highways england

A303 Amesbury to Berwick Down

TR010025

Volume 6.0

Environmental Statement

Non-Technical Summary

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

October 2018

A303 Amesbury to Berwick Down

Highways England proposes to improve the A303 past Stonehenge by providing a dual two-lane carriageway between Amesbury and Berwick Down in Wiltshire (the Scheme). The Scheme would help unlock economic growth in the South West by improving journey reliability, increasing safety and improving connectivity with neighbouring regions, while protecting and enhancing the environment.

This proposal is a "Nationally Significant Infrastructure Project" under the Planning Act 2008, which means that permission is required to build and operate the Scheme. The permission is called a Development Consent Order (DCO). The DCO application will be examined by the Planning Inspectorate which will report its findings to the Secretary of State for Transport to aid decision making.

An Environmental Statement (ES) has been prepared to accompany the DCO Application which sets out: a description of the Scheme and the reasonable alternatives considered in the development of the design, the environmental setting, the likely significant effects of the Scheme on local communities and the environment, and the measures proposed to mitigate these effects. This document provides a summary of the ES in non-technical language.

Need for the scheme

The A303/A358 corridor is a vital connection between the South West and the South East. While most of the road is now dual carriageway, there are still over 35 miles (56km) of single carriageway. These sections act as bottlenecks for users of the route resulting in congestion, particularly in the summer months and at weekends. This causes delays to traffic travelling between the M3 in the South East and the M5 in the South West and increases the risk of accidents.

The A303 Amesbury to Berwick Down Scheme is part of a wider package of proposals for the A303/ A30 / A358 corridor designed to transform connectivity to and from the South West by creating a high-quality dual-carriageway along the corridor. The A303 / A30 / A358 Corridor improvements were identified in the 2016-2021 National Infrastructure Delivery Plan as one of the country's top five projects or programmes within the road sector.

The existing A303 passes through the Stonehenge section of the Stonehenge, Avebury and Associated Sites World Heritage Site (the WHS), passing approximately 165 metres from the Stonehenge monument itself. The WHS comprises two distinct components – Avebury is the northern component and Stonehenge is the southern component. The Scheme crosses the Stonehenge component only and all subsequent references to "the WHS" in this NTS refer to the Stonehenge component.

Objectives

The Scheme has four key objectives:

- **Transport:** To create a high quality reliable route between the South East and the South West that meets the future needs of traffic.
- **Economic growth:** To enable growth in jobs and housing by providing a free-flowing and reliable connection between the South East and the South West.
- **Cultural heritage:** To help conserve and enhance the World Heritage Site and to make it easier to reach and explore.
- **Environment and community:** To improve biodiversity and provide a positive legacy for nearby communities.

The applicant

Highways England is the Strategic Highways Company as defined in the Infrastructure Act 2015, and is charged with modernising and maintaining England's strategic road network, as well as running the network and keeping traffic moving. Highways England is the applicant under the Planning Act 2008.

Description of the Scheme

Environmental context

The Scheme would be located mostly within open, rolling countryside. At the western end the landform is elevated and undulating, before falling eastwards to a series of valleys including the River Till valley. The undulating landform then rises eastwards towards the A360 and the WHS. The landform in the WHS is gently undulating before falling across the eastern part of the WHS to Amesbury and the River Avon. Land use in the area is predominantly agricultural, with tourism in the WHS and military uses to the north and east.

At the western end, the Scheme would pass just to the south of the Parsonage Down Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR) and to the north of the village of Winterbourne Stoke, crossing the River Till which is a SSSI and part of the River Avon Special Area of Conservation (SAC). It would then pass through the WHS. Located within the WHS and to the south of the Scheme is the Normanton Down RSPB Reserve. At the eastern end, the Scheme would mostly follow the line of the existing A303, passing to the north of the historic town of Amesbury and across the River Avon which is also a SSSI and SAC.

The Scheme

Summary description

The Scheme objectives would be achieved by providing a high quality, two-lane dual carriageway on the A303 trunk road between Amesbury and Berwick Down in Wiltshire. The Scheme would resolve traffic problems and, at the same time, protect and enhance the WHS. The Scheme would be approximately 8 miles (13km) long and comprise the following key components:

- A northern bypass of Winterbourne Stoke with a viaduct over the River Till valley;
- A new junction between the A303 and A360 to the west of and outside the WHS, replacing the existing Longbarrow roundabout;
- A twin-bore tunnel approximately 2 miles (3.3km) long, past Stonehenge; and
- A new junction between the A303 and A345 at the existing Countess roundabout.

These features are illustrated on the Scheme Environmental Masterplan presented in the centre of this document.

Measures to avoid, prevent or reduce significant effects

The Scheme includes a range of measures that have been developed to avoid, prevent, reduce or offset potential significant adverse environmental effects including, but not limited to, the following:

- Development of a design that avoids sensitive sites wherever reasonably practicable, and minimises landtake within the WHS;
- The provision of bunds and sympathetic regrading of earthworks and false cuttings for integration with the existing natural rolling landform;

