A303 Sparkford to Ilchester Dualling Scheme TR010036

5.12 Annex K: S47 Consultation Material

APFP Regulation 5(2)(q)
Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009
July 2018

Volume 5.0

Infrastructure Planning

Planning Act 2008

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

A303 Sparkford to Ilchester Dualling Scheme

Development Consent Order 201[x]

ANNEX K: S47 Consultation Material

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Rev 0	July 2018	Application Issue

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A303

Sparkford to Ilchester Dualling Scheme

Preferred Route Announcement

A303/A358 route corridor schemes

1. A358 Taunton to Southfields
2. A303 Sparkford to Ilchester
3. A303 Amesbury to Berwick Down

About this booklet

This booklet presents the preferred route for the A303 Sparkford to Ilchester dualling scheme and a summary of how the consultation we carried out in early 2017 influenced it.

The booklet does not set out every consultation response we received, nor address every issue that was raised. For a complete analysis and detailed response to consultation feedback, please see the Report on Public Consultation and our post-consultation Scheme Assessment Report. Both are available online at www.highways.gov.uk/Sparkford-to-Ilchester together with a range of other useful documents.

Scheme background

The Government's Road Investment Strategy, published in December 2014, sets out the vision for the strategic road network and includes a commitment to upgrade the route from the M3 motorway to the M5 at Taunton to dual carriageway standard, including the section of the A303 between Sparkford and Ilchester.

The existing A303 between Sparkford and Ilchester comprises a mix of dual and single carriageway and suffers from traffic congestion and long delays. Up to 26,000 vehicles use the single carriageway section of the existing A303 on a normal day. As well as being the principal route between London and the south east to the south west, the A303 is the main road for road users living and working in local towns including Ilchester and Yeovil as well as other smaller communities along the way.

Improvements are needed to this section of the A303 to improve journey times, reduce congestion and decrease the number of accidents. Without improvement, the performance of the route will deteriorate, congestion and delays will increase and road access will be an ever-bigger barrier to economic growth and prosperity.

The consultation

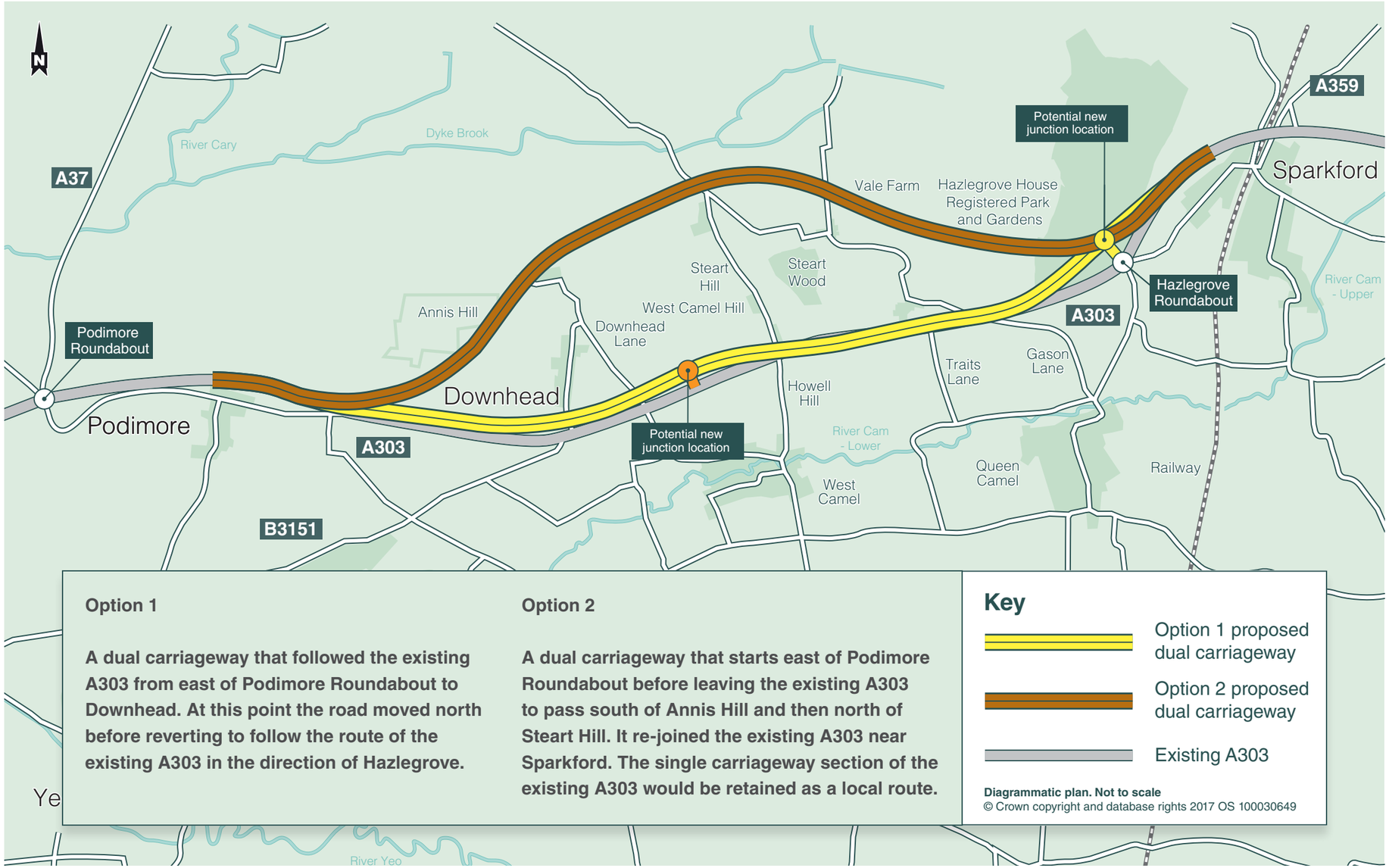
We held our public consultation on the route options between 14 February and 29 March 2017. We invited the local community, landholders, businesses, road users and key stakeholders to provide feedback on the route options presented.

As part of the public consultation we held a launch event for local politicians and community leaders, 2 landowner events and 4 public information events. We publicised the public consultation through 3,297 letters sent to addresses in the local area, local media coverage and information published on our website. We also contacted key stakeholders including local authorities and other statutory bodies to seek their views on the proposals. We produced a consultation brochure and questionnaire that, along with other related public consultation material, were available online and at designated public information points.

Routes presented at public consultation

We presented 2 options at the public consultation that will deliver against the scheme objectives to:

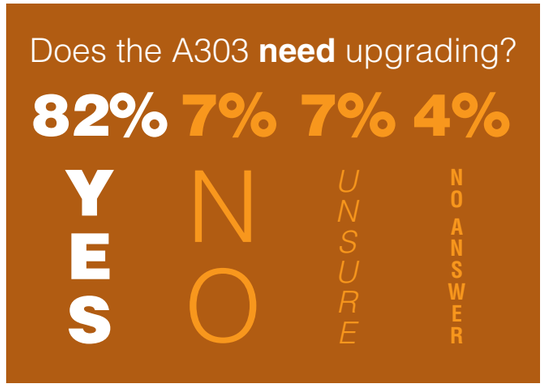
- relieve traffic congestion on a vital link to the south west
- provide more reliable journey times
- improve safety and reducing driver stress by providing a more free-flowing network
- provide safer local access provisions for pedestrians, cyclists and other non-motorised users
- support the local economy to grow through the creation of a modernised and reliable road that reduces delays and makes the south west more accessible for tourism and business
- improve the environment by reducing pollution from queuing traffic, particularly during the busy summer months



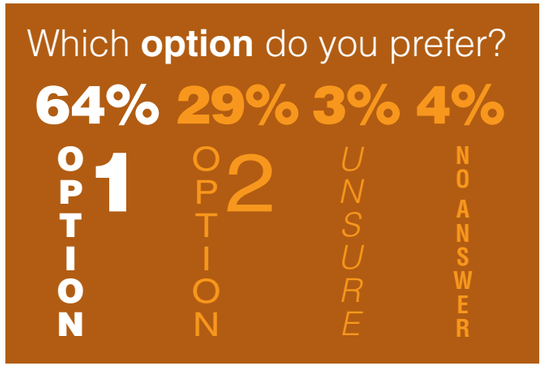
What you told us

A total of 735 stakeholders attended the public events and we received 1,237 questionnaire responses. We have read and considered every response and comment you gave us. Some of your comments related to design, which is the next stage of the process. Please be assured that these will be considered when we reach that stage.

82% of people generally agreed that something should be done to address the problems on the A303. The responses show overwhelming support for the principle of the scheme and significant majority support for Option 1.



82% supported an upgrade of the route



64% chose Option 1 as their preferred route

A copy of the full consultation report can be found on the scheme website, www.highways.gov.uk/Sparkford-to-Ilchester

Your comments

Key issues raised through the public consultation included:

- flooding
- the impact on the open countryside and visual impact, particularly in relation to Option 2
- access for pedestrians, cyclists and equestrians
- the impact on the local community
- the impact of a junction on the registered park and garden at Hazlegrove House

Feedback also included suggestions for:

- Hazlegrove junction
- Downhead Lane junction
- crossing points at road level on the A303
- the upgrading of Podimore junction
- a new road linking the Podimore Roundabout with RNAS Yeovilton
- provision of animal crossings

Our response

Following the public consultation, we have used the feedback submitted to refine the possible route alignments and junction layouts.

Several junction arrangements have been considered for Hazlegrove junction, balancing the demands of predicted traffic flow, with the views of the local authority conservation officer, other stakeholders and environmental bodies. In addition, the Downhead junction proposal has been examined in some detail, including whether a junction is required at this location at all. The Podimore junction is outside the scope of this particular project.

Selection of the preferred route

Following the public consultation, we have continued to develop the options taking into account comments and issues raised during the consultation. This has included looking at what measures are needed to offset any impact the scheme may have on the environment and local communities.

When selecting the preferred route, we considered a number of factors, including:

- scheme objectives
- safety
- benefits
- costs
- environmental effects
- construction
- public consultation feedback

Having assessed all the relevant issues and analysed the feedback, we have concluded that Option 1 would provide the best performing route overall.

We have selected Option 1 as it:

- minimises land-take
- minimises construction in an unspoilt rural setting as the route follows the existing corridor very closely
- is preferred by stakeholders and most of the local community as it has less impact on biodiversity
- is the shortest of the 2 options so will provide the best journey time

The announcement of our preferred route will allow land required for the construction of the scheme to be protected from development.

The preferred route

The preferred route includes:

- a 70mph high quality dual carriageway
- a new junction built on two-levels at Hazlegrove
- a potential new junction at Downhead
- a new overbridge at Steart Hill
- a new underbridge at Traits Lane

Following the consultation we have moved the proposed new dual carriageway section between Podimore and Downhead Lane to the south slightly to align with the existing single carriageway section.

The potential junction at Downhead would provide a connection to and from the eastbound carriageway near Downhead Lane, which can be accessed from roads to the south of the new dual carriageway via the proposed overbridge at Steart Hill.

What happens next?

We will develop the details of the preferred route and give you another chance to comment on these before we submit our proposal for development consent.

Between now and then, we will continue to refine and further develop the design and undertake more surveys, including geotechnical, topographical and environmental surveys.

Explaining the Development Consent Order (DCO) process

- **Autumn 2017** — Announce preferred route
- **Winter 2017** — Consultation on proposed Development Consent Order
- **Summer 2018** — Submit application
- **Summer 2018** — Individuals and organisations register as interested parties and submit representations
- **Winter 2018** — Start of DCO examination
- **Winter 2019** — Secretary of State decision on DCO application
- **Spring 2020** — Start of construction
- **2022/23** — End of construction

The next public consultation

Our next consultation will be statutory, which means it is required by law.

In this case the law is the Planning Act 2008. The consultation is planned for early 2018 and will focus on detailed proposals for the A303 Sparkford to Ilchester scheme.

The Development Consent Order process

The scheme is classed as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008.

As such, we are required to make an application for a Development Consent Order to obtain permission to construct the scheme. We currently intend to make our application by summer 2018. More information about the Development Consent Order process can be found on the Planning Inspectorate's website: https://infrastructure.planninginspectorate.gov.uk

How to find out more:
You can find out more information about the need to upgrade the A303 corridor and the full report of our 2017 consultation on our website: www.highways.gov.uk/Sparkford-to-Ilchester

Contact us:

The project team can be contacted by:

emailing us at:
A303SparkfordtoIlchesterDualling@highwaysengland.co.uk

writing to us at:
A303 Sparkford to Ilchester Project Team,
Highways England, 2/07k Temple Quay House,
2 The Square, Temple Quay, Bristol, BS1 6HA

calling us on:
0300 123 5000

Notes:

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

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A303
Sparkford to Ilchester
Dualling Scheme

Report on Public Consultation

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Executive Summary

Context

The section of the A303 between Sparkford and Ilchester in Somerset is one of a programme of schemes along the A303 in the Government's Road Investment Strategy: for the 2015/16 – 2019/20 Road Period (Department for Transport, March 2015). The A303 together with the A358 forms the most direct strategic link from the South West to London and the South East. More than a third of the route is single carriageway which causes significant congestion, particularly during weekends and the summer months. The A303 between Sparkford and Ilchester is largely single carriageway and suffers some of the worst congestion along the route. Recognising this context, the Government's strategy is to upgrade the entire A303/A358 route to a dual-carriageway expressway between the M3 near Basingstoke and the M5 at Taunton.

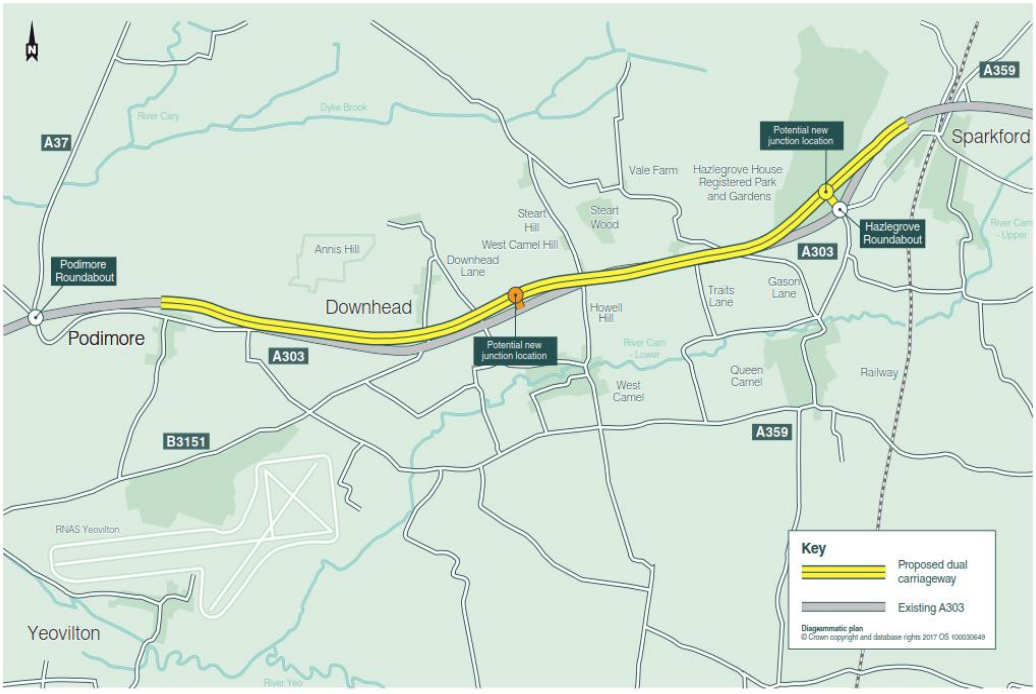
Public consultation

As part of the Sparkford to Ilchester scheme development, Highways England held a public consultation from 14 February to 29 March 2017 to:

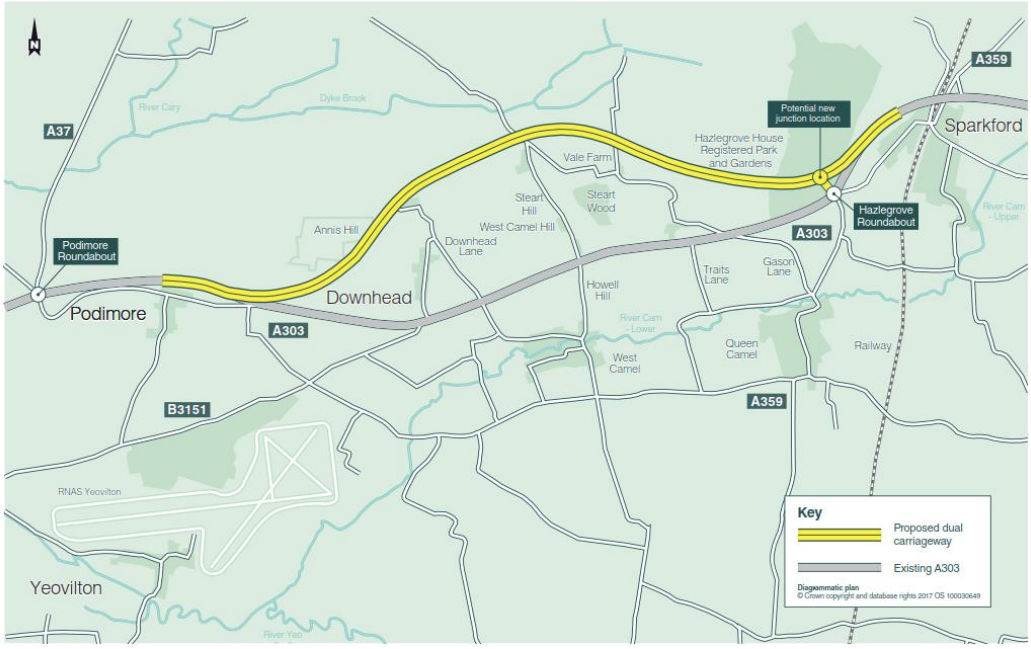
- raise awareness of the scheme
- gain relevant and appropriate feedback to help inform decision-making on the Preferred Route
- understand how the proposed scheme can be improved

At the public consultation, Highways England sought feedback on two route options:

- Option 1, following the existing corridor of the A303 very closely.



- Option 2, running to the north of the existing A303 between Sparkford and Podimore.



The consultation period ran between 14 February and 29 March 2017. The following events were held:

Preview event for elected representatives

Date	Venue
Thursday 14 February 2017	Haynes Motor Museum

Landholder events

Date	Venue
Wednesday 15 February 2017	Haynes Motor Museum
Thursday 16 February 2017	Haynes Motor Museum

Public Events

Date	Venue
Thursday 23 February 2017	Sparkford Inn, High Street
Saturday 25 February 2017	Queen Camel Memorial Hall
Thursday 9 March 2017	Red Lion Pub, Babcary
Friday 10 March 2017	Davis Hall, West Camel

People were made aware of the public consultation and events through mailed letters and by information published on Highways England's website, local authority and parish council websites and in the local media.

