

A303 Amesbury to Berwick Down

TR010025

6.1 Environmental Statement

Chapter 13: People and communities

Volume 6

APFP Regulation 5(2)(a)

Planning Act 2008

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

October 2018



13 People and communities

13.1 Introduction and competent expert evidence

- 13.1.1 This chapter assesses the potential people and communities impacts of the construction and operation of the Scheme, following the methodology set out in Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 8 Pedestrians, Cyclists, Equestrians and Community and associated Interim Advice Notes (IANs) (Ref 13.1), as well as good practice from other assessments from comparable transport schemes.
- 13.1.2 This chapter details the methodology followed for the assessment, summarises the regulatory and policy framework related to people and communities and describes the existing environment in the area surrounding the Scheme. Following this, the design, mitigation and residual effects of the Scheme are identified. For agriculture, this chapter considers the impacts on agricultural land and soil with specific reference to the quality of the agricultural land (referred to as the Agricultural Land Classification (ALC)) and rural (agricultural) holdings.
- 13.1.3 An assessment of the direct and indirect effects of the Scheme on human health, including through these interactions with other aspects of the EIA, has also been undertaken and is presented within this chapter of the ES. In order to account for these other aspects, the collated findings of the following topics, which are conducted principally in isolation as is required by their methodologies, have been utilised in an assessment of combined effects on human health; Air Quality, Noise and Vibration, Landscape and Visual, and Climate.
- 13.1.4 This chapter of the ES has been undertaken by competent experts with relevant and appropriate experience. The technical lead for the people and communities assessment is Dave Widger and his professional qualifications and experience are summarised in Appendix 1.1.

13.2 Legislative and policy framework

Legislation

- 13.2.1 As discussed in Chapter 1, the primary basis for deciding whether or not to grant a Development Consent Order (DCO) is the National Policy Statement for National Networks (NPSNN and Ref 13.2) which, at sections 4 and 5, sets out policies to guide how DCO applications will be decided and how the impacts of national networks infrastructure should be considered. Table 13.1 identifies the NPSNN policies relevant to the people and communities assessment and where in the ES chapter information is provided to address the policy.

Table 13.1: Relevant NPSNN policies for people and communities assessment

Relevant NPSNN paragraph reference	Requirement of the National Policy Statement for National Networks (NPSNN) (Paraphrased)	Where in the ES Chapter is information provided to address this policy.
5.165-5.167	The applicant should identify existing and proposed land uses near the project and their effects of replacing an existing development or use-open space, sports and recreational buildings should not be developed unless there is excess land.	Sections 13.2 and 13.6
5.168	Applicants should take into account the economic and other benefits of the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification). Where significant development of agricultural land is demonstrated to be necessary, applicants should seek to use areas of poorer quality land in preference to that of a higher quality. Applicants should also identify any effects, and seek to minimise impacts, on soil quality, taking into account any mitigation measures proposed.	Sections 13.6 and 13.9
5.174	The Secretary of State should not grant consent for development on existing open space, sports and recreational buildings unless there is surplus or excess land or the benefits of the project outweigh the loss of those facilities.	Sections 13.3, 13.6 and 13.9
5.180	Applicants should avoid any adverse impact on green infrastructure and where appropriate improve the network and other areas of open space and public rights of way	Sections 13.3 and 13.6
5.184	Applicants are expected to take appropriate mitigation measures to address adverse effects on coastal access, National Trails, other public rights of way and open access land and, where appropriate, to consider what opportunities there may be to improve access.	Sections 13.3
5.203-5.205	Applicants should have regard to the policies set out in local plans and consult the relevant highway authority and local planning authority on the assessment of transport impacts. Applicants should consider reasonable opportunities to support other transport modes in developing infrastructure. As part of this, consistent with paragraph 3.19-3.22 above, the applicant should provide evidence that as part of the project they have used reasonable endeavours to address any existing severance issues that act as a barrier to non-motorised users.	Section 13.3 and 13.9

Relevant NPSNN paragraph reference	Requirement of the National Policy Statement for National Networks (NPSNN) (Paraphrased)	Where in the ES Chapter is information provided to address this policy.
5.206	For road and rail developments, if a development is subject to EIA and is likely to have significant environmental impacts arising from impacts on transport networks, the applicant's environmental statement should describe those impacts and mitigating commitments.	Sections 13.7 and 13.8
5.208	Where appropriate, the applicant should prepare a travel plan including management measures to mitigate transport impacts.	Section 13.8 and Section 10.4 of the Transport Assessment

National Planning Policy Framework (2018)

- 13.2.2 In accordance with the NPPF (Ref 13.3), the NPSNN policies relating to the applicant's assessment are the primary source of policy guidance regarding this assessment. The NPPF was revised in 2018, but the requirements which relate to this assessment have not substantively changed, and the NPSNN remains the primary source of policy guidance.

Countryside and Rights of Way Act (2000)

- 13.2.3 The Countryside and Rights of Way Act 2000 (CRoW Act) (Ref 13.4) legislation is considered in the assessment. The CRoW Act regulates public rights of way and open access land and ensures access to them.

Health and Social Care Act (2012)

- 13.2.4 In terms of human health legislation, the Health and Social Care Act 2012 (Ref 13.5) was introduced following the Health and Social Care Bill 2011 and outlines the Secretary of State's duty to promote and improve the NHS, in pursuit of a number of key aims, which include:

- a) An improvement in the quality of services;
- b) A reduction in health inequalities;
- c) The promotion of autonomy for GPs and health centres; and
- d) Improvements to the treatments and services offered to patients.

- 13.2.5 The document focuses on the regulation of the NHS at a national and local level, and also promotes changes such as the abolition of NHS Trusts, support for the production of Joint Strategic Needs Assessments (JSNA), and establishment of Health and Well-being boards at a local authority level. These boards will be established for the purpose of advancing the health and well-being of people within each local authority area and will aim to "*encourage persons who arrange for the provision of any health or social care services in that area to work in an integrated manner*".

Policy

- 13.2.6 Other relevant policies have been considered as part of the people and communities assessment where these have informed the identification of receptors and resources and their sensitivity; the assessment methodology; the potential for significant environmental effects; and required mitigation. These policies include:
- a) National Planning Policy Framework (NPPF) (Ref 13.3) and supporting Planning Practice Guidance (Ref 13.6) sections on “*health and well-being*” and “*open spaces, sports and recreational facilities, public rights of ways and local green spaces*” which support the application of NPPF policies;
 - b) Highways England Delivery Plan (Ref 13.7);
 - c) Stonehenge World Heritage Site Management Plan (Ref 13.8); Wiltshire Council Core Strategy Development Plan Document (Ref 13.9) – Core Policy 6 (Stonehenge), Core Policy 48 (Supporting Rural Life), Core Policy 59 (Stonehenge, Avebury and Associated Sites World Heritage Site) and Core Policy 34 (Additional Employment Land); and
 - d) Wiltshire Joint Health and Well-being Strategy (Ref 13.10).
- 13.2.7 These policies identify the importance of safeguarding public rights of ways and open spaces, as well as recreational buildings for communities. These policies also identify the need for a community severance and amenity assessment to assess the developments impact on non-motorised users on variables such as pollution, natural environment and general amenity. In terms of motorised travel, policy leans towards sustainable transport modes and local policy highlights the importance on reducing traffic flows and decreasing congestion in the area.
- Planning Practice Guidance (PPG) (2014)*
- 13.2.8 In March 2014, the government published the Planning Practice Guidance (PPG) (Ref 13.5) which provides further guidance that is relevant to this assessment.
- 13.2.9 Regarding community cohesion development, the PPG states that proposals should:
- a) Support strong, vibrant and healthy communities and help create healthy living environments which should, where possible, include making physical activity easy to do and create places and spaces to meet to support community engagement and social capital;
 - b) Provide access to the whole community by all sections of the community, whether able-bodied or disabled.
- 13.2.10 Open spaces, sports and recreational facilities, public rights of way and local green spaces are referred to as follows:

- a) Open space should be taken into account in planning for new development and considering proposals that may affect existing open space;
- b) Open space (including all open space of public value) can take many forms, from formal sports pitches to open areas within a development, linear corridors, and country parks; and
- c) It can provide health and recreation benefits to people living and working nearby, have an ecological value, and contribute to green infrastructure, as well as being an important part of the landscape and setting of built development, and an important component in the achievement of sustainable development.

Highways England Delivery Plan (2015)

- 13.2.11 The number of new and upgraded crossings is a Key Performance Indicator (KPI) in The Highways England Delivery Plan (2015-2020) (Ref 13.7). The development of new indicators which demonstrate improved facilities for cyclists, walkers, and other vulnerable users is identified as a requirement in the Delivery Plan. The Delivery Plan also sets out Highways England's commitments for improving integration and accessibility through the network including a commitment to work with local communities, to listen to local people to identify how to improve the physical or environmental quality of a place, or the economic or social well-being of a community.

Stonehenge World Heritage Site Management Plan (2015)

- 13.2.12 National Trust and English Heritage have adopted the Stonehenge WHS Management Plan (Ref 13.8) to achieve an appropriate balance of heritage protection with other interests such as tourism, education, farming, nature conservation, roads and traffic, research, education and local community. Implementation of the Stonehenge WHS Management Plan seeks to improve the experience of users accessing the Stones and the WHS.

Wiltshire Core Strategy (2015)

- 13.2.13 In the Wiltshire Core Strategy (Ref 13.9) Core Policy 6 regarding Stonehenge states '*The World Heritage Site and its setting will be protected so as to sustain its Outstanding Universal Value in accordance with Core Policy 59*'. New visitor facilities will be supported where they:
- a) return Stonehenge to a more respectful setting befitting its World Heritage Site status;
 - b) include measures to mitigate the negative impacts of the roads;
 - c) introduce a greatly enhanced visitor experience in a high quality visitor centre;

- d) implement an environmentally sensitive method of managing visitors to and from Stonehenge; and
- e) include a tourist information element, which highlights other attractions and facilities on offer in the surrounding area and raises the profile of Wiltshire.

13.2.14 Core Policy 48 states:

'Proposals which will focus on improving accessibility between towns and villages, helping to reduce social exclusion, isolation and rural deprivation, such as transport and infrastructure improvements, will be supported where the development will not be to the detriment of the local environment or local residents'.

13.2.15 Core Policy 59 on The Stonehenge, Avebury and associated sites World Heritage Site sets out that the Outstanding Universal Value (OUV) of the WHS will be sustained by:

- a) giving precedence to the protection of the World Heritage Site and its setting;
- b) development not adversely affecting the World Heritage Site and its attributes of OUV. This includes the physical fabric, character, appearance, setting or views into or out of the World Heritage Site;
- c) seeking opportunities to support and maintain the positive management of the World Heritage Site through development that delivers improved conservation, presentation and interpretation and reduces the negative impacts of roads, traffic and visitor pressure; and
- d) requiring developments to demonstrate that full account has been taken of their impact upon the World Heritage Site and its setting. Proposals will need to demonstrate that the development will have no individual, cumulative or consequential adverse effect upon the site and its OUV. Consideration of opportunities for enhancing the World Heritage Site and sustaining its OUV should also be demonstrated. This will include proposals for climate change mitigation and renewable energy schemes.

Wiltshire Joint Health and Well-being Strategy (2015-2018)

13.2.16 The Wiltshire Joint Health and Well-being Strategy was published by the Wiltshire Health and Well-being Board in 2015 (Ref 13.10) with the aim of improving quality of life and reducing health inequality by prioritising the needs of the local population.

13.2.17 Key considerations within the Wiltshire area related to health include: an ageing population; health inequalities across the County between different people and places; enabling children to have the best start in life; and mental health issues. Prevention and early intervention are highlighted as a primary focus for addressing these considerations.

13.2.18 The Strategy identifies five key health outcomes that it aims to achieve over the Strategy period:

- a) *The people of Wiltshire are enabled to take control of their own health and well-being;*
- b) *The gap between health outcomes for different people and places has reduced;*
- c) *Children and young people in Wiltshire are safe and living in families where they can achieve their full potential and have good health and well-being;*
- d) *People plan ahead to stay healthy and age well and older people feel they have a good quality of life; and*
- e) *People give equal priority to their mental health and well-being and can access the right support throughout their life course”.*

13.3 Assessment methodology

13.3.1 The assessment follows that set out in DMRB guidance, specifically Volume 11, Section 3, Part 8 Pedestrians, Cyclists, Equestrians and Community and associated Interim Advice Notes (IANs) (Ref 13.1), and good practice from other assessments undertaken on comparable transport schemes. The assessment of agricultural land and agricultural holdings follows the guidance in DMRB, Volume 11, Section 3, Part 6 Land Use.

13.3.2 For some aspects of the assessment there is no specific guidance for the determination of impacts and effect significance and in these cases, potential effects arising from the Scheme have been assessed using professional judgement. Where possible, the assessment is based upon DMRB guidance.

13.3.3 In accordance with the overall EIA methodology for assessing effect significance, conclusions have been made by assessing the sensitivity of people and communities resources and receptors to the impacts that would be likely to arise as a result of the Scheme.

Sensitivity

Sensitivity of agricultural land

13.3.4 As defined in Natural England’s Technical Information Note TIN049 – ‘*Agricultural Land Classification: protecting the best and most versatile agricultural land*’, agricultural land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long-term limitations on agricultural use. Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use, and Grade 5 is very poor quality land, with severe limitations due to adverse soil,

relief, climate or a combination of these. Grade 3 land is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). BMV agricultural land comprises Grades 1, 2 and Subgrade 3a (see NPSNN paragraph 5.168).

- 13.3.5 The sensitivity of agricultural land is assessed according to its grade within the ALC, as set out in Table 13.2. The criteria take into account guidance within the NPSNN in respect of the economic and other benefits of BMV land, and give little weight to the loss of land in grades 3b, 4 and 5.

Table 13.2: Receptor sensitivity criteria – agricultural land

Sensitivity	Agricultural Land
High	Grade 1
Medium	Grades 2 and 3a
Low	Grades 3b and 4
Negligible	Grade 5

- 13.3.6 The sensitivity of displaced soil reflects its textural characteristics and its susceptibility to the effects of handling during construction and the re-instatement of land, as shown in Table 13.3.

Table 13.3: Receptor sensitivity criteria – soils

Sensitivity	Definition
High	Soils with high clay and silt fractions (clays, silty clays and sandy clays) and organic and peaty soils.
Medium	Heavy loams (heavy silty clay loams and heavy clay loams).
Low	Silty loams, medium silty clay loams, medium clay loams and sandy clay loams.
Negligible	Soils with a high sand fraction (sands, loamy sands, sandy loams and sandy silt loams).

Sensitivity of agricultural holdings

- 13.3.7 For agricultural holdings, receptor sensitivity is a reflection of the size of an affected holding and the nature of the particular agricultural activity. Generally, larger holdings are more able to accommodate change than smaller ones; and, complex activities, or ones dependent upon particular infrastructure or regular access to land, for example dairying, intensive livestock and horticulture, have a higher degree of sensitivity to development impacts compared with arable and grazing enterprises which have a degree of operational flexibility which can adapt to changing circumstances. The criteria are set out in Table 13.4.

Table 13.4: Receptor sensitivity criteria – agricultural holdings

Receptor Sensitivity	Definitions
High	<p>Farm types in which the operation of the enterprise is dependent on the spatial relationship of land to key infrastructure, and where there is a requirement for frequent and regular access between the two, or dependent on the existence of the infrastructure itself, for example:</p> <ul style="list-style-type: none"> • dairying, in which milking cows travel between fields and the parlour at least twice a day; • irrigated arable cropping and field-scale horticulture, which are dependent on irrigation water supplies; and • intensive livestock or horticultural production which is undertaken primarily within buildings, often in controlled environments.
Medium	<p>Farm types in which there is a degree of flexibility in the normal course of operations, e.g:</p> <ul style="list-style-type: none"> • combinable arable farms; and • grazing livestock farms (other than dairying).
Low	Off-lying areas of land that are not contiguous with the main farm holding.
Negligible	Off-lying areas of agricultural land used on a non-commercial basis.

Sensitivity of other environmental resources and receptors

- 13.3.8 For other people and communities resources and receptors (non-motorised users, community severance, private assets and development land), the value and typical descriptors which have been applied to determine sensitivity to the impacts that would arise as a result of the Scheme are set out in Table 13.5. The motorised travellers assessment has been undertaken in line with DMRB guidance and specific sensitivity values are not assigned.

Table 13.5: Receptor sensitivity criteria - people and communities

Value	Typical Descriptors
Very high	Very high importance and rarity and very limited potential for substitution or to access alternatives.
High	High importance and rarity, and limited potential for substitution or to access alternatives.
Medium	High or medium importance and rarity, limited potential for substitution or to access alternatives.
Low	Low or medium importance and rarity, with alternatives available.
Negligible	Very low importance and rarity, with alternatives available.

Impact magnitude and significance of effects

Agricultural land and soils

- 13.3.9 The thresholds for the magnitude of impact adopted in this assessment set out in Table 13.6 have regard to guidance within DMRB Volume 11, Section 3, Part 6. Paragraphs 6.1 and 9.1 of that guidance indicate that the level of assessment should relate to the value to the nation of the agricultural land which a scheme is likely to take, in terms of both the quality and quantity of land required. Paragraph 9.3 indicates that more detailed assessment is required where BMV land is affected and that where losses of over 20ha of BMV land are likely, comments on the Scheme's impact should be sought from statutory consultees.

