

Joanna Posnett

From: Freek, Steve <Steve.Freek@highwaysengland.co.uk>
Sent: 22 February 2019 09:11
To: Joanna Posnett; 'Law, Daniel'; Roxburgh, Mark
Cc: 'James Houghton'; Russell, Ashley
Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Hi Jo,

Regarding your email below, I can confirm that the condition could be worded 'prior to occupation' on the understanding that modelling work is provided and agreed beforehand in support of the appropriate trigger points.

Regards

Steve Freek

Assistant Spatial Planning & Economic Development Manager

Highways England, Stirling House (Area 7) Lakeside Court, Osier Drive, Sherwood Business Park
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Tel: 0300 470 4457

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Email: steve.freek@highwaysengland.co.uk

From: Joanna Posnett [<mailto:J.Posnett@bsp-consulting.co.uk>]
Sent: 21 February 2019 17:25
To: Freek, Steve <Steve.Freek@highwaysengland.co.uk>; 'Law, Daniel' <Daniel.Law@aecom.com>; Roxburgh, Mark <Mark.Roxburgh@highwaysengland.co.uk>
Cc: 'James Houghton' <James.Houghton@brackley-propdev.co.uk>; Russell, Ashley <Ashley.Russell@wsp.com>
Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Hi Steve

Thank you for your e-mail below, and confirmation that a signalisation scheme to mitigate the development at the A38/A50 junction, and the suggested condition are acceptable in principle.

We would request that the recommended wording of the condition for the development of the scheme, including the further modelling work, is required 'prior to occupation' rather prior to 'commencement of the development', so as not to restrict starting on earth works, on-site infrastructure etc., with both trigger points open for negotiation based on further evidence in due course. Trust this would be acceptable?

Kind regards

Joanna Posnett

BA(Hons) MCIHT

Principal Transport Planner

BSP Consulting (Leicester)

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From: Freek, Steve <Steve.Freek@highwaysengland.co.uk>

Sent: 14 February 2019 09:48

To: Joanna Posnett <J.Posnett@bsp-consulting.co.uk>; 'Law, Daniel' <Daniel.Law@aecom.com>; Roxburgh, Mark <Mark.Roxburgh@highwaysengland.co.uk>

Cc: 'James Houghton' <James.Houghton@brackley-propdev.co.uk>; Russell, Ashley <Ashley.Russell@wsp.com>

Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Hi Jo,

Further to discussions with colleagues and in response to your emails below I would comment as follows:

To recap on our January review of the modelling work for a signalisation scheme at the A38/A50 junction in support of the Burnaston Cross development, AECOM and Highways England are of the view that a scheme in broad accordance with the design proposed will be both deliverable, and capable of mitigating development impacts.

As such it is reasonable to proceed on the basis that in principle, the mitigation of signalising the roundabout is acceptable, however, and as recognised by all parties, further detail will need to be developed at a later stage. In response to any forthcoming planning application, a condition should be recommended to ensure a scheme is approved prior to commencement of the development. This would require updated modelling due to the concerns previously raised regarding the operational viability of the proposed scheme.

The 'prior to commencement' element of the condition could of course be amended accordingly should suitable modelling work be provided as suggested, to support appropriate trigger points.

Please feel free to contact me should you have any queries.

Regards

Steve Freek

Assistant Spatial Planning & Economic Development Manager

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Email: steve.freek@highwaysengland.co.uk

From: Joanna Posnett [<mailto:J.Posnett@bsp-consulting.co.uk>]

Sent: 11 February 2019 11:11

To: Freek, Steve <Steve.Freek@highwaysengland.co.uk>; 'Law, Daniel' <Daniel.Law@aecom.com>; Roxburgh, Mark <Mark.Roxburgh@highwaysengland.co.uk>

Cc: 'James Houghton' <James.Houghton@brackley-propdev.co.uk>; Russell, Ashley <Ashley.Russell@wsp.com>

Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Morning Steve

Just following this up after our conversation last week. Have you had chance to discuss with your colleagues? Look forward to hearing from you. Let me know if you have any queries.

Kind regards

Joanna Posnett

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Principal Transport Planner

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From: Joanna Posnett

Sent: 22 January 2019 16:37

To: Freek, Steve <Steve.Freek@highwaysengland.co.uk>; 'Law, Daniel' <Daniel.Law@aecon.com>; Roxburgh, Mark <Mark.Roxburgh@highwaysengland.co.uk>

Cc: 'James Houghton' <James.Houghton@brackley-propdev.co.uk>; Russell, Ashley <Ashley.Russell@wsp.com>

Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Hi Steve

I've left a few voicemails, as ideally wanted to discuss this with you first. We have been reviewing the latest comments and would like to suggest that another option may be appropriate, to avoid the need to complete the additional modelling work up front and the need for a holding response for this work to be undertaken prior to a planning decision.

It is our understanding that the meetings and discussions we have had prior to this point were focussed on trying to keep the level of work proportional to the relatively small impact of the scheme in terms of additional traffic, and acknowledge that the committed developments and background growth were the key drivers for the required mitigation scheme.

The comments are generally positive and agree in principle to a mitigation scheme of the type proposed. MOVA design work and further modelling would be necessary to demonstrate fully the positive impact of signalisation, however as that should just provide betterment to the results so far with fixed time operation, we consider that this work could be done at a later stage, to allow the scheme to move forward. We had also discussed at our meeting that it may be appropriate for MOVA to be retrofitted, as the scale of mitigation would need to remain proportionate and viable.