The following consultation material was made available:

- public consultation scheme brochure;
- scheme maps; and
- Technical Appraisal Report.

Feedback was invited via a public consultation questionnaire.

Consultation Feedback

The consultation public events were attended by 735 people and a total of 1,237 questionnaires were returned. The key findings are:

1. The number of respondents who think that there is a need to improve the A303 between Sparkford and Ilchester is 82 per cent.
2. Of those who responded, 64 per cent prefer Option 1.

These findings are illustrated on Figures E-1 & E-2 below.

Figure E-1: Do you agree the A303 between Sparkford and Ilchester needs upgrading to a dual carriageway?

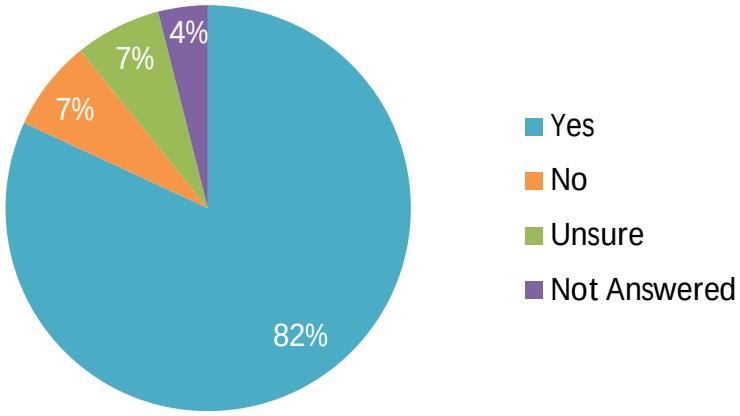
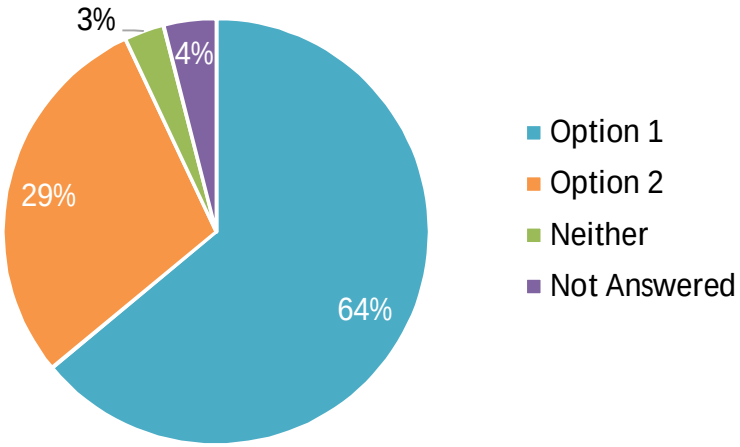


Figure E-2: Which option do you prefer?



It was clear from the consultation findings that there was overwhelming agreement for the proposed upgrading to a dual carriageway, with a significant majority preferring Option 1. The main considerations raised by respondents centred on:

- flooding issues;
- environmental effects;
- safe provision for pedestrians, cyclists and equestrians; and
- the need for ready, safe access with the local road network.

These and all other consultation comments have been responded to in this report through the Response Logs, found in Appendix C.

A Scheme Assessment Report has been published alongside this report, which sets out the work done since consultation to inform the choice of Option 1 as the preferred route. A copy of the Scheme Assessment Report can be viewed on the scheme website **https://highwaysengland.citizenspace.com/he/a303-sparkford-to-ilchester/**

1. Introduction

1.1. Overview

1.1.1. This consultation report provides an account of the non-statutory public consultation undertaken from 14 February to 29 March 2017 on route options for the A303 Sparkford to Ilchester Dualling scheme. It provides a full account of:

- how the strategy for the non-statutory public consultation was developed to be consistent with what will be required at the next stage of statutory consultation which will precede the application for a Development Consent Order (DCO);
- how the public consultation was undertaken; and
- the feedback received and Highways England's response

1.1.2. Proposals for dualling this section of A303 between Sparkford and Ilchester were first investigated in the 1990s and were most recently announced in the Road Investment Strategy (RIS): for the 2015/16 – 2019/20 Road Period (Department for Transport, March 2015). The A303 together with the A358 forms the most direct strategic link from the South West to London and the South East. More than a third of the route is single carriageway which causes significant congestion, particularly during weekends and the summer months. The A303 between Sparkford and Ilchester is largely single carriageway and suffers some of the worst congestion along the route. The A303 also has a number of safety issues, with accident rates above the national rate for equivalent A class trunk roads.

1.1.3. As set out in the RIS, the Government's strategy is to improve connectivity to the South West by upgrading the entire A303/A358 route to a dual-carriageway expressway from the M3, near Basingstoke, to the M5 at Taunton. This is aimed enhancing the economy of the South West which underperforms other regions across the country.

1.1.4. The Sparkford to Ilchester scheme is one of a planned programme of eight improvements along the A303/A358 corridor. It is classified as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008. As such, Highways England is required to submit a Development Consent Order application to the Planning Inspectorate to gain permission to construct the scheme.

1.2. Structure of the report

1.2.1. Highways England has given careful consideration to the relevant guidance and advice notes from the Planning Inspectorate (PINS) and Department for Communities and Local Government (DCLG) when structuring all public engagement. This report describes compliant activities undertaken during the process detailing:

- The approach to consultation, including how Highways England informed, consulted and involved all statutory and non-statutory bodies, the local community and wider public.

- Feedback received and Highways England's response, together with a summary of the main considerations raised.

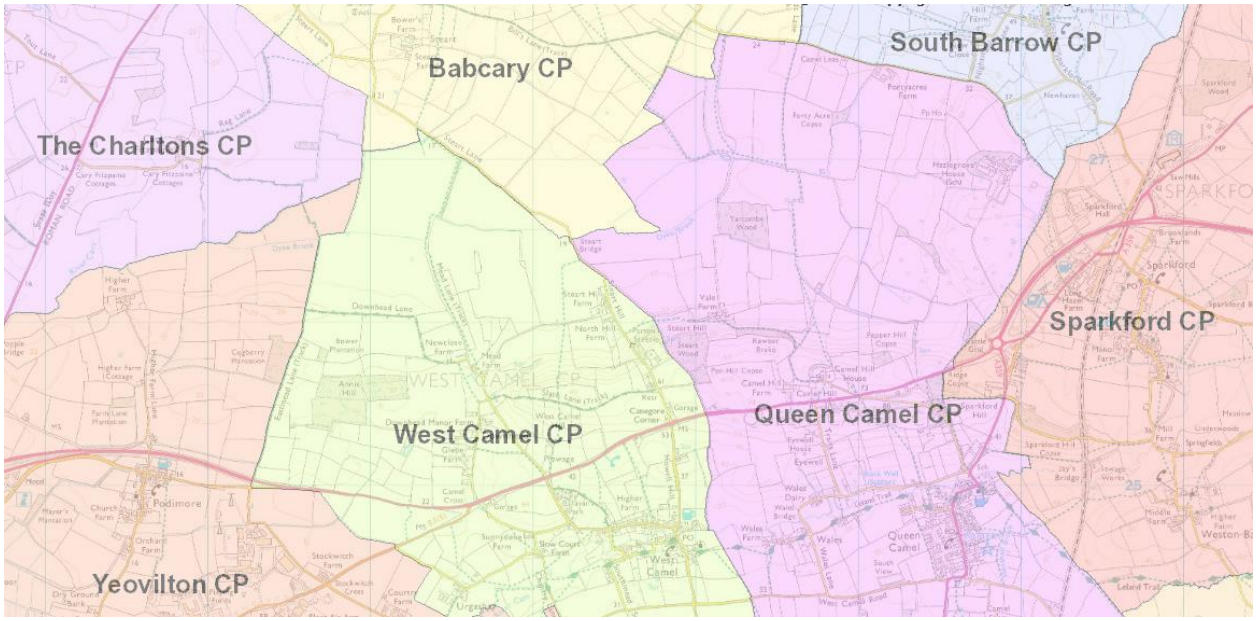
This report follows the following structure:

- Chapter 1 – Introduction
- Chapter 2 – Stakeholder engagement and planning for public consultation
- Chapter 3 – Approach to consultation
- Chapter 4 – The non-statutory public consultation
- Chapter 5 – Overview of the consultation feedback
- Chapter 6 – Conclusion and Next Steps

1.3. The scheme – A303 Sparkford to Ilchester

1.3.1. The existing A303 between Sparkford and Ilchester is located in the South Somerset District Council area in the county of Somerset. It passes through a predominantly rural area, consisting mainly of arable farmland. The parishes of Sparkford, Queen Camel, West Camel and Yeovilton are situated along the existing route, see Figure 1.1. The area is characterised by low-lying topography with clusters of higher-lying landscape features.

Figure 1.1 Parishes in the vicinity of the A303 Sparkford to Ilchester scheme



1.3.2. Improvements are needed to this section of the A303 to increase capacity, reduce congestion and improve the safety performance of one of the busiest stretches of the A303/A358 route corridor that connects London and the South East to the South West. The Government published its Road Investment Strategy (RIS) for the period between 2015/16 and 2019/20 in December 2014. The RIS explains the Government's intention to upgrade all remaining single carriageway sections of the A303 and A358 between the M3

and the M5 near Taunton. These proposed works are part of a commitment to create an unbroken dual-carriageway expressway to the South West.

1.3.3. As well as being the arterial route from London and the South East to the South West, the A303 is the main road for road users living and working in adjacent local towns, including Ilchester and Yeovil as well as other smaller communities along the way. The section of the A303 between Sparkford and Ilchester is largely single carriageway, which leads to localised congestion, impacting adversely on journey times and journey time reliability. On most weekdays, up to 26,000 vehicles use this single carriageway section, which is twice the designed capacity. At weekends in the summer the number of vehicles using this section of road can increase by nearly half as many again. Due to seasonal increases in traffic, average travel times can increase threefold or more on the westbound direction on a Friday in August, making it impossible to predict the time a journey will take. This traffic is forecast to increase further as local authorities located along the A303/A358 corridor seek to deliver economic growth and new development, with more jobs and houses.

1.3.4. The A303 corridor has the following issues:

- poor junction visibility
- slow moving agricultural vehicles
- limited opportunities for safe overtaking
- increasing traffic levels outgrowing the capacity of the existing road design

1.3.5. The consequences of these issues are:

- congestion and longer journey times during peak times and during the summer months;
- unreliable journey times;
- queueing at the junctions due to the turning conflicts between local and strategic traffic
- increased risk of accidents and incidents, with accident rates above the national rate for equivalent A class trunk roads causing delays and knock-on effects along interacting local routes.

1.3.6. To address these issues and support the strategy for delivering an expressway to the South West, the scheme has the following objectives:

- Support economic growth:
  - Facilitate growth in employment at key locations and centres along the A303/A358/A30 corridor and to the South West Region.
  - Facilitate growth in housing at key development hotspots along the corridor.
- Capacity:
  - Reduce delays and queues that occur during peak hours and at seasonal times of the year.
- Resilience:
  - Improve the resilience of the A303/A358/A30 route corridor.
- Safety:
  - safety along the A303/A358/A30 route corridor.
- Connectivity:

  - Improve the connectivity of the south-west to the rest of the UK, to reduce peripherality and improve both business and growth prospects.
  - Reduce severance on local communities; and,
  - Promote and promote opportunities to improve the quality of life for local communities.
- Environmental:
  - Avoid unacceptable impacts on the surrounding natural and historic environment and landscape and optimise the environmental opportunities and mitigation that the intervention could bring.
- Reduce severance on local communities.
- Promote opportunities to improve the quality of life for local communities.

1.3.7. Throughout the design and delivery stages, the scheme is tasked with ensuring that customers and communities are fully considered. Specifically, this includes:

- Understanding the needs of all customers (including vulnerable users), stakeholders and Highways England scheme partners.
- Responding to those needs such that the end-product delivers an improved customer experience.
- Assessing the impact of the works on road users and communities, minimising disruption and delivering beneficial mitigation measures, looking at issues through customers' eyes.

1.3.8. Following an appraisal and sifting process set out in the Technical Appraisal Report (TAR), which can be found on the scheme website (**https://highwaysengland.citizenspace.com/he/a303-sparkford-to-ilchester/**), Highways England shortlisted two route options capable of delivering the scheme objectives (see Chapter 4).

2. Stakeholder engagement and planning for public consultation

2.1. Introduction

2.1.1. Scheme engagement commenced from December 2015 with local authorities and other organisations such as the National Farmers Union (NFU) and Heart of the South West Local Enterprise Partnership (HotSWLEP), Environment Agency, Natural England, Historic England and National Trust.

2.1.2. A communications strategy was developed to identify and engage with a range of stakeholders prior to and during consultation. It described how local authorities, organisations and communities would be engaged through a planned scheme timetable and detailed different channels of communications that would be used to engage most effectively with differing stakeholders.

2.2. Stakeholder engagement process

2.2.1. An extensive mapping exercise was undertaken to identify relevant stakeholders and their key interests. A summary of stakeholder groups follows:

- Host local authorities – as key statutory stakeholders, engagement with host local authorities (namely Somerset County Council and South Somerset District Council) has assisted with the provision of detailed knowledge of local priorities including economic growth strategies, local planning and transport policy, environmental objectives, heritage designations and other potential issues of local interest that helped inform scheme development.
- Environmental groups –environmental organisations were identified to help inform and assist with scheme environmental issues.
- Landholders – potentially affected landholders were identified to establish a database compliant with relevant requirements of the Planning Act 2008. All landowners and tenants located within 150 metres of a proposed route option were designated as Section 44 consultees in accordance with the Planning Act 2008.
- Hard-to-reach groups – discussions were had with the host local authorities to identify any known hard-to-reach groups in the vicinity of the scheme.
- Local community stakeholders – community and business stakeholders were identified to assist with scheme development from their knowledge about local issues, priorities, concerns and aspirations.
- Strategic traffic users and transport organisations – as directly affected users of the A303/A358 corridor, Highways England's national stakeholders and relevant regional road users were identified, including business organisations, tourist groups, public transport providers, road user groups and emergency services.

2.3. Engagement with local authorities

2.3.1. Engagement with the host local authorities, Somerset CC and South Somerset DC, began in December 2015 and has continued throughout subsequent development of the scheme. A summary of meetings held is given in Table 2.1

Table 2.1 Host local authority meetings

Date	Stakeholders attending	Topics raised	Discussion
4 December 2015	Somerset County Council, South Somerset District Council	Introduction to the scheme and route options, Development Consent Order process, project timescales and engagement methodology.	Representatives confirmed their interest in the scheme and engagement approach. Initial discussions about scheme options.
22 March 2016	Somerset County Council, South Somerset District Council	Scheme update and public consultation strategy discussion.	Discussions about development of public consultation strategy and specific stakeholder identification and engagement activities. Discussion about communications channels to be employed.
13 July 2016	Somerset County Council, South Somerset District Council	Stakeholder engagement progress meeting. Discussion about public consultation activities timing.	Feedback about route options presented. Discussion about planned public consultation programme.
11 November 2016	Somerset County Council, South Somerset District Council	Stakeholder engagement progress meeting. Update about public consultation activities planned.	Consideration of specific groups including landholders, parish councils, local authority councillors and Members of Parliament.

2.4. Engagement with environmental bodies

2.4.1. Highways England engaged with the following statutory environmental bodies during the scheme's route options development period prior to public consultation, which continued into consultation itself:

- Environment Agency
- Natural England
- Historic England

2.4.2. The National Trust and the South West Heritage Trust were also engaged.

2.4.3. Engagement was by group meetings, telephone discussions and email channels. A summary of the meetings held is provided in Table 2.2 below.

Table 2.2 Environmental body meetings

Date	Stakeholders attending	Topics raised	Discussion
4 December 2015	National Trust, Environment Agency, and Natural England	Introduction to the scheme and route options, Development Consent Order process, project timescales and engagement methodology.	Representatives confirmed their interest in the scheme and engagement approach. Initial discussions about scheme options.
22 March 2016	National Trust, Environment Agency, South West Heritage Trust and Natural England	Scheme update and public consultation strategy discussion.	Discussions about development of public consultation strategy and specific stakeholder identification and engagement activities. Discussion about communications channels to be employed.
13 July 2016	National Trust, Environment Agency, South West Heritage Trust and Natural England	Stakeholder engagement progress meeting. Discussion about public consultation activities timing.	Feedback about route options presented. Discussion about planned public consultation programme.
11 November 2016	National Trust, Environment Agency, South West Heritage Trust and Natural England	Stakeholder engagement progress meeting. Update about public consultation activities planned.	Consideration of specific groups including, landowners, parish councils, local authority councillors and Members of Parliament.
15 March 2017	Historic England	On site meeting at Hazlegrove Registered Park and Garden.	Discussion about options under consideration that potentially affect Hazlegrove Registered Park and Garden and associated access from Hazlegrove Roundabout.

2.5. Engagement with landholders

2.5.1. Relevant legislation and guidance describes the need to identify and consult with people who own, occupy or have an interest in the land the scheme affects. At this early stage in the scheme's development, wide buffer zones extending 150m from the two shortlisted route options were drawn and a database of all residents, landowners, tenants, businesses and organisations located within the buffer zones was established. The database is updated on a regular basis using Land Registry information, publicly available information from local authorities and Land Interest Questionnaires issued to landholders.

2.5.2. On behalf of farming landholding interests, Highways England also sought to engage the National Farmers Union. A meeting was held on 28 June 2016, when an overview of the scheme was given and the NFU provided feedback about the movement of farm goods and the need for ready access.

2.6. Engagement with hard-to-reach groups

2.6.1. Equality, diversity and inclusion issues need to be considered in the development of the scheme. As part of this the host local authorities were consulted about identification of relevant hard-to-reach groups. Representative groups included non-motorised user groups such as the British Horse Society and Ramblers Association, who were subsequently invited to take part in the consultation.

2.7. Engagement with the local community

2.7.1. Relevant legislation and guidance describes the need to identify and engage with local communities who will have an interest or may be potentially affected by the scheme proposals. As such, again recognising the early stage in the schemes' development, a wide buffer zone extending 1500 metres around the two route options was drawn (see map at Appendix A), and a database of all residents, businesses and organisations located within the zone was established.

2.7.2. In February 2016, an A303/A358 route corridor information event was held about the schemes planned along the corridor at the Podymore Inn, Podimore, at the western end of the scheme. The event was promoted widely to nearby local communities and community leaders. The importance of the A303/A358 route corridor was explained, as well as providing early understanding of the intention to improve the A303 between Sparkford and Ilchester. The purpose of the information event was to engage the local communities and make them aware of the future road improvement scheme plans.