Table 13.6: Impact magnitude criteria agricultural land

Magnitude of Impact	Agricultural Land
Major	The development would lead to the loss of over 50ha of agricultural land.
Moderate	The development would lead to the loss of between 20ha and 50ha of agricultural land.
Minor	The development would lead to the loss of between 5ha and 20ha of agricultural land.
Negligible	The development would lead to the loss of less than 5ha of agricultural land.

- 13.3.10 The magnitude of effect on the soil resource is assessed according to the degree to which soils can continue to fulfil their primary functions other than food and fibre production which is encapsulated in the ALC. These other functions comprise:
- a) the storage, filtration and transformation of many substances and elements, including water, carbon and nitrogen;
 - b) support of ecological habitats and biodiversity;
 - c) support for the landscape;
 - d) protection of cultural heritage;
 - e) providing raw materials;
 - f) providing a platform for human activities, such as construction and recreation.
- 13.3.11 The assessment will consider the key functions identified for soil in a particular location and use the criteria for assessing the magnitude of impact as shown in Table 13.7.

Table 13.7: Impact magnitude criteria - soils

Magnitude of Impact	Definitions
Major	The soil displaced from the Scheme is unable to fulfil one or more of the primary soil functions
Moderate	The soil displaced from the Scheme mostly fulfils the primary soil functions off-site or has a reduced capacity to fulfil the primary functions on site
Minor	The soil displaced from the Scheme mostly fulfils the primary soil functions on-site
Negligible	The soil retains its pre-existing functions on-site

Agricultural holdings

13.3.12 Information on the existing agricultural use and circumstances of the land to be acquired or used has been obtained from the owners and occupiers of the land. Interviews have been conducted to provide:

- a) a description of the existing size, location and use of farm holdings;
- b) a description of the existing scale and nature of agricultural and non-agricultural enterprises based on farm holdings and their associated capital and labour inputs;
- c) a discussion of the potential physical impacts on the structure and operation of the farm holding; and,
- d) a discussion about potential options to mitigate such impacts.

13.3.13 Guideline criteria for assessing the magnitude of impacts are presented in Table 13.8. Where a farm holding experiences different levels of impact for different types of impact, the higher level will be assigned. Thus, for example, a farm holding that will lose 15% of its land (medium impact) but will retain access to severed land via a private means of access (low impact) will be assessed as incurring a medium impact. The assessment considers the temporary effects first followed by the permanent effects.

Table 13.8: Impact magnitude criteria - agricultural holdings

Impact Magnitude	Land required	Severance	Infrastructure	Disruptive effects
Major	>20% of all land farmed	No access available to severed land	Direct loss of farm dwelling, building or structure	Disruption discontinues land use or enterprise
Moderate	>10% - 20% of all land farmed	Access available to severed land via the public highway	Loss of or damage to infrastructure affecting land use	Disruption necessitates change to scale or nature of land use or enterprise

Impact Magnitude	Land required	Severance	Infrastructure	Disruptive effects
Minor	> 5% - 10% of all land farmed	Access available to severed land via private way	Infrastructure loss/damage does not affect land use	Disruption does not affect land use or enterprise
Negligible	5% or less of all land farmed	No new severance	No impact on farm infrastructure	No disruption on land use or enterprise

Significance criteria for all agricultural effects

13.3.14 The significance of effect is a product of the magnitude of the impact and the sensitivity of the receptor, as summarised in Table 13.9 and set out in DMRB Volume 11, Section 2, Part 5, Table 2.4. Where the Significance Criteria presented in Table 13.9 allows for two levels of significance (e.g Slight/Moderate, Large/Very large) professional judgement has been used on a case by case basis to determine the appropriate level of significance.

Table 13.9: Significance criteria for all agricultural effects

Magnitude \ Sensitivity	Negligible	Minor	Moderate	Major
High	Slight Adverse	Slight or Moderate Adverse	Moderate or Large Adverse	Large or Very Large Adverse
Medium	Neutral or Slight Adverse	Slight Adverse	Moderate Adverse	Moderate or Large Adverse
Low	Neutral or Slight Adverse	Neutral or Slight Adverse	Slight Adverse	Slight or Moderate Adverse
Negligible	Neutral	Neutral or Slight Adverse	Neutral or Slight Adverse	Neutral or Slight Adverse

Non-Motorised Users

- 13.3.15 The assessment of effects on Non-motorised Users (NMU) focuses on the impact of severance of existing routes and the resulting changes in journey lengths and times and local travel patterns.
- 13.3.16 The scope of the assessment comprises the users of existing routes likely to be affected by severance of routes, alterations in traffic distribution and flows as well as users of relevant aspects of the Scheme.
- 13.3.17 '*Journey length*' in this assessment is used to cover both the distance travelled and the time taken. The assessment of NMU effects has considered effects arising from the construction and operation of the Scheme. Changes in journey lengths and travel patterns are predicted using the methodology outlined in the DMRB Vol 11, Section 3, Part 8, Chapters 2 and 3 (Ref 13.1).

- 13.3.18 A qualitative assessment of impacts has been undertaken using a four point scale of magnitude as follows, to assess the changes in journey length and local travel patterns arising from the Scheme experienced by pedestrians, cyclists and equestrians (with particular consideration of vulnerable groups such as children, the aged and disabled where identified):
- a) Neutral - no increase or decrease in journey length and/or travel patterns and no increase or decrease in opportunities for NMUs to access the wider network and/or community infrastructure;
 - b) Low - slight increase/decrease in journey length and/or travel patterns and increased/decreased opportunities for NMUs to access the wider network and/or community infrastructure;
 - c) Medium – noticeable increase/decrease in journey length and/or travel patterns and increased/decreased opportunities for NMUs to access the wider network and/or community infrastructure; and
 - d) High - substantial increase/decrease in journey length and/or travel patterns and increased/decreased opportunities for NMUs to access the wider network and/or community infrastructure.

Motorised travellers

- 13.3.19 The scope of the assessment of effects on motorised travellers has been prepared with reference to guidance contained in IAN 125/09 (Ref 13.1); this provides advice on assessing the effects on all travellers as introduced in HA 200/08 (Ref 13.1), noting that an assessment of the effects on all travellers uses a combination of existing guidance on vehicle travellers together with existing guidance on pedestrians, cyclists and equestrians. The assessment is limited to consider only those pertinent to motorised travellers, namely; views from the road, driver stress and vehicular severance.

Driver views

- 13.3.20 The assessment of effects on views from the road has used guidance from DMRB Volume 11, Section 3 Part 9 (Ref 13.1). Within DMRB guidance the quality of views is placed into four categories:
- a) No view - road in steep cutting or contained by earth bunds, environmental barriers or adjacent structures;
 - b) Restricted views - frequent cuttings or structures blocking the view;
 - c) Intermittent views - road generally at ground level with shallow cuttings or barriers at intervals; and
 - d) Open views - view extending over many miles or only restricted by existing landscape features.

- 13.3.21 The effects on drivers' views has been assessed for those rerouting from the existing A303 to the Scheme, namely:
- Neutral: little or no effect for most views from the road, or improvements on some views are generally balanced by deterioration in others;
 - Beneficial: views from the road would be, on balance, a change for the better; and
 - Adverse: views from the road would be, on balance, a change for the worse.
- 13.3.22 The significance of effects assessed in relation to drivers views is ascribed using the following scale:
- Minor beneficial or adverse: where the number of travellers affected is low (less than 500 a day);
 - Moderate beneficial or adverse: where the number of travellers affected is between 500 to 10,000 travellers per day; and
 - Major beneficial or adverse: where the number of travellers affected is high (more than 10,000 per day).
- 13.3.23 The assessment of views has been applied to each of the four sections of the existing A303, with the same longitudinal sections applied to the Scheme alignment, which were defined for the assessment of transport derived effects as follows; A303 west of Winterbourne Stoke, A303 west of Longbarrow Roundabout to Winterbourne Stoke, A303 west of Countess Roundabout to Longbarrow Roundabout, and A303 west of Solstice Park to Countess Roundabout.
- 13.3.24 The assessment has been informed by the landscape and visual discipline. The Landscape and Visual chapter (Chapter 7) considers viewpoints from locations on the A360, B3083 and at Countess Roundabout. Views along the length of the A303 are not assessed as part of the landscape and visual assessment.
- Driver stress**
- 13.3.25 Driver stress is related to adverse mental and physiological effects experienced by drivers using the road network. The components of driver stress are:
- Frustration;
 - Fear of accidents; and
 - Uncertainty relating to the route being followed.
- 13.3.26 There is no specific methodology for assessing the degree of driver stress during construction. Therefore, a descriptive assessment as to how likely

construction activities would affect driver stress during the construction period has been set out.

- 13.3.27 For the operation of the Scheme, an assessment of the predicted changes in traffic flows has been undertaken in order to estimate changes in frustration and fear of accidents and the resulting implications on driver stress. This is because for the existing A303 and the Scheme, changes in traffic flows would be expected to have an influence on driver stress. This is due to the level of congestion presently experienced having the potential to result in increased frustration and likelihood of accidents. Reducing driver stress experienced in this respect is a key purpose of the Scheme. The assessment also considers whether the Scheme would result in reduced or increased uncertainty in relation to the route being followed given the potential impacts on driver stress levels.
- 13.3.28 With new or improved routes, designed to accord with DfT standards, desirable categories for levels of driver stress would likely be '*moderate*' or '*low*' along the extent of the route. Table 13.10 and Table 13.11 set out DMRB recommendations for assessing driver stress on single and dual carriageway roads respectively, with a three point descriptive value for the level of driver stress (Low, Moderate or High) being ascribed based on the level of predicted traffic flows (average peak hourly flow per lane, in flow units per hour) and the average journey speed (km/hr).

Table 13.10: Assessment of driver stress on single carriageway roads

Average peak hourly flow per lane, in flow Units/1 hour	Average Journey Speed (Km/hr)		
	Under 50	50-70	Over 70
Under 600	High	Moderate	Low
600-800	High	Moderate	Moderate
Over 800	High	High	High

Table 13.11: Assessment of driver stress on dual carriageway roads

Average peak hourly flow per lane, in flow Units/1 hour	Average Journey Speed (Km/hr)		
	Under 50	50-70	Over 70
Under 1200	High	Moderate	Low
1200-1600	High	Moderate	Moderate
Over 1600	High	High	High

- 13.3.29 In accordance with DMRB guidance regarding driver stress, the worst year in the 15 years after the Scheme opens is considered in assessing driver stress. For the Scheme, 2041 is the worst year, having the highest forecast vehicle flows, and as such predicted flows for this year '*with scheme*' and '*without scheme*' (a '*do-minimum*' scenario) have been compared.

13.3.30 As DMRB provides no significance criteria, the significance has been addressed using comparison of present and future conditions, using beneficial, neutral and adverse definitions. For the purposes of this assessment, a comparison has been made between the flows for the 'without scheme' and 'with scheme' scenarios in 2041, with the level of change in these resulting in beneficial effects if flows are reduced, and adverse effects where flows increase.

13.3.31 This has been applied to the four sections of the existing A303 and Scheme as listed in Section 13.3 with a conclusion provided based on the degree of change overall.

Vehicular user severance

13.3.32 This assessment has considered the extent to which the Scheme would introduce new severance between communities or would provide relief from existing severance for vehicular users (NMU severance is covered in Section 13.3). New severance results from the introduction of physical barriers - such as new highway infrastructure or increased traffic flows (DMRB Volume 11, Section 3, Part 8, chapter 6). Relief from existing severance results from a reduction in traffic on the existing highway and local road network (DMRB Volume 11, Section 3, Part 8, chapter 7) (Ref 13.1).

13.3.33 These descriptions have been coupled with a consideration of the community facilities from which residents might be severed. The following factors have been taken into consideration in describing vehicular user severance between communities:

- a) The physical changes caused by the Scheme;
- b) The consequent changes in traffic levels on existing roads;
- c) The number of people whose journey would be affected;
- d) The type of road involved; and
- e) The provision of mitigation.

13.3.34 The following criteria have been used for assessing the magnitude of impact associated with change in vehicular user severance that has been used to evaluate the effects of the Scheme on vehicular user severance:

- a) **High:** People are likely to be deterred from making trips to an extent sufficient to induce reorganisation of their habits. Considerable hindrance would be caused to people trying to make their existing journeys for a prolonged period of time.
- b) **Medium:** Some people are likely to be dissuaded from making trips. Other trips would be made longer or less attractive.

- c) **Low:** In general the current journey pattern is likely to be maintained, but there would probably be some hindrance to movement for limited amount of time.

13.3.35 The magnitude of relief from existing severance has been assessed using the following three point scale: slight, moderate or substantial. For existing severance, the extent of relief has been assessed by considering the reduction in traffic on the existing highway and local road network in the worst year in the 15 years from the Scheme opening (2041) in the context of the size of community affected, the provision of alternative routes and diversions and the existing road standards. Taking into account the magnitude, significance criteria for vehicular user severance has been developed based upon guidance contained in DMRB Volume 11 Section 3 Part 8 (Ref. 13.1), defined as follows:

- a) **Slight effects** are likely to be experienced where journey patterns are generally maintained, but there would be some hindrance to movement;
- b) **Moderate effects** would be expected where some residents are likely to be dissuaded from making trips. Other trips will be made longer or less attractive; and
- c) **Severe effects** occur where people are likely to be deterred from making trips to an extent sufficient to induce a re-organisation of their habits. Alternatively, considerable hindrance would be caused to people trying to make their existing journeys.

13.3.36 The assessment takes account of the number of people who may benefit from the relief of severance and the geographical location of the relief based on four route sections and the surrounding roads associated with these. Table 13.12 categorises relief from severance by reductions in traffic levels as outlined in DMRB which has been applied in the assessment.

Table 13.12: Relief from severance by reductions in existing traffic levels

	Level of Relief from Severance		
	Slight	Moderate	Substantial
Built up Area	c.30%	30-60%	60%+
Rural Area	60-75%	75-90%	90%+

Private assets

13.3.37 The approach for the assessment of impacts on private assets presented within this chapter considers direct effects on residential properties, businesses and community facilities arising from land take and demolition. Indirect effects on these assets are principally considered in the assessment of amenity effects presented separately.

- 13.3.38 The assessment has followed guidance set out in DMRB Volume 11, Section 3, Part 6 (Ref 13.1) as it relates to residential properties, local businesses and community facilities. The methodology provided in Part 6 includes:
- a) The effects of demolition of property; and
 - b) The loss of land (as opposed to buildings) used by the community (for example public open space).

- 13.3.39 The magnitude of impact is assessed as the amount of land to be taken or properties to be demolished, using a five point scale of major, moderate minor, negligible and no change, with the significance of effects determined through consideration of the relationship between the sensitivity of the receptor and this magnitude of change, having reference to the significance criteria presented in Section 4.5.

Amenity

- 13.3.40 The assessment of amenity is concerned with how the Scheme potentially impacts on the ability of communities to achieve enjoyment and/or quality of life. Assessing the impact of the Scheme on the amenity of private assets has taken into account the combined residual significant effects from other assessment topics (noise, vibration, air quality, traffic, landscape and visual) which could affect people's enjoyment of a public right of way, community facility or residential property or on the viability of a business.
- 13.3.41 In assessing this, a descriptive approach has been used which gives an overall indication of the change i.e. positive, negative or no change, in the amenity of the receptor. The magnitude of impacts on people arising from combined effects as identified by other topics has been assessed using the following scale:
- a) **High:** Either three or more residual significant other topic effect (noise and vibration, landscape and visual, air quality or traffic) for the public right of way, community facility or residential property with at least one being major in nature, or two major residual significant other effects.
 - b) **Medium:** Two significant residual other environmental effects with at least one being of a major nature.
 - c) **Low:** Two significant residual other environmental effects, both being moderate in nature.
 - d) **Negligible:** One or fewer significant residual other environmental effects.
- 13.3.42 Specifically, with regards to NMUs the assessment of amenity also considered changes in the quality and condition of footpaths, changes in quality of the landscape and for cyclists, signage and crossing provision. A qualitative assessment relating to such impacts has been undertaken and is considered in tandem with the combined effects approach explained above.

13.3.43 With regard to private assets which are proposed and are considered to form part of the *'future baseline'* for the Scheme, effects on amenity of these have been assessed where findings of the topic assessments in regard to effects on these are available.

Development land

13.3.44 A qualitative assessment has been undertaken of the effects on development land within the study area as identified from a review of planning applications which have received planning permission or which are under consideration and allocated sites. This is essentially considering permanent land take of development land which affects its viability.

13.3.45 As detailed the significance of effects has been determined through consideration of the relationship between the sensitivity of the receptor and the magnitude of change.

13.3.46 The assessment of effects of the Scheme on development land is based upon professional judgement. Each of the schemes with existing planning applications identified as being likely impacted have been described individually in subsequent sections of this report.

