



# **A27 Improvements: Arundel By-Pass and Land North of Worthing**

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**Preliminary Desk-Based Assessment**

**South Downs National Park Authority**

**April 2017**

## Document Control Information

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## Executive Summary

*Hampshire Services was commissioned by the South Downs National Park Authority (SDNPA) to carry out a Desk-Based Assessment (DBA) of cultural heritage issues relating to two proposed route options (the Red Route and the Pink Route) of the A27 trunk road located to the south of Arundel, West Sussex and a section of proposed new A27 in a field to the north of Worthing. Both Route Options and the land to the north of Worthing cross the South Downs National Park (SDNP). The assessment has concluded that:*

*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. Both 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 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*

*The assessment also concluded that the proposed junction to the north of Worthing was located in an area of good archaeological potential with evidence for later prehistoric, Roman and medieval activity immediately to the east of the site, with further evidence for prehistoric settlement c.500 metres to the south east and cropmarks indicating prehistoric field systems c. 500 metres to the north. Although no assets have been recorded within the proposed site itself, it is considered possible that as yet unrecorded features dating from the later prehistoric and Roman periods may survive here.*

*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. Photographs also identified a possible prehistoric field system to the north of Worthing.*

*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. This will be addressed by a report to be prepared by Nexus Heritage.*

*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.*

## **1 Introduction**

- 1.1** Hampshire Services was commissioned by the South Downs National Park Authority (SDNPA) to carry out a Desk-Based Assessment (DBA) of cultural heritage issues relating to two proposed route options (Red Route and Pink Route) of the A27 trunk road located to the south of Arundel, West Sussex (Figures 1a-b, 3a-b and 5a-b) and a section of proposed new A27 in a field to the north of Worthing (Figures 2, 4 and 6). Both Route Options and the land to the north of Worthing cross the South Downs National Park (SDNP).

## **2 Project Background**

- 2.1** Highways England have funding and government approval to develop a road scheme with multiple objectives including to improve traffic flow, and allow capacity for economic growth on the A27 by-passing close to Arundel, as part of a bigger scheme of trunk road improvements. At the time of writing two route options are being considered; the Red Route (which is located wholly within the SDNP) and the Pink Route, (the north western third of which is located within the SDNP). Both of these routes are illustrated in Figures 1a-b, 3a-b and 5a-b). The scheme, replacing the current single carriageway section of the A27 between Arundel Arboretum and Crossbush, is now at DMRB Stage 1 and will be going to public consultation probably in summer 2017.
- 2.2** A junction improvement is also proposed at Halewick Farm to the north of Worthing and c.13km to the east of the Arundel Bypass routes (Figures 2, 4 and 6).
- 2.3** South Downs National Park Authority wishes to undertake an evidence-based assessment of the potential impact of these improvements.

- 2.4** The SDNPA acknowledges that Design Manual For Roads And Bridges (DMRB) volume 11 Section 3 Part 2 (HA208/07) proposes that at Stage 2 the consideration of cultural heritage should be high-level and focussed on nationally important designated heritage. However, the SDNPA's evaluation of previous development within the National Park has identified that when the option decision had been made SDNPA has had very little opportunity to influence routing decisions. The SDNPA informed by the learning from this earlier work has therefore agreed (1st December 2016) that evidence should be gathered to inform the NPA's decision on the impacts of the two options within the SDNP being proposed by Highways England.

### **3 Aims**

- 3.1** This heritage assessment will only consider the two Highways England Options to the south of Arundel and which are proposed to run within the National Park boundary, together with the proposed junction close to Halewick Farm near Worthing. The impact of these improvements on the historic landscape character and setting of the National Park will be part of the work undertaken in the assessment of landscape, visual and tranquillity impacts and will not be considered here.
- 3.2** This DBA will include both designated and undesignated heritage assets, where this distinction applies, for the following categories of heritage assets:
- Archaeological sites, find spots and events
  - Listed buildings
  - Registered parks and gardens (national and county lists, listed below)
  - Conservation Areas
- 3.3** The DBA will consider the potential for environmental archaeology and geo-archaeology and will also consider what is known along with the predictable discoveries together with the historic landscape character.

## **4 Methodology**

- 4.1** 'Study Areas' 500 metres in width were established around the centre line of the two proposed Route Options (Red and Pink) of the by-pass and the junction at Halewick Farm in order to place the proposed development within its archaeological, historical and historic landscape context. The proposed route options and the junction improvement are hereafter defined as those shown in Figures 1-14.

## **5 Sources**

- The West Sussex Historic Environment Record (WSHER) is the definitive database for archaeological, historic building, Conservation Area and Historic Landscape Character data in the area. This was consulted for the preparation of the Desk-Based Assessment.
- Aerial Photographs were consulted at the National Aerial Photographic Library at the National Monuments Record (NMR) in Swindon.
- Relevant historic maps were consulted at West Sussex County Record Office in Chichester.
- LiDAR data gathered by the 'Secrets of the High Woods' project (commissioned by the SDNPA).
- Sussex County Gardens Trust (SCGT) list of locally important designed landscapes was consulted via the SCGT website.

## **6 Site Description (Arundel Bypass)**

- 6.1** The Arundel Study Area encloses a largely agricultural landscape covered by a mixture of field systems dating from the later medieval period and into the post-medieval and modern periods, together with post-medieval assarts of former forest and post-medieval semi-ancient woodlands along with scattered villages and isolated farms. The medieval town of Arundel is located in the north east of the Study Area on the northern bank of the River Arun, with the town's modern suburbs extending to the south west into the central part of the Study Area.



- 6.2** The Red Route is c. 3.8km in length and runs from a high point close to the Convent of Poor Clares at c.30 metres AOD. It follows the current route of the A27, crossing the floodplain of the River Arun, located at c.2 metres AOD, in a north westerly direction and crossing the river immediately to the south of Arundel. The route then runs between the medieval town and its modern extension, climbing the escarpment on the western side of the river valley and then following a ridge located at c.40m AOD as far as a caravan park located at Paine's Wood.
- 6.3** The Pink Route is approximately 4.9km in length and runs from a point at c. 20 metres AOD close to the village of Crossbush before descending off the chalk escarpment and across the floodplain of the River Arun at c. 2 metres AOD on a roughly east west axis.. The route crosses the Arun c.380 metres to the south east of the Augustinian Priory at Tortington before turning north west and crossing the semi-ancient woodland at Tortington Common and Paine's Wood before re-joining the current A27 carriageway at c. 40 metres AOD, around 95 metres to the north of the caravan park.

## **7 Site Description (Land North of Worthing)**

- 7.1** The proposed junction improvement to the north of Worthing is approximately 270 metres in length. It is located c.180 metres to the south of Halewick Farm. It crosses the south east corner of a gently undulating arable field located at c.20 metres AOD on a roughly east – west alignment.

## **8 Legislation and Policy Background**

### **8.1 Ancient Monuments and Archaeological Areas Act 1979 (amended by the National Heritage Act 1983 and 2002)**

**8.2** Archaeological sites that have been designated as being of national importance are contained within a schedule maintained for that purpose and are referred to as Scheduled Monuments. They are protected by the 1979 Act. Works impacting these monuments will require scheduled monument consent independently of any planning permission. The settings of these monuments are also protected and are a material consideration within the planning process. Whilst the national planning policy framework seeks for development to not only respect and conserve but also enhance and be informed by these heritage assets it also recognises that in some circumstances an adverse impact might be accepted but only in '*wholly exceptional circumstance*'. NPPF accords the same level of protection to national important archaeological sites which have not been designated as scheduled monuments within the planning system, although these sites are not protected by the 1979 Act.

### **8.3 National Planning Policy Framework**

**8.4** The proposed development will be the subject of a Development Consent Order (DCO), a process that will lead to a Planning Inspectorate hearing that will in turn advise the Secretary of State on the various Route Options. The Secretary of State will then decide on which Route Option is to be adopted, based on all available evidence.

**8.5** Despite the DCO process, the policy framework within which local planning authorities should consider planning applications is still the National Planning Policy Framework (NPPF) issued in 2012. The importance of conserving, and enhancing the historic environment is clearly a material consideration. NPPF paragraph 52 defines the historic environment as:

- *All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.*
- *‘Submitted planning applications should include sufficient information to enable the local planning authority to assess the significance of any heritage assets that may be affected by a proposal, the impact of the proposal and the most appropriate provision whether within the plan or through actions secured by condition.*

**8.6** NPPF paragraph 128 states that;

- *In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets’ importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.*

**8.7** NPPF paragraph 129 states;

- *Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this assessment into account when considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset’s conservation and any aspect of the proposal.*

**8.8** NPPF paragraph 51 defines a designated heritage asset as any;

*World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.*

**8.9** NPPF paragraph 52 defines a heritage asset as;

*A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage*

*interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing).*

**8.10** NPPF paragraph 50 defines ‘Archaeological interest’;

*There will be archaeological interest in a heritage asset if it holds, or potentially may hold, evidence of past human activity worthy of expert investigation at some point.*

*Heritage assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them.*

**8.11** NPPF sets out guidance on assessing the significance and the impact of the proposal. Paragraph 131;

- *In determining planning applications, local planning authorities should take account of:*
- *the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;*
- *the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and*
- *the desirability of new development making a positive contribution to local character and Distinctiveness.*

**8.12** Paragraph 132;

- *When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset’s conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II\* listed buildings, grade I and II\* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.*

**8.13** Paragraph 133;

- *Where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, local planning authorities should refuse*

*consent, unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:*

- the nature of the heritage asset prevents all reasonable uses of the site; and*
- no viable use of the heritage asset itself can be found in the medium term through*
- appropriate marketing that will enable its conservation; and*
- conservation by grant-funding or some form of charitable or public ownership is*
- demonstrably not possible; and*
- the harm or loss is outweighed by the benefit of bringing the site back into use.*

**8.14** Paragraph 134;

- Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.*

**8.15** Paragraph 135;

- The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.*

**8.16** Paragraph 139 recognizes that new archaeological discoveries may reveal hitherto unsuspected and hence non designated heritage assets.