2.7.3. Contact was also established with the four parish councils through which the A303 Sparkford to Ilchester road passes (see Figure 1.1). The host parish

councils are Sparkford Parish Council, Queen Camel Parish Council, West Camel Parish Council and Yeovilton Parish Council.

2.7.4. Contact was also established with adjoining parish councils for the public consultation.

2.7.5. Households and businesses within the 1500 metres buffer zone were contacted by letter prior to public consultation events held in February and March 2017. The letter invited recipients to attend the public consultation events, visit public information points, view the scheme website and respond to the scheme option proposals by completing and returning a questionnaire online or by freepost.

2.8. Strategic traffic users and transport organisations

2.8.1. The organisations invited to participate in the public consultation can be found at Appendix B.

3. Approach to Consultation

3.1. Introduction

3.1.1. Highways England chose to follow the "Pre-Application Guidance" published by the Department for Communities and Local Government (DCLG) as the basis of carrying out the early (non-statutory) public consultation on route options for the A303 Sparkford to Ilchester scheme. This guidance is considered to be best practice for public consultation of nationally significant infrastructure projects.

3.1.2. The full DCLG guidance document can be viewed at the following website: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/418009/150326_Pre-Application_Guidance.pdf.

3.2. Statement of Community Consultation (SoCC)

3.2.1. A non-statutory Statement of Community Consultation (SoCC) was developed to provide explanation of how Highways England would consult about the route options proposals. To help develop the SoCC, Highways England engaged with the host local authorities' communications and community officers. Table 3.1 shows the working group meetings that took place. Table 3.2 shows a summary of the SoCC, and a full copy can be found in Appendix A.

Table 3.1 SoCC Working Group Meetings

Date	Stakeholders	Topics raised	Discussion
14 January 2016	Somerset County Council, South Somerset District Council	Scheme overview and building collaborative relationships.	Awareness of channels of communication.
22 March 2016	Somerset County Council, South Somerset District Council	Explanation of the non-statutory and statutory consultation process, Development Consent Order process, development of the SoCC.	Acknowledgement of need to engage with local parish councils and ward members.
26 May 2016	Somerset County Council, South Somerset District Council	Discussion of draft SoCC, public consultation dates, update on consultation process, progress on the project, equality strategy.	Discussions about planned roll-out of public consultation programme and methodologies proposed.

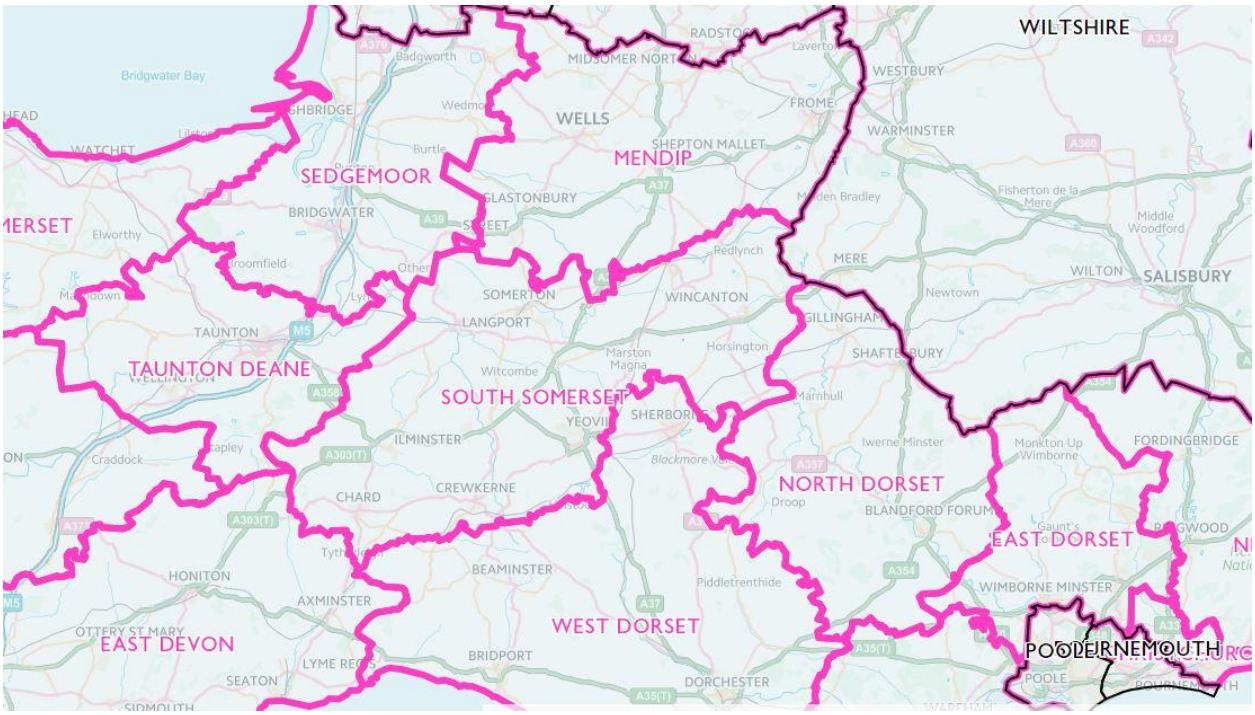
Table 3.2 Summary of SoCC approach

Method	Detail
Public information events	Public information events will be held at locations along the route of the scheme to offer people an opportunity to view the proposed route options, speak with the project team and provide feedback. The local community, businesses and road users will be informed of the events through channels including written communications, the Highways England website and local media. Information on how to provide consultation feedback will be available at the events and the Highways England website. A printed questionnaire will be available for members of the public to provide feedback and these can be left with the project team, posted free of charge to a freepost address or emailed to us. Information will be available to members of the public detailing how to provide feedback online at the Highways England website.
Public information points	Information advertising the public information events will be on view at specified public information points. Consultation brochures will be available at public information points for the local community and other road users to review and take away. Information about how the local community, businesses and other road users can provide consultation feedback will be available at the public information points. A printed questionnaire will be available for members of the local community and other road users to provide feedback at the public information points and these can be posted free of charge or emailed to us. Information detailing how to provide feedback online at the Highways England website will be available.
Project website	Details of the scheme background, the need for the scheme and the proposed route options will be provided on the scheme web page at www.highways.gov.uk/Sparkford-to-Ilchester. Supporting route options stage, documents including the consultation brochure will be available to download or print. A questionnaire will be available for members of the local community and other road users to provide feedback online.
Written communication	We will send residents and businesses inside the consultation zone an information letter that explains the proposed route options and the issues being consulted on. The letters will invite people to the public information events and detail how consultation feedback can be provided to us.

Method	Detail
	Other key stakeholder organisations and identified special interest groups will also receive information letters that explain the route options stage proposals and the issues being consulted on. The letters will invite recipients to the public information events and detail how consultation feedback can be provided to us. Individuals or organisations that have registered to receive further communications on the Highways England scheme web page will be sent information emails that explain the proposed route options and the issues being consulted on. The emails will invite recipients to the public information events and detail how consultation feedback can be provided to us.
Consultation brochure	We will produce a consultation brochure providing information about the route options stage proposals, the need for the scheme and the issues being consulted on. The brochure will be available to view on the Highways England scheme web page. The consultation brochure will also be available at public information events and public information points. Copies of the consultation brochure can be provided free of charge by request to Highways England.
Representatives at local groups and forums	We welcome contact from local groups and forums. Where it is considered that there is a relevant interest and where a visit is considered proportionate and appropriate, we will attend a local event to discuss the route options stage consultation.
Hard-to-reach groups	Appropriate and proportionate consultation tools for hard-to-reach groups include: · Presentations to community groups and organisations · Appropriate direct engagement with, for example, younger people and disabled people and representative groups · Provision of appropriate and accessible materials in local community/hard-to-reach centres · Provision of appropriate and accessible materials (i.e. in large print and alternative languages if requested) · Venues chosen for public events to be compliant with the Equality Act 2010
Route options stage consultation updates	The local community and other road users will be updated about progress of the route options stage consultation through channels including written communications, the Highways England website, local media and local authority websites, newsletters and social media.
Consultation feedback	Written feedback can be made either online or in writing to Highways England at the following addresses: · A303SparkfordtoIlchesterDualling@highwaysengland.co.uk · A303 Sparkford to Ilchester Dualling, 2/07K Temple Quay House, 2 The Square, Temple Quay, Bristol. BS1 6HA

3.2.2. The adjoining local authorities to South Somerset, shown on Figure 3.1 were also engaged during the development of the non-statutory SoCC.

Figure 3.1 Map of adjacent local authorities



4. The non-statutory public consultation

4.1. Introduction

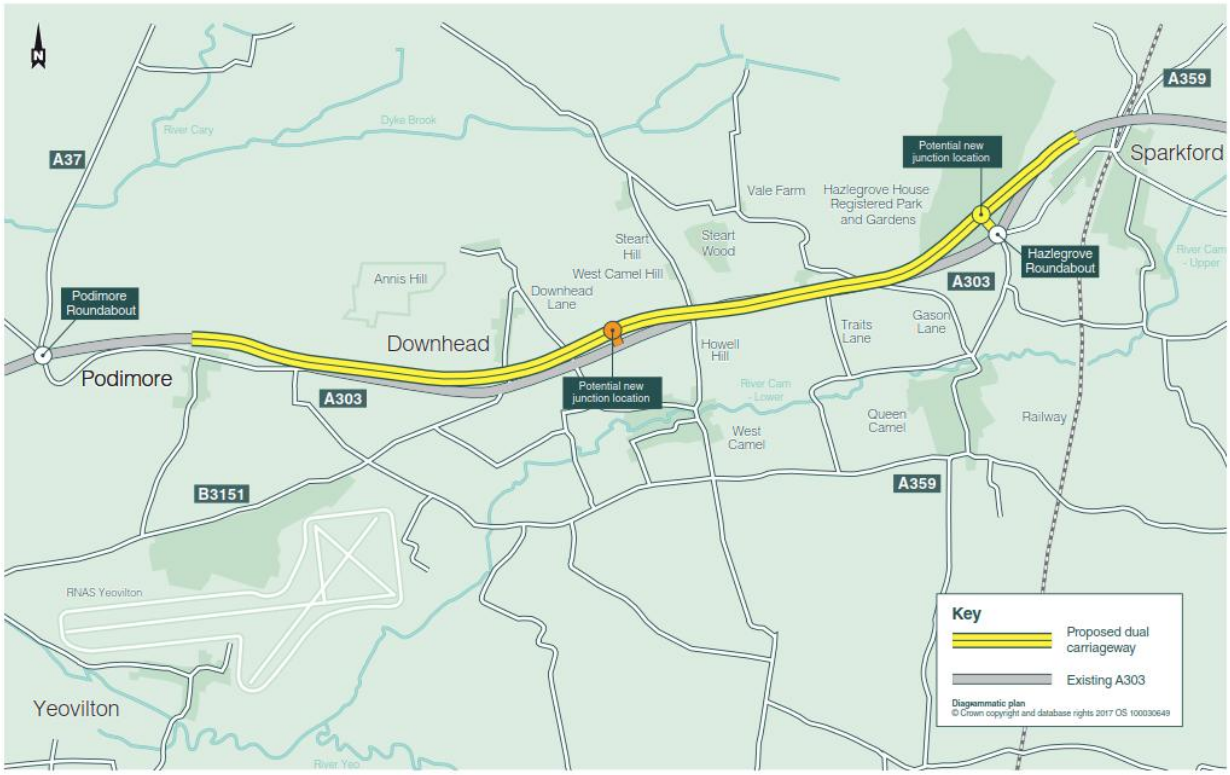
4.1.1. The non-statutory public consultation on route options took place from 14 February to 29 March 2017. A website hosted details of the proposed route options including supporting documentation such as the scheme brochure, consultation questionnaire and Technical Appraisal Report (see https://highwaysengland.citizenspace.com/he/a303-sparkford-to-ilchester) and the route option proposals were presented at four public exhibitions in February and March where the public could discuss the proposals with members of the project team.

4.1.2. The public consultation presented and sought feedback on two route options.

Option 1 Overview

4.1.3. Route Option 1 follows the existing corridor of the A303 very closely (see Figure 4.1). It is considered to be the online option, being closely aligned just to the side of the existing carriageway as appropriate, to allow re-use of the existing road for local access, to avoid property and to facilitate construction. At its maximum offset, the route is typically 100m either north or south of the existing A303.

Figure 4.1 Route Option 1 Map



4.1.4. At its western end, Option 1 would tie-in with the existing A303 Podimore Bypass (a dual carriageway). Travelling eastwards, the route would move north of the existing A303 single carriageway, allowing it to be retained for use as a parallel local road. The route would then rise up West Camel Hill before crossing over the existing A303 at the junction with Steart Hill / Howell Hill. The route would then take a southerly alignment briefly before meeting up with the existing road again to pass between the scheduled monument at Vale Farm and the MOD signal station at Eyewell / Traits Lane. Finally, the route would then bypass the existing Hazlegrove Roundabout to the north through the Registered Park and Garden associated with Hazlegrove House, before tying into the existing A303 north of Sparkford Village.

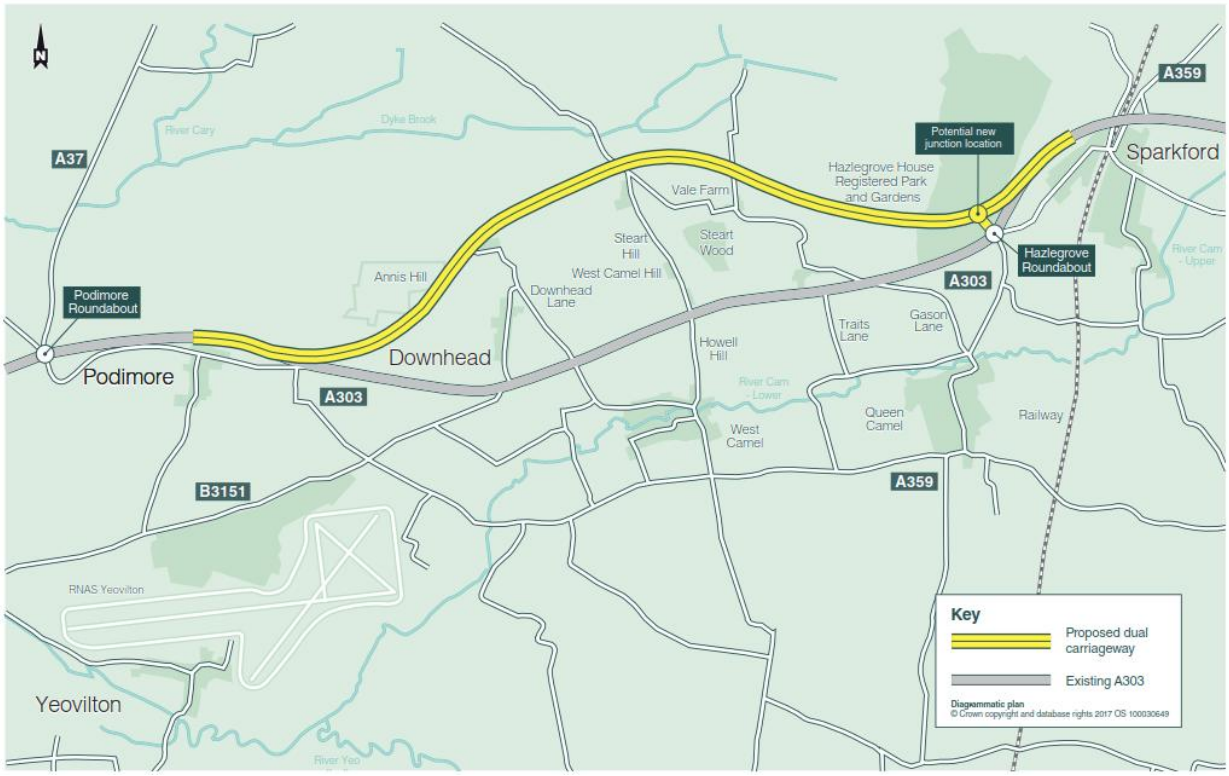
4.1.5. A new all-movement grade-separated junction is likely to be provided at Hazlegrove. This would provide connections to Hazlegrove House, the A359 and access to villages south of the route. A limited-movement junction, comprising only east-facing slip roads, is likely to be provided at Downhead. A limited-movement junction would be provided at Camel Cross comprising a westbound exit slip road and connections to the B3151 and the existing A303. At the western end of the scheme, a westbound entry slip would be provided to access the proposed route from the existing A303 and Podimore village.

4.1.6. A connection would be provided between Traits Lane and Camel Hill, via an underbridge. This underbridge would also accommodate the long-distance walking route known as Celtic Way. A connection would be provided between Howell Hill and Steart Hill via an overbridge. At the western end of the scheme, a connection would be provided to access Podimore village to and from the existing A303, in the form of a two-way single carriageway built to local road standards.

Option 2 Overview

4.1.7. Route Option 2 takes an offline course to the north of the existing route (Figure 4.2). At its maximum distance, the route is approximately 1km north of the existing A303.

Figure 4.2 Route Option 2 Map



4.1.8. Immediately east of the tie-in with the Podimore Bypass Option 2, would bear north-east passing Annis Hill to the south-east. The route would then pass immediately north-west of Newclose Farm and continue north-east so that it runs close to, but not into, the Dyke Brook flood plain. The topography here is low-lying and the route is thus separated from the existing road by intermediate hills of West Camel Hill and Camel Hill which lie between the proposed route and the existing A303. The proposed route would then bear south-east, passing Vale Farm Cottages, then skirting around the foot of Camel Hill and through the Registered Park and Gardens of Hazlegrove House to re-join the existing A303, north of Sparkford Village.

4.1.9. The existing A303 carriageway would be left in place to provide access to local villages such as West Camel and Downhead. Connections would be provided between the retained carriageway and the proposed Hazlegrove Junction at the eastern end and the Podimore Bypass at the western end. The road known as Steart Hill, which provides a route from the existing A303 to Babcary, would be retained via a bridge over the proposed dual carriageway. There is a chance that a small part of the northern approach ramp of the Steart Hill overbridge would encroach upon the edge of the Dyke Brook flood plain. Further design and assessment work would be required to determine the extent of this encroachment and the mitigation required to address it. The Byway known as Downhead Lane would be retained via a

bridge over the proposed dual carriageway. A bridge over the proposed access track would be provided as access from Vale Farm to the north. This bridge would also accommodate the long-distance walking route known as Celtic Way.

