

Firethorn 21/01630/OUT Transport Assessment – Analysis, Short Version

Dear Reader,

While there are no obvious errors in the work performed for this document, please read carefully through the following steps, analysing parts of its conclusions, and assumptions, to see why we are concerned that NPPF parag. 108 (b) would not be met (*“It should be ensured that safe and suitable access can be achieved for all users.”*)

Item 1: The Critical Conclusion and how it is evidenced:

The significant concluding result is stated in Table 9-1, in section 9.2 “Junction Assessment” – which is reproduced:

Table 9-1: B4100 Banbury Road/Charlotte Avenue – 2031 - Do Something PICADY

ARM	AM PEAK HOUR			PM PEAK HOUR		
	RFC	QUEUE (PCU)	DELAY (S)	RFC	QUEUE (PCU)	DELAY (S)
B4100 (N)	-	-	-	-	-	-
Charlotte Avenue	0.87	5.2	79.67	0.77	3.1	56.10
B4100 (S)	0.09	0.1	7.61	0.01	0.0	7.89

The critical figure here is the flow capacity (RFC) for vehicles exiting Charlotte Avenue, which is found to be 0.87. This is “slightly over” the recommended maximum capacity of 0.85, enabling the conclusion from 9.2.3:

This demonstrates that the existing priority junction would provide sufficient capacity to accommodate the 2031 Do Something flows, which consist of the Do Minimum flows extracted from the BTM with the proposed development traffic flows manually added to the network. However, it is acknowledged that the existing priority junction is expected to operate close to the recommended maximum capacity of 0.85 RFC in the future.

What this also implies, however, is: if there is any error in the methodology/set up for the simulations and calculations which determine this, then the above conclusion will not hold – and in that scenario, the existing junctions would be found unable to sustain the additional volume of traffic due to the proposed new homes.

Item 2: Scope and Baseline Model information

Information as to the Baseline Model which the developers were instructed to use comes from:

- 11.1.13 As agreed during scoping discussions with OCC and HE, the Bicester Transport Model (BTM) has been confirmed as the appropriate tool to identify the forecast future year traffic flows. This traffic generation has been used at the request of OCC as the basis for assessing the traffic impact.

From the Appendix 6.1, Part 2.pdf document, further details are given regarding the BTM:

3.8 BASELINE TRAFFIC

- 3.8.1 It is noted that the ‘Bicester SATURN Model’ was originally developed in 2007 but following a series of vehicle counts undertaken in 2012/2013, a revised base year of 2012 was developed.
- 3.8.2 A review of the NW Bicester Outline Planning Application 1 (14/01384/OUT), which considered a total of 2,600 dwellings associated with the wider NW Bicester Masterplan for development located to the north of the railway line including the majority of the application site (with the exception of the Eastern Parcel, which was considered as part of application 18/00484/OUT) includes significant data analysis based on the 2012 ‘Bicester SATURN model’.

Further detail indicates that the modelling carried out in 2021, aimed at predicting traffic in 2031, is using a Base Model from 2012, released in 2014, largely based on 2007 data. However, this model therefore ignores issues with the 2010/11 Hyder TA and TP for NW Bicester Exemplar Phase, which was shown in 2018-19 to significantly underestimate the true peak traffic flows, based on 2x surveys, 4 months of Traffic Monitoring data (Sept-Dec 2019), and presented to members of OCC and CDC on 29/1/19, 5/12/19 and (showing trends met) 9/9/20. Not only is it not using the latest version of the model, it is missing known additional features which need to be incorporated.

Item 3: Examples showing evidence that the Conclusion cannot be trusted

A. Evidence from within the calculations using the Baseline Model:

The assumptions for trip generation for the ~400 new homes should be no different to that for the existing ~220 homes which exit Elmsbrook via the Braeburn Avenue B4100 junction (Phases 3 and 4). This is because there are no other effecting factors (e.g. School, Business Centre). The most relevant information for understanding the key peak hour (8-9 AM) from the models is shown in Appendix F, in Diagrams 6 and 8.

Diagram 6 shows that the model predicts, in 2031, if only the Exemplar site is present, then the Braeburn Avenue-B4100 junction has 70 Departures, 8-9 AM, for ~220 homes. Diagram 8 shows (for 2031), Exemplar PLUS Proposed Development shows the Braeburn Avenue-B4100 junction has 136 Departures, 8-9 AM, for ~620 homes.

The latter is just one (of many) examples of **nonsensical results**: if the model enabled the new homes to be treated the same as the Exemplar's 220, then the new total number of Departures should be ~197 homes – i.e. 61 more than the 136 predicted.