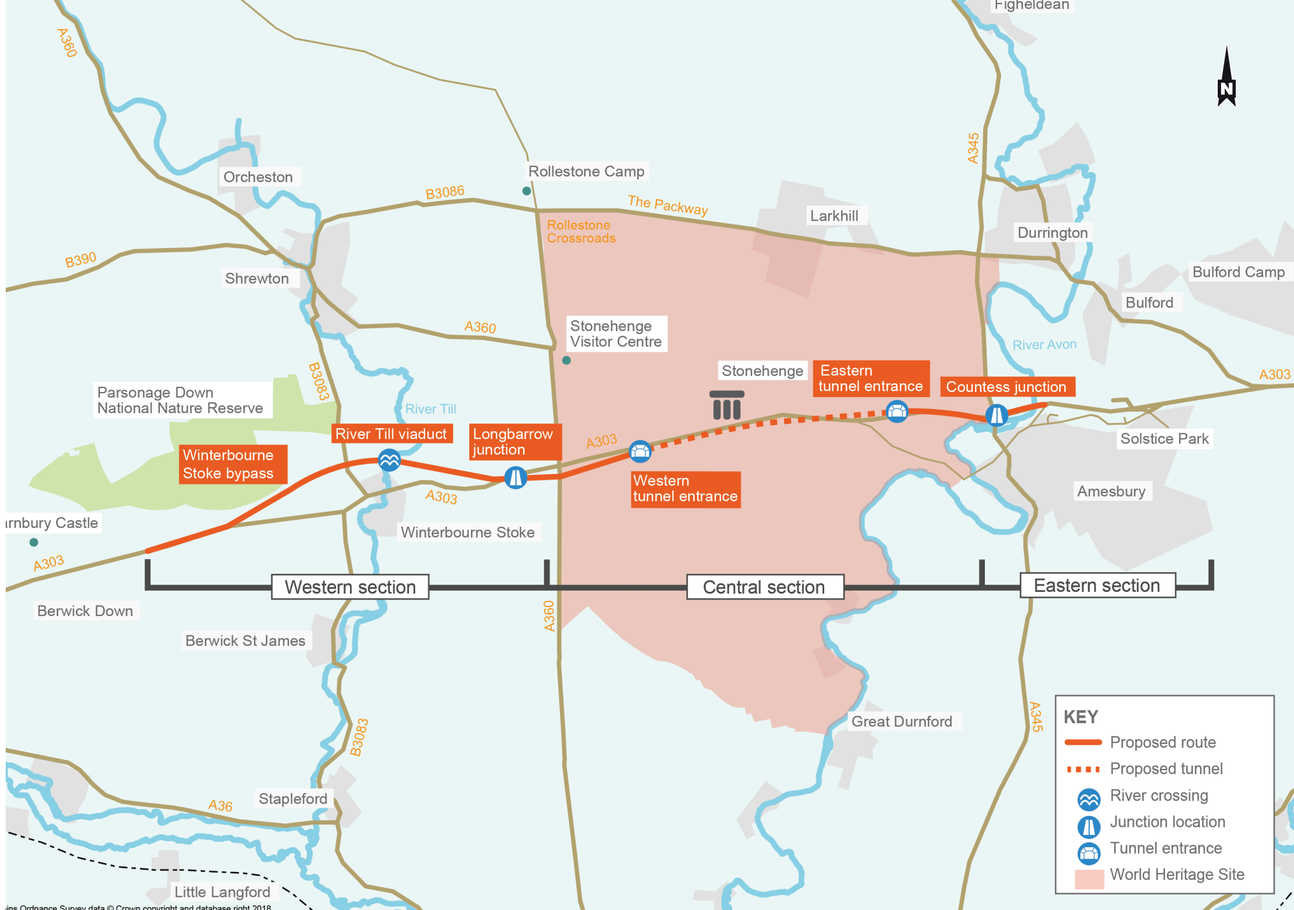
Chalk grassland flora

Example of a Green Bridge

- New chalk grassland areas;
- New hedgerows and planting areas;
- The inclusion of green bridges and mammal underpasses to maintain ecological connectivity;
- The positioning and widening of the green bridge within the WHS to provide visual and landscape connectivity between monuments;
- Designing the River Till viaduct to minimise shading impacts with the provision of a twin deck structure with a gap between the decks; and
- During construction and subsequent operation, the implementation of industry standard practice and control measures, to minimise environmental impacts.

The control measures mentioned above are contained within the Outline Environmental Management Plan (OEMP) which is included in the DCO Application. The OEMP will be further developed into a Construction Environmental Management Plan (CEMP), which will be implemented by the construction contractor and will include the approach to monitoring of construction activities and the performance of mitigation measures as appropriate.

The Environmental Masterplan presented in the centre of this document shows the proposed environmental mitigation for the Scheme such as planting, habitat creation and green bridges.



Construction approach and programme

Preliminary works including the provision of power and water supplies, ecological and archaeological mitigation, selected site clearance and minor highways works are planned to start ahead of the main construction. The Scheme's main construction works are planned to start in 2021 and the Scheme is due to open to traffic in 2026.

Construction of the Scheme would require a main construction compound and several smaller compounds.

Traffic management measures would be put in place to ensure adverse impacts on traffic flows on the existing A303 and other local roads are minimised.

View from Stonehenge without the Scheme

View from Stonehenge with the Scheme

Alternatives studied and consultation

Proposals for the improvement of the A303 between Amesbury and Berwick Down have been the subject of extensive study and consultation since 1991. The process of options identification and route selection leading to the Scheme has included options with and without tunnelling in the WHS and is summarised in Chapter 3 of the ES. The process followed the following stages:

- Corridor identification and initial sifting of corridors – in which 60 route options, grouped into seven route corridors, were reviewed. These corridors included surface routes to the north and south of and outside the WHS, surface routes partially within the WHS, and partially tunnelled routes within the WHS. On the basis of a range of assessment criteria including impacts on settlements, severance of the WHS, environmental impacts and journey time, two corridors were taken forward for the development of route options within the preferred corridors. .
- Development of route options within the preferred corridors – in which ten options were assessed, seven partially tunnelled options within the WHS and with bypasses to the north and south of Winterbourne Stoke, and three surface options running south of and outside the WHS. Assessment against the same criteria led to the selection of three route options for further appraisal, as discussed below.
- Route options appraisal and sifting to identify options to take forward for further appraisal – in which the options assessed comprised two partially tunnelled options through the WHS, one with a northern bypass of Winterbourne Stoke, one bypassing the village to the south, and one surface option to the south of and outside the WHS.
- The selection of route options, which were taken to non-statutory public consultation in January/March 2017 – the comparison of the three options above, identified the surface route to be a significantly longer route which would pass through a largely unspoilt, high quality, tranquil landscape with an additional crossing of the River Avon SAC. It would have a much larger footprint and a greater overall environmental impact than the partially tunnelled options, despite having greater benefits for the WHS. The surface route would also leave higher levels of rat-running traffic adversely affecting the quality of life in local communities. Consequently the two partially tunnelled routes, with a bypass to either the north or south of Winterbourne Stoke, were taken to non-statutory consultation.
- The selection of the Preferred Route which was announced by the Secretary of State in September 2017 - in response to the feedback received during the non-statutory consultation and findings of ongoing archaeological surveys, seven modifications of the two partially tunnelled options were developed for further appraisal and assessment. The Preferred Route was selected as it provided more opportunities to bring overall benefits to the WHS, presented lower risk to the River Avon SAC/River Till SSSI, avoided impacting the more complex valley landscape to the south of Winterbourne Stoke, affected the visual amenity of fewer people in Winterbourne Stoke and Berwick St James, would be located further away from the RSPB reserve at Normanton Down and would be located closer to the existing A303 and its associated disturbance.
- The selection of the Proposed Scheme taken to statutory consultation – details of the Preferred Route were developed to the level appropriate for statutory consultation, which took place between February 2018 and April 2018
- The development of the Scheme taken to statutory consultation – the Scheme was developed to take into consideration the feedback received from the consultation on key features such as the design options for the River Till Viaduct, the location of the green bridge on the western boundary of the WHS, the approach to the tunnel's western entrance and the flyover at Countess Junction.

Consultation

Traffic on the A303

- Changes taken to supplementary consultation - between July and August 2018 the scheme design was refined and three further proposed changes were taken to supplementary consultation. These comprised the removal of the previously proposed link for motorised vehicles between Byways 11 and 12; widening the green bridge on the western boundary of the WHS and moving it to the east into the WHS; and modifying the proposed Rollestone crossroads, to provide a more compact layout.

Details of the February to April 2018 statutory consultation can be found in the Consultation Booklet at: https://highwaysengland.citizenspace.com/he/a303-stonehenge-2018/

Details of the July to August 2018 supplementary consultation can be found in the Consultation Booklet at: https://highwaysengland.citizenspace.com/cip/a303-stonehenge-consultation-july-2018/

The feedback to the 2018 consultation exercises, and Highways England response to it, is presented in the Consultation Report at Application Document 5.1

In addition to formal consultation, extensive and regular engagement has been undertaken with the relevant stakeholders to inform the development and assessment of the design for the Scheme. These stakeholders include Wiltshire Council, English Heritage, Historic England, the National Trust, the Environment Agency, Natural England and Amesbury and Winterbourne Stoke Parish Councils.

Assessment of likely significant effects

Under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations'), the Scheme is defined as the type and scale of development that automatically requires an Environmental Impact Assessment (EIA). Accordingly, an EIA has been undertaken to meet the requirements of the relevant planning policy and legislation, and cover the effects of the Scheme on the environment.

The EIA considers impacts during the construction and operation of the Scheme. The construction phase assessment addresses both the temporary activities involved in building the Scheme and the subsequent permanent presence of the Scheme once constructed. Where relevant, these temporary and permanent effects are described separately below. The operational assessment considers the situation when the Scheme is being used by traffic. The one exception to this approach is the landscape and visual assessment, for which the industry guidance requires the impacts of the presence of the Scheme to be considered in the operational phase assessment.

Methods used in the assessment

The approach to the EIA comprised gathering information to establish the environmental setting or baseline, considering the potential impacts of the Scheme, developing measures to avoid, prevent or reduce adverse impacts and then assessing the resultant likely significant effects of the Scheme on local communities and the environment. The EIA has followed industry standard methods, including for establishing significance, set out in Highways England's Design Manual for Roads and Bridges along with topic-specific guidance as appropriate. Each topic chapter in the ES provides further detail regarding the specific methodology applied.