WSP have worked on another scheme where the additional design and modelling (MOVA) work was conditioned to allow an outline application to proceed and be determined. Below is an extract of the condition HE requested from the outline application:

21 Unless otherwise agreed, in writing, by the Local Planning Authority (Sunderland City Council), no more than 20 no. dwellings shall be occupied until a scheme of traffic signal improvements to the B1285 / Seaton Lane / Lord Byron's Walk junction has been submitted to and approved, in writing, by the Local Planning Authority, upon consultation with Durham County Council. This scheme shall include detailed analysis of the saturation flows at the junction, the timings of the signals, the operation strategy to ensure the junction is stable and a Stage 1/2 Road Safety Audit, if deemed necessary by the Local Planning Authority, together with an appropriate timescale for implementation. Unless otherwise agreed, in writing, by the Local Planning Authority, no more than 40 no. dwellings shall be occupied until the approved scheme has been fully implemented, to completion, in accordance with the approved details. Reason: To mitigate the impact of the development on this junction, in the interest of highway safety and the free passage of traffic and to comply with policy T14 of the adopted Unitary Development Plan and paragraph 32 of the National Planning Policy Framework.

Should you be agreeable to a similar condition, we will look to prepare evidence to support our proposed trigger points for a) the additional scheme design and modelling work, and b) the implementation of the scheme, for your comments/approval and have started to look at this from a phasing and viability point of view.

In response to your comments on the land uses and scale, this is set out in more detail the draft Transport Assessment which we were envisage would be submitted imminently. In accordance with what we had previously agreed in April/May 2018, we are assessing up to 100,000sqm with up to 25% B2 and at least 75% B8, which can be controlled by condition (see attached Scoping Note and your approval). Therefore the overall number of trips has increased slightly from the agreed Scoping Note, as the GFA was rounded up to allow for more flexibility, but the trip rates and split have remained consistent. The resulting trip generation for 100,000sqm have been used in the modelling work to date.

Please can you consider the above and confirm if this would be an acceptable way forward. Please give me a call if you have any queries.

Kind regards,

Joanna Posnett

BA(Hons) MCIHT

Principal Transport Planner

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From: Freek, Steve <Steve.Freek@highwaysengland.co.uk>

Sent: 11 January 2019 15:40

To: Russell, Ashley <Ashley.Russell@wsp.com>; 'Law, Daniel' <Daniel.Law@aecom.com>; Roxburgh, Mark <Mark.Roxburgh@highwaysengland.co.uk>

Cc: Joanna Posnett <J.Posnett@bsp-consulting.co.uk>; 'James Houghton' <James.Houghton@brackley-propdev.co.uk>; Leworthy, Emma <emma.leworthy@wsp.com>

Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Hi Ashley,

Further to your email below dated 20 December 2018, I can confirm that Highways England agree in principle to a mitigation scheme comprising signalisation works. However in light of the seemingly extensive amount of modelling work still to be undertaken to reach an agreed scheme, should a planning application be forthcoming then HE's recommendation would be for a holding response (normally 3 months) until a scheme (prelim design) and supporting modelling work were to be submitted and considered acceptable.

For note if a Road Safety Audit has not been provided by the time HE are in a position to recommend approval, the requirement for an RSA along with approval of detailed design would be incorporated within the appropriate condition.

In the meantime please see comments relating to your latest modelling submission below:

Mitigation scheme review

There are numerous amendments required to the mitigation scenario models before we can agree that the specific scheme proposed is acceptable. However based on the nature of these changes and the overall positive effect they will have on junction performance it is reasonable to accept in principle the signalisation of the roundabout, although the scheme and supporting modelling work will need to be further developed before any application can be recommended for approval.

As such we have proceeded with comparing the mitigation scheme model with development traffic against the Do Minimum model, which has allowed us to determine whether signalisation is likely to mitigate development impacts.

Overall network performance appears to be improved with the development and mitigation scheme in place, however these results alone do not provide sufficient detail to allow us to identify any potential isolated areas where performance is worsened. We have therefore reviewed the expected changes to the 2025 forecast queue lengths as a result of the proposals (provided at Appendix H).

Across the two peak periods there are several incidences of the off-slips serving the SRN experiencing increased queue lengths, however this issue is likely to be addressed by the model amendments recommended.

Trigger point testing

The trigger point testing note suggests that a number of routes will experience a material increase in journey times even in the scenario with 15% development traffic. The most severely affected journey times appear to be those routing from the A38 south, with those on route 21 (A38 south to A38 north) increasing by 15.9%, route 23 (A38 south to B5008) by 23.7%. Strangely route 19 (A38 south to A50 west) performs worse with 15% development traffic than with 100%.

Queues on the A38 south approach to the junction in the same AM peak increase by 15.7%. This represents an increase of 429m, indicating that mitigation at this approach is required far sooner than 15% occupation of the development.

The proposed trigger point of 50% occupation suggests a less severe increase of 9.3% (254m), though this is still a significant impact for which mitigation would be required in advance of queue lengths at over-capacity links materially increasing.

We note that 15% of development traffic represents a total of 21 LVs and 7 HVs, which should not result in the severe impacts summarised above. This, along with the above highlighted discrepancy between the 15/30/50/70/100% development traffic models, should be investigated and addressed. Have unreleased vehicles been accounted for in the tabulated queue length results? Is there significant variation in performance results over the 10 random seeds?

Development traffic generation

No further details regarding the scale and use of the proposed development have been provided since the initial consultation in May 2018 in which the development was briefly described as being “up to 100,000sqm of commercial floor space (use classes B2 and B8 with ancillary B1(a) offices)”.

The TRICS database suggests that the development would generate 120-130 two-way vehicle trips in the worst case AM peak if entirely B8 use. This would be around 500 if entirely B2.

We note that your report suggests that the development will generate 189 trips in the AM and 136 in the PM.

We understand that the proposal is at the early stages and as such the applicant may not be in a position to confirm the likely B2/B8 split, however there is a risk that the development flows adopted in the modelling work thus far may need to be updated once this information is provided. The sooner the development trips can be agreed therefore the better.

