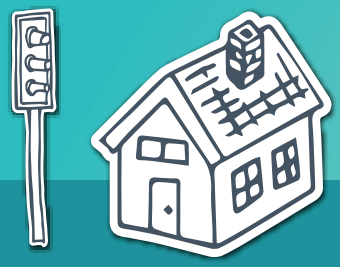

Eastleigh Borough Local Plan 2016-2036

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Allbrook Rail Bridge Background Paper

October 2018

EASTLEIGH BOROUGH COUNCIL

This background paper supports the Eastleigh Borough Local Plan and provides the Council's response to the proposed measures at the Allbrook Rail Bridge.

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1. Introduction

1.1 Strategic Policy S5 of the Eastleigh Borough Local Plan 2016-2036 allocates a Strategic Growth Option (SGO) to the north of Bishopstoke and Fair Oak to provide 5,200 homes, 30,000 sq. m of employment and a mixed use community. By Strategic Policy S6, this will be connected by a new link road to the M3 junction 12.

1.2 At one point the link road will join the existing B3335 Highbridge Road, which passes under the main Southampton – London railway through the existing Allbrook Rail Bridge. Currently, cars and smaller goods vehicles can pass unimpeded but the dimensions of the bridge and road approach are such that larger heavy goods vehicles cannot, and there have been occasional bridge strikes from taller vehicles.

1.3 The SGO developers are proposing improvements in relation to the bridge to enable more vehicles to pass. These are set out in two reports prepared on behalf of the developers:

- The first is a report by Paul Basham Associates (PBA) entitled "Eastleigh SGO Allbrook Appraisal" and dated October 2018 ("the PBA report").
- The second is a report by White Young Green (WYG) entitled "Highbridge Road / Itchen Navigation Bridge Replacement Options" and dated June 2018 ("the WYG report").

1.4 The PBA report is the main report which sets out the overall improvements, while the WYG report focuses on the changes needed to the immediately adjacent road bridge across the Itchen navigation to accommodate these improvements.

1.5 Emerging versions of these reports (and of this paper) have been discussed with the Office for Rail and Road, Network Rail, Hampshire County Council, Winchester City Council, Natural England, the Environment Agency and the Hampshire and Isle of Wight Wildlife Trust.

1.6 This paper summarises the key points in the latest PBA / WYG reports, provides additional results from the transport modelling (based on the preferred and alternative SGO scenarios), sets out the Council's position, and sets out the response to date from the organisations listed above. The source reports should be referred to for more detailed information.

2. Developers' Proposals

2.1 The PBA report identifies the following existing issues:

- Vertical clearance: The rail bridge has an advertised height restriction of 3.7 metres (which was lowered from 4 metres 4 years ago). The actual vertical clearance is 4.1 metres to 4.15 metres, which in theory would enable a 3.87 metre large articulated vehicle to pass under the rail bridge. However, the vertical alignment of the road approaches to the rail bridge mean that in practice large longer vehicles can get 'stuck' under the bridge. In the last 3 years, since the new height restriction has been in place, there have been 5 bridge strikes.

- Horizontal clearance: Approaching from the east, the road turns to the right. This means that longer vehicles can overrun the central markings into the oncoming lane.

- Signage: there are a variety of warning signs at and on the approaches to the bridge (e.g. at the previous junction). However these do not fully comply with Network Rail's advice: "Prevention of Strikes on Bridges over Highways – A Protocol for Highway Managers and Bridge Owners" (Issue 2, July 2014).

2.2 The Council recognises that in addition to actual bridge strikes (which cause disruption on the highway and rail network), larger vehicles can stop as they approach the bridge and then need to reverse a considerable distance, causing traffic delays.

2.3 The PBA report identifies a number of improvements that the developers propose to make:

- Vertical clearance: A reduction in the height of the surface of the road by 150mm and a regrading of the surface of the road to provide a more consistent clearance. Table 3 on page 30 of the report identifies that the clearance for an articulated vehicle would increase from 0.16 metres to 0.33 metres. Only a limited number of vehicles would not clear the rail bridge, for example a double decker bus or a pantechnicon.

