

**I. Impacts on the Special Qualities of the SDNP**

Notwithstanding and without prejudice to the SDNPA's objection to all 3 route options as set out above, the following assessment work has been undertaken to help understand the impacts on the special qualities of the SDNP, and to highlight where insufficient evidence precludes full understanding. The seven Special Qualities of the SDNPA are;

- A. Diverse, inspirational landscapes and breath-taking views. **See evidence for Landscape and Visual Impacts**
- B. Tranquil and unspoilt places. **See evidence for Tranquility**
- C. A rich variety of wildlife and habitats including rare and internationally important species. **See evidence for Biodiversity**
- D. An environment shaped by centuries of farming and embracing new enterprise. **(See evidence for Economy)**
- E. Great opportunities for recreational activities and learning experiences. **(See evidence for Access and PROW network)**
- F. Well-conserved historical features and a rich cultural heritage. **(See evidence for Archaeology/Cultural Heritage)**
- G. Distinctive towns and villages, and communities with real pride in their area. **(See evidence for Economy)**

Highways England use the Environmental Impact Assessment system to assess the impacts of schemes. The following table shows the EIA headings down the table and the SDNPA Special Qualities across the top. The shaded sections under the SQ show how the evidence gathered by SDNPA covers elements of the EIA headings. Note we do not have any evidence to assess the impact on 'air quality', 'materials' or 'cumulative impacts'

**Table showing how the SDNP Special Qualities fit with HE Environmental Impact Assessment subject Areas**

A27 Arundel Bypass Scheme Environmental Statement subject comparison with South Downs National Park Special Qualities							
	South Downs National Park Special Qualities						
Environmental Impact Assessment Chapters	Diverse and inspirational landscapes 1	Rich variety of wildlife and habitats 2	Tranquil and unspoiled places 3	Environment shaped by farming 4	Great recreational opportunities 5	Well conserved historic features 6	Distinctive towns and villages and communities 7
Air quality							
Cultural Heritage							
Landscape							
Nature Conservation							
Geology and Soils							
Materials							
Noise and Vibration							
People and communities							
Road Drainage & the water environment							
Cumulative impacts							

## 2. Potential effects on Landscape, Dark night skies and Tranquillity (Appendix I, Annex 4i and 4ii)

### Description

- 2.1. SDNP have appointed consultants to undertake an assessment of the Landscape and Visual impacts of the route options for the A27 Arundel scheme. This work has been carried out in advance of the public consultation for the scheme in order that the authority is well informed about the likely effects of the various options as the schemes are developed in more detail. At this stage our consultants have been working on outline design drawings which are not full scheme designs. Therefore these are to be regarded as interim conclusions based on the information available at this time.
- 2.2. The following sections of this report outline the conclusions of the various specialist assessments at this stage.

### Background information regarding the SDNP and the landscape of Arundel

- 2.3. The A27 around Arundel was the subject of a number of improvements in the later 20<sup>th</sup> century. A by-pass road was constructed between 1973 and 1974 that crosses the Arun and its floodplain to the south of the town before linking up with A284, which was also constructed at this time. The road at the far eastern end of the Study Area was converted into a dual carriageway between 1992 and 1993 with provision to extend this road westwards along what is currently the proposed Pink Route (option 3).

### Designation of the South Downs National Park

- 2.4. The inclusion of land surrounding Arundel within the proposed South Downs National Park (PSDNP) was considered in some detail during the public inquiry into the designation of the National Park. The inspector considered a number of proposed modifications to the PSDNP boundary by a number of responders including the South Downs Society, the Countryside Agency and Highways Agency. Excerpts of the inspector's report from the inquiry which describe his conclusions about how the landscape around Arundel satisfies the designation criteria (or not) and the subsequent proposed boundary alignment for the PSDNP are included at **Appendix I, Annex 3**. It is noted that at the time of the designation process following the Secretary of State had withdrawn support for the proposed Arundel By pass - the Pink/blue route (now called option 3) due to its environmental impacts.