**8.17** Paragraph 139;

- Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.*

**8.18** Within paragraph 141 NPPF requires local planning authorities to ensure that where there is any loss of heritage assets the opportunity/requirement is to advance understanding of the historic environment, but it is also stressed that advancing understanding is not by itself sufficient reason to permit the loss of an heritage asset:

- *Local planning authorities should make information about the significance of the historic environment gathered as part of plan-making or development management publicly accessible. They should also require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.*

#### **8.19 South Downs National Park Authority Planning Policy**

**8.20** The South Downs National Park is covered by the saved policies of 11 inherited Local Plans and 1 adopted Core Strategy. Since the designation of the National Park, the SDNPA has been working jointly to adopt Joint Core Strategies with some of the authorities.

**8.21** The SDNPA is preparing its Local Plan, which will replace all existing planning policies across the National Park. Until this is adopted, the 'Development Plan' for the SDNPA within the area of the proposed development consists of saved policies included in the Chichester District Council Local plan (1999). These 'saved' policies include those concerning cultural heritage and the historic environment that are reproduced below.

#### **8.22 Policy BE3: Archaeology**

- *The destruction of or damage to scheduled ancient monuments and other features and sites of archaeological interest by development will be prevented wherever possible. There is a presumption in favour of the preservation in situ of important monuments. Where proposed development is likely to affect a known or suspected site of archaeological interest, one or more of the following requirements will be imposed.*
- *Archaeological assessment and field evaluation applicants will be required to include, as part of their research into the development potential of a site a desk-based archaeological assessment and where appropriate a field evaluation of the archaeological remains. A statement of the findings will be required to accompany the planning application.*
- *Preservation in situ. In order to secure the preservation in situ of important archaeological features and their settings, the district planning authority may require*

*developers to modify their proposals. In appropriate cases, the use of conditions or the completion of an agreement under section 106 of the town and country planning act 1990 may be required to secure a modification. Planning applications must indicate how preservation in situ will be secured.*

- Arrangements for excavation, recording and Publication if the district planning authority decides that the preservation in situ of archaeological remains is not justified and that development resulting in their destruction should proceed, it will satisfy itself before granting planning permission that the developer has made satisfactory provision for the excavation, recording and publication of the remains before development commences. Such work will be carried out to a specification approved by the district planning authority. In appropriate cases, an agreement under section 106 of the town and country planning act 1990 will be required to secure the investigation.*
- Conditions to secure excavation and recording where the district planning authority has decided that preservation in situ is not justified, it may impose a condition prohibiting the carrying out of development until excavation and recording have been carried out in accordance with a written scheme of investigation submitted by the applicant and approved by the district planning authority. Such schemes shall include proposals for the publication of any findings.*
- Watching brief. The developer will be required to give notice to the district planning authority of an intention to commence development and to satisfy the district planning authority that adequate provision has been made for access and subsequent observation and recording of any finds and other evidence which may be revealed during the development works. The developer will also be required to notify an archaeologist approved by or appointed by the district planning authority of any items unearthed during development which he knows or suspects to be of interest and to allow adequate time for records to be made by the archaeologist.*
- Field monuments. Where development is likely to affect adversely the setting of a nationally important field monument whether scheduled or not, permission will be refused.*

#### **8.23 Policy BE4: Buildings of Architectural or Historic Merit**

- The district planning authority will place a high priority on protecting the character and appearance of all buildings of architectural or historic interest. The district planning authority will have special regard to the desirability of preserving listed buildings and their settings.*

- *There will be a presumption in favour of the preservation of such buildings, including*
- *Their settings and any features of architectural or historic interest, unless a convincing case can be made for demolition or alteration; development affecting a listed building which would result in the loss of character of an area will similarly be resisted.*

#### **8.24** Policy BE5: Alterations to Listed Buildings

- *Where listed buildings are to be altered or extended the design, detailing and materials must be appropriate to the character of the listed building.*

#### **8.25** Policy BE6: Conservation Areas

- *Within designated Conservation Areas and their settings the district council will seek to preserve or enhance the special architectural or historic character or appearance of the area and will refuse applications where:*
- *they include new buildings or extensions or alterations to existing buildings (including shop fronts) which are of inappropriate height, scale, materials or design, to accord with the character of the Conservation Area;*
- *the proposals by reason of their bulk and height would obstruct or adversely affect views of buildings which are effective in helping to maintain the historic character of the Conservation Area;*
- *the proposals fail to respect the existing historic layout and street pattern of the Conservation Area and the surrounding settlement (including passageways, alleys and public open spaces);*
- *the proposals would result in the loss of trees, walls or other means of enclosure which are important to the character of the Conservation Area. There will be a presumption in favour of retaining buildings which make a positive contribution to the character or appearance of Conservation Areas.*



## **8.26 South Downs National Park Partnership Management Plan**

**8.27** This Partnership Management Plan (PMP) is the first overarching five-year strategy for the management of the South Downs National Park.

**8.28** There are six important sectors that have been prioritised to strengthen partnership working, improve sustainability and expand delivery that enhances the special qualities. These are: Farming, Forestry, Water, Transport, Visitors & Tourism, and Education & Learning. Each has its own section with context information and policies. Policies 9 and 10 cover cultural heritage issues of relevance to this assessment.

- **Policy 9:** *The significance of the historic environment is protected from harm, new discoveries are sought and opportunities to reveal its significance are exploited.*
- **Policy 10:** *Improve the management of heritage assets, particularly focusing on those that are 'at risk', including from crimes against heritage.*

## **9 Cultural Heritage Baseline (Arundel By-pass)**

### **9.1 Designated Sites (Figures 1a-b)**

**9.2** A total of four Scheduled Monuments (SMs) have been identified within this Study Area (**1005865**, **1005895**, **1012500** and **1021459**).

**9.3** Maison Dieu (**1005865**) is the hospital or almshouse of the Holy Trinity which was founded for twenty poor men, aged or infirm, in connection with the newly founded college in 1395 and, despite long confusion with the remains of the Blackfriars, was probably located immediately north-west of the church. The hospital had a chapel, refectory and dormitory. It was suppressed in 1546 (Harris, 2009). The site is located c. 540 metres to the north east of the Red Route at the point where it crosses the River Arun.

**9.4** Goblestubbs Copse (**1005895**) is a series of earthworks, enclosures and droveways that are thought to be medieval in origin that are located within woodland c. 425 metres to the north west of the western end of the Pink Route.

**9.5** Arundel Castle (**1012500**) Arundel castle is located c. 475 metres to the north east of the Red Route at the point where it crosses the River Arun. It was first recorded in 1071, but is likely to have been begun as early as c.1067. This period was marked by the first wave of Norman castle building, with programmes of castle construction begun in 1067 on William I's behalf by Odo, Bishop of Bayeux and his half-brother, and William Fitzosbern. Arundel Castle became the principal fortification and administrative centre of the Rape of Arundel at this time. Orderic Vitalis recorded that Robert de Bêlleme, fortified all his castles in 1102 including Arundel, which was placed under siege by Henry I, ending after three months with the surrender of the garrison. Confiscated by the king, Arundel castle remained a royal possession, passing on his death in 1135 to his widow, Adeliza of Louvain, who was in residence at Arundel from that time: it passed into private hands again when Adeliza married William d'Aubigny in 1138-9. On William's death in 1176 it reverted to the king – who spent nearly £330 on works including building a wall, a chapel and a 'king's chamber' before it was restored to William's heirs in 1190 (Harris, 2009).

- 9.6** Tortington Augustinian Priory (**1021459**) is located c. 35 metres to the north of the Pink Route at a point c. 50 metres from its proposed crossing of the River Arun. This Augustinian priory was founded in the late-12th century on land held by the Norman Abbey of Sées. The founder of the Priory was probably Alicia de Corbet, a widow and daughter of the d'Aubigny family who had once been a mistress of Henry I. The Augustinian order or 'Black Canons' who lived here it was a small establishment, not unlike other Augustinian priories founded nearby at Pyneham just to the east of Arundel and at Hardham, further up the Arun valley. Occupied by only a Prior and four or five Canons at any one time, Successive visitations in the 15th and early 16th centuries reported a house in decay, lacking in books and whose servants were incompetent and unskilled. It gained a reputation as a house where errant monks were sent who were undeserving of a more prestigious or venerated establishment. The religious house was dissolved soon after 1536, its goods sold off and the Priory sold to Lord Maltravers of Arundel within whose family it remained until the late-16th century. After this, though re-occupied for a time and known as Tortington Priory House, the old priory was plundered for building materials for several houses and farm buildings in the vicinity. This included a grand house nearby called Tortington Place, built in the 17th century by Roger Gratwick on the site where Tortington House would eventually be built. Some of the priory remains were in use as a barn by the late-18th century until the late-20th century.
- 9.7** These Scheduled Monuments will not be materially impacted by any development although the impact of the new road options upon the settings of and views from these monuments will be summarised in the report by Nexus Heritage.