(Note: this equates to a reduction 31%, which is similar to the assumed 35% figure for “trip containment within NW Bicester” – however, this is not a viable cause: the 2010 modelling estimated 17% containment, and the full traffic modelling in that report used a 30% estimate, so the actual difference would be a lot smaller. Note also, these are *vehicle trips only*, whereas experience suggests that containment within NW Bicester is almost all walking, some cycling – and this is unlikely to change with the proposed development's location.)

B. Evidence from anomalous results within the Baseline Model:

Diagrams 6 and 8 also show 243 vehicles leaving Phase 2 via Cranberry Avenue, and 82 vehicles entering this way. Sadly, this is impossible: the road stops, and beyond is a large field. Diagram 1 (for 2016) actually has *negative* values for trips here – which is another type of anomaly. The reason *why* this is happening seems to be found in Appendix E, which contains a list of what developments (industrial, commercial, residential, etc.) are included in the Model. Here, the NW Bicester Data is incorrect:

Development Name	Description	Note	Dev Type	Total Dev Units/ Area	2021	2026	2031
NWB Eco-town Exemplar	See 2017 AMR for planning information		C3Dwellings		213	303	303
NWB Phase 2	See 2017 AMR for planning information		C3Dwellings		405	1505	2605

The Exemplar is 393 total, not 303, and is currently ~260 homes built (2021) not 213 – despite slow build, and will be 393 by 2026. (Is this a typo in the document...or the model itself?) Likewise, “NWB Phase 2” is currently 0 homes built, not 405 (as of 2021) – possibly the BTM assumes that these 405 homes are accessed via Cranberry Avenue.

Irrespective: any model which produces such results therefore cannot be trusted to be accurately predicting exits via Charlotte Avenue (for instance – where is this “differential” of (243 minus 82 =) 161 vehicles going to go?!

This also highlights that the BTM used must only include works proposed at/before the time of model creation several years ago. But what about all the other planning proposals since – including many already started, and in the Cherwell Local Plan? And all other differences between the plans then and now? For example, what about the Bicester Heritage site growth, further phases added at the Heyfords, road layout changes...? Surely it is critical that the modelling/simulations use *the latest up to date information*, to determine the true traffic growth?

C. Comparison of Traffic Simulation with Real Traffic Data, from Autumn 2019

Traffic Simulations used for the original 2014 planning application were compared with 2x traffic surveys and Traffic Monitoring data (Sept-Dec 2019) for vehicles entering Charlotte Avenue during the 8-9 AM Peak hour. The Simulations – which used the 2012 SATURN model, were shown to underestimate vehicle traffic by 97% overall, and by 417% for the School. Since the BTM used for simulations *pre-dates this finding*, it cannot contain any attempt to rectify the significant differences. (There is no reason to assume traffic trends in reality will suddenly reduce.)

(Recall: if the 2031 model predictions were to underestimate true traffic flows by even a small fraction of the above findings, then the RFC for Charlotte Avenue would be higher than 0.85. The impact would be serious.)

D. Comparison of School Demographic Assumptions with existing evidence

In point 7.4.4, it is assumed that “all primary school children from the proposed development” would attend Gagle Brook School – however, we’ve already seen evidence (from the Exemplar Phase) that this isn’t true. (1) Families moving from elsewhere in Bicester to the new development are likely to keep their children at their existing school, with existing friends. Likewise, (2) where families move to Elmsbrook and have older children also, at Secondary School with a site-sharing Primary School, we’ve seen parents send their child there – to a more established school, and single drop-off run. Also, (3) cases where parents choose to send their children to a Private School. The model does not appear to allow for alternatives such as these. Presumably statistics for such choices exist, and could be incorporated, if significant enough?

The results in Table 7-8, regarding Person Trips for Education Purpose by Mode, are also confusing. There’s no school on the land – so what are the Education *Arrivals* for in the morning? – especially non-Car ones – is this a count of people from outside the Proposed Development picking up kids living inside it?? If this data is meant to be inclusive of GBS, it’s far short of true data, and has transport mode assumption errors too, based on the GBS annual Travel Surveys.

E. Significant Omissions from the Model, first reported to OCC and CDC in January 2019

There are 2 single flow direction “bottlenecks”, each side of the bridge on Charlotte Avenue, on Phase 2, i.e. between the Eco Business Centre (ECB) and Gagle Brook School (GBS). These are to make it safer for children crossing to the 2 entrances to the park. These are not included anywhere in the Transport Assessment modelling – of 2010, 2014, 2018 or 2021 – and yet they will prove to be *very significant, very soon*. This is because they are only 5-6 car lengths apart, and only 5-6 car lengths from access to the entrances to the EBC, Energy Centre and Community Hub/Café (due to be built in 2021-22).