This assessment has been undertaken against both the current baseline setting of the Scheme and potential changes to the Scheme's baseline setting at the times of both construction and operation of the Scheme (the "future baseline"). Future changes to the baseline, without the Scheme, could result from both natural events such as the movement of protected species, or from human activities, such as the development of homes and businesses in the area.

In accordance with the EIA Regulations, an assessment was undertaken of the vulnerability of the Scheme to major accidents or disasters ("major events"). The assessment considered a wide range of events including naturally occurring events such as lightning strikes, floods and heatwaves; human accidents such as road, aircraft and military accidents; infrastructure failure such as tunnel, bridge, utilities or dam failure; and bomb, vehicle and cyber-attacks. It was concluded that with the mitigation measures already included in the design of the Scheme, no significant adverse effects from major events would be expected.

The following sections provide a summary of the assessment of likely significant environmental effects as a result of the Scheme on an environmental topic basis.

Air Quality

Baseline

Air quality in the area around the Scheme is good. This is confirmed by the fact that there are no Air Quality Management Areas (AQMAs) close to the proposed scheme, with the nearest being in Salisbury, approximately 6 miles (approximately 10 km) south of Amesbury. AQMAs are areas which the local authority has identified as requiring management to achieve desired air quality objectives. Notwithstanding this, air quality within Winterbourne Stoke and the northern edge of Amesbury is currently affected by traffic on the A303.

Construction

Without mitigation, construction of the Scheme could temporarily impact air quality as a result of dust from construction activities, such as earth moving and excavations, and emissions from construction traffic and equipment/plant. Mitigation measures in the CEMP would include those for dust suppression, control and use of equipment/plant and construction traffic management. These would minimise the temporary impacts during construction activities.

Summary of construction assessment:

- With the implementation of the above mitigation measures, no significant effects are likely.

Operation

During operation there could be impacts on air quality as a result of changes in vehicle flows along the scheme and the wider road network once the Scheme is open. Once the Scheme is operational, traffic would be moved further away from the village of Winterbourne Stoke, but would remain along the existing line past Amesbury, although at a raised level. Traffic would be within a tunnel or a deep cutting through the WHS. These design components would minimise the air quality impacts during operation.

Summary of operational assessment:

- No significant effects are likely.
- Air quality is likely to be improved through Winterbourne Stoke once the Scheme is in use.

Traffic queuing through Winterbourne Stoke

Cultural Heritage

Baseline

Cultural heritage includes archaeology, historic buildings/structures and historic landscapes including parks and gardens. The existing A303 runs through the WHS, passing 165m from Stonehenge itself, with significant adverse effects on important features such as Stonehenge and the Avenue. There are also heritage assets such as burial mounds (or 'barrows') located beyond the boundary of the WHS. In addition, there are four Grade I Listed buildings and three Conservation Areas within 500m of the proposed scheme.

Construction

The construction activities could lead to temporary adverse effects on the setting of a number of heritage assets through visual intrusion and noise. The compound locations have been selected to minimise such effects and mitigation measures included in the CEMP would include screening of construction compounds and material storage areas. These would minimise the temporary impacts during construction activities, however some temporary significant effects would remain.

The Scheme would result in significant permanent adverse effects on eleven non-designated heritage assets through the partial or total removal of the assets.

The Scheme would have significant permanent adverse effects on the setting of one Listed Building in the vicinity of Countess Roundabout.

The Scheme would remove or reduce existing significant adverse effects on 72 scheduled monuments and 2 non-designated heritage assets of similar value, all of which are within the central part of the WHS. It therefore would have a significant beneficial effect on the setting of heritage assets within the central part of the WHS.

Summary of Construction Assessment:

- Construction activities would have likely significant temporary **adverse** effects on the setting of heritage assets within and outside the WHS.
- The Scheme would have likely significant permanent **adverse** effects due to the loss or truncation of eleven non-designated heritage assets.
- The Scheme would have likely significant permanent **adverse** effects on the setting one listed building in the vicinity of Countess Roundabout.
- The Scheme would have likely significant permanent **adverse** effects on the character of the Winterbourne Stoke to Shrewton Water Meadows Historic Landscape Character Area.
- The Scheme would have likely significant permanent **beneficial** effects once built on the setting of 72 scheduled monuments, including Stonehenge, and two non-designated heritage assets of similar assessed value within the WHS. This is the result of the removal of severance of heritage assets by the existing A303, such as where it crosses the Avenue, and improvements to the inter-relationships between heritage assets, north and south of the existing A303, due to the removal of the current surface route into a tunnel, within the tunnel section.

Operation

The removal of the traffic along the existing A303 from much of the Stonehenge landscape would improve the setting of heritage assets within the WHS, including Stonehenge itself. This removal of traffic and conversion of the existing A303 through the WHS into a restricted byway for walking, cycling and horse riding, would improve public access to the WHS.

Summary of operational assessment:

- Operation of the Scheme would have likely significant **beneficial** effects on the setting of 75 scheduled monuments and two non-designated assets due to the removal of traffic.
- Operation of the Scheme would have likely significant **beneficial** effects on public access to the WHS due to the removal of severance.

Outstanding Universal Value

In parallel with the EIA, a Heritage Impact Assessment (HIA) was undertaken which considered the impacts of the Scheme on the WHS selection criteria; Attributes that convey the Outstanding Universal Value (OUV) of the WHS, their Integrity and Authenticity. The HIA assessed the anticipated impacts and effects of the Scheme on the OUV of the WHS. The HIA was undertaken in accordance with the relevant Guidance on Heritage Impact Assessments for Cultural World Heritage Properties, and in consultation with English Heritage, Historic England, Wiltshire Council Archaeology Service and the National Trust. The HIA is appended to the Environmental Statement.

Summary assessment:

- The HIA concluded that the Scheme would sustain the OUV of the WHS and would have a permanent slight **beneficial** effect on the OUV of the WHS as a whole.

Heavy traffic past Stonehenge

Stonehenge

Landscape and Visual Effects

Baseline

The Scheme would be situated in an open rolling landscape, within a pattern of ridgelines and valleys including the River Till valley. The land use is predominantly agricultural, with areas of residential small towns, villages and farms and military properties and tourism. The existing A303 is a busy transport link which is visible from within Winterbourne Stoke and across the landscape from public rights of way (PRoW) and within the WHS.

Construction

Without mitigation, construction activities could have temporary adverse impacts on the local landscape and on views for users of the PRoW network, visitors to the WHS and local roads, together with residential properties in the vicinity of the Scheme. Measures to mitigate the landscape and visual impacts of the construction activities would include the sensitive siting of compounds and use of soil mounds and hoardings to screen the construction works where appropriate.

Summary of construction assessment:

- Construction activities would have likely significant temporary **adverse** effects on the rural landscape, including in terms of direct changes to landform and tranquillity. This would be particularly noticeable across the River Till valley and at Longbarrow junction.
- Construction activities would have likely significant temporary **adverse** visual effects on residents of Amesbury, specifically in proximity to Countess Roundabout, and Winterbourne Stoke, visitors to the WHS and users of the PRoW network.

Operation

Without mitigation, operation activities could have permanent adverse impacts on the local landscape and views. Measures to mitigate the landscape and visual impacts include using new landform to reduce views of vehicles along the length of the dual carriageway; shaping the earthworks to integrate the approach to the River Till viaduct along with careful design of the size and scale of the viaduct (including an environmental barrier on the southern side of the viaduct); and setting Countess flyover at the minimum possible height.

Tunnelling of the A303 through the central section of the WHS would remove vehicles from part of the WHS landscape and allow the landscape to be reconnected, as well as improving the visual amenity and tranquillity for visitors to the WHS and users of the PRoW network.

