

Roger Elkins, Cabinet Member for Highways & Infrastructure	Ref No:
October 2019	Key Decision: Yes
Response to Highways England's Further Non-statutory Consultation on Options for the A27 Arundel Bypass	Part I
Report by Lee Harris, Acting Chief Executive and Matt Davey, Director for Highways, Transport and Planning	Electoral Division(s): Arundel & Courtwick, Fontwell

Summary

In March 2015, the Government published its first Roads Investment Strategy (RIS1), which included a commitment to improve the A27 at Arundel towards the end of Roads Period 1 (2015-20).

In 2017, Highways England consulted on three options for the A27 Arundel Bypass and in May 2018, it announced that its preferred route was a modified version of Option 5A. Following more detailed surveys and technical work that resulted in changes to the design of the scheme, Highways England decided to conduct further non-statutory consultation on options in autumn 2019.

The County Council is only a consultee in the decision-making process. Technical assessments of the proposals have been published by Highways England and these have been reviewed by officers to inform preparation of a Consultation Response (attached as Appendix B) that includes comments on the transport, economic, social and environmental impacts of the options.

Overall, it is considered that the environmental impacts of Option 4/5AV1 (Magenta), if appropriately mitigated, are likely to be significantly outweighed by the substantial transport, economic and social benefits of this option over the longer term. Therefore, provided that a detailed and high quality package of environmental mitigation measures is delivered as part of the scheme, Option 4/5AV1 (Magenta) should be the County Council's preferred option for an Arundel Bypass. This is because it is the best performing option and it represents the best fit with the strategic outcomes that the Authority is seeking for the A27.

However, even though they do not offer the best balance between traffic, economic and social benefits and environmental impacts, it is considered that Options 4/5AV2 (Amber) and 5BV1 (Grey), if appropriately mitigated, would also deliver the County Council's strategic objectives and, therefore, they should be the County Council's second and third preferences respectively.

Once all consultation responses have been analysed by Highways England, a Preferred Route will be announced in 2020. Statutory consultation on the Preferred Route will then take place as part of the Development Consent Order process. Following examination, the decision to grant development consent will be taken by the Secretary of State.

Separate consultations have already taken place on improvements to the A27 at Chichester, and Worthing and Lancing.

West Sussex Plan: Policy Impact and Context

The County Council's West Sussex Transport Plan 2011-26 identifies improvements to the A27 trunk road and complementary public transport improvements to address the current bottlenecks at Chichester, Arundel, and Worthing as the highest priority. Submitting a County Council response to the consultation on options is expected to help facilitate the implementation of an A27 Arundel Bypass by demonstrating that the scheme is supported by a key local stakeholder.

Financial Impact

There are no financial implications in making this response.

Recommendations

That the Cabinet Member for Highways and Infrastructure approves the Consultation Response (Appendix B) for submission to Highways England.

Proposal

1. Context

- 1.1 In March 2015, the Government published its first Roads Investment Strategy (RIS1), which included a commitment to improve the A27 at Arundel towards the end of Roads Period 1 (2015-20).
- 1.2 The County Council's West Sussex Transport Plan 2011-26 identifies improvements to the A27 trunk road and complementary public transport improvements to address the current bottlenecks at Chichester, Arundel, and Worthing as the highest priority. The Plan states that improvements are needed to increase capacity, improve reliability and safety and to increase the competitiveness of local businesses and attract investment.
- 1.3 In 2017, Highways England consulted on three options for the A27 Arundel Bypass and in May 2018, Highways England announced that its preferred route was a modified version of Option 5A. Following more detailed surveys and technical work that resulted in changes to the design of the scheme, Highways England decided to conduct further non-statutory consultation on options for the Bypass.
- 1.4 In August 2019, Highways England began consulting on six options; Option 1V5 (Cyan), Option 1V9 (Beige), Option 3V1 (Crimson), Option 4/5AV1 (Magenta), Option 4/5AV2 (Amber), and Option 5BV1 (Grey). Each of the options would achieve the Government's ambition of providing a dual carriageway although only Option 3V1 (Crimson); Option 4/5AV1 (Magenta); Option 4/5AV2 (Amber); and Option 5BV1 (Grey) would provide a bypass of Arundel. The public consultation began on 30 August and ends on 24 October 2019.

- 1.5 The County Council's Consultation Response will be approved by the Cabinet Member for Highways and Infrastructure and submitted to Highways England before the consultation closes.
- 1.6 The County Council is only a consultee in the decision-making process. Feedback from local stakeholders will inform decisions by Highways England and the Secretary of State about how to proceed with the project. Once all consultation responses have been analysed by Highways England, a Preferred Route will be announced in 2020. The County Council will continue to support the development of the design for the preferred option to ensure that the impacts of the scheme are effectively managed. Statutory consultation on the Preferred Route will then take place as part of the Development Consent Order process. Following examination, the decision to grant development consent will be taken by the Secretary of State.
- 1.7 The County Council acknowledges that many local stakeholders hold strong and sometimes conflicting views about how the A27 at Arundel should be improved. Some local groups are in favour of specific options proposed by Highways England and other groups consider that alternative options should be considered. Therefore, it is requested that due consideration be given by Highways England to the contents of all consultation responses before a Preferred Route is announced.
- 1.8 Consultation took place in summer 2016 on five options to improve the A27 at Chichester. This resulted in no Preferred Route being selected by Highways England and the scheme being cancelled by the Secretary of State. Although the County Council is continuing to press Highways England for a solution that will meet local stakeholder aspirations, the scheme does not form part of the 'Do Minimum' reference case for the A27 Arundel Bypass.
- 1.9 Separate consultation on proposals to improve the A27 at Worthing and Lancing took place between 19 July and 12 September 2017. As the scheme was not well supported, it is currently paused. However, it remains part of the Highways England programme and the County Council is working with other local stakeholders to develop a solution that will meet local stakeholder aspirations. The scheme for Worthing and Lancing has been included in the Do Minimum reference case for the A27 Arundel Bypass so the economic appraisal assumes that the scheme will go ahead. Therefore, the options for A27 at Arundel should be seen as part of a broader set of proposals for the A27 route in West Sussex. However, a sensitivity test has been provided by Highways England to show how the A27 Arundel Bypass options would perform if the scheme does not go ahead.