Human health

13.3.47 There is no consolidated methodology or practice for the assessment of effects of the Scheme on human health, however the scope of the assessment has been informed by existing Highways England guidance where relevant. This recognises the specific requirements of the NPSNN for consideration of health, specifically within paragraphs 4.79-4.82 as well as the following guidance:

- a) **Air Quality:** HA 207/07 (Ref 13.11), IAN 185/15 (Ref 13.12), IAN 175/13 (Ref 13.13), IAN 174/13 (Ref 13.14), IAN 170/12 (Ref 13.15);
- b) **Noise and Vibration:** HD 213/11 (Ref 13.16), IAN 185/15 (Ref 13.17);
- c) **Road Drainage and the Water Environment:** HD 45/09 (Ref 13.18).

13.3.48 Appendix 13.2 provides additional detail to the methodology for the assessment of effects on human health set out within this chapter.

Scope

13.3.49 The scope of this assessment does not involve the completion of a Health Impact Assessment (HIA), however it does provide sufficient consideration of population and health. This qualitative assessment of the potential effects of the Scheme on human health considers the following health and well-being determinants of relevance as identified from those set out in the London Healthy Urban Development Unit (HUDU) Rapid Health Impact Assessment Tool Third Edition 2017 (Ref 13.19):

- a) Access to healthcare services and other social infrastructure;

- b) Access to open space and nature;
- c) Air quality, noise and neighbourhood amenity;
- d) Accessibility and active travel;
- e) Access to work and training;
- f) Social cohesion and neighbourhoods; and
- g) Climate change.

Approach

- 13.3.50 This assessment considers the potential consequences for health and wellbeing from the construction and operation of the Scheme. In particular, it draws upon information and conclusions contained within various assessments reported within this ES (Air Quality, Landscape and Visual, Noise and Vibration, and Climate) and separate reports (Equalities Impact Assessment (Ref 13.26) and Transport (Ref 13.27) produced in respect of the Scheme.
- 13.3.51 The geographical extent of the impacts considered within this assessment is dependent upon the type of effects and receptors. A qualitative assessment of the impact of the Scheme on the surrounding statistical ward has been undertaken, in particular identifying where existing indicators of poor health have the potential to change as a result of the Scheme.
- 13.3.52 This assessment is a qualitative rather than quantitative assessment, due to the diverse nature of health determinants and health outcomes which are assessed. Although the assessment of human health effects describes the likely qualitative health outcomes, it is not possible to quantify the severity or extent of the effects which give rise to these impacts. As such, the potential health impacts during construction and operation are described as outlined in Table 13.13, based on broad categories for the qualitative impacts identified. Where an impact has been identified, actions have been recommended to mitigate any negative impact on health, or opportunities to enhance health benefits. It should be noted that in many cases, mitigation to reduce these impacts or measures to enhance certain benefits already form part of the Scheme and the assessment has considered these impacts as such.

Table 13.13: Human health impact categories

Impact Category	Impact Symbol	Description
Positive	+	A beneficial impact is identified
Neutral	0	No discernible health impact is identified
Negative	-	An adverse impact is identified
Uncertain	?	Where uncertainty exists as to the overall impact

Scoping

- 13.3.53 An interim assessment of effects on people and communities was included within the Scoping Report (October 2017). The Scoping Report outlined the assessment methodology (derived wherever possible from DMRB guidance), relevant legislation and policy, defined study areas and identified baseline conditions pertaining to the scope of the people and communities assessment.
- 13.3.54 Table 13.14 summarises the consultee responses to the people and communities section of the Scoping Report and where the comments are addressed within this chapter of the ES. Where assessment has been undertaken in accordance with the Scoping Opinion point, a response and the relevant ES Section is provided; where an alternative approach has been agreed with the relevant stakeholders, an explanation is provided.
- 13.3.55 The Scoping Opinion as received is provided in Appendix 4.1.

Table 13.14: People and communities Scoping Opinion and response

Scoping Opinion	Where addressed within the ES
Planning Inspectorate	
The Inspectorate does not consider that sufficient evidence has been presented to demonstrate that an assessment of effects on civil and military aviation and defence interests can be scoped out at this stage. For example, the Inspectorate notes the presence of the Boscombe Down Airfield and the Larkhill Artillery Range in proximity to the Proposed Development. These sites are identified on the Figures presented in the Scoping Report. The ES should address the potential for the Proposed Development to have a likely significantly effect on these important features.	As discussed with The Planning Inspectorate on 30th January 2018, it is acknowledged that the Scheme is located within proximity to military aviation and defence interests at the locations specified. It is considered that the Scheme will not likely impact on the operation of these during construction or operation given the nature of the scheme, land take required (temporary and permanent) and works required during construction and the understood nature of operations taking place at these interests. Highways England has met with the MoD on a number of occasions to ensure the scope and sensitivities of their operations are fully understood and protected accordingly and agree the approach adopted. Full details of engagement with the MoD can be found in the Consultation Report Application Document 5.1. The OEMP contains a commitment to consult with the MoD during construction.
The ES should include a clear justification for each of these study areas referred to in the people and communities section with corresponding figures to aid understanding.	The Study Area is defined and explained in Section 13.5.

Scoping Opinion	Where addressed within the ES
<p>Whilst the assessment will assess a number of matters, there is no consistent methodology provided for these collectively. The ES should clearly set out the methodology for each assessment including the definition of significance for each of the matters considered.</p> <p>The use of summary tables will be important to draw together the various components of the assessment in a coherent form so as to understand the overall significance of effects</p>	<p>The people and communities assessment methodology is set out in Section 13.3</p>
<p>Reference is made to an Agricultural Land Classification (ALC) survey, although the scope of this survey is not discussed further in the Scoping Report. The Inspectorate considers that any ALC survey and assessment of effects should be prepared in accordance with/having regard to NE's Technical Information Note TIN049 - Agricultural Land Classification: protecting the best and most versatile agricultural land.</p>	<p>An ALC survey has been carried out and is presented in Section 13.6, Paragraph 13.6.10 to 13.6.11</p>
<p>The Scoping Report notes at paragraph 6.8.57 that a 2km buffer either side of the route will be used capture community facilities as part of the NMU. However, paragraph 6.8.5 states an area of 1km will be used to identify PRow.</p> <p>The ES should ensure that all study areas are clearly depicted, explained are justified and applied consistently.</p>	<p>The Study Area is defined and explained in Section 13.5.</p>
<p>In order to assess amenity, the Scoping Report notes that other aspects will be taken into account. However the methodology is not provided to explain how this is to be achieved. The ES chapter should include specific explanation as to the cross referenced data sources from other aspects in the ES.</p>	<p>The people and communities assessment methodology is set out in Section 13.3, Methodology.</p>
<p>The Scoping Report notes that one of the assumptions made in the assessments is that crossing points will be provided where each PRow is crossed by the new road. The ES should demonstrate how mitigation relied upon in this way will be secured in the DCO or other legally binding agreement.</p>	<p>Mitigation is discussed in Section 13.8. The mechanisms for securing mitigation are identified in the Outline Environmental Management Plan (OEMP) Appendix 2.2 and the Register of Environmental Actions and Commitments (REAC) included in it.</p>

Scoping Opinion	Where addressed within the ES
<p>The Scoping Report does not define what is meant by a “<i>community resource</i>” contributing to the local context. Grouping of such assets should be defined for the purpose of the assessment along with a description of each of the relevant features identified and description of their contribution to the community.</p>	<p>The approach to defining and identifying community resources is set out in Section 13.4.4 and 13.4.5.</p>
<p>The Chapter makes no reference to tourists (as a group of people) and reference is only made to tourist as non-motorised users. The ES should assess impacts on tourists and tourism specifically as matter within the assessment, and appropriate cross referencing should be made to the LVIA which considers tourists as part of the definition of assessment viewpoints.</p>	<p>Impacts on tourists are assessed in the following regards:</p> <p>Tourists are considered as users of public rights of way, visitors to the WHS and vehicle drivers in the People and Communities chapter and other relevant chapters of the ES (see Chapter 5 Air Quality, Chapter 6 Cultural Heritage, Chapter 7 Landscape and Visual and Chapter 9 Noise and Vibration)..</p> <p>Impacts on the amenity of Public Rights of Way users which will include tourists in the vicinity of the Scheme are considered in the People and Communities Chapter with reference being had to the landscape and visual, noise and vibration and air quality assessments as relevant.</p> <p>On the basis of the above, it is considered that appropriate consideration is given to impacts on tourism within the application and within this Environmental Statement.</p>
Natural England	
<p>The scoping document says: “6.8.36 <i>The ALC survey...</i>”</p> <p>This survey is not referred to elsewhere in the scoping document. We advise an Agricultural Land Classification (ALC) survey, to an appropriate specification, is required for the EIA, and impacts assessed.</p>	<p>An ALC survey has been carried out and is presented in Section 13.6, Paragraph 13.6.10 to 13.6.11</p>

Scoping Opinion	Where addressed within the ES
Public Health England	
<p><i>"The points below are cross-cutting and should be considered when undertaking a human health risk assessment:</i></p> <ul style="list-style-type: none"> <i>- The promoter should consider including Chemical Abstract Service (CAS) numbers alongside chemical names, where referenced in the ES</i> <i>- Where available, the most recent United Kingdom standards for the appropriate media (e.g. air, water, and/or soil) and health-based guideline values should be used when quantifying the risk to human health from chemical pollutants. Where UK standards or guideline values are not available, those recommended by the European Union or World Health Organisation can be used</i> <i>- When assessing the human health risk of a chemical emitted from a facility or operation, the background exposure to the chemical from other sources should be taken into account</i> <i>- When quantitatively assessing the health risk of genotoxic and carcinogenic chemical pollutants PHE does not favour the use of mathematical models to extrapolate from high dose levels used in animal carcinogenicity studies to well below the observed region of a dose-response relationship. When only animal data are available, we recommend that the 'Margin of Exposure' (MOE) approach¹⁰ is used"</i> 	<p>During construction, chemicals will be managed as outlined within the OEMP. This will include a Pollution Incident Control Plan, as part of the CEMP, which recognises the risk of pollution from construction activities and presents management practices to ensure that any pollution incident that may occur, such as a diesel spillage, is minimised, controlled, reported to relevant parties and remediated.</p> <p>During operation, road accidents are a potential source of chemical spills. For the Scheme, the Stage 2 Economic Appraisal Report identified that there would be an overall reduction in the number of accidents. The Economic Appraisal Report states that "The accident and safety impacts were assessed quantitatively..." The assessment demonstrates that all options will reduce accidents due to the replacement of the existing single carriageway with a grade-separated dual carriageway. As such, although the ES will still consider the risk of spillages, as part of the assessment of road drainage and the water environment (in line with DMRB Volume 11 requirements), the potential for such accidents to affect people, as receptors under the topic of human health, is not considered further. This was discussed with PINS at the post-Scoping Opinion meeting.</p>

Scoping Opinion	Where addressed within the ES
<p>The ES should clearly identify the development's location and the location and distance from the development of off-site human receptors that may be affected by emissions from, or activities at, the development. Off-site human receptors may include people living in residential premises; people working in commercial, and industrial premises and people using transport infrastructure (such as roads and railways), recreational areas, and publicly-accessible land. Consideration should also be given to environmental receptors such as the surrounding land, watercourses, surface and groundwater, and drinking water supplies such as wells, boreholes and water abstraction points.</p>	<p>Off-site human receptors are considered as part of the People and Communities assessment, as presented in ES Chapter 13. They include people working in commercial, and industrial premises and people using transport infrastructure (such as roads and railways), recreational areas, and publicly-accessible land, where deemed to have the potential to experience effects, as well as surrounding land and its use, as set out in ES Section 13.9.</p>
<p>There is evidence that, in some cases, perception of risk may have a greater impact on health than the hazard itself. A 2009 report, jointly published by Liverpool John Moores University and the HPA, examined health risk perception and environmental problems using a number of case studies. As a point to consider, the report suggested:</p> <p><i>“Estimation of community anxiety and stress should be included as part of every risk or impact assessment of proposed plans that involve a potential environmental hazard. This is true even when the physical health risks may be negligible.”</i></p> <p>PHE supports the inclusion of this information within EIAs as good practice.</p>	<p>The assessment of impacts on human health considers outcomes of the Scheme with regard to the Social cohesion and Lifetime neighbourhoods determinant of health, which gives consideration to the impact the Scheme will have on the community independent of any physical health risks see paragraphs 13.9.97 to 13.9.100.</p>
<p>There is a potential health impact associated with the electric and magnetic fields around substations, and power lines and cables. This should be considered in the EIA as appropriate.</p>	<p>The Scheme includes the installation of underground electric cables within the Scheme boundary. Compliance with relevant power cable design and installation legislation would mean no adverse effects are anticipated.</p>

Consultation

- 13.3.56 Engagement has taken place with Wiltshire Council with regard to NMU routes. Meetings have been held with the *'Local Roads and PRow Group'* to discuss emerging scheme proposals for NMU routes.
- 13.3.57 Meetings have been held with farmers and/or landholders of affected land holdings to discuss interaction with the Scheme in order to inform design.

13.3.58 Public consultation comments received on this topic and their associated responses are provided within the Consultation Report, a copy of which is included within the application.

13.4 Assessment assumptions and limitations

13.4.1 The key assumptions relating to land and land use interests are that:

- a) with the exception of the land intended to be restored as permanent chalk downland to the west of the Scheme, that land restored to agriculture following construction would be restored to the pre-construction condition;
- b) following discussions with landowners, the existing pattern of ownership and agricultural land use would remain unaltered until the start of construction, such that the proportion of land required from agricultural holdings would remain unaltered; and
- c) existing accesses onto the A303 unaffected by the construction programme would remain available for their existing use and purpose; and measures outlined in the Outline Environmental Management Plan (OEMP) regarding field water supplies, fencing, and liaison would be followed.

13.4.2 Assumptions that have been made in undertaking the assessment of effects on people and communities include:

- a) the assessment addresses only the direct effects on commercial land in terms of land take. The transport impacts on business users are assessed as part of the Economic Case contained within the Business Case for the Scheme (Ref 13.20);
- b) the assessment methodology has excluded, for the purposes of reporting amenity and isolation effects, residential properties where the total number of dwellings affected is fewer than five. Impacts on individual properties do not constitute a significant community effect. There are a number of individual properties scattered along the route where impacts may be experienced from other topics, such as noise and vibration. These impacts would be reflected in other topic assessments where relevant; and
- c) community resources are mentioned expressly in the environmental baseline only where they contribute to the local context or where they may be affected by the Scheme. Consequently, not all community resources within the study area are mentioned.

13.5 Study area

13.5.1 The study area varies depending on the effect or type of resource being assessed. The Scheme site boundary and effects on land that borders the order limits through severance has been used for consideration of effects on agricultural land, development land, and open space.

- 13.5.2 The study area for the assessment of effects on farm holdings covers the land required for the construction and operation of the Scheme, together with the rest of the holding affected.
- 13.5.3 Effects on motorised users and NMUs of existing routes consider all such resources likely to be affected by alterations in traffic distribution and flows as well as users of the Scheme. The types of resources considered include roads, PRoW and footpaths located within 1km of the Scheme.
- 13.5.4 The study area for '*private assets*' (including residential properties, businesses and community facilities) consists of those assets containing land parcels required to accommodate the Scheme during construction and/or operation, i.e. within the Scheme boundary.
- 13.5.5 The study area for '*community severance*' is extended to 10km to include communities that may potentially be directly and indirectly affected by the Scheme, for example, through severance caused by the new road or the redistribution of vehicles on the affected road network. These would include communities directly connected by the NMU and motorised traveller routes.
- 13.5.6 The study area for '*human health*' comprises six wards (Amesbury East; Amesbury West; Bourne and Woodford Valley; Bulford, Allington and Figheldean; Durrington and Larkhill; and Till and Wyllye Valley). These have been profiled based on their proximity to the Scheme conferring a high likelihood that they could experience effects arising from construction activities and traffic, and the Scheme in operation.

13.6 Baseline conditions

Current baseline

- 13.6.1 This section establishes the current provision and condition of facilities and routes serving local communities for the defined study area (see Section 13.54).
- 13.6.2 Community resources are mentioned expressly in the environmental baseline only where they contribute to the local context or where they may be affected by the Scheme. Consequently, not all community resources within the study area are referred to.

Overview

- 13.6.3 The Scheme is located in the County of Wiltshire which has an estimated population of 488,400 (Ref 13.21). The study area surrounding the Scheme mostly comprises agricultural land and is sparsely populated. Small settlements are scattered around the area, the main settlement being Amesbury, located at the eastern end of the Scheme. In 2016, the total population of the study area defined for the assessment of human health was 34,244 (Ref 13.22).
- 13.6.4 Amesbury is the main location for services and community facilities in the study area and has a population of 10,700 inhabitants (Ref 13.21). Winterbourne

Stoke located 8 km west of Amesbury, and Larkhill, located 1.9 miles (3km) north west of Amesbury also offer a number of services. Smaller communities include Shrewton to the north of the existing A303 and several villages to the south of the existing A303 along the Avon and Till valleys and along the A338. The study area is serviced by a comprehensive network of B and C roads as well as PRoW.

