to an acceptable degree as required by NPPF and the CS. Significant information was missing which does not allow the application to be assessed sufficiently. In the absence of this information, there are a number of indicators that the effects of the Proposed Development would be unacceptable.

(c) Additional analysis and detail used in the parking study is still required to fully understand the methodology and calculations used to determine the proposed parking provision. In the absence of the additional analysis and detail, or consideration of the current CAA sustainable mode share and increased %5 target, it is my opinion that the number of parking spaces are over provided to the extent that the Phase 2 Silver Zone extension would not be required.

(d) BAL's Transport Assessment suffers from a number of deficiencies which do not allow the effects of the Proposed Development to be fully understood from a public transport perspective. The level of public transport provision for the Proposed Development is considered to be inadequate, does not take account of all the opportunities to maximise sustainable transport solutions, does not deliver a genuine choice of transport modes and will not sufficiently reduce the reliance on the car to access the Appeal Site.

7.2. Conclusion

7.2.1. Given the evidence set out in my PoE, I conclude it has not been demonstrated that there is adequate surface access infrastructure, the Phase 2 extension to the Silver Zone car park is not justified and the proposed public transport provision is not adequate. The Proposed Scheme Development would therefore be contrary to policies CS1, CS10 and CS23 of the North Somerset Core Strategy and the relevant provisions of Chapter 9 of the NPPF.

Appendix A Parking Calculations

5.2.5 Reduction in mode share impact on parking demand

12 mppa (2030) requires 22,200 spaces with a sustainable mode share of 17.5%
Increasing the mode share to existing 21.8% (excluding additional mode share target).
The over provision of 4.3% is the existing mode share (21.8% - 17.5%) = 4.3%
4.3% * 22,200 (total supply) = 955 spaces.

5.3.4 Reduction due to operational utilisation of 100% assuming existing utilisation is 95%

Silver Zone Phase 1 Capacity 3650 * 5% = 182
Silver Zone Phase 2 Capacity 2700 * 5% = 135
Total = 317

5.3.8 Demand to capacity ratio

Assuming an operational capacity of 95% (notwithstanding valet block parking could achieve 100%)
Parking demand 15,000 / Parking capacity 16,800 = 0.89 Demand to Capacity Ratio
Difference between stated and assume Demand to Capacity Ratio 95% - 89%= 6%
Parking demand 22,200* 6% = 1332

5.3.9 Growth in Parking Numbers Relevant to Passenger Numbers

Additional proposed parking 4200 / Existing consented parking 18,100 = 23% growth.
Additional proposed passengers 2mppa / Existing consented passengers 10mppa = 20% growth.
Parking growth 23% / Passenger growth 20% = 15% growth

5.3.11 Sustainable Transport Mode Share

12.5% = 4600 spaces
15% = 3900 spaces
700 spaces (4600-3900) = 2.5% (15% - 12.5%)
700 spaces / 2.5% = 280 spaces per 1%
21.8% - 12.5% = 9.3% increase in sustainable mode share
9.3% increase in sustainable mode share x 280 = 2604 spaces

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