A303 Amesbury to Berwick Down

TR010025

6.1 Environmental Statement

Chapter 2: The Scheme

Volume 6

APFP Regulation 5(2)(a)

Planning Act 2008

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

October 2018

2 The Scheme

2.1 Need for the Scheme

2.1.1 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.

2.1.2 The 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 (Ref 2.1) as one of the country's top five projects or programmes for delivery within the road sector.

2.1.3 The existing A303 passes through the Stonehenge section of the WHS, passing approximately 165m from the Stonehenge monument itself (hereafter referred to as "the Stones"). The WHS comprises two distinct components, Avebury to the north and Stonehenge to the south and the Scheme crosses the Stonehenge component only (see Figure 1.1). All subsequent references to "the WHS" in this ES refer to the Stonehenge component.

2.1.4 Objectives for the Scheme have been formulated both to address identified problems and to take advantage of the opportunities that new infrastructure would provide. The objectives are defined in the Department for Transport's (DfT) Client Scheme Requirements (CSRs) which respond directly to the need for change (Ref 2.2):

a) Transport – To create a high quality reliable route between the South East and the South West that meets the future needs of traffic;

b) 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;

c) Cultural heritage – To help conserve and enhance the World Heritage Site and to make it easier to reach and explore; and

d) Environment and community – To improve biodiversity and provide a positive legacy for nearby communities.

2.1.5 Further information on the need for the Scheme and how the Scheme will meet that need is provided in the Case for Scheme (Application Document 7.1).

2.2 Scheme location

2.2.1 The Scheme would be approximately 8 miles (13km) long and would comprise the construction of a new two lane dual carriageway between Amesbury and Berwick Down. The Scheme location is shown in Figure 2.1a to Figure 2.1c. At the western end, the Scheme would pass just to the south of the Parsonage Down 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 a 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.

2.2.2 The Scheme boundary, which includes land likely to be required temporarily and/or permanently for the construction, operation and maintenance of the Scheme is shown in Figure 2.1a to Figure 2.1c.

2.3 Description of the Scheme

2.3.1 The development of the Scheme was informed by knowledge of environmental constraints, as well as the environmental assessment of emerging design proposals and engagement with stakeholders. This ES and the assessments within it are based on the works proposed in the DCO (described principally in Schedule 1, the works plans and the engineering sections) and the maximum area of land anticipated as likely to be required, taking into account the proposed limits of deviation (LoD) for the Scheme (summarised in Table 2.1 below) and the flexibility of detailed design provided for in the DCO. The assessments therefore take into consideration what can be regarded as a realistic 'worst case' assessment of the impacts associated with the proposed scheme.

2.3.2 The indicative design of the Scheme is described below and presented in Figure 2.2. The details and dimensions are subject to the LoD below and are indicative for the purpose of the assessment and will be refined as the design is further developed during the detailed design stage.

Table 2.1: Limits of deviation

Work Number (refer Work Plans - Application Document 2.5)	Description	Upwards Vertical Limits of Deviation	Downwards Vertical Limits of Deviation	Lateral Limits of Deviation	Centreline Limits of Deviation	Work commencement and termination Limits of Deviation (nominal 3m from the points of commencement and termination unless noted otherwise)
1A	New and improved A303 Western tie in to just west of River Till Viaduct	1m	1m	Order Limits	+3m/-3m	
1B	New and improved A303 just west of River Till Viaduct to just east of River Till Viaduct	0.5m	0.5m	Order Limits	+3m/-3m	
1C	New and improved A303 just east of River Till Viaduct to just west of Longbarrow roundabout	0.5m	1m	Order Limits	+3m/-3m	
1D	New and improved A303 from just west of Longbarrow roundabout to new Western Portal (includes Green Bridge Four, retaining walls and buildings but not cut and cover section)	0.5m	3m	Order Limits	+3m/-3m	
1E	New and improved A303 - Western Cut and Cover Section	0.5m	4m	Order Limits	+3m/-3m	Allowance for the cut and cover tunnel to be extended up to 200m westwards and reduced by a nominal 1m eastwards
1F	New and improved A303 - Bored Tunnel Section	Ref Application Document 2.16		Order Limits	N/A	Allowance for the bored tunnel to be extended up to 200m westwards and 30m eastwards and reduced by a nominal 1m westwards and eastwards.

Work Number (refer Work Plans - Application Document 2.5)	Description	Upwards Vertical Limits of Deviation	Downwards Vertical Limits of Deviation	Lateral Limits of Deviation	Centreline Limits of Deviation	Work commencement and termination Limits of Deviation (nominal 3m from the points of commencement and termination unless noted otherwise)
1G	New and improved A303 - Eastern Cut and Cover Section	0.5m	3m	Order Limits	+3m/-3m	Allowance for the cut and cover tunnel to be extended up to 30m eastwards and reduced by a nominal 1m westwards
1H	New and improved A303 - Eastern Tunnel Portal to Eastern End of the Scheme	0.5m	0.5m	Order Limits	+3m/-3m	
2	Realigned B3083	1m	1m	Order Limits	+3m/-3m	
3A	Bypassed section of A303 from western end to just east of Winterbourne Stoke	0.5m	1m	Order Limits	+3m/-3m	
3B	Bypassed section of old A303 from just east of Winterbourne Stoke to just east of WST06A	0.5m	1m	Order Limits	+3m/-3m	
3C	New Section of Winterbourne Stoke connector road	0.5m	1m	Order Limits	+3m/-3m	
4	Realigned A360	0.5m	1m	Order Limits	+3m/-3m	
5	New Rollestone Cross Junction	0.5m	1m	Order Limits	+3m/-3m	
6	New Restricted Byway on old alignment of A303 within the WHS	0.25m	0.25m	Order Limits	+3m/-3m but within existing carriageway	
7	Allington Track	0.5m	1m	Order Limits	+3m/-3m	
8	Parsonage Down	3m	3m	Ref Application Document 2.5	N/A	N/A

Work Number (refer Work Plans - Application Document 2.5)	Description	Upwards Vertical Limits of Deviation	Downwards Vertical Limits of Deviation	Lateral Limits of Deviation	Centreline Limits of Deviation	Work commencement and termination Limits of Deviation (nominal 3m from the points of commencement and termination unless noted otherwise)
9	North East of Countess Roundabout (extension of existing substation)	0.5m	1m	Ref Application Document 2.5	N/A	N/A

Notes

1. *Further details of the Work Numbers and Areas are shown in the Work Plans (Application Document 2.5)*
2. *A specific drawing is provided to show the limits of deviation for the bored tunnel (Application Document 2.16)*
3. *The ground above the deck of Green Bridge Four is to be located within 0.25m of existing ground level*
4. *The land above the cut and cover tunnel sections are to be reinstated within 0.25m of existing ground level*

2.3.3 The Scheme is described briefly below in three route sections:

a) Western section - Winterbourne Stoke bypass to Longbarrow junction.

b) Central section - within the World Heritage Site.

c) Eastern section - Countess junction to just beyond the Solstice Park.

2.3.4 All distances, directions, areas and lengths referred to in this document are approximate.

Western section (Figure 2.5A-E, L)

2.3.5 The Scheme would commence on the existing A303 approximately at Yarnbury Castle and would closely follow the existing A303 alignment, south of Parsonage Down NNR. It would then continue in a north easterly direction providing a bypass to the north of the village of Winterbourne Stoke.