4.2. Consultation programme

4.2.1. The six-week public consultation period commenced on 14 February 2017 and ended on 29 March 2017.

4.2.2. The consultation event programme started with an invitation-event for elected representatives, affording them the opportunity to view and discuss the scheme options proposals with the project team ahead of the public events in the local area. Local district and parish councillors were invited so that they could be informed about the scheme option proposals prior to subsequent discussion with constituents.

4.2.3. Tables 4.1, 4.2 and 4.3 below detail the date, time and location of the consultation events held.

Table 4.1 Invitation preview event

Date	Venue	Time
Thursday 14 February 2017	Haynes Motor Museum, Wolverlands, Sparkford, Yeovil BA22 7LH	6pm to 8pm

Table 4.2 Landholder events

Date	Venue	Time
Wednesday 15 February 2017 Thursday 16 February 2017	Haynes International Motor Museum Sparkford, Yeovil, Somerset BA22 7LH	11am to 7pm Appointment only

Table 4.3 Public Events

Date	Venue	Time
Thursday 23 February 2017	Sparkford Inn, High Street, Sparkford, Yeovil, BA22 7JH	12pm to 8pm
Saturday 25 February 2017	Queen Camel Memorial Hall, High Street, Queen Camel, Yeovil, BA22 7NF	10am to 5pm
Thursday 9 March 2017	Red Lion, Babcary TA11 7ED	6pm to 8.30pm
Friday 10 March 2017	Davis Hall, Howell Hill, West Camel, Yeovil, BA22 7QX	10am to 6pm

4.2.4. An overview of public consultation events is set out below:

Launch event – an evening event was held for local elected representatives and a total of 20 people attended.

Landholder events – Events were held for landowners and tenants with land interests within 150 metres of the scheme. These events were by appointment only, where landholders could discuss land issues with specialists from the project team. Over the two landowner events there were 23 appointments.

Public events[1] - The public events provided valuable insight into the views held by the local communities and how they use the existing road network. There were four public events held at venues along both route options, with a total number of 735 people visiting the events. The materials displayed at the exhibition are available to view on the scheme website, as listed in Appendix D.

4.2.5. A scheme website was launched where consultation materials could be viewed and information about how to respond to the consultation was available. The website can be viewed at**:** https://highwaysengland.citizenspace.com/he/a303-sparkford-to-ilchester/

4.2.6. A series of consultation materials were made available at public information events and on the scheme website. These materials included:

- Consultation brochure;
- Consultation questionnaire;
- Technical Appraisal Report; and
- Environment Constraints Map.

4.2.7. Additional presentations were undertaken at the request of Sparkford Parish Council and South Somerset District Council and these meetings are summarised in Table 4.4 below.

Table 4.4 Additional stakeholder presentations

Date	Stakeholders attending	Topics raised	Discussion
28 February 2017	South Somerset District Council	Presentation followed by questions and answers.	Scheme overview, Development Consent Order process, future liaison.
6 March 2017	Sparkford Parish Council	Presentation followed by questions and answers.	Scheme overview, Development Consent Order process, future liaison.

[1] **Additional requested event** – Originally, at the start of consultation, three public events were planned. However, some residents suggested that, while the three planned events were convenient for Option 1, they were less convenient for residents living closer to Option 2. Therefore, an additional event was held at the Red Lion, Babcary to ensure that local residents who lived closer to Option 2 were given a convenient opportunity to attend a consultation event. A total of 42 people attended the Babcary event.

4.3. Publicising the public consultation

4.3.1. The public consultation period was promoted in accordance with the SoCC in the following ways:

- Letters sent to 111 organisations outlining the scheme proposals and drawing attention to the scheme website and public consultation events, including an invitation to attend the preview event for Councillors. The organisations included representatives of hard-to-reach groups, such as the Ramblers Association and the British Horse Society representing non-motorised users. An example letter sent to organisations can be found in Appendix D.
- Letters sent to 113 potentially affected landowners and tenants outlining the scheme proposals and drawing attention to the scheme website, public information points (see Table 4.5 below) and public consultation events, and including an invitation to book an individual appointment at a landholder event. This letter can be found in Appendix D.
- Letters sent to 3,297 addresses located within 1500 metres of a scheme option outlining the scheme proposals and drawing attention to the scheme website, public information points and public consultation events. This letter can be found
- Department for Transport press release on 13 February to local media, explaining scheme proposal and promoting details of the public consultation. This can be found in Appendix D.
- BBC Somerset interview with Highways England project manager.
- Scheme website with all details of the route option proposals and consultation material, including the means to contact Highways England and to complete an online questionnaire.
- A poster was displayed at all public information points, advertising the times and venues of the public information events. This can be found on the scheme website.

4.4. Public information points

4.4.1. Public information points were selected in the vicinity of the scheme proposal and in nearby towns to provide people with the opportunity to collect the consultation brochure and questionnaire if they were unable to attend one of the scheduled public events. The non-statutory SoCC working group was consulted in the selection of these venues to ensure Highways England had selected venues suitable for the local public to access. The locations of the public information points are detailed in Table 4.5 below.

Table 4.5 Public Information Points

Public Information Points	
Wincanton Library, 7 Carrington Way, Wincanton, Somerset, BA9 9JS	Barrington Court, Barrington, Ilminster, TA19 0NQ
Yeovil Library, King George Street, Yeovil, Somerset, BA20 1PZ	Lytes Cary Manor, near Somerton, Somerset, TA11 7HU

South Petherton Library, St. James Street, South Petherton, Somerset, TA13 5BS	Montacute House, Montacute, TA15 6XP
Taunton Library, Paul Street, Taunton, Somerset, TA1 3XZ	Somerset County Council, County Hall, Taunton, Somerset, TA1 4DY
Martock Library, The Shopping Centre, Martock, Somerset, TA12 6DL	South Somerset District Council, Brympton Way, Yeovil, Somerset, BA20 2HT

4.4.2. At the Public Information Points the following consultation material was available:

- consultation scheme brochure
- consultation scheme questionnaire and freepost envelope
- poster detailing public events and scheme website

4.5. Taking account of feedback

4.5.1. The public consultation ended on 29 March 2017, when the scheme website was closed for questionnaire submissions. Highways England accepted submissions sent to the freepost address for a period of two weeks after the end of the public consultation period. All paper entries, letters and emails received were added to the database for analysis. Views expressed and matters raised were extracted and included in a Response Log for consideration and response by Highways England (see Appendix C).

5. Overview of consultation feedback

5.1. Analysis of feedback

5.1.1. The consultation period closed on 29 March 2017, with 1,237 responses received. The questionnaire responses received were primarily from members of the local communities, with a number of statutory and non-statutory bodies submitting formal reports and letters in place of a questionnaire. The additional reports and letters have been combined with the free text comments provided via the questionnaires for analysis.

5.1.2. Of the 1,237 questionnaires received, 389 paper questionnaires were submitted to the freepost address. These were combined with the electronic responses and analysed collectively.

5.1.3. Analysis of the questionnaire feedback has identified seven themes under which the matters raised which have been collated and summarised for response by Highways England. The seven themes are to do with comments about:

- junction proposals
- buildability & construction
- highways design
- non-motorised user provision
- local community considerations
- views on the public consultation
- environmental considerations

5.1.4. All matters raised by individual members of the public in their feedback comments have been collated and summarised under the above themes in Response Logs contained in Appendix C, which also contain Highways England's responses to those matters.

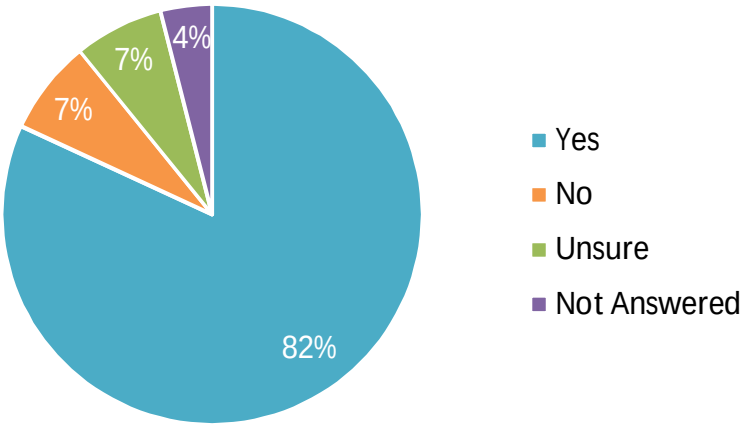
5.1.5. In relation to the feedback received by letter from statutory and non-statutory bodies, their consultation responses are presented in full in Appendix E. In addition, the matters raised by each body have been summarised in a separate Response Log contained in Appendix C, along with Highways England's response to those matters.

5.2. Consultation questionnaire results

5.2.1. The questionnaire results have been recorded and collated as presented in this chapter, starting with Question 1 as follows.

5.2.2. **Question 1- Do you agree the A303 between Sparkford and Ilchester needs upgrading to a dual carriageway?**

Figure 5.1: Agreement about need for upgrading



5.2.3. Figure 5.1 shows that of those who responded, there was overwhelming agreement that the A303 between Sparkford and Ilchester should be upgraded to dual carriageway.

5.2.4. **Question 2 - Please provide any comments to support your answer**

5.2.5. Question 2 sought to gain an understanding of the reasons behind the views expressed in Question 1.

Representative feedback from respondents in support of an upgrade:

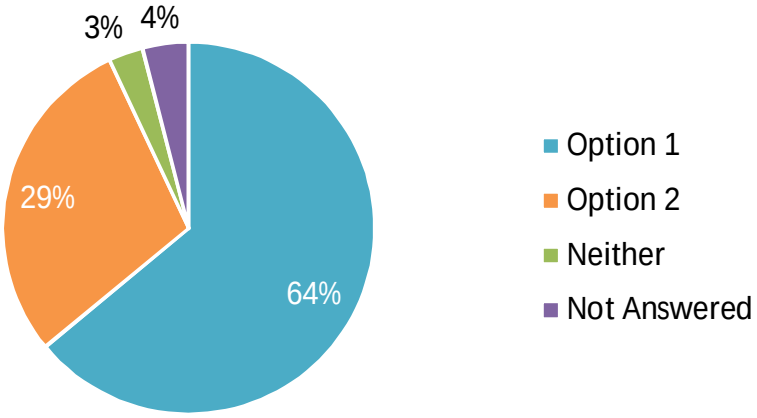
- *"Improvements would reduce congestion"*
- *"Improve safety and reduce accidents"*
- *"Overcapacity and difficult to gain access"*
- *"A constant bottleneck, new road will remove this"*
- *"Will help with the volume of holiday traffic – Thursday evening – Sunday and improve the journey through to the South West."*
- *"Dualling is essential to manage overcrowding and traffic flow"*
- *"Absolutely vital"*
- *"Reduce pollution with better flowing traffic"*

Representative feedback from respondents not in support of an upgrade:

- *"It would impact on businesses"*
- *"Homes could be lost"*
- *"Impact on the environment"*
- *"Improvements only necessary to help Friday - Sunday holiday traffic"*

5.2.6. **Question 3 - Which option do you prefer?**

Figure 5.2: Option Preference



5.2.7. Figure 5.2 shows that more than twice as many favour Option 1 over Option 2.

5.2.8. **Question 4 - Reason for your preferred option:**

5.2.9. Question 4 asked respondents to provide reasons for the preferred option selected in Question 3. Reasons have been separated into support for Option 1 or Option 2.

Option 1:

- preserves the countryside
- minimises land-take
- uses the existing road

Option 2:

- easier to construct
- would allow the existing A303 to be used as a local road
- takes the road away from the local villages, reducing noise

5.2.10. **Question 5 - Do you use the existing crossroad junction at Downhead Lane for the following[2]?**

Figure 5.3: Map of the existing Downhead Lane junction

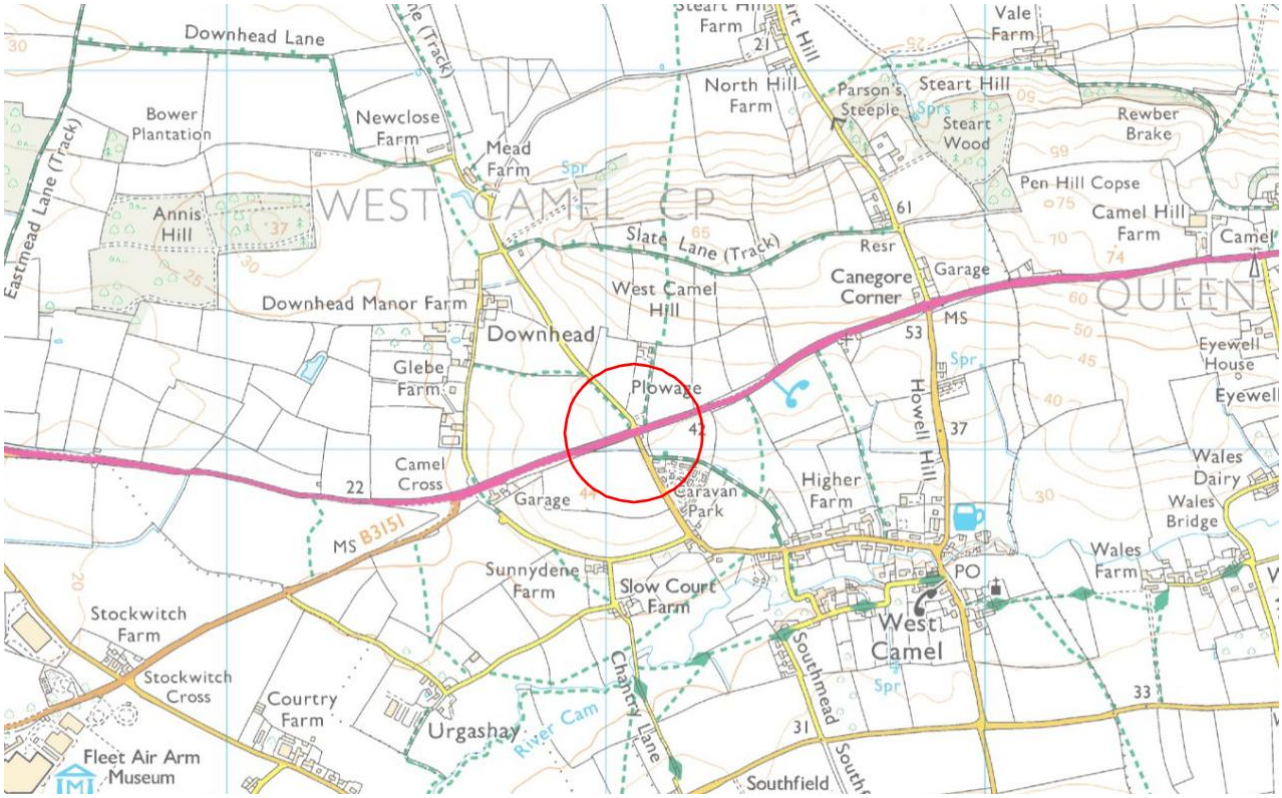
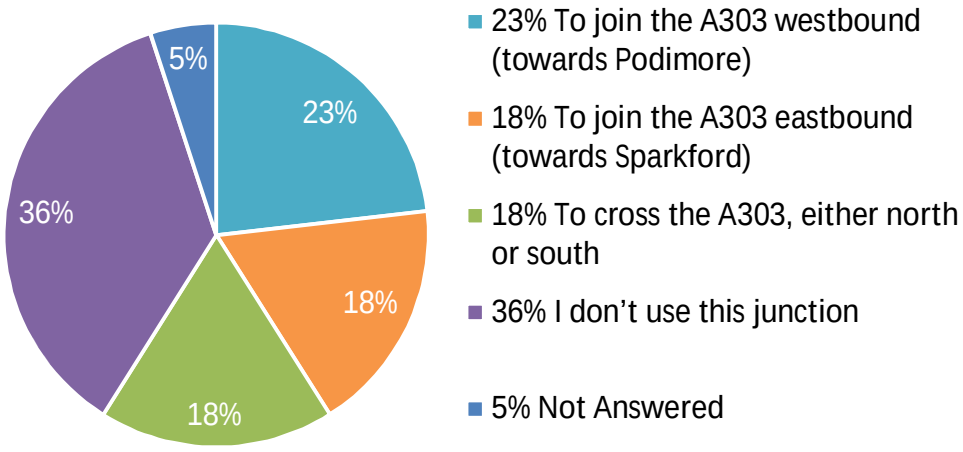


Figure 5.4: Use of Downhead Lane junction



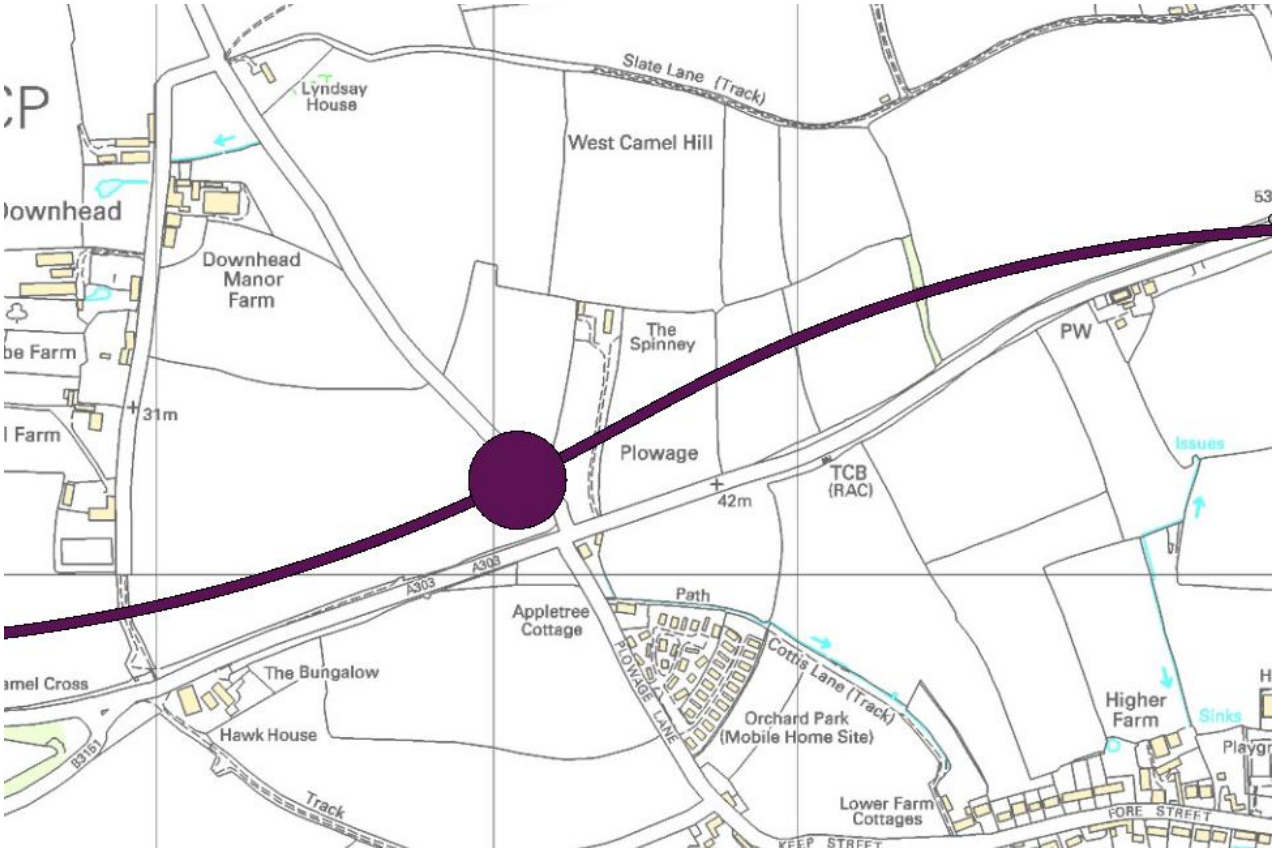
5.2.11. Figure 5.4 shows that 41% of respondents stated they used the crossroads to join the A303 in either direction and 18% used the junction simply to cross the A303.