- 9.8** A total of 203 Listed Buildings were identified by the assessment. Of these, three are Grade I (**1027914**, **1248090** and **1263812**) and seven are Grade II\* (**1027908**, **1027913**, **1027943**, **1034405**, **1221996**, **1263836** and **1278040**). The remaining 193 buildings are Grade II. The Grade I structures are; the Church of St. Nicholas and the Fitzalan Chapel in Arundel (**1027914** and **1263812**), which are located c. 450 metres to the north east of the Red Route at the point where it crosses the River Arun, and the Roman Catholic Cathedral of Our Lady and St. Philip Howard (**1248090**) which is located c.280 metres to the north east of the Red Route where it is proposed to interchange with the A284. None of these buildings is located within the proposed route corridor of either route option and none will be materially impacted by the proposed development. The possible impact of the development upon the settings of and views from these buildings will be summarised in the report by Nexus Heritage.
- 9.9** Arundel Castle (**1000170**) is the one Registered Park and Garden (RPG) located within the Study Area (Fig\*\*). This is a Grade II\* RPG that mostly dates from the early and mid-19<sup>th</sup> century partly walled pleasure grounds developed from the former medieval earthworks around the Castle and with surviving 16<sup>th</sup> and 17<sup>th</sup> century features, laid out within and around the castle with, on its north side, an extensive late 18<sup>th</sup> to early 19<sup>th</sup> century walled park. The RPG does not encroach into the route corridor of either route option. The impact of the development upon its setting and the views from it will be summarised in the report prepared by Nexus Heritage.
- 9.10 Previous Archaeological work (Figures 5a-b)**
- 9.11** A total of 11 archaeological investigations have been carried out within the Study Area throughout the 20<sup>th</sup> century and into the early 21<sup>st</sup>. Limited (and unpublished) excavations were carried out by Ainsworth at Goblestubbs Copse (**EWS158**), c. 495 metres to the north west of the western end of the Pink Route, in 1968.

- 9.12** A medieval site of some size c.480 metres to the south of Tortington Priory and the Pink Route was excavated by Worthing Museum in 1968 (**EWS159**). The site was a moated one which may have contained a timber-framed house. Four furnaces or fireplaces of tile construction were recognised together with a circular clay base some 3m in diameter which was enclosed by flint walling. A test pit excavated in July 1994 during exploratory work ahead of a possible Arundel by-pass revealed Romano-British Pottery at TQ 0273 0595 (**EWS276**). This pottery was found close to the northern edge of the Pink Route c. 70 metres from its eastern terminus.

Excavations by Worthing Archaeological Society (**EWS322**) in 1965 at Maison Dieu (**1005865**) in Arundel, c. 550 metres to the north east of the Red Route and outside the north range, revealed the unrobbled base of a buttress below the present ground surface with an area of cobbing along side it. The excavations at the west range revealed the early 18th to mid-19th century concrete floor of the malthouse. An 18th century brick hearth occupied the north-west corner of the range and the west wall had been altered by filling up the series of embrasures with flint packing, with the exception of the northern-most which had been reconstructed as a doorway. A further excavation was undertaken on this site by Archaeology South-East (**EWS964**) in 2007. This confirmed the presence of medieval remains believed to be that of the Holy Trinity Hospital or 'Maison Dieu'. It also identified a post-medieval building thought to correspond to a structure shown on 1785 and 1807 cartographic sources (not illustrated) and revealed a number of other post-medieval features including path surfaces. Further archaeological evidence for a street system along with a small stone structure on the east of the site was also seen during the evaluation.

- 9.13** An Archaeological watching brief was undertaken at Priory Farm (**EWS1317**), Arundel in 2004 by Archaeology South East. This site, located on the southern edge of the Re Route and c. 550 metres from the eastern terminus, located a substantial wall were recorded underneath the milking parlour floor, this may have formed a peripheral building of the known medieval hospital. The dating retrieved during the excavation suggested a date of 13th – 14th century. A previous unknown buttress and a medieval tiled floor were also identified during the excavation.

- 9.14** Excavations at Tortington Manor in 1909 (**EWS380**) exposed the foundations of the church and, south of it, those of numerous buildings including a gatehouse, various halls and chambers. Some finds are in Lewes Museum but cannot now be identified, and the excavation notes and plans have disappeared.
- 9.15** A number of watching briefs have been carried out within the Study Area that recorded no archaeological remains (**EWS761** in Tarrant Street Arundel, **EWS1131** at the Site of Crown Yard, Arundel, **EWS1690** Land at the Former Texaco Garage, Queen Street, Arundel, **EWS 1734** evaluation and watching brief at The Slipe, Arundel
- 9.16 Conservation Areas (Figures 3a-b)**
- 9.17** The Arundel Conservation Area, established by Arun District Council, is located within the north east corner of the Study Area. This Conservation Area is not crossed by either the Red or the Pink Route options and will therefore not be materially impacted by any development. The impact of any development upon the settings and views from this Conservation Area will be summarised in the report prepared by Nexus Heritage.
- 9.18 Undesignated Heritage Assets by Period (Figures 3a-b)**
- 9.19** *Palaeolithic Period (c.500,000 BP – 8,000 BC)*
- 9.20** Both the Red and the Pink route options cross areas of potentially international importance for Palaeolithic studies. In the distant past (c.500,000 BP), the sea had carved a line of cliffs along what is now West Sussex and Hampshire, with a shore platform in front. Sand and flint shingle were deposited at the foot of the cliffs and on the platform surface, known as the 'Westbourne to Arundel Raised Beach', reflecting its known eastern and western extremities (Roberts and Pope, 2009). The sand and shingle can be traced for a distance of over 25 km along the Downs from Arundel in the east past Boxgrove and Goodwood House and on into Hampshire.

- 9.21** The Westbourne to Arundel Raised Beach Deposit sequence (Figure 3a-b) has been recorded up to 250 metres from the base of the relict cliff line with the unconformable sequence extending up to 800 metres from the cliff, an area incorporating most of the area to the south of the current A27 and taking up a sizeable proportion of the central part of the current Study Area (ibid.). These deposits have been found in some places to contain internationally important *in situ* Palaeolithic activity with knapping floors and animal butchery sites recorded at former quarries at Boxgrove (Roberts and Pope 2009, Pope, 2003) which are located c. 7.8 km to the east of the western end of the Pink Route.
- 9.22** The depth at which archaeological deposits occur within the raised beach levels vary but were found at around 2 metres below current ground level at Boxgrove (The Boxgrove Project website), while a recent archaeological evaluation carried out to the north west of Tangmere, 7.4 km to the east of the Study Area, exposed raised beach deposits less than 1 metre below current ground level (James Kenny, Chichester District Council, pers comm). Sections of both the Red and Pink Routes would include cuttings and new junctions, some of which are likely to involve significant ground penetration. This development could impact upon these potentially internationally important raised beach deposits.
- 9.23** The only Palaeolithic artefact to be clearly recorded within the Study Area to date is a Chellean type hand axe (**MWS 2691**) that was recovered from the south bank of the Arun within the old town of Arundel, c.400 metres to the north of the Red Route, in the late 1920s. This hand axe dates from the Lower Palaeolithic period (500,000 – 150,000 BP) and would be contemporary with the nearby raised beach deposits known to exist within the Study Area. Three further handaxes of similar date were noted within the collections at Lewes Museum in the late 1960s and the early 1980s and are believed to have been found in the same general area.
- 9.24** *Mesolithic Period (8,000BC – 4,000 BC)*
- 9.25** Early research into the Mesolithic of West Sussex assumed that activity in this period was limited to the drier chalk uplands, however, further research from the 1970s onwards has shown this to be incorrect (Butler, 2007). It is becoming increasingly clear that Mesolithic activity extended across all landscapes across the county including the coastal plain. It is likely however that much of this material will be buried below alluvial deposits in the very dynamic environment of the River Arun's floodplain.

- 9.26** One Mesolithic artefact has been recovered from within the Study Area. This is a tranchet axe (**MWS7840**) that was recovered on the Arun floodplain to the west of the river, 280 metres to the north of the Pink Route and c. 200 metres to the east of Tortington Priory.
- 9.27** *Neolithic Period (4,000BC – 2,200 BC)*
- 9.28** Although the Neolithic sees the introduction of agriculture to Britain, this early farming appears to have been limited to the chalk escarpments while the coastal plain contains evidence that the hunter-gatherer practices of the Mesolithic continued within the area for some considerable time (Drewett, 2007). There is a lack of field monuments normally associated with the period and settlement activity is limited mainly to flint scatters.
- 9.29** Very few Neolithic assets have been recorded within the Study Area to date. A single worked flint was recorded at Goblestubbs Copse in the early 1930s (**MWS2285**) c. 500 metres to the north west of the western end of the Pink Route. Two scrapers were recovered from the same site in the summer 2006, suggesting that this area may have much earlier phases than previously assumed.



**9.30** *Bronze Age (2,200 BC – 700 BC)*

**9.31** As with the Neolithic period, Bronze Age activity along the coastal plain was very poorly understood prior to the advent of extensive commercial excavation from the late 1980s onwards. Prior to this period, Bronze Age settlement was considered to be limited to the chalk uplands, but it is now clear that the coastal plain now formed the hub of settlement as agricultural activity grew to dominate and shape the landscape (Dunkin and Yates, 2007).