2.3.6 A ‘green bridge’ would be constructed over the new A303 northwest of Scotland Lodge Farm near the southeast corner of Parsonage Down. This bridge would provide ecological and landscape connectivity across the Scheme and would form part of a non-motorised user (NMU) route and agricultural access route which would run adjacent to a layby on the existing A303 to the area of Parsonage Down and Yarnbury Castle. An example of a ‘green bridge’ is shown in Figure 2.3. An area east of Parsonage Down would be used to create chalk

grassland habitat using excavated chalk material arising from construction and is described further below.

2.3.7 Local access from Winterbourne Stoke, northwards towards Shrewton, would be provided by the B3083. This access would be maintained by the provision of a single span bridge to carry the new A303 over the B3083. The proposed new bridge would be located to the west of the existing B3083. This location would necessitate the realignment of the B3083 but would enable the B3083 to be kept open to traffic throughout the construction period other than for discrete periods to allow short duration specific activities to be undertaken (e.g. construction of tie-ins etc.). The clear span of the bridge would accommodate both the re-aligned B3083 and a segregated verge on the east side to allow cattle movements and equestrian use across the new alignment.

Figure 2.3: Example of a green bridge (Weymouth Relief Road)

2.3.8 The Scheme would continue in an easterly direction, crossing the River Till valley on a new twin deck viaduct. The River Till viaduct would carry the proposed A303 over the River Till SAC and SSSI and its floodplain. The viaduct would be designed to minimise impacts on the river below while balancing other environmental considerations, such as landscape and visual impacts. It would be a twin deck structure, with each deck approximately 14m wide and 210m in length, and with a gap of approximately 7m between the decks. The road level on the bridge would be approximately 10m above the River Till where it crosses the river channel. The location of the piers would not be within the SAC or SSSI and would allow the existing bridleway (WST04) from Winterbourne Stoke to remain at its current location (Figure 2.5). An environmental barrier, 1.5m in

height, would be installed on the southern parapet to help screen vehicle movements from locations to the south.

2.3.9 A second green bridge at the Winterbourne Stoke Public Right of Way (PRoW) WST06B (see Figure 2.5) would maintain the existing PRoW over the new A303 alignment and as with other green bridges would provide for ecological and landscape connectivity across the Scheme.

2.3.10 Continuing to the east, the Scheme would cross the line of the existing A303 approximately 700m west of the existing A360 Longbarrow Roundabout. A new grade separated junction with the A360 is proposed to the west of the WHS boundary (Figure 2.5). This junction, known as the Longbarrow Junction, would accommodate free-flowing traffic movements between the A360 and the A303. The junction would consist of two roundabouts connected by a short length of dual carriageway, carried over the A303 on a new green bridge with earth bunds on each side, to help mitigate visual impact and to provide ecological connectivity. The roundabouts and approach roads would be set below existing ground level.

2.3.11 Traffic lights would be required at the Longbarrow Junction. The traffic lights could be used during both day and night. A link to the de-trunked A303 to the west, accessing Winterbourne Stoke, would also be provided from the new Longbarrow Junction.

Central section (Figure 2.5E-I)

2.3.12 As the Scheme crosses the line of the existing A360, it would enter into the WHS where it then follows closely the line of the existing A303.

2.3.13 The proposed alignment over the first 1.0km of this section would generally be in a cutting varying in depth between approximately 7m and 10m. The top approximately 2.5m of the cutting would have approximately 1 in 2 grassed slopes. The bottom of the cutting would comprise vertical retaining walls.

2.3.14 Shortly after entering the WHS there would be a further green bridge (also known as a ‘land bridge’) that would be approximately 150m in length and would start approximately 150m from the western boundary of the WHS. In addition to an NMU route and private means of access, this bridge would also provide visual and landscape connectivity between barrow groups to the north and south of the Scheme. The existing A303 through the WHS would be converted to a restricted byway and is described further in paragraph 2.3.56 onwards.

2.3.15 The western tunnel portal (Figure 2.5) would be located within the WHS, north west of Normanton Gorse, approximately 1.0km east of the existing Longbarrow Roundabout and immediately to the south of the existing A303. The tunnel would commence with a fully grassed-over cut and cover tunnel before it becomes a bored tunnel. Tunnel service buildings would be located outside the tunnel portal.

2.3.16 The Scheme would then continue in tunnel in an easterly direction following an alignment that is broadly similar to the existing A303 but at a depth of up to 50m.

2.3.17 The tunnel would be a twin-bore structure, approximately 2 miles (approximately 3.3 km) in length, and each bored section of the tunnel would have an internal diameter of approximately 11.5m.

2.3.18 The two bores would be connected underground by a series of cross passages at regular intervals to allow for the safe evacuation of road users in the event of an incident in one of the bores.

2.3.19 The tunnel would contain a number of mechanical and electrical, operational and safety systems. The items of plant required to power and control these systems would predominantly be housed at the tunnel service buildings located outside of the tunnel.

2.3.20 The tunnel would emerge at the eastern tunnel portal through a short section of cut and cover tunnel extending eastwards from the bored tunnel section. The eastern tunnel portal would be located to the east of the King Barrow Ridge and The Avenue (Figure 2.5) and just to the north of the existing A303. The portal approach would be in deep cutting formed mostly of grassed slopes beyond the extents of the tunnel buildings.

2.3.21 The Scheme would then closely follow the line of the existing A303 to Countess Roundabout.

Eastern section (Figure 2.5I-K)

2.3.22 A new flyover above the existing roundabout would separate traffic going east-west along the A303 from traffic going north-south along the A345 Countess Road, with slip roads accommodating traffic movements between the two roads. The new flyover would include two single span bridges that would accommodate the existing roundabout traffic lanes.