Agriculture

Soils

- 13.6.5 The 1:250,000 soil map of South East England published by the Soil Survey of England and Wales in 1983 (Ref 13.30) shows the soils to be mainly shallow, calcareous soils over Chalk. Most widespread on the gently rolling downland is the Andover 1 association of calcareous silty soils over Chalk at shallow depth. Almost as extensive is the Icknield association of soils distinguished from the Andover by their blackish humose topsoils. On steeper slopes there is the Upton 1 association of shallow, well drained, silty soils over Chalk. In the valley of the River Till at Winterbourne Stoke there is the Coombe 1 association of deep calcareous silty soils in colluvium (soil material deposited by hillwash and soil creep).
- 13.6.6 The nature and quality of the agricultural land and soil affected by the Scheme has been assessed following detailed field surveys. The total area surveyed extends to approximately 352ha of which most is agricultural land mainly under arable cultivation growing winter cereals or under grass used for grazing sheep and cattle.
- #### **Soil parent materials and natural drainage**
- 13.6.7 There is one main soil parent material across the Scheme, Cretaceous Middle and Upper Chalk of the Seaford Chalk Formation, which is covered by varying thicknesses of flinty and chalky silty and loamy drift. The most extensive soil profiles within the Scheme boundary typically comprise dark brown or greyish brown, extremely calcareous, silty or loamy upper layers overlying chalk at shallow depth. On land to the east of Longbarrow Roundabout and locally to the west and north west of Winterbourne Stoke, soil profiles typically comprise very dark greyish brown, organic, silty upper layers overlying chalk at shallow depth.
- 13.6.8 Locally, in dry valleys, there are deeper soils which typically comprise dark brown, calcareous, silty or fine loamy upper layers over brownish, calcareous, silty and fine loamy lower layers, commonly over chalk at moderate depth or over flinty gravelly lower layers. Within the flood plain of the River Till, soils are developed in gravelly drift and typically comprise dark greyish brown, calcareous, moderately stony, silty upper layers over calcareous gravelly lower layers.
- 13.6.9 Natural drainage of all of these soil types is mainly by free vertical percolation down through the soil profile layers then through the permeable chalk or gravelly layers below.

Agricultural land classification

- 13.6.10 ALC grades have been evaluated in accordance with the MAFF ALC guidelines (Ref 13.31). The extent and distribution of the different ALC grades and subgrades is shown on Figure 13.3, and set out in Table 13.15. The majority of the agricultural land affected (90%) is BMV land in Subgrade 3a (223.2ha: 75%), Grade 2 (41.2ha: 14%) and Grade 1 (3.1ha: 1%). The remaining agricultural land (10%) is of moderate quality in Subgrade 3b (29.3ha).
- 13.6.11 The ALC within the Scheme boundary is typical of agricultural land quality in the Salisbury Plain and West Wiltshire Downs National Character Area (NCA) (Ref. 13.21), as shown in Table 13.15.

Table 13.15: Agricultural land classification

Agricultural land quality	Area within study area (ha)	Percentage of study area	Percentage of grade in NCA
Grade 1	3.1	1	<1
Grade 2	41.2	14	15
Subgrade 3a	223.2	75	(combined 3a and 3b) 77
BMV land	267.5	90	
Subgrade 3b	29.3	10	
Grade 4	0	0	6
Grade 5	0	0	1
Total agricultural land	296.8		

Agricultural holdings

- 13.6.12 Agricultural land use in this area is predominantly arable, although some grassland with beef cattle and sheep is also present. Many of the holdings are also engaged in equestrian activities. Table 13.16 sets out the current understanding of main farm holdings affected and their sensitivity to change.

Table 13.16: Summary of characteristics of agricultural holdings

Holding name	Holding type	Size (ha)	Diversification	Sensitivity to change
Yarnbury Castle Estate	Arable	>100ha	Not known	Medium
East Clyffe Farm, Steeple Langford	Arable	>100ha	Not known	Medium

Holding name	Holding type	Size (ha)	Diversification	Sensitivity to change
Berwick Hill Farm, Berwick St James	Arable with free-range poultry	325ha	None	Medium
Guinness Estate, Winterbourne Stoke	Arable with dairy and equestrian	1,620ha	Equestrian activities including polo ponies	Medium ¹
Little Wishford Farm, Stoford	Arable and beef cattle	250ha including rented land	Equestrian livery	Medium
Manor Farm, Stapleford	Arable	337ha	None	Medium
Scotland Lodge Farm, Winterbourne Stoke	Equestrian	18ha	Equestrian livery, management training	Medium
Cherry Tree Lodge Farm	Grassland used for livestock grazing	>250ha	Not known	Medium
Manor Farm, Winterbourne Stoke (including land rented from National Trust)	Arable with beef cattle	890ha including rented land	Wedding and events venue	Medium
Boreland Farm with Westfield Farm, Woodford	Arable, dairy and pigs	526ha	Land let for pig keeping	Medium ²
West Amesbury Farm with Park Farm (including land rented from National Trust and Antrobus Estate)	Arable with beef cattle	350ha including rented land	Agricultural contracting	Medium
Beacon Hill Land Ltd, Amesbury (including land rented from National Trust and DCMS)	Arable	376ha including rented land	None	Medium
Ratfyn Farm, Amesbury (including land rented from Lincoln College, Oxford)	Arable	600ha including rented land	Storage facilities, fishing lakes and livery stables	Medium
Beacon Hill Farm, Amesbury	Arable	>50ha	Not known	Medium

² Sensitivity reduced as land affected is used as part of the arable rotation and is not used for grazing lactating dairy cows

² Sensitivity reduced as land affected is used as part of the arable rotation and is not used for grazing lactating dairy cows

Holding name	Holding type	Size (ha)	Diversification	Sensitivity to change
Shrewton Farm, Shrewton	Arable	>400ha	None	Medium

Non-Motorised Users

- 13.6.13 There is a comprehensive network of PRoWs in the study area (as shown within Figure 13.1) available for use by NMUs. These routes provide connections between Shrewton and Rollestone to Berwick St James and Winterbourne Stoke as well as Larkhill and Countess to Stonehenge, however there is severance experienced at intersections with the A303. Byway AMES12 crosses the existing A303 slightly to the west of Stonehenge and passes directly through the WHS connecting the community of Larkhill to Druids Lodge on the A360.
- 13.6.14 These routes serve a wide range of users, including equestrians, hikers and cyclists, both local people and tourists. The footpaths and byways situated in proximity to the Stones are understood to be well used by those visiting the historic site.
- 13.6.15 On the Amesbury to Berwick Down section of the existing A303, several PRoW can be accessed on either side of the road. PRoWs ending at the A303 road (WSTO3 including along road B3083, WSTO6B, AMES10, AMES29, AMES35 and AMES11) or crossing it (AMES12) present safety risks as NMUs use the verges of the A303 or cross it.
- 13.6.16 There is no designated safe crossing point on the existing A303 through Winterbourne Stoke and there is poor visibility brought about by the alignment of the road at this location. The existing NMU underpass at Countess Roundabout is of a design that can be considered to be unattractive or impractical to users. These factors combine to inhibit movement across the road.
- 13.6.17 To the north of Boscombe Down Airfield are AMES3A and AMES1, with BULF11, AMES34, ALLI13, IDMI3 and IDMI5 found to the east and south. Further to the south there is a network of PRoW connecting communities within and between the villages in the Avon and Till valleys including Great Durnford. Within the Avon and Till Valleys are Bridleways DURN4, DURN13, BSJA4 and BSJA3, Footpaths WSTO11, BSJA8 and BSJA6 and Byways BSJA11, BSJA10, SLAN3, SLAN2 and BSJA3A.
- 13.6.18 Amesbury and the surrounding areas contain a range of cycling infrastructure including segregated paths, on-carriageway markings or off-road routes. The majority of cycling routes pass through the centre of Amesbury and do not cross the Amesbury to Berwick Down section of the existing A303. The only National Cycle Route (NCR) and only nationally designated NMU route lying in close proximity to the Scheme is the Wiltshire Cycle Way (Route 45). It passes through Bulford and Amesbury and does not intersect with the Scheme.

Motorised travellers

Driver stress

- 13.6.19 The existing A303 is used as the primary through route for journeys to the South West, requiring road users to pass through the WHS, offering views within approximately 165m of the Stones. The volume and speed of traffic as well as journey time reliability causes stress to motorised users.
- 13.6.20 Considerable congestion is experienced along the existing single carriageway A303 alignment between Amesbury and Berwick Down. The 40mph speed limits operating within Winterbourne Stoke as well as the queuing at the roundabout junctions at Countess and Longbarrow, and at the junction of the A303 and A344 at Stonehenge Bottom increase congestion. Rat-running also affects the villages of Larkhill and Shrewton, increasing travel distances.
- 13.6.21 The effect of the existing arrangements during periods of heavy traffic and emergency closures on driver stress is considered to be the key variable affecting motorised travellers, both at a local and regional level. Therefore, driver stress is likely to be highly sensitive to change.
- 13.6.22 Currently, there are eleven laybys along the existing A303 between the Countess Roundabout and Berwick Down allowing drivers to stop temporarily; six on the westbound and five on the eastbound carriageway. Local services are available at Amesbury and Winterbourne Stoke. The Countess Services located east of the Countess Roundabout, also offers services to motorised travellers.
- 13.6.23 Table 13.17 shows the number of vehicles travelling along the A303 as a two-way traffic flow (in the peak hour) recorded in the AM and PM during traffic surveys undertaken to inform the Scheme. It identifies the west of Countess Roundabout section as having the highest traffic flow both in the morning and evening with 2,268 vehicles travelling across the two lanes.

Table 13.17: Two-way vehicle flows on the A303 road in 2017

Locations (Number and description)	Two- way traffic flows (AM peak hour)	Two-way traffic flows (PM peak hour)
A303 west of Winterbourne Stoke	1,593	1,505
A303 west of Longbarrow Roundabout to Winterbourne Stoke	964	1,213
A303 west of Countess Roundabout to Longbarrow Roundabout	2,268	2,067
A303 west of Solstice Park to Countess Roundabout	1,154	1,054

13.6.24 The A360 currently crosses the A303 causing congestion at the existing Longbarrow Roundabout. Other routes either intersect or lie adjacent to the Scheme alignment, one of B-classification (B3083) and several which are unclassified and are used predominantly for local journeys. There are a number of byways open to all traffic (BOAT) in the Winterbourne Stoke area and south of Stonehenge. BOAT AMES 12 passes to the west of the Stones and crosses the existing A303 connecting Larkhill to Druids Lodge settlement on the A360 route, with another (AMES 11) running south from the existing A303 towards Wilsford. Several other byways can be accessed on either side of the existing A303 and connect with the communities of Berwick St James, Great Durnford, Larkhill and Shrewton.

Driver views

13.6.25 With regard to driver views, the existing A303 passes through the Stonehenge WHS, offering views on approach to and within approximately 200m of the Stones. Views of the River Till valley are also experienced by drivers in the section of the existing A303 lying to the west of Longbarrow Roundabout though these are considered to be somewhat narrow due to the immediate visual context around Winterbourne Stoke.

13.6.26 Motorised travellers in other sections of the existing A303 in the study area experience views of a more intermittent nature due to the visual context and surroundings, including as a result of trees/woodland at points along the route and from built-form, though mostly only at and to the west of Solstice Park and at Countess Roundabout.

Vehicular user severance

13.6.27 This type of severance is the separation of residents from the facilities and services they use within their community. Residents of Winterbourne Stoke are served by a full range of services and facilities in Amesbury. The existing A303 is the primary route between facilities in Amesbury and inhabitants of Winterbourne Stoke. Services at Amesbury include three primary schools, a secondary school, two surgeries, a library and a range of other town centre facilities.

13.6.28 The village of Shrewton, situated approximately 2.6km to the north of Winterbourne Stoke experiences rat-running associated with congestion along the existing A303. This results in severance within the village inhibiting access to services elsewhere, including in Amesbury, and increased journey times for residents of Winterbourne Stoke accessing the school and the limited services on offer in Shrewton.

13.6.29 Within Winterbourne Stoke the facilities are limited to St Peters Church, the petrol station (including a shop) and a public house (The Solstice Rest). These services suffer from severance caused by the existing A303 passing through the village. Further from the A303 there are several villages along the A338 and within the Avon and Till Valleys. These villages are primarily residential in nature and rely on larger service centres for the majority of services and community facilities.

- 13.6.30 Counts of two-way vehicle flows on surrounding roads around the A303 have been collected as part of traffic surveys undertaken in 2017. This work informs the existing levels of severance which is identified through using the scale provided in the DMRB guidance.
- 13.6.31 Table 13.18 presents the observed two-way peak hour (AM and PM) vehicle flows on other roads either intersecting or running in parallel to the existing A303 as recorded in traffic surveys undertaken in 2017 to inform the Scheme.

Table 13.18: Two-way vehicle flows on surrounding roads in 2017

Locations (Number and description)	Two-way traffic flows (AM, peak hour)	Two-way traffic flows (PM, peak hour)
London Road	337	280
The Packway	469	411
High Street	175	149
A345 Countess Road	756	1,068
A360 Amesbury Road	861	772
A38 over River Derwent Bridge	2,375	1,916
A3028	231	329
B3083 North of A303	99	73
B3083 South of A303	59	43
B3086 South of The Packway	230	209
B390 Chitterne Road	207	239

Private Assets

Residential properties

- 13.6.32 The study area is mostly rural and relatively sparsely populated. The main settlement close to the Scheme is Amesbury. There are no residential properties within the Scheme boundary. Residential properties within the study area are mainly located in Winterbourne Stoke. This village is currently crossed by the existing A303, lies directly south of the Scheme and has a population of approximately 200 people (Ref 13.21). East of Stonehenge, the study area also includes residential properties located in West Amesbury and south of Larkhill. Dispersed dwellings and farms are scattered through the study area, mainly in the Winterbourne Stoke area. Several isolated dwellings are also present within the study area, including the Stonehenge Cottages situated on the existing A303, south of The Avenue. Sparsely distributed residential farmhouses are present within the southern half of the study area with greater concentrations of residential housing at Berwick St James, Great Durnford and High Post.

Business premises

- 13.6.33 In addition to the agricultural holdings affected there are no business premises lying directly on the alignment of the Scheme. In Winterbourne Stoke, business premises comprise a bed and breakfast, a motorcycle manufacturer, an events venue, a training business, and a campsite as well as a petrol station and shop

off the A303. Another petrol station, a hotel and a restaurant are located at the Countess Services area. A shop and café form part of the Stonehenge Visitor Centre situated at the intersection of the A360 and the B3086 north of the Scheme.

- 13.6.34 East of the Scheme, there is an industrial estate located in Amesbury with housing located immediately to the north. South east of Amesbury, Boscombe Down Airfield occupies a large tract of land whilst the Porton Down military science park lies just to the south of the A338.

Community facilities

- 13.6.35 A public house (The Solstice Rest) and a church (St Peters Church) are located in Winterbourne Stoke with residents using the existing A303 to access other community facilities in Amesbury. Facilities available in Amesbury include three primary schools (Amesbury Archer Primary School, Amesbury Church of England Voluntary Controlled Primary School, Christ The King Catholic Primary School), a secondary school (The Stonehenge School), a library, a leisure centre (Amesbury Sports and Community Centre), a community centre (Bowman Centre), several churches, a cemetery and a range of other services such as a post office and a police station.
- 13.6.36 Winterbourne Stoke residents can also access community facilities in Shrewton, located 2.6km north using the B3083. Facilities at this location include a cricket club, a primary school (Shrewton CE VC Primary School), three churches (Shrewton Methodist Church, St Mary's Church, St Andrew's Church), a village hall (Maddington Church Room) and a social club (Shrewton Sports and Social Club).
- 13.6.37 Primary care facilities, comprising pharmacies and two surgeries (Barcroft Medical Centre, St Melor House Surgery) are located in Amesbury. There are two additional surgeries in Shrewton (Shrewton Surgery and The Till Orchard Surgery). The nearest general hospital is Salisbury District Hospital.
- 13.6.38 The Scheme borders the Parsonage Down National Nature Reserve (NNR) (which is also open access land) and would cross two rivers, the River Till and the River Avon. In Amesbury, several open spaces lie within 500m of the Scheme including the Holders Field and the Amesbury Sports and Community Centre pitches. An area of informal public open space is located to the west of byway AMES1 in the vicinity of Equinox Drive and Allington Track.
- 13.6.39 Land in the vicinity of Stonehenge comprises two distinct areas of ownership; land owned by English Heritage and Natural Trust owned-land. English Heritage allow access to parts of their area on an entry-fee paying basis at the Stonehenge Visitor Centre, for viewing the Stones. The Natural Trust owned land is permissive open access land. The land in the vicinity of Stonehenge does not therefore comprise open space and is not categorised as such by Natural England or Wiltshire County Council.