**9.32** The only recorded evidence for Bronze Age activity in the Study Area was in the form of pottery, worked and fire-cracked flint (**MWS7071**) that was found to the east of the priory church at Tortington Priory, immediately to the north of the Pink Route, during archaeological investigations in the late 1990s (ASE, 1999).

**9.33** *Iron Age (700BC – AD 43)*

**9.34** While Bronze Age activity tends to be focused on the high ground on either side of the many palaeochannels that cross the West Sussex coastal plain, Iron Age settlement appears to be more focused with little found in between known ‘hotspots’ (Kenney, Pers Comm).

**9.35** A series of earthworks are located within Goblestubbs Copse (**MWS2285**) c. 450 metres to the north west of the western end of the Pink Route. These earthworks, which are currently located within semi-ancient woodland on the summit of a chalk ridge immediately to the west of Arundel, were recorded initially in the late 1920s thus: ‘(they) comprise contiguous rectangular or irregular enclosures surrounded by a ditch between two banks associated with wandering bivallate ditches, sometimes duplicated or triplicated, which seem to continue across the banks where intersections occur (Curwen, 1928). The earthworks have traditionally been associated with medieval stock enclosures since the area formed sheep runs prior to emparkment in 1786. A partial, unpublished, excavation was carried out in the 1970s, which indicated that the earthworks may be of Iron Age or Romano-British origin. A view supported by the recovery of a few sherds of Iron Age pottery during excavations at the earthworks in Goblestubbs Copse (**MWS8596**) in the mid-2000s. There are two earthwork enclosures and a sunken trackway or ditch immediately to the south-east of the monument, which are likely to be associated with it and there is the possibility for further, as yet unrecorded elements to exist closer to the Pink Route which may now survive as sub-surface features.

- 9.36** The ploughed-out remains of a Celtic field system on Park Farm c. 300 metres to the north of the Red Route (**MWS2312**), are visible on APs as soilmarks (MAL65021/178 taken on 1<sup>st</sup> April 1965 and OS69005/026 taken on 7<sup>th</sup> March 1969) although nothing is visible on the ground. Possible enclosures at Park Farm, (**MWS2342**) were revealed by aerial photography in the mid-1970s (King, 1979) c.220 metres to the north west of the celtic field system and 390 metres to the north of the Red Route. A further photograph (MAL63568/107941 taken on 27<sup>th</sup> February 1963), noted during the visit to the NMR for the purposes of compiling this report shows the vague outline of a more extensive coaxial field system surrounding these enclosures and spreading over much of the chalk ridge. This field system appears to lead up to the earthwork enclosures at Goblestubbs Copse to the west.
- 9.37** *Roman Period (AD 43 - AD 410)*
- 9.38** Following the invasion of AD43, southern England appears to have become rapidly assimilated into Roman culture. The Roman town of *Noviomagus* (Chichester) was established c. 12km to the west of the Study Area and the grand palace at Fishbourne located 15km to the west. Within the Study Area the agricultural systems established in the later prehistoric period were retained (as appears to be the case at Goblestubbs Copse (**MWS2285**) and at Park Farm (**MWS2312** and **MWS2342**)) and then expanded upon in a series of estates based on villas.
- 9.39** The remains of one such villa (**MWS5396**) were first recorded in the late 19<sup>th</sup> century during excavations at Tarrant Street, Arundel (c. 145 metres to the east of where the Red Route would intersect with the A284). Traces of a heated room, possibly late 1<sup>st</sup> century or early 2<sup>nd</sup> century, were found in a road works trench outside 60 Tarrant Street. A chalk wall was recorded running in the direction of the river that cut through hypocaust tiles. Some black and white mosaic, diamond-pattern flue tiles and roofing tiles were also found. Further discoveries were made in 1976 when the owner of 95 Tarrant Street was lowering the floor of his cellar. At 1.7m below the pavement level (at c.4m AOD) a 'floor' level was located beneath the N. wall of the house, but this had apparently been destroyed within the cellar area. A chalk-lined well was also found partially underlying the W. wall. Further excavations were carried out 1983 on the south side of Tarrant Street on a plot of derelict land recorded evidence of a villa building dating from the 1<sup>st</sup> century AD.

- 9.40** The excavation of a trench for a new gas pipeline along the whole length of Tarrant Street in 1984 recorded a wall running north – south. It was faced with plaster and associated with quite a lot of broken tegulae and imbrices. Tiles recovered from these excavations have been dated to c. AD75-80 and c. AD90-110. A chalk and flint wall footing (**MWS4437**) was discovered in the summer of 1995 during the excavation of a drain. It was oriented WSW-ENE and was 2.12m length within the drain run, 0.4m in width and survived to a depth of at least 0.25m (only the top was exposed). It appeared to be constructed of chalk rubble and nodules of flint, in a gravelly mix, with occasional fragments of pink gritty mortar and inclusions of large fragments of Roman tile.
- 9.41** Four arterial Roman roads leading out from Chichester have been identified and recorded through the 20<sup>th</sup> century, however, the course of the road east along the coastal plain has remained elusive (Small, F., Historic England website). Recent aerial survey by Historic England for the Secrets of the High Woods Project (working in partnership with the South Downs National Park) has now firmly identified the remains of this fifth Roman road, part of the route of which is shown in **Figure 3b**. This discovery has depended on a combination of aerial photography and LiDAR survey. The longest stretch of the road is recorded on LiDAR images and shows a raised causeway through the eastern end of Paine's Wood, where it is now followed by the course of a woodland track. At the eastern edge of the woods, the route again meets the Old Arundel Road, which follows the presumed alignment of this Roman road into the outskirts of Arundel itself (ibid). The road crosses the Pink Route at a point c. 210 metres to the south west of Scotland Barn and intersecting with the Red Route at a point c.300 metres to the south of Park Farm. The road also appears to have been engineered over undulating ground, with causeways and slight cuttings.
- 9.42** Whether by accident or design, for much of its course the road closely follows a band of marine gravel and cobbles, remnants of a Quaternary raised beach deposit. Gravels quarried from this same marine deposit were used in the construction of Stane Street to the north and it is likely that the Chichester to Arundel road also exploited this source of aggregates. Extractive pits detected by LiDAR adjacent to the road east of Crocker Hill may represent contemporary quarrying for road construction or maintenance purposes.

- 9.43** Roman pottery and two pieces of roller-stamped flue tile (Die 86) (**MWS4504**) were found in the field south of Tortington Priory and 55 metres to the south of the Pink Route during field walking. The tile fragments found were the same type as those recorded at the Tarrant Street villa in Arundel. These finds may be indicative of a high status Roman building located somewhere just off the floodplain of the Arun which may extend into the Pink Route construction zone.
- 9.44** Other Roman assets recorded within the Study Area include a ditch containing probable 2<sup>nd</sup> century pottery that was found during road widening at Crossbush in 1977 (**MWS5715**), while the backfill of a pipe trench on the south side of the A27 in a field c. 370 metres to the south east revealed pottery sherds (**MWS6383**). Roman pottery (**MWS2700**) has also been recorded on a property boundary between the rear garden of 33 Kirdford Road and the rear gardens of houses built in c.1950 on Torton Hill Road, Arundel c. 300 metres to the south west of the Red Route where it would form a junction with the A284.
- 9.45** *Early Medieval Period (AD 410 – AD 1066)*
- 9.46** The period immediately following the Roman occupation (5<sup>th</sup> – 7<sup>th</sup> centuries AD) remains a problem for most of southern England due to a general lack of data. There is some evidence of Saxon cultural influences appearing in the area, although the extent to which the Roman estates, settlements and field systems remained in use is still unclear (Gardiner, 2007) and will depend on future discoveries and research. The histories of Gildas and Bede, both written centuries later and of questionable authority, describe various stories of invasion and conquest from the later 5th century onwards, however, it appears clear from the archaeological record that following the withdrawal of Roman authority from Britain in AD 410 the south coast began to be settled by groups from north west Europe, including the Saxons, Jutes and Angles. Those settling in Sussex were known as the South Saxons or the *suthsaexe*, from which the county derives its name (Welch, 1983). Sussex functioned as an independent kingdom up to the 9th century. However, following the Battle of Ellandun in 825 the South Saxons submitted to King Egbert of Wessex, although it is probable that Sussex was not fully annexed by Wessex until 827. Ethelbald of Wessex was crowned King of Sussex and the other south-eastern kingdoms in 858 (Edwards, 2004).