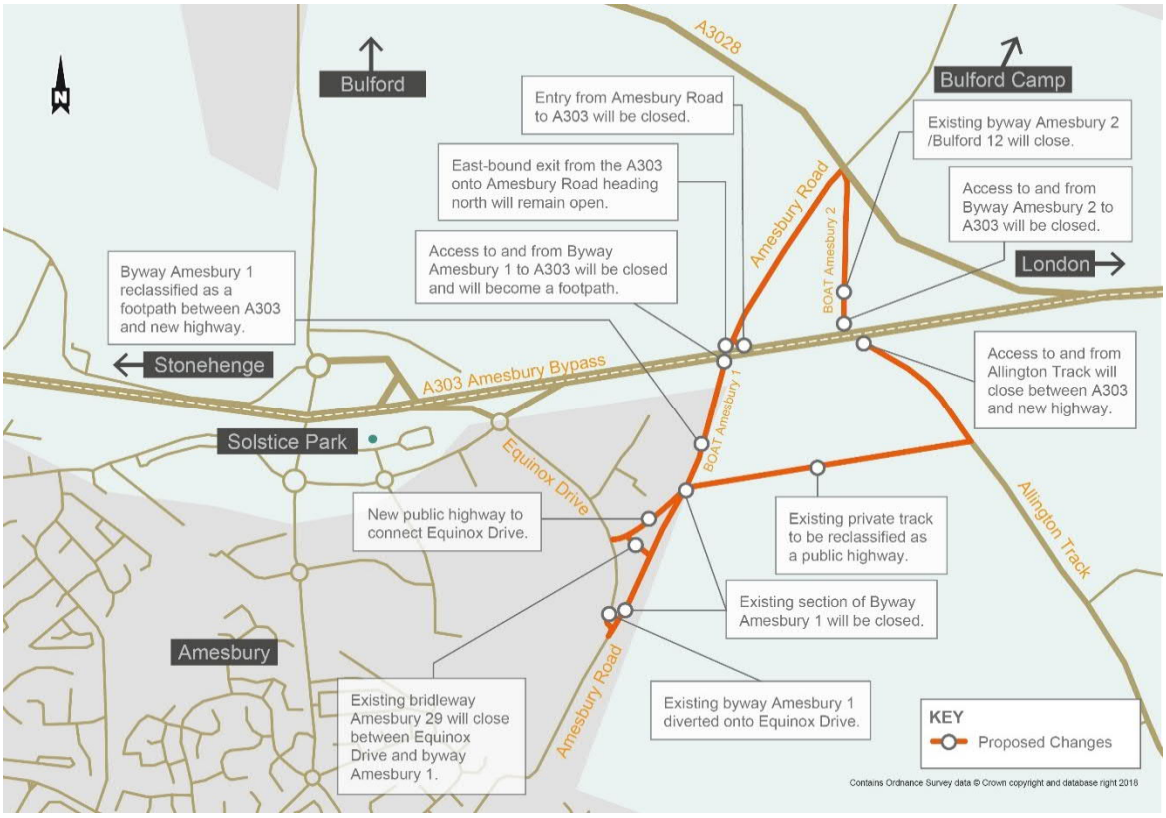
2.3.23 Retaining walls would be required at this junction to support the A303 between the slip-roads. 1.8m high noise barriers would be installed along both sides of the flyover to help screen vehicles and to help attenuate vehicle noise.

2.3.24 There are two existing subways between the proposed eastern tunnel portal and Countess Junction, which would be removed. New pedestrian crossings would be created around the existing Countess Roundabout to provide north/south connectivity along Countess Road under the A303.

2.3.25 The Scheme would tie in with the existing A303 close to the existing River Avon Bridge, to the west of Solstice Park junction.

2.3.26 To the east of the Solstice Park Junction there would be a number of changes to existing rights of way. These changes at the eastern end of the Scheme are summarised in Figure 2.4 below.

Figure 2.4: Changes to rights of way at eastern end of Scheme



Highway design

2.3.27 The following highway design principles have been applied in the development of the Scheme:

a) The design is based on good practice, as embodied in the Design Manual for Roads and Bridges (DMRB).

b) An 'earthworks balance' is sought to minimise importing or exporting earthworks materials to/from the site.

c) Roadside features such as lighting would be minimised to reduce visual impacts, whilst remaining consistent with safety requirements.

2.3.28 Further detail on the principles proposed to be applied in the detailed design are provided in the Design and Access Statement (Application Document 7.2).

2.3.29 The A303 outside of the tunnel would be a dual carriageway formed of two carriageways each 9.3m wide (comprising two running lanes and a hard strip on either side), generally with a verge up to 3.5m wide. The verge width would be increased locally as required to some 10m to provide the appropriate unobstructed visibility around curves. Further localised increases in verge width to accommodate highway features such as signs, vehicle restraint systems, communication equipment and laybys would also be included.

2.3.30 The central reserve would be built with a minimum width of 2.5m, but increased as required to provide the appropriate visibility around curves, and locally on the approaches to the tunnel.

2.3.31 Within the tunnel the verge and hardstrip widths would be reduced. A 1.5m wide emergency walkway would be provided along each side of each carriageway.

2.3.32 Telecommunications networks to support the tunnel operations would be provided within the highway verges, consisting of a fibre network installed in a ducted network. Optical fibre equipment cabinets would be installed at intervals to support the transmission network requirements.

2.3.33 Public laybys and hard standing areas for maintenance and operations requirements would be incorporated along the length of the Scheme.

2.3.34 Vehicle restraint systems would be provided in accordance with the required standards. Generally, this would include a central reserve concrete safety barrier and verge steel safety barriers. The outer carriageway barriers on raised structures, such as the River Till Viaduct and Countess Flyover, would be bridge parapets.

Climate change adaptation

2.3.35 To ensure that the strategic road network can meet the challenge of changing climate, the Scheme has taken into account the potential effects of climate change. At this DCO design stage, the main climate change considerations are related to material deterioration, flood risk and drainage systems.

2.3.36 Section 10(3)(a) of the Planning Act requires the Secretary of State to have regard to the desirability of mitigating, and adapting to, climate change in designating National Policy Statements. Within NPSNN itself, the responsibilities of the applicant are set out in paragraphs 4.40-4.47 and are summarised as follows:

a) Applicants are required to consider the impacts of climate change when planning location, design, build and operation and the ES should set out how the proposed development will take account of the projected impacts of climate change.

b) For transport infrastructure with safety-critical elements and a design life of the asset is 60 years or greater, as with the Scheme, the applicant is required to apply the UK Climate Projections 2009 (UKCP09) high emissions scenario (high impact, low likelihood) against the 2080 projections at the 50% probability level.

c) The applicant is required to take into account the potential impacts of climate change using the latest UK Climate Projections available at the time and ensure that the ES that is prepared identifies appropriate mitigation or adaptation measures for the estimated lifetime of the new infrastructure.

d) The applicant is required to demonstrate that there are no critical features of the design which may be seriously affected by more radical changes to the climate beyond that projected in the latest set of UK climate projections.

e) The applicant is required to base any adaptation measures on the latest set of UK Climate Projections, the Government's national Climate Change Risk Assessment and consultation with statutory consultation bodies and assess any measures in the ES, which should set out how and where such measures are proposed to be secured.

2.3.37 Each of these requirements has been addressed and an assessment is included within Chapter 14 Climate.

Flood risk and drainage design

Flood risk

2.3.38 All sources of flood risk to and from the Scheme, including the impact of a changing climate on flood risk, have been assessed as part of the Flood Risk Assessment (Appendix 11.5) and Chapter 11 Road Drainage and the Water Environment.

Drainage design

2.3.39 Road drainage would be managed predominantly by infiltration. Details of the proposed drainage have been developed in discussion with the Environment Agency. These are outlined below and are subject to final detailed design in accordance with the surface water drainage strategy that is to be approved under the DCO.

2.3.40 The drainage design includes an allowance for the effects of climate change. The Scheme has been designed to reduce the risk of flooding through the use of sustainable drainage systems and comprises three distinct drainage areas, the roads west of the tunnel, the tunnel and the roads east of the tunnel – these are described below.

West of Tunnel

2.3.41 Runoff from the main carriageway would outfall to carrier pipe systems. The use of carrier pipes would ensure that spillages are contained within the drainage system and do not infiltrate to ground.