Regards

Steve Freek

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Email: steve.freek@highwaysengland.co.uk

From: Russell, Ashley [<mailto:Ashley.Russell@wsp.com>]

Sent: 20 December 2018 21:19

To: Freek, Steve <Steve.Freek@highwaysengland.co.uk>; 'Law, Daniel' <Daniel.Law@aecom.com>; Roxburgh, Mark <Mark.Roxburgh@highwaysengland.co.uk>

Cc: 'Joanna Posnett' <J.Posnett@bsp-consulting.co.uk>; 'James Houghton' <James.Houghton@brackley-propdev.co.uk>; Leworthy, Emma <emma.leworthy@wsp.com>

Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Hi Steve,

The comments detailed in your email below have been helpful in providing further clarity on the potential operation of the mitigation scheme. The comments made for the most part seem focused on enhancing the performance of the mitigation scheme model, which is very much appreciated. Given these comments are targeted at delivering enhancements to the mitigation scheme, it is considered that it should not be holding up any review of the performance results of the mitigation scheme we have already presented.

Given the limited impact of the proposed development, as shown in the without mitigation modelling, we had previously discussed that this initial mitigation assessment would demonstrate the potential positive impact of the mitigation scheme to allow our discussions to progress further, but with the expectation that should the scheme move forward more detail would need to be drawn out at detailed design stage – especially evolving things from a fixed time solution to an adaptive control (MOVA) solution. We have investigated making changes to the model as you have indicated, but we are experiencing difficulties resulting from the structure of the model set up that would require a substantial amount of further work to address – these are impacting lane use discipline in particular. Further, fixed time signals are constraining the performance of the model and I feel we are only going to get enhancements over the results already presented by introducing MOVA. Work to address these model updates is something that would naturally fall as part of the detailed development of the scheme. We have provided responses (in **BLUE**) below against your comments for your review.

This initial work was / is targeted at securing your support for a mitigation scheme for the proposed development of the scale that has been tested in the modelling so far. There is further substantial work to be done to move the scheme towards a detailed design if it is considered suitable to take forward. As covered at previous meetings and through previous discussions, it is important to clarify and understand at this stage if you are supportive of a mitigation scheme of this nature, or if you are looking to secure something greater in terms of a mitigation scheme. We acknowledge the limitations of the modelling presented at this stage, but also feel that whilst a fixed time solution is being tested, we would only be moving pieces around the board, rather than achieving any overall improvement to the scheme design and junction performance.

The comments provided below make no reference to the Trigger Point Sensitivity Testing note issued. Given all the comments below relate to the modelling of the mitigation scheme, are you able to provide comments on a potentially suitable trigger point? The identification of a trigger point is based around the impact of the

development without the introduction of mitigation, therefore, the detail of the mitigation scheme should not influence this discussion? The Impact Assessment Report (Section 3) provides details of the proposed developments impact on the junction maintaining its existing layout. The Sensitivity Testing Note provides details based on the delivery of different quantum's of development.

A revision to the mitigation drawing has been attached picking up on some of the comments below.

I am happy and keen to discuss the above and below in further detail on the phone if that would be helpful? I will be back working from Wednesday 2 January 2019, please let me know a suitable time.

Many thanks

Ashley Russell

Associate



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Please note that my working days are Monday to Thursday

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From: Freek, Steve [<mailto:Steve.Freek@highwaysengland.co.uk>]

Sent: 12 December 2018 15:41

To: Russell, Ashley <Ashley.Russell@wsp.com>; 'Law, Daniel' <Daniel.Law@aecom.com>; Roxburgh, Mark <Mark.Roxburgh@highwaysengland.co.uk>

Cc: 'James Houghton' <James.Houghton@brackley-propdev.co.uk>; Vila Salgado, Alba <Alba.VilaSalgado@wsp.com>; 'Joanna Posnett' <J.Posnett@bsp-consulting.co.uk>

Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Hi Ashley,

Thank you for email below and the modelling files & reports provided for review.

Before proceeding to review performance results and take a view as to whether the proposed scheme suitably mitigates the development impacts, and from this to agree suitable trigger points, the following comments should be considered and models amended accordingly. Please see the annotated screenshots attached to assist with this review:

- Modelling note should clearly state that the junction has been assessed using fixed timings – **comment to be added to Section 4 Introduction.**
- Page 1 – Vehicles circulating the eastern section of the circulatory are able to use the middle lane to approach the B5008 exit, whilst those continuing to the A38 south exit further downstream may use the nearside lane. This presents a conflict and causes those destined for the B5008 to queue on the circulatory. The removal of the connector to the

offside lane of the B5008 would encourage approaching vehicles from the circulatory to be in the nearside lane. – **noted and investigated. Lane use behaviour is influenced by more factors than just the connector structure. More detailed work to update the model to suit a signal controlled junction, rather than a priority junction, is required to address wider junction operation issues – this should be carried out at the next stage of design development if the scheme is to be taken forward.**