- 9.47** The town of Arundel (**MWS2689**), located immediately to the north east of the Red Route, has Saxon origins and it is recorded in the Domesday Survey of 1066 records that a 'castrum, church and mill' had existed here prior to the Norman invasion. This early settlement appears to have made use of the natural promontory above a meander in the course of the River Arun that effectively controls access along the river both inland and downstream to the sea. A possible pre-Conquest grave slab, apparently reused in the footings of the Norman Castle, may indicate the former existence of a late Saxon church nearby.
- 9.48** No early medieval archaeological assets have been recorded outside of Arundel and within the Study Area.
- 9.49** *Later medieval Period (1066 – 1550)*
- 9.50** The medieval town of Arundel was defended to the east by marshland and to the south by the River Arun, while an earthen wall was added on the north and west of the pre-existing defences in 1295 (**MWS3515**). It is probable that Arundel Castle (**1012500**), located c.550 metres to the north east of the Red route where it intersects with the A284, was erected immediately after the Norman Conquest of 1066. Arundel was represented as a borough or *vill* by its own jury in 1248 and from 1294 it was taxed as a borough. The town walls, linking the castle, St. Mary's Gate, and Water Gate, appear to have been erected in 1295 though a Bogerwerth gate, thought to have been situated in the outer defences, was mentioned in 1275. It may well be that the walls that were built in 1294 represent a reduction in the area covered by the town defences though this is by no means certain since earthworks may have predated the construction of the walls. A Dominican Friary (**MWS2695**) was founded in 1221 on the north side of Maltravers Street and a Leper Hospital, first mentioned in 1272, probably stood to the north of the town. The Priory of St. Nicolas, which may have been of late Saxon origin, was demolished and replaced by the College of Holy Trinity and the Church of St. Nicolas in 1380-81. The Hospital of the Holy Trinity (Maison Dieu **1005865**) was founded in 1395-96 and dissolved in 1532 at the time of the reformation.

- 9.51** Tortington Priory (**1021459**), located on a tongue of land above the floodplain on the west bank of the River Arun and immediately to the north of the Pink Route, was founded c. 1180 by Alicia de Corbet, a mistress of Henry I and a daughter of the d'Aubigny family who held the manor of Arundel. The priory was a cell of the Cathedral of Sees (Normandy) and dedicated to Mary Magdalene. It was a small Augustinian community consisting of a prior and four or five canons together with a cellarer, bailiff, novices and servants. For most of its history the record of the priory was one of decay, neglect and disorder (Johnston, 1904). The establishment was never large and its revenues were small, but as its benefactors increased the 'black canons', as the Augustinian monks were known, enjoyed a comfortable lifestyle. Tortington had a number of manors from which it collected rents. As one of its duties the priory was expected to involve itself in drainage and checking the regular overflow of the River Arun, and for this work Commissions of Sewers had been awarded at an early period in the priory's existence. The priory fell into a state of neglect and decay by the end of the 15th century and the Bishop of Chichester reprimanded the canons on their maintenance of the buildings, their dress, the way the accounts were kept and their pursuance of games and hunting. A medieval Deer Park (**MWS 2991**) is reported to have once existed between the Priory to the north and the village of Tortington to the south. In a visitation in 1527 it was reported that the priory church and brew house were in a ruinous condition. At the Act of Suppression of 1536 Tortington's income was c.£75. Its agricultural land was divided into two separate holdings; the area immediately adjacent to the priory (called Priory Farm), and Priory Manor. Excavations at Tortington Manor in 1909 (**EWS380**) exposed the foundations of the church and, south of it, those of numerous buildings including a gatehouse, various halls and chambers.
- 9.52** Priory Farmhouse (**1034405**) located on the southern edge of the Red Route, c.315 metres to the south east of its junction with the A284, incorporates the remains of the former Calcetto Priory. Queen Adelisa, the widow of Henry I, who married as her second husband William de Albini, Earl of Arundel, founded a small house here for Augustinian Canons at some time before 1151. It was dedicated to St Bartholomew and was known as the Priory de Calcetto or 'of the Causeway'. It was suppressed by Cardinal Wolsey in 1524. Strip lynchets (**MWS4224**) have been noted in the steep slope behind the priory, while a road leading south survives in the form of low ridges in the grass.

- 9.53** A medieval Deer Park is reported to have existed at Batworth (**MWS2992**) at the far eastern end of the Study Area c.390 metres to the north east of the Red Route. The park is mentioned in 1397 as being owned by the Earl of Arundel and is also shown on the first OS map of the area created in 1813 (not illustrated as no copy of this survives at West Sussex County Records Office).
- 9.54** The wider Study Area in the later medieval period was dominated by agricultural land made up of a mix between enclosed monastic estates, serving isolated farms and more traditional villages with open field systems. Many of these field systems may have their origins in the early medieval or possibly Roman periods, but there is no proof of a link at this time (Barber and Gardiner, 2007). Fragments of the medieval field patterns that once covered the Study Areas survive within current field boundaries. These are a mixture of village settlement cores, assarts of former woodland and the irregular piecemeal enclosure of land around villages that predated the post-medieval parliamentary enclosures. The Pink Route corridor crosses assart land immediately to the east of Priory Farm.
- 9.55** *Post-medieval Period (1550 – 1900)*
- 9.56** The Study area retained its largely agricultural character into the post-medieval era, with the major development coming in the 19<sup>th</sup> century with widespread enclosure of land. A large proportion of the area is covered by semi-ancient forest, together with modern mixed plantations that were established after World War II and which have been regenerated on more than one occasion over the past 70 years. These plantations have been established mainly over areas of former common land associated with earlier medieval field systems.
- 9.57** *Map Regression*
- The earliest map located within the Study Area is the Tortington Estate map of 1724 (Figure 7) which covers all land west of the River Arun as far as Goblestubbs Copse. The land immediately west of the Arun at this time is covered by a pattern of small enclosed fields which are crossed by the Pink Route, while the Red route generally follows the line of the old Chichester Road leading west out of Arundel. The Pink Route crosses a number of larger plots which appear to be assarts of former woodland, before crossing Tortington Common. The route then passes over two small plots of woodland (now called Pinewoods and Scotland Barn) together with a number of open fields, before crossing the northern end of Paine's Wood.

- 9.58** The Leominster Map of 1808 (Figure 8) shows a very similar field pattern at the far eastern end of the Study area around Crossbush to that seen today. The exception to this is the presence of Badworth Park (**MWS2992**), the remnants of the medieval deer park.
- 9.59** The Study Area is covered by the mid-19<sup>th</sup> century Parish Tithe Maps of Arundel (published 1841), Leominster (1837), Tortington (1840) and Binsted (1838), (Figures 9a-b). The eastern end of the two route options cross the Arundel and Leominster maps which show very similar field layouts to those noted on the Leominster map of 1808. These are made up of small enclosures covering both the floodplain of the Arun and the chalk uplands. On the western side of the Arun, the Tortington map shows a similar field layout along the Pink Route to that noted on the estate map of 1742, although many of the fields have since been amalgamated into slightly larger plots. By 1840 Tortington Common has been covered with woodland, while the smaller woods noted at the north western end of the Pink Route in the mid-18<sup>th</sup> century have since become amalgamated into one large area, similar to that seen today, which encompasses the western end of the Tortington map and the eastern end of the Binsted map.
- 9.60** The field patterns on either side of the Arun and the size of the woodlands to the west are largely unchanged by the time of the publication of the First Edition Ordnance Survey map of the area in 1871 (Figure 10a-b) and remains largely unchanged by the publication of the Second Edition in 1899 (not illustrated).
- 9.61** Arundel (**MWS2689**) was defended during the Civil War (1642-49) and it is possibly to this period that the earthworks and apparent tower foundations on the north side of Castle Park may be attributed. The town walls were subsequently demolished in 1659. The northern course of the Arun was probably embanked in the sixteenth century and the first bridge was built in 1509. The present town bridge was erected in 1724 and was widened in 1830-31. Encroachments onto the High Street in the 1760s led to the clearing of buildings from the Market Square in 1773 and the Paving, Lighting and Cleansing Act of 1785 resulted in the production of a plan of the town which shows the extent of the developed area. Major alterations soon followed in attempts to enlarge and improve the castle grounds. A new gateway was built in 1809 following the re-alignment of the main road to London in 1803. A new wall was built in 1833 around the newly-acquired extension to the Castle Grounds. In 1876 the Roman Catholic Cathedral of St. Phillip Howard (**MWS8214**) was completed and in 1892 Mill Road was re-aligned further east to enable the Castle Grounds to be completely closed to the general public



- 9.62** The remains of Oil-Cake windmill (**MWS2983**) are shown to the south east of Arundel by the OS in 1877, 140 metres to the south of the Red Route and 230 metres to the north of the Pink Route. The mill is also shown on views of 1842 and 1846 in editions of the Sussex County Magazine (12:264-5& 13:318). When the fields south east of Arundel are flooded a slightly raised track can be seen leading from a gate on the causeway to this point. Presumably it this trackway that served the mill. A second windmill site (**MWS2985**) has been identified to the south east of Arundel on the south bank of the Arun c.130 metres to the north of the Red Route where it intersects with The Causeway.
- 9.63** Brick kiln copse (**MWS4692**), 480 metres to the south west of the western end of the Pink Route, was listed on the tithe award of 1838 while a second brick kiln (**MWS4693**) was listed on a survey of 1825. This is located within the Pink Route c. 50 metres from its western end. Three brickyards dating from the first part of the 19<sup>th</sup> century (**MWS4696** **MWS5681** and **MWS4743**) were located 130 metres to the north west and 120 metres to the south east of the western end of the Red Route and at Park Farm, c. 390 metres to the north of the Red Route, respectively.
- 9.64** Crossbush/Lyminster Barracks (**MWS6746**), located c.420 metres to the north east of the eastern end of the Red Route, and dating from the Napoleonic wars (1793-1815) was 'ordered and ready to build' in 1794. Burial registers for the site ended in 1813 (Hudson, 1986).
- 9.65** The remains of a late-19<sup>th</sup> century Outfarm (**MWS12759-66** and **MWS12892**) have been identified on the floodplain of the Arun, 100 metres to the south west of the Red Route and 420 metres to the north of the Pink Route.
- 9.66** *Modern Period (1900 – Present)*
- 9.67** The Study area continued to be dominated by agricultural land with scattered villages with the gradual encroachment of urban expansion from Arundel to the north east.
- 9.68** *Map Regression*
- The Study Area is covered by the Ordnance Survey maps published in 1914, 1938, 1946, 1950 and 1961 (not illustrated). All of these maps show little change from the field patterns and woodland sizes noted in the mid-19<sup>th</sup> century, with some amalgamation of fields.