2.3.42 The runoff would be conveyed via the carrier pipes to infiltration basins. The basins would be grassed and designed with shallow slopes to integrate sympathetically into the landscape. A proprietary treatment system would be provided in the base of the basin to absorb contaminates before the runoff is discharged via infiltration to ground. No outfalls to surface watercourses are proposed from these basins. Exceedance routes from the basins would be identified to ensure any potential disruption caused by an extreme rainfall event is minimised. Penstocks would be provided in the chambers immediately upstream of the basins to provide additional spillage control.

2.3.43 From just east of the new Longbarrow Junction, to the tunnel portal entrance, an infiltration crate system within the retained cutting, positioned underneath the central reserve, would be used to discharge the runoff. When extreme groundwater levels prevent infiltration to ground at the base of the cutting the waters would be collected in a sump at the tunnel portal and pumped into an infiltration tank at a higher level for discharge into the ground.

Tunnel

2.3.44 The tunnel drainage has been designed to manage the flows from the Fixed Fire Fighting System (FFFS), accidental spillages, groundwater ingress through the tunnel lining and maintenance activities.

2.3.45 The proposed tunnel drainage would outfall to a carrier pipe located beneath the roadway. The carrier pipe would then convey the flows to a sump and to an impounding sump from where they would be removed from site by tanker.

East of Tunnel

2.3.46 An infiltration crate system similar to that on the western portal approach would be used. From the top of the cutting eastwards carrier pipes would convey the runoff to a series of linear ponds adjacent to the roundabout, located within the existing highway boundary.

2.3.47 The linear ponds would be designed to supplement the existing unlined ditches to which the runoff from the existing A303 currently outfalls. The runoff would be attenuated to achieve a betterment of the existing discharge rates (as discussed with Wiltshire Council). All ponds would outfall to the existing highway ditches and then to the River Avon.

Intelligent transport system

2.3.48 Equipment to enable operational monitoring and control of traffic during incidents and maintenance would be located along the length of the Scheme and in accordance with the relevant design standards. The equipment would include CCTV cameras and variable message signs, in compliance with Highways England design standards.

Emergency/maintenance crossing points

2.3.49 When one tunnel bore is closed during planned maintenance or an incident occurs in a bore, the vehicles that would usually travel through that bore would be diverted into contra-flow travelling in the open bore. Cross-over points would therefore be required to allow this. These would be located on the main carriageway at both Longbarrow Junction and Countess Junction. To support the operation of these cross-overs, temporary lighting and signage would be provided as required.

Lighting

2.3.50 Given the WHS context, dark skies are an important consideration within the Scheme design. There would be no permanent road lighting associated with the Scheme, outside of the tunnel and Green Bridge Four, within the WHS.

2.3.51 The tunnel would be lit and the existing lighting provision at Countess roundabout would be replaced with a modern system that would reduce light spill. The A303 would be lit under Green Bridge Four during daylight hours only to avoid night-time light spill into the WHS. Dimmer controls would be used at dawn and dusk to match lighting within the 'land bridge' to ambient levels.

2.3.52 The proposed Longbarrow Junction would be unlit, except for the provision of traffic lights. To the west of Longbarrow Junction the Scheme would be unlit.

Earthworks and landform

2.3.53 The Scheme would require a number of embankments and cuttings to be formed to accommodate the horizontal and vertical alignment as shown in Figure 2.5.

2.3.54 Earth retaining structures would be required at a number of locations.

2.3.55 The current landscape proposals include the following:

a) The rounding off of cut slopes in order to integrate the highway earthworks into the adjacent landform. This would include the deep cutting south of Parsonage Down.

b) The regrading of embankments in order to integrate the highway earthworks into the adjacent landform. The main area for earthwork regrading would be to the north of Scotland Lodge, which is to the west of the Till Valley. Here an embankment would be graded out on the northern side of the Scheme to tie the embankment into the adjacent valley and hillsides and regraded on the southern side. Other areas of landscaping would be provided north east of Winterbourne Stoke and at Longbarrow Junction as shown on Figure 2.5.

c) Earth banks or bunds of approximately 2m – 3m in height, known as 'false cuttings', would be included along sections of the Scheme to the west and east of the Till Valley, including over the B3083 underbridge. These would be associated with the regrading of the embankments described above and would help reduce views of the traffic on the Scheme as well as reduce noise levels to the surrounding area.

d) The graded out cutting slopes and regraded embankments would, in most locations, be returned to agricultural use. Within the vicinity of Parsonage Down however, it is proposed to develop species-rich chalk grassland as explained further in sub-section 2.4.

e) Within the WHS, the cuttings would include a 2.5m deep cut slope above the lower retaining structure. The top of the cut slopes would be rounded off to ensure a better integration with the adjacent landform.

Existing A303

2.3.56 The existing A303 would be subject to changes between the western tie-in with the new alignment and the eastern tunnel portal. The overall approach would be to downgrade the route, but this would vary across the length depending upon local requirements, for example, the need to maintain local access. From west to east, the proposed approach at each section can be summarised as:

a) Western tie-in to existing layby west of Winterbourne Stoke: This stretch of the existing A303 would be downgraded to a byway open to all traffic (BOAT).

b) Layby west of Winterbourne Stoke to the east of the proposed Longbarrow Junction: The A303 would be de-trunked, but retained for local access to Winterbourne Stoke and properties as far west as the layby, with a new tie-in to the southern side of the new Longbarrow Junction. A segregated bridleway would be provided between the east of Winterbourne Stoke and the new Longbarrow Junction.

c) Proposed Longbarrow Junction to existing Longbarrow Roundabout: This short length of the existing road would largely be removed and lost within the new junction and associated landscaping works. A new bridleway would be created along the southern boundary of the proposed A303, to link with the proposed restricted byway along the line of the old A360 (see sub-section on PRoW below).

d) Within the WHS: The existing A303 would be converted to a restricted byway accessible to pedestrians, wheelchairs and mobility scooters, cyclists, equestrians and horse drawn carriages. Authorised agricultural, emergency service and maintenance vehicles would also be permitted. The restricted byway would provide safe access for the above user groups, compliant with the Equalities Act and with the aim of providing increased recreational opportunities across the WHS. This restricted byway would extend along the stopped-up section of Stonehenge Road.

   For the purpose of this assessment, it is assumed that the restricted byway will consist of:

   i. a 4m wide chalk grassland habitat, accessible to pedestrians and horse riders; and

   ii. a 4m bound surface, to replace the existing A303 surface.

   The restricted byway would comprise a bound surface adjacent to chalk grassland habitat. The chalk grassland habitat would be mainly bare chalk at year 1 of operation, but by year 15 it would consist of an established

grass sward. The bound surface would be suitably coloured at year 1 of operation to be visually recessive and sympathetically integrated within the WHS, to a visually acceptable level. At year 15 of operation, the bound surface tone would have softened, to further aid its integration within the landscape.

In order to integrate the restricted byway within the landscape, it would not include hard edging, raised kerbs, surface markings, signage, lighting, benches, litter bins or other such street furniture in order to retain an open character. The adjacent fencing would be visually unobtrusive.

e) The choice of the bound surface colour would be established through consultation between Highways England and relevant Stakeholders. The stretch of the existing A303 to the east of the current junction with Stonehenge Road would not form part of the restricted byway and would only be required for occasional maintenance and agricultural access. As such the existing surface would be broken up and a grassed surface treatment provided.