Creating chalk grassland across the Scheme and particularly to the east of Parsonage Down, additional planting, removing the A303 from Winterbourne Stoke and providing enhanced opportunities for recreational access across the landscape would be **beneficial** impacts of the Scheme.

Summary of operational assessment:

- The Scheme would have likely significant **adverse** effects on the rural landscape between Berwick Down and Longbarrow Junction in the opening year, including for effects to landform and tranquillity.
- The Scheme would have likely significant **adverse** visual effects on users of the PRoW network and some residents in the area west of the WHS in the opening year.
- The Scheme would have likely significant permanent **adverse** effects on the landscape of the River Till valley.
- The Scheme would have likely significant permanent **adverse** visual effects on the residents of Countess Farm and users of the PRoW in the River Till valley. The Scheme would have likely significant permanent **beneficial** effects on the townscape within Winterbourne Stoke.
- The Scheme would have likely significant permanent **beneficial** effects on the pattern, tranquillity and connectivity of the landscape within the WHS.
- The Scheme would have likely significant permanent **beneficial** visual effects on visitors to the WHS and users of the PRoW network within the WHS.

Biodiversity

Baseline

There are several important designated sites in the vicinity of the Scheme, including the River Avon Special Area of Conservation (SAC), Salisbury Plain SAC and Special Protection Area (SPA), both of European importance, and the River Till Site of Special Scientific Interest (SSSI). The River Till SSSI also forms part of the River Avon SAC. Other important nearby sites include the Parsonage Down SSSI and National Nature Reserve (NNR) and the RSPB reserve at Normanton Down.

Construction

Without mitigation, temporary impacts to the River Till SSSI and SAC could arise during the construction of the proposed scheme. Mitigation measures in the CEMP would include measures to control run-off, spillages and to avoid physical intrusion on the River Till SSSI and SAC. During construction there is a need to create a temporary crossing of the River Till valley for the movement of construction plant. To minimise adverse impacts, this crossing would be across a temporary bridge raised above the valley floor with supports located outside the designated area of the SAC. Surveys have been undertaken for a wide range of plant and animal species. Construction activities are not expected to result in significant effects on these species.

The Scheme avoids the above SPA, NNR and RSPB reserve and there would be no direct habitat loss from the SACs and SSSIs. Without mitigation, there could be impacts arising from disturbance of stone curlew, a rare bird present in the SPA, and from the shading caused by the new viaduct across the River Till, which could affect the vegetation under the viaduct.

The Scheme includes the provision of a replacement breeding plot for stone curlew to mitigate the direct loss of one breeding plot. The design of the viaduct would balance minimising visual impact with minimising shading of the underlying ground. This would involve building the viaduct as a 'twin deck' structure with a gap between the carriageways and setting the bridge at an optimum height to allow light to pass to the underlying valley floor. This design would maintain vegetation beneath the bridge and is expected to avoid any significant adverse effects.

The Scheme includes wider measures to mitigate impacts or enhance existing biodiversity, in particular the creation of a new area of chalk grassland habitat adjacent to Parsonage Down SSSI, using excavated chalk material including from the tunnel excavations. The creation of chalk grassland adjacent to Parsonage Down SSSI and the other habitats to be created within the Scheme would improve connectivity in an east-west direction for species. The green bridges would help provide connectivity between the areas of habitat.

Summary of construction assessment:

- The Scheme would have a likely significant permanent **adverse** effect due to the loss of the designated non-statutory Countess Cutting County Wildlife Site (CWS).
- The Scheme would have likely significant **beneficial** effects on chalk grassland habitat in the vicinity of Parsonage Down and other grassland areas.
- The Scheme would have likely significant **beneficial** effects as a result of ecological network connectivity through incorporation of green bridges and habitat creation along the length of the scheme.

Operation

The Scheme includes measures to mitigate severance impacts caused by traffic on the new road. These comprise 'green bridges' over the new road to create links between habitats and allow the movement of wildlife across the scheme.

Summary of operational assessment:

- No significant effects are likely.

Habitats Regulations assessment

In parallel with the EIA, a Habitats Regulation Assessment (HRA) Screening exercise was undertaken to identify the potential impacts of the Scheme on each SAC and SPA which could be affected. Where likely significant effects on these European Sites could not be dismissed, further assessment was undertaken and reported as a "Statement to Inform the Appropriate Assessment" to inform the production of an 'appropriate assessment' by the Secretary of State.

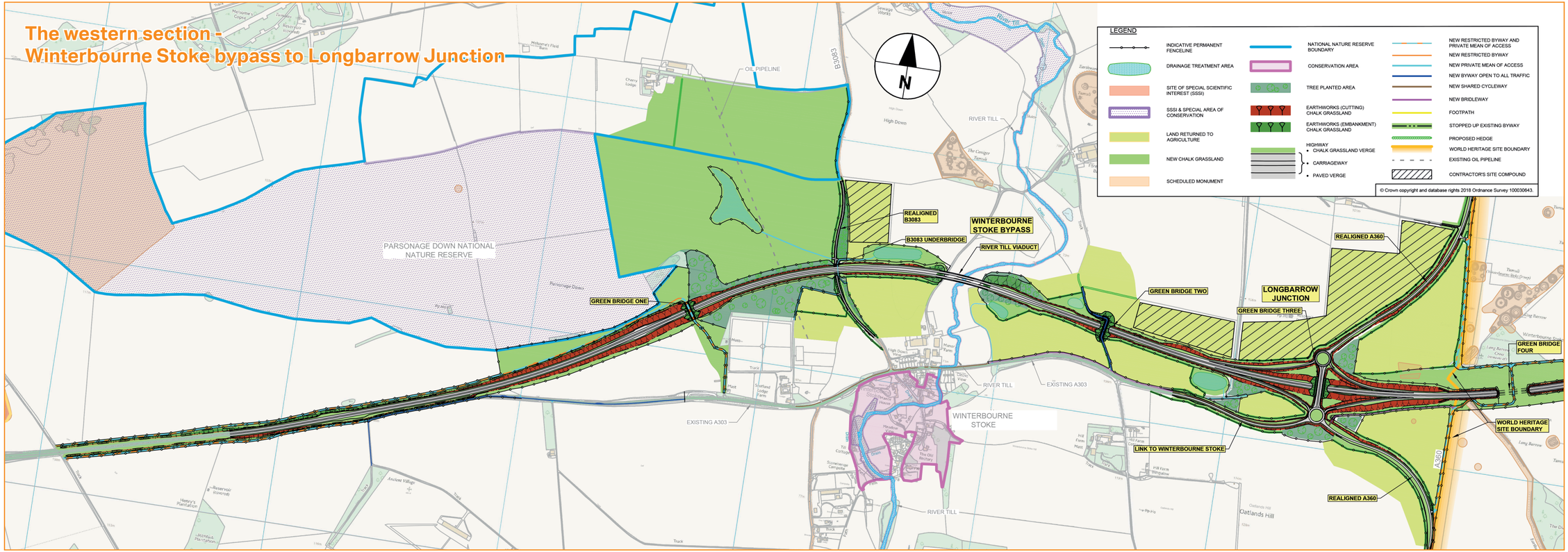
Summary assessment:

Mitigation has been identified and incorporated into the Scheme as necessary to ensure there are no adverse effects on the integrity of these European sites, alone or in combination with other plans and projects.

