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Subject Bristol Airport Transport Assessment Technical Note Issue 1
Project Name Bristol Airport
Attention Steve Thorne, North Somerset Council
From Simon Shapland, Jacobs
Date 10/01/2019

1. Introduction

Jacobs are reviewing the submitted Transport Assessment for the expansion of Bristol Airport on behalf of North Somerset Council. This technical note is to aid ongoing discussions and inform the progress meeting of the 11th January 2019. This note has been prepared without prejudice and does not constitute a formal consultation response on the planning application.

2. Highway Network

The extent of the Highway Network to be used in the assessment was determined at the pre-application stage, and the list of 13 junctions which have been surveyed was accepted. The caveat to this is that should the assignment assessment demonstrate any additional areas of concerns which have not been picked up by the surveys then additional assessment work may be required. At this stage we have queries about the assignment (which is covered later) and reserve the right to request additional junction assessment if required. As an example, the current assignment model does not increase traffic at Backwell crossroads, so this has not been assessed within the TA.

TEMPRO growth has been applied to July 2018 surveys to an assessment year of 2026. This factor has been applied to all traffic recorded within the surveys, including existing trips to and from the Airport. Therefore, there is an element of 'double counting' within the assessment, as growth in trips to and from the airport would be expected to be assessed within the TA methodology, rather than relying on TEMPRO growth factors. This results in an overly robust assessment of the highway conditions which could have implications when assessing the mitigation requirements and determining any phasing of improvements on the network.

3. Forecast Travel Demands

The methodology to determine the forecast travel demands was agreed at the pre-application stage and the TA appears to follow the agreed approach. Detailed comments on this will be submitted in the formal highways consultation response.

The assessment has assumed a robust 15% split of passengers travelling by public transport, a figure agreed when considering the earlier 10mppa application. It is understood that recent surveys by Bristol

Airport suggest that the Airport currently has a figure of approximately 12.5% modal split for public transport.

As agreed at the pre-application stage, given the scale of the development and the impact that relatively small changes to modal splits can make on the resultant trip generations, a sensitivity test assuming a lower public transport modal split is to be provided by the applicant. We understand that this assessment is currently being produced, as we will require sight of this before providing final highway comments on the application.

4. Surface Access Improvement Opportunities

The TA states that, to ensure more sustainable modes are encouraged, a new and ambitious airport surface access strategy (ASAS) will be produced through the S106 process. This will consider improvements to public transport services, travel plan measures and improvements to local highway infrastructure.

Detailed comments on the local highway infrastructure improvements will be provided as part of the consultation response, following a review of the modelling work.

As part of this a high-level assessment of the existing public transport network has been completed and has identified that the current bus network is able to absorb the predicted increase in travel demand from both passengers and employees at the Airport. No further details about the capacity of the network, or how this has been assessed has been provided within the TA, and further clarification of this is requested. Having adequate capacity on the public transport network is a key driver which influences the attractiveness of public transport, and the likelihood that passengers will use it as their mode of choice for journeys to or from the airport.

5. Forecast Traffic Assignment

To assign new vehicle trips from the 2mppa increase onto the highway network, a basic buffer network has been developed within SATURN, which considers link distance between specific nodes and recorded HERE speed data. Assigned traffic network diagrams for each scenario have been provided in Appendix G of the TA. It would be useful to understand more about the modelling. For example, how the zones have been assumed for North Somerset as this will ultimately impact the route choice for vehicles to these areas. As an example, the assigned traffic network diagram for the AM peak shows 4 outbound and 9 inbound vehicles to the airport using Downside Road. The diagram appears to show all this traffic heading to Clevedon, but presumably this also includes traffic from Yatton and Nailsea. Equally the model only shows an increase of 2 outbound trips from Weston-super-Mare to the airport during this period. Given the relatively low amount of total generation during the AM peak it could be that these numbers are correct, however it would be useful to understand how the model is assigning traffic to the North Somerset area, and if there are multiple nodes which cover this.

Paragraph 10.2.1 states that the use of dummy simulation nodes within the network allows the junction turning counts to be provided. Turning count diagrams have not been provided within the TA, and whilst it is possible to consider movements using the assigned traffic network diagrams it would be helpful, for our consideration of the numerical impact at each junction and assist our review of the modelling if turning count diagrams of each critical junction could be provided.

6. Residual Highway Impact

As discussed at the pre-application stage, there is a need to consider additional assessment years beyond those identified within the TA. The TA is has tested two scenarios: a 2026 Baseline + committed development (2026 reference case including the 10mppa consent) and 2026 Baseline + Committed development + proposed 12 mppa Development (2026 Test Case).

It is understood that the airport is expected to reach the 12mppa in 2026, hence this choice of assessment year. It is also expected that the airport will reach its current consent limit of 10mppa in 2021. There is therefore a gap of 5 years where effectively no assessment has been undertaken (2021 to 2026) but where there will be an impact on the highway network as passenger numbers grow from 10mppa to 12mppa. There could be an impact which requires mitigation as soon as the airport exceeds its 10mppa consent, and it is understood that PBA are preparing phasing assessment which considers this. This assessment will be necessary to determine the earliest point which highway mitigation measures are required, and subsequently inform the conditions and S106 process.