- Page 2 – eliminating the ability for those entering the circulatory from the A50 WB off-slip to change lanes regularly causes a false queue. This should be removed and replaced by additional connectors from the off-slip, which together with appropriate edge closures will encourage correct lane choices before vehicles enter the circulatory. – **as above, noted and investigated. Lane use behaviour is influenced by more factors than just the connector structure. More detailed work to update the model to suit a signal controlled junction, rather than a priority junction, is required to address wider junction operation issues – this should be carried out at the next stage of design development if the scheme is to be taken forward.**
- Page 3 – Yellow box as shown in the proposed scheme drawing presumably to account for the short stacking space has not been modelled. – **the drawing and the modelling were developed in parallel, with the Yellow Box coming late to the design. This was an oversight in the initial modelling, however, the behaviour of Yellow Box junctions in models is not always as you would hope/expect on street, and would only help the follow of traffic and therefore improve operation. It was therefore omitted in the initial modelling. This has now been included in the modelling currently being looked at – we are seeing abuse of the Yellow Box, still being investigated, but not likely to be resolved until a final signals design improves overall junction performance.**
- Page 4 – As modelled, vehicles entering the circulatory from the middle lane of the A50 WB off-slip are able to route south on the A38. This occasionally causes queues as vehicles stop on the circulatory to await gaps to exit. The above comment ensuring correct lane choices by use of additional connectors from the off-slip would address this. Lane designations on the drawing both at the off-slip and downstream at the circulatory are not compatible as currently shown. – **Further investigation of allocation of road space and implication on flaring and lane designations can be considered as part of detailed design if the scheme is to be taken forwards.**
- Page 5 – Headways may be necessary if the above amendments do not eliminate queues reaching back to the A38 SB off-slip node. – **noted and investigated. To be taken up as part of more detailed work at the next stage of design development.**
- Page 6 – A particular issue in the PM, the circulatory reaches capacity and locks up causing off-slip queues. A priority should be given to circulatory capacity in signal timing set-up. – **As set out in the Impact Assessment Report, it is acknowledged that further refinement of the signals operation would be required should the scheme be taken forward. Investment of time in development of the fixed time signals to this point has been proportionate to the impact of the proposed development and the acknowledgement that at this stage it is not necessary to undertake a MOVA design. The linking of the signals is something that is directly linked to the lane allocations and the use of the available road space. From the modelling undertaken so far it appears that ideally the AM and PM would have different road markings (lane designations) and this is something that needs further consideration as to how best to allocate the road space for use of the junction across the whole day. Adjustment of green splits and offsets through further application of the Vissim model is something that could be looked at further if the scheme is to progress.**

- Page 6 – The drawing shows the Toyota access from the circulatory retained as two lanes however both Linsig and VISSIM modelling had it as a single lane. Further, we queried whether Toyota needed a dedicated lane on the west bridge whereas now it has both a dedicated lane and the option to use the middle lane. No in principle issue here but want to understand why this change was made please. – **this is just about retaining the current provision in lieu of further information. There is insufficient traffic data ((only peak period for whole junction collected) at this stage to confirm the requirement or not for two lane exit towards Toyota at this node.**
- Page 6 – With the performance of the A50 EB off-slip node being a major concern, please see previous comment raised in email of 9th October to consider allowing circulatory traffic to use nearside lane for A38 north, with the other two lanes dedicated for the A50 east and B5008, including remarking the northwest of the circulatory as three lanes using the existing paved width. – **this is something that could be considered as a point of detailed design. There is insufficient traffic data (only peak period for whole junction collected) at this stage to confirm the requirement or not for two lane exit towards Toyota at this node. The suggested change would enforce a single lane exit to Toyota, so the implications of this across the whole operating period need to be considered once suitable information is available.**
- Page 7 – Yellow box not included at southwest quadrant (serving NB off-slip) in either the drawing or the VISSIM model. This is a minor point and can be added in at detail stage but again would like to know what the basis was for deciding this isn't needed. – **Once a traffic signal design can be finalised, if the scheme is to be implemented, there should not be a requirement for a Yellow Box if the signals work suitably. The application of the Yellow Box on the South East corner directly relates to the short internal length between the two signalised nodes and the requirement to maintain space within the junction to keep each movement flowing when a green signal is indicated.**
- Page 8 – To clarify why the flare on the A38 NB off-slip is shown on the drawing to be on the other side to that modelled and existing. – **noted. Drawing to be updated.**
- From review of the scheme drawing the flare on the northern circulatory (west of A38 SB off-slip) has not been extended as previously requested; this is simply removing hatching and has no kerblane implications plus has potential to be an RSA finding (as drivers are likely to overrun it in any case). We would like to see this changed on the drawing to be conditioned (flare extended back to just before A38 NB on-slip) but no need to model the change as it will only be further betterment. – **noted. Is it possible to confirm that there are no structural loading implications for increasing the northern circulatory to three lanes? This is again, something that can be considered as part of detailed design and as part of a wider consideration about the most suitable application of road markings (lane designations) for the whole operating period.**
- B5008 incorrectly shown as a destination in offside lane of both the A38 SB off-slip and the opposing circulatory; drawing should be updated. – **noted. Drawing to be updated.**
- Although intergreen timings are all acceptable, signals are poorly linked (do not synchronise well between nodes) as above a greater priority needs to be given to circulatory capacity. – **As set out in the Impact Assessment Report, it is acknowledged that further refinement of the signals operation would be required should the scheme be taken forward. Investment of time in development of the fixed time signals to this point has been proportionate to the impact of the proposed development and the acknowledgement that at this stage it is not necessary to**

undertake a MOVA design. The linking of the signals is something that is directly linked to the lane allocations and the use of the available road space. From the modelling undertaken so far it appears that ideally the AM and PM would have different road markings (lane designations) and this is something that needs further consideration as to how best to allocate the road space for use of the junction across the whole day. Adjustment of green splits and offsets through further application of the Vissim model is something that could be looked at further if the scheme is to progress.

- The November 2018 Impact Assessment Report refers both to the no change and the with scheme scenarios as DS which could lead to errors in reviewing the data (as there are two tables comparing DM to DS for each set of stats but the DS is different in each). This should be updated, perhaps showing the no development case as Do Nothing (DN), development traffic only as Do Minimum (DM) and development traffic plus scheme as Do Something (DS). – **Reporting can be updated to use Do Something Mitigation (DSM) in Section 4 - Mitigation Scheme.**

We look forward to receiving your revised modelling in due course.

Regards

Steve Freek

Assistant Spatial Planning & Economic Development Manager

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Email: steve.freek@highwaysengland.co.uk

From: Russell, Ashley [<mailto:Ashley.Russell@wsp.com>]

Sent: 28 November 2018 11:28

To: 'Law, Daniel' <Daniel.Law@aecom.com>; Roxburgh, Mark <Mark.Roxburgh@highwaysengland.co.uk>; Freek, Steve <Steve.Freek@highwaysengland.co.uk>

Cc: 'James Houghton' <James.Houghton@brackley-propdev.co.uk>; Vila Salgado, Alba <Alba.VilaSalgado@wsp.com>; 'Joanna Posnett' <J.Posnett@bsp-consulting.co.uk>

Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Morning Again!