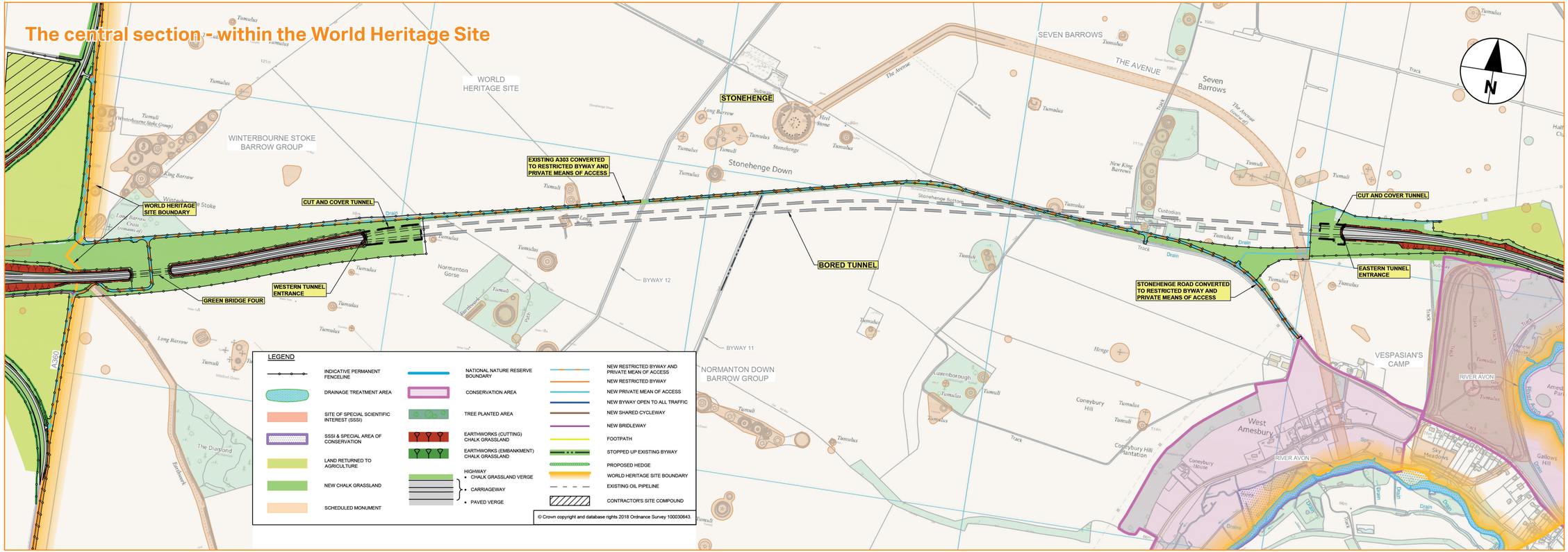
Badger

Chalk Grassland

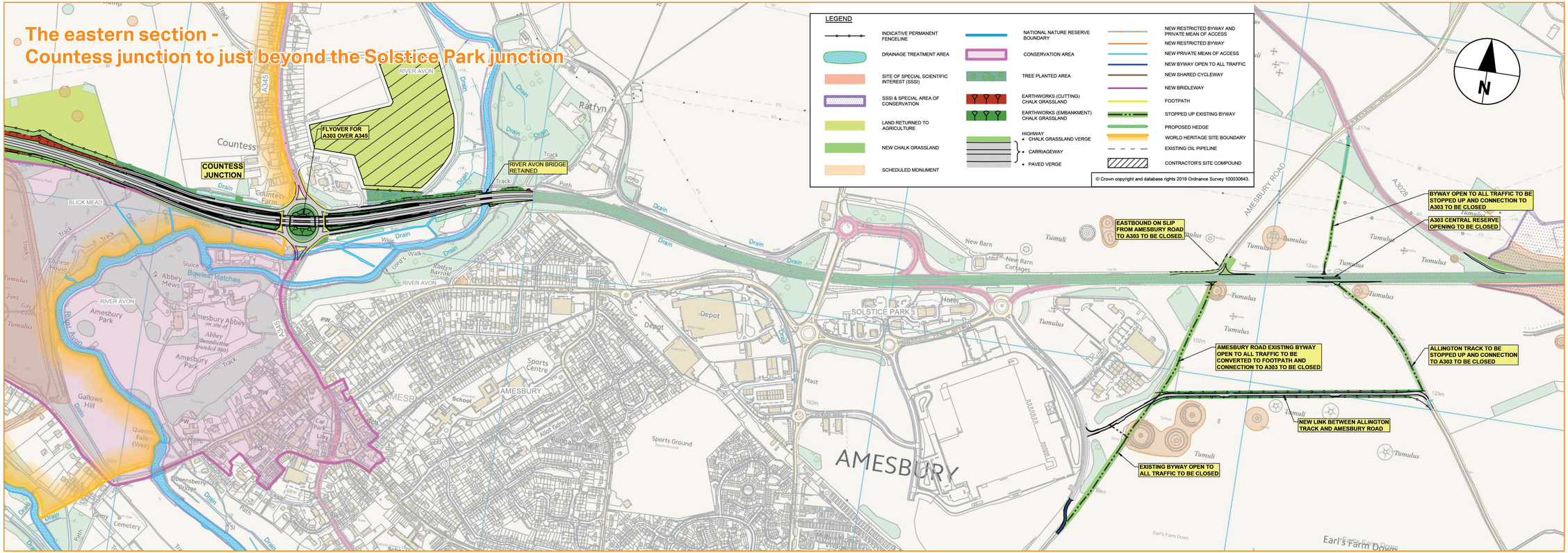
The western section - Winterbourne Stoke bypass to Longbarrow Junction



The central section - within the World Heritage Site



The eastern section - Countess junction to just beyond the Solstice Park junction



Noise and Vibration

Baseline

The area is predominantly rural in nature. Road traffic noise from the A303 affects the setting of the WHS, particularly in the vicinity of Stonehenge. The existing A303 passes close to residential properties at Amesbury and Winterbourne Stoke and the high existing noise levels along the A303 through Winterbourne Stoke are reflected in the designation of two 'Noise Important Areas' (areas identified by the government as being most exposed to noise) in the vicinity. Other sources of road traffic noise include the A360, A345 and other more minor local roads. The area is subject to occasional noise from light aircraft, commercial aircraft, military aircraft and other military activity. A baseline noise survey was undertaken to assist in understanding the general noise environment in the area, and identify any other local noise sources.

Construction

Temporary noise and vibration impacts related to Scheme construction activities as well as the related construction traffic have been assessed. Measures within the OEMP to reduce noise and vibration impacts include selection of quiet and low vibration equipment, optimal location of equipment on site to minimise noise disturbance, the use of enclosures for stationary equipment, and the use of less intrusive vehicle reversing warnings. A Community Relations Manager would be appointed as a point of contact for any complaints or concerns. Works in the vicinity of Amesbury and Winterbourne Stoke, where the majority of sensitive receptors are located, would be within Wiltshire Council's standard working hours as agreed with the Public Health and Public Protection team.

Tunnel construction would be a 24 hour activity, seven days per week. However, this activity would be remote from residential properties and either underground or within the deep cuttings of the new road. The associated surface activities to support the tunnelling works, would be located to the west of the tunnel and outside of the WHS as far from residential properties as reasonably practicable. Vibration effects from tunnel construction on residential and heritage receptors are not considered to be significant, based on the depth at which the tunnel would be constructed. However, surveys of vibration levels at selected locations when the tunnel works are nearby would be carried out.

No significant adverse construction traffic effects are likely.

Summary of construction assessment:

- Construction activities would have likely significant temporary **adverse** noise effects for nearby residential properties in close proximity to the works, at Countess Roundabout on the edge of Amesbury and the northern edge of Winterbourne Stoke.
- No significant adverse vibration effects are likely.