Public Rights of Way

2.3.57 The Scheme would cut across a number of existing PRoWs including Byways Open to All Traffic (BOATs), bridleways and public footpaths. Provision is made within the Scheme to maintain the existing function of the PRoWs with suitably located overbridges. However, the Scheme also includes new PRoW routes to improve accessibility and connectivity for communities including Winterbourne Stoke and Amesbury. These are shown on Figure 2.5 and from west to east, are:

a) a new restricted byway on the northern side of the new alignment, west of Winterbourne Stoke to Yarnbury Castle, which would tie in to PRoW SLAN3 north of the A303;

b) a new restricted byway with Private Means of Access (PMA) rights along the southern side of the new alignment, which would tie in to the west with BOAT SLAN3 south of the A303 and with bridleway BSJA3 to the east (which will become a BOAT). To the east of BSJA3 a new BOAT will extend to meet the old A303;

c) a new restricted byway with agricultural access from the existing layby on the A303, running north across the new green bridge north-west of Scotland Lodge Farm, which would enable access to the arable land parcels on the north side of the new alignment;

d) a new bridleway, east from Winterbourne Stoke to the new Longbarrow Junction, connecting with the new restricted byway through the WHS via the new green bridge to the east of the existing Longbarrow roundabout. The new bridleway and the new NMU route through the WHS would enable NMU journeys between Winterbourne Stoke and Amesbury;

e) a new restricted byway along the existing A360 alignment, where removed, crossing the new A303 alignment on the new green bridge to the east of the existing Longbarrow Roundabout, and extending to the Stonehenge Visitor Centre to the north and restricted byway BSJA9 to south. South of this point a bridleway extends to meet Byway 12; and

f) a new restricted byway open to NMUs, and authorised agricultural and statutory utility vehicles would be created through the WHS along the route of the existing A303, connecting with Stonehenge Road at the eastern end of the Scheme.

2.3.58 It is currently possible to gain access between byways AMES11 and AMES12 along the existing A303, however this vehicular access would be removed by the placement of this section of the A303 in tunnel (see Chapter 3 Assessment of Alternatives). NMU access between AMES 11 and 12 would be available along the new restricted byway along the line of the old A303, but vehicular access would not be retained.

Environmental masterplan and securing mitigation

2.3.59 The Environmental Masterplan presented in Figure 2.5 shows mitigation measures embedded as integral elements of the indicative Scheme design including the green bridges and new NMU routes described above as well as areas of habitat creation, such as landscaping and the new area of chalk grassland adjacent to Parsonage Down SSSI (see excavated materials in section 2.4.1 onwards). The Environmental Masterplan includes indicative cross sections across the Scheme (Figure 2.5 P-S).

2.3.60 The mitigation measures shown on the Environmental Masterplan have been factored into the assessment of significant effects presented in the topic chapters (chapters 5 to 14). These mitigation measures are also described in the Outline Environmental Management Plan (OEMP) (Appendix 2.2) and the Environmental Mitigation Schedule (EMS) presented at Appendix 2.1. The EMS lists out each mitigation measure which is not already covered in the OEMP and how it is secured.

2.3.61 The mitigation set out in the ES and illustrated in the Environmental Masterplan would be secured by requirements in the DCO that the Scheme is undertaken in accordance with:

a) the OEMP (which includes detailed provision on mitigation of environmental impacts);

b) specific mitigation obligations in key topic areas such as archaeology, landscaping and drainage; and

c) the scheme design shown on the plans submitted with the DCO.

2.3.62 It would also be secured by Highways England placing a contractual responsibility on the main works contractor and subcontractors to:

a) comply with the DCO requirements; and

b) subject to (a), deliver each mitigation measure as specified in the ES and Masterplan, unless the contractor is able to define an alternative measure or measures, approved by Highways England, which achieve the same level of mitigation.

High load route

2.3.63 The existing A303 in the Scheme area is identified as a high load route for vehicles with a maximum height of 6.1m. A restriction on abnormal height vehicles in the new tunnel means that only normal height vehicles can use the new tunnel. The high load route would therefore be diverted from the new Longbarrow Junction, north on the A360 and B3086, then east on The Packway and A3028, and south on Salisbury Road to Solstice Park. This route functions in both directions (see Figure 2.6). To enable the free flow of traffic between the B3086 and the Packway, it would be necessary to reconfigure the junction at Rollestone Corner at the north-west corner of the WHS and the proposed layout is shown on Figure 2.5. It is anticipated that the high load route would be used on average once per year.

Diversionary route

2.3.64 In the event of the emergency closure of both bores of the proposed tunnel, traffic would be diverted along the high load route, but using the A345 (Countess Road) rather than the A3028 to re-join the A303 at Countess Roundabout (see Figure 2.6). It is considered that the closure of both bores would be an extremely rare event.

2.4 Construction, operation and long-term management

Construction activities

2.4.1 The approach to construction described below is indicative but it is representative of the likely approach to be adopted. Further provisions in relation to construction of the Scheme would be provided in the Construction Environmental Management Plan (CEMP), which would be developed based on the OEMP included in this Application (Appendix 2.2) and which would be approved as part of the making of the DCO.

2.4.2 The Scheme comprises the following principal overlapping construction elements:

a) the construction of the tunnel; and

b) the construction of the surface roads, bridges and junctions, including the related earthworks to create cuttings and embankments.

2.4.3 The draft DCO allows for the potential for the proposed development to be constructed in phases, for example, with the section between the western tie-in

and Longbarrow junction open to traffic, prior to the later completion of the section through the WHS, which is dependent on the construction of the tunnel.

2.4.4 The site boundaries shown in Figure 2.7 allow for temporary traffic management areas, temporary working and storage areas, material stockpiles, haul roads, and provision for site compounds to be used during the construction of the Scheme. Likely locations for these construction elements are shown on Figure 2.7 in illustrative form.

Construction programme

2.4.5 Subject to securing a DCO, preliminary works are planned to start in 2020, with the main construction works following in 2021 and with the Scheme due to open to traffic in 2026. Table 2.2 provides an indicative high level programme of key milestones.

Table 2.2: High level programme of key milestones

Milestone	Target Date
SoS DCO Decision	February 2020
DCO Judicial Review period ends	March 2020
Land entry effected	July 2020, dependent on powers in DCO
Start of DCO preliminary works	July 2020
Start of main works	July 2021
Full Scheme open to traffic	2026

2.4.6 The preliminary works delivered under the DCO would consist of archaeological and ecological mitigation works, remedial work in respect of any contamination or other adverse ground conditions, erection of temporary fencing, diversion and laying of underground apparatus, site clearance and the two sections of highways works outlined in Table 2.3.

2.4.7 The OEMP in Appendix 2.2 includes a section specifically related to the preliminary works (Table 3.2a). Implementation of the measures described in Table 3.2a of the OEMP would ensure that there are no significant environmental effects resulting from the preliminary works.

Table 2.3: List of proposed preliminary highways works under the DCO

Preliminary works	Envisaged activities
Rollestone Crossroads highway improvement	The works are described in Work No.5 of Schedule 1 to the draft DCO, and shown on the Works Plans and the Engineering Section Drawings (Plan and Profiles), with the design shown illustratively on Sheet 13 of the General Arrangement Plans.