### Landscape Character Description

- 2.5. Arundel holds a commanding defensive and controlling position at the head of the Arun river valley at the point where the river Arun cuts through the South Downs and out onto the coastal plain before joining the English Channel at Littlehampton. The catchment of the Arun extends further north towards Horsham some 25 miles away. The river valley is a major physical feature which is in part within the SDNP but extends beyond the SDNP boundaries to the north and south, where the topography and meandering alignment of the river valley and views towards the SDNP are distinctive and defining features of the surrounding landscape.
- 2.6. There are far reaching views towards Arundel in all directions from the surrounding valley, valley sides, coastal plain and downland. To the north of Arundel the river valley which cuts through the chalk downland is lush and pastoral in character with ecologically important flora. The south facing upper coastal plain/footslopes of the South Downs are well wooded to the west and east. To the north of Arundel the downland and Arun valley is heavily wooded to the west and more arable and open to the east.
- 2.7. The existing A27 route going west to east runs along the northern edge of Binsted wood in the upper coastal plain before descending the Arun valley side to the south of the historic

core of Arundel, and to the north of more recent settlement expansion to the south of the road which is located on the Arun valley side. The road crosses the valley at a narrow point south of Arundel before ascending the eastern valley side in a sinuous alignment up to Crossbush high on the eastern valley side

- 2.8. Surrounding hedgerows and woodland provide some screening for the existing A27 and are well established. The existing road is well screened from the SDNP and were it not for the visible movement of traffic, the road would largely be overlooked. The flat valley floor and floodplain is periodically waterlogged. Field patterns within the valley are often defined and bounded by ditches – known as ‘innings’ where land has been reclaimed from the floodplain marshes. The innings are often medieval

#### Experiential and cultural qualities

- 2.9. The South Downs integrated character assessment (SDILCA) identifies the landscape surrounding Arundel as being deeply rural and tranquil. The landscape framework of valley, downland and coastal plain is large scale with far reaching views although there is a sense of enclosure, tranquillity and time depth in much of the landscape away from roads and settlements. A network of rural roads and historic villages and hamlets along the wooded upper coastal plain and the river valley sides contributes to the sense of time depth and rural quality of the landscape. The river valley has long been used as a route through the downs between the Weald and the sea. The public rights of way network is extensive although the A27 acts as a significant barrier to north/south movement along the boundary of the SDNP. The river valley floor is a largely still landscape where the floodplain has prevented development. The landscape of the floodplain is predominantly pastoral and tranquil

#### Landscape Sensitivity and forces for change

- 2.10. The large scale of the landscape combined with far reaching views and undulating topography makes the landscape visually sensitive despite its wooded character to the west. The valley sides and crests are particularly so. The rural character of the local road network is vulnerable to ‘improvements’ where highway infrastructure would urbanise and erode rural qualities. The river valley is sensitive to development due to the long views possible along the valley floor and the sense of stillness and tranquillity which surrounds the course of the river

#### Landscape impacts for the route options

##### Option I

- 2.11. The Option I route can be considered in 2 distinct sections:- the western half (on the existing alignment of the A27), and the eastern half (on a new alignment)
- 2.12. The western part of option I is on the existing alignment of the A27 and is considered to be unlikely to have significant adverse implications for the SDNP or for upholding its Statutory Purposes owing to the existing alignment of the road and its associated impacts (noise, severance, visual intrusion). The majority of potential effects on the assessed landscape and visual receptors relating to the western part of option I were found to be ‘neutral’
- 2.13. However, widening of the existing road would require the removal of existing roadside vegetation, including 5.5 ha of ancient woodland which is irreplaceable habitat. This would be significantly detrimental to the landscape experience, through this loss of habitat within the SDNP and in addition by exposing receptors within the woodland to increased movement of vehicles and road noise as a result
- 2.14. The eastern part of option I from the River Arun to Crossbush, is within the setting of the SDNP

- 2.15. The eastern part of option 1 is considered to have far reaching implications for the landscape and visual context of the SDNP; the effects on the Arun valley floor, and the valley side near Crossbush are of particular note
- 2.16. The creation of an elevated section of highway, approximately 925m in length, traversing the eastern lower valley side, would require embankments reaching 8.3m at the highest point. The top of this feature would have a gentler grade than the natural surrounding topography, and therefore be fundamentally contrary to the natural valley side landform, projecting further into the flat valley floor, interrupting its continuous expanse between the railway (in the south at Ford and the east between Arundel junction and Arundel station) and the town of Arundel
- 2.17. This physical change would have implications for the experience of far reaching views towards the chalk downs and Arundel. As-such, there is potential for this landscape change within the setting of the SDNP to compromise the special qualities of the SDNP landscape
- 2.18. The physical and experiential changes associated with the proposed road improvement option 1 would have implications for the appreciation of landscape components which are contiguous between the valley floor on either side of the SDNP boundary, (e.g. the flat topography, permanent pasture, and far reaching views) and the valley sides on either side of the SDNP boundary (e.g. the tranquil, rural setting of undulating farmland and woody field boundaries). As-such, there is potential for this landscape change within the setting of the SDNP to compromise the special qualities of the SDNP landscape
- 2.19. Although the downgrading of the road along the existing alignment of the A27 could be regarded as a positive intervention locally, the intrusion of vehicle movement and road noise would merely be displaced further south rather than reduced altogether. Whilst this could be regarded as slightly beneficial for the valley floor and valley sides within the SDNP to the north of the existing A27, the equivalent landscape character areas within the setting of the SDNP (to the south of the existing A27) would not experience that benefit and both roads would remain in use, thereby extending the range of impacts in the location