- Horizontal clearance: The road would be realigned and straightened on its approach from the east. The Council understands that two HGVs approaching on a straight alignment can pass each other under the rail bridge if travelling slowly, whilst retaining the existing footway.

- Signage: Improved signs would be provided, to encourage vehicles to divert to a different route at the appropriate point. These could include:

- Illuminating the signs at the Pitmore Road and Brambridge / Highbridge junction. (The report also notes that there is currently no sign on the Brambridge arm, and that the current location of signs is not ideal).
- Locating the advanced warning signs on Allbrook Way away from the junction so that drivers can more easily observe them without distraction.
- New signs along the new link road.

- Other measures: These could include:
  - Infra-red sensors to detect approaching large vehicles and trigger a warning message.
  - Physical beams in front of the bridge to prevent a vehicle striking the rail bridge.
  - A turning head on the eastern approach to the bridge to enable HGVs to turn around as they approach the rail bridge.
  - Potential improvements to the pedestrian route through the rail bridge, including for example guard rails and/or double kerbs to increase separation.

2.4 The vertical and horizontal realignment of the road on the eastern approach to the rail bridge requires a new bridge across the River Itchen navigation, which is adjacent to the railway. At this point the River Itchen navigation channel itself is designated a Special Area of Conservation. The WYG report identifies an option which meets the necessary parameters. These include maintaining an appropriate horizontal and vertical alignment for the road; increasing the deck width to create a wider carriageway and pedestrian routes; maintaining or increasing the sub deck void surface (in relation to 1:100 annual probability flood levels); and an appropriate design in ecology terms (for example, avoiding in channel structures, reducing water velocity / sheer, widening the bridge span and maintaining / improving access for mammals such as otters, including at times of peak flow, minimising shade, and careful construction techniques).

3. Council's response

3.1 The Council notes that the developers' proposals lead to an improvement in the vertical alignment. Design standards require a 0.4 metre vertical clearance or that warning signs remain in place for those vehicles which will not meet this clearance. On the basis of the PBA report table 3, the current bridge does not provide the 0.4 metre clearance for any of the larger goods vehicles listed. The proposals would enable 'drawback trucks' and 'super large refuse vehicles' to fully exceed this clearance for the first time. 'Articulated vehicles' and 'rigid trucks' would not fully meet the design standard 0.4 metre clearance but would see an improvement in clearance from 0.16 to 0.33 metres and 0.11 to 0.27 metres respectively.

3.2 The issues at the existing bridge relate in part to the general height of the bridge above the road surface and in part to the road sloping down as it approaches the bridge in both directions. This can cause longer vehicles to successfully enter under the bridge but become stuck as the front end of the vehicle starts to rise upon exiting the bridge.

3.3 The Council notes that the developers' proposal to create a consistent 'flat' grade through the bridge is therefore an improvement. The Council continues to work with PBA and the highway authority to understand in detail the precise grade / alignment of the improved road in this respect. This ongoing detailed consideration is required before any decision is taken on maintaining or relaxing the advertised height restriction.

3.4 The horizontal alignment also represents an improvement, as this will enable larger vehicles to pass each other. It should be noted that the removal of the tight approach bend may increase approach speeds from the east, which re-emphasises the importance of taking a considered approach to any relaxation of advertised height restrictions, and may require detailed traffic management measures.