Preliminary works	Envisaged activities
Minor highway works east of Solstice Park	The works described in Work No. 1H (viii)-(xiv) and Work No.7 of Schedule 1 to the draft DCO, and shown on the Works Plans and the Engineering Section Drawings (Plan and Profiles), with the design shown illustratively on Sheet 11 of the General Arrangement Plans.

2.4.8 For the purposes of the EIA and the traffic assessment, two principal phases of the construction programme for the main works have been identified. These correspond to:

a) Phase 1, when Winterbourne Stoke bypass, Longbarrow Junction and Countess Roundabout flyover are under construction (likely 2021-2023); and

b) Phase 2, when the construction of the tunnel is the primary construction activity (2024 onwards). The Winterbourne Stoke bypass, Longbarrow Junction and Countess Roundabout flyover constructed in Phase 1 would be operational.

2.4.9 The construction plan will be refined through detailed design of the scheme with appropriate regard to reducing the overall impacts during construction.

Working hours

Core working hours

2.4.10 The project-wide core working hours are defined in Table 2.4.

Table 2.4: Core working hours

Works	Working hours
All works excluding earthworks and tunnelling	07:00 – 19:00 Monday to Friday 07:00 – 13:00 Saturday
Earthworks	Summer: 07:00 – 22:00 Monday to Saturday with occasional working on Sundays and Bank Holidays Winter: 07:00 – 19:00 Monday to Friday 07:00 – 13:00 Saturday
Tunnelling operations and associated works	24 hours 7 days/week

Site-specific working hours

2.4.11 At certain locations, a different set of working hours would apply in order to limit the potential for noise impacts on residential receptors and heritage assets north of both Winterbourne Stoke and Amesbury (Table 2.5 and Table 2.6 below). These hours are the same as Wiltshire Council's standard hours for noisy activities during construction.

Table 2.5: Site-specific working hours

Works	Working hours
All works	07:30 – 18:00 Monday to Friday 07:30 – 13:00 Saturday

Table 2.6: Locations at which site-specific working hours apply

Site	Site chainages
North of Winterbourne Stoke	Chainage 3520 – Chainage 4180
North of Amesbury	Chainage 11300 – Chainage 12400

Construction compounds and site accesses

2.4.12 The main construction compound and tunnel production areas would be located to the west of the existing Longbarrow Junction and outside of the WHS. The main access to these areas would be off the A360 although other access arrangements may be viable. The approximate location of these areas and an illustrative layout is shown on Figure 2.7.

2.4.13 The main site offices compound would cover an area of up to six hectares and would include temporary site offices, parking, and welfare facilities. This compound would also support the surface earthworks and road construction elements of the Scheme. Earth bunds using stockpiled soils would be created along the margins of the compound to screen it from viewpoints within the WHS to the east.

2.4.14 The main production area for the tunnel construction would cover an additional area of up to seven hectares. It is anticipated that the tunnel production area would be immediately adjacent to the main site compound and on the alignment of the new road to enable movement of tunnel excavations along the new alignment rather than on the existing A303. This production area would include a treatment plant to treat the excavated material from the tunnel, a facility to produce the prefabricated primary tunnel lining, a storage area, a batching plant and aggregate storage.

2.4.15 Additional satellite offices and compounds would also be required. A satellite office and compound area is likely to be located east of the B3083 (see Figure 2.7) at the western end to serve the construction of the River Till viaduct and the western section of the Scheme. A further satellite office and compound

area would be located to the north of the Countess Roundabout to serve the eastern end of the Scheme (see Figure 2.7).

Material storage and stockpiles

2.4.16 There is a requirement to remove approximately 190,000 cubic metres of topsoil from the proposed alignment and then temporarily stockpile it until needed for re-use on the various batters, verges and landscape areas. The topsoil stockpiles would generally be located at the perimeter of working areas so that they would also screen the works from the public. They would be sown with chalk grassland seed to reduce their visual impact. The stockpiles would be approximately 2m to 3m in height. Material and stockpile areas would be located along the Scheme within the site boundary, but outside of the WHS. Soils removed from areas identified as being of designated archaeological importance would be subject to specific procedures, defined in the OEMP (Appendix 2.2).

Haul routes

2.4.17 Wherever possible, construction plant would travel along the alignment of the Scheme using the footprint of the proposed embankments and cuttings, for example from the main site compound to the western tunnel portal. No haul roads are proposed within the WHS, other than those within the footprint of the proposed road alignment.

2.4.18 An illustration of the likely haul routes required for the construction of the Scheme is given in Figure 2.7. Haul road maintenance and dust control measures would be adopted and are defined within the OEMP (Appendix 2.2).

2.4.19 At the western end, an all-weather haul road would be required from the tunnel production area to the Parsonage Down area to enable the transfer of excavated material. This haul route would be constructed from material excavated from the Scheme construction and would run adjacent to, but outside of the main earthworks. A temporary bridge would be required over the River Till SAC for this haul route. To minimise adverse impacts this bridge would be raised above the valley floor with supports located outside the designated area of the SAC and the River Till Floodplain. The Environment Agency would be consulted on the design of the temporary bridge and relevant consents gained where applicable.

2.4.20 All haul routes would be removed upon completion of the earthworks and the land reinstated.

Construction traffic

2.4.21 Although the proposed haul routes and the alignment of the Scheme would be used for the majority of on-site vehicle movements, it would be necessary to use the existing A303 for some operations. For example, while much of the material excavated at the eastern end would be used to construct the embankments for the Countess Roundabout flyover, there would be some surplus chalk material that would need to be transported during off-peak periods

along the A303 from this eastern section of the works towards the Parsonage Down area.

2.4.22 Earthworks material would generally be retained and re-used within the Scheme, but there may be some small quantities of contaminated material that would need to be transported to licensed waste management facilities.

2.4.23 Other construction traffic arriving from off site would consist of vehicles delivering the products required for the construction of the Scheme, including concrete, bitumen, aggregates, pipes and steel. Some deliveries would arrive as abnormal loads, such as large construction plant. In most cases these construction traffic movements as well as site worker journeys would be directly to and from the main compound area at Longbarrow, using the existing A303 and the A360. Table 2.7 provides a summary of the likely HGV movements, based upon the delivery type for the two main phases of the project.

Table 2.7: HGV daily totals during construction phases 1 and 2

Delivery Type	Phase 1		Phase 2	
	Daily	Av. Hour	Daily	Av. Hour
Concrete: non-tunnel	40	3.6	14	1.2
Concrete: tunnel	74	6	44	4
Structural Steel	0.2			
Reinforcing bar	3.5		1.5	
Coarse-grained backfill materials	1.0		0.5	
Hardcore	0.7		0.1	
Timber	1.0			
Pre-cast concrete	0.05		0.02	
Road surfacing	6		6	
Drainage stone	1.0		0.6	
Lime/cement	0.12		0.18	
Total	**128**	**10.6**	**67**	**5.6**

2.4.24 In order to provide a robust assumption for the EIA and the traffic assessment, a 30% contingency has been added to the average hourly totals, resulting in assumptions of an average of 14 Heavy Goods Vehicles (HGVs) per hour in Phase 1 and seven HGVs per hour in Phase 2.