### Route Option 3

- 2.20. The Option 3 scheme would have far-reaching implications for the SDNP. The effects on the Arun Valley and Binsted Wood / Tortington Common are of particular note.
- 2.21. The creation of a causeway approximately 2km in length, stretching across the width of the lower Arun Valley floor from the arable fields south of Priory Farm, Tortington (in the west) to the pastoral fields south of Priory Farm, Crossbush (in the east), would fundamentally change the key characteristics of the flat valley floor, and would compromise the special qualities of the SDNP landscape. This change as experienced from within the SDNP would read as an intrusion within a previously continual landscape character. This would affect both the setting and the SDNP Special Qualities to a significant degree.
- 2.22. Although the downgrading of the road along the existing alignment of the A27 could be regarded as a positive intervention locally, the intrusion of vehicle movement and road noise would merely be displaced further south rather than reduced. Whilst this could be regarded as slightly beneficial for the valley within the SDNP to the north of the existing A27, the valley within the setting of the SDNP (to the south of the existing A27) would not experience that benefit. It is noted that the existing A27 would still be used by traffic from Arundel and from Ford in order to gain access to route options 3 & 5a which would further erode any benefit of downgrading this section of the existing A27.
- 2.23. A long section of the proposed road improvement option 3 passes through part of Tortington Common / Binsted Wood, within the SDNP, stretching approximately 1900m from the woodland edge where it abuts an agricultural field just east of Tortington Road, to the driveway leading to Havenwood Park caravan site, just off the existing A27 at the

northern edge of the wood. Near to its northern extent a relatively short section of the proposed road re-alignment would emerge from the woods into a pastoral field.

- 2.24. Certain assumptions have had to be used in assessing this part of the road improvement route, since technical details have not been provided. However, the route alignment is known, and therefore it is possible to say that the proposed road would cut through continuous and successive woodland compartments along almost all of this section, of which all compartments are registered on the Natural England inventory as ancient replanted woodland. It is assumed that the proposed road would be constructed approximately at grade, extending through the woodland's gently undulating topography, with numerous meandering drainage ditches. The woodland broadly consists of coniferous plantation, and an understorey with a particular wealth of flora and fauna all contributing to an interesting and varied landscape experience. The woodland is well served by public footpaths, bridleways and rural lanes, all of which provide opportunities for recreation. In particular Old Scotland Lane (a bridleway) is particularly noteworthy, as an ancient trackway. The landscape experience throughout the woodland on the PRoW / rural lane network is one of deep seclusion.
- 2.25. The potential movement of vehicles and road noise have clear implications for enjoyment of the scenic value of the woodlands and adjacent pastoral landscape, (eroding the sense of deep seclusion / tranquillity). Aside from experiential changes, the proposed road improvement option 3 would have inevitable physical implications, including the loss of ancient woodland (extending to approximately 24ha).
- 2.26. It is not known what the nature of the interface between the various PRoW's and rural lanes with the proposed A27 would be. The proposed road alignment crosses 3 public footpaths, a bridleway and a rural lane. This is likely to impede the use of these recreational routes, or sever them altogether, with adverse consequences for the wider network of these routes throughout the woodland, and erosion of the otherwise good public access that is considered to be a key baseline component.
- 2.27. Although the downgrading of the road along the existing alignment of the A27 could be regarded as a positive intervention locally, with regards to Binsted Wood / Tortington Common as a whole the intrusion of vehicle movement and road noise would merely be displaced further south rather than reduced. Any physical changes along the alignment of the existing A27 are unlikely to have notable implications for Binsted Wood / Tortington Common. It is noted that the existing A27 would still be used by traffic from Arundel and from Ford in order to gain access to route options 3 & 5a.