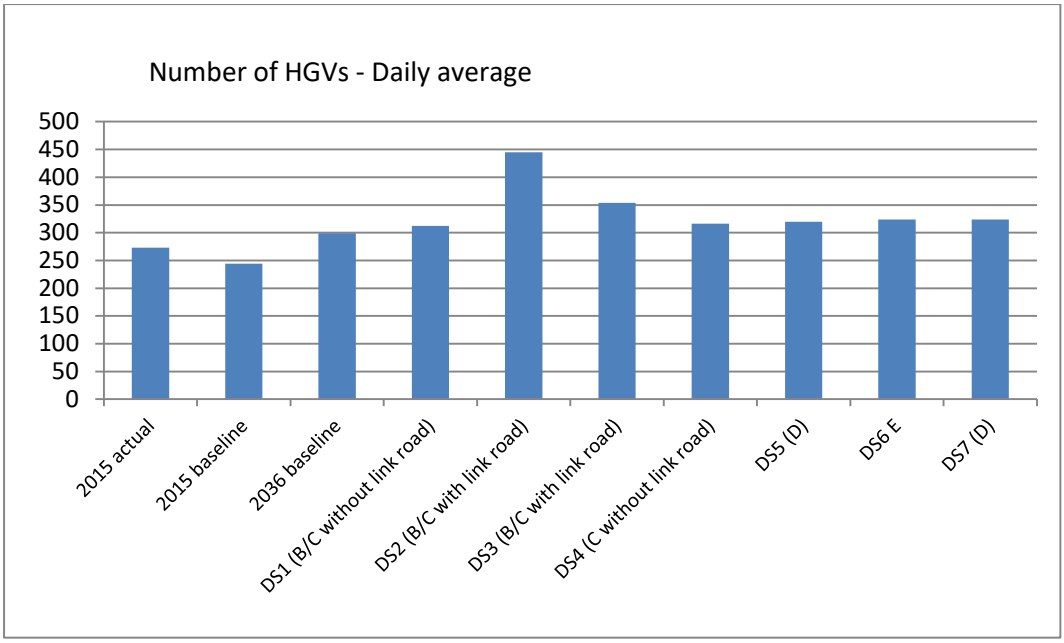
3.5 Clearly there is still a need for a height restriction (the precise height to be determined). Therefore, the proposals to improve / increase warning signs (and the potential to add further to these over the wider area), to provide automatically triggered warning signs and a turning area for HGVs are further improvements.

3.6 On the basis of the above position it is considered appropriate to restrict the new employment at the SGO to offices and light industry. Based on the Sub Regional Transport Model (SRTM) assumptions, it is understood these employment uses would not generate any new HGV movements. The submission Local Plan essentially provides this restriction already. Policy S5 criterion 6 states that the 30,000 sq. m of employment space will "….consist predominately of light industrial and office uses (B1 use class)…", and the supporting text states at paragraph 4.28 that "A small

element of general industrial (B2) or warehouse (B8) uses may be suitable but will require careful justification". Unless any final detailed considerations of the bridge proposals in advance of the Local Plan hearing sessions indicate otherwise, the Council is likely to suggest to the Inspector a main modification to remove this slight flexibility (i.e. deleting "predominately" and the paragraph 4.28 sentence quoted above). This would mean that the SGO as a whole is likely to generate very little additional HGV movements (perhaps just associated with daily deliveries to for example a supermarket). Therefore, where HGVs were unable to use the new link road as a result of the rail bridge and were required to use existing roads (for example the existing B – road network, including in Winchester), they will be the HGVs which would be on these roads in any case without the Local Plan's SGO and link road. The Local Plan's SGO would not be adding to this traffic. Indeed, given that it has been established that with the bridge improvements at least two categories of larger vehicles would be able to start using the new link road, there should be at least some reduction on existing roads.

3.7 The SRTM has been used to assess potential HGV traffic flows under the rail bridge based on different Local Plan development scenarios. The SRTM itself is a strategic model and does not include the rail bridge vehicle height restrictions as a constraint. The model outputs for 2015 are broadly calibrated with the actual observed flows for 2015 which do of course reflect the presence of the bridge. (The HGV category includes a range of goods vehicles, some of which can already pass under the bridge, hence the observed actual flows). However, the SRTM's predictions for 2036 do not take into account the effects of the rail bridge height restrictions on vehicular movements. In other words, the SRTM is predicting the increase in HGVs which would occur along the B3335 Highbridge Road if the rail bridge were not there. This provides a good worst case proxy for the extent of the risk that HGVs might try and use this route and negotiate the rail bridge. The results are set out below in Figure 1 with the actual figures in Table 1. In reality most of the HGVs which did not conform to the height restriction would choose a different route and so the numbers should be less than indicated below, but a proportion of HGVs might try and negotiate the rail bridge. In that sense it is the relative difference between the development scenarios which is important to consider.