Operation

Once operational, changes in the noise environment would arise from changes in the road layout which alter the distance between road traffic and sensitive receptors such as residential properties (e.g. in Winterbourne Stoke and Amesbury). Changes in noise levels would also be associated with changes in traffic on the local road network, in particular on minor roads to the north through Larkhill, Shrewton and Chitterne which are currently used as alternatives to the A303.

Noise reduction measures have been included within the Scheme such as the selection of the vertical and horizontal alignment, the use of noise screening/ earthworks and the use of a thin road surfacing with lower noise generating characteristics than traditional hot rolled asphalt road surfacing. Noise barriers would be provided at Countess flyover on both sides of the road between the slip roads, to benefit residents of Amesbury.

The residents of Winterbourne Stoke would benefit from reduced noise levels, as traffic is re-routed off the existing A303 and onto the bypass. One property on the northern edge of the village would experience a significant adverse noise effect on its northern side facing the bypass. This effect would start during the construction stage for the Scheme, as soon as the Winterbourne Stoke bypass is opened.

The removal of the surface section of the A303 through the WHS and the relocation of much of this section of road into tunnel and deep cutting would significantly reduce road traffic noise levels in the vicinity of Stonehenge, Stonehenge Cottages and much of this part of the WHS.

With regard to the northern edge of Amesbury close to Countess Roundabout, the inclusion of noise barriers on the flyover would reduce the anticipated increase in traffic noise due to the Scheme, with the majority of properties expected to experience a negligible increase. The closure of the Stonehenge Road onto the A303 would mean that some traffic would redirect through Amesbury, resulting in likely significant adverse noise effects for the closest properties to the road along Church Street and High Street. This effect would start early during the construction of the Scheme, as soon as Stonehenge Road is closed.

Summary of operational assessment:

- Operation of the Scheme would have significant permanent **adverse** noise effects for a single property on the northern edge of Winterbourne Stoke closest to the section of the A303 which would be realigned to the north of the village.
- Operation of the Scheme would have significant permanent **adverse** noise effects for the closest properties along Church Street and High Street in Amesbury due to the closure of the Stonehenge Road access onto the A303.
- Operation of the Scheme would have significant permanent **beneficial** noise effects for residents of Winterbourne Stoke located in close proximity to the existing A303 through the centre of the village.
- Operation of the Scheme would have significant permanent **beneficial** noise effects for visitors to the WHS, residents at Stonehenge Cottages and the northern end of Stonehenge Road.
- Operation of the Scheme would have significant permanent **beneficial** noise effects for residents of properties on the B390 between Shrewton and Chitterne.

Proposed bridge over the River Till with Environmental Barrier

Geology and Soils

Baseline

The underlying geology across the Scheme is Chalk, including localised Phosphatic Chalk within the Stonehenge Bottom area. Overlying deposits include silts, sands, gravels and peat within the River Avon and River Till valleys. Limited areas of historic fill material have been identified in areas of previous and existing development and along existing highways. A number of possible sources of contamination have been identified including former military land (RAF Oatlands Hill and RAF Stonehenge), a former gas works, current petrol filling stations, light industry, former railway lines and a high-pressure oil pipeline.

Construction

Without mitigation and the implementation of adequate control measures, there could be the potential for contaminants from the above sources to enter groundwater, should they be disturbed during construction of the Scheme. The CEMP would include measures for the identification, treatment, re-use and management of excavated materials and tunnel arisings during the construction works, including the Phosphatic Chalk.

Measures would also be included to limit the potential for dispersal and accidental releases of potential contaminants, dusts from soil and uncontrolled run-off to occur during construction. The CEMP would also establish procedures for dealing with unexpected soil or groundwater contamination that may be encountered.

Summary of construction assessment

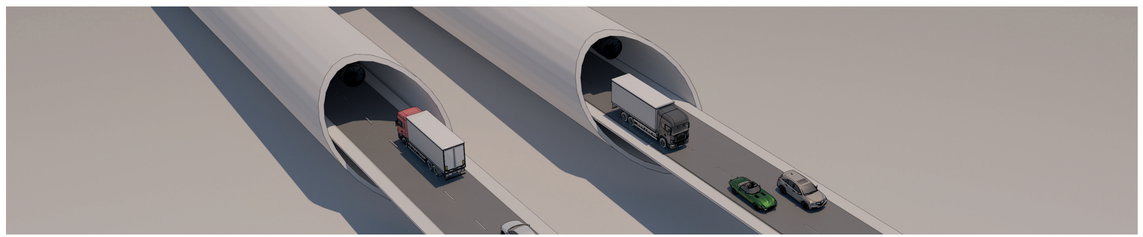
- With the mitigation measures in place, no significant adverse effects are likely during the construction of the Scheme.

Operation

Operation of the Scheme would not include any activities that are likely to have an impact on geology and soils.

Summary of operational assessment

- No significant effects are likely.



The Tunnel

Road Drainage and the Water Environment

Baseline

The surface water environment includes the River Till and River Avon and their associated floodplains. The Scheme would cross the River Till on a new viaduct but would cross the River Avon on the existing bridge. Groundwater is contained within the Chalk and superficial deposits which underlie the Scheme; the Chalk is designated as a Principal aquifer (a rock that readily allows the storage and flow of groundwater). The majority of the Scheme would be built in areas of no or very low probability of flooding although localised areas, such as the River Till valley, have a higher risk of flooding.

Construction

Without mitigation, the potential impacts of the construction activities could include spillages or sediment run-off causing pollution and risk of contamination to surface water and groundwater, localised de-watering of aquifers and worsening flood risk. The CEMP would include measures to mitigate any potential adverse effects on the water environment during construction. These would include pollution control measures such as emergency spill procedures/ kit and the approach to managing storage areas and stockpiles.

Without mitigation the Scheme could lead to changes to groundwater levels and flows as a result of the presence of the tunnel, and the presence of new structures such as the River Till crossing could increase flood risk.

Potential effects on groundwater would be mitigated by minimising any need for groundwater extraction from the aquifers as part of the construction process. The tunnel would be constructed using a tunnel boring machine or similar technology that minimises the need for de-watering to facilitate construction. Where groundwater extraction is required, water would be returned to the aquifers as close as practicable to the extraction point to minimise changes to the flow regime.

To minimise flood risk, the crossing over the River Till would be an open viaduct structure designed to avoid the river channel and produce minimal obstruction to flows across the floodplain. Works within the floodplain would be kept to a minimum as far as reasonably practicable.

Summary of construction assessment:

- With the implementation of the CEMP and the design measures above there would be no likely significant temporary adverse effects during construction activities.
- The Scheme would have no likely significant permanent adverse effects on the water environment.
- The integrity of the River Avon SAC (incorporating the River Till SAC) would not be adversely affected by the Scheme.
- The Scheme would have no significant effects on groundwater levels at the Blick Mead archaeological site.

River Avon

Operation

Without mitigation, operation of the road could lead to pollution impacts on surface water and groundwater from road run-off. Road drainage for the Scheme would generally be managed by a piped drainage system that would then discharge into a series of infiltration basins to provide treatment before allowing water to gradually soak into the ground or flow into a watercourse. This approach would control pollution from road run-off to higher standards than for the current road.

The road has been designed to minimise the risk of it flooding or causing flooding elsewhere by incorporating current design standards and future climate change allowances to improve its resilience, and through the use of measures to control and manage run-off.

Summary of operational assessment:

- There would be a significant **beneficial** effect as a result of improved prevention and treatment of pollution from road runoff and sediment transport.

Water Framework Directive compliance assessment

In parallel with the EIA, a Water Framework Directive (WFD) compliance assessment has been undertaken to consider the extent to which the Scheme could impact on the current and future target WFD status of the River Avon, the River Till and the Upper Hampshire Avon groundwater body. Where potential adverse effects were identified, the assessment of these has informed the mitigation measures incorporated into the design and construction methods of the Scheme in order to remove or minimise the effect.