Work presented to CDC Planning Department on 9/9/2020 demonstrated how the lack of parking for GBS (due to errors in demographic assumptions and analysis of the Transport Mode, made in the original Exemplar planning) and growth of the EBC, plus building of the Community Hub/Café, will start to cause serious issues from September 2021 onwards – i.e. completely ignoring the impact of the proposed development’s additional impact! So let’s now consider what that impact will be:

Differencing the 2031 predictions (Diagram 8 in Appendix F) with 2016 (Diagram 1 in Appendix F), we can subtract the contribution of “Phase 1 only”, so we can calculate the predicted volumes going through the “bottleneck” by the Phase 1-2 Park: Arrivals = 350 – 16 = 334. Departures = 242 – 59 = 183. TOTAL = 334 + 183 = 517 vehicles.

This equates to 1 vehicle every 10.8 seconds going towards the School, and 1 vehicle every 19.7 seconds going towards the B4100 junction. And these 517 vehicles have to go through *two single-car bottlenecks*. This in itself would create tailbacks in either direction, causing issues with the EBC/Hub entrance; however, when you consider the parking situation outside the school as well, the effective “bottleneck region” is extended a long distance.

There are no road crossings outside the School, and the on-road parking situation is already dire, with the school at 70 pupils out of a capacity 230. Cars are parked on both sides on all available spaces on the roads, currently as safely as they can, but as the school grows, with no parking solution yet determined (despite constant pressure since 2018 from Residents, GBS itself, and Parents), this will inevitably go further through the estate both ways along Charlotte Avenue – making much more of it only single-car passable.

This is going to build up as the delays occur, and cause tailbacks all the way through Phase 2, and with the additional traffic from the proposed development, by the time the school goes from 30% to 100% capacity, even if the percentage car trips falls from currently 56% to say 30%, the traffic will likely be jammed all the way through Phase 1 to the B4100 – for much of the morning peak hour. It will also make things VERY DANGEROUS for those travelling on-foot or by bicycle to the School, who cross over Charlotte Avenue here.

NB also: even if the 2x bottlenecks are removed – i.e. making road crossing more dangerous for children going to the park – the School parking problem will still cause the above issues. And even if the School demographic not only meets its legal 50% vehicle travel target (last measured at 56%, in October 2020), but meets the original headmaster’s goal of just 25% - even then, it will still require enough parking such that these tailbacks are created.

F. Base Flows and Percentage Change

In “ES Chapter 6 TRANSPORT.pdf”, 6.108, Table 6.6 indicates that the Charlotte Avenue Link (stated in Table 6.5 to be of “High” Link Sensitivity) is modelled as having 703 vehicles (18 hour AAWT) in 2016, which increases to 4446 in 2031 “Do Minimum” (532% increase), and Table 6.7 shows this increases to 5184 (a further 16.6% increase) for the 2031 “Do Something” case (i.e. this includes the Traffic Lights at the B4100 junction). Table 6.7 also shows that the Braeburn Avenue increase between the two 2031 cases is high – 83.9% to “Do Something” – but NB this cannot be compared to 2016, because Phases 3-4 were not built then.

Comparing back to Table 6.2 Criteria for Magnitude of Change, the following can be noted:

- The modelling suggests both junctions have Severance, Driver Delay and Pedestrian/Cyclist Delay and Amenity all scoring in the “Medium” Magnitude of Impact category; however, Fear & Intimidation scores “High” – these points are not mentioned in the report. (This is because Delays, see Table 9-1 above, are calculated at 79.67 seconds, and the 18 hour AAWT vehicle count is between 3500 and 5600.)
- If the modelling underestimates true trip generation by as little as 14% (calculated based on Delay Times), then ALL of the above are pushed into the “High” category. Note that evidence from the preceding points, especially Item 3C, suggest that the underestimation might be significantly more than 14%.
- However, irrespective of whether these are “High” or “Medium”, Table 6.4 indicates that for a “High” Sensitivity Link (which Charlotte Avenue is, see Table 6.5), for either High or Medium Magnitude of Change, will experience a “**Major**” Adverse Impact – and this is described in Table 6.3 as “...A negative effect on the receptor that will have an impact on the wider area or that may be in breach of standards or legislation.”
- However, in the report, 6.130 only concludes that Braeburn Avenue will have a “moderate” adverse effect, and the others (i.e. including Charlotte Avenue) will have “negligible.” This appears to be only looking at some of the data, and only comparing the two 2031 cases. Point 6.137 later concludes Charlotte Avenue’s driver delay impact will be “Moderate” – Table 6.8 shows the modelling predicts the proposed development will increase the Charlotte Avenue exit delay in 2031 from 23.08 seconds to 79.67 seconds; the latter is the value in Table 9-1, which is also stated as a queue length of 5.2 cars. However, we are already seeing queue lengths of 5 cars, regularly, in 2021, under lockdown restrictions!
- 6.81 actually states that traffic levels are assumed to be lower in future, due to the pandemic. Speaking as a professional noise assessment consultant, who recently studied this for Motorways: *this simply cannot be assumed in the long-term!* It cannot be used to imply the traffic will be lower irrespective of other issues.