3.8 Figure 1 / Table 1 illustrate that a Local Plan based on the preferred SGO B/C and link road (DS3) could increase the number of HGVs which may try and traverse the railway bridge. However, in relative terms, this increase would only be 18% higher than in the 2036 baseline (i.e. 354 v 299), and only between 9% and 13% higher than alternative development scenarios (i.e. 354 v 312 to 324).



		Number of HGVs (Two way flow)
2015		
Actual		273
Model		244
2036		
Baseline	N/A.	299
DS1	B/C (without link road)	312
DS2	B/C (with link road and do something)	445
DS3	B/C (with link road and do more)	354
DS4	C plus (without link road)	316
DS5	D (sup. dev. in Fair Oak)	320
DS6	E (sup. dev. in Fair Oak)	324
DS7	D (sup. dev to south)	324

3.9 The alternative development scenarios would not generate developer funded improvements to the approaches to the bridge. The choice therefore lies between a number of HGVs traversing or potentially traversing under the bridge with no improvements; or a slightly greater number of HGVs traversing / potentially traversing under the bridge with improvements.

3.10 If one of the alternative SGOs were selected (options D or E), this would locate major development along Allington Lane. Allington Lane crosses over the Eastleigh – Fareham railway line on a single lane. Therefore, not only HGVs but all vehicles have to give way to each other. The nature of the constraint is different to that at the Allbrook rail bridge, but major development would still be located next to a constrained rail bridge.

4. Discussion with Other Parties

4.1 The Council and developers have held ongoing discussions on these matters with Hampshire County Council (as highway authority), Winchester City Council, Network Rail and the Office of Rail and Road (ORR). These discussions have been informed by, and in turn have informed, the emerging versions of the PBA and WYG reports and of this paper as submitted to the examination. To date this discussion has included two meetings, the first in 16th March 2018 with all parties except the ORR; the second in September 2018 with Hampshire County Council and Winchester City Council. In addition, Natural England, the Environment Agency and the Hampshire and Isle of Wight Wildlife Trust have provided comments on the environmental aspects of the Itchen navigation crossing.

4.2 The comments received to date are as follows.

4.3 The Office of Rail and Road have stated (by email on 25th January 2018, in response to an earlier draft of the bridge reports):

> *"The Office of Rail and Road (ORR) is pleased to note that vertical clearance and road profile are being improved and that thought has been given to traffic surveys and the adequacy of the pedestrian pavement. We therefore have no particular concerns with the proposal. We are content that Network Rail is involved in the process".*

4.4 They were given the opportunity to comment on the updated reports and stated (by email on 30th August 2018):

> *"The Office of Rail and Road (ORR) has no comments on the proposals".*

4.5 Network Rail have stated (by email, 11th September 2018):

> *"Having reviewed the documents sent to me, I can confirm that Network Rail is broadly supportive of the scheme. We understand that the developments are likely to increase road traffic but we are satisfied that with improved road alignments, it may reduce the frequency of damaging impacts to the railway structure. We also understand that if you were able to improve the highway sag*

curve then there may be an opportunity to change the maximum clearance height warning signs on the bridge. Whilst these proposals are shown diagrammatically on Drg 024/0036/001 it would be helpful (in due course) to clarify the proposed height restriction".

4.6 Discussions are continuing with Hampshire County Council and Winchester City Council who are seeking further information before they form a view. At the September 2018 meeting they requested further assessment of:

1. Whether or not the road can be lowered further, and if not the reason for this;
2. The alternatives for improving pedestrian / cycle access at the bridge (and the likely alternative routes for pedestrians / cyclists);
3. The bus passenger capacity implications of the link road accommodating single decker buses only; and
4. (in Winchester City Council's case) further transport modelling of the effects of some further HGVs being able to pass but others still not being able to.