Human health

- 13.6.40 This section provides a human health profile of the study area surrounding the Scheme, focusing on key indicators identified by Public Health England at ward level including a comparison of these to national averages (Ref 13.23). Indicators deemed relevant to likely health impacts of the Scheme for each area have been identified, with data relating to these and the national (England) average figure set out in detail in Table 13.9.
- 13.6.41 In summary for each ward; the proportion of the population in Amesbury East with a general health classification of *'bad or very bad'* is well below the average for England. Amesbury East records rates of long-term illness or disability and obesity among children (reception year) below the national average, and the proportion of children aged under 16 is notably above the national average.
- 13.6.42 The proportion of the population in Amesbury West with a general health classification of *'bad or very bad'* is greater than the average for England - the only ward in the study area which ranks above the national average. Rates of obesity among adults in Amesbury West are also above the national average. The proportion of the population with long-term illnesses or disabilities is also considerably higher than the national average and the proportion of people aged 65 and over is also higher than the national average. Though below the national average the incidence of income deprivation is the highest of the six wards in the study area.
- 13.6.43 In Bourne and Woodford Valley, the rate of pensioners living alone is below the national average and the proportion of the population with a general health classification of *'bad or very bad'* is lower than the average for England. The proportion of people aged 65 and over is above the national average.
- 13.6.44 The ward of Bulford, Allington and Figheldean records a lower rate of pensioners living alone than nationally with the rates of both adult and child obesity being broadly similar to national averages. The proportion of the population with a general health classification of *'bad or very bad'* is lower than the average for England. The proportion of children aged under 16 is notably above the national average.
- 13.6.45 The proportion of the population in Durrington and Larkhill with a general health classification of *'bad or very bad'* is well below the average for England. Durrington and Larkhill also record a rate of long-term illness below those recorded nationally, though rates of both adult and child obesity are higher than the national average.
- 13.6.46 The Till and Wylve Valley ward records a lower rate of pensioners living alone than nationally with the rates of both adult and child obesity being broadly similar to national averages. The proportion of the population with long-term illnesses or disabilities is also significantly higher than the national average and the proportion of people aged 65 and over is also higher the national average.

Table 13.19: Human health profile in study area

	Amesbury East	Amesbury West	Bourne and Woodford Valley	Bulford, Allington and Figcheldean	Durrington and Larkhill	Till and Wylve Valley	England
Population	6,729	4,524	4,333	6,549	7,666	4,443	55,268,067
Population aged under 16 (%)	25	16	18	25	20	16	19
Population aged over 65 (%)	9	28	25	11	12	26	18
Income Deprivation (people living in income-deprived households as % of popn.)	7.7	11.7	5.2	5.4	5.5	5.6	21.8
Long term Unemployment (measured as claimants of Jobseekers Allowance (per 1,000 population aged 16-64) for over 6 months)	0	0.3	0	0	0.1	0.3	4.6
General Health – bad or very bad (%)	2.6	6.8	3.4	3.3	2.5	3.6	5.5
Long term illness or disability (%)	10.5	22.6	15.4	12.3	11.8	16.4	17.6
Obese adults (%)	27.7	27.7	24.2	25.4	27.4	24.1	24.1
Obese children (reception year) (%)	7.8	7.8	-	9.5	9.5	8.7	9.3
Emergency hospital admissions for COPD (SAR)	64.5	64.5	44.7	42.4	46.8	49.3	100
Deaths from respiratory diseases, all ages (SMR)	76.2	117.7	45.4	60	90	85.5	100

(SIR – Standardised Incidence Ratio, SAR – Standardised Admission Ratio, SMR – Standardised Mortality Ratio) SIR is the ratio of the observed number of Incidences in a ward to the number expected if the ward had the same age-specific rates as England. SAR is the ratio of the observed number of Admissions in a ward to the number expected if the ward had the same age-specific rates as England. A SMR is the ratio of the observed number of deaths in a ward to the number expected if the ward had the same age-specific rates as England.

Sources: Public Health England, Local Health; ONS (2017), Ward Level Mid-Year Population Estimates (Experimental Statistics).

Future baseline

Construction year baseline (2021)

- 13.6.47 The future baseline for the construction year (2021) of the Scheme comprises the current baseline conditions described in the previous sections together with relevant planning applications implemented and started or completed which would constitute new sensitive receptors for the assessment of effects.
- 13.6.48 Developments associated with the relevant planning applications which are either under construction, or where construction has not started but would be completed by 2021, are included. These are:
- a) 515 new homes and associated community infrastructure, including a primary school with playing fields at Archers Gate Amesbury (ref: 15/02530/OUT);
 - b) 460 new homes and associated community infrastructure, south of Archers Gate, Amesbury (ref: S/2012/0497);
 - c) New dwellings (143 units) and associated community infrastructure, south of Archers Gate, Amesbury (ref: 13/06181/OUT);
 - d) Expansion of Stonehenge School at Antrobus Road, Amesbury (ref: 17/05583/DP3);
 - e) Mixed-use development at Bulford Garrison (Army 2020 rebasing) including living accommodation and associated community infrastructure (refs: 15/05950/FUL, 15/04006/FUL, 17/02739/REM);
 - f) Mixed-use development at and adjacent to Larkhill Garrison (Army 2020 rebasing) including living accommodation and associated community infrastructure (refs: 15/06682/FUL, 16/00032/FUL, 18/00397/FUL, 17/06370/FUL, 17/03959/FUL, 17/06373/FUL); and
 - g) New Cricket ground including 2 storey club house at Nett Road, Shrewton (ref: 14/06488/FUL);
- 13.6.49 There are also five development plan allocations which would be future baseline in the construction year if implemented:
- a) King's Gate Amesbury, which is designated in Wiltshire Core Strategy (2015) to provide up to 1,300 homes (Ref. 13.9);
 - b) Land adjoining Plot 7a, Idmiston Rd, Porton (Plot 7b) to provide up to 10 homes; and
 - c) Land between Porton Road and Beech End, Tidworth Road, Porton (Plot 12), providing up to 10 homes.

- d) Land north of Clover Lane, Durrington (Plot A14), designated by Wiltshire Housing Site Allocations (2018) (Ref. 13.32) to provide 45 homes; and
- e) Land south of Larkhill Road, Durrington (Plot A15), is designated by Wiltshire Housing Site Allocations (2018) (Ref. 13.32) to provide 15 homes.

13.6.50 Other than the presence of the identified development, the baseline for this assessment would not be likely to change substantially by the construction year (2021). It is acknowledged that agricultural, other businesses and community facilities may open and close, and the level of usage of community resources including public rights of way may change but this cannot be predicted with any accuracy.

Opening year baseline (2026)

13.6.51 The future baseline for the opening year (2026) of the Scheme for people and communities comprises the current baseline conditions described previously together with relevant developments which would be constructed by 2026.

13.6.52 The opening year baseline includes the planning applications defined as being future baseline for the construction year, as noted above, as well as those developments which would be under construction or not started in 2021 and likely to be complete by 2026. There is one additional development to those identified in the construction year baseline (2021) which may be part of the baseline in the opening year (2026); the proposed development of 16 new homes at Idmiston Road, Porton (ref: 17/00842/OUT);

13.6.53 Other than the presence of the development identified in the previous section, the baseline for this assessment would not be likely to substantially change by opening year (2026). It is acknowledged that agricultural, other businesses and community facilities may open and close, and the level of usage of community resources including public rights of way may change though this cannot be predicted with any accuracy.

13.7 Potential impacts

13.7.1 Mitigation measures being incorporated in the design and construction of the Scheme are set out in Section 13.8. Prior to implementation of the mitigation, the Scheme has the potential to affect people and communities resources and receptors (positively or negatively), both during construction and once in operation, as described in the following sections.

Construction

Agricultural land and holdings

13.7.2 The principal potential impacts on agricultural land and farm and farm-based enterprises are anticipated to occur during the construction of the Scheme.

13.7.3 Construction impacts on agricultural land and farm-based enterprises would include land requirements; severance; and the loss of, or disruption to, buildings and operational infrastructure. Other potential construction effects would include the deposition of dust on sensitive crops, land uses or buildings; disruption to drainage, irrigation and water supply systems; unintentional pollution of soil and water courses; spread of injurious weeds to adjacent agricultural land from soil and material stockpiles; and construction noise on farm and farm-based enterprises.

13.7.4 Permanent construction impacts would comprise the net area of agricultural land required to operate the Scheme, following the construction period and the restoration of land required temporarily to unrestricted agriculture; permanent severance; and the permanent loss of or effect on farm infrastructure such as property, buildings and structures, and the consequential effects on land uses and enterprises.

Non-Motorised Users

13.7.5 Potential impacts during construction include:

- a) permanent land take associated with the footprint of the at-grade sections, portals and junctions;
- b) temporary land take, closure or diversion during construction; and
- c) temporary disruption to PRowWs during construction and resulting severance of access to community facilities.

Motorised travellers

13.7.6 Potential impacts during construction include:

- a) temporary increase in driver stress across the local network during the construction period;
- b) temporary changes in driver views experienced arising from the presence of construction activities or from diversions; and
- c) temporary changes including severance to vehicular user journeys for residents accessing community resources on local roads resulting from the redistribution of traffic on the wider network

Private assets

13.7.7 Potential impacts include land required temporarily and/or permanently for construction and operation of the Scheme, including areas of public open space.

Amenity

13.7.8 Potential impacts during construction include:

- a) potential for noise and vibration and air quality effects arising from construction activities including traffic to impact on the amenity of residents and local workers; and
- b) possible changes in the amenity experience of NMUs caused by the construction activities generating noise and vibration and emissions to air.

Development land

- 13.7.9 There is potential for impacts on development land during construction owing to land required temporarily and permanently for the Scheme.

Human health

- 13.7.10 Potential impacts on human health determinants during construction include changes in noise and air pollution, water quality and climate change as a result of construction activities and traffic.

Operation

Agricultural holdings

- 13.7.11 Other than potentially reducing severance and improving inter and intra-farm connectivity, there are no potential new or additional impacts on agricultural land and holdings during operation.

Non-Motorised Users

- 13.7.12 Potential impacts during operation of the Scheme include:
- a) reducing severance and improving connectivity and local travel patterns through provision of new NMU routes; and
 - b) reducing journey times to accessing community resources through provision of new NMU routes and connections.

Motorised travellers

- 13.7.13 Potential impacts during operation of the Scheme include:
- a) permanent loss of driver views of the WHS and associated landscape along the tunnelled section and associated cuttings;
 - b) permanent widened views in the River Till valley;
 - c) permanent decrease in driver stress related to improvements in journey time reliability and a reduction in congestion on the existing A303;
 - d) possible changes in levels of driver stress across the wider road network from redistribution of traffic; and

- e) changes in severance for residents of villages accessing community facilities and social infrastructure as a result of reduced traffic flows on surrounding roads.

Private assets

- 13.7.14 Potential impacts include land required temporarily and/or permanently for construction and operation of the Scheme, including areas of public open space.

Amenity

- 13.7.15 Potential impacts during operation include:

- a) Potential for noise and vibration, air quality, visual and transport effects arising from operation of the Scheme to impact on the amenity of residents and local workers;
- b) Improving the amenity experience and safety of PRow users through the tunnelling, downgrading or de-trunking of the A303 and the provision of newly created NMU routes; and
- c) Potential for noise and vibration, air quality, visual and transport effects impacting on development land.

Human health

- 13.7.16 Potential impacts on human health determinants during operation of the Scheme include:

- a) Lifestyle changes such as encouraging travel by means other than private car, for example encouraging walking and cycling behaviours through provision of new NMU routes and potentially reduced severance;
- b) Effects on local employment opportunities and activity through changes in access to employment resulting from reduced delays, congestion and potential reductions in severance;
- c) Effects on access to key services and social infrastructure such as health facilities and education facilities arising from reduced delays, congestion and potential reductions in severance; and
- d) Effects on access to open space and recreation space through provision of new NMU routes.

13.8 Design, mitigation and enhancement measures

Agricultural land and holdings

- 13.8.1 During the development of the design, the measures incorporated to avoid or mitigate adverse impacts on agricultural land and holdings included:

- a) agricultural crossing incorporated into a green bridge over the new A303 northwest of Scotland Yard Farm to mitigate severance of Guinness Estate and Little Wishford Farm, Stoford;
- b) dedicated agricultural access lane incorporated into B3083 Shrewton Road crossing to mitigate severance of Manor Farm, Winterbourne Stoke;
- c) maintenance of agricultural access under River Till Viaduct to mitigate severance of Manor Farm, Winterbourne Stoke;
- d) agricultural crossing incorporated into a green bridge to the east of the new Longbarrow Junction to mitigate severance of Boreland Farm with Westfield Farm; and
- e) revised agricultural access provided to mitigate severance for West Amesbury Farm with Park Farm.

13.8.2 The potential severance of agricultural land for various holdings is also avoided by the creation of the new link road between Allington Track and Amesbury Road and by the construction of the tunnel.

13.8.3 Compliance with measures set out within the OEMP would avoid or reduce environmental impacts during construction. Those measures that are particularly relevant to agriculture include:

- a) arrangements for the maintenance of farm and field accesses affected by construction;
- b) the protection and maintenance of livestock water supply systems, where reasonably practicable;
- c) the protection of agricultural land adjacent to the construction site, including the provision and maintenance of appropriate stock-proof fencing;
- d) the adoption of measures to control the deposition of dust on adjacent agricultural crops;
- e) the control of invasive and non-native species and the prevention of the spread of weeds generally from the construction site to adjacent agricultural land. The adoption of measures to prevent, insofar as reasonably practicable, the spread of soil-borne, tree, crop and animal diseases from the construction area; and
- f) liaison and advisory arrangements with affected landowners, occupiers and agents, as appropriate.

13.8.4 Where unrestricted agricultural uses are to be resumed on land disturbed during the construction of the Scheme, the design objective is to avoid any reduction in long term capability, which would downgrade the quality of the disturbed land,

through the adoption of good practice techniques in handling, storing and reinstating soils on that land.

Non-Motorised Users

13.8.5 The Scheme provides the opportunity to enhance the amenity and enjoyment of NMUs, providing additional benefits, as well as addressing adverse effects via mitigation. The Scheme includes:

- a) new restricted byways on the north and the south side of the new alignment both tying in with PRoW SLAN3, and a new segregated cycleway east from Winterbourne Stoke to the new Longbarrow Junction;
- b) the provision of 'green bridges' one of which facilitates the realignment of the existing WSTO6B PRoW and two of which each provide a new NMU route; and
- c) the tunnelling of the A303 and downgrading the current road in that section to a route open to NMUs only and extending to the Stonehenge Visitor Centre to the north and AMES12 to the south.

13.8.6 The Scheme design would improve safety for residents in the vicinity of the junctions through improved NMU facilities and separating trunk road traffic from local traffic movements, as well as including a consistent high standard of signing relating to the junctions.

Motorised travellers

Construction

13.8.7 During construction of the Scheme, the following measures would be put in place to reduce potential impacts upon motorised travellers as follows:

- a) As detailed in Section 2.4, an OEMP has been prepared and will be further developed and implemented by the selected construction contractor. The OEMP includes a range of good practice measures associated with mitigating potential environmental impacts. In addition to the OEMP, the construction contractor would define the requirements relating to traffic management. The construction contractor would liaise with Wiltshire Council and the police to agree and implement a Traffic Management Plan. Mitigation to minimise vehicular user severance on the highway network, where reasonable and practicable, includes the implementation of a phased construction programme, and may include intelligent transport systems to implement variable speed limits and lane control and variable message signs. The contractors would also be required to provide regular updates regarding any disruption caused by construction works on the road network;
- b) Appropriate mechanisms to communicate with local residents would be set up to highlight potential periods of disruption (for example, web-based,

newsletters, newspapers, radio announcements etc.) and an appropriate communication strategy will be developed. An information web-page would be provided and kept up-to-date on the Highways England website to reflect construction and community liaison requirements. The web-page would provide up-to-date information on planned construction works and progress to date, areas affected by construction and mitigation in place to reduce adverse effects. These communication measures would help drivers plan their journeys during the construction phase of the Scheme.

Operation

- 13.8.8 The Scheme would improve safety for all road users, as grade separation would potentially reduce the accident clusters that occur at the existing at-grade roundabouts. For motorised travellers, safety measures include but are not limited to signage and signalling, increased verge width to accommodate highway features such as signs, vehicle restraint systems, communication equipment and laybys; and central reserves providing appropriate visibility.

Private assets

Community facilities

- 13.8.9 The Scheme would mitigate the loss of any public open space required for construction and operation. Replacement public open space would be equal to or greater in size than the land required for the Scheme.

Development land

- 13.8.10 Mitigation of effects on development land would be specific to each of the circumstances identified, with steps undertaken to inform mitigation likely to include:
- a) discussions with the promoters of proposed developments to ensure compatibility of proposals;
 - b) discussions with promoters to identify potential cumulative effects during the construction and operational phases;
 - c) continued monitoring of planning applications for new development proposals in or around the route alignment; and
 - d) monitoring of the plan preparation process for the Wiltshire Housing Sites Development Plan Document.

13.9 Assessment of effects

- 13.9.1 Effects have been identified following consideration of the potential impacts outlined in Section 13.7 and the mitigation measures in Section 13.8.

Agricultural land and soils

Agricultural land

Construction

- 13.9.2 During the construction phase, the total area of agricultural land required for the construction of the Scheme would be approximately 297ha as shown in Table 13.20. Approximately 279ha would be restored and would be available for agriculture following construction, of which approximately 162ha would be maintained as permanent chalk grassland.