Please can you try the link below to access the model files as promised?

<https://wettransfer.com/downloads/b86538c4c0e305a98a62860174663c7820181128111300/de206ce401575f5e227c560bd747532220181128111300/85f4ad>

Please can you let me know that you have managed to access the files or if you have any problems?

Many thanks

Ashley Russell

Associate



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From: Russell, Ashley

Sent: 28 November 2018 10:30

To: 'Law, Daniel' <Daniel.Law@aeacom.com>; 'Mark.Roxburgh@highwaysengland.co.uk' <Mark.Roxburgh@highwaysengland.co.uk>; 'Freek, Steve' <Steve.Freek@highwaysengland.co.uk>

Cc: 'James Houghton' <James.Houghton@brackley-propdev.co.uk>; Vila Salgado, Alba <Alba.VilaSalgado@wsp.com>; 'Joanna Posnett' <J.Posnett@bsp-consulting.co.uk>

Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Hi All,

Apologies for the delay in providing a link to the model files. We are having internal server issues and I can't currently upload them to our file transfer server. I will send a link as soon as the issues are resolved.

Many thanks for your patience.

Ashley Russell

Associate



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From: Russell, Ashley

Sent: 26 November 2018 14:15

To: 'Law, Daniel' <Daniel.Law@aeacom.com>; 'Mark.Roxburgh@highwaysengland.co.uk' <Mark.Roxburgh@highwaysengland.co.uk>; Freek, Steve <Steve.Freek@highwaysengland.co.uk>

Cc: 'James Houghton' <James.Houghton@brackley-propdev.co.uk>; Vila Salgado, Alba <Alba.VilaSalgado@wsp.com>; 'Joanna Posnett' <J.Posnett@bsp-consulting.co.uk>

Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Good Morning Everyone,

As previously discussed, I am now able to provide copies of the Microsimulation Modelling Impact Assessment Report, a Mitigation Scheme Drawing, and a Note on Development Trigger Point Sensitivity Testing.

The impact assessment report details the modelling undertaken to assess the junction with and without a mitigation scheme. In summary, this sets out the mitigation scheme demonstrates improved vehicle throughput in both modelled periods, a reduction in average delay experienced per vehicle in both modelled periods and an average reduction in journey times through the junction. The assessment excludes the provision of MOVA at this time as we agreed that it was disproportionate to the impact of the development on the junction.

The trigger point sensitivity testing note reports on the testing of 15%, 30%, 50% and 70% quantum of development and the associated impact on the operation and performance of the junction. This note is intended to demonstrate that a substantial quantum of the development can be delivered prior to the requirement for the delivery of, or contribution to, a mitigation or junction improvement scheme. We anticipate that we will need to hold further discussions regarding an agreed trigger point and this note sets out the preferred and initial position.

Finally, I will shortly provide a link giving access to the following Vissim modelling scenarios for download:

- 2025 DM
- 2025 DS
- 2025 DS (15%)
- 2025 DS (30%)
- 2025 DS (50%)
- 2025 DS (70%)
- 2025 DS + Mitigation

Please can you review the attached reporting and models and, as previously agreed, provide a formal response / position statement? Hopefully the above and attached provides you with sufficient information to undertake your review, but if you require any further clarifications or information please do not hesitate to get in touch and we will assist in any way we can to keep the process moving.

Please can you provide an indication of the likely response time so that Jo and James can plan how your responses sits with the planning application?

Many thanks in advance for your inputs, please can you copy all of those in this email to any responses?

Ashley Russell

Associate



T+ 44 (0) [REDACTED]

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From: Russell, Ashley

Sent: 25 October 2018 13:08

To: Roxburgh, Mark <Mark.Roxburgh@highwaysengland.co.uk>

Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Hi Mark,

Once again, many thanks for your detailed comments and inputs below. We have progressed the mitigation forwards in to VISSIM building on your comments and further work on the initial LinSig models. We felt that now was a good time to reengage in discussions as we have useful outputs from our VISSIM work. I have summarised this below and would be keen to discuss with you on the phone once you have had time to digest.

As per the LinSig modelling, the VISSIM results show the that junction is operating overcapacity with the mitigation scheme, but overall junction performance is better with the mitigation scheme than without. I have presented below some headline results for the overall performance of the junction showing improvements in vehicle throughput, and reductions in average delay, suppressed demand and total travel time. It is worth noting here, as we have discussed previously, in both peaks, certain movements / routes through the junction do experience an increase in journey time as a result of the introduction of signals at five nodes of the roundabout. For some of the movements, e.g. right turns and u-turns, this means that there could be three or four signal controlled stoplines to pass through, therefore an increase in journey time once entering the junction is to be expected. With the implementation of signals it is about trying to address the delay issues on the approach to the junction such that the overall trip journey time can see an improvement.

Trip Completed

	2325AM_DM	2025AM_DS	Diff_AM	2025PM_DM	2025PM_DS	Diff_PM
Vehicles	11771	12732	961	11127	12304	1177

Network Statistics Summary

	AM_DM	AM_DS	AM_Diff	PM_DM	PM_DS	PM_Diff
Supressed demand (Average) [Vehicles]	1073	506	-567	1370	75	-1295
Delay (Average) [Seconds]	174	84	-90	142	100	-42
Travel Time (Total) [Seconds]	5107985	4129912	-978073	4336654	4142212	-194443

In the AM, the introduction of the scheme results in an increased throughput at the junction of about 8% (through a reduction in supressed demand of c500 vehicles), therefore seeing a general reduction in queue length and a reduction in the number of vehicles left outside the modelled network at the end of the simulated time period. This results in a reduced average delay per vehicle of 90 seconds. In the PM, we are seeing increased throughput of about 10%, through a reduction in supressed demand of c1,200 vehicles. The overall junction improvement results in a reduced average delay per vehicle of 40 about seconds. These results show that at an overall junction level the mitigation scheme is delivering betterment over and above the impact of the proposed scheme.