- 9.69** Aerial photographs of the area have shown that the woodland in the western half of the Study Area has been harvested and replanted on a number of occasions. The area around the later prehistoric earthworks at Goblestubbs Copse are shown to have been recently removed on a photograph taken on 15<sup>th</sup> May 1973 (OS/73179/128), while the central third of the woodlands including Binsted Woods and a section of Pinewood, are seen as harvested on a photograph taken on 1<sup>st</sup> April 1965 (MAL65021/178).
- 9.70** The town of Arundel expanded south westwards towards Priory Farm and Stewards Copse in the post-World War II period. The A27 around the town was the subject of a number of improvements in the later 20<sup>th</sup> century. A1 by-pass road was constructed between 1973 and 1974 that crosses the Arun floodplain to the south of the town and the river itself immediately to the south west 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.
- 9.71 Aerial Photographs**
- 9.72** Aerial photographs taken within the Study Area were examined at the National Monuments Record (NMR), Swindon on 30<sup>th</sup> March 2017. The majority of the 456 prints consulted either showed no archaeological features or revealed features previously recorded by the WSHR. A number of prints however revealed new data.
- 9.73** A series of four parallel lines of potentially ancient origin were noted on an oblique photograph taken on 19<sup>th</sup> June 2001 (NMR21237/06). These are located c.400 metres to the west of Priory Farm. Two of these linear features are likely to be crossed by the Pink Route immediately to the south of the woodland at Tortington Common. A second oblique photograph taken on the same day as the first (NMR21179/23) shows a series of nine parallel features located within an arable field immediately to the north west of Priory Farm c./ 330 metres to the north of the Pink Route. These features run square to the existing field boundaries and may well be modern in origin.

- 9.74** Cropmarks which may represent a number of enclosures were noted in a field immediately to the east of Priory Farm on an oblique photograph taken on 19<sup>th</sup> June 2001 (NMR21179/25). At least three enclosures could be discerned and all appeared to be ovoid in shape. At this time there is insufficient evidence to suggest a date of origin for these features which are located c. 360 metres to the north of the Pink Route.

## **10 Cultural Heritage Baseline (Land north of Worthing)**

### **10.1 Designated Heritage Assets**

- 10.2** No Scheduled Monuments, Registered Parks and Gardens or Registered Battlefields are recorded within the Study Area.

- 10.3** A total of four Listed Buildings (**1027847**, **1027849**, **1027850** and **1353748**) have been recorded within the Study Area (Figure 2). All of these buildings are of Grade II quality.

- 10.4** None of these buildings are located within the proposed route corridor of either route option and none will be materially impacted by the proposed development. The possible impact of the development upon the settings of and views from these buildings will be summarised in Section 10.

### **10.5 Previous Archaeological work (Figure 6)**

Two archaeological investigations have been carried out within the Study Area throughout the 20<sup>th</sup> century and into the early 21<sup>st</sup>. An archaeological evaluation and later excavation (**EWS1091** and **1501**) were undertaken on the former playing fields south of the Boundstone Community College, 420 metres to the south east of the Site. The excavation encountered archaeological finds and remains of Mesolithic, Neolithic, Bronze Age, Iron Age and Roman date. The evaluation also recorded 18<sup>th</sup>, 19<sup>th</sup> and 20<sup>th</sup> century activity which was largely in the form of residual finds in the topsoil. A working hollow thought to be of Early Neolithic or Late Bronze Age date was recorded during the excavation however the majority of the evidence found pointed to activity taking place during the Late Bronze Age or Early Iron Age.

### **10.6 Conservation Areas (Figure 4)**

No Conservation Areas have been designated within the Study Area at the time of writing.

## **10.7 Undesignated Heritage Assets by Period (Figure 4)**

### **10.8** *Palaeolithic (500,000BP – 8,000BC)*

**10.9** The Palaeolithic encompasses a vast period of time in which the Study Area has been subject to dramatic climate changes as well as development in the morphology of the landscape. Studies of the Palaeolithic in southern England have focused in the past on the raised beach deposits in West Sussex where internationally important evidence of activity have been preserved in the sand deposits of earlier coastlines.

**10.10** No assets dating from this period have been recorded within the Study Area.

### **10.11** *Mesolithic (8,000BC – 4,000BC)*

The Mesolithic period sees the gradual re settlement of Britain following the end of the last Ice age c. 10,000 BC. This was characterised by a hunter-gatherer society with no permanent settlements, although rare examples of temporary encampments have been recorded. Worked flints dating from the Mesolithic were recorded during the excavations at Boundstone Community College (**EWS 1091**) c. 400 metres to the south east of the Site.

### **10.12** *Neolithic (4,000 BC – 2,200BC)*

**10.13** The Neolithic period sees the introduction of agriculture to Britain, although this appears to have been a gradual process. The first permanent settlements established while the archaeological record suggests a continuation of hunter gathering in some places alongside the new farms. A working hollow thought to be of Early Neolithic or Late Bronze Age in date was recorded during the excavations at Boundstone Community College (**EWS1091**).

### **10.14** *Bronze Age (2,200BC – 700BC)*

**10.15** This period sees the expansion of agriculture across southern Britain and the establishment of many more permanent settlements with accompanying roadways and field systems. Evidence for Late Bronze Age (2,200 – 1,600BC) settlement has also been recorded during the excavations at Boundstone Community College.

#### 10.16 *Iron Age (700 BC – AD43)*

The Iron Age saw an expansion of agricultural field systems and the enlargement of settlements across the county. Late Iron Age (100BC – AD43) settlement evidence was recorded at Boundstone Community College while a fragment of Iron Age 'A' pottery (**MWS286**) was found in North Lancing, Sompting, during the 1930's, c.35 metres to the north east of the eastern end of the scheme. This pottery allegedly all came from the now worked out gravel deposits opposite Halewick Farm. Evidence for the actual discovery is scant. There is no further evidence at Worthing Museum and the gravel pit area is now built over by houses along Halewick Way.

#### 10.17 *Roman (AD 43 – AD410)*

10.18 Following the invasion of AD43, southern England appears to have become rapidly assimilated into Roman culture and so finds of Roman structures and material are fairly common. Sherds of pottery (**MWS1085**) were reportedly found during mineral extraction opposite Halewick Farm c. 35 metres to the east of the scheme. Several examples of Romano-British 1st century AD ware were recorded, one fragment of 3rd century colour coated pottery and several pieces of a very large floor or oven tile (which could be RB or later). A Romano-British lamp (**MWS283**), with a figure of a sphinx, was found in the garden of a house in 1970 on Sedbury Road, Sompting c. 370 metres to the north of the scheme. However, the soil in which this item was found is thought to have been imported from elsewhere in the modern period.

#### 10.19 *Early Medieval (AD410 –AD1066)*

The immediate post-Roman period in southern England is poorly understood in general although it is clear that the county became a Saxon Kingdom that was eventually subsumed by Wessex. A pagan Saxon *buckleurn* and a possible Early Anglo-Saxon cremation (**MWS 5616**) were reportedly found within a former quarry at Halewick Farm, c.35 metres to the east of the scheme in the early 1960s, although firm evidence for this find is not available.

#### 10.20 *Medieval (1066-1550)*

Three fragments of medieval pottery (**MWS287**) were found within the former quarry at Halewick Farm c. 35 metres to the east of the Scheme in the 1930s.

**10.21** *Post-Medieval (1550 –1900)*

**10.22** Halewick Farm, Sompting, (**MWS11052**) c.200 metres to the north of the scheme, has been identified as a Historic Farmstead through the 'Historic Farmsteads and Landscape Character in West Sussex' Project. The farm is an 18th century three-sided loose courtyard farmstead with a detached farmhouse set side on to the yard. It is in an isolated location and is extant with no apparent alterations.

**10.23** *Map Regression*

**10.24** The earliest map of the Study Area is the Sompting Tithe Map that was published in 1839 (Figure 11). This shows the site as being located within a 'ladder' field system of possibly medieval (possibly earlier) origin. Halewick Farm is shown to the north of the site with the hamlets of Sompting Abbots and Cokeham to the west and south respectively.

**10.25** *Modern (1900-Present)*

**10.26** The 20<sup>th</sup> century saw the area develop from being largely agricultural in nature to being a semi-urban landscape, with a short intervening period of small scale mineral extraction and market gardening. This urban expansion began in the early decades of the 20<sup>th</sup> century, but expanded rapidly after World War II with the post-war housing boom and the growth of Worthing to the south. The site itself remained as an arable field through this period, although aerial photographic evidence from the mid-20<sup>th</sup> century shows that this field was subdivided into a number of north-south aligned strips for a number of decades.