Table 13.20: Agricultural land required for the construction of the scheme

Agricultural land quality (ha)	Area required during construction (ha)
Grade 1	3.1
Grade 2	41.2
Subgrade 3a	223.2
BMV agricultural land	267.5
Subgrade 3b	29.3
Grade 4	0
Grade 5	0
Total agricultural land	296.8

- 13.9.3 The disturbance during construction to approximately 268ha of BMV land in Grades 1, 2 and 3a is assessed as an impact of major magnitude. This represents approximately 0.6% of the BMV in the NCA (assuming a 50:50 split between Subgrade 3a and 3b in the Grade 3 figure, out of a total of 46,700ha BMV). The overall temporary effect of the Scheme on BMV agricultural land is assessed as large adverse, which is significant.
- 13.9.4 Following completion of construction, temporary facilities would be removed and the soil reinstated in accordance with the agreed end use for the land.
- 13.9.5 The area of land presently in agricultural use that would be permanently required for the Scheme is approximately 39ha, as shown in Table 13.21. Approximately 280ha of land would be restored for agriculture following construction with 117ha available for unrestricted agricultural use. Some 162ha would be restored as chalk grassland where land management prescriptions would ensure its long-term survival (see Chapter 8).

Table 13.21: Land required temporarily and permanently for the construction of the scheme

Agricultural land quality (ha)	Area required during construction (ha)	Total area restored to “unrestricted” agriculture (ha)	Total area restored to permanent chalk grassland) ³	Area permanently required (ha)
Grade 1	3.1	1.0	2.1	0
Grade 2	41.2	18.0	20.6	2.6
Subgrade 3a	223.2	85.9	109.9	27.5
BMV agricultural land	267.5	104.9	132.6	30.1
Subgrade 3b	29.3	12.4	8.4	8.1
Grade 4	0	0	0	0
Grade 5	0	0	0	0
Non-agricultural land	80.2	0	0 (21.2)	0
Total agricultural land	296.8	117.3	162.1	38.5

- 13.9.6 The permanent requirement for 30.1ha of BMV land in Grade 2 and 3a is assessed as an impact of moderate magnitude even though it only represents 0.06% of the BMV agricultural land in the NCA. Grade 2 and 3a land is assessed as a receptor of medium sensitivity which is typical of the ALC in the NCA. The overall effect of the Scheme on BMV agricultural land is assessed as moderate adverse, which is significant.

Nature of the soil to be disturbed

Construction

- 13.9.7 In general, the agricultural soil displaced by the Scheme would, after land restoration, be able to fulfil its primary soil functions on site and the Scheme would have a minor magnitude of impact on soil. The topsoil that would remain in situ on the land restored adjacent to Parsonage Down would retain its function in protecting cultural heritage and will be subject to a moderate magnitude of impact. The soils affected are generally medium silty clay loam with locally medium clay loam, heavy silty clay loam or clay, and are of low sensitivity. Thus, the effect of the Scheme on soil is assessed as slight adverse, which is not significant.
- 13.9.8 Where unrestricted agricultural uses are to be resumed on land disturbed during the construction of the Scheme, the design objective is to avoid any reduction in long term capability, which would downgrade the quality of the disturbed land,

³ Includes all chalk grassland.

through the adoption of good practice techniques in handling, storing and reinstating soils on that land.

- 13.9.9 Successful soil handling is dependent upon movements being undertaken under appropriate weather and ground conditions using the appropriate equipment. The principles of soil handling are well established and set out in advisory material such as Defra's Code of Practice for the Sustainable Use of Soils and referred to in NPS. These principles would be followed throughout the construction period.

Agricultural holdings

Construction

- 13.9.10 The acquisition and use of land for the Scheme would interfere with existing uses of that land and, in some locations, preclude existing land use practices. This could result in potential effects associated with the ability of affected agricultural interests to access and use residual parcels of land. The Scheme seeks to reduce this disruption and, where appropriate and reasonably practicable, incorporate inaccessible severed land as part of environmental mitigation works.
- 13.9.11 Land used to construct the Scheme would fall into the following main categories when work is complete:
- a) part of the operational road and kept under the control of the operator;
 - b) returned to unrestricted agricultural use (with aftercare management to ensure stabilisation of the soil structure); and
 - c) used for ecological and/or landscape mitigation.
- 13.9.12 Land may be required for the Scheme from holdings temporarily, during the construction period, or permanently. In most cases, the temporary and permanent land requirement would occur simultaneously at the start of the construction period and it is the combined effect of both that would have the most impact on the holding. During the construction period, some agricultural land would be restored to unrestricted agricultural use and the same agricultural condition, and the impact on individual holdings would reduce. In some cases, land would be restored to agriculture but would be maintained as permanent chalk grassland. The long-term management strategy for this land has yet to be finalised but the assessment assumes on a worst case basis that the ownership of the land would remain with the acquiring authority with a land management company being retained to manage the land. Where this occurs, the restored land would not be available to the original landowner and the impact on the holdings affected would not be reduced.
- 13.9.13 The effects of the Scheme on individual agricultural and related interests during the construction period are summarised in Table 13.22, which shows the total area of land required from a particular holding in absolute terms and as a

percentage of the total area farmed. The area of agricultural land that could be returned to the holding following the construction period (this excludes the land restored as permanent chalk grassland) is also indicated. The degree of impact is based on the proportion of the holding required rather than the absolute area of land.

- 13.9.14 The effect of severance during construction as set out in Table 13.22 is judged on the ease and availability of access to severed land (but excludes land already severed from the main holding or accessed from the public highway). The disruptive effects, principally of construction noise and dust, are assessed according to their effects on land uses and enterprises. Impacts on residential properties on farm holdings are assessed, as required, in Chapter 5 Air Quality and Chapter 9 Noise and Vibration.

Table 13.22: Assessment of temporary effects on agricultural holdings

Holding Name	Sensitivity to change	Total area required from holding (and % of total size) / Scale ⁴	Construction severance	Disruptive effects	Scale of construction effect	Area to be restored to agriculture
Yarnbury Castle	Medium	0.5ha, (<1%)	Negligible	Negligible	Slight adverse	0.0ha
East Clyffe Farm, Steeple Langford	Medium	2.0ha, (<2%)	Negligible	Negligible	Slight adverse	0.8ha
Berwick Hill Farm	Medium	1.5ha, (<1%) Negligible	Negligible	Negligible	Slight adverse	0.5ha
Guinness Estate	Medium	46.8ha, (3%) Negligible	Major	Major	Large adverse due to severance and disruption during construction	18.9ha
Little Wishford Farm	Medium	21.2ha, (9%) Minor	Major	Negligible	Large adverse due to severance	1.5ha
Manor Farm, Stapleford	Medium	56.1ha, (17%) Moderate	Negligible	Negligible	Large adverse due to the proportion of land required	0.2ha
Cherry Tree Lodge Farm	Medium	28.7ha, (10%) Moderate	Negligible	Moderate	Moderate adverse due to the proportion of land required	3.4ha

⁴ Includes all land, not limited to productive agricultural land

Holding Name	Sensitivity to change	Total area required from holding (and % of total size) / Scale ⁴	Construction severance	Disruptive effects	Scale of construction effect	Area to be restored to agriculture
Scotland Lodge	Medium	4.4ha, (24%) Major	Negligible	Moderate	Large adverse due to the proportion of land required	1.8ha
Manor Farm, Winterbourne Stoke	Medium	110.4ha, (12%) Moderate	Major	Major	Large adverse due to severance and disruption during construction; moderate adverse due to the proportion of land required	79.2ha
Boreland Farm with Westfield Farm	Medium	16.9ha, (3%) Negligible	Negligible	Minor	Slight adverse	1.8ha
West Amesbury Farm with Park Farm	Medium	8.9ha, (3%) Negligible	Moderate	Moderate	Moderate adverse due to the severance and disruption during construction	4.3ha
Beacon Hill Land Ltd	Medium	12.6ha, (3%) Negligible	Negligible	Negligible	Slight adverse	9.9ha
Ratfyn Farm	Medium	2.4ha, (<1%) Negligible	Negligible	Negligible	Slight adverse	0.1ha
Beacon Hill Farm, Amesbury	Medium	0.7ha, (<2%) Negligible	Negligible	Negligible	Slight adverse	0.0ha
Shrewton Farm	Medium	2.0ha, (<1%) Negligible	Negligible	Negligible	Slight adverse	0.0ha

13.9.15 Overall, 15 holdings would be affected during construction, of which seven would experience moderate or large adverse effects, which are significant for each holding.

Permanent effects of construction

13.9.16 The permanent effects from the construction of the Scheme on individual agricultural and related interests are summarised in Table 13.23. The '*land required from holding*' column refers to the area of land required to operate the Scheme in absolute terms and as a percentage of the overall area farmed. The

scale of effect is based on the proportion of land required from the holding. The effects of severance are judged on the ease and availability of access to severed land once construction is completed. The impact on farm infrastructure refers to the loss of or damage to farm capital, such as property, buildings and structures, and the consequential effects on land uses and enterprises.

Table 13.23: Summary of permanent effects on agricultural holdings

Holding name	Sensitivity to change	Land required from holding	Severance	Infrastructure	Scale of effect
Yarnbury Castle	Medium	0.4ha, (<1%) Negligible	Negligible	Negligible	Slight adverse
East Clyffe Farm, Steeple Langford	Medium	1.3ha, (1%) Negligible	Negligible	Negligible	Slight adverse
Berwick Hill Farm	Medium	1.0ha, (<1%) Negligible	Negligible	Negligible	Slight adverse
Guinness Estate	Medium	27.9ha, (2%) Negligible	Minor	Negligible	Slight adverse
Little Wishford Farm	Medium	19.8ha, (8%) Minor	Negligible	Negligible	Slight adverse
Manor Farm, Stapleford	Medium	6.0ha, (17%) Moderate	Negligible	Negligible	Moderate adverse
Cherry Tree Lodge Farm	Medium	25.3ha, (8%) Minor	Negligible	Negligible	Slight adverse
Scotland Lodge	Medium	2.6 ha, (14%) Moderate	Negligible	Negligible	Moderate adverse
Manor Farm, Winterbourne Stoke	Medium	31.2ha, (4%) Negligible	Minor	Negligible	Slight adverse
Boreland Farm with Westfield Farm	Medium	15.1ha, (3%) Negligible	Negligible	Minor	Slight adverse
West Amesbury Farm with Park Farm	Medium	4.6ha, (1%) Negligible	Minor	Minor	Slight adverse
Beacon Hill Land Ltd	Medium	2.7ha, (<1%) Negligible	Negligible	Negligible	Slight adverse
Ratfyn Farm	Medium	2.3ha, (<1%) Negligible	Negligible	Negligible	Slight adverse
Beacon Hill Farm, Amesbury	Medium	0.7ha, (2%) Negligible	Negligible	Negligible	Slight adverse
Shrewton Farm	Medium	2.0ha, (1%) Negligible	Negligible	Negligible	Slight adverse

- 13.9.17 Overall, the presence of the Scheme would affect 15 holdings with two holdings experiencing moderate adverse permanent effects which are significant for each holding.
- 13.9.18 Although financial compensation would be available, there can be no certainty that this would be used to reduce the adverse agricultural effects. Therefore, this assessment represents the worst case, which could be reduced if the owner and/or occupier is able, and chooses, to use compensation payments to replace assets.

Non-motorised users

Journey length and local travel patterns

Construction

- 13.9.19 Changes to journey times, local travel patterns, and certainty of route for NMUs would arise from the temporary closures and diversions of PRoWs through direct land take, severance, and provision of access routes required for the construction of the Scheme. The provision of new and realigned NMU routes by the Scheme would also have an effect on journey times and local travel patterns.
- 13.9.20 Effects during construction on relevant routes are set out in the following paragraphs for each of four sections of the Scheme.
- 13.9.21 In the section of the Scheme west of Winterbourne Stoke, during construction a new PRoW would be created along the de-trunked/downgraded A303 and new alignment. This would include a new cycleway to the north (approximately 3.1km in length) and new route for other users on the south side (around 1.1km of bridleway, with a byway of a further 1.5km) both tying in with PRoW SLAN3. A green bridge (see Figure 13.3) would also be constructed over the Scheme northwest of Scotland Lodge Farm providing a NMU connection between the north and south sections of the route. These routes would improve connectivity to community resources for residents from Winterbourne Stoke accessing Yarnbury Castle and Wylve, and provide improved opportunities for recreational cycle journeys. Impacts arising from this on journey lengths and local travel patterns are assessed to be medium, and the effect on NMUs is assessed to be moderate beneficial and significant.
- 13.9.22 Temporary disruption to NMUs making short local journeys on byway BSJA3 would be experienced at the intersection with the A303 due to the byway being temporarily severed preventing access. However, NMUs would be able to use an alternative route via byway BSJA3A (approximately 490m in total length), to complete their journeys which should result in minimal disruption. Impacts arising from this on journey lengths and local travel patterns are assessed to be neutral, and the effect on NMUs is assessed to be negligible and not significant.
- 13.9.23 The permanent closure of BSJA3A byway in this section would result in disruption to local NMU journeys however the upgrading of the adjoining BSJA3

to a byway would result in alternative access to a wider network of routes being available within a short distance (approximately 200m). This would result in minimal disruption experienced by NMUs.

- 13.9.24 Temporary disruption to NMUs making short local journeys on byway WSTO3 would also be experienced at its intersection with the existing A303. Although in the added presence of traffic, NMUs would be able to use the B3083 and the existing A303 as an alternative route (approximately 250m in additional journey length) to complete their journeys. Using this route should result in minimal disruption, and thus impacts arising from this on the use of WSTO3 by NMUs are therefore assessed to be low and the effect on NMUs is assessed to be negligible and not significant.
- 13.9.25 In the section of the Scheme west of Longbarrow Roundabout to Winterbourne Stoke, byways WSTO4 and WSTO6B would be temporarily closed for approximately two years to facilitate construction of the Scheme. Disruption to journeys by NMUs accessing community services in Shrewton from Winterbourne Stoke would be experienced due to the routes being temporarily severed. A local alternative route to the byways is available (approximately 200m and 800m respectively from the routes) to the west using the B3083 road, albeit with the added presence of traffic. Increases in journey length and changes to travel patterns during the approximately two year construction period would not be substantial. Impacts arising from this on each route (WSTO4 and WSTO6B) are therefore assessed to be low and the effect on NMUs is assessed to be minor adverse and not significant.
- 13.9.26 Following construction of the realigned A303, a green bridge (see Figure 13.3) would then be constructed over this to the east of Winterbourne Stoke. The green bridge would incorporate the permanently realigned WSTO6B retaining access for residents of Winterbourne Stoke to services in Shrewton.
- 13.9.27 During construction, a new NMU route – a segregated cycleway – would be provided on the downgraded A303 east from Winterbourne Stoke to the new Longbarrow Junction. The route would provide opportunity for recreational journeys to the Stonehenge WHS and would facilitate improved journey times between Winterbourne Stoke and Amesbury for potential accessing of community services by cyclists, where there is currently severance experienced due to congestion on the existing A303. Impacts arising from this on journey lengths and local travel patterns are assessed to be low, and the effect on NMUs is assessed to be minor beneficial and not significant.
- 13.9.28 To the east of the new Longbarrow Junction a green bridge (see Figure 13.3) approximately 150m in length would be constructed. The green bridge would incorporate a new restricted bridleway (approximately 3.6km in length) which extends to the north along the A360 as far as the Stonehenge Visitor Centre and south along the same road to connect with byway BSJA11. The route would include a separated cycle path and bridleway, facilitating recreational journeys within and across the Stonehenge WHS and improved NMU journeys between Shrewton and Amesbury for potential accessing of community

services. Impacts arising from this on journey lengths and local travel patterns are assessed to be medium, and the effect on NMUs is assessed to be moderate beneficial and significant.