These overall junction results are obviously built up by results on specific journey paths and queue locations. The detail of these is shown below and shows that when broken down, some paths and locations see betterment and some see worsening. In the AM, we are able to demonstrate a positive impact on journey times and queues pretty much all round the junction. In the PM, based on the fixed time modelling of the signals, some approaches are seeing a benefit in journey time and queue length (A38 SB, A50 EB, Toyota Access), but some are seeing a noticeable worsening in journey time and queue length (A50 WB, B5008, A38 NB).

Journey Times (seconds)

	From	To	2025 DM AM	2025 DS AM	Difference	Diff (%)
Route 1	A38 SB (North)	A50 EB (East)	599	551	-48	-8.0%
Route 2	A38 SB (North)	B5008 SB	467	564	97	20.7%
Route 3	A38 SB (North)	A38 SB (South)	296	274	-22	-7.4%
Route 4	A38 SB (North)	A50 WB (West)	467	529	62	13.3%
Route 5	A38 SB (North)	Toyota Access NB	413	482	68	16.5%
Route 6	A38 SB (North)	A38 NE (North)	437	496	59	13.6%
Route 7	A50 WB (East)	B5008 SB	288	286	-3	-0.9%
Route 8	A50 WB (East)	A38 SB (South)	366	365	-1	-0.2%
Route 9	A50 WB (East)	A50 WB (West)	269	270	1	0.3%
Route 10	A50 WB (East)	Toyota Access NB	321	366	45	13.9%
Route 11	A50 WB (East)	A38 NE (North)	368	404	36	9.6%
Route 12	A50 WB (East)	A50 EB (East)	492	412	-80	-16.3%
Route 13	B5008 NB	A38 SB (South)	411	216	-195	-47.6%
Route 14	B5008 NB	A50 WB (West)	427	199	-228	-53.4%
Route 15	B5008 NB	Toyota Access NB	403	177	-226	-56.0%
Route 16	B5008 NB	A38 NE (North)	477	272	-204	-42.9%
Route 17	B5008 NB	A50 EB (East)	583	394	-189	-32.5%
Route 18	B5008 NB	B5008 SB	156	59	-99	-62.5%
Route 19	A38 NB (South)	A50 WB (West)	576	257	-319	-55.4%
Route 20	A38 NB (South)	Toyota Access NB	547	219	-328	-60.0%
Route 21	A38 NB (South)	A38 NE (North)	285	189	-96	-33.7%
Route 22	A38 NB (South)	A50 EB (East)	772	442	-330	-42.7%
Route 23	A38 NB (South)	B5008 SB	586	446	-140	-23.9%
Route 24	A38 NB (South)	A38 SB (South)	754	551	-203	-26.9%
Route 25	A50 EB (West)	Toyota Access NB	818	176	-642	-78.5%
Route 26	A50 EB (West)	A38 NE (North)	882	237	-645	-73.1%
Route 27	A50 EB (West)	A50 EB (East)	332	267	-65	-19.6%
Route 28	A50 EB (West)	B5008 SB	748	400	-349	-46.6%
Route 29	A50 EB (West)	A38 SB (South)	875	489	-386	-44.1%
Route 30	A50 EB (West)	A50 WB (West)	913	197	-716	-78.4%
Route 31	Toyota Access SB	A38 NE (North)	126	122	-5	-3.6%
Route 32	Toyota Access SB	A50 EB (East)	271	298	27	9.9%
Route 33	Toyota Access SB	B5008 SB	134	309	175	131.4%
Route 34	Toyota Access SB	A38 SB (South)	243	417	175	71.9%
Route 35	Toyota Access SB	A50 WB (West)	233	433	200	85.6%
Route 36	Toyota Access SB	Toyota Access NB	191	93	-98	-51.5%
Total difference					-4673	-28.2%

	From	To	2025 DM PM	2025 DS PM	Difference	Diff (%)
Route 1	A38 SB (North)	A50 EB (East)	943	296	-647	-68.6%
Route 2	A38 SB (North)	B5008 SB	812	247	-565	-69.6%
Route 3	A38 SB (North)	A38 SB (South)	418	188	-229	-54.9%
Route 4	A38 SB (North)	A50 WB (West)	714	375	-339	-47.4%
Route 5	A38 SB (North)	Toyota Access NB	626	376	-249	-39.8%
Route 6	A38 SB (North)	A38 NE (North)	705	437	-269	-38.1%
Route 7	A50 WB (East)	B5008 SB	261	466	205	78.8%
Route 8	A50 WB (East)	A38 SB (South)	355	541	185	52.2%
Route 9	A50 WB (East)	A50 WB (West)	268	269	1	0.4%
Route 10	A50 WB (East)	Toyota Access NB	258	450	191	54.1%
Route 11	A50 WB (East)	A38 NE (North)	352	599	247	70.0%
Route 12	A50 WB (East)	A50 EB (East)	465	697	233	50.0%
Route 13	B5008 NB	A38 SB (South)	179	243	64	35.8%
Route 14	B5008 NB	A50 WB (West)	168	263	96	56.7%
Route 15	B5008 NB	Toyota Access NB	136	266	130	95.3%
Route 16	B5008 NB	A38 NE (North)	228	419	191	83.7%
Route 17	B5008 NB	A50 EB (East)	338	536	198	58.6%
Route 18	B5008 NB	B5008 SB	50	81	31	62.4%
Route 19	A38 NB (South)	A50 WB (West)	243	245	1	0.5%
Route 20	A38 NB (South)	Toyota Access NB	214	259	45	21.0%
Route 21	A38 NB (South)	A38 NE (North)	185	185	0	0.0%
Route 22	A38 NB (South)	A50 EB (East)	372	473	101	27.1%
Route 23	A38 NB (South)	B5008 SB	251	416	164	65.5%
Route 24	A38 NB (South)	A38 SB (South)	345	499	153	44.4%
Route 25	A50 EB (West)	Toyota Access NB	523	182	-341	-65.1%
Route 26	A50 EB (West)	A38 NE (North)	597	251	-345	-57.9%
Route 27	A50 EB (West)	A50 EB (East)	274	267	-7	-2.6%
Route 28	A50 EB (West)	B5008 SB	447	375	-72	-16.2%
Route 29	A50 EB (West)	A38 SB (South)	569	471	-98	-17.2%
Route 30	A50 EB (West)	A50 WB (West)	501	519	18	3.6%
Route 31	Toyota Access SB	A38 NE (North)	611	442	-169	-27.6%
Route 32	Toyota Access SB	A50 EB (East)	814	770	-44	-5.5%
Route 33	Toyota Access SB	B5008 SB	715	858	143	20.0%
Route 34	Toyota Access SB	A38 SB (South)	784	876	92	11.7%
Route 35	Toyota Access SB	A50 WB (West)	776	906	131	16.9%
Route 36	Toyota Access SB	Toyota Access NB	725	647	-78	-10.8%
Total difference					-863	-5.3%