#### Route Option 5A

- 2.28. The Option 5A scheme would have implications for the SDNP and its setting. The effects on the Arun Valley and farmland to the south of Binsted Wood / Tortington Common are of particular note.
- 2.29. The creation of a causeway approximately 2km in length, stretching across the width of the lower Arun Valley floor would fundamentally change its key characteristics by interrupting its continuous expanse between the railway (in the south at Ford and the east between Arundel junction and Arundel station) and the town of Arundel. This physical change significantly affect the far reaching views towards and from the chalk downs and Arundel, both within and in the setting of the SDNP due to the continuous and undeveloped landscape character of the river valley.
- 2.30. Although the downgrading of the road along the existing alignment of the A27 could be regarded as a positive intervention locally, the intrusion of vehicle movement and road noise would merely be displaced further south rather than reduced. Whilst this could be regarded as slightly beneficial for the valley within the SDNP to the north of the existing

A27, the valley within the setting of the SDNP (to the south of the existing A27) would not experience that benefit.

- 2.31. Through the northern part of the agricultural landscape at Tortington, Binsted and Walberton (around Binsted Park) is partly within the SDNP, and partly outside the SDNP but very close to its boundary and clearly within its setting. Here, the Option 5A scheme proposes a sequence of 3 sections of highway elevated on embankments and 2 sections of highway in cuttings. The vertical alignment of the carriageway would be 10.8m higher than the surrounding natural topography at the highest point, and 8.3m lower than the surrounding natural topography at its lowest point. The footprint of this sequence of embankments and cuttings would also require clearance of several parts of woodlands, (including a substantial area of registered Ancient Woodland at Barn's Copse / Hundredhouse Copse / Little Danes Wood), along with several tree belts, and field boundary hedgerows.
- 2.32. These physical and experiential changes associated with the proposed road improvement option 5A would impact significantly on the SDNP and its setting. The movement of vehicles and road noise introduced into this landscape can be regarded as an erosion of the high degree of tranquillity and stillness that are noted as key features of the area. This would be exacerbated by the source of the intrusion (i.e. traffic) being at close range to users of the PROW network. As such, there is significant potential for this landscape change within the setting of the SDNP to compromise the special qualities of the SDNP's landscape.
- 2.33. Downgrading the road along the existing alignment of the A27 (north of Binsted Wood / Tortington Common within the SDNP) could be regarded as a positive intervention locally. As the volume of traffic would be notably reduced, the degree of intrusion from vehicular movement / road noise would also be reduced. Similarly, the reduction in the quantity of vehicles in this part of the view composition could be regarded as a positive visual change. It is noted however that the existing A27 would still be used by traffic from Arundel and from Ford in order to gain access to route options 3 & 5a which would moderate any positive effects experienced.
- 2.34. Assessing the baseline landscape and visual conditions observed in the field has confirmed that changes to the key landscape visual components as a consequence of route Option 5A would be felt most adversely by receptors within the Arun Valley and within the agricultural landscape at Tortington, Binsted and Walberton (around Binsted Park)

### **Tranquillity**

#### **Route option 1**

- 2.35. It has not been possible to consider the potential impacts on tranquillity of other areas away from the schemes as the information has not been provided
- 2.36. There is potential for a minor improvement in tranquillity experienced along the Monarch Way within the river valley in the SDNP owing to the A27 being moved away from the SDNP boundary and the resulting reduction of impacts from noise and movement. However this benefit would be likely countered by the elevation of the new road crossing (8m) which would increase the visibility, movement and noise of vehicles albeit at a greater distance. This would also result in two road corridors within and in the setting of the SDNP where currently there is only one, thus spreading the associated negative effects on tranquillity over a wider area.

#### **Route option 3 -**

- 2.37. There would be significant negative impacts on tranquillity within both Tortington and Binsted Woods in the SDNP due to the introduction of the road within the woods.
- 2.38. There would be significant negative impacts on tranquillity within the floodplain in the setting of the SDNP due to visible and audible movement of traffic across the still, quiet and

essentially medieval landscape of the river valley in the setting of the SDNP. This would affect receptors both within and in the setting of the SDNP.

- 2.39. There is potential for a minor local improvement in Tranquillity along the section of the A27 to be downgraded east of the new junction at Paines Wood. However, this would be likely to be countered by the continued use of the existing A27 by traffic from Ford Road. This would result in two road corridors within the SDNP where currently there is only one thus spreading the associated negative effects on tranquillity over a wider area.