- 13.9.29 In the section of the Scheme west of Countess Roundabout to Longbarrow Roundabout, byways AMES 11 and AMES12 would be temporarily closed for short periods to facilitate the conversion of the existing A303 to an NMU route, and to extend the byways to this route. NMUs using the byways to access community services in Larkhill from Berwick St James could experience disruption to journeys, as could users from these settlements accessing the Stones and Stonehenge Visitor Centre. However, as closures would be limited to two to three hour periods on a daily basis, with diversion via routes to the west and east possible, disruption to journeys would be minimal. Impacts arising from this on each route (AMES11 and AMES12) are therefore assessed to be neutral and the effect on users of each route is assessed to be negligible and not significant.
- 13.9.30 Bridleway AMES10 would be temporarily closed for short periods to facilitate the conversion of the existing A303 to a NMU route. However, as closures would be limited to two to three hour periods on a daily basis, disruption to journeys would be minimal. Impacts arising from this on the use of AMES10 by NMUs are therefore assessed to be neutral and the effect on NMUs is assessed to be negligible and not significant.
- 13.9.31 The permanent closure of byways AMES2 and BULF12 in this section would result in disruption to local NMU journeys. However, NMUs would be able to use the wider network of alternative routes available within 400m to complete their journeys which should result in minimal disruption. Impacts arising from this on each route (AMES2 and BULF12) are therefore assessed to be neutral and the effect on users of each route is assessed to be negligible and not significant.
- 13.9.32 The permanent closure of byway AMES1 between the A303 and AMES29 would also result in disruption to local NMU journeys. However, users would be able to complete their journeys using an opened in advance new route accessible by NMUs which would be constructed along the existing private lane between Allington Track and AMES1 (approximately 500m in additional journey length). This would result in minimal disruption experienced by NMUs, and impacts arising from this on the use of AMES1 by NMUs are therefore assessed to be neutral and the effect on NMUs is assessed to be negligible and not significant.
- Operation**
- 13.9.33 The Scheme would incorporate a grade-separated pedestrian crossing of the realigned A303 crossing on byway WSTO4 which should offset any adverse effects by NMUs travelling across the alignment.
- 13.9.34 As the Scheme would be in tunnel within the Stonehenge WHS, the existing A303 in this location would be downgraded to an NMU route (approximately

4.2km in length) connecting to existing and new routes to the west of Longbarrow Roundabout. This would reduce severance for residents of Winterbourne Stoke, Shrewton and other villages in the River Till valley accessing community services in Amesbury and Larkhill, and support improved links between these locations and the Stonehenge WHS. Impacts arising from this on journey lengths and local travel patterns are assessed to be medium, and the effect on NMUs is assessed to be moderate beneficial and significant.

- 13.9.35 The construction of a grade separated junction at Countess Roundabout would remove through-traffic from the roundabout and the existing NMU underpass would be replaced with an at-grade signalised NMU crossing. The provision, during operation of the Scheme, would potentially reduce severance in this location for pedestrians and cyclists from Bulford and Larkhill accessing community facilities in Amesbury. As this represents an improvement of an existing route, the impact on improving access and local travel patterns is low, and the effect on NMUs is assessed to be minor beneficial and not significant.

Motorised travellers

Driver Stress

Construction

- 13.9.36 There would be an increase in driver stress in the study area due principally to the presence of construction traffic on the A303 and surrounding roads and construction activities taking place along the route and nearby. This would likely lead to some frustration amongst vehicular travellers, though no expected change in fear of accidents due to the change in traffic levels being low. The assessment takes account of road management measures associated with the construction traffic and activities as well as diversions which could potentially create route uncertainty.
- 13.9.37 Changes and resulting impacts would be monitored through implementing traffic management requirements set out in the OEMP which would make drivers aware of disruptions ahead of time to help them plan their routes and journeys accordingly with signage mitigating any impact. It is therefore assessed that effects on driver stress levels during construction related to the three components causing driver stress (frustration, fear of accidents and uncertainty of route being followed) would likely be minor adverse and therefore not significant.

Operation

- 13.9.38 Changes to the A303 arising from the Scheme would result in reduced journey times, more efficient functioning of the road network, improved route certainty and reduced fear of potential accidents.
- 13.9.39 The proposed tunnel and highway would be constructed to higher standards than the existing carriageway. New junctions at the Countess Roundabout and the new Longbarrow Junction would allow for free flowing traffic movements east to west and north to south allowing for the junctions to separate traffic

going east west along the A303 or north south along the A345 Countess Road or A360 Longbarrow Junction. This would help reduce congestion and also maintain connectivity between local roads and should contribute to a reduction in driver fear. Modern signage would be provided throughout the Scheme which would also help inform drivers about route changes and restrictions.

13.9.40 Vehicle travellers taking local journeys would be able to use the local access road and avoid exposure to the high volumes of heavy good vehicles on the trunk road, which should lead to a reduction in driver stress in terms of driver frustration, fear of accidents and uncertainty in relation to the route followed.

13.9.41 To assess the level of change in driver stress levels (frustration and fear of potential accidents) arising from the improvements, Table 13.24 sets out the predicted driver stress level for each of the four sections of the route for the two scenarios, '*with scheme*' and '*without scheme*', using the method set out in DMRB (Ref 13.1) and described in Section 13.3.

Table 13.24: Assessment of effects of driver stress on the A303

Road Section	Baseline Road Classification	Predicted Traffic Flows per hour (peak) per lane - ' <i>without scheme</i> ' 2041	Driver Stress Level ' <i>without scheme</i> ' 2041	Predicted 2041 Traffic Flows per hour (peak) per lane - with scheme 2041	Predicted Driver Stress Level with scheme, 2041	Change in Driver Stress Level
A303 west of Winterbourne Stoke	Single Carriageway	2,000	High	1,300	Moderate	Reduction
A303 west of Longbarrow Roundabout	Single Carriageway	1,600	High	1,300	Moderate	Reduction
A303 west of Countess Roundabout	Single Carriageway	2,700	High	1,900	High	No change
A303 west of Solstice Park	Dual Carriageway	1,500	Moderate	1,800	High	Increase

13.9.42 As shown in Table 13.25, the only observed increase in traffic flows is in the section of the Scheme west of Solstice Park, which is presently dual carriageway, where the level of driver stress as defined by DMRB guidance increases from Moderate to High. Two sections of the Scheme, west of Winterbourne Stoke and west of Longbarrow Roundabout would experience a reduction in driver stress from High to Moderate. The remaining section, west of Countess Roundabout where the Scheme is dual carriageway and mostly in tunnel records a substantial reduction in traffic flows, though the driver stress level remains unchanged for this section at High as per the methodology set out in the DMRB guidance.

- 13.9.43 Regarding '*uncertainty of route*' the use of modern signage throughout the Scheme would help inform drivers about routes. Whilst this would minimise the potential for driver stress to arise in this way, with some benefit derived, the Scheme would not likely be of substantial benefit in this regard as route uncertainty is not considered to be an existing problem.
- 13.9.44 Overall with regards to driver stress, the reduction in traffic flows per lane between the '*without scheme*' and '*with scheme*' scenarios in 2041 is substantial, reducing stress levels measurably in two of the four sections, and somewhat in another section. The effect of the Scheme on these components of driver stress is assessed to be moderate beneficial and therefore significant.

Driver Views

Construction

- 13.9.45 During construction, there would be a change in driver views along certain sections of the existing A303 where construction activities would be taking place. Generally, views from the road would remain largely as recorded for the baseline as drivers would still be travelling on the existing A303 alignment. This is as a result of the existing road remaining in use whilst the Scheme is constructed on a new alignment.
- 13.9.46 However changes in views would be experienced at some locations during construction and have been assessed for each of the four defined sections of the Scheme.
- 13.9.47 An approximately 1.9km stretch (from its western end to the proposed junction with the de-trunked A303) of the section west of Winterbourne Stoke would experience changes in views. These changes would be due to construction of the dual-carriageway and the two parallel new PRoW routes on either side, and the green bridge. Views are intermittent at present along this stretch and would worsen somewhat on the northern side due to the construction activities. Despite this, views are considered to remain intermittent. An approximately 1.7km stretch (east of the proposed junction with the existing A303) of the section would experience changes in views. These changes would be due to views of the construction works to the north, which would be partly screened by vegetation and fencing. Overall, views from the existing A303 in the section are assessed to remain intermittent. Therefore the effect on views from the existing A303 during construction in this section of the Scheme is assessed to be negligible and therefore not significant.
- 13.9.48 Within the approximately 2.5km section of the Scheme west of Longbarrow Roundabout to Winterbourne Stoke, there would be slightly intermittent views from the road throughout the section as a result of the Scheme due to construction works in the River Till valley, including construction of the River Till Viaduct. However, views of these activities would be intermittent in the '*without scheme*' scenario and as such would be mostly unchanged in this respect. As there is mostly no change in views experienced in this section of the Scheme,

the effect on views from the road during construction is assessed to be negligible and therefore not significant.

- 13.9.49 In the section of the Scheme west of Countess Roundabout to Longbarrow Roundabout, drivers would experience views of construction of the realignment of the Longbarrow Roundabout and of the western tunnel portal. This is within an approximately 500m stretch of this 3.5km section where there are currently open views of the WHS which would become restricted for the duration of construction. The remainder of this section, approximately 3km of the existing A303 including most of the stretch where there are views of the WHS, would not experience a material change in views. This is due to construction works being in tunnel, apart from at Countess Roundabout where eastbound travelling drivers would experience a worsening of views due to construction works. In summary, although there would be a worsening of the open views experienced from the existing A303, the majority of views experienced in the section, including views of the Stones, would remain mostly unchanged during construction. On this basis, the effect on views from the road during construction in this section is assessed to be minor adverse and therefore not significant
- 13.9.50 In the approximately 1.5km section of the route west of Solstice Park, the main impact on views would be from construction of the vertical alignment of the Countess Roundabout. Current views from the existing A303 in this location are restricted and whilst these will worsen in this particular location in both directions due to construction works, views from the road would be mostly unchanged in the remainder of the section. On this basis, the effect on views from the road during construction in this section is assessed to be minor adverse and therefore not significant.

Operation

- 13.9.51 The Scheme would have impacts on views from the road experienced by motorised travellers owing to the changed layout of the A303, as has been assessed with reference to the four sections of the Scheme identified. In all sections, Annual Average Weekday Trips (AAWT) forecasts for this alignment establish that more than 10,000 daily travellers would use the route and thus experience changes.
- 13.9.52 For the section of the route west of Winterbourne Stoke, the vertical alignment of the Scheme would reduce views on residential housing, however. the presence of the cutting would mean that the intermittent views currently experienced are only improved in a part of the section. As more than 10,000 travellers per day would be affected by this change in views, there would be a minor beneficial and significant effect experienced by drivers in respect of views in the section of the Scheme west of Winterbourne Stoke.
- 13.9.53 Within the section of the Scheme west of Longbarrow Roundabout to Winterbourne Stoke, the new twin-deck and five-span viaduct would be 10m above the River Till. Coupled with the realignment of the A303 to the north, away from the village of Winterbourne Stoke and the presence of buildings and

screening vegetation, the intermittent views currently experienced would remain mostly unchanged with the exception of widened views of the River Till valley in the vicinity of the viaduct, though these would be partly screened by barrier on the south side. There would be a minor beneficial and not significant effect experienced by drivers arising from the Scheme on driver views in this section.

- 13.9.54 In the section of the Scheme west of Countess Roundabout to Longbarrow Roundabout, the closure of the existing at-grade section of the A303 between Longbarrow Roundabout and Stonehenge Road and its replacement tunnel and associated cuttings would result in no views from the road for an approximately 3km stretch of the route. This would result in a complete loss of views currently experienced of the Stones and the majority of views of the Stonehenge WHS. There would be a major adverse and significant effect experienced by drivers in respect of views from the road in this section of the Scheme due to more than 10,000 travellers per day being affected by this loss in views.
- 13.9.55 Within the section of the Scheme west of Solstice Park to the Countess Roundabout the raised vertical alignment associated with the grade-separated junction would result in changes in views. More open views would be experienced at the Countess Roundabout, although these views would be screened and of a mostly developed area. To the east of the roundabout, although current views are largely restricted by noise barriers and screening vegetation, the retaining wall would result in no view being experienced for around 800m. This represents just over 50% of the 1.5km section of the Scheme. Overall, despite the slight improvement in views at the junction, in general views would worsen in both directions although this would only be over a relatively short distance. The change in views from the road experienced in this section is assessed to be minor adverse and a not significant effect.

Vehicular user severance

Construction

- 13.9.56 The construction of the Scheme would generate traffic in the form of HGV and other vehicle movements which together with works to connect the existing A303 to the Scheme may result in diversions. The volume of construction traffic is not of a scale so as to require long-term diversions to be implemented, with speed restrictions and other measures being implemented to manage this. Whilst construction activities may result in an increase in journey times, journeys would not be deterred or vehicle users prevented from making journeys. Impacts arising are assessed to be slight and the effect on vehicular users is assessed to be negligible and not significant.

Operation

- 13.9.57 The operation of the Scheme would result in changes to traffic flows on the route of the A303 and surrounding roads such that it would have a potential impact on severance in relation to vehicular users accessing community resources in the study area.

- 13.9.58 Table 13.25 presents, for both the A303 and surrounding roads, a comparison of the Scheme with the ‘without scheme’ (do minimum) scenario in 2041 in terms of percentage change in two-way traffic flows with 2041 taken to be the worst year in the first 15 years of operation. Data on flows has been taken from traffic forecasts prepared in 2018 (Ref. 13.20).
- 13.9.59 Based on this percentage change, for each road/section Table 13.26 identifies whether there is likely to be new/increased severance or a relief from severance experienced by vehicular users of the road/sections. Surrounding roads have been grouped with the section of the Scheme with which they intersect or most readily connect with.

Table 13.25: Change in degree of severance arising from changes in traffic levels

Route Sections and Surrounding Roads	% change in two-way traffic flows (peak hourly) with Scheme in 2041 to ‘do minimum’ scenario	Increase in Severance or Relief from Severance?	Magnitude of change in Severance
A303 West of Winterbourne Stoke			
A303 West of Winterbourne Stoke	-33%	Relief	Slight Relief
B3083 North of A303	13%	Increase	Low
B3083 South of A303	76%	Increase	Medium
B390 Chitterne Road	-46%	Relief	Slight Relief
A303 West of Longbarrow Roundabout to Winterbourne Stoke			
A303 West of Longbarrow Roundabout to Winterbourne Stoke	-15%	Relief	Slight Relief
London Road	-32%	Relief	Slight Relief
High Street	-23%	Relief	Slight Relief
B3086 South of The Packway	-34%	Relief	Slight Relief
A360 Amesbury Road	0.9%	Increase	Neutral
B3086 South of The Packway	-34%	Relief	Slight Relief
A303 West of Countess Roundabout to Longbarrow Roundabout			
A303 West of Countess Roundabout to Longbarrow Junction	-30%	Relief	Slight Relief
The Packway	-39%	Relief	Slight Relief

Route Sections and Surrounding Roads	% change in two-way traffic flows (peak hourly) with Scheme in 2041 to 'do minimum' scenario	Increase in Severance or Relief from Severance?	Magnitude of change in Severance
A303 West of Solstice Park to Countess Roundabout			
A303 West of Solstice Park to Countess Roundabout	25%	Increase	Low
A345 Countess Road	31%	Increase	Low
A3028 Double Hedges	-3%	Relief	Neutral

Source: A303 Stonehenge – Amesbury to Berwick Down, Business Case (2018) (Ref 13.20)

- 13.9.60 The realignment of the A303 north of Winterbourne Stoke would direct trunk road traffic away from the village. In addition, the dual carriageway and improved traffic management measures compared to the 'without scheme' scenario would mean that the road section A303 west of Winterbourne Stoke would experience a 33% reduction in traffic flows east and westbound to those currently experienced representing a slight relief from severance. As Winterbourne Stoke residents are likely to be travelling north to Shrewton and east to Amesbury to access community facilities, the numbers of residents benefitting from reduced traffic flows to the west of the village in this section are likely to be limited. Additionally, whilst flows on the B390 would reduce with a slight relief from severance associated, flows on the B3083 would increase overall which reduces potential for benefits to be experienced by residents. The potential overall effect on vehicular users is assessed to be minor beneficial and therefore not significant.
- 13.9.61 The grade-separated junction west of Longbarrow Roundabout to Winterbourne Stoke would result in this section experiencing a 15% reduction in traffic flows. This would reduce severance experienced by residents of Winterbourne Stoke currently when accessing facilities in Amesbury and Shrewton and the catchment school in Great Wishford, supported by the provision of the underbridge for the B3083 under the A303 to the north of the village. Also, there would be relief from severance experienced along most of the surrounding roads connecting with this section, except the A360. Based on the severance they currently experience due to road congestion and the potential relief from severance recorded on the route and a number surrounding roads, overall the effect on vehicular users is assessed to be moderate beneficial and therefore significant.
- 13.9.62 The existing A303 would be downgraded to a restricted byway route within the WHS, and as a result, the Scheme would result in vehicular users no longer being able to use the A303 as a connection between Byway AMES 12 and Byway AMES 11. There could be severance experienced by motorised travellers travelling from Larkhill and surrounds to the villages of Wilsford, Lake and Upper Woodford and vice versa, and from these locations to the A303. Larkhill residents would be able to access the A303 using the

Packway/B3086/A360 to the new Longbarrow Junction for westbound journeys (approximately 1.9km in additional journey length) or the A345 to Countess Roundabout for eastbound travel with minimal additional journey length experienced. Residents from Larkhill and surrounds would be required to travel via the A345 to Amesbury and then on an unnamed road along the course of the River Avon to access Wilsford, Lake and Upper Woodford (approximately 2km in additional journey length). In addition, Wilsford, Lake and Upper Woodford residents would follow this same route in the opposite direction to access the A303, resulting in approximately 2.5km in additional journey length for westbound journeys. Eastbound travellers are likely to currently use this route already. The potential changes in severance for vehicular users assessed for the removal of the connection between Byways AMES 12 and AMES11 overall are assessed to be minor adverse and not significant.