[2] There was a list of options to tick as represented in Figure 5.4

5.2.12. **Question 6 - If this junction (Downhead) did not exist; what route would you take?**

5.2.13. Respondents stated that the presence of a junction at Downhead Lane as shown in Figure 5.5: is necessary to avoid rat-running through the local villages. Without the junction or an alternative replacement, respondents highlighted concerns about HGVs using the narrow village lanes to travel.

Figure 5.5: Map of Downhead Junction Area



5.2.14. From the questionnaire responses, the locations listed below were identified as alternative access points to the A303, if Downhead Junction did not exist. Pictured on the next pages are maps highlighting the identified access point locations (Figure 5.6 to Figure 5.9).

- Podimore Roundabout
- Sparkford Roundabout
- Ilchester
- Haynes Motor Museum

Figure 5.6: Map of Podimore Roundabout location

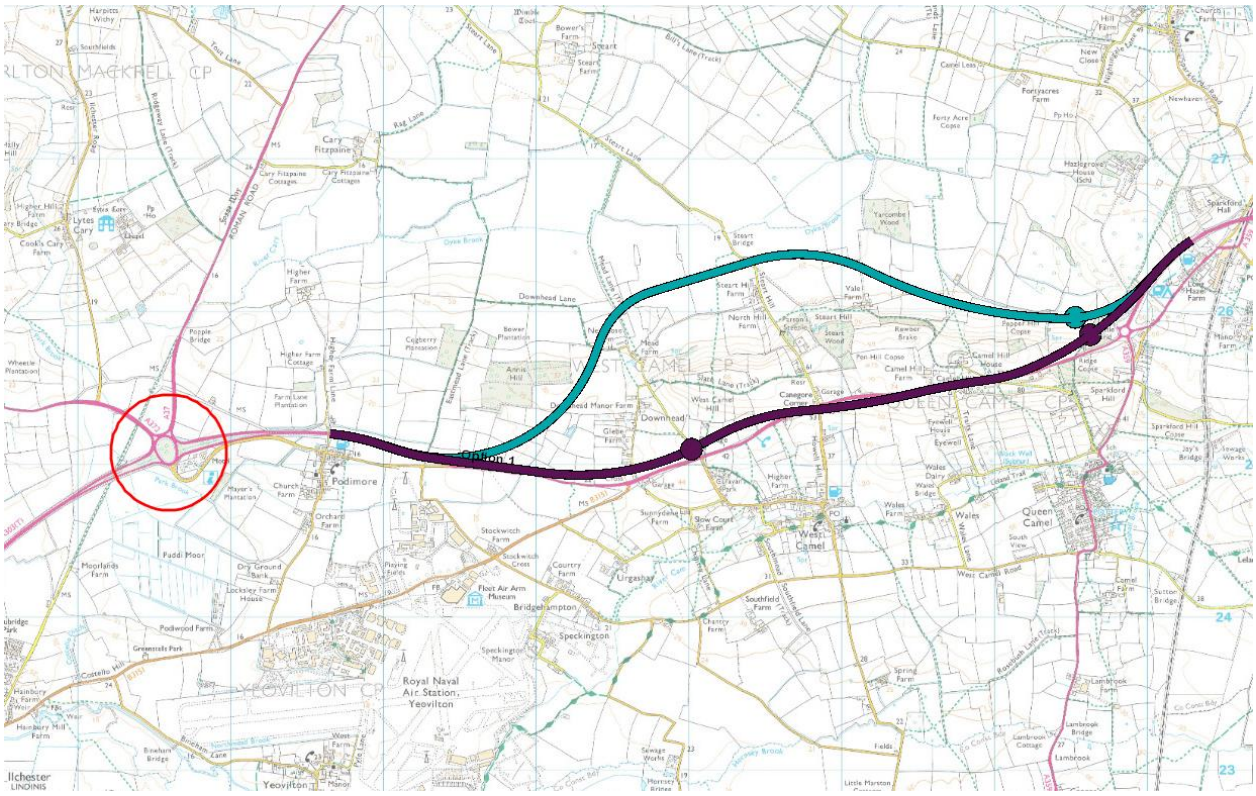


Figure 5.7: Sparkford Roundabout location

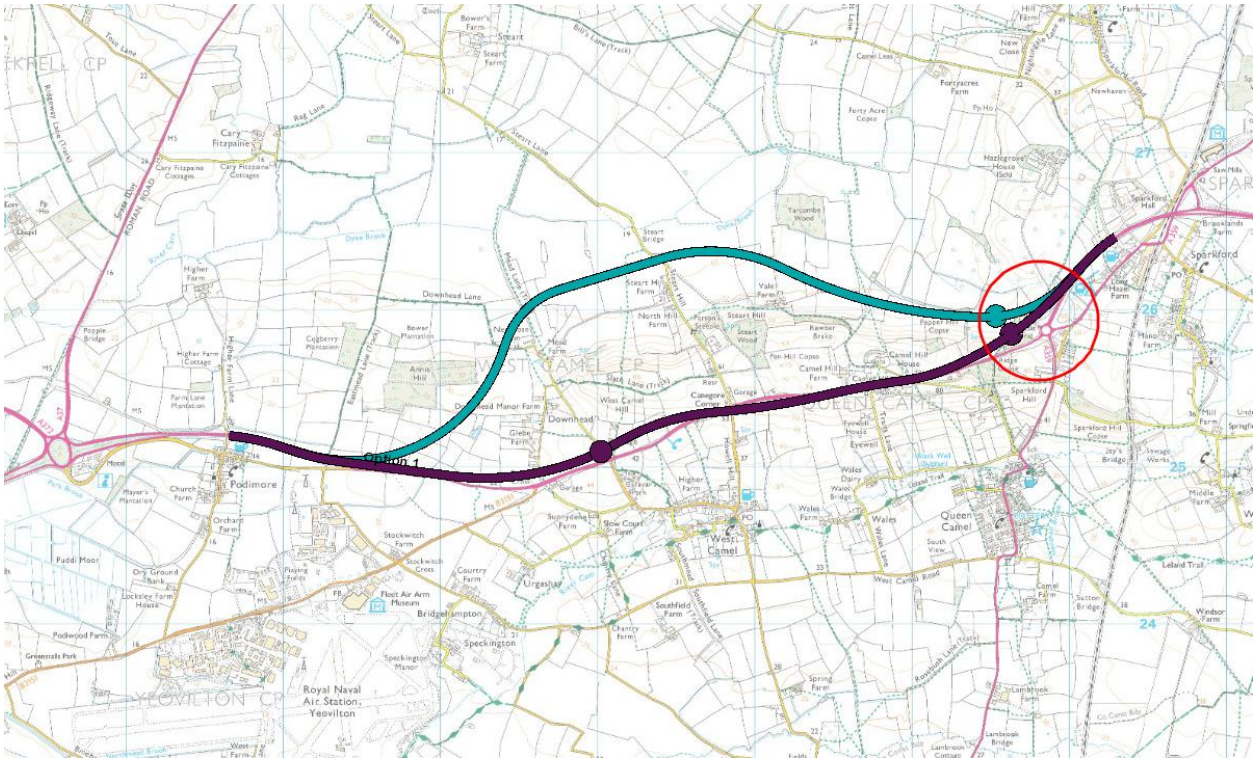


Figure 5.8: Map of Ilchester location

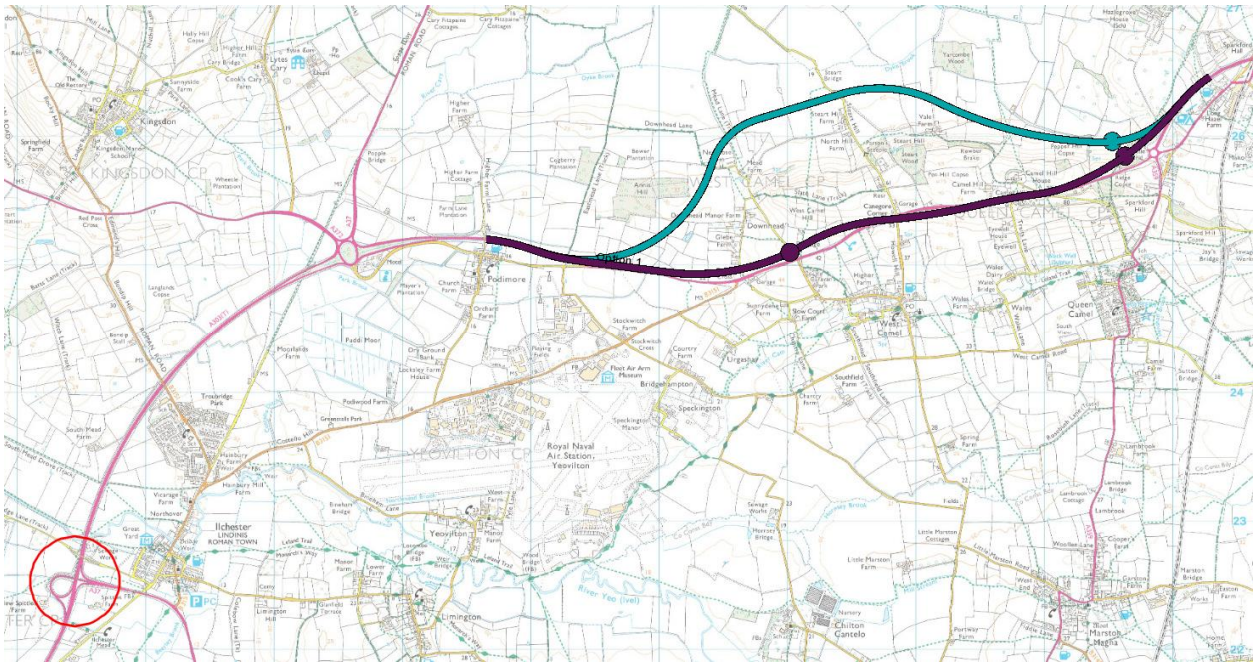
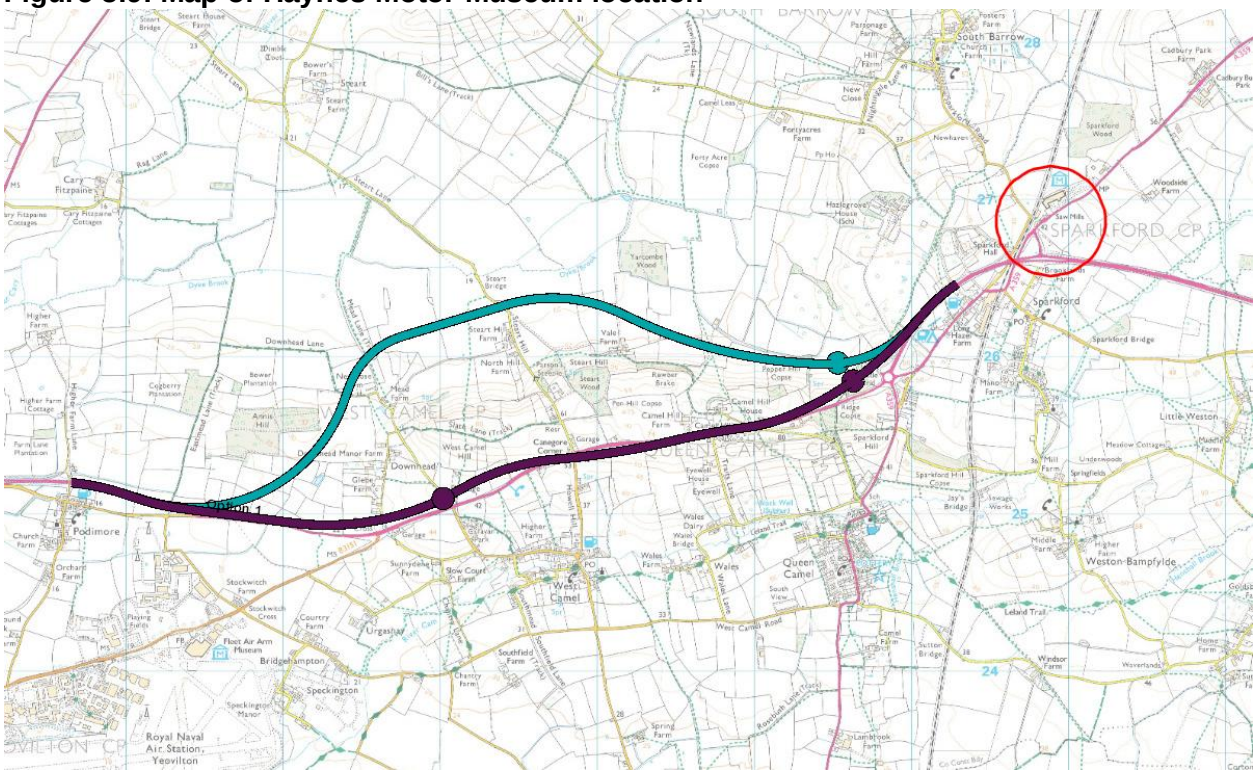


Figure 5.9: Map of Haynes Motor Museum location



5.2.15. Question 7 - Do you use Hazlegrove Roundabout for the following[3]?

Figure 5.10: Map of Hazlegrove Roundabout location

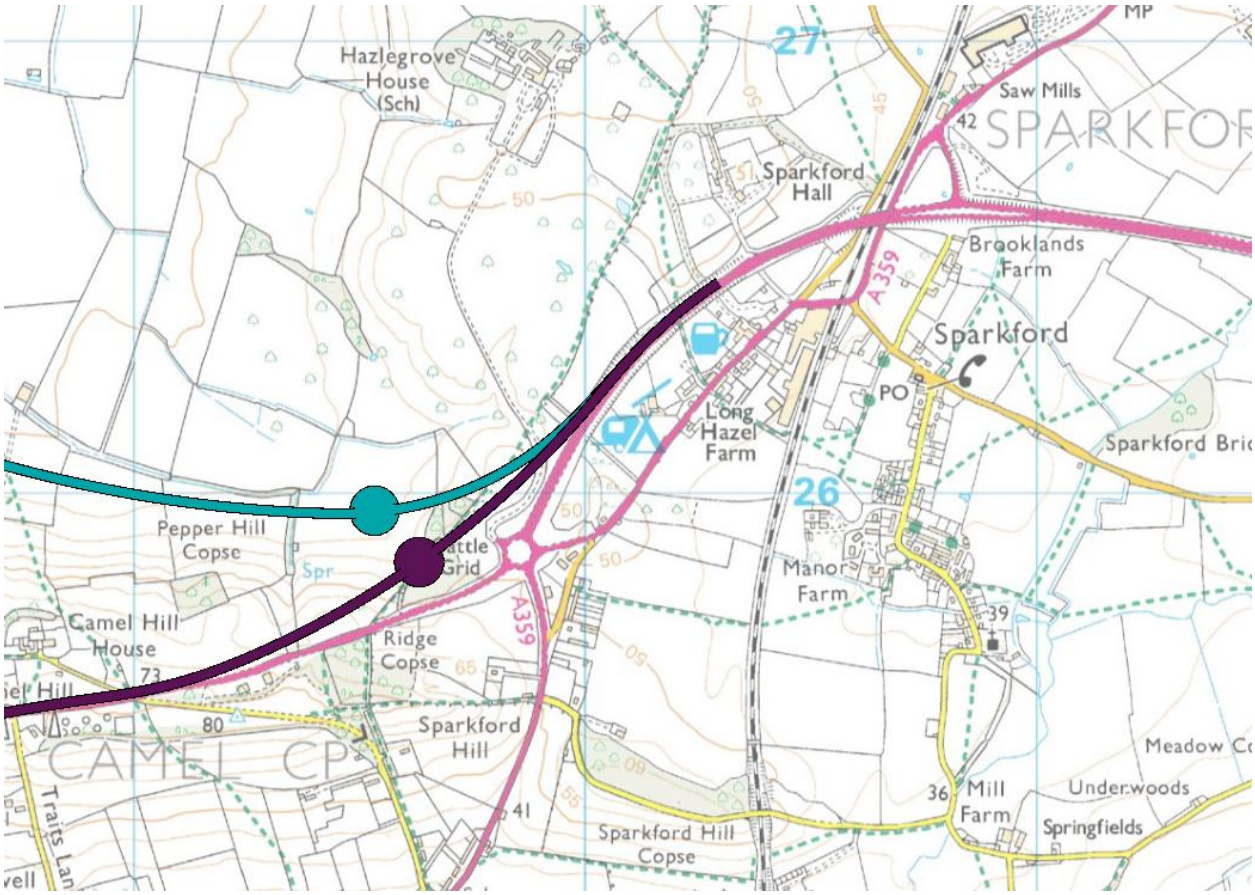
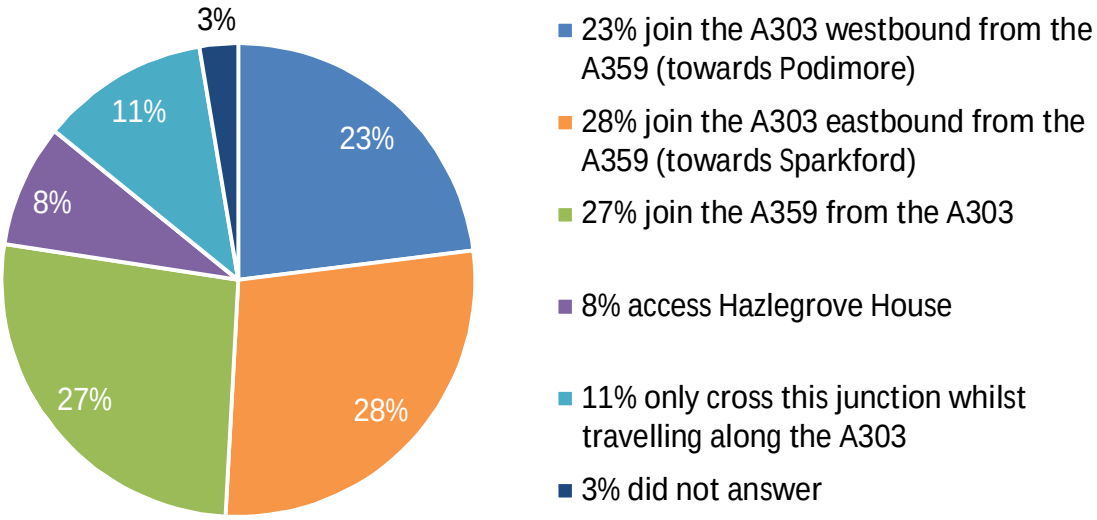


