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**Your ref:** ENVPAC/1/SSD/00025

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Dear Jason

**A27 ARUNDEL BYPASS - FURTHER PUBLIC CONSULTATION**

Thank you for inviting the Environment Agency to provide comments on your further public consultation on the six proposed options for the A27 Arundel Bypass scheme.

We are providing this advice under agreement ENVPAC/1/SSD/00025.

Our response is at a high level based on the nature of the consultation at this stage. We would also draw your attention to the Defra family “Single Voice” letter we sent to you along with the Forestry Commission, Natural England and the South Downs National Park Authority which sets out our shared issues and requirements for the A27 Arundel Bypass scheme.

We look forward to continue working with you and your consultants as the scheme progresses to ensure that decisions with regard to the route and its design fully reflect the sensitive environment in which the proposals sit.

**Environment Agency Advice**

All of the proposed options pose significant environmental risks which will need to be fully investigated, assessed and addressed when deciding on the preferred route and as the design of the scheme progresses.

We fully encourage Highways England to consider the weight of opportunities and risks for flood risk and the environment when deciding on a preferred option, and when further evaluating the costs versus benefits of that route.

Below we have provided advice on the main environmental constraints, within our remit, that you should be aware of. Many of these have already been identified in the Environmental Assessment Report supporting the consultation. A number of the

constraints are relevant for each of the options but where necessary we have drawn out the distinctions between options. We hope that this assists you in determining a preferred route and also serves as a basis for further discussions with us on the issues any detailed scheme will need to address.

**Flood Risk**

All six options include areas that are located within the floodplain of the River Arun. These are designated as Flood Zone 3 on our Flood Map for Planning, which indicates land with a 1 in 200 year probability of flooding from the sea, or 1 in 100 year probability of flooding from fluvial sources. This is defined as a high probability of flooding in the Planning Practice Guidance.

Whilst the location of the River Arun crossing, and the distance across the flood plain, differs between the six options they would all require the submission of a Flood Risk Assessment that demonstrates the scheme would be safe without increasing flood risk elsewhere over the lifetime of the infrastructure. This is in accordance with paragraph 163 of the National Planning Policy Framework (NPPF) and paragraphs 5.93-4 of the National Policy Statement for National Networks (NPSNN).

The consultation material states that for each option there will be a neutral impact on flood risk as it will be mitigated for through the design. Whilst in order to secure development consent this would be the case we recommend that for each option you consider how the likely requirements for ensuring flood risk isn't increased elsewhere could be managed along with the associated costs for these.

We understand that modelling is being undertaken to consider these requirements for fluvial scenarios. However, we are still concerned that the impact the proposed options may have on tidal flood risk has not yet been properly considered. As highlighted the options fall within an area at risk from fluvial and tidal flooding and as such both must be assessed as part of the Flood Risk Assessment. We are surprised to see that initial modelling suggests the online options require significantly more flood storage compensation given that they cross a much narrower section of the floodplain. This is something that we would expect to discuss in more detail once the detailed modelling is ready for review.

*Sequential Test and Approach*
Any development within Flood Zones 3 and 2 (1 in 1000 year probability of flooding) will need to demonstrate that there are no other available sites appropriate for the development at a lower risk of flooding (known as the 'Sequential Test'). Considering the scheme has to pass over at least one main river in order to connect the two dual carriage way parts of the A27, it is unlikely that an alternative location completely within Flood Zone 1 for any proposed bypass could be identified.

However, we would recommend that this assessment is undertaken by Highways England through their Flood Risk Assessment. It would be consistent with the sequential approach to seek a preferred option and design that avoids locating as much infrastructure in Flood Zone 3 as is possible.

*Functional floodplain*
The Arun Strategic Flood Risk Assessment defines Flood Zone 3b, or functional floodplain, as land with a 1 in 20 year chance of flooding. Planning policy restricts the types of development that should be permitted within the functional floodplain. In

order for any highway to be located in these areas, it should be defined as ‘essential infrastructure’ by the planning authority.

Although all the options may involve crossing areas of functional floodplain, at this stage it is not clear to what extent they would require built footprint within the functional floodplain.

The NPPF and associated Practice Guidance makes it clear that essential infrastructure located within Flood Zone 3b must:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

We therefore recommend that you consider the extent of Flood Zone 3b that would be impacted by the options in making a decision on a preferred route and design, including what may be required in order to ensure they meet the above requirements.

*Increasing flood risk elsewhere*
In accordance with the NPPF and NPSNN it would need to be demonstrated that the scheme, both during construction and operation, will not increase flood risk elsewhere.