#### Route Option 5a

- 2.40. Similar to option 3 - There is potential for a minor improvement in tranquillity to be experienced east of the proposed junction at Yapton Lane, although this would be countered by the continued use of the road by traffic from Ford Road. However, this would be likely to be countered by the continued use of the existing A27 by traffic from Ford Road. This would result in two road corridors within the SDNP where currently there is only one thus spreading the associated negative effects on tranquillity over a wider area.
- 2.41. There would be significant negative impacts on tranquillity within the SDNP and its setting along the 5A route option alignment which would be experienced by users of the PROW network journeying to and from the SDNP. There would be significant negative impacts on tranquillity within the floodplain in the setting of the SDNP due to visible and audible movement of traffic across the still, quiet and essentially medieval landscape of the river valley in the setting of the SDNP. This would affect receptors both within and in the setting of the SDNP.

### **3. Potential effects on the Recreational Opportunity (Appendix I, Annex 4i and 4ii)**

- 3.1. The indicative NMU proposals provided for both Option 1 and Option 5A show an intent create a shared segregated pedestrian and cycle route alongside the improved A27 carriageway, for the length of the each of the improvement options. Whilst these intentions are commendable, they favour an east-west NMU movement. Greater consideration of NMU movement in a north-south direction of travel, enhancing connectivity to and within the SDNP would be beneficial.
- 3.2. The **Option 1** proposals indicate that, for the most part, the existing PROW network, and connectivity to the SDNP would in essence remain unchanged. However, the road improvement scheme could offer opportunities to strengthen the relationship between the PROW on either side of the A27 (and in doing so enhancing connections into the SDNP). Those opportunities appear to have been wholly missed by the design proposals to date.
- 3.3. **Option 5A** proposes a new stretch of bridleway, to be formed alongside the shared cycle and pedestrian lane, westwards of No. 57a Chichester Road (i.e. where the existing A27 becomes a dual carriageway, west of Arundel). This would improve connectivity of routes available of horse users through the SDNP, via the existing bridleway 386 allowing their movement from Slindon (and further west), through Rewell Woods, and onwards (via the local road, on the alignment of the existing A27) into Arundel, where horseriders could then return to Slindon via bridleway 415 (through the Waterwoods). Whilst the intended bridleway link would be beneficial, the broader NMU indicative proposals of Option 5A seem to facilitate east-west NMU movement, and frustrate some existing connections by closing some, requiring PROW users to use an underpass, or bridges, and elsewhere necessitating lengthy PROW diversions.
- 3.4. Both of the road improvement options appear to have given some consideration to east-west NMU movement, but have to some extent eroded, and by no means enhanced NMU movement (and connections to the SDNP) in a north-south direction of travel. Both of the road improvement options could harness more opportunities to reverse the existing severance of the landscape. This would further the objective of promoting understanding and enjoyment of the special qualities of the SDNP.

- 3.5. Furthermore, the indicative NMU proposals provided to-date are not reflected in the technical highway design drawings, and as-such there is no certainty that the intent is achievable without causing additional (and un-assessed) landscape and visual harm.
- 3.6. Indicative NMU proposals associated with the **Option 3** road improvement scheme have not been provided, although it is considered likely that they would follow the same principles as indicated in relation to the Option 5A road improvement scheme. These suggest that a shared cycle and pedestrian lane would be created along the route of the existing A27 (alongside a local road (i.e. a downgrading of the existing A27), stretching from Crossbush (in the East) to the driveway leading to Havenwood Park caravan site, where the proposed-route would tie-in to the existing A27. The indicative proposals also show a new bridleway to be formed alongside the shared cycle and pedestrian lane, westwards of No. 57a Chichester Road (i.e. where the existing A27 becomes a dual carriageway, west of Arundel). The indicative NMU proposals drawing also shows that the shared cycleway, pedestrian land and bridleway would connect to Bridleway 386 (on the northern side of the adjacent road (existing A27)). Connections to the south are thought to be unlikely in relation to the Option 3 road improvements, given the close proximity of the proposed carriageway.
- 3.7. The new stretch of bridleway, connected to the existing bridleway 386 would represent an improvement to the connectivity of routes available of horse users, allowing their movement from Slindon (and further west), through Rewell Woods, and onwards (via the local road, on the alignment of the existing A27) into Arundel, where horseriders could then return to Slindon via bridleway 415 (through the Waterwoods).
- 3.8. Whilst the intended bridleway link would be beneficial, the broader NMU indicative proposals seem to facilitate east-west NMU movement, but fail to address (and by no means enhance) NMU movement in a north-south direction of travel (and connections to the SDNP).
- 3.9. **Potential effects on Biodiversity** (full report in **Appendix I, Annex 5**)
- 3.10. The SDNPA Landscape and Biodiversity Lead (water) commissioned a data search from the Sussex Biological Records Centre and carried out an ecological desk-based assessment for the proposed routes.
- 3.11. A range of options have been presented that include on line improvements and various options for new routes. Due to the range of potential options a search area 2km either side of the current route has been undertaken. All routes would be likely to have a significant negative impact on biodiversity: protected sites, semi-natural habitat extent, quality and connectivity, and populations of native species.
- 3.12. The proposals likely to have the least adverse ecological impact are the online routes, though potential significant negative impacts remain.