2.4.25 It has been assumed that deliveries of the above materials would be made in a 12 hour period between 7am and 7pm other than in exceptional circumstances, and that deliveries would route along the following main corridors, based on the following percentage distribution:

a) A36 (North) - 55%

b) A36 (South) - 15%

c) A303, West of A36 Junction - 15%

d) A303, East of Scheme - 15%

2.4.26 The percentage distribution is based on the assumption that a higher proportion of HGV's are assumed to arrive on site from the A36 (North) due to the location of various quarries in the Mendips. An equal distribution of traffic was then assumed from the other corridors.

2.4.27 It is assumed that 80% of all deliveries would go to the main construction compound and tunnel production area at Longbarrow with the remainder going to the satellite compound at Countess Junction.

2.4.28 A Traffic Management Plan (TMP) would be implemented and would define those measures used by the contractor to reduce the impacts from construction traffic, including measures to reduce worker vehicle movements and to reduce HGV movements, particularly at peak periods.

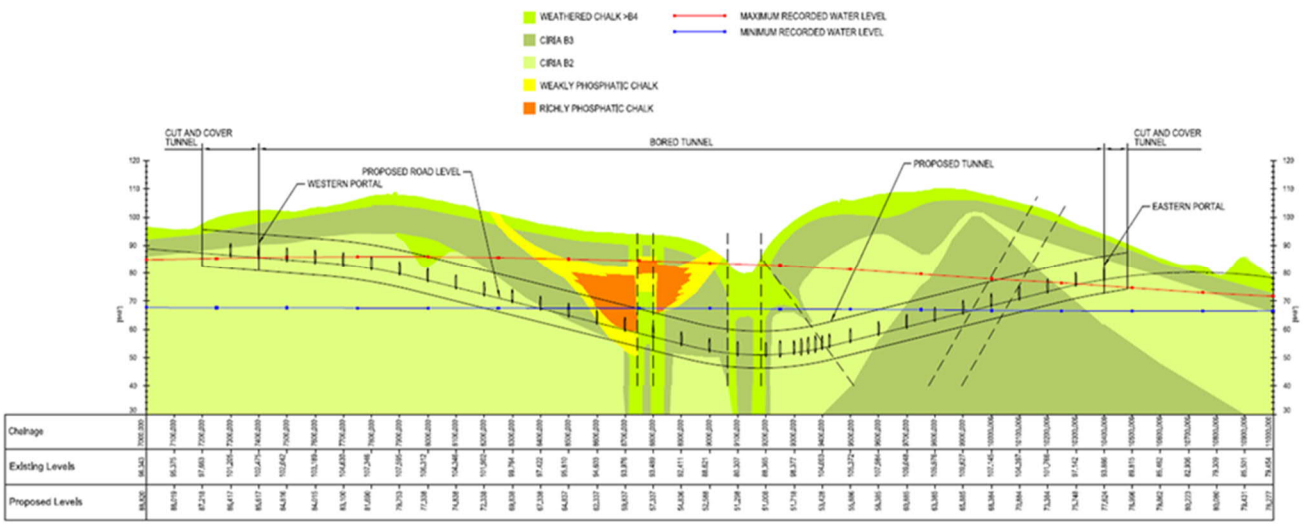
Existing A303 during construction

2.4.29 Appropriate traffic management measures would be put in place to ensure that traffic flows on the existing A303 and other local roads are maintained, whilst allowing safe working at the interface between the existing road network and the Scheme.

Tunnel construction

2.4.30 A Tunnel Boring Machine (TBM) is likely to be used to build the tunnel and the current expectation is that it would start boring at the western end of the tunnel at the western portal and continue eastwards. It would then be turned around at the eastern portal to construct the second bore from east to west or taken back to the western end to bore from west to east. The tunnel would be constructed almost entirely though chalk formations, as illustrated in Figure 2.8:

Figure 2.8: Conceptual geology model - Cross section of tunnel



(from Mortimer et al, 2017, Ref 2.3)

2.4.31 Excavated chalk arising from the tunnel would be extracted at the western portal for both tunnel bores and transported to a treatment area within the main tunnel production area.

2.4.32 Two tunnelling concepts and five techniques for tunnel construction have been considered as follows:

a) Option 1: Open Face Tunnelling

   i. Open Shield

   ii. Sprayed Concrete Lining

b) Option 2: Closed Face tunnelling

   i. Slurry TBM

   ii. Earth Pressure Balance TBM

   iii. Variable Density TBM

2.4.33 It has been concluded that safe construction of the main tunnel bore could be completed by each of the three closed face techniques. In the UK it has become normal practice to tunnel water bearing chalk (as in the case with the Scheme) with a slurry machine although the machine choice will be left to the appointed contractor. The assessment within the ES is equally valid for each for these three technologies, although where relevant, an assumption has been made that a slurry TBM would be used, since this is most likely and also has the greatest spatial requirement for tunnel arisings treatment.

2.4.34 The highly variable nature of the groundwater levels (see Chapter 11 Road drainage and the water environment) means that it is possible that temporary and localised groundwater control would be required for the construction of the tunnel portal slab to launch the TBM and also for some cross-passages for mechanical and electrical services at Stonehenge Bottom where groundwater levels are high. If required, the extent and duration of groundwater control would be minimised.

Other construction methods

2.4.35 The construction of the Scheme would use typical construction techniques associated with major infrastructure projects including piling to support major structures. Piling would be required to construct the support for the piers of the River Till viaduct and the Countess Roundabout, and possibly elsewhere for the retained cuttings. Major bridge structures would be likely to be built using combinations of 'cast-in-situ' elements and imported 'off-site' elements craned into place.

2.4.36 Earthworks, including cuttings and embankments, would be required to create the route alignment. The cuttings and embankments would be constructed using a 'cut-and-fill' approach, using the alignment and haul routes described above to move materials along the route corridor. The formation of the road surface is likely to use relatively standard techniques, including construction of capping, sub-base and pavement layers.

Plant and equipment

2.4.37 Construction of the Scheme would require a large quantity of plant and equipment. The volume of earth to be moved would require large excavators, dump trucks, dozers, compactors plus graders, bowsers and stabilising plant. Seasonal constraints associated with working in chalk, mean that a number of on and off movements with low loaders to deliver earth moving plant would be required. Plant numbers and usage will be determined by the chosen construction methodology although for the purposes of assessment, preliminary plant lists have been used to consider construction noise effects (see Chapter 9 Noise and vibration).

Workforce

2.4.38 The work force will vary over the course of the construction phase. The maximum monthly workforce has been assumed to be 300 staff.

Utilities

2.4.39 Construction of the Scheme is likely to require the diversion, relocation or protection of approximately 25 existing utility assets including water, wastewater, electricity, gas and telecommunications. Most of the required diversions would be planned in detail by the contractor as part of the construction works. The larger (pipeline) diversion, along with an outline of the new power and water utility infrastructure to be provided, is described briefly in the following sub-sections and shown in Figure 2.7A-E.