### **10.27 Map Regression**

**10.28** The Second Edition Ordnance Survey map of the area, published in 1899, is the earliest available OS map of the area (Figure 12). By this time a small scale quarry is shown immediately to north-west of the site. The block of land immediately to the south of the site, bordered on each side by Halewick Lane and Dunkton Lane, had been partially in-filled since 1839 with green houses and market garden plots. Little had changed in the area by the publication of the 1914 OS edition (not illustrated). By the publication of the 1931 Edition (Figure 13) small quarries had been established immediately to the east of the site and at Busticle Cottages c.250 metres to the south, while the remaining part of the land block immediately to the south of the site had been covered by new housing (Millfield Cottages). The OS map of 1947 (Figure 14) shows new blocks of housing to the north of Halewick Farm to the north of the site and along Halewick Lane to the east, with a large block now located to the east of Busticle Lane, to the south east. The 1961 OS Edition (not illustrated) shows new housing under construction along the newly constructed Meadowview Road to the north east of the site.

### **10.29 Aerial Photographs**

**10.30** Aerial photographs taken within the Study Area were examined at the National Monuments Record (NMR), Swindon on 30th March 2017. The majority of the 148 prints consulted either showed no archaeological features or revealed features previously recorded by the WSHR. One photograph (MAL/73005/57) taken in February 1973 showed some linear cropmarks immediately to the north of the Study Area on the edge of the chalk downs, which may represent ancient field systems.

## **11 Summary of Cultural Heritage Potential (Arundel Bypass)**

- There is the potential to encounter raised beach deposits containing internationally important Palaeolithic deposits along the majority of the Pink Route and along the easternmost 700 metres of the Red Route. Particular attention should be paid to the eastern end of the Pink Route where it passes close to the two former Priors on either side of the Arun valley where these deposits may be close to the surface.
- There is the potential to encounter multi-period archaeological activity from the prehistoric and Roman periods along the entirety of the Pink Route, with a particularly sensitive area within the woodland at the western end of the scheme where the route of a Roman road has recently been identified. The presence of this road also means there is potential for small scale settlement

activity and even burials, along the route. There is also potential for these woods to contain hitherto unsuspected earthworks, similar to those recorded in Goblestubbs Copse to the north west of the scheme.

- There is potential for the remains of a high status Roman building to exist in and around the site of Tortington Manor, which may be impacted by the Pink Route.
- There is potential to encounter multi-period archaeological activity within the floodplain of the river Arun where it is crossed by the Pink Route. Such material would likely to be buried below substantial alluvial deposits.
- There is potential encounter multi-period archaeological activity from the prehistoric and Roman periods along the Red Route immediately to the west of Park Farm where the proposed carriageway would impact upon current open fields that may contain as yet unrecorded elements of prehistoric/Roman coaxial field systems that are known to exist to the north of the road from aerial photographic evidence.
- The Red Route crosses a known Roman site (**MWS5715**) c.250 metres from its eastern end. There is potential here for further features that may be associated either with agricultural or settlement activity.
- The Pink Route passes within 30 metres of the site of the former Tortington Priory, a Scheduled Monument (**1021459**). It is possible that as yet unrecorded structures and features that were associated with the Priory may extend south and be impacted by the proposed development.
- The Red Route passes next to the former Calcetto Priory site (**MWS9625**). It is possible that as yet unrecorded structures and features that were associated with the Priory may extend to the south and be impacted by the proposed development.
- Both the Pink and Red Routes route cross a number of field boundaries that appear to be medieval in origin.
- The Pink Route crosses the line of the former medieval Chichester road leading out from Arundel, which is now covered by semi-ancient and modern plantation woodland.
- There is potential for multi-period (early medieval, medieval, post-medieval) archaeological features and deposits to be exposed during development on the Red Route where it intersects with the A284 at what was the western entrance to the medieval town of Arundel.
- The Pink Route crosses a number of linear features identified from aerial photographs, to the north west of Tortington Priory. These features are currently undated and of unknown character.



## **12 Summary of Cultural Heritage Potential (Land North of Worthing)**

- There is good potential encounter multi-period archaeological activity from the prehistoric and Roman periods. This is due to the fact that traces of prehistoric and Roman activity have been identified immediately to the east of the site, while multi-period prehistoric activity has been recorded less than 500 metres to the south east. Aerial photographic evidence has also identified potential prehistoric field systems to the north of the Study Area, which may have shaped the field systems within which the site is located.
- There is small potential to encounter medieval activity in the area, either associated with Halewick Farm to the north of the site or from possible settlement immediately to the east that may have been recorded during early 20<sup>th</sup> century quarrying activity.

## **13 Impact of Development**

### **13.1 Limitations of Data**

**13.2** At the time of writing scale plans and long sections of the Red and Pink Routes have not been made available to Hampshire Services. The outline plans that have been supplied by SDNPA have been used therefore in this section as the basis for a series of estimations as to how development would be likely to impact upon as yet unrecorded archaeological features and/or deposits. These estimations may vary considerably from the final proposals when they are presented for scrutiny.

### **13.3 Construction Methodology**

**13.4** In the absence of available development plans and long sections, it is assumed that the development will involve the creation of new interchanges and new link roads as well as the main carriageway. This will require substantial ground penetration with the creation of cuttings, embankments and a bridge across the River Arun if the Pink Route is chosen, together with the construction of drains and service trenches. It is assumed from other phases of A27 improvements that have been studied in the past that ground disturbance along the carriageway will be at around 1-2 metres, with disturbance within junctions up to c.10 metres below current ground level and cuttings for the main carriageways c. 5 metres in depth and with drains and services also up to 5 metres in depth. The construction of a bridge across the Arun if the Pink route is selected could involve the construction of piers that would penetrate far into the alluvial deposits of the floodplain, possibly disturbing archaeological material of great antiquity.

**13.5** All of these depths would be enough to impact upon any as yet unrecorded archaeological features and/or deposits and could also impact upon any Raised Beach deposits.

### **13.6 Impact on the SDNP**

**13.7** The construction of either Arundel by-pass route will have a direct impact upon the SDNP located within the woodland at the western end of the Pink Route and the former park land on either side of Long Lane at the western end of the Red Route.

**13.8** The proposed link road to the north of Worthing is located wholly within the southern boundary of the SDNP and would have some limited direct impact upon the Park.

### **13.9 Impact on Scheduled Monuments**

**13.10** The precise level of impacts on Scheduled Monuments along the Arundel by-pass will be determined by a separate report prepared by Nexus Heritage. This section simply highlights potential for impact at this conceptual stage.

**13.11** The Red Route may impact upon the settings of Arundel Castle and Maison Dieu (SMs **1005865** and **1012500**), although the distance between the corridors and these features, together with limited lines of sight between the two means that this impact would be likely to be limited.

**13.12** The Pink Route would be likely impact upon the setting of Tortington Priory (SM **1021459**). A more detailed assessment would be required to fully assess the precise level of impact.

### **13.13 Impact on Built Heritage**

**13.14** The precise level of impacts on Built Heritage along the Arundel by-pass will be determined by a separate report prepared by Nexus Heritage. This section simply highlights potential for impact at this conceptual stage.

**13.15** The Pink route may impact upon the setting of and views from Tortington Priory Barn, a grade II\* Listed Building (**1221996**). It may also impact upon the settings of multiple Listed Buildings located within the town of Arundel where the route crosses the floodplain of the River Arun.

**13.16** The Red route may have an impact upon the settings of and views from multiple Listed Buildings located within the town of Arundel, particularly the route section between Crossbush and Arundel railway station that overlooks the town. It is also likely to impact the setting of and views from the Camellia Hotel (**1027602**) at the eastern end of the route.

**13.17** The construction of the new link road to the north of Worthing may impact upon the settings of and views from Halewick Farmhouse (**1353748**) and its associated Barn (**1027847**), both Grade II Listed Buildings.

### **13.18 Impact upon Registered Parks and Gardens**

**13.19** The Red route may have an impact upon the settings of and views from the Grade II\* Registered Park and Garden (RPG) of Arundel Castle (**1000170**), particularly the route section between Crossbush and Arundel railway station that overlooks the town. This RPG is also recorded on the Sussex Gardens Trust website (no.148).

**13.20** The construction of the Pink Route may also impact upon the setting of the Tortington Manor Gardens which are recorded on the Sussex Gardens Trust website (no. 5333). These gardens date from the late 17<sup>th</sup> century and surround the site of the former Manor House.

**13.21** The construction of the link road to the north of Worthing would be unlikely to impact upon the gardens at Sompting Abbots which is listed on the Sussex Gardens Trust website c. 500 metres to the west.

### **13.22 Impact on Conservation Areas**

**13.23** It is possible that the Red and Pink Routes would impact upon the setting of the Arundel Conservation Area. These issues will be considered in a separate report prepared by Nexus Heritage.

### **13.24 Impact on Archaeology**

**13.25** Both the Red and Pink Routes may impact upon Raised Beach deposits that could include deposits dating from the Lower Palaeolithic period. If such deposits were encountered, they would be likely to be of international importance.