4.7 In relation to the first of these points, the PBA and WYG reports (and the comments below from the environmental bodies) set out the design parameters. Some further detailed utility information is awaited. It is considered unlikely that the road can be lowered further because of the need for the adjacent Itchen navigation bridge to meet flood and ecology requirements.

4.8 On the second of the points, the final version of the PBA report has been updated to provide further information on pedestrian and access issues. This demonstrates that the route through the rail bridge is unlikely to experience an increase in pedestrian / cycle usage as a result of the Local Plan SGO development, because there are alternative shorter and more attractive routes from the SGO to key destinations. It also sets out the range of options for improving pedestrian and cycle access through the bridge.

4.9 On the third of the points, the PBA report sets out the range of existing and potentially extended / enhanced bus routes which could serve the SGO on routes compatible with double decker buses (i.e. without traversing the rail bridge).

4.10 Finally, on the fourth of the points, the Council is currently discussing the technical scope of this transport modelling or calculation with Winchester City Council, Hampshire County Council and Systra (who operate the model). Eastleigh Borough Council consider that with the Local Plan restricting the new SGO employment to offices and light industry (excluding general industry / distribution uses which would generate HGVs), the effect of the SGO link road and rail bridge improvements in themselves are likely to reduce HGV movements within Winchester.

4.11 The Itchen Navigation channel itself forms a part of the River Itchen Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) and there must be no adverse effect. The navigation is also associated with a wider River Itchen flood zone, and in addition the Environment Agency have a gauging station just to the north of the bridge. The written comments received from Natural England (NE), the Environment Agency (EA) and Hampshire and Isle of Wight Wildlife Trust in September 2018 regarding the WYG report on the Itchen navigation crossing are appended.

4.12 In brief, the biodiversity comments from NE and the EA are as follows. These confirm the key design parameter issues to incorporate in the bridge design and road re-alignment. These will continue to be assessed through the project level assessments required. In relation to biodiversity, examples include the parameters of the span of the bridge and other measures (for example to aid connectivity under the bridge and ensure no obstruction), and construction measures. The potential to enhance the river corridor should also be sought. Clarity is sought regarding the precise road alignment and the SAC. Habitat regulations and water framework directive assessments will be required for this very sensitive environment (the Council notes the Local Plan HRA addresses this, and that a further project level HRA will be required). The Trust notes the reports have an engineering focus with limited ecological information. They welcome the objectives set out in the WYG report and request further information on how this will be achieved, particular given that their general understanding is that the constraints of the rail bridge and flood risk limit the opportunity to reduce the potential ecological impacts.

4.13 In relation to flood risk the EA explain that the bridge must be a clear span, the old bridge must be removed, climate change should be allowed for, there should be no net loss of floodplain (and improvements where possible). There may be a need to accept the road would be un-useable in some flood events. The EA's Allbrook Gauging Station is key monitoring infrastructure and must be protected. (The Environment Agency explain that their comments make no difference to their formal representation, which covers similar points).

5. Conclusion

5.1 It is considered that the proposed measures at the Allbrook rail bridge represent an improvement on the existing situation. The preferred Local Plan proposals will generate the most increase in the potential for HGV traffic to try and traverse the rail bridge. However, it is the only option which would deliver an improvement in relation to the rail bridge, and it only generates a 9 – 13% greater potential in the number of HGVs relative to other development options. Under these other Local Plan development options not only would the existing potential for HGVs to try and traverse the bridge remain, but this potential would also increase (albeit by not as much), and the development would deliver no improvements to the Allbrook rail bridge. Furthermore, these development options would increase traffic at another constrained rail bridge.