Esso pipeline

2.4.40 An existing Esso oil pipeline which is crossed by the Scheme to the north west of Winterbourne Stoke will be diverted to the east of and generally parallel to the existing pipeline. A protective slab structure will be constructed above the diverted pipeline to protect it against construction impact. To ensure the long term integrity of the new pipe, no planting of trees will be permitted above the pipeline. However, other habitat creation measures above the pipeline and surrounding area will be permitted.

2.4.41 Discussions have been ongoing with Esso regarding the pipeline diversion. The pipeline would be diverted within a corridor extending from approximately 50m west of its current alignment to the B3083, as shown on Figure 2.7A-E. For the purpose of this EIA, we have assumed a reasonable environmental "worst case" alignment within this corridor, noting that the final route will be selected to avoid known archaeological assets and sensitive ecological receptors as far as reasonably practicable. The new section of pipeline would be 150mm in diameter and buried between 0.5m and 1m below existing ground level.

Approach to Power and Water connections

2.4.42 Discussions have been ongoing with the water and power utilities providers regarding the requisite connections for the Scheme. The details described below and shown on Figure 2.7A–E represent the emerging details for the connections at the time of submission, as received from the utilities providers in August 2018. Discussions will continue with the relevant utilities providers to confirm the details of the connections.

Power

2.4.43 Electricity connections would be required at both ends of the Scheme to provide power to the construction activities and compounds. New electricity cables would typically be run along roads or tracks and be buried at a depth of about 1m. They would be retained to provide power for the operational development.

West

2.4.44 At the western end of the Scheme the cable route to the main construction compound would enter the site boundary north of Druid's Lodge and follow the existing A360 north to Longbarrow Roundabout and into the main construction compound. The cable along the A360 would be retained for the operational development but would then run east from the Longbarrow roundabout area along the new A303 alignment to the western tunnel portal.

East

2.4.45 At the eastern end of the Scheme, the permanent cable route to the eastern tunnel portal would be installed between Ratfyn sub-station, north of Amesbury, following the route of an existing track southwards to the A303, before following the line of the existing A303 west to the eastern portal (Figure 2.7A-E). An alternate route follows the track from Ratfyn substation northwards and requires a thrust bore crossing of the River Avon.

Water

2.4.46 Mains water connections would be required at both ends of the Scheme and would be used to provide potable water to the construction activities and compounds and during operation for the proposed FFFS.

West

2.4.47 At the western end of the Scheme, a new water pipeline would connect into an existing supply close to the B3083, north of Winterbourne Stoke and would then be routed east through farmland to the north of the existing A303 alignment, beneath the River Till (using a Horizontal Directional Drilling method), and east to the Longbarrow Junction area to serve the main construction compound. It would subsequently be extended east along the new A303 alignment to the western tunnel portal to serve the operational tunnel requirements.

East

2.4.48 At the eastern end of the Scheme, a new water pipeline would connect into an existing water main north east of Countess Services, run south along the A345 for a short distance to the Countess Junction, before following the line of the existing A303 west to the eastern portal (Figure 2.7A to Figure 2.7E).

Wastewater

2.4.49 It is expected that at the main construction compound, wastewater from welfare facilities would be stored in double skinned tanks on site and transported to Salisbury Sewage Treatment Works (STW) by tanker. At the satellite office at the Countess Junction, discharge to the existing foul sewer would be sought with Trade Effluent Consent obtained from Wessex Water.

Demolition

2.4.50 The Scheme does not require the demolition of existing major structures, although the existing Countess Pedestrian Underpass would be demolished and replaced with at grade controlled crossing of the slip-roads of the new Countess Junction. A second existing underpass in the proximity of the eastern tunnel portal would be decommissioned with part of it retained for the creation of a bat habitat.

Excavated materials

2.4.51 Construction of the Scheme would require excavation in places to form cuttings for the highway and this material would then be used to form embankments. The design aims to balance these ‘cut and fill’ requirements as far as practicable.

2.4.52 In addition to the material used within the cut and fill balance, tunnel construction would generate approximately 900,000 m^3 of arisings. The excavated material arising from tunnelling is likely to require treatment within a Slurry Treatment Plant (STP) to reduce the water content sufficiently to make it suitable for handling and re-use. The STP would be located within the tunnel

production area, with the tunnel arisings being transported by pumping, conveyor or by truck to the STP.

2.4.53 The STP would recycle the wastewater with further treatment using settlement tanks and pH correction facilities if required. It is likely that this water once treated could be discharged back into the ground, with an environmental permit from the Environment Agency. The alternative would be to remove the suspended solids and treat the water to an agreed specification with Wessex Water and then tanker the water to Salisbury STW.

2.4.54 Once suitable for use the arisings from the tunnel would principally be used for essential landscaping mitigation and new habitat creation to increase biodiversity. The principal area of use would be the land to the east of Parsonage Down NNR. In addition to the need for essential landscape mitigation in this area, the material would be used to create areas of new chalk grassland and other habitats, similar to the existing Parsonage Down habitats.

2.4.55 Use of excavated material from the tunnel in this way would minimise the need to transport this material on the highway network for deposition offsite, as well as the use of capacity within landfill sites. This would minimise the environmental impacts associated with the construction of the Scheme, particularly in relation to the air quality and noise impacts of construction traffic on people and communities living along potential off-site disposal routes to landfill sites. This strategy would also help reduce greenhouse gas emissions during the construction phase.

2.4.56 The approach to materials management is considered further in Chapter 12 Material Assets and Waste.

Environmental management plan

2.4.57 An OEMP has been prepared in parallel with the development of the Scheme design and construction methodology. It includes construction, operational and maintenance mitigation measures which have been defined in part by the requirements which arise from the technical assessments presented in this ES. The technical assessments within this ES have taken account of the agreed measures within the OEMP as 'embedded mitigation'. The OEMP is provided within Appendix 2.2 and would be secured by DCO requirement.

2.4.58 The construction of the Scheme would be subject to measures and procedures defined within a Construction Environmental Management Plan (CEMP). The CEMP would be based on, and incorporate, the requirements of the OEMP, and would include the implementation of industry standard practice and control measures for environmental impacts arising during construction, such as the control of dust and the approach to waste management on site. The CEMP would be produced by the contractor prior to works commencing.

Operation and long–term management

2.4.59 Once the new road is opened, it would form part of the A303 Trunk Road and part of the strategic road network. The likely traffic flows on the new road and

on adjacent roads are described in the Transport Assessment Report (Application Document 7.4).

2.4.60 The new road would be managed on a day to day basis using the monitoring and control systems described in 2.3.47. Long-term maintenance and repairs would be undertaken as required to maintain the appropriate standards for the strategic road network.

2.5 Maintenance

2.5.1 Maintenance activities would be as authorised under the DCO. As required by the OEMP, industry standard control measures would be applied and encapsulated in the Handover Environmental Management Plan (HEMP). With the implementation of these measures no significant effects are considered likely.

2.6 Decommissioning

2.6.1 It is highly unlikely that the Scheme would be demolished before the end of its 120 year design life as the road would have become an integral part of nationally important infrastructure. In the event of the Scheme needing to be demolished, this would conform to the statutory process at that time, including EIA as appropriate. Demolition of the Scheme is not therefore considered further in this ES. Consideration is however given, where relevant, to dismantling and replacing particular elements of the Scheme once they reach the end of their design life, if significant effects are likely.

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