Figure 5.11: Use of Hazlegrove Roundabout

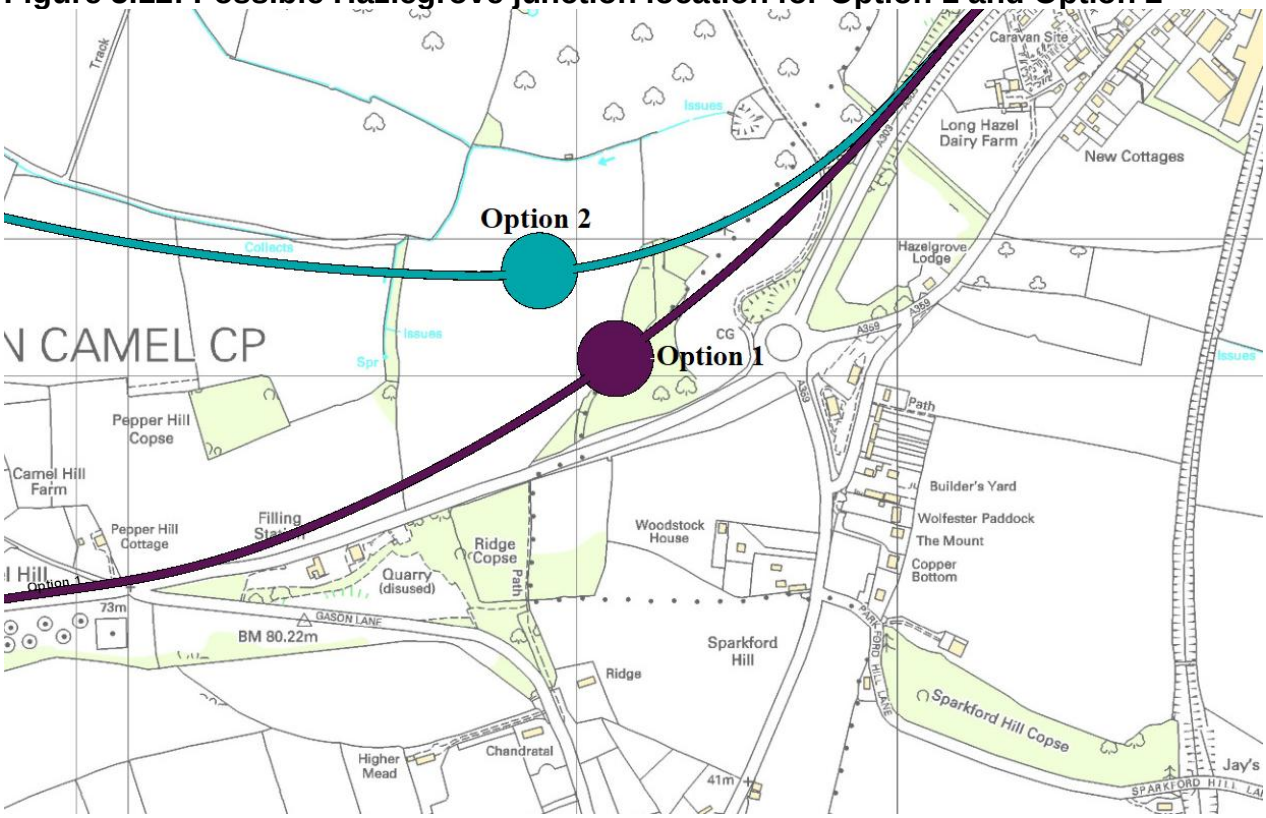


[3] There was a list of options to tick as represented in Figure 5.11

5.2.16. Figure 5.11 shows that Hazlegrove Roundabout is used for a wide variety of movements, with a relatively even split between traffic joining the A303 westbound or eastbound and the A359, reflecting its importance as a junction that serves strategic and local traffic needs.

5.2.17. **Question 8 - If the existing Hazlegrove junction did not connect to the improved A303; what route would you take to gain access to the road?**

Figure 5.12: Possible Hazlegrove junction location for Option 1 and Option 2



5.2.18. In addition to their movements at Hazlegrove, respondents were asked to identify a substitute route in the event that access was not maintained at Hazlegrove. The following is a list of the routes identified:

- Steart Hill
- Chapel Cross
- Cartgate Rounabout
- A37
- North Cadbury
- Sparkford
- A359
- Yeovil
- Haynes Motor Museum
- Podimore Roundabout
- West Camel
- South Cadbury
- Queen Camel

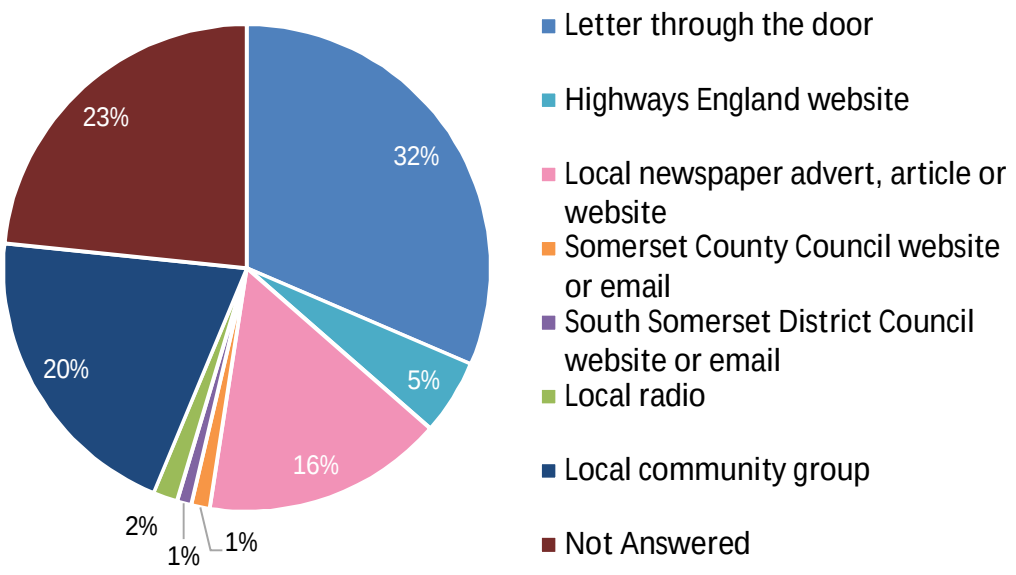
5.2.19. **Question 9 - Do you have any further comments or observations that you think we should consider?**

5.2.20. Highways England has analysed responses submitted by respondents to Question 9 and identified themes considered to be significant and common (see paragraph 5.1.3). All matters raised by respondents have been extracted and collated within the appropriate identified theme, and each has been considered and responded to by Highways England as set out in the Response Logs at Appendix C.

5.2.21. A number of consultation responses from local community organisations and statutory and non-statutory bodies were also received. These responses were analysed and the matters raised included in a separate Response Log also found in Appendix C.

5.2.22. **Question 10 – How did you find out about the A303 Sparkford to Ilchester improvement scheme consultation?**

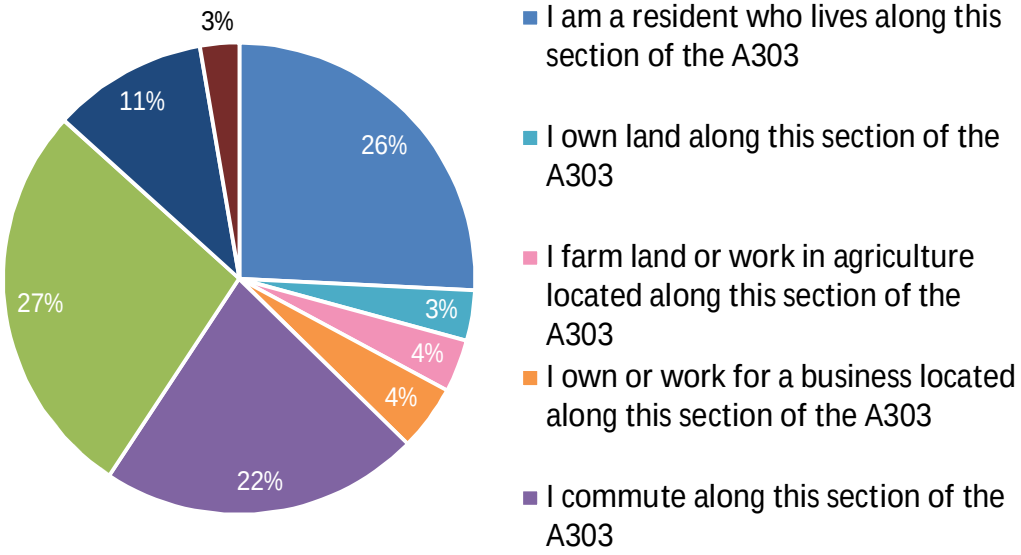
Figure 5.13: Method of finding out about consultation



5.2.23. Figure 5.13 displays the variety of ways in which respondents found out about the consultation. 32% found out about the consultation via a letter from Highways England, whilst a further 20% found out via a local community group. Local newspaper content in a variety of formats made up a further 16% and the Highways England website accounted for 5%. The remaining 4% who answered this question stated that they had found out via local radio (2%) or a local authority website (2% in total for South Somerset District Council and Somerset County Council)

5.2.24. **Question 11 – What is your interest in the scheme?**

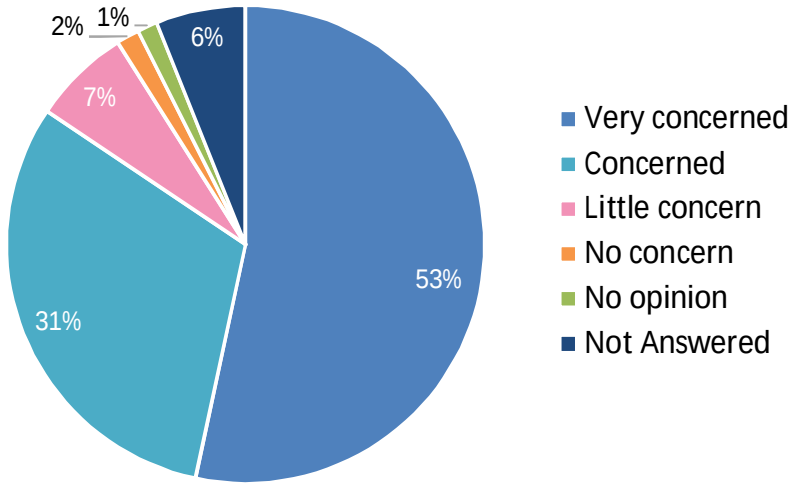
Figure 5.14: Interest in the scheme



5.2.25. Figure 5.14 shows that those with an interest in tourism and leisure make up the largest group of respondents, at 27%. These are closely followed by residents living along the route of the scheme at 26% and in turn by commuters using the route at 22%. The remaining 25% of respondents are made up of land owners, those who farm the land or work in agriculture, those who work in or own businesses along the route and various other users.

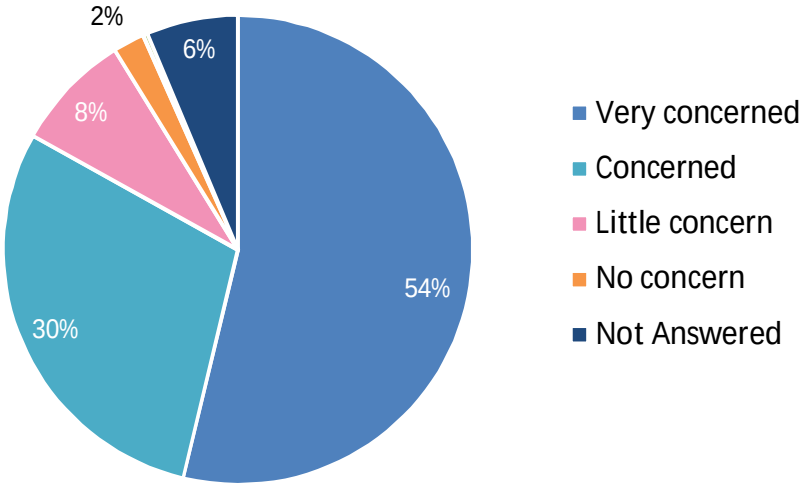
5.2.26. **Question 12 – Please tell us how concerned you are about the following issues**

Figure 5.15: Road Safety



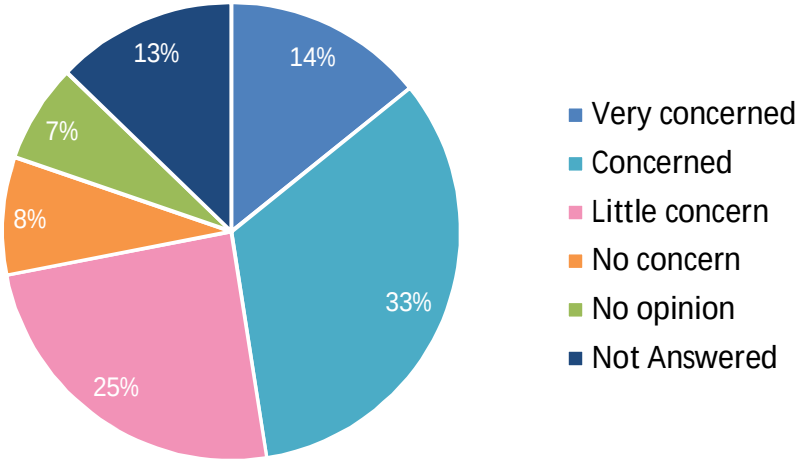
5.2.27. Figure 5.15 shows that 84% of respondents are either “concerned or “very concerned with road safety along this section of the A303. A further 7% of respondents indicated a “little concern” about road safety. just 2% of respondents have “no concern” over road safety.

Figure 5.16: Traffic Congestion



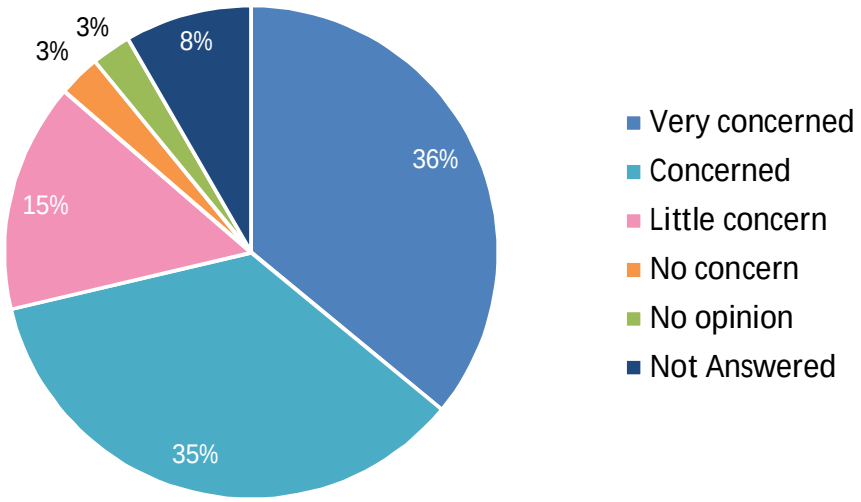
5.2.28. Figure 5.16 shows that 84% of respondents are either “very concerned” or “concerned” with the levels of traffic congestion along this section of the A303. By contrast, 8% indicate a “little concern” over traffic congestion. Only 2% of those who answered have “no concern” over the level of traffic congestion.

Figure 5.17: Limited opportunities for economic growth



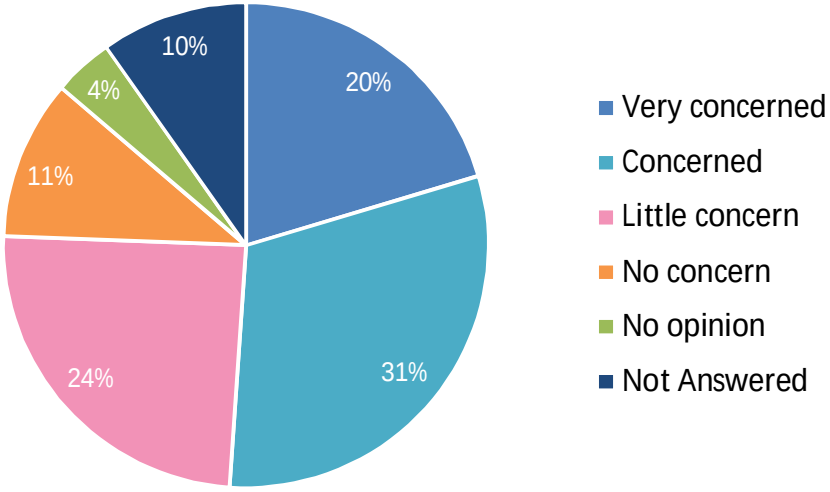
5.2.29. As displayed in Figure 5.17, 47% of respondents stated that they are “very concerned” or “concerned” about the existing situation on the A303 contributing to only limited opportunities for economic growth. An additional 25% of respondents have little concern over this. Only 8% of respondents have no concern over the limited lack of opportunities for economic growth which the existing route allows for.

Figure 5.18: Air pollution



5.2.30. Figure 5.18 shows that 71% of respondents are either "very concerned" or "concerned" about the levels of air pollution along the route of the section of the A303. A further 15% indicate a "little concern" over the levels of air pollution. The remaining 3% state that they have "no concern" over the levels of air pollution.