#### Designated sites: National

- 3.13. There are two Sites of Special Scientific interest within the search area. Arundel Park is within 1km of most of the route options, whilst Fairmile Bottom is 2km away. Arundel Park is designated for areas of woodland, chalk grassland, wetland and a rich invertebrate fauna. Fairmile Bottom is an area of species rich lowland chalk grassland with rare and unusual plant species. It is considered that none of the highway routing options will result in the loss or removal of any part of the nationally designated sites.

#### Designated sites: Local

- 3.14. Six locally-designated nature conservation sites are situated within the 2km radius. Three of these, Binsted wood LWS, Rewell wood LWS and Arun Valley LWS are directly in line with many of the routes. The first two sites are ancient woodlands with a rich and diverse flora



and fauna. The third site is a complex of wetlands. There is a clear risk of direct impacts and habitat loss to Local Wildlife Sites (LWS) as a consequence of all of the proposals.

#### Protected Species

- 3.15. A significant number of protected and notable species records occur within the 2KM search area. These include 13 species of bats, hazel dormouse, great crested newt, water vole, stag beetle and reptiles. In addition there are many protected birds and over 130 species listed under section 41 of the NERC act. It is recommended that future ecological appraisal work should include detailed assessment of impacts on all protected species, supported where required by an appropriate level of survey.
- 3.16. Badger records are confidential and are not included in the report, however the large areas of woodland and parkland make it likely that there will be a large population of badgers in the area. A full badger survey will need to be carried out in advance of any works.
- 3.17. There is a concern that the routes will sever extensive areas of habitat reducing connectivity and feeding corridors for species such as bats and dormice. Thirteen species of bats have been recorded with feeding and maternity roosts in the local area and so it is likely that bats are commuting between woodlands and maternity roosts in buildings in Arundel and the surrounding villages.
- 3.18. These impacts will need to be fully assessed based on robust baseline information and field surveys; if this is not available for the initial route selection however, a precautionary approach to potential impacts is recommended which should first seek to avoid ecological impacts.

#### Priority habitats

- 3.19. All routes may impact on known areas of priority habitats. The largest areas are deciduous woodland, wood pasture and parkland, hedgerows and floodplain grazing marsh. There are also several chalk streams crossed by the proposed routes. Much of the woodland is designated as ancient woodland and there are a large number of veteran trees in the area.

#### Invasive non-native species

- 3.20. The highway route options pass through areas where a number of non-native and invasive species have been recorded. In the majority, these relate to plant species and garden escapees, but include 17 species listed on Schedule 9 of the Wildlife and Countryside Act in England and Wales (including plants which are an offence to plant or otherwise cause to grow in the wild and plants that are illegal to sell) such as Japanese Knotweed.
- 3.21. Controlling the spread of these species is important but, especially in the case of Schedule 9 plants, construction projects can contribute to the spread of invasive species. The exact location of invasive species will need to be targeted for managed removal prior to any clearance or construction work. Based on the evidence reviewed to date there is considered to be **high potential** for non-native and invasive species to be present on all route options.

#### Ecological Enhancement

- 3.22. Natural Environment and Rural Communities Act 2006 encourages the incorporation of ecological enhancements into proposals. It is recommended that initial ecological surveys and reporting seek opportunities to contribute to biodiversity enhancement of adjacent habitats and contribute to existing initiatives.