An increase in flood risk could be caused by structures in the floodplain resulting in the loss of fluvial floodplain storage, or the impedance of tidal flood paths, resulting in increases in flood risk to properties, infrastructure or land elsewhere.

Any final design and Flood Risk Assessment will need take into account the uncertainties regarding flood risk over the lifetime of the infrastructure. This includes the impact of climate change and sea level rise on tidal and fluvial flood risks, as well as the standard of flood risk infrastructure on the Arun over the next 100 years. Therefore, we recommend that you consider the impacts of climate change and the implications of an undefended scenario in considering the options, including any high level assessment on flood risks.

As you have highlighted the climate change allowances are due to be updated as a result of the new UK Climate Projections 2018. We would expect that these allowances, when published, are used to inform further assessments following the preferred route announcement. More information on our guidance for climate change allowances in planning can be found here: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances which will be updated when the new allowances are available.

*Modelling*
Detailed flood modelling has been submitted to, and accepted by, the Environment Agency regarding the baseline scenario. Further modelling of how both fluvial and tidal flood risk is affected by the proposed development designs is still required.

We will continue to work with you and your consultants to ensure that the flood modelling for the scheme is robust. We recommend this is a matter that is fully satisfied prior to any submission. This will avoid delays in the development consent process.

*Opportunities*

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Paragraph 5.103 of the NPSNN makes clear that Highways England should be identifying opportunities to provide flood risk benefits through the scheme. Whilst the scheme is at a high level stage, and requires much further assessment and design, it is clear that there is potential for such an option to be considered further. Such an approach could also address several of the above planning requirements if an improvement in flood risk management could be achieved. When deliberating on the options, we encourage Highways England to keep in mind not just the implications of the above requirements for assessing and mitigating flood risk, but also the potential for improvements to flood risk management through delivery of the scheme. This should ensure that potential opportunities are not missed out.

**Biodiversity**

As identified in the environmental appraisal of the consultation package there are major adverse risks to nature conservation from all six options presented.

All six route proposals involve crossing the River Arun and associated floodplain with four offline routes requiring a new span across the River Arun and the two broadly online routes requiring an increased footprint upon the current crossing. Three options, 4/5AV1, 4/5 AV2 and 5 BV1 also cross the Tortington Rife and Binsted Rife which are main rivers.

As well as being priority habitats in their own right, watercourses also serve as ecological corridors that support the movement of species and resilience of populations to climate change.

The floodplain of the Arun contains an extensive network of watercourses, coastal and floodplain grazing marsh, and other wetland habitat that will also be of significant ecological value. Water voles, a protected species under Schedule 5 of the Wildlife and Countryside Act 1981, are present along the Arun, whilst a significant run of Sea Trout uses the main river for migration and ditches within the floodplain provide vital habitat for the protected European eel. Any works to the channels, e.g. infilling, shortening or redirecting, would have implications for ecology, drainage and sediment movement into the river.

The construction of the highway poses a risk to these habitats and species, including direct loss and fragmentation of habitat, interruptions to ecological corridors/ migratory routes, disturbance to species, water pollution, etc. This and the loss of ancient woodland, are likely to pose the most significant risks for biodiversity.

In line with paragraph 175 of the NPPF and paragraph 5.25 of the NPSNN, any detailed scheme will need to demonstrate how impacts to biodiversity have been avoided, mitigated or, as a last resort, compensated for. The design of the scheme and demonstration of how it is in accordance with planning policy and legislation on protecting biodiversity, will need to be based on adequate surveys and assessment of the risks to habitats and species.

Options 3V1, 4/5AV1, 4/5AV2 and 5BV1, which all run to the south and comprise the longest stretches of new highway and the greatest extent through the Arun floodplain will require the most work in terms of mitigation. The scale of impact of all these options will vary dependant on the decision to take forward either an embankment or viaduct crossing of the floodplain.

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Option 3V1 whilst being the shorter route has the clear constraint of a large adverse impact upon the ancient woodland at Binsted and its associated species including bats.

Options 4/5AV1 and 4/5AV2 will also impact upon the woodland to a lesser extent and create a barrier to the free movement of a number of species. They will also require crossings of the Tortington and Binsted Rifes.

Option 5BV1 avoids many of the significant blocks of protected woodland, however, being the longest route it entails the largest land take and will require crossings of both the Tortington and Binsted Rifes. We would wish to see significant numbers of appropriately designed green bridges and underpasses for the exclusive use of wildlife to ensure the impacts of habitat severance are reduced.