Queues (metres)

	2025 AM							
	DM		DS		Difference		Difference (%)	
	Max	Average	Max	Average	Max	Average	Max	Average
Queue 1	1904	1257	1905	1204	0	-52	0.0%	-4.2%
Queue 2	359	200	458	234	99	34	27.4%	16.9%
Queue 3	421	311	170	102	-251	-208	-59.5%	-67.0%
Queue 4	2734	1535	159	99	-2575	-1437	-94.2%	-93.6%
Queue 5	2421	1293	428	168	-1993	-1125	-82.3%	-87.0%
Queue 6	26	20	31	21	5	1	19.0%	2.7%

	2025 PM							
	DM		DS		Difference		Difference (%)	
	Max	Average	Max	Average	Max	Average	Max	Average
Queue 1	1905	1400	153	103	-1752	-1296	-91.9%	-92.6%
Queue 2	170	106	1502	619	1332	513	784.2%	486.3%
Queue 3	137	100	273	174	135	74	98.5%	74.0%
Queue 4	87	62	122	74	35	12	40.9%	20.0%
Queue 5	1996	853	277	147	-1720	-706	-86.1%	-82.8%
Queue 6	596	421	597	413	1	-8	0.2%	-2.0%

We feel now is a good time to engage with you as the results so far demonstrate that overall the scheme delivers betterment at the junction over and above the impact of the development. However, it also shows that based on fixed time signals, certain approaches to the junction are expected to see increases in queuing and journey time and some reductions. We have undertaken multiple iterations of the fixed time signal solutions, in the PM in particular, without achieving noticeable improvements to the results presented. Therefore, we feel that without MOVA or physical changes to the layout of the junction, we won't be able to get a scheme that shows results noticeably better than this (i.e. a step change in performance).

As discussed when we met, a fixed time solution would not be implemented at this location. MOVA control would be required should this mitigation scheme be delivered on site. However, we did agree that the testing (at this stage) of MOVA was disproportionate to the impact of the development. The results presented above indicate that operationally there should be sufficient flexibility and capacity such that (with appropriate design and implementation) MOVA would be able to balance out the benefits and impacts we see across the different approaches in the fixed time results to achieve the overall positive junction performance benefits reported.

We would therefore like to get your thoughts on the above to see if you are comfortable with the results we are getting and the overall betterment that the scheme provides, and whether at this stage, it provides sufficient comfort that the mitigation scheme is the right solution to address (and exceed) the impacts of the development?

I appreciate that I have provided a lot of information and narrative above, so am keen to talk this through in more detail with you. Please could you let me know when would be a good time to have a call to discuss (early next week?) and I can get that set up.

Many thanks in advance for your further engagement and I look forward to hearing from you shortly.

Ashley Russell
Associate



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From: Roxburgh, Mark [<mailto:Mark.Roxburgh@highwaysengland.co.uk>]

Sent: 09 October 2018 18:41

To: Russell, Ashley <Ashley.Russell@wsp.com>; Freek, Steve <Steve.Freek@highwaysengland.co.uk>; Law, Daniel <Daniel.Law@aecom.com>

Cc: James Houghton <James.Houghton@brackley-propdev.co.uk>; Vila Salgado, Alba <Alba.VilaSalgado@wsp.com>; Joanna Posnett <J.Posnett@bsp-consulting.co.uk>; Robshaw, Emma <Emma.Robshaw@wsp.com>

Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Ashley,

Thanks for sending this through. I have had a good look over and play around with the Linsig model and have a few observations and suggestions:

- The intergreens are currently set to 6 for all conflicts. On such a junction I expect that geometric intergreens would generally be 5 with extra time added for approach speeds, typically 2 seconds for entries and 1 second for the circs (as they are long and high speed here). The exception may be the B5008 node where the approach speeds may be lower and only in need of one additional second. For further testing please ensure these are changed accordingly (7s from entries excepting the B5008 and 6s from all circs).
- Give way parameters I presume have been taken from ARCADY; while from experience these seem a little bit off what I would expect (for a partially signalised roundabout) this model is only used as a guide for layout and timings so I am happy with them as set for this purpose
- The coordination strategy described in the report is generally sound with the exception that I would favour linking the A38S to A50E platoon through all stoplines as it is one of the largest movements on the junction and uses two lanes. I haven't checked the linking in the model with much detail but did note some of the coordination was not quite set up right, although with the link and storage lengths for the most part this is not a big issue here.
- The main concern I have with the proposed layout at present is the performance of the A50W node, including the extensive queueing on the west bridge, this means that a yellow box junction is likely required at the A38S entry (although if the lane changes to the west bridge noted below are taken forward it would likely remove this need).
- I have identified a couple of minor lane changes that would help improve the performance including:
 - Allowing traffic on the A38N (SB offslip) to turn left from lane 2
 - Re-assigning traffic to Toyota into the nearside lane on the A38S (NB offslip) and opposing circ to lane 1 (from lane 2 in both cases)
 - Extending the flare on the offside for the northern circulatory carriageway by removing some of the hatching
- Further potential options I have identified but which need further consideration:
 - Changing the west bridge to allow traffic for A38N to use the nearside lane, with the other two lanes dedicated for the A50E (and B5008), including remarking the northwest of the circ as three lanes using the existing paved width. This appears to provide substantial peak betterment but further understanding of the peak flows into Toyota (shift change related) is needed to ensure that this would not cause issues at

other times; if you have sufficient survey data a review of this should be sufficient to identify any implications, failing that I suggest speaking to Toyota to see what data they can share

- Not signalling the B5008 entry to the roundabout; this would remove the need to closely coordinate with the adjacent node or manage queue lengths on the short circ stacking space; supplemented by an all red on the upstream node to create suitable gaps, this however appears to perform worse as it requires holding back the upstream circ more and causing the lane into the B5008 to become oversaturated as well, while also degrading the performance of the B5008 entry. This is not worth taking forward therefore in my view.
- I have attached a couple of updated versions of the Linsig model, the first with the minor changes noted above and my tweak of the coordination strategy and the second testing the alternative further options noted above. In both cases I have increased the cycle time to 70s but have not changes the intergreens as noted; with regards cycletime as ever on such a junction this is a balance between capacity and internal queue lengths (although less so in this case around coordination given the long links and less need for strict coordination for all movements).

Overall therefore I am satisfied that there is a good proposal here worth pursuing further and at a level which looks like it should offset the development impact without the need for kerblane alterations. The additional suggestions I have made above should not have any material change on the scheme cost as they only affect lining and signing details already being affected by the proposed scheme. Could you please consider these further as you develop your proposed mitigation scheme. In terms of signal timings, I am happy to cast a further look over any timings proposed for use in the VISSIM if you wish although I don't think this is necessary given that the coordination pattern is not overly critical to the junction capacity.

Regards
Mark

Mark Roxburgh, Studies Team Leader, East Midlands Asset Team

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From: Russell, Ashley [<mailto:Ashley.Russell@wsp.com>]

Sent: 02 October 2018 08:46

To: Freek, Steve; Law, Daniel; Roxburgh, Mark

Cc: James Houghton; Vila Salgado, Alba; Joanna Posnett; Robshaw, Emma

Subject: RE: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Morning Everyone,

As previously discussed, I have attached a copy of our current LinSig work looking to signalise the A50/A38 interchange as part of mitigation proposals for the proposed development. Also attached is a report from the LinSig model and a short Technical Note setting out our approach and anticipated next steps.

Given the differences between the two modelling tools of Vissim and LinSig, as we discussed previously, the LinSig model is intended to develop an initial set of green splits and offsets to take as a starting point in to the Vissim model. These are then proposed to be adjusted based on the modelling of individual vehicles and the associated interactions in the Vissim model. To that end, the LinSig model is a little "rough and ready" as set out in the attached note, but is sufficiently set up to develop the initial timings required for Vissim.

At our meeting we talked about how the preferred approach for our mitigation is to work with the existing physical alignment of the junction as much as possible. This is the approach taken in the modelling, with adjustments

proposed to lane designations. The LinSig model shows that the junction will not be brought back within capacity as a result of the proposed mitigation, but it looks like it should be able to demonstrate a betterment over the existing situation and mitigate the impact of the development. We will be able to review and confirm this once we have completed our analysis in Vissim.

Please do get in touch with any questions you have on the modelling. Emma (signals engineer) has been cc'd so she can respond to any comments that come back directly if required. We look forward to hearing from you shortly on the initial LinSig modelling and hope to be able to move in to the Vissim testing following your approval of our approach.

Many thanks in advance.

Ashley Russell
Associate



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From: Joanna Posnett [<mailto:J.Posnett@bsp-consulting.co.uk>]

Sent: 24 September 2018 15:30

To: Freek, Steve <Steve.Freek@highwaysengland.co.uk>; Law, Daniel <Daniel.Law@aecom.com>;
Mark.Roxburgh@highwaysengland.co.uk

Cc: James Houghton <James.Houghton@brackley-propdev.co.uk>; Russell, Ashley <Ashley.Russell@wsp.com>; Vila Salgado, Alba <Alba.VilaSalgado@wsp.com>

Subject: Proposed Industrial Development at Burnaston Cross/Willington - A50/A38 junction impact and mitigation

Steve/Daniel/Mark

Thank you for the helpful meeting last week. I will type up some meeting minutes and circulate them.

As discussed, please find attached the VISSIM results with and without the full development traffic added to the reference case, for you to review and provide us with some advice in terms of looking at an acceptable trigger point for mitigation.

Based on the enclosed results of the modelling, do you have any priorities in terms of focusing our mitigation proposal on reducing journey times (secs/%), queue lengths (m/%), or total network delay? As discussed last Wednesday, the impact on journey time is low, even with the full development traffic added.

Please can you advise what sort of level of change from the reference case would HE be comfortable with prior to mitigation, and therefore consider to be a reasonable trigger point? As discussed, we can then look to quantify the proportion of the development traffic that can be accommodated within that.

Look forward to hearing from you.

Kind regards

Joanna Posnett BA(Hons) MCIHT

Principal Transport Planner

On Behalf Of

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