- 13.9.63 The provision of the dual carriageway including within tunnel in the section west of Countess Roundabout to Longbarrow Roundabout would result in a forecast reduction in traffic flows of 30% per lane forecast. This will potentially serve to reduce severance experienced by residents of the villages of the River Till valley including Berwick St James, Winterbourne Stoke, Stapleford and Shrewton when accessing community facilities in Amesbury. The forecast change in traffic flows in this section is predicted to result in slight relief from severance for these residents, a level of relief also experienced on the Packway (which runs in parallel), and thus overall the potential effect on vehicular user severance is assessed to be minor beneficial and therefore not significant.
- 13.9.64 Within the section of the west of Solstice Park to Countess Roundabout, the grade-separated junction at Countess Roundabout and existing presence of the dual carriageway would result in a low increase in severance based on the forecast increase in traffic flows of 25%. Flows would also increase on the A345 Countess Road between Larkhill and Bulford and Amesbury, and remain static on the A3028 in Bulford itself, potentially increasing severance for residents of both settlements accessing community services in Amesbury. The potential changes in severance for vehicular users assessed for this section overall are assessed to be minor adverse and not significant.

Private assets

Construction

- 13.9.65 In order to accommodate utilities infrastructure, the construction of the Scheme would require the permanent use of approximately 0.4ha of an informal area of public open space located to the west of byway AMES1 in the vicinity of Equinox Drive and Allington Track. An area of replacement open space equivalent to or greater in size than the area required would be provided prior to construction. The replacement open space would be adjacent to where the existing area is located. Impacts on users of open space are therefore assessed to be negligible and the effect is in-turn assessed to be negligible and not significant.

- 13.9.66 The construction of the Scheme would not require the demolition of residential and commercial properties and community facilities located within the study area, nor would it require land temporarily from these properties. Land required from agricultural land holdings is assessed in the previous sections. Therefore, as the Scheme has no impact on private assets during construction no effects have been assessed.

Operation

- 13.9.67 Approximately 0.4ha of an informal area of open space would be required permanently during operation of the Scheme. An area of replacement open space equivalent to or greater in size than the area required would be provided for users adjacent to where the existing open space is located. Impacts on users of open space are therefore assessed to be negligible and the effect is in-turn assessed to be negligible and not significant.
- 13.9.68 The operation of the Scheme would not require land permanently from residential and commercial properties and community facilities located within the study area. Therefore, as the Scheme has no impact on private assets during operation no effects have been assessed.

Amenity

Construction

- 13.9.69 Taking into account the results of the air quality, noise and visual assessments, there are no residents or users of public rights of way, community facilities or businesses that would experience a significant effect on their amenity during construction.

Operation

- 13.9.70 Taking into account the results of the air quality, noise and visual assessments, there are no residents or users of public rights of way, community facilities or businesses that would experience a significant effect on their amenity during operation.

Development land

Construction

- 13.9.71 There are no planning applications / permissions affected by land required temporarily for construction of the Scheme and thus no effects have been assessed.

Operation

- 13.9.72 There are no planning applications / permissions affected by land required for operation of the Scheme and thus no effects have been assessed.

Human health

Health Determinant Outcomes during Construction

Access to healthcare services and other social infrastructure

- 13.9.73 During periods of the construction phase, eastbound and westbound A303 traffic would be restricted. In addition, areas beneath the Eastern Bridge and Western Bridge of the Countess Roundabout would be temporarily closed.
- 13.9.74 The provision of mitigation measures, such as diversions and relevant access points, would ensure accessing these facilities remains possible. The effect on local community assets as a determinant of human health during construction is assessed to be neutral (0).

Access to open space and nature

- 13.9.75 During construction, traffic management areas, temporary working and storage areas, material stockpiles, haul roads and provision for site compounds are expected. Existing open and natural spaces would be retained and remain usable during construction, with any changes to access or potential impact on the amenity of users being mitigated.
- 13.9.76 Eastbound and westbound A303 traffic would be restricted during construction. In addition, areas beneath the Eastern Bridge and Western Bridge of the Countess Roundabout would be temporarily closed. However, diversions are to be provided as required.
- 13.9.77 Changes to journey times, local travel patterns, and certainty of route for NMUs would arise from the temporary closures and diversions of PRoWs through direct land take and provision of access routes required for the construction of the Scheme.
- 13.9.78 An area of informal public open space located adjacent to byway AMES1 and Allington Track would be permanently required for the construction and operation of the Scheme. However replacement open space which is equivalent to or greater in size than the area required would be provided prior to construction adjacent to where the existing area is located.
- 13.9.79 Through mitigation measures, such as temporary diversions to access routes and PRoWs and replacement provision of open space, access to open and natural space during the Scheme construction would be maintained and so the effect on human health is assessed to be neutral (0).

Air quality, noise and neighbourhood amenity

- 13.9.80 During construction, emissions from HGVs and traffic management effects would occur, although they would be temporary in nature.
- 13.9.81 The Scheme would result in some temporary noise and vibration impacts during the construction works. The site clearance works and earthworks have been

identified as the construction activities with the greatest potential to generate noise.

13.9.82 There is potential for residents to be affected by noise exceedances or worsening in air quality due to construction activities and construction traffic where present. Residents of the ward of Amesbury West are considered to experience existing poor levels of health as identified by indicators, most notably that the proportion of the population with a general health classification of '*bad or very bad*' is greater than the average for England and the number of people aged over 65 is also higher than recorded nationally. These residents are therefore considered most susceptible to such effects from the perspective of human health. The assessment of effects undertaken in respect of noise conclude that there would be significant adverse effects experienced by residents of some properties due to proximity to the construction activities and/or construction traffic routes. Mitigation measures identified in this assessment would be implemented accordingly, and there would be limited residual effects on the health of residents during construction.

13.9.83 Potential impacts on air quality, noise and neighbourhood amenity would be managed through the use of best practicable means included in the OEMP and the use of temporary noise barriers where possible as outlined in the noise and vibration assessment. As a result, the effect of the Scheme on air quality, noise and neighbourhood amenity as a determinant of human health during construction is assessed to be neutral (0).

Accessibility and active travel

13.9.84 During construction, changes to journey times, local travel patterns, and certainty of route for NMUs would arise from the temporary closures and diversions of PRowS through direct land take and provision of access routes required for the construction of the Scheme.

13.9.85 Construction traffic may impact on journeys made by pedestrians and cyclists in the local area. However, the effects would be minimised through measures set out within the OEMP and the required traffic management plans.

13.9.86 Mitigation measures, such as diversions to access routes would minimise disruption and therefore the effect of the Scheme on accessibility and active travel as a determinant of human health during construction is assessed to be neutral (0).

Access to work and training

13.9.87 The construction phase of the Scheme is anticipated to provide net additional employment opportunities in the local area. Therefore, the effect of the Scheme on access to work and training as a determinant of human health during construction is assessed to be positive (+).

Social cohesion and lifetime neighbourhoods⁵

- 13.9.88 During the construction phase, temporary severance issues may occur due to disruption to existing road usage. Through mitigation measures, such as the provision of diversions during construction, the effect of the Scheme on social cohesion and lifetime neighbourhoods as a determinant of human health is assessed to be neutral (0).

Climate change

- 13.9.89 During the construction phase, the integrity of the River Avon SAC (incorporating the River Till SAC) and the Salisbury Plain SAC and SPA could be adversely impacted by deposition of dusts. This has the potential to impact upon people's enjoyment of these natural resources such that their well-being could be affected. However, as stated in Chapter 14 Climate, the implications are low and not significant and the effect of the Scheme on climate change as a determinant of human health during construction is therefore assessed to be neutral (0).

Health Determinant Outcomes during Operation

Access to healthcare services and other social infrastructure

- 13.9.90 During the operational phase, the realignment of A303 north of Winterbourne Stoke and the provision of a grade-separated junction at the A303 West of Longbarrow Roundabout would reduce severance experienced by residents when accessing healthcare facilities in Amesbury. Improved access to healthcare is an essential component of creating sustainable, healthy communities.
- 13.9.91 Despite the permanent closure of A303 access routes from Amesbury Road, Allington Track and Byway AMES2, the Scheme would improve connectivity to community facilities located in Amesbury with the surrounding settlements, particularly Winterbourne Stoke.
- 13.9.92 Therefore, reduced severance and improved access to local healthcare services facilitated by the Scheme is assessed to positively effect human health (+) of residents in the study area.

Access to open space and nature

- 13.9.93 During operation, the new '*green bridges*' would connect existing natural spaces and allow the movement of wildlife, maintain existing agricultural access and provide crossings for existing and new bridleways and public footpaths. In addition, a new restricted byway would be created through the WHS along the route of the existing A303. 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 and much of this part of the WHS. Access to the natural space in this location would be directly enhanced through the provision of this

⁵ Lifetime neighbourhoods are places designed to be inclusive regardless of age or disability as set out by the UK Government.

route, and its connections with existing routes and other new routes within the Scheme to the west. Improved access to the entrance to Parsonage Down NNR would also arise.

- 13.9.94 An area of informal public open space located adjacent to byway AMES1 and Allington Track would be permanently required for the construction and operation of the Scheme. However replacement open space which is equivalent to or greater in size than the area required would be provided prior to construction. The replacement open space would be adjacent to where the existing area is located.
- 13.9.95 The Scheme also includes the provision of a new NMU route along the de-trunked/downgraded A303 west of Winterbourne Stoke running through to the Longbarrow Junction. A further NMU route extending to the north and south of the junction along the existing A360 would also be constructed. The new NMU routes, managed and maintained by HE, would improve accessibility and connectivity for communities including Winterbourne Stoke and Amesbury as well as increase opportunities for physical activity.
- 13.9.96 Therefore, with the provision of new *'green bridges'* and additional NMU routes, the effect of the Scheme on access to open and natural space as a determinant of human health during operation is assessed to be positive (+) for residents in the study area.

Air quality, noise and neighbourhood amenity

- 13.9.97 During operation, the Scheme would cause a redistribution of traffic on the local highway network, resulting in a decrease in traffic flows at some junctions and an increase at other junctions. Changes to the A303 arising from the Scheme would result in reduced journey times and congestion, and likely reductions to levels of air pollution.
- 13.9.98 The Scheme would bring the road closer to some receptors, and further away from others. 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 and much of this part of the WHS. The relocation of the A303 to the north of Winterbourne Stoke would remove through traffic from the centre of the village resulting in better air quality and a reduction in operational traffic noise levels to receptors along this route.
- 13.9.99 There is potential for residents to be affected by noise exceedances or worsening in air quality due to operation of the Scheme. Residents of the ward of Amesbury West where there is an existing incidence of poor health as set out above are considered most susceptible to experience such effects from the perspective of human health than elsewhere in the study area. The assessment of noise and vibration effects conclude that there would be some significant adverse noise effects experienced by residents due to proximity to the Scheme. The application of mitigation would limit effects on the health of residents during construction in these respects.

13.9.100 In summary, the redistribution of traffic and removal of the surface section of the A303 through the WHS would have likely positive implications for air quality, noise and neighbourhood amenity. Any likely negative impacts would be managed through the use of noise barriers and screening. Therefore, the influence of the Scheme on air quality, noise and neighbourhood amenity as a determinant of human health during operation is assessed to be positive (+) for residents in the study area.

Accessibility and active travel

13.9.101 During operation, the provision of a tunnel in the Stonehenge WHS and the downgrading of the existing A303 in this location would provide additional opportunity for recreational walking journeys for residents of Winterbourne Stoke, Shrewton and other villages in the River Till valley.

13.9.102 The proposed construction of new '*green bridges*' northwest of Scotland Lodge Farm, east of Winterbourne Stoke and over the Longbarrow Junction would connect to new and existing NMU routes in the local area. The '*green bridges*' would improve access to the Stonehenge WHS and partly facilitate improved pedestrian and cycling journeys in the local area.

13.9.103 The Scheme would also provide NMU routes which would encourage cycling. A new restricted byway is proposed on the northern side of new A303 alignment to the west of Winterbourne Stoke to Yarnbury Castle and a segregated bridleway is proposed east from Winterbourne Stoke to the new Longbarrow Junction. The proposed cycleways also link into the new NMU routes and restricted byway along the line of the old A303.

13.9.104 As set out elsewhere in Section 13.9, changes to the A303 arising from the Scheme would result in reduced journey times, improved condition of the road network and improved route certainty would improve the provision of public transport services.

13.9.105 Therefore, with the provision of new '*green bridges*', NMU routes and the tunnel in the Stonehenge WHS, the influence of the Scheme on accessibility and active travel as a determinant of human health during operation assessed to be positive (+) for residents in the study area.

Access to work and training

13.9.106 No direct impacts on employment are expected as a result of the operation of the Scheme. However, the operation of the Scheme may improve accessibility to local employment and training opportunities with indirect benefits on mental health and well-being. This could particularly be of benefit for residents of some areas (e.g. Amesbury West) which record higher income deprivation scores than others in the study area. Therefore, the influence of the Scheme on access to work and training as a determinant of health during operation is assessed to be positive (+) for residents in the study area.

Social cohesion and lifetime neighbourhoods

- 13.9.107 During the operational phase, the Scheme would reduce community severance along ten of the road sections along the Scheme or surrounding roads (Table 13.25). However, the Scheme would cause new severance to be created between communities in five road sections (Table 13.25). In addition, downgrading of the existing A303 carriageway to form a restricted byway would remove the existing severance across the central part of the WHS and allow opportunities to open up the WHS landscape for increased public access using public rights of way. This would represent a substantial benefit.
- 13.9.108 The Scheme also has the potential to address Lifetime Neighbourhoods principles. Street design and road maintenance has been found to be crucial to old people's ability and confidence in going outside (Ref 13.24).
- 13.9.109 Whilst levels of social interaction can be influenced by a number of other factors, including the availability and quality of community facilities, open and play space, the influence of the Scheme on social cohesion and lifetime neighbourhoods as a determinant of human health during operation is assessed to be positive (+) for residents in the study area.

Climate change

- 13.9.110 During the operation phase in respect of climate change resilience the Scheme may be vulnerable to a range of potentially significant impacts. As identified in Chapter 14, based on the mitigation built into the design and assumed management practices, UKCP09 climate change projections, information from other environmental disciplines, and details on scheme design, none of the potential impacts identified would be significant (and are therefore classed as non-significant).
- 13.9.111 In respect of pollution incidents the mitigation embedded into the drainage design of the Scheme would prevent or mitigate for any incidents and any effects are assessed to be not significant. The measures incorporated are given in Chapter 11 Road Drainage and Water Environment the Drainage Strategy and the OEMP.
- 13.9.112 Given these conclusions would ensure that effects on human health would be minimised, the effect of the effect of the Scheme on climate change as a determinant of human health during operation are assessed to be neutral (0).
- 13.9.113 A summary of the non-significant effects is provided in Appendix 13.1.

Table 13.26: Summary of significant effects – construction

Receptor	Attribute	Receptor Sensitivity	Impact	Design and Mitigation Measures	Impact Magnitude	Residual Effect
BMV land	Agricultural land	Medium	Disturbance during construction to approximately 268ha of BMV land in Grades 1 and 2 and Subgrade 3a. Following agricultural land restoration permanent requirement for 30.1ha of BMV land	OEMP and appropriate liaison.	Major	Moderate Adverse
Farms	Agricultural holdings	Variable Medium or Low	Loss of agricultural land and/or severance of 15 holdings	OEMP and appropriate liaison.	Major to Negligible	Seven holdings experience large or moderate effects temporarily which are significant; two remain significantly affected after agricultural land restoration
New NMU route and tie-in with Byway SLAN3	Non-motorised Users	Medium	Reduction in journey times and improved local travel patterns and access to community facilities	None required.	Medium	Moderate Beneficial
New NMU route on green bridge east of Longbarrow Junction	Non-motorised Users	Medium	Reduction in journey times, improved local travel patterns and access to community facilities	None required.	Medium	Moderate Beneficial

Table 13.27: Summary of significant effects – operation

Receptor	Attribute	Receptor Sensitivity	Impact	Design and Mitigation Measures	Impact Magnitude	Residual Effect
New NMU route on downgraded A303 in WHS	Non-motorised Users	Medium	Permanent change in journey times/lengths, change in local travel patterns and access to community facilities	None required.	Medium	Moderate Beneficial
Driver Stress	Motorised Travellers	NA	Permanent impact on frustration, fear of accidents and route uncertainty	Traffic management measures.	NA	Moderate Beneficial
Driver Views on A303 West of Countess Roundabout to Longbarrow Junction	Motorised Travellers	NA	Permanent change in views from the road	None required.	Major	Major Adverse
Vehicular User Severance - A303 West of Longbarrow Roundabout to Winterbourne Stoke	Motorised Travellers	NA	Permanent relief from vehicular user severance of access to community facilities	None required.	Moderate	Moderate Beneficial

13.10 Monitoring

- 13.10.1 The significant adverse effect during construction on best and most versatile agricultural land would remain permanently with no mitigation possible. The two significantly affected farm holdings would be entitled to financial compensation (as with all affected farm holdings). It would not be necessary to undertake any associated monitoring.
- 13.10.2 The significant adverse effect assessed in relation to views from the road during operation on the section of the Scheme west of Countess Roundabout to Longbarrow Junction would remain permanently with no mitigation possible. No monitoring is therefore proposed.
- 13.10.3 Given there are no likely significant adverse effects for NMUs, driver stress, private assets, amenity or development land it would not be necessary to undertake any associated monitoring.

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