We would recommend that as the scheme progresses consideration should be given to Non-native Invasive Species both in terms of bringing species in to the Arun valley or disturbing and distributing those already in existence.

We recognise that minimised environmental impacts, and an improved local environment are one of the project objectives. With this in mind, and considering the scale of investment and works involved, including the access to Designated funds, we would expect the project to be resulting in a substantial net benefit to biodiversity overall. There are likely to be opportunities for substantial habitat creation and improvement, and we look forward to discussing how such improvements could be secured alongside Natural England and other relevant stakeholders.

**Groundwater Protection**

*Contaminated Land – Landfills, previous use*

Construction works for new highways can pose a risk to groundwater resources by mobilising any contaminants in the ground and creating new pathways for pollutants. The Environmental Assessment Report - August 2019 identified a number of landfills within the study area which would need to be considered further as the Scheme progresses. As an example there is a historic landfill site at the north east corner of Ford Road roundabout, located over the Spetisbury Chalk designated as a Principal Aquifer and a significant groundwater resource that must be protected. This could impact options 1V5 and 1V9.

The presence of historic landfills and sensitive groundwater resources should be considered through the decision making process to confirm a preferred route. Once the preferred route is selected a detailed desk based risk assessment should be made at an early stage to identify all active and historic landfills and other sources of contaminated land associated with current and past land uses.

In addition natural and non-natural cavities in the chalk may have been infilled and could present a risk of contaminants being mobilised by the development. The existing highway land itself could potentially be affected by contamination.
These areas may need further risk assessment, potentially with an intrusive site investigation targeted at known areas of potential contaminated land.

We advise that consideration is given to the level of remediation required and the impact this may have on the cost benefit ratios for individual options.

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*Solution Features*
We support the consideration in the Environmental Assessment Report of the potential for the presence of dissolution features where the scheme is underlain by chalk. Solution features could pose risks in terms of stability to the development and also create preferential pathways for chemical contamination of the underlying aquifer.

Solution features in the Chalk are known to be present in the vicinity of Binsted and Binsted Woods, which could affect Options 4/5AV1, 4/5AV2 and 5BV1. Due to the nature of the Chalk in this area, other previously unidentified solution features may be present and should be considered as part of any site investigation.

*Piling*
Piling and investigation boreholes using penetrative methods can result in risks to potable supplies from, for example, pollution/turbidity, risk of mobilising contamination, drilling through different aquifers and creating preferential pathways. If piling is to be carried out in areas of contaminated land or where contaminated land is suspected then controls will be required to ensure the protection of groundwater. In some locations certain piling techniques may not be appropriate.

*Dewatering*
Abstraction for dewatering purposes can have unacceptable impacts on environmental features supported by groundwater, for example, wetlands, watercourses, ponds or may derogate existing protected licensed water supplies, or lead to deterioration in groundwater quality. All of the routes proposed are likely to have areas where dewatering is required and therefore needs to be considered.

**Drainage**
Highways pose a risk to the water environment through the introduction of new and/ or increased discharges from highway runoff to watercourses or groundwater. Highway runoff can contain metals, hydrocarbons and sediment, which without adequate pollution prevention measures, can result in pollution of the water environment.

In line with paragraph 170 of the NPPF, which states that development must not result in unacceptable levels of water pollution, the drainage systems for the bypass will need to be designed to fully address pollution risks, including maintenance. This should include identifying opportunities for improving existing systems on the road network.

We recommend prioritising vegetated drainage systems in early thinking about drainage solutions, maximising the opportunities for multiple benefits for surface water management, pollution prevention, biodiversity, and landscape.

**Environmental permits**
Each of the six options are likely to require environmental permits from us under the Environmental Permitting regulations. We encourage early permitting discussions with us, once a preferred option is chosen and detailed design is developed, on the likely requirements for these.

**Final Comments**

I trust that the above comments are useful as you progress from the Options appraisal to further stages of the scheme for the A27 Arundel Bypass.

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We would like to take this opportunity to reiterate our wish that as an overarching principle any option for the bypass should be considered in an integrated way at a landscape scale to ensure that the complex and interconnected ecosystem that is set within wider hydrological catchment are fully understood and reflected in design choices.

Key principles that we would wish to see taken forward following the preferred route announcement include the further consideration of a viaduct; the use of multiple quality green bridges in optimal locations to address concerns of habitat severance; and opportunities for biodiversity net gain are fully assessed.

We look forward to working with you and your consultants as you further develop this scheme. Please do not hesitate to contact me directly if you require further advice on any of the above issues.

Yours sincerely

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