5.2 On this basis Eastleigh Borough Council has approved its submission Local Plan and welcomes the support of the Office of Rail and Road and Network Rail. The Council continues to work with Hampshire County Council and Winchester City Council and the developers on the details to seek agreement on this issue.

APPENDIX: Environmental responses on the WYG Itchen crossing report

Natural England

(Email, 17th September 2018):

- The span of the bridge should be as high and wide as reasonably possible to allow light diffusion underneath and aid connectivity under the bridge
- Measures to facilitate the safe passage for mammals underneath – particularly otter – should be incorporated throughout both construction and operational phases, including during a flooding event. Appropriate fencing should be used along bridge to prevent otter deaths on the road
- Enhancements to the existing river corridor should be sought, for example the pollarding of willows. It is advised an ecologist is contracted to walk up and down the river bank to assess current condition and opportunities for enhancement

Additionally measures should be implemented during construction to address the following impacts:

- Damage/erosion of riverbanks
- Chemical/fuel run-off
- Waste disposal
- Noise/vibrational impacts

Environment Agency

(Email, 10th September 2018)

From our point of view, reviewing these reports makes no difference to any of the formal comments we have made on the Local Plan Submission.

As a general comment it is quite hard to look at these documents in isolation as the railway bridge, the Itchen crossing and the road realignment are so intrinsically linked. We really are unable to provide many comments without looking at the scheme as a whole. The bridge crossing cannot be isolated from the road realignment.

In terms of the comments we do have I think it is easiest to split comments into topic areas as follows;

<u>Flood Risk</u>

This is obviously considered within in the reports, especially in regard to bridge height. The generally principles that we have always provided remain the same. Bridges must be clear span. There should be no net loss of flood plain and improvement where possible. This is a key requirement to ensure that flood risk is not increased. Any compensation that is

provided for storage that is taken up must be shown to hydrologically connected and therefore function correctly. As per our local plan comments our understanding is that the current bridge crossing the river (and the old road once its realigned) will be removed after the new ones are constructed. This needs to be made very clear. In terms of bridge heights etc. it needs to be ensured that climate change is considered. Please be aware that the climate change allowances for planning have changed reasonable recently and you need to ensure that the correct allowance is used. Whichever one is used should be justified (e.g. whether its central, higher central or upper). We have now provide you with the records we have of historic flooding in that area and as per our discussion it may be (depending on levels) there will likely need to be an acceptance that in some flood events the road may flood and become unusable.

Allbrook Gauging Station and Associated Weir

This is something we have touched on previously but having looked at the reports really needs much more consideration. Not only do we have the brick structure that houses the electronic equipment there is also a historic weir in the river. It is thought that the existing bridge may sit on this weir. There currently is no mention of it in any reports and it is a highly significant structure for the Environment Agency for monitoring purposes. The historic nature of the weir may also need to be investigated. We have had continuous monitoring at this point for many years and it continues to provide us with information that is used to monitor flows within the Itchen which are used to inform decisions about abstraction from the river. It is essential infrastructure to us. As part of this we also have a small amount of land that we own on either side of the existing road (see map attached). My understanding is that this is used for us to be able to park and access the site of the gauging station and weir safely. We need to have a guarantee that this is still going to be possible during and after any of the works. As I said previously none of this is considered within the reports and is an area that needs to be looked at in much more detail.

Biodiversity

We are obviously dealing with a very sensitive environment in this location. Again many of the issues are going to be present no matter which of the options are chosen.

Bridge Concept Report comments

Executive summary - we would query how much more light bridge option 1B will allow. This area is quite shaded generally due to tree cover. We don't think light levels as a result of this option will be significantly greater. The only ecological benefits of increase light levels are likely to be some weed growth on the bed as the banks are going to be hard engineered. Will this bridge cover more of the channel? The comment states that the span will be wider but what about the width of the carriageway (including footpaths, railings, abutments etc).

Section 4.1 – any realignment will also need to consider the constraint of ecological issues including the designated sites (SSSI and SAC) and protected species.