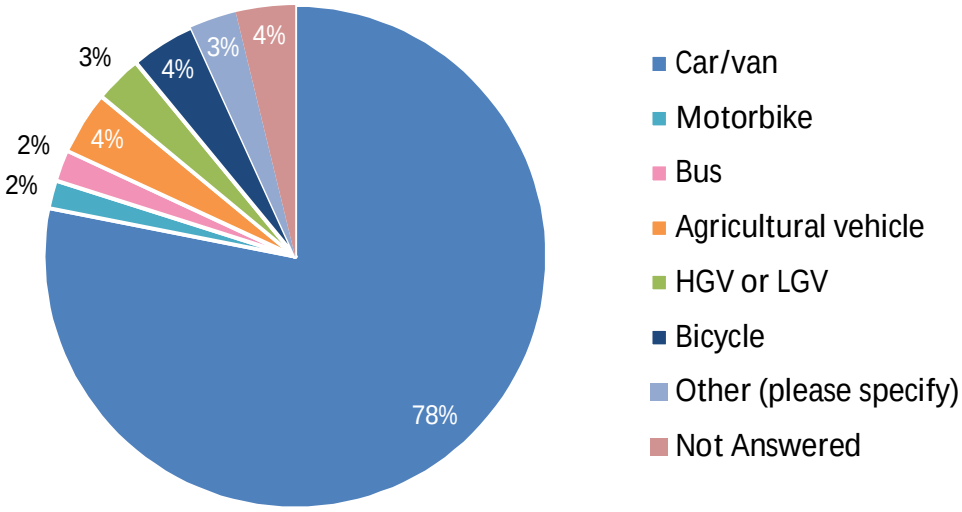
Figure 5.19: Limited connectivity and access for pedestrians, cyclists and other non-motorised users



5.2.31. Figure 5.19 shows that 51% of respondents are "very concerned" or "concerned" with the current state of limited connectivity for pedestrians, cyclists and other non-motorised users. 24% of respondents indicate a little concern over this issue, while 11% express no concern at all.

5.2.32. **Question 13 – How do you normally travel on the route?**

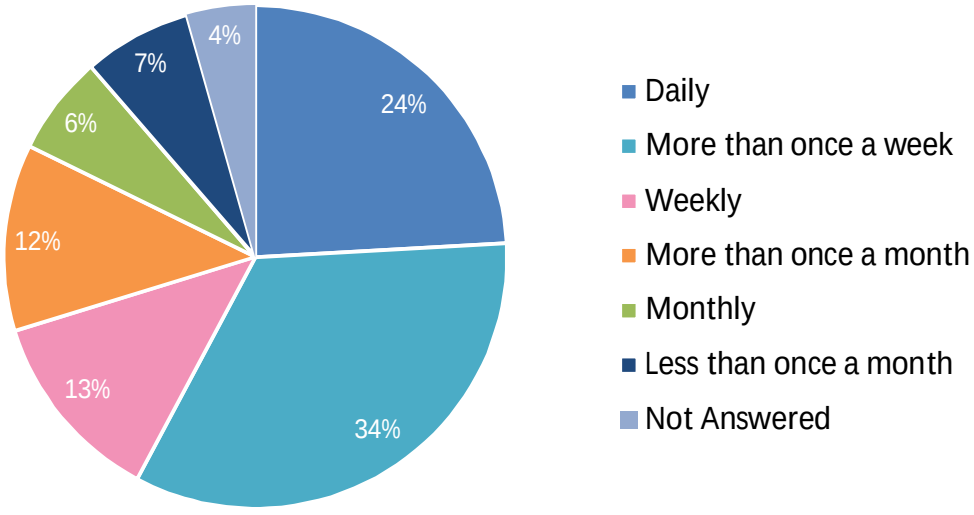
Figure 5.20 – Travel on the route



5.2.33. Figure 5.20 shows that 78% of respondents travel on the route using a car. The remaining 18% of those who answered are fragmented amongst a variety of different transport methods.

5.2.34. **Question 14 – How often do you use the route?**

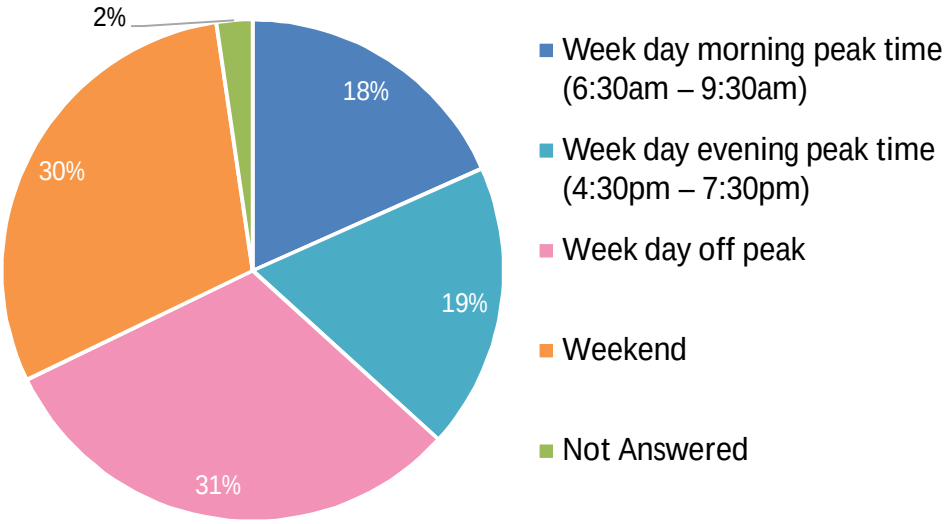
Figure 5.21: Use of the route - frequency



5.2.35. Figure 5.21 shows that 34% of respondents use the route more than once a week. This group is followed by people using the route daily (24%). The remaining 41% use the route weekly or less, with only 4% of respondents using it monthly.

5.2.36. **Question 15 – When do you use the route?**

Figure 5.22: Use of the route – time/day

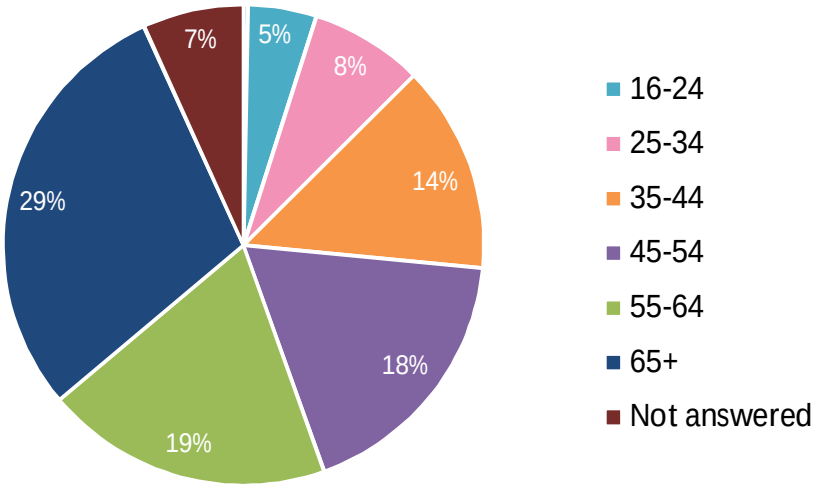


5.2.37. Figure 5.22 shows that there is a relatively even split amongst respondents between peak users (morning and evening users combined at 37%), off peak week day users (31%) and weekend users (30%).

5.2.38. **Question 16 & 17 - Diversity Questions**

5.2.39. In addition to the questions addressed above, the questionnaire asked a number of diversity questions. The results are shown in Figures 5.23 – 5.26 below.

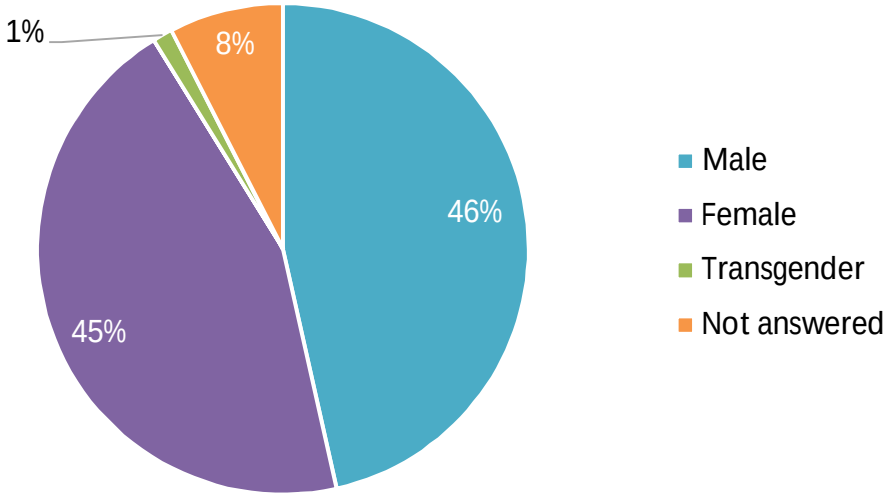
Figure 5.23: Age breakdown



5.2.40. Figure 5.23 shows that 29% of respondents stated that they were aged 65 or older while 13% stated that they were aged 34 or younger.

5.2.41. This bears reasonable correlation with the 2011 census which showed that 22% of the South Somerset population were aged 65 or over.

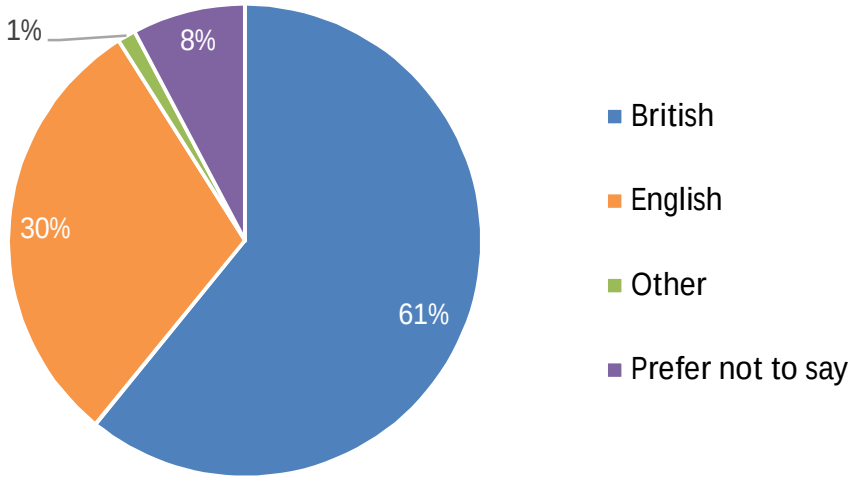
Figure 5.24: Gender breakdown



5.2.42. Evidence from the National Transport Survey (NTS)[4] suggests that women make more walking trips than men. As such, women are likely to be more sensitive to any changes to pedestrian access (during both construction and operation of the scheme) than other groups.

5.2.43. Figure 5.24 shows that responses were evenly split between genders. If women had not been adequately represented within the responses, important feedback may not have been received.

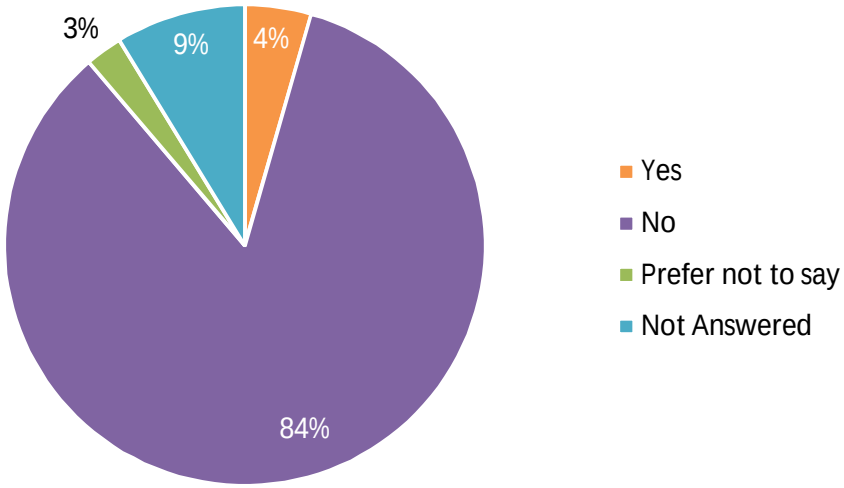
Figure 5.25: National identity



5.2.44. Figure 5.25:5 shows that the majority of people who responded consider themselves as British, with nearly a third identifying as English and with limited other international identities recorded.

[4] NTS (2015): 'National Travel Survey: England 2014', p.17. See: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/457752/nts2014-01.pdf

Figure 5.26: Do you consider yourself to have a disability?



5.2.45. Figure 5.266 shows that the majority of people who responded do not consider themselves to have a disability.

5.3. Common concerns

5.3.1. Some of the main concerns raised from the consultation feedback are summarised below, with further comment in the Response Logs found in Appendix C.

- Flooding
- Environmental impact
- Non-motorised users
- Scheme design and junction positioning for the local communities

Flooding

5.3.2. Many respondents identified that the local area suffers from flooding. Respondents living close to the A303 have stated that they believe the road currently contributes to flooding difficulties in nearby villages from water run-off. A number of local community respondents submitted photographs in addition to a questionnaire, bringing attention to flooding episodes in the local area, particularly at Steart Hill and Howell Hill.

5.3.3. These concerns are understood, and a detailed Flood Risk Assessment of the design proposals for the preferred route will be produced to ensure the scheme does not increase the susceptibility of the local area to flooding.

Environmental impact

5.3.4. Respondents highlighted a need to preserve the countryside, particularly the Sparkford Vale area that Option 2 would impact upon.

5.3.5. This concern has informed the choice of Option 1 as the preferred route. Also, as part of the ongoing environmental impact assessment process, the environmental design of the scheme will be central to developing a mitigation

and enhancement strategy. This will be fully developed to support the Development Consent Order (DCO) application. Further interim details will be presented at the next (statutory) consultation stage, and the full assessment will be reported in the Environmental Statement accompanying the DCO application.

Non-motorised users

5.3.6. Many respondents identified the need to ensure connectivity for non-motorised users is maintained or improved.

5.3.7. Highways England intends to identify the most frequented walking, cycling and riding routes and investigate how these might be facilitated by safe and reliable crossings. This process has commenced by undertaking surveys of rights-of-way, consulting user groups including Somerset County Council's Rights-of-way Officer. Moving forward, Highways England will develop proposals for rights-of-way. This will include the provision of crossing points using bridges or underpasses to ensure people can cross the road in greater safety and more easily than they currently do. More details will be presented at the next consultation stage.

Scheme design and junction positioning for the local communities

5.3.8. Many respondents commented that there is a need to ensure local connectivity between communities is retained as part of any proposal to improve this part of the A303.

5.3.9. Highways England now has a better understanding of how local residents and businesses use the road network and how these journeys need to be accommodated within the proposed scheme design. The information gained during the public consultation will now feed into the design for the preferred route, where junctions, bridges and underpasses need to be located.

5.3.10. There were many comments regarding Podimore Roundabout and the need for this junction to be upgraded in conjunction with this proposed A303 improvement. However, while the Podimore Roundabout is included in the programme of improvements for upgrading the A303/A358 corridor to an expressway, the upgrading of the roundabout has not been identified in the current 5-year Road Investment Strategy (RIS), and instead is due to be funded in future RIS periods.

5.3.11. Many respondents from the local community expressed how they thought the scheme was only catering for the needs of individuals wishing to travel from London to the South West peninsula and would create more traffic through their communities. Concerns were also expressed about local connectivity, with respondents wishing to ensure the new road does not cause rat-running through nearby villages.

5.3.12. This feedback will be used to optimise proposed junction designs, ensuring the scheme accommodates local traffic conveniently and safely whilst also catering for through traffic avoiding impacts on the local communities.

5.4. Summary of design suggestions from consultation feedback

5.4.1. A number of design suggestions have been identified from the consultation feedback. These have been taken into consideration when selecting the preferred route and will be considered further during the ongoing development of the scheme. They are shown in Table 5.1 below.

Table 5.1 Summary of design suggestions from consultation

Route Option	Respondent	Comment	Highways England Response
1 & 2	Public	Junction at Hazlegrove should be removed from the scheme.	This will be considered although the following should be noted: · Initial traffic analysis suggests that removal of this junction would significantly increase traffic through the village of Sparkford. · Initial economic analysis suggests that this junction is essential for value for money. · This comment is in contrast to other public feedback we have received stating that the junction is essential (see below).
1 & 2	Public	Access to and from the new road at Hazlegrove should be included.	It was clear from the feedback during the consultation that the possible inclusion and subsequent arrangement of any junction at Hazlegrove is an important issue for many people. We have undertaken a number of traffic surveys along the existing A303, including Hazlegrove junction, in order to get a better understanding of how the traffic is currently moving around the junction. We also posed a specific question about Hazlegrove junction within the questionnaire. The data and feedback will help us develop a junction strategy which will be presented at the next consultation for further comment.
1 & 2	Somerset Ramblers	There should be no at-grade crossings of the new road.	At-grade pedestrian crossings on high speed roads are not desirable for safety reasons and will not be

Route Option	Respondent	Comment	Highways England Response
			proposed as part of the scheme design.
1	Public	Arrangements for access between the new route and Steart Hill should be improved.	We will examine the design in more detail, and in particular will look at local accesses and the access between the new route and Steart Hill.
1	Public	Access between the new road and RNAS Yeovilton is essential.	The access arrangements to RNAS Yeovilton are an important issue and we recognise the 'air-day' brings in large numbers of visitors. We have had several discussions with RNAS Yeovilton throughout the early stages of the design and will continue to maintain this dialogue to ensure their needs are addressed as best as possible.
1	Public	Traits Lane is not suitable for any additional use.	This will be considered during the next stage of development, particularly taking into account the requirements of residents to the north of the route for works to Traits Lane to benefit those residents.
1	Public	A safe crossing is required between Downhead and West Camel for school children.	Safe crossings for pedestrians, and other non-motorised users, including school children, will be looked at during the next stage. We will be in a position to talk about these crossings in more detail at the next consultation.
1	Public	The proposed junction at Downhead should be removed as it encourages rat-running through the villages of West Camel and Queen Camel.	This will be considered, noting also that this comment is in contrast to other public feedback we have received, stating that some form of access is required. We have also undertaken traffic counts to model and better understand this junction.
1	Public	Proposed works to Slate Lane are a poor idea and should be removed from the scheme.	We will examine the design in more detail, and in particular will look at local accesses including Slate Lane.
2	Public	A significant number of bridges would be	This will be considered during the next stage of development,

Route Option	Respondent	Comment	Highways England Response
		required across the new road to avoid impact to landholders either side.	particularly taking into account the specific requirements of individual landholders either side of the route.
2	West Camel Parish Council	Consider realigning Option 2 proposals to reflect initially the line shown in discarded Option B4 i.e. after leaving Podimore overbridge, the route should pass to the north of Annis Hill Wood, before re-joining the existing line of Option 2. This would provide greater separation from properties, Newclose & Mead Farms as well as other properties in Downhead.	Chapter 12 of the Technical Appraisal Report (http://roads.highways.gov.uk/projects/a303-sparkford-to-ilchester) provides a summary of the comparison between Option B4 and Option 2 (named Option F1 at the time). This concluded that Option 2 offered better value for money than Option B4. A qualitative assessment of the environmental, social, safety, buildability and maintainability characteristics of each option concluded that there was little to distinguish between the two options. Option F1 was reported as being slightly worse in environmental terms due to potential impact on the Annis Hill Local Wildlife Site. However, on balance it was felt that the value for money benefits of Option 2 outweighed its marginal environmental dis-benefits. One reason why the impact at Annis Hill was discounted was because it was judged that further design modifications would reduce or even avoid the impact at Annis Hill. These concerns have subsequently informed the selection of Option 1 as the preferred route.