Summary assessment:

- The WFD assessment concluded that the status of groundwater and surface water bodies would not be adversely affected by the Scheme, and that the Scheme complies with the requirements of the WFD.

River Avon

Material assets and waste

Baseline

If off-site disposal is required for materials generated during construction of the Scheme, suitable quarries and landfill sites have been identified in Wiltshire and the surrounding counties. Within the south of England, the available landfill capacity is approximately 100 million m^3.

With regard to re-use of materials, the baseline target for recycling of construction and demolition waste is 70%, as set out in the EU Waste Framework Directive and the Waste Plan for England. In addition, the Scheme would set a target of 22% use of secondary and recycled aggregates, for those activities where it is technically and economically feasible to use these alternative materials as substitutes for primary aggregates.

Construction

Opportunities to re-use material resources would be sought where practicable and waste would be prevented and designed out in accordance with the requirements of the OEMP. The main type of material generated during construction would be chalk and much of this would be used directly 'as excavated' in the construction of the embankments and landscaping works for the proposed scheme.

Approximately 900,000 cubic metres of chalk would be produced from tunnel excavations, which would undergo processing as part of the tunnelling works, to produce a material suitable for re-use. The Scheme would use this material for essential landscaping integration and to create new chalk grassland and other wildlife habitats in an area to the east of Parsonage Down NNR.

The Scheme would minimise the amount of material that would need to be taken to off-site disposal sites. This would minimise the use of landfill capacity and avoid the adverse noise and air quality impacts associated with the transportation of large quantities of materials to disposal sites.

Because the Scheme is located in a rural area with relatively few sources of secondary and recycled aggregate, it is possible that it may not be practicable to meet the target of 22% use of secondary and recycled aggregate. Whilst this would constitute a significant impact in terms of sustainable use of material assets, the impact would be on a regional target, and there would not be any local effects in the immediate vicinity of the Scheme.

Summary of construction assessment:

- The anticipated failure to meet the target of 22% use of secondary and recycled aggregate would be a likely significant **adverse** effect.

Operation

Material use and waste generation is expected to be very small during operation of the Scheme, with no significant effects expected. Operational waste and materials have consequently been scoped out of the assessment.

Inside the Tunnel

People and Communities

Baseline

Amesbury, at the eastern end of the Scheme, is the main location for services and community facilities in the area. The area surrounding the Scheme is predominantly arable land with some permanent pasture grazed by cattle and sheep and is generally sparsely populated, with small, scattered settlements.

There is an extensive PRoW network (including bridleways and footpaths) within the vicinity of the Scheme. These routes serve a wide range of users, including horse riders, hikers and cyclists. The footpaths and byways situated in proximity to Stonehenge are particularly well used. The existing A303 creates severance of Winterbourne Stoke as well as some existing rights of way, whilst for drivers, regular traffic delays and the related journey uncertainty lead to driver stress.

Construction

During construction of the Scheme, potential impacts on agriculture relate primarily to the loss of agricultural land and soils and the possible loss, severance and fragmentation of agricultural holdings. There are also possible impacts on users of PRoW including temporary closure or diversion during construction.

The design of the Scheme has been developed to minimise agricultural landtake as far as reasonably practicable. Mitigation measures during construction would include temporary diversions and signage to limit the impacts of any temporary closures of rights of way and agricultural accesses. During construction the traffic management required to construct the scheme, particularly at Countess Roundabout, and the presence of construction traffic could lead to additional delays that would increase driver stress. Traffic management measures and construction activity could also lead to changes in views from the road. Traffic management measures seeking to minimise adverse effects will be agreed with Wiltshire Council.

Summary of construction assessment:

- Construction of the Scheme would result in likely significant temporary **adverse** effects on seven agricultural holdings and permanent **adverse** effects on two agricultural holdings.
- Construction of the Scheme would result in likely significant permanent **adverse** effects due to the loss of approximately 30ha of best and most versatile agricultural land.
- The effect of construction on human health is assessed to be neutral overall.

Operation

During operation, the Scheme would include green bridges and new routes to maintain existing agricultural accesses, and maintain and improve the connectivity of the local PRoW network. It would also include the provision of new rights of way, which would improve connectivity for walkers, cyclists and horse riders particularly between Yarnbury Castle and Winterbourne Stoke and between Winterbourne Stoke and Amesbury. In addition, bypassing Winterbourne Stoke would reduce the severance of this community caused by the current A303. The Scheme would improve traffic flows and reduce driver stress. Whilst views from the road would improve at some locations, the view of the WHS from the current A303 would be lost due to the tunnel.

Summary of operational assessment:

- Operation of the Scheme would result in likely significant **adverse** effects on driver views through the WHS.
- Operation of the Scheme would have likely significant **beneficial** effects on connectivity and local travel patterns for users of the PRoW network.
- Operation of the Scheme would have likely significant **beneficial** effects resulting from reduced severance for the community of Winterbourne Stoke.
- Operation of the Scheme would have likely significant **beneficial** effects of improved journey time reliability and reduced stress for drivers on the A303.
- The effect of operation on human health is assessed to be positive overall.

Climate

Baseline

An assessment has been undertaken of the effects on climate of the greenhouse gas emissions associated with the Scheme. Consideration has also been given to the resilience of the Scheme to climate change.

Records show that Wiltshire already experiences major weather events including flooding and heatwaves. UK climate projections predict an increase in annual temperatures and rainfall, with wetter winters and drier summers. Increases in the frequency of heatwaves, prolonged periods with no rainfall and days when precipitation is greater than 25mm are also predicted.

Construction

The construction of the Scheme would contribute to UK CO2 emissions and has been assessed within the relevant UK carbon budgets. Mitigation measures would be implemented to reduce emissions during the construction of the Scheme, for example through specification of ultra-low sulphur diesel, management and minimisation of energy use, and wherever reasonably practicable sourcing recycled or secondary materials from the local area. These will be set out in the CEMP.

Potential impacts of severe weather events during the construction phase include reduction of working hours, increased health and safety risks and damage to construction materials. The Scheme is designed to be resilient to impacts arising from predicted future more severe weather events and climatic conditions and designed in accordance with current planning, design and engineering practice and codes.

Summary of construction assessment:

- No significant effects with regard to greenhouse gas emissions would be likely during the construction of the Scheme.
- No significant effects with regard to the vulnerability of the scheme to climate change would be likely during the construction of the Scheme.

Operation

During operation of the Scheme CO2 emissions would be generated from road users along with emissions arising from powering the tunnel services. Emissions have been assessed within the context of the relevant national carbon budgets. The Scheme has been designed to limit operational greenhouse gas emissions including minimising the use of lighting and/or use of energy efficient lighting, by optimising traffic to allow it to flow freely, and by using low energy tunnel ventilation technology. It is predicted that emissions arising as a result of the construction and operation of the Scheme would represent less than 0.03% of the total UK emissions target in any five year carbon budget during which they arise.

Potential impacts of climate change during the operational phase would include increased flooding, health and safety risks associated with extreme weather events and storm damage to structures. Mitigation measures would include regular monitoring and maintenance, emergency response plans, the installation of emergency systems such as variable messaging systems (VMS) and drainage design to allow for increased rainfall.

Summary of operational assessment:

- No significant effects with regard to greenhouse gas emissions would be likely during the operation of the Scheme.
- No significant effects with regard to the vulnerability of the Scheme to climate change would be likely during the operation of the Scheme.

Cumulative Effects

An assessment has been undertaken of potential cumulative effects for all the above environmental topics arising from the following:

- Proposed developments in the vicinity of the Scheme that are under construction, have been consented or are identified on development plans, combined with the effects of the Scheme; and
- The combined effects from the Scheme on a single receptor from a number of individual environmental impacts, for example noise, dust and traffic.