#### Ancient woodland

- 3.23. All route options would result in the loss of Ancient Woodland which is contrary to National Planning Policy. The amounts are as follows:
  - Option 1 would result in the loss of 5.5ha of Ancient woodland

- Option 3 would result in the loss of approximately 24Ha of Ancient woodland,
- Option 5a would result in the loss of 6 ha of Ancient woodland

All figures are according to information available at this stage. The following text is taken from the National Planning Guidance notes<sup>1</sup> for guidance on Ancient Woodland and is included for information;

- 3.24. Trees and woodland classed as ‘ancient’ or ‘veteran’ are irreplaceable. Ancient woodland takes hundreds of years to establish and is considered important for its wildlife, soils, recreation, cultural value, history and contribution to landscapes.
- 3.25. ‘Ancient woodland’ is any wooded area that has been wooded continuously since at least 1600 AD. It includes:
  - ‘ancient semi-natural woodland’ mainly made up of trees and shrubs native to the site, usually arising from natural regeneration
  - ‘plantations on ancient woodland sites’ areas of ancient woodland where the former native tree cover has been felled and replaced by planted trees, usually of species not native to the site
- 3.26. Ancient semi-natural woodland and plantations on ancient woodland sites have equal protection under the National Planning Policy Framework.
- 3.27. ‘Wooded continuously’ doesn’t mean there has been a continuous tree cover across the entirety of the whole site. Open space, both temporary and permanent, is an important component of woodlands.
- 3.28. Ancient wood pastures and historic parkland can be a distinct form of ancient woodland. Many have not been included on the Ancient Woodland Inventory because their low tree density meant that they didn’t register as woodland on historical maps. Where ancient wood pastures are identified they should receive the same consideration as other forms of ancient woodland.
- 3.29. If the planning authority decides to grant planning permission in line with the National Planning Policy Framework, it should seek appropriate mitigation or compensation from the developer. As ancient woodland and veteran trees are irreplaceable, discussions on compensation should not form part of the assessment of the merits of the development proposal.
- 3.30. The planning authority should use planning conditions or obligations to secure these mitigation or compensation measures and subsequent ecological monitoring.

#### **4. Potential Effects on Cultural Heritage (Full report at Appendix I, Annex 6)**

- 4.1. The South Downs National Park Authority (SDNPA) commissioned Hampshire Services to carry out a Desk-Based Assessment (DBA) of cultural heritage issues relating to two proposed route options (the Red Route (1) and the Pink Route (3)) of the A27 trunk road located to the south of Arundel, West Sussex. The assessment has concluded that:
- 4.2. “The construction of the Pink Route would have a direct impact upon the SDNP in the areas of Tortington Common, Pinewoods and Paine’s Wood, while the Red Route would impact upon the SDNP in the area of former park land to the west of Park Farm. The assessment has concluded that the proposed development is likely to have a major and extensive impact upon any undesignated archaeology located along both the Pink and Red Routes.”
- 4.3. Both Arundel routes cross a part of West Sussex that is known to have been occupied from the Lower Palaeolithic through to the present day and has the potential to contain as yet

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<sup>1</sup> <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences>

unrecorded archaeological features and/or deposits associated with known internationally important Palaeolithic activity recorded at Boxgrove quarry c. 7km to the west of the scheme. There is also potential for early prehistoric material to exist within the alluvial deposits that cover the floodplain of the River Arun that would be impacted by the construction of the Pink Route. Areas of Iron Age field systems and settlement have been recorded at the western end of the scheme. Roman activity of similar intensity follows on from this period with traces recorded at both ends of the scheme. The Pink Route crosses the line of a recently discovered Roman road that leads from Chichester in the west towards Brighton in the east. Evidence for a possible high status Roman building has also been recorded close to the Pink Route at Tortington Priory. Fragments of both the medieval and post-medieval landscape in the form of some surviving field boundaries are also crossed by both routes

- 4.4. The study of available aerial photographs along the route also established the presence of as yet undated linear features immediately to north west of Tortington Priory, as well as illustrating the previously identified later prehistoric enclosure to the east of Park Farm.
- 4.5. The potential impacts upon the settings of the SDNP, other Scheduled Monuments, Listed Buildings and Conservation Areas will require more detailed investigation, leading to mitigation measures.
- 4.6. A programme of archaeological fieldwork consisting of field walking, geophysical survey, geo-archaeological trial pitting and trial trench evaluation should be carried out to fully assess the potential of as yet unrecorded archaeology along the Pink and Red Routes as well as the site north of Worthing. This programme should then be followed by an assessment statement that should set out the terms of further investigation and excavation, leading to the academic publication and public dissemination of all results. Any archaeological work carried out within the SDNP should include public engagement as part of any mitigation strategy with any archives deposited in a publically accessible archive.
- 4.7. It wasn't possible to consider the impacts of option 5a within the timescale though many of the issues for 5a would be similar to 3 with the crossing of the valley being in a similar alignment though the impacts would be different where the routes diverge and take different routes westwards