6. Conclusions and next steps

6.1.1. Highways England would like to thank all who have submitted consultation responses and contributed to the consultation. The feedback has provided valuable insight into the views of the local communities and others, and how Highways England can seek to refine the design of the preferred route.

6.1.2. The consultation has highlighted a variety of views about the scheme, many of which will be addressed during the next stage of the scheme development. It has been important to understand the possible impacts the scheme might have on the local community and where Highways England can make refinements to support the local community positively while still delivering the Government's Road Investment Strategy.

6.1.3. The consultation has also provided insight into specific aspects of the scheme. Above all, it is clear that there is good support for the principle of dualling the A303 between Sparkford and Ilchester. Issues of connectivity are also considered paramount to enable local people to move around their local communities with ease.

6.1.4. Highways England has used the feedback received to help inform the choice of Option 1 for the preferred route. The feedback has been used alongside further assessment work undertaken since consultation, as reported in the Scheme Assessment Report (http://roads.highways.gov.uk/projects/a303-sparkford-to-ilchester/) to inform the choice.

6.1.5. Moving forward, Highways England will develop the preferred route and will engage with stakeholders in the design of its more detailed proposal. This engagement will include a statutory consultation to gain further feedback from all interested parties before the application is submitted for development consent.

Glossary

Act	The Planning Act 2008
AONB	Area of Outstanding Natural Beauty
APFP Regulations	The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009
DCLG	Department for Communities and Local Government
DCLG guidance	'Planning Act 2008: Guidance on the pre-application process' (DCLG, March 2015)
DCO	Development Consent Order
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
EIA Regulations	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009
ES	Environmental Statement
FRA	Flood Risk Assessment
GI	Ground Investigation
HGV	Heavy Goods Vehicle
NMU	Non-Motorised User
NRTS	National Roads Telecommunications Service
NSIP	Nationally Significant Infrastructure Project
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PRoW	Public Right of Way
SAR	Scheme Assessment Report
SoCC	Statement of Community Consultation
SSSI	Site of Special Scientific Interest
TAR	Technical Appraisal Report
WFD	Water Framework Directive

Appendix A – Statement of Community Consultation (SoCC)

A303 Sparkford to Ilchester Road Dualling
Route Options

Non-Statutory Statement of Community Consultation (SoCC)

Date: 19 January 2017 **Version: 0.9**

Section 37 of the Planning Act 2008 (the Act) requires promoters of Nationally Significant Infrastructure Projects (NSIPs) to detail how they intend to comply with the consultation requirements set out in sections 42, 47 and 48 of the Act.

The original format of this document is copyright to Highways England.
A303 Sparkford to Ilchester road improvement scheme - Statement of Community Consultation

Highways England is inviting feedback from the local community and road users on our proposals to improve the A303 between Sparkford and Ilchester in South Somerset.

This non-statutory Statement of Community Consultation (the statement) provides background to the route options stage proposals and explains how a future Development Consent Order (DCO) application to improve the A303 between Sparkford and Ilchester will progress.

The purpose of the statement is to set out how we will consult the local community and road users about the route options stage proposals.

The statement provides details of where further information can be obtained or viewed and how feedback by the local community and road users about the route options stage proposals can be provided to us.

The options stage consultation

We are developing this scheme under the Planning Act 2008 and this statement advises how we will consult with the local community and road users during the route options stage of the proposal to improve the A303 between Sparkford and Ilchester.

The scheme is presently not at formal statutory consultation as required under Section 47 of the Act. Public feedback received during the non-statutory route options stage consultation will be recorded and carefully considered by Highways England when selecting a preferred route option, before a period of statutory consultation is commenced.

Under the Act, we are required to consult with the relevant local authorities. As part of the route options stage preparation, consultation has been undertaken with host local authorities and adjoining local authorities. Their views have been taken into account to develop the route options stage consultation approach and prepare this statement.

The Act requires us to submit an application to the Secretary of State through the Planning Inspectorate (PINS) for a DCO to build the scheme. The Secretary of State's role is to consider whether DCO approval should be given for major infrastructure projects like this scheme. We anticipate that a DCO application for the scheme will be published no later than summer 2018. The Secretary of State will consider the DCO application and decide on whether the scheme should go ahead.

The Government has published National Policy Statements (NPS) relating to the types of infrastructure projects the Secretary of State will examine. These provide frameworks for DCO applications to be considered against. Major road infrastructure proposals are subject to the NPS for National Networks.

When Highways England submits its DCO application, the Secretary of State must consider whether consultation undertaken has been adequate. This non-statutory route options stage consultation will provide guidance that assists us to select a preferred route option.

Consultation with people living in the vicinity of a proposed development site is an important aspect of a Nationally Significant Infrastructure Project proposal, and feedback received from the local community and road users during the route options stage consultation and pre-application consultation will help to deliver a better final scheme application.

A period of formal consultation, as required by Section 47 of the Act, is scheduled to take place in 2017. This will take place following selection of a preferred route option and before a DCO application is made to PINS.

More information about the PINS, the Act and how to participate in the DCO process can be found on the PINS national infrastructure planning website at http://infrastructure.planninginspectorate.gov.uk/ or by calling PINS on 0303 444 5000.

At the time of publication of this statement, Highways England and other organisations within the vicinity of the options stage proposals were involved in the following road related public consultations:

- A358 Taunton to Southfields
- M5 Junction 25

The road improvement scheme

The A303/A358 corridor is a vital connection between the South West and London and the South East. While the majority of the road has been dualled, there are still over 30 miles of single carriageway. These sections act as bottlenecks for users of the route resulting in congestion, particularly in the summer months and at weekends, delays to traffic travelling between the M3 and the South West and an increased risk of accidents.

The route corridor comprises multiple road standards, including single carriageways, single carriageways with overtaking lanes and dual carriageway sections with associated road junctions and varying speed limits between 40mph and 70mph.

The section of the A303 between Sparkford and Ilchester includes the Hazlegrove Roundabout, which has five arms and forms a junction with the A359, including access to a service station located at the western end of the existing dual carriageway standard Sparkford bypass. Continuing westwards from the roundabout, the A303 comprises a single carriageway with a two-way overtaking lane that is subject to a 50mph maximum speed limit.

The remaining length of the Sparkford to Ilchester section is characterised by single carriageway sections with double white lines prohibiting overtaking and subject to a 50mph maximum speed limit. There are a number of priority junctions along the route enabling access to the settlements of Queen Camel and West Camel to the south of the road, as well as a number of farm accesses and parking laybys. The road continues until it becomes a dual carriageway just before the Podimore Roundabout.

The section of the A303 between Sparkford and Ilchester is approximately 3 miles in length.

The proposed scheme will link existing sections of dual carriageway and is likely to include new and replacement slip roads, junctions and road bridges to replace existing junctions and direct access roads.

Consulting the community

The consultation is a process by which the local community living in the vicinity of the A303 between Sparkford and Ilchester and those that make use of the A303 road network between Sparkford and Ilchester are invited to participate and provide feedback to the route options stage proposals.

Highways England wants to ensure that the local community and road users have the opportunity to understand the route options stage proposals and to provide feedback. To do this we will undertake a period of consultation from **15 February to 29 March 2017**, at which time we will ask for feedback on the route options stage proposals.

Consultation materials will detail information about the route options stage proposals, including route improvement alternatives, proposed road access arrangements, traffic modelling and the scheme timescales.

We will be using a range of methods during the consultation period to ensure that the local community, road users and any other interested party have an opportunity to view and provide feedback on the route options stage proposals.

The route options stage consultation will include the following consultation methodologies:

Method	Detail
Public information events	Public information events will be held at locations along the route of the scheme to offer people an opportunity to view the proposed route options, speak with the project team and provide feedback. The local community, businesses and road users will be informed of the events through channels including written communications, the Highways England website and local media. Information on how to provide consultation feedback will be available

	at the events and the Highways England website. A printed questionnaire will be available for members of the public to provide feedback and these can be left with the project team, posted free of charge to **Freepost Consultation, FPN 4016** or emailed to us. Information will be available to members of the public detailing how to provide feedback online at the Highways England website.
Public information points	Information advertising the public information events will be on view at specified public information points. Consultation brochures will be available at public information points for the local community and other road users to review and take away. Information about how the local community, businesses and other road users can provide consultation feedback will be available at the public information points. A printed questionnaire will be available for members of the local community and other road users to provide feedback at the public information points and these can be posted free of charge or emailed to us. Information detailing how to provide feedback online at the Highways England website will be available.
Project website	Details of the scheme background, the need for the scheme and the proposed route options will be provided on the scheme web page at www.highways.gov.uk/Sparkford-to-Ilchester Supporting route options stage documents including the consultation brochure will be available to download or print. A questionnaire will be available for members of the local community and other road users to provide feedback online.
Written communication	We will send residents and businesses inside the consultation zone (see Appendix 1.1) an information letter that explains the proposed route options and the issues being consulted on. The letters will invite people to the public information events and detail how consultation feedback can be provided to us. Other key stakeholder organisations and special interest groups will also receive information letters that explain the route options stage proposals and the issues being consulted on. The letters will invite recipients to the public information events and detail how consultation feedback can be provided to us.

	Individuals or organisations that have registered to receive further communications on the Highways England scheme web page will be sent information emails that explain the proposed route options and the issues being consulted on. The emails will invite recipients to the public information events and detail how consultation feedback can be provided to us. Details of public information events:
Consultation brochure	We will produce a consultation brochure providing information about the route options stage proposals, the need for the scheme and the issues being consulted on. The brochure will be available to view on the Highways England scheme web page. The consultation brochure will also be available at public information events and public information points. Copies of the consultation brochure can be provided free of charge by request to Highways England.
Use of local authority and parish council communications channels	We will promote the route options stage consultation through local authority and parish council communication channels, including their respective websites, newsletters and social media pages.
Representatives at local groups and forums	We welcome contact from local groups and forums. Where it is considered that there is a relevant interest and where a visit is considered proportionate and appropriate, we will attend a local event to discuss the route options stage consultation.
Hard to reach groups	An appropriate and proportionate 'hard to reach' engagement plan will be developed with the assistance and agreement of relevant local authority personnel and third sector organisations. Appropriate and proportionate consultation tools for hard to reach groups could include: • Presentations to community groups and organisations • Appropriate direct engagement with, for example, younger people and disabled people and representative groups • Provision of appropriate and accessible materials in local community/hard to reach centres • Provision of appropriate and accessible materials (i.e. in large print and alternative languages if requested) • Venues chosen for public events to be compliant with the Equality Act 2010
Route options stage consultation	The local community and other road users will be updated about progress of the route options stage consultation through channels including written communications, the Highways England website,

updates	local media and local authority websites, newsletters and social media.
Consultation feedback	Written feedback can be made either online or in writing to Highways England at the following addresses: • A303SparkfordtoIlchesterDualling@highwaysengland.co.uk • A303 Sparkford to Ilchester Dualling, 2/07K Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6HA
Media	The route options stage consultation will be publicised through local print, radio and online media channels by means of a Highways England press release detailing the consultation process and explaining how the local community and road users can provide feedback.

Documents available for inspection

Scheme summary information and copies of the consultation material will be available online and will be updated throughout the course of the scheme at the Highways England scheme web page.

Next steps

Feedback provided by members of the local community and road users during the route options stage consultation will be recorded by Highways England.

Please contact Highways England to find out more about this scheme by:

- visiting the scheme webpage at www.highways.gov.uk/Sparkford-to-Ilchester
- emailing the project team at A303SparkfordtoIlchesterDualling@highwaysengland.co.uk
- calling the project team on **0300 123 5000 (9am to 5pm, Monday to Friday)**
- writing to the project team at **A303 Sparkford to Ilchester Dualling, 2/07K Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6HA**

Consultation zone

The consultation zone covers a geographical area of approximately 1.5 kilometres from any point on all of the proposed route options under consultation. In certain areas the 1.5 kilometre zone has been extended to include additional population centres. A map showing the consultation zone boundary is in appendix 1.1.

Local authorities consulted

Host local authorities: (Somerset County Council, South Somerset District Council)

Adjoining local authorities: (Bath and North East Somerset Council, Devon County Council, Dorset County Council, East Devon District Council, Mendip District Council, North Dorset District Council, North Somerset Council, Sedgemoor District Council, Taunton Deane Borough Council, West Dorset District Council, Wiltshire Council)

Public information event venues, dates and times

A minimum of three public events will be held during the consultation period. These events will be located at strategic locations along the proposed route options. The venues will be chosen based on the suitability of the building, ease of access for all members of the local community, and available facilities.

The public events will be open from late morning until the early evening, with at least one event held at the weekend.

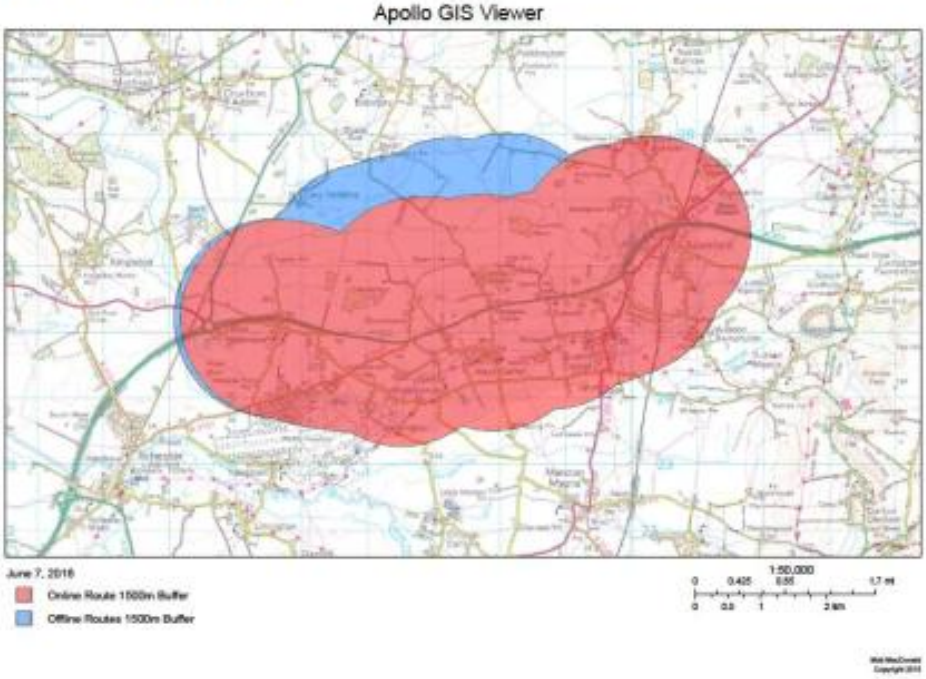
Date	Location	Time
Thursday 23 February 2017	Sparkford Inn, High Street, Sparkford, Yeovil, BA22 7JH	12.00 midday to 8.00pm
Saturday 25 February 2017	Queen Camel Memorial Hall, High Street, Queen Camel, Yeovil, BA22 7NF	10.00am to 8.00pm
Friday 10 March 2017	Davis Hall, Howell Hill, West Camel, Yeovil, BA22 7QX	10.00am to 8.00pm

Public information point locations

Consultation materials will be available to view at a number of venues and beyond the consultation zone. Materials available for viewing at these locations will include the consultation brochure and questionnaire for the proposed route options. Visitors will be able to take a copy of the consultation brochure and questionnaire away with them. All other materials will be available to view on the Highways England website - www.highways.gov.uk/Sparkford-to-Ilchester.

Public Information Points	
Wincanton Library, 7 Carrington Way, Wincanton, Somerset, BA9 9JS	Barrington Court, Barrington, Ilminster, TA19 0NQ
Yeovil Library, King George Street, Yeovil, Somerset, BA20 1PZ	Lytes Cary Manor, near Somerton, Somerset, TA11 7HU
South Petherton Library, St. James Street, South Petherton, Somerset, TA13 5BS	Montacute House, Montacute, TA15 6XP
Taunton Library, Paul Street, Taunton, Somerset, TA1 3XZ	Somerset County Council, County Hall, Taunton, Somerset, TA1 4DY
Martock Library, The Shopping Centre, Martock, Somerset, TA12 6DL	South Somerset District Council, Brympton Way, Yeovil, Somerset, BA20 2HT

Appendix 1.1 – Consultation zone map



Appendix B – Organisations invited to respond to the consultation

Organisation
Access for All
Associated British Ports
Avon and Somerset Constabulary
Babcary Parish Council
Bath & North East Somerset Council
Blackdown Hills AONB Conservation Board
British Gas
British Gas c/o ES Pipelines
British Gas Pipelines limited
British Horse Society
BT / BT Openreach
Cable and Wireless - Vodafone UK
Civil Aviation Authority
DEFRA
Devon & Somerset Fire & Rescue Service Headquarters
Devon County Council
Dorset CCG
Dorset County Council
Dorset Fire & Rescue Service Headquarters
Dorset LEP
Dorset Police
East Devon District Council
Easynet
EDF Energy
Energetics Electricity Limited
Energetics Gas Ltd
English Heritage
Environment Agency
EON UK
Equality Steering Group
ES Pipelines Ltd
Forestry Commission
Fulcrum Pipelines Ltd
Gas Transportation Company (GTC)
Heart of South West LEP
Historic England
Instalcom
Interoute (Ringway/Beach/51 degrees)
Joint Nature Conservation Committee
Line Search Before U Dig
LNG Portable Pipeline Services Limited

Local Transport Body
McNicholas
Mendip District Council
Musgrove Park Hospital
National Farmers Union (NFU)
National Grid Electricity Transmission Plc
National Grid Gas Plc
National Parks Authorities
National Trust
NATS En-Route (NERL) Safeguarding
Natural England
NHS Northern Eastern and Western Devon Clinical Commissioning Group
North Dorset District Council