Cumulative effects with other developments

A review of the planning applications and allocations within the area around the Scheme was undertaken to identify any other developments which may result in a cumulative effect together with the Scheme, which is a greater, new or different significant effect than would result from the Scheme on its own. The search area for these other developments was the largest combined area based on the likely distances from which developments could influence each environmental topic.

The predicted traffic flows associated with the developments identified, including Highways England's A303 Sparkford to Ilchester and A358 Taunton to Southfields schemes, were included in the traffic data used for the noise, air quality, water and people and communities assessments. As such, these assessments are inherently cumulative.

Summary of cumulative effects assessment

- No significant cumulative effects with other developments would be likely.

Combined effects on a single receptor

The combination of significant effects which could affect people's enjoyment of a public right of way, community facility or residential property or the viability of a business was considered within the People and Communities amenity assessment and the outcome is included below. In other cases, the combination of otherwise non-significant effects such as visual, noise and dust could lead to a new significant effect or increase the magnitude of previously identified significant effects.

Summary of construction assessment

- No significant amenity effects were identified.
- Temporary significant **adverse** combined visual, noise and air quality effects on recreational users of Parsonage Down NNR, byways in the River Till floodplain, the WHS and Lords Walk during construction of the Scheme.
- Temporary significant **adverse** combined visual, noise and air quality effects on residents of Cherry Lodge, Foredown House, the northern part of Winterbourne Stoke and Countess Farm during construction of the Scheme.

Summary of operational assessment

- No significant amenity effects were identified.
- Permanent significant **adverse** combined visual and noise effects on recreational users of byways in the River Till floodplain during operation of the Scheme.
- Permanent significant **adverse** combined visual, noise and air quality effects on residents of Countess Farm during operation of the Scheme.
- Permanent significant **beneficial** combined visual, noise and air quality effects on residents of Winterbourne Stoke.
- Permanent significant **beneficial** combined visual, noise and cultural heritage effects on visitors to the WHS.

Topic	Assessment of significant environmental effects	
	Construction stage	**Operational Stage**
Air Quality	■ No significant effects.	■ No significant effects.
Cultural heritage	■ Temporary **adverse** effects of construction activities on the setting of heritage assets within and outside the WHS. ■ Permanent **adverse** effects due to the loss or truncation of eleven non-designated assets ■ Permanent **adverse** effects on the setting of one listed building in the vicinity of Countess Roundabout. ■ Permanent **adverse** effect on the character of the Winterbourne Stoke to Shrewton Water Meadows Historic Landscape Character Area. ■ Permanent **beneficial** effects, once built, on the setting of 72 scheduled monuments, including Stonehenge, together with two non-designated heritage assets, due to the removal of severance and improvements to inter-relationships between heritage assets.	■ Permanent **beneficial** effect on the setting of 75 scheduled monuments and two non-designated assets, due to the removal of traffic using the A303. ■ Permanent **beneficial** effect on public access to the WHS.
Landscape and Visual	■ Temporary **adverse** effects of construction activities on the rural landscape, particularly the River Till valley and at Longbarrow Junction, including in terms of changes to landform and tranquillity. ■ Temporary **adverse** visual effects of construction activities on residents of Amesbury, specifically in proximity to Countess Roundabout, and Winterbourne Stoke, visitors to the WHS and users of the PRoW network.	■ **Adverse** visual effects on users of the PRoW network and some residents in the area west of the WHS in the opening year. ■ **Adverse** visual effects on users of the PRoW network and some residents in the area west of the WHS in the opening year ■ Permanent **adverse** effects on the landscape of the River Till valley. ■ Permanent **adverse** visual effects on the residents of Countess Farm and users of the PRoW in the River Till valley. ■ Permanent **beneficial** effects on the townscape within Winterbourne Stoke. ■ Permanent **beneficial** effects on the pattern, tranquillity and connectivity of the landscape within the WHS. ■ Permanent **beneficial** visual effects on visitors to the WHS and users of the PRoW network within the WHS.
Biodiversity	■ Permanent **adverse** effect due to the loss of the designated non-statutory Countess Cutting CWS. ■ **Beneficial** effect on chalk grassland habitat in the vicinity of Parsonage Down and other grassland areas within the scheme. ■ Permanent **beneficial** effect as a result of ecological network connectivity through incorporation of green bridges and habitat creation along the length of the scheme.	■ No significant effects.

Topic	Assessment of significant environmental effects	
	Construction stage	**Operational Stage**
Noise and vibration	■ Temporary **adverse** noise effects of construction activities for residential properties in close proximity to the works, such as at Countess Roundabout and the northern edge of Winterbourne Stoke. ■ No significant vibration effects.	■ Permanent **adverse** noise effects for a single property on the northern edge of Winterbourne Stoke closest to the section of the A303 which is realigned to the north of the village. ■ Permanent **adverse** noise effects for the closest properties along Church Street and High Street in Amesbury due to the closure of Stonehenge Road. ■ Permanent **beneficial** noise effects for residents of Winterbourne Stoke located in close proximity to the existing A303 through the centre of the village. ■ Permanent **beneficial** noise effects for visitors to the WHS, residents at Stonehenge Cottages and the northern end of Stonehenge Road. ■ Permanent **beneficial** noise effects for residents of properties on the B390 between Shrewton and Chitterne
Geology and soils	■ No significant effects.	■ No significant effects.
Road Drainage and the Water	■ No significant effects.	■ Permanent **beneficial** effect as a result of improved prevention and treatment of pollution from road run-off and sediment transport to the River Avon.
Materials	■ The anticipated failure to meet the target of 22% use of secondary and recycled aggregate would be a likely significant temporary **adverse** effect.	■ No significant effects.
People and Communities	■ Temporary **adverse** effects on seven agricultural holdings and permanent **adverse** effects on two agricultural holdings. ■ Permanent **adverse** effects on best and most versatile agricultural land.	■ Permanent **adverse** effects on driver views through the WHS. ■ Permanent **beneficial** effects on connectivity and local travel patterns for users of the PRoW network. ■ Permanent **beneficial** effects resulting from reduced severance for the community of Winterbourne Stoke. ■ Permanent **beneficial** effects of improved journey time reliability and reduced stress for drivers on A303.
Climate	■ No significant effects.	■ No significant effects.
Cumulative effects	■ Temporary **adverse** combined visual, noise and air quality effects on recreational users of Parsonage Down NNR, byways in the River Till valley, the WHS and Lords Walk. ■ Temporary **adverse** combined visual, noise and air quality effects on residents of Cherry Lodge, Foredown House, the northern part of Winterbourne Stoke and Countess Farm.	■ Permanent **adverse** combined visual and noise effects on recreational users of byways in the River Till valley. ■ Permanent **adverse** combined visual, noise and air quality effects on residents of Countess Farm. ■ Permanent **beneficial** combined visual, noise and air quality effects on residents of Winterbourne Stoke. ■ Permanent **beneficial** combined visual, noise and cultural heritage effects on visitors to the WHS

Next steps

Following submission of the Application for Development Consent, the Planning Inspectorate will consider, on behalf of the Secretary of State for Transport, whether the Application should be accepted for examination. If accepted, the documents accompanying the Application will be publicly available on the Planning Inspectorate's website.

Interested parties will be able to make relevant representations about the Scheme and its potential impacts. Representations received by the Planning Inspectorate will be considered as part of the examination into the Application.

If you need help accessing this or any other Highways England information, please call **0300 123 5000** and we will help you.

This document is also available on our website at www.gov.uk /highways

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Registered office Bridge House, 1 Walnut Tree Close, Guildford GU1 4LZ
Highways England Company Limited registered in England and Wales number 09346363