**13.26** The Red Route is likely to impact the previously recorded Roman site (**MWS5715**) located c.100 metres to the west of the Convent of Poor Clares at Crossbush at the eastern end of the scheme. The route then descends from the chalk upland onto the floodplain of the River Arun, clipping the site of the former Calcetto Augustinian Priory (**MWS6925**), close to Arundel Station. The route then crosses the floodplain of the Arun up to Mill House Farm which is low in potential for archaeological finds close to the surface, although early prehistoric features and finds may be sealed below alluvial deposits. The route then follows the existing causeway built for the first Arundel by-pass in 1973 where archaeological potential is neutral. After crossing the Arun there is an interchange with the A284, which, while located close to the south west gate of the medieval town with all the archaeological potential that entails, might have been heavily impacted by previous road building in the mid-1970s. The route then climbs through The Waterwoods which are of as yet unknown archaeological potential and then, following the chalk ridge, passes to the south of Park Farm and a series of fields containing surviving ridge and furrow cultivation which may be of medieval origin. The Red Route terminates to the north of Scotland Barn c.290 metres to the south of a known late prehistoric enclosure and immediately to the south of a coaxial field system that may be of similar date. Elements from this field system may well be impacted by the widening of the carriageway at this point.

- 13.27** The far eastern end of The Pink Route crosses a point where Romano-British pottery was found during ground investigations in 1994 (**MWS3870**). There is potential here for development to impact upon as yet unrecorded archaeological features dating from the 1<sup>st</sup>-4<sup>th</sup> Centuries AD. The route then drops down off the chalk upland and onto the floodplain of the Arun, crossing the river itself c.400 metres to the south east of Tortington Priory. This floodplain is considered low in potential for archaeological finds close to the surface, although early prehistoric features and finds may be sealed below alluvial deposits. These archaeological deposits could be of great antiquity (dating back through prehistory to the Lower Palaeolithic) and may well be exposed if the construction of bridge piers requires the excavation of deep foundation pits within the floodplain deposits. The route passes c.30 metres to the south of Tortington Priory and 55 metres to the north of a findspot of Romano-British pottery, suggesting that the area may have been settled prior to as well as during the medieval period and that construction may well impact upon as yet unrecorded archaeological features and deposits at this point. The route then turns north west, crossing the undated linear cropmarks noted on aerial photographs and then across a number of fields of assart (former ancient woodland) with as yet unresolved archaeological potential, before crossing the mix of modern plantation and semi ancient woodland that cover the final third of the route. The route crosses the projected line of the former Chichester to Brighton Roman road that has been recently identified by LiDAR surveys to the south of Scotland Barn where development will certainly impact the structure of this road and any accompanying roadside settlement activity or former field systems. This is an area of high archaeological potential. The route then crosses a pasture field that may contain elements of the prehistoric coaxial field system known to exist to the north of the current A27 before crossing the northern end of the semi-ancient forest of Paine's Wood before re joining the carriageway where it may impact upon the site of a former post-medieval brick kiln (**MWS4693**).
- 13.28** The proposed junction located to the north of Worthing may impact upon as yet unrecorded activity dating from the later prehistoric, Roman and medieval periods. This potential is based upon finds recorded during quarrying immediately to the east of the site in the early 20<sup>th</sup> century (**MWS286, 283, 1085 and 287**).

### **13.29 Impact on Historic Landscape**

**13.30** Both the Red and Pink routes cross a landscape that is a mixture of amalgamated informal enclosure dating from the post-medieval, together with small patches of assart, semi-ancient woodland and areas of replanted modern plantation. The amalgamated nature of these field systems means that most of the current field boundaries on either side of the Arun and the drains that criss-cross the floodplain are at least 18<sup>th</sup> century in origin. The boundaries within the woodland are harder to define from the existing cartographic record and so it is unclear as to which are pre 1850 in date. However, the current boundary between Paine's Wood and Pinewoods does appear align with the edge of Paine's Wood as depicted on the Tortington Estate Map of 1742. This boundary is crossed by the Pink Route at its far western end. Any field boundaries that can be shown to predate the parliamentary enclosure acts of the early 19<sup>th</sup> century are therefore deemed to be 'important' under the Hedgerow Regulations of 1997 and will require recording prior to development if they are likely to be impacted by construction.

## **14 Mitigation**

### **14.1 Undesignated Archaeology**

**14.2** The impact of the proposed development on undesignated archaeology along the Red and Pink Routes of Arundel by-pass and at the proposed junction to the north of Worthing, would be high and extensive across a landscape with good archaeological potential. It is therefore recommended that any archaeological remains likely to be encountered by either the Red or Pink Routes should be recognised at an early stage and recorded. This could be managed by a programme of archaeological field investigation to be carried out in advance of construction. If carried out to the standards and guidance of the Chartered Institute for Archaeologists (CIfA), then this programme will mitigate the considerable impact of the proposed development upon the cultural heritage resource.

**14.3** Each phase of fieldwork should be proceeded by a Written Scheme of Investigation (WSI) that sets out the proposed methodology by which the work should be carried out and followed by a detailed report on the results. Each of these WSIs and reports should be prepared in accordance with the standards and guidance of the Chartered Institute for Archaeologists (CIfA). The suggest stages of fieldwork are:

- A programme of archaeological fieldwalking should be carried out within all open arable fields along the Red and Pink Routes as well as the proposed junction north of Worthing. This programme will enable the identification of concentrations of archaeological material at current ground level, particularly scatters of Mesolithic and Neolithic flints as well as pottery scatters which may indicate the presence of previously unrecorded later prehistoric, Roman and medieval settlement activity. Fieldwalking will require fields to be in a ploughed (but not harrowed) condition. This would normally limit activity to autumn and spring.
- A programme of geo-archaeological investigations should be conducted along the entirety of the Pink Route and sections of the Red Route covering currently open land in order to ascertain the depth, extent and nature of raised beach deposits within both route corridors as well as floodplain deposits on either side of the proposed crossing of the Arun along the Pink Route. These investigations should take the form of a series of geotechnical pits to be excavated at intervals along the routes with the excavation of each pit to be monitored and recorded by a suitably qualified geo-archaeologist. The aim of this test pitting should be to try an identify deposits of Palaeolithic activity similar in nature to those recorded at Boxgrove quarry to the west of the scheme.
- A Programme of geophysical surveys should be conducted along the length of the Pink Route and sections of the Red Route not already built over, as well as the proposed junction to the north of Worthing. These surveys should aim to identify potential archaeological features along the two routes and to guide future field investigations.
- A programme of archaeological trial trenching should be conducted along the length of the Pink Route, those parts of the Red Route not built upon and the proposed junction to the north of Worthing. These trial trenches should aim to sample at least 4% of the total land take area of the schemes and should be no more than 30 metres in length in order to provide sufficient frequency of cover across the route corridors

and the proposed junction. Trial trenching should be targeted on any potential features identified by the earlier geophysical survey but should also investigate and 'blank' areas where the geophysics has not returned any results.

- Following the completion of these initial stages an archaeological mitigation statement should be produced that summarises the results of all stages, identifies areas of particular archaeological potential and sets out a programme of detailed archaeological excavation of these areas prior to the commencement of construction. The statement should also set out a programme of public engagement with any archaeological excavations that would be located within the SDNP itself. The statement should also include details on the production of a final report for academic publication on the results of the entire programme within an approved county or national journal. It should also make provision for the deposition of all archaeological archives and finds with the appropriate local museums. The statement will also set out how all archaeological archives carried out within the SDNP itself will be placed within a publically accessible location.

#### **14.4 Setting Issues**

##### **14.5** *Arundel Bypass*

##### **14.6** The proposed development is likely to impact upon the settings of and views of:

- The Pink route may impact upon the setting of and views from Tortington Priory Barn, a grade II\* Listed Building (**1221996**). It may also impact upon the settings of multiple Listed Buildings located within the town of Arundel where the route crosses the floodplain of the River Arun.
- The Red route may have an impact upon the settings of and views from multiple Listed Buildings located within the town of Arundel, particularly the route section between Crossbush and Arundel railway station that overlooks the town. It is also likely to impact the setting of and views from the Camelia Hotel (**1027602**) at the eastern end of the route.
- The Arundel Conservation Area.

##### **14.7** *Land North of Worthing*

- The construction of the new link road to the north of Worthing may impact upon the settings of and views from Halewick Farmhouse (**1353748**) and its associated Barn (**1027847**), both Grade II Listed Buildings



- 14.8** It has been beyond the parameters of this assessment to study these impacts in detail. A more detailed report on these aspects will be carried out and a report prepared by Nexus Heritage.

## **15 Conclusions**

- 15.1** This assessment has studied the cultural heritage resource within 500 metre wide study areas along two sections of proposed road improvements to the A27 Trunk Road. These sections are the Pink and Red Routes of the proposed Arundel By-pass and a proposed new junction located to the north of Worthing.
- 15.2** The assessment has concluded 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 former park land to the west of Park Farm.
- 15.3** 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. Both 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 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.

- 15.4** The assessment also concluded that the proposed junction to the north of Worthing was located in an area of good archaeological potential with evidence for later prehistoric, Roman and medieval activity immediately to the east of the site, with further evidence for prehistoric settlement c.500 metres to the south east and cropmarks indicating prehistoric field systems c. 500 metres to the north. Although no assets have been recorded within the proposed site itself, it is considered possible that as yet unrecorded features dating from the later prehistoric and roman periods may survive here.
- 15.5** 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. Photographs also identified a possible prehistoric field system to the north of the site at Worthing.
- 15.6** 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. This will be addressed by a report to be prepared by Nexus Heritage.
- 15.7** 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.
- 15.8** 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.

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*Notes on the South East Research Framework public seminar on the Upper Palaeolithic and Mesolithic periods (13/10/07); Chair: Pope, M.*