Section 5 – this section is entitled 'considerations applicable to all options' and yet ecological issues, and particularly those relating to the SAC are not included here. A Habitats Regulations Assessment will be required and it will be necessary not only for the bridge but for the new road alignment to the east of the crossing.

Section 5.3 (para 1) – 'accommodate a wider deck'. Does this mean that more of the watercourse will be covered or that the span over the river is wider? Please clarify.

Section 5.3 (Page 9) – necessary to undertake detailed borehole testing – need more detail. Potential ecological issues depending upon how many, where and how being drilled. If piled foundations are required then there are potential effects as a result of noise and vibration (possibly water quality also if there is ground contamination?)

Section 5.5 – support the need for a detailed construction management plan. There will be both construction and operational effects as a result of this crossing and road re-alignment. Appropriate ecological assessment including Habitats Regulations Assessment (HRA) and Water Framework Directive (WFD) Assessment will be required.

Section 6.0 – agree that there should be minimised ecological harm and an improvement against the existing situation (net gain for biodiversity). As mentioned above appropriate ecological assessment including HRA and WFD Assessment will be required.

From an ecological perspective there must also be no adverse effect on the River Itchen SAC. No obstruction to passage for eels and fish is a key issue. Brook Lamprey are in unfavourable condition so any ecological assessment/HRA must consider impact on this species, its migration and habitat.

We haven't provided any comments on the various options put forward in Section 6 as they only appear to have been assessed with regards to structural engineering technical feasibility and parameters set by the road and flood levels. Any options coming forward will need an appropriate ecological assessment including a HRA and WFD Assessment.

Allbrook Appraisal Report

Section 3.18 – suggests that there has been input by WYG from an ecological perspective – not aware that we've seen any assessment so far. Criteria considered in the evolution of options should also be ecological assessment, particularly HRA. A bridge could not be built if it has an adverse effect on the River Itchen SAC.

The plans in this documents e.g. App H also show the road realignment (and associated embankment) to the east of the new crossing. This appears to be very close and possibly

within the River Itchen SAC (it's quite hard to tell). Any HRA should cover effects from both the new bridge and re-alignment of the road in this location.

Summary

We are very keen to be involved as this project progresses as there are some key issues for us that need to be addressed but I would reiterate that as this information is project specific it will be chargeable. If the relevant parties want to contact me then I'm happy to progress a charging agreement.

(Map of EA landownership in vicinity also attached).

Hampshire and Isle of Wight Wildlife Trust

(Letter, 7th September 2018)

Thank you for consulting the Wildlife Trust on these proposals, we welcome the opportunity to comment. We have reviewed the supporting documentation and note that they refer in general to the engineering feasibility of the new bridge with limited ecological information; as such there is limited information for us to comment on.

Our understanding of the reports is that options 1, 4 and 5 are technically feasible from a structural engineering perspective, when considered against the constraints set by the road alignment parameters and the 1:100 year flood level. It also appears that it is the concrete option, specifically, Option 1B which utilises a sloped deck, that will provide the optimum void area beneath the bridge whilst also being feasible within the parameters set by the road and flood levels.

With regard to the bridge design we support the objective of *"minimised ecological impact of the new structure and ideally improvement against the existing situation. In particular, shadowing under the bridge should be minimised by keeping the bridge superstructure as slender as possible and lifting it up from the water level as far as possible"* and request further information as to how this will be achieved.

In terms of the aims from an ecological perspective we are pleased to see those detailed in Section 6. However, our general understanding of the proposals is that, given the constraints of the nearby railway bridge and flood risk, there is limited opportunity to reduce the potential ecological impacts of any new structure. If it is possible to for example decrease shading and facilitate movement of mammals and fish, as has been alluded to in the reports, further information must be provided as to how this will be achieved.

The above advice is given based on the information made available at this time and may change should further or amended details be submitted. We trust that you will find our comments helpful and if you wish to discuss these matters further, please do not hesitate to do so. I also ask that you keep the Trust informed of the progress of this planning application.

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