G. Financial Contribution Calculations

We note also the following points raised in the assessment:

- 6.1.4 It is acknowledged that the majority of the proposed development has already been considered as part of the Traffic Impact Assessment that was undertaken for the Application 1 scheme (14/01384-OUT), which was modelled by White Young Green (WYG) on behalf of A2 Dominion using OCC’s ‘Bicester SATURN Model’. This modelling was undertaken for the full 6,000 homes and it was agreed with OCC that the difference in traffic generation between Application 1 development and the full NW Bicester Eco Town can then be used to quantify the traffic impact of that application, which included the majority of the development proposals which are the subject of this scoping note.
- 6.1.5 With the above in mind, it is considered reasonable to accept that the assessment of the NW Bicester Masterplan undertaken by Hyder, WYG, PBA and other applications that have come forward to date, have clearly established the off-site strategic highway improvements that are required to deliver the wider NW Bicester Masterplan. As such, the applicant for the current proposals will be agreeing to proportionate financial contributions to these strategic improvements. Further details in this regard are set out within the Scoping report.

Would the calculated financial contributions be accurate, however – bearing in mind the above issues/analysis?

Conclusion – key points:

As highlighted in “ES Chapter 6 TRANSPORT.pdf” as part of the application, regarding the NPPF:

6.8 Paragraph 109 states that: “*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.*”

The following conclusions relate directly to this latter point:

- If the model has not been updated to reflect any of the above issues, how can we trust the figures?
- The figures are clearly likely to be significant underestimates of the true traffic flows and queue lengths.
- But the RFCs are predicted at over 0.85 already – so the result is likely to be significantly worse than predicted: critically, the planned simple change to the Charlotte Avenue-B4100 junction (Traffic lights) are *very unlikely* to be anything like a significant enough mitigation to the potentially significant issues.
- (Even if only issues A, C or D above were the issue, the junction would be overloaded, and the conclusions cannot be supported. However, when issue E is also included, the exacerbation is considerably worse.)
- Based on the available sets of evidence and content of the Transport Assessment for 21/01630/OUT, we are very concerned that – if this application were submitted as-is, the future cumulative impact for both the NW Bicester Ecotown and the wider traffic on the B4100 and Bicester Ring Road might indeed be severe.

The conclusion of “the existing junction would provide sufficient capacity” unfortunately can neither be justified, nor could it be accepted as having been determined by the best information available in 2021. Indeed, it is highly likely that such a simulation would not be sufficient – and further design variations will need investigation to determine what is actually viable/optimum.

Please note: we do not wish to ‘scupper’ the Firethorn development: we have been very impressed with Firethorn and their consultants so far, and are supportive of many aspects of the Outline planning application. We just don’t want to see the future of NW Bicester Ecotown damaged by a decision based on flawed information – when this is avoidable.

We would therefore very much like to help offer and discuss constructive solutions to the issues raised above.

It seems clear that an up-to-date modelling of the true situation is required, i.e. using the most recent BTM and further updating it to factor in all of the points raised in Item 3 above. It would seem very prudent to ensure that such a model were able to predict the September to December 2019 Traffic Monitoring/2x Survey results with reasonable accuracy, before going any further. The true ‘picture’ for 2031 could then be simulated *to the best of currently available knowledge*, and the conclusions revisited.

If, as we suspect, the conclusion no longer holds (i.e. due to unsupportably high RFC values), we have a number of ideas of different design aspects which could be discussed, and viable candidates could then be simulated.

Also:

The School parking/drop-off/collect issue will get worse in September 2021, irrespective of the Firethorn planning application: CDC also need to take action to resolve this. At the presentation on 9 Sept. 2020 (hosted jointly by the Elmsbrook Parking and Traffic Group, Gagle Brook School and the Eco Business Centre), members of CDC Planning verbally acknowledged the seriousness of the issue; however, no further action has yet been taken, in terms of further engagement with the community, School or Business Centre, i.e. beyond what both School and Business Centre had already been doing (these activities are detailed on slide 21 of the shared presentation).

As noted in the presentation: even if the school meets its boldest target for minimising vehicle trips, there would still be enough cars at pick-up and drop-off times to create traffic issues, once the school reaches full capacity. This issue not only affects all of Elmsbrook Phases 1 and 2; it will impact at least 130 homes of the proposed development. **It is not going to disappear: we would welcome further discussion of ideas for actions on this, as soon as possible.**