## **5. Potential Impacts on Drainage & Water**

- 5.1. HE have highlighted the potential impact on the flood plain and increased flood risk this could lead to additional bunding/ embankments and the related landscape impact.
- 5.2. Whilst the SDNPA would strongly advocate SUDs and other natural drainage interventions these need to be sensitively designed in the landscape in order to enhance local character.
- 5.3. There will be water quality and biodiversity concerns with all water course crossed by the scheme, especially during construction but additionally during operation if appropriate pollution interventions are not in place.
- 5.4. HE have recognised main river (EA adopted) water courses in terms of impacts on water quality and flood risk but have little detail on other water courses, these include one chalk stream (a priority habitat)
- 5.5. Likely Impacts on Ramsar site within the SDNP (Amberley Brooks), suggest that HRA is needed to assess impacts on the water environment and flight paths for migrating birds,

## **6. Summary of Economic impacts (Appendix I, Annex 7)**

- 6.1. A cumulative economic impact study of the 4 HE proposed schemes along the A27 at Chichester, Arundel, Worthing/Lancing, and east of Lewes was commissioned by the SDNPA using Steer Davies Gleave so that the SDNPA could better understand the implications for the SDNP economy.

- 6.2. Because of the time constraints in commissioning the impacts on the economy of the SDNP and the unclear timetable that Highways England used to bring schemes to consultation, 4 generic schemes were identified to correspond to the most optimistic assumptions based at the 4 locations that HE identified in Road Investment Strategy (RIS) 1. Consideration at Arundel is given to a generic off-line bypass option with a junction at Ford Road.
- 6.3. It is worth noting that there is no available evidence that would allow an assessment of the social impact on the communities elsewhere in the SDNP.
- 6.4. It should be noted that there will be network impacts between options at Worthing and Arundel, and this has been recognised by HE, with modelling work taking this into account. The BCR presented at that time was 1.7:1, which represents medium value for money as an initial assessment. It is unclear what this includes, but reliability and induced traffic impacts, together with accident and environmental effects may make a significant difference to this initial finding.

#### Specific Findings - Arundel

- 6.5. Local economic impacts will depend in part on whether a junction is provided with Ford Road, due south. This would help to open up development opportunities at Ford Airfield with at least 1,500 houses<sup>[1]</sup>, but has not (yet) been identified as 'dependent development' for the Arundel scheme. It would represent an economic benefit in its own right, although by definition it would load additional traffic on to the Strategic Road Network and therefore exacerbate congestion compared with a 'no development' scenario.
- 6.6. Whilst the town of Arundel itself would be expected to benefit from congestion relief, and therefore improve its appeal as a tourism destination, any bypass scheme will inevitably have an adverse impact on the wider surroundings of the park. The extent of this will be dependent on the scheme alignment chosen, and the degree of environmental mitigation proposed.
- 6.7. Overall, the likely economic impacts of the proposed investment on the A27 are therefore likely to be locally specific, and are not likely to impact on the wider economic geography of the park

## **7. Design**

- 7.1. The design of the river valley crossing and the river bridge has been identified in early discussions with members as a key issue which will affect the likely impacts on the SDNP and its setting. All 3 of the route options will require an elevated valley crossing both to clear the flood plain, but also to bridge over the railway and to meet the Crossbush junction on the eastern valley side.
- 7.2. The SDNPA Design Review Panel and the SDNPA Design Officer have prepared joint comments following an informal session of the panel on 18<sup>th</sup> September – comments to be added

## **8. Overall Assessments of the Impacts of the schemes on the Special Qualities**

- 8.1. Because there is a lack of evidence and detail for the mitigation and no precise details of the route options it is therefore not possible to give an overall assessment of the relative merits or otherwise of the options on the impacts of the special qualities of the SDNP.
- 8.2. As they are presented and from the available evidence supplied all options are considered to have a serious adverse impact on the natural beauty and recreational opportunities provided by the National Park.

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<sup>[1]</sup> <http://ford.arun.gov.uk/main.cfm?type=EVIDENCEBASE>