2. Scheme Objectives

- 2.1 Highways England has stated that the 'objectives' for the A27 Arundel Bypass Scheme are to:
 - To improve the safety of travellers along A27 and consequently the wider local road network;
 - Ensure that customers and communities are fully considered through the design and delivery stages:

- Improve capacity of the A27 whilst supporting local planning authorities to manage the impact of planned growth;
- Reduce congestion, reduce travel time and improve journey time reliability along the A27;
- Improve accessibility for all users to local services and facilities;
- Deliver a scheme that minimises environmental impact and seeks to protect and enhance the quality of the surrounding environment through its high quality design; and
- Respect the South Downs National Park (SDNP) and its special qualities in our decision making.

2.2 The objectives for the scheme align closely with the aims of the West Sussex Transport Plan. Therefore, the County Council's consideration of the proposals has assessed whether and how each one meets Highway England's objectives.

2.3 The Cabinet Member is invited to consider the proposals against Highways England's objectives and also against the following strategic outcomes that accord with the West Sussex Transport Plan and which should guide the County Council's response to any proposals for its improvement:

- facilitate economic growth, including the delivery of housing and commercial development that is key to economic growth;
- improve regional connectivity of the West Sussex coast to widen customer and labour markets and facilitate regeneration;
- protect and mitigate impacts on the local environment including those that are remote from the improvements;
- provide capacity to accommodate traffic growth;
- be future-proofed to cater for future change, including in vehicle technology;
- use Intelligent Transport Systems to manage impacts on the West Sussex community;
- improve road safety; and
- be influenced by the duration, intensity and repetitiveness of construction.

3. The Options

3.1 The six options include improvements to the A27 at Arundel by providing a dual carriageway between the existing dual carriageway sections. The options are summarised in Table 1. Highways England's consultation brochure, which is included as Appendix A, includes a more detailed description of the options.

Table 1: Highways England's options for the A27 Arundel Bypass¹

Option	Description of proposals
Option 1V5 (Cyan)	4.5km (approx.) of new dual two-lane carriageway between Crossbush and the existing transition between single and dual carriageway to the west of Arundel. The viaduct extends over the Ford Road junction with no direct access to the local road network.
Option 1V9 (Beige)	4.5km (approx.) of new dual two-lane carriageway between Crossbush and the existing transition between single and dual carriageway to the west of Arundel. The junction at Ford Road would be a traffic signal controlled 'through-about'. This option is likely to require a 50mph speed limit to operate safely.
Option 3V1 (Crimson)	6km (approx.) of new dual two-lane carriageway bypass located to the south of the existing A27. Starting in the east at Crossbush and ending just west of Havenwood Park.
Option 4/5AV1 (Magenta)	7.2km (approx.) of new dual two-lane carriageway bypass located to the south of the existing A27. Starting in the east at Crossbush and ending just west of the existing B2132 Yapton Lane and Shellbridge Road junction.
Option 4/5AV2 (Amber)	6.9km (approx.) of new dual two-lane carriageway located to the south of the existing A27. The proposed route would start in the east at Crossbush and would end just west of existing B2132 at Yapton Lane and Shellbridge Road junction.
Option 5BV1 (Grey)	8km (approx.) of new dual two-lane carriageway located to the south of the existing A27. The proposed route would start in the east at Crossbush and end east of the A27/ A29 Fontwell (east) roundabout.

3.2 Although other options were examined earlier in the design process, they were subsequently discounted by Highways England after an assessment of their performance using key selection criteria, including compliance with key policy tests, the scheme objectives and environmental, economic, social and engineering factors. The options presented for consultation are the best performing of the range of options considered. Therefore, this report and the Consultation Response are limited to the options published for consultation by Highways England.

4. Stakeholder Engagement

4.1 The public consultation is being supported by a series of exhibitions at locations in the local area throughout the consultation period. Letters have been sent to local residents to publicise the consultation and the events.

¹ Highways England (2019): A27 Arundel Bypass: Consultation Brochure

- 4.2 As the public consultation is being conducted by Highways England, the results of the consultation are not available to inform the County Council's assessment of the proposals and its response to the consultation.

5. Technical Assessment

- 5.1 To inform the County Council's response to the consultation, various technical reports have been reviewed by officers. The main reports are the Interim Scheme Assessment Report (ISAR), Combined Modelling and Appraisal Report (ComMAR), and the Environmental Assessment Report (EAR).
- 5.2 The following paragraphs take account of the review of technical assessments and set out the assessment of the transport, economic, and environmental impacts of the options; where appropriate, reference is also made to their social impacts. They are followed by the overall assessment of each option.

Transport Assessment

- 6.2 The A27 Transport Model has been developed using traffic data collected in 2015 and used to forecast conditions in 2026, 2041 and 2051. It takes account of planned development and committed schemes and is an appropriate tool to use to assess the relative performance of the options at this stage of the project, including the impact on the local highway network. Highways England should work with the County Council at the next stage of the project to ensure that local roads are adequately represented and also work with local stakeholders to ensure that the modelling information is well understood.
- 6.3 Each of the options would provide journey time savings through reduced congestion and improved journey speeds when compared to the 'Do Minimum' reference case, which are expected to be very beneficial. This will help to attract traffic from the local road network to A27 as traffic currently uses these less suitable routes (including through the SDNP and along the coast) to avoid congestion on A27 at Arundel. All of the options would have a beneficial impact in this respect. All of the options are also expected to result in fewer accidents over the appraisal period.
- 6.4 Although the overall traffic performance of the options varies, there is relatively little difference between the impacts of the options on journey times and accidents in the short term. However, Option 1V9 (Beige) would not provide sufficient highway capacity to cater for traffic growth and over the longer term, the transport benefits of this option would erode as congestion returns to the A27 (leading to rat-running and peak spreading; i.e. peak period conditions will extend into other parts of the day). Option 1V5 (Cyan); Option 3V1 (Crimson), Option 4/5AV1 (Magenta), Option 4/5AV2 (Amber) and Option 5BV1 (Grey) would all provide sufficient capacity for long term traffic growth.
- 6.5 The places and associated communities that are expected to benefit from traffic relief vary significantly between the options. Option 1V5 (Cyan) and Option 1V9 (Beige) would increase the volume of traffic passing through Arundel and the part of SDNP immediately west of Arundel, whereas Option

3V1 (Crimson), Option 4/5AV1 (Magenta), Option 4/5AV2 (Amber), and Option 5BV1 (Grey) would reduce the volume of traffic passing through Arundel and the part of SDNP immediately west of Arundel. These options would divert this traffic further south, before re-joining A27 at a point west of Arundel variously affecting Tortington, Binsted and Walberton and their associated communities. The impacts on communities should be considered and weighed up against the economic and environmental impacts of the options and may affect the overall balance of impacts.

- 6.6 The community severance impacts (i.e. the separation of residents from the services they use by new or improved roads or changes in traffic flow) vary significantly between the options. Option 1V5 (Cyan) and Option 1V9 (Beige) are expected to have slight adverse impact on community severance as traffic flow will increase in Arundel. Option 3V1 (Crimson), Option 4/5AV1 (Magenta), Option 4/5AV2 (Amber), and Option 5BV1 (Grey) are expected to have a slight beneficial impact on community severance as they will reduce traffic flow in Arundel and new community severance effects of these routes will affect smaller communities of Tortington, Binsted and Walberton.
- 6.7 Whichever option is selected as the preferred route, the design will need to be refined to ensure that access routes are maintained and, in some cases, to ensure that undesirable effects on the local road network, such as creation of new rat-runs, are effectively managed. This should take place at the next stage once a preferred option has been selected.
- 6.8 Although the options include some improvements to facilities for Non-Motorised Users (NMUs), opportunities to maximise the facility of off-road access are available in all options. This can be achieved, as a minimum, by providing new infrastructure (i.e. crossings) that is suitable for use by as many modes of transport as possible and up-grading the status of public footpaths to public bridleways or even restricted byways to provide a coherent network of routes. It can also be achieved by ensuring that grade separated crossings of the A27 are available to as many modes of transport as possible. This will help to improve safety for PROW and road users leading to improved health, leisure and community benefits of each option as well as facilitating access to employment and services.
- 6.9 Therefore, new facilities for NMUs on the bypassed section of A27 and new connections between Arundel and Ford, the proposed A284 Lyminster Bypass, and along the River Arun should be included in the design of the preferred route; such matters should be discussed with the County Council at the next stage of the project. However, it is not considered that the facilities for NMUs in the design of each option should be a significant factor in determining the County Council's route preference, as this should be based on the overall impacts, such as those listed for community severance in paragraph 6.6.
- 6.10 It is recognised that some local stakeholders would like to see a junction between Ford Road and an A27 Arundel Bypass, principally to reduce traffic on other routes. However, other stakeholders are concerned that this could lead to increase use of Ford Road as an access to/from Arundel. Highways England has not included this junction within the design of Options 3V1 (Crimson), 4/5AV1 (Magenta), 4/5AV2 (Amber) or 5BV1 (Grey) at this stage

and intend to decide on its inclusion at the next stage of the project. The 2018 Arun Local Plan does not require the delivery of an A27 Arundel Bypass or a junction with Ford Road, so it is not needed to deliver currently planned development. However, a junction between Ford Road and A27 Arundel Bypass could facilitate future development and, therefore, Highways England should be encouraged to ensure the design is future-proofed to accommodate a Ford Road junction at some point in the future.

Economic Assessment

- 6.11 The economic benefits have been calculated by Highways England based largely on savings in travel time and improving journey time reliability. The options also have the potential to generate a series of 'wider economic impacts' resulting from improved productivity and business agglomeration; improved access to markets (customers and labour); regeneration; and facilitating planned housing and commercial development.
- 6.12 Highways England have set out the economic benefits of the options in the ComMAR, which shows the impact of the options in monetary terms compared to the 'Do Minimum' reference case. The total Present Value of Benefits (PVB) (excluding wider impacts) over the 60-year appraisal period are shown in Table 2. The majority of the benefits of each option are from travel time and accident savings as a result of providing additional highway capacity through provision of a dual carriageway and improved junctions. The benefits of options 1V5 (Cyan) and 1V9 (Beige) are significantly smaller than the other options.
- 6.13 An assessment of wider economic impacts (the factors identified in paragraph 6.11) has also been carried out which demonstrates that each option would provide substantial wider economic impacts. The wider economic impacts over the 60 year appraisal period are shown in Table 2. Option 1V9 (Beige) does not perform as well as the remaining options as congestion is likely to reoccur in the long term; therefore, the wider economic impact performance of this option is a concern. Although the wider economic impact performance of the other options varies, they are all beneficial and these benefits should be weighed up against the environmental impacts of each option to determine whether the economic benefits outweigh the environmental impacts.

Table 2: WSCC ranking based on economic impact appraisal²

Impacts	1V5 (Cyan)	1V9 (Beige)	3V1 (Crimson)	4/5AV1 (Magenta)	4/5AV2 (Amber)	5BV1 (Grey)
Present Value of Benefits	£226.40m	£220.68m	£264.31m	£280.84m	£304.35m	£294.07m
Wider Economic Benefits	£60.36m	£45.89m	£85.93m	£71.82m	£72.84m	£84.40m

² Highways England (2019): Combined Modelling and Appraisal Report – Table 14-18
Adjusted BCR (including Wider Economic Impacts)

Present Value of Benefits (including Wider Economic Benefits)	£286.76m	£266.57m	£350.24m	£352.66m	£377.19m	£378.47m
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- 6.14 The area that is expected to benefit most from an A27 Arundel Bypass is Arun District. However, it should be noted that the economic appraisal indicates that Worthing Borough and Adur District would not benefit over the 60 year appraisal period. This is understood to be due to additional traffic exacerbating congestion in Worthing and Adur where congestion on A27 is already a concern. The County Council remains committed to improving the A27 in Worthing and Lancing. In responding to the 2017 consultation on A27 Worthing and Lancing improvements, the County Council called for a more substantial set of A27 improvements and is working with Highways England to achieve this.
- 6.15 The Government has set out a clear ambition³ to increase the number of homes as part of its strategy to address issues in the housing market. Local plans prepared by the Local Planning Authorities set out plans to deliver new homes and allocate sites for development that will come forward over a fifteen year period. Future housing delivery is planned to increase by 48% in the coastal West Sussex area compared to past housing completions⁴. Housing delivery has historically been constrained by an infrastructure deficit as infrastructure investment has not kept pace with economic growth in the sub-region. As all the options are forecast to have a transformational impact on traffic conditions on the A27 in the short term, they are likely to assist in narrowing the gap between planned and the objectively assessed need for housing. However, over the long term Option 1V9 (Beige) is likely to result in highway infrastructure capacity becoming a constraint on future development.

Environmental Assessment

- 6.16 Highways England has set out the environmental impacts of the proposals in an Environmental Assessment Report (EAR). It should be recognised that due to the sensitive environment and previous issues with this scheme, Highways England has undertaken more extensive surveys to inform the EAR than would usually be the case at this stage of the project. This should be welcomed and is generally expected to improve understanding of the environmental impacts of the options to inform decision-making.
- 6.17 The options all involve construction of a new road across the Arun floodplain and, to varying degrees of severity, they would result in habitat loss and habitat severance that would adversely affect rare and protected species including but not limited to dormice, badger, bats and reptiles. Option 1V5 (Cyan), Option 1V9 (Beige), Option 3V1 (Crimson), Option 4/5AV1 (Magenta) and Option 4/5AV2 (Amber) would have adverse impacts on woodland

³ DCLG (2017): Fixing our broken housing market

⁴ Coastal West Sussex & Greater Brighton (2015) Background Paper: Housing Market

including designated Ancient Woodland, which is irreplaceable. Option 1V5 (Cyan), Option 1V9 (Beige), Option 3V1 (Crimson) and Option 4/5AV2 (Amber) would also either create new or exacerbate existing habitat severance of woodland including designated Ancient Woodland. It is acknowledged that it will not be possible to mitigate some of the ecological impacts and this should be taken into account in weighing up the benefits and impacts of the options.

- 6.18 The options all have adverse landscape and visual amenity impacts, to varying degrees of severity, either directly or on the setting of SDNP and up to ten landscape character areas during the construction and operational phases of the scheme. The sensitivity of these landscape character areas varies. In most cases, the significance and magnitude of the effects would reduce over time as mitigation measures become established. However, the effects on landscape and visual amenity should be taken into account in weighing up the benefits and impacts of the options.
- 6.19 Neither the EAR nor the consultation material include the design of mitigation measures, which is disappointing given that each option would have major adverse environmental impacts and these measures appear to have been identified to inform the cost estimates.
- 6.20 Table 3 includes a summary of the environmental impact appraisal of the options. The impact categories are those used in the appraisal process, in line with DfT's Transport Appraisal Guidance (i.e. WebTAG), which are slightly different to the categories used in Environmental Impact Assessment. These categories have been used as they summarise the environmental impacts taking both the construction and operational stages of the scheme into account. This is appropriate because, at this stage of the project, the purpose is to select between alternative options rather than assess the suitability of the environmental mitigation strategy (as this has not been presented for any of the options and will be addressed at the next stage of the project). In reaching conclusions about the options, these impacts should be weighed up against the traffic and economic impacts, which are largely beneficial.

Table 3: Summary of Highways England's environmental impact appraisal⁵

Impacts	1V5 (Cyan)	1V9 (Beige)	3V1 (Crimson)	4/5AV1 (Magenta)	4/5AV2 (Amber)	5BV1 (Grey)
Noise (NPV ⁶)	-£5.1m	-£5.4m	-£2.0m	-£0.9m	-£0.9m	-£1.7m
Air quality (NPV ²)	-£6.9m	-£2.7m	-£7.7m	-£7.5m	-£6.6m	-£7.1m
Greenhouse gases (NPV ²)	-£10.7m	-£7.7m	-£13.5m	-£9.6m	-£8.1m	-£6.5m
Landscape	Moderate adverse	Moderate adverse	Large adverse	Large adverse	Large adverse	Large adverse

⁵ Highways England (2019): Interim Scheme Assessment Report – Appendix F Appraisal Summary Tables

⁶ Net Present Value

Townscape	Moderate adverse	Moderate adverse	n/a	n/a	n/a	n/a
Historic environment	Slight adverse	Slight adverse	Large adverse	Moderate adverse	Moderate adverse	Moderate adverse
Biodiversity	Large adverse	Large adverse	Very large adverse	Large adverse	Very large adverse	Large adverse
Water environment	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral

6.21 Table 3 includes details of the greenhouse gas and air quality impacts of the options. However, the assessment has made no allowance for improvements in vehicle emissions beyond 2030 resulting from the switch to electric vehicles. Accordingly, it is considered that Highway England have overestimated the greenhouse gas and air quality impacts of the options and, therefore, the following assessment and balancing of environmental impacts is based on their relative differences.

6.22 To inform the County Council's conclusions about the options, they have been ranked based on the environmental impacts summarised in Table 3. Unless specified, this exercise has been conducted based on the information presented by Highways England in the EAR and ISAR. The conclusions of this exercise are set out in Table 4 below and paragraphs 6.23-6.30.

Option 1V5 (Cyan)

6.23 Option 1V5 (Cyan) is the best or joint best option for landscape, visual, historic environment and biodiversity impacts, the joint second best option for townscape, the fourth best option for noise impacts, the third best option for air quality, and fifth best option for greenhouse gas impacts. Overall, this option has:

- worse environmental impacts than Option 1V9 (Beige), principally due to worse air quality and greenhouse gas impacts;
- similar impacts to Option 4/5AV1 (Magenta) provided that amendments (outlined in paragraph 6.20) are made to the design of this option, principally because greater noise and townscape impacts are counterbalanced by the greater landscape, visual and historic environment impacts of Option 4/5AV1 (Magenta); and
- less environmental impact than Option 4/5AV2 (Amber), Option 5BV1 (Grey) and Option 3V1 (Crimson).

Option 1V9 (Beige)

6.24 Option 1V9 (Beige) is the best or joint best option for landscape, visual, historic environment, biodiversity and air quality impacts, the joint second best option for townscape and greenhouse gas impacts, and the fifth best option for noise impacts. Overall, this option is likely to have the lowest environmental impacts.

Option 3V1 (Crimson)

6.25 Option 3V1 (Crimson) is the joint best option for townscape impact, the third best option for the historic environment, the joint second best option for landscape, visual and biodiversity impacts, and the sixth best option for air quality and greenhouse gas impacts. Overall, this option has the worst environmental impacts overall of all the options, principally because of the very large adverse impact on biodiversity.

Option 4/5AV1 (Magenta)

6.26 Option 4/5AV1 (Magenta) is best or joint best for noise, townscape and biodiversity impacts and the joint second best option for landscape and visual amenity. As the environmental assessment has not taken into account the presence of a well preserved medieval pottery kiln, it is considered that the assessment of historic environment impact has been underestimated and is likely to be joint third best for historic environment impacts. However, if the impacts on this feature can be mitigated through a minor realignment, which appears possible, this option would be joint second best for historic environment impacts. It is also the fourth best option for air quality and fifth best option for greenhouse gas impacts. Overall, provided that the impacts on the medieval pottery kiln can be successfully mitigated, this option has:

- worse environmental impacts than Option 1V9 (Beige), principally due to greater air quality and greenhouse gas impacts;
- similar impacts to Option 1V5 (Cyan), principally because greater landscape, visual and historic environment impacts are counterbalanced by the greater noise and townscape impacts of Option 1V5 (Cyan); and
- less environmental impact than Option 4/5AV2 (Amber), Option 5BV1 (Grey) and Option 3V1 (Crimson).

Option 4/5AV2 (Amber)

6.27 Option 4/5AV2 (Amber) is the best or joint best option for noise and townscape impacts, the joint second best option for landscape, visual, historic environment, biodiversity and air quality impacts, and the third best option for greenhouse gas impacts. Overall, this option has:

- worse environmental impacts than Option 1V9 (Beige), Option 1V5 (Cyan) and Option 4/5AV1 (Magenta), principally due to greater landscape and visual impacts than Option 1V9 (Beige) and Option 1V5 (Cyan) and greater biodiversity impacts than Option 1V9 (Beige), Option 1V5 (Cyan) and Option 4/5AV1 (Magenta);
- less environmental impact than Option 5BV1 (Grey), principally because the greater biodiversity impact is outweighed by the greater noise and historic environment impacts (as outlined in paragraph 6.22) of Option 5BV1 (Grey); and
- less environmental impact than Option 3V1 (Crimson).

Option 5BV1 (Grey)

6.28 Option 5BV1 (Grey) is best or joint best for townscape and biodiversity impacts, the joint second best option for landscape, visual and noise impacts. However, it is considered that the noise and townscape impacts are likely to

be underestimated, because the environmental assessment has not taken account of impacts on planned development, including the Avisford Grange development of c200 dwellings, which would be encroached by this option.

- 6.29 Furthermore, the assessment of impacts on the historic environment has not taken into account, including: (a) the severance of Binsted as a historical settlement into three parts, isolating its most ancient and historically important building, St Mary’s Church; and (b) severance of the view along the Binsted Rife valley by crossing this very visible feature of the local historical landscape in an open area. These impacts are unlikely to be mitigated, so the historic environment assessment is also likely to be underestimated and is more likely to be ‘large adverse’.
- 6.30 Overall, taking account of the underestimated townscape, noise and historic environment impacts, this option has:
- worse environmental impacts than Option 1V9 (Beige), Option 1V5 (Cyan), principally due to greater noise, landscape, visual and historic environment impacts and Option 4/5AV1 (Magenta), principally due to greater noise impact, and Option 4/5AV2 (Amber) because the greater noise and historic environment impacts outweigh the greater biodiversity impact of Option 4/5AV2 (Amber);
 - less environmental impact than Option 3V1 (Crimson).

Table 4: WSCC ranking based on overall environmental impact appraisal

Overall assessment	1V5 (Cyan)	1V9 (Beige)	3V1 (Crimson)	4/5AV1 (Magenta)	4/5AV2 (Amber)	5BV1 (Grey)
Rank based on overall environmental assessment	2 nd	1 st	5 th	2 nd	3 rd	4 th

- 6.31 The impacts of all the options are contentious due to their impacts on woodland, including Ancient Woodland which is irreplaceable, and the SDNP, which are both protected by the National Policy Statement for National Networks. A summary of the impacts on woodland, including Ancient Woodland, and SDNP is included in Table 5 below. It is acknowledged that impacts which occur outside the boundary may negatively affect the setting of the SDNP, so the summary provided in Table 5 can only be taken as very simple indicator of potential impacts on SDNP.

Table 5: Summary of impacts on woodland and SDNP

Impact	1V5 (Cyan)	1V9 (Beige)	3V1 (Crimson)	4/5AV1 (Magenta)	4/5AV2 (Amber)	5BV1 (Grey)
Woodland area (of which Ancient Woodland in brackets) (ha)	8.37 (1.95)	7.44 (1.09)	20.57 (9.05)	3.51 (0.4)	5.33 (1.83)	1.49 (0)

Length of road within SDNP (km)	1.92	1.93	2.28	0.74	1.97	0
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- 6.32 As Ancient Woodland and National Parks are protected by National Policy, the impacts on these designations should be considered in the selection of a preferred option. The option that would have least overall impact on both Ancient Woodland and SDNP is Option 5BV1 (Grey). However, as outlined in paragraph 6.30, when considered against a range of environmental characteristics, this option has worse environmental impacts overall than Option 1V9 (Beige), Option 1V5 (Cyan), Option 4/5AV1 (Magenta) and Option 4/5AV2 (Amber). Therefore, there is a need to weigh up the environmental impacts overall as well as take account of the specific impacts on Ancient Woodland and the SDNP. These should be taken into account in the balancing of economic and social benefits and environmental impacts.
- 6.33 In accordance with Government policy and expressed aspirations, every effort must be taken to ensure biodiversity net gain is achieved through this project, in line with the Biodiversity Net Gain Assessment. The feasibility of the following measures should be investigated in developing a detailed and high quality package of environmental mitigation measures: extensive landscaping/screening; translocation of soils from Ancient Woodland to create new compensatory habitats; creation of 'green bridges' to maintain connectivity between Ancient Woodland; extensive noise mitigation; and new facilities for NMUs. Although it is not possible to replace Ancient Woodland, it is considered that it should be possible to mitigate this loss to an acceptable level, provided that sufficient land can be identified to create replacement woodland; of the options that require this, this would be most achievable for Option 4/5AV1 (Magenta).
- 6.34 An embankment would have significant detrimental impacts on landscape and visual amenity, local hydrology, reduce the flood capacity of the floodplain, sever ecological networks, and result in a significant increase in mitigation and compensatory habitat creation costs. Therefore, the environmental impacts of a viaduct, particularly on landscape and visual amenity, the water and historic environments and biodiversity, including habitat severance effects, are likely to be less than an embankment. Arundel is a sensitive location with a long-standing history of difficulty in securing the delivery of a bypass, principally due to the environmental impacts. Therefore, highway improvements on this scale should include the highest standard of environmental mitigation. The County Council is leading by example by including a viaduct in its planned A284 Lyminster Bypass (north). For these reasons, Highways England should be encouraged to seek additional funding for a viaduct, provided that it can be demonstrated that the additional benefits would outweigh the costs and that this would not cause delay to the project.

Overall Assessment of the Options

- 6.35 The following paragraphs sets out the overall technical assessment of each option and their relative performance when compared to the other options. The consultation form provides the opportunity for consultees to indicate the options that are their first, second or third preference and the option that is

their least preferred or last choice. Therefore, they also identify whether the County Council should express a preference for each option.

Option 1V5 (Cyan)

- 6.36 Option 1V5 (Cyan) would have beneficial traffic impacts by reducing congestion and attracting traffic to the A27 from parallel local roads that are used as rat-runs. This would result in substantial economic benefits of £286.76m although these are noticeably smaller than Option 3V1 (Crimson), Option 4/5AV1 (Magenta), Option 4/5AV2 (Amber) and Option 5BV1 (Grey). However, this option would substantially increase the volume of traffic in Arundel (by around 65% compared to the Do Minimum scenario), exacerbating noise issues for a large community (daytime noise levels in 2041 will be increased for 1861 households and reduced for 129 households) and result in a slight adverse impact on community severance. This option would also require the second largest area of woodland and Ancient Woodland, and is the fourth largest length of road within the SDNP.
- 6.37 The environmental impacts of Option 1V5 (Cyan) are expected to be similar to Option 4/5AV1 (Magenta) once suggested amendments are made to the design to reduce its historic environment impacts. However, the traffic, economic and social benefits of Option 1V5 (Cyan) are substantially less due to smaller travel time and accident savings and a greater impact on community severance. The impacts on Ancient Woodland and SDNP are also greater.
- 6.38 The environmental impacts of Option 4/5AV2 (Amber) and Option 5BV1 (Grey) are greater than Option 1V5 (Cyan) but their impacts on Ancient Woodland and SDNP are less. Furthermore, the traffic, economic and social benefits of Option 1V5 (Cyan) are substantially less than these options due to smaller travel time and accident savings. On balance, it is considered that the greater traffic, economic and social benefits of Option 4/5AV2 (Amber) and Option 5BV1 (Grey) are likely to outweigh their environmental impacts to a greater degree than Option 1V5 (Cyan).
- 6.39 Therefore, Option 1V5 (Cyan) does not perform as well as other options and it should not be a preferred option.

Option 1V9 (Beige)

- 6.40 Option 1V9 (Beige) would have beneficial traffic impacts by reducing congestion and attracting traffic to the A27 from parallel local roads that are used as rat-runs. However, this option would substantially increase the volume of traffic in Arundel (by around 66% compared to the Do Minimum reference case), exacerbating noise issues for a large community (daytime noise levels in 2041 will be increased for 1816 households and reduced for 135 households) and result in a slight adverse impact on community severance. Furthermore, this option provides the lowest level of highway capacity of the options combined with a lower speed limit, so congestion is likely to reoccur by 2041. Therefore, although this option would result in substantial economic benefits of £266.57m, these are noticeably smaller than Option 1V5 (Cyan), Option 3V1 (Crimson), Option 4/5AV1 (Magenta), Option 4/5AV2 (Amber) and Option 5BV1 (Grey) and are likely to be less beneficial

over the longer term. This option would have the lowest overall environmental impact even though it requires the third largest area of woodland and is the third largest length of road within the SDNP.

- 6.41 The environmental impacts of Option 4/5AV1 (Magenta), Option 4/5AV2 (Amber) and Option 5BV1 (Grey) are greater than Option 1V9 (Beige) but their impacts on Ancient Woodland and SDNP are less. However, the traffic, economic and social benefits of Option 1V9 (Beige) are substantially less than these options due to smaller travel time and accident savings. On balance it is considered that the greater traffic, economic and social benefits of Option 4/5AV1 (Magenta), Option 4/5AV2 (Amber) and Option 5BV1 (Grey) are likely to outweigh their environmental impacts to a greater degree than Option 1V9 (Beige).
- 6.42 Therefore, Option 1V9 (Beige) does not perform as well as other options (principally because it would not deliver long-term benefits) and it should not be a preferred option.

Option 3V1 (Crimson)

- 6.43 Option 3V1 (Crimson) would have beneficial traffic impacts by reducing congestion and attracting traffic to the A27 from parallel local roads that are used as rat-runs. This option would substantially reduce the volume of traffic in Arundel (by around 85% compared to the Do Minimum reference case) although it would negatively affect the community in Tortington (daytime noise levels in 2041 will be increased for 1103 and reduced for 405 households) and the setting of the nationally important Tortington Priory Scheduled Monument. This option would result in substantial economic benefits of £350.24m and a slight beneficial impact on community severance. This option would require the greatest loss of woodland and Ancient Woodland and is the largest length of road within SDNP. Option 3V1 (Crimson) would have the greatest environmental impact overall.
- 6.44 Therefore, although Option 3V1 (Crimson) would result in the greatest traffic, economic and social impacts, it is unlikely to satisfy the requirements of National Policy (because other options would result in less impact on Ancient Woodland and SDNP). For these reasons, Option 3V1 (Crimson) should not be a preferred option.

Option 4/5AV1 (Magenta)

- 6.45 Option 4/5AV1 (Magenta) would have beneficial traffic impacts by reducing congestion and attracting traffic to the A27 from parallel local roads that are used as rat-runs. This option would substantially reduce the volume of traffic in Arundel (by around 85% compared to the Do Minimum reference case). However, it would negatively affect the communities of Tortington, Binsted and Walberton (daytime noise levels in 2041 will be increased for 1064 and reduced for 466 households). This option would result in substantial economic benefits of £352.66m that are noticeably greater than Option 1V5 (Cyan) and Option 1V9 (Beige) and also have a slight beneficial impact on community severance.

- 6.46 Provided that an amendment is made to the design to reduce historic environment impacts as mentioned in paragraph 6.26, the environmental impacts of this option (as summarised in Table 3) are less than Option 1V9 (Beige) and although they are similar to Option 1V5 (Cyan), Option 4/5AV1 (Magenta) would result in less Ancient Woodland loss and includes a shorter length of road within SDNP. The alignment would have less impact on the historic settlement of Binsted and cross the Binsted Rife in a less prominent location than Option 5BV1 (Grey).
- 6.47 Although the economic benefits of Option 4/5AV2 (Amber) and Option 5BV1 (Grey) are greater than Option 4/5AV1 (Magenta), they have worse environmental impacts and Option 4/5AV2 (Amber) would have greater impacts on Ancient Woodland. These greater environmental impacts are unlikely to outweigh the additional traffic, economic and social benefits to the extent that they perform better than Option 4/5AV1 (Magenta).
- 6.48 Overall, of the options available, Option 4/5AV1 (Magenta) offers the best balance between traffic, economic and social benefits and environmental impacts, taking account of impacts on Ancient Woodland and SDNP. This is because it is the second best option for environmental impacts and impacts on Ancient Woodland and SDNP whilst also being third best option for economic benefits.
- 6.49 Therefore, Option 4/5AV1 (Magenta) performs better than the other options and it should be the preferred option.

Option 4/5AV2 (Amber)

- 6.50 Option 4/5AV2 (Amber) would have beneficial traffic impacts by reducing congestion and attracting traffic to the A27 from parallel local roads that are used as rat-runs. This option would substantially reduce the volume of traffic in Arundel (by around 84% compared to the Do Minimum reference case). However, it would negatively affect the communities of Tortington, Binsted and Walberton (daytime noise levels in 2041 will be increased for 1064 and reduced for 466 households). This option would result in substantial economic benefits of £377.19m that are noticeably greater than Option 1V5 (Cyan) and Option 1V9 (Beige). The environmental impacts of this option are greater than Option 1V9 (Beige), Option 1V5 (Cyan) and Option 4/5AV2 (Magenta) and would result in greater loss of Ancient Woodland and length of road in SDNP.
- 6.51 The alignment of Option 4/5AV2 (Amber) would have less impact on the historic settlement of Binsted than Option 4/5AV1 (Magenta) and Option 5BV1 (Grey) and cross the Binsted Rife in a well-screened location. As it is considered that the noise, townscape and historic environment impacts of Option 5BV1 (Grey) have been underestimated, Option 4/5AV2 (Amber) is preferable to Option 5BV1 (Grey).
- 6.52 Overall, although Option 4/5AV2 (Amber) does not offer the best balance between traffic, economic and social benefits and environmental impacts, principally due to greater impacts on Ancient Woodland and SDNP, it is the second best option.

Option 5BV1 (Grey)

- 6.53 Option 5BV1 (Grey) would have beneficial traffic impacts by reducing congestion and attracting traffic to the A27 from parallel local roads that are used as rat-runs. This option would substantially reduce the volume of traffic in Arundel (by around 84% compared to the Do Minimum scenario). However, it would negatively affect the communities of Tortington, Binsted and Walberton (Highways England figures indicate that daytime noise levels in 2041 will be increased for 1249 but this is likely to be an underestimate and reduced for 527 households). This option would result in substantial economic benefits of £378.47m that are noticeably greater than Option 1V5 (Cyan) and Option 1V9 (Beige). The environmental impacts of this option are greater than Option 1V9 (Beige), Option 1V5 (Cyan), Option 4/5AV2 (Magenta) and Option 4/5AV2 (Amber) but would result in no loss of Ancient Woodland or length of road in SDNP.
- 6.54 Overall, Option 5BV1 (Grey) does not offer the best balance between traffic, economic and social benefits and environmental impacts because it is considered that the noise, townscape and historic environment impacts have been underestimated. The alignment would also sever the historic settlement of Binsted into three sections and cross the Binsted Rife in a prominent location. Therefore, Option 5BV1 (Grey) is the third best option.

Conclusions

- 6.55 The West Sussex Transport Plan identifies improvements to the A27 together with complementary improvements to public transport at Chichester, Arundel and Worthing as its highest priority. The poor performance of A27 disrupts businesses, residents and visitors to West Sussex on a daily basis. Traffic levels are forecast by the Department for Transport to grow in the future predominantly due to population growth and reducing costs of driving⁷. There is uncertainty about the rate of traffic growth and DfT have set out a range of possible future scenarios.
- 6.56 However, the fact that growth is expected in all scenarios suggests that there continues to be a case for addressing congestion at key existing bottlenecks. Highways England has also assessed the performance of the options in a low growth scenario (i.e. if traffic grows at a lower rate) and these results indicate that the benefits are still likely to outweigh the costs in all cases. The County Council is working with public transport providers, notably Network Rail, to bring forward public transport improvements but we acknowledge Highways England's conclusion that there is no evidence to suggest that these are likely to result in a significant reduction in demand on the A27. Therefore, without improvements to the A27 at Arundel, congestion will grow at peak times, resulting in greater rat-running and 'peak spreading'; i.e. peak period conditions will extend into other parts of the day.
- 6.57 The County Council has identified championing the West Sussex economy as one of its highest priorities. In a recent survey by the Coastal West Sussex Partnership of 377 companies, 90% said that the A27 in West Sussex is important to their company and 51% said that congestion is a major problem

⁷ DfT 2018: Road Traffic Forecasts

for their company. Therefore, significant weight should be given to the potential economic benefits of improving the A27 and it is necessary to take a long term view on the environmental impacts, some of which will reduce as mitigation measures become established.

- 6.58 The benefits of the options take into account the effects of the planned A27 Worthing and Lancing and A284 Lyminster Bypass schemes. Without the A27 Worthing and Lancing and A284 Lyminster Bypass schemes, the traffic and economic benefits of all the options are expected to reduce but still outweigh the costs. As the County Council remains committed to the delivery of these schemes, potential uncertainty about their delivery is not a justifiable reason not to proceed with one of the options for an A27 Arundel Bypass. Furthermore, this potential uncertainty should not be a determining factor in the decision about which option to pursue, as this should be based on an assessment of the impacts (positive and negative) and the views of local stakeholders.

Preferred Option and Preferences

- 6.59 The only option that is unlikely to achieve the ambition of the West Sussex Transport Plan to improve the A27 is Option 1V9 (Beige) because it would not provide sufficient highway capacity to cater for traffic growth and over the longer-term, with congestion forecast to return by 2041.
- 6.60 Overall, it is considered that the environmental impacts of Option 4/5AV1 (Magenta), if appropriately mitigated, are likely to be significantly outweighed by the substantial traffic, social and economic benefits of this option over the longer term. Therefore, provided that a detailed and high quality package of environmental mitigation measures is identified and delivered as part of the scheme, Option 4/5AV1 (Magenta) should be the County Council's preferred option for an A27 Arundel Bypass. This is because it is the best performing option and it represents the best fit with the strategic objectives that the Authority is seeking for the A27.
- 6.61 However, even though they do not offer the best balance between transport, economic and social benefits and environmental impacts, it is considered that Options 4/5AV2 (Amber) and 5BV1 (Grey), if appropriately mitigated, would also deliver the County Council's strategic objectives and, therefore, they are preferable to the other three options; 1V5 (Cyan), 1V9 (Beige) and 3V1 (Crimson). Therefore, Option 4/5AV2 (Amber) should be the County Council's second preference and Option 5BV1 (Grey) should be the third preference.

Need for Additional Funding

- 6.62 It is acknowledged that the budget range for the A27 Arundel Bypass in the Roads Investment Strategy (2015-20) is £150-250m. The deliverability of Option 3V1 (Crimson), Option 4/5AV1 (Magenta), Option 4/5AV2 (Amber), and Option 5BV1 (Grey) is dependent upon additional funding being secured. The cost of delivering major highway improvements in this area should reflect that there is a need to provide the highest standard of design, including environmental mitigation. Although this cannot come at any cost, it is considered that the design of the scheme should be determined by what is needed to deliver Highway England's objectives (paragraph 2.1), rather

than what is affordable. The County Council should support Highways England in seeking the additional funding to deliver Option 4/5AV1 (Magenta), as the County Council's preferred option.

Consultation Response

- 6.63 A consultation response (attached as Appendix B) has been prepared that takes account of the transport, economic, environmental, and overall assessments of the options (as summarised in Section 5) and reflects the overall conclusion set out above.

Factors taken into account

7. Consultation

- 7.1 Consultation has taken place with the teams in the Directorate for Highways, Transport & Planning. The responses received have informed the technical assessment and the preparation of the draft Consultation Response.
- 7.2 The draft Consultation Response will be considered by the Environment, Communities and Fire Select Committee at its meeting on 21 October 2019 and feedback from the Committee will be taken into account in finalising the Consultation Response.

8. Resource Implications and Value for Money

- 8.1 There are no resource implications in making this response other than officer time in preparing the response, which has been identified within existing service plans.
- 8.2 The County Council is not expected to make a financial contribution towards the cost of implementing the A27 Arundel Bypass Scheme.

9. Legal Implications

There are no legal implications for the County Council in making this response.

10. Other options considered by the County Council

The other option considered was to not provide a response to the consultation. However, the delivery of improvements to the A27 at Arundel is one of the County Council's strategic priorities and, therefore, it is important that the Authority continues to engage positively in the process and that it responds to the consultation.

11. Risk Implications and Mitigations

There are no identifiable risks to the Council in making this response.

12. Equality and Human Rights Assessment

There are no equality and human rights implications in making this response as it is a response to a consultation by an external organisation.

13. Social Value and Sustainability Assessment

There are no identifiable social value and sustainability implications in making this response.

14. Crime and Disorder Reduction Assessment

There are no identifiable Crime and Disorder Act implications in making this response.

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Appendices

A – A27 Arundel Consultation Brochure
B – WSCC Consultation Response

Background Papers

None