At this stage, given a number of outstanding queries in respect of the total impact and phasing assessment, an in-depth review of the modelling has not been completed as this work would be abortive if the inputs change. Notwithstanding this, we have reviewed some of the inputs to the LINSIG modelling, which has been used to assess the signalised junctions within the study area. There are a number of initial concerns about this which have been already been raised with PBA. For completeness those comments are reproduced below

J4_Downside Road_A38_Signalised Junction Existing.lsg3x

- Model layout seems fine. Saturation flows are based on RR67 calculations with roughly the correct geometry used;
- Model omits private access on south side of junction, although given infrequent usage this is acceptable;
- Phase allocation is inconsistent with controller specification information received from NSC. Although not necessarily a problem in itself, it just makes audit difficult as phases are assigned differently. This information can be made available.
- The minimum green for the Toucan crossing phase is 5 seconds in the controller specification and not 4 seconds as modelled. This is not an issue if the pedestrian stage is assumed not to appear (see below);
- Inter-greens are consistent with controller specification;
- Modelled staging sequence omits the pedestrian stage, although once again given its infrequent usage this is acceptable;
- The same cycle time is used for particular periods in the base and forecast years with the result that conditions are artificially bad, e.g. forecast interpeak Cycle time should be optimised under growth conditions as this is what MOVA will do.

J5_A38_Barrow Street_&_J6_A38_Barrow Lane.lsg3x

- Model layout seems fine and consistent with the on-site geometry. It is unclear why the Barrow Lane major-minor priority junction is included in the model. This would be better modelled using PICADY;
- Saturation flows are based on RR67 calculations for turning movements. The southbound right turn radius used is 20m but the turn looks tighter and needs to be checked. Saturation flows for the ahead movements are manually entered at 2,200 and 2,250 for nearside and offside lane respectively. These seem a little high and more robust values based on RR67 calculations should be used;
- The model assumes balanced utility of A38 ahead lanes. In practice, due to 2-1 merges on exit, traffic will be heavily biased to the nearside lane, particularly because the two ahead lanes are short and most drivers will see little benefit in moving to lane 2. A study carried out on the use of merge on exit arrangements shows that typically only around 26% use a secondary lane for a movement which has to merge on exit from the junction;
- Again, phase allocation is inconsistent with controller specification information from NSC;
- Inter-greens are notably shorter than those in the controller configuration (e.g. all Phase D terminations are 8 seconds compared to 5 and 7 as modelled) and need to be corrected to the on-street configuration;

- Once again, the same cycle time is used for particular periods in the base and forecast years. Cycle time optimisation should be carried out where the junction is over-capacity with the upper limit governed by existing MOVA information and TOTALG value.

J7_A38_Colliters Way_Signalised Roundabout.lsg3x

- Model layout seems fine and consistent with the layout, flare lengths etc. on street;
- Saturation flows are based on RR67 but some values seem high, e.g. 2,100 in some circulating lanes. This is due to fairly generous lane widths and radii used in the calculations. Since internal lanes will be subject to edge friction, because of the presence of traffic in adjacent lanes, the 'treat as nearside' should be used in the RR67 calculations to model more robust saturation flow values;
- Phase allocations, stage etc. are consistent with controller specification information (see attached) and updated staging is understood to have been implemented by NSC in early 2019;
- Pedestrian phases L, M and P have terminating inter-greens of 12 seconds, but Phases K and O have only 5, but are 12 in the controller specification;
- Phase delays are not consistent with controller specification (attached);

It should be noted that the performance of the proposed mitigation for the A38/Downside Road junction will be dependent on the assumed usage of the secondary lane for the A38 northbound ahead movement and merge on exit arrangement, in the same way as described above in relation to the Barrow Street signals. It would be prudent that the models should only model a maximum of around 26% of traffic using the secondary lane for this movement;

Similarly, the modelling for A38/Downside Road junction should take account of the likely imbalance in lane utility on the southbound lanes and the likely usage of lanes at the A38/Airport roundabout as this will have a large bearing on the operation of the proposed layout

In respect of the modelling of the existing roundabout accesses to the airport; paragraph 11.2.2 states that the modelling of these have been validated against the recorded queue length information. Details of this validation should be provided for review.

7. Transport Assessment and Environmental Statement

The Environmental Statement submitted in support of the planning application has several elements which are informed by the assessment contained reported in the TA. Given there are outstanding queries in respect of the total impact of the development, resolution of those could have a knock-on impact on the content of the Environmental Statement.

8. Conclusions

This technical note has provided an initial review of the Transport Assessment prepared by PBA in support of the planning application at Bristol Airport for an expansion to 12 million passengers per annum.

Whilst many key issues were agreed at the pre-application stage, there are a number of outstanding assessment elements which are required before Highways can provide a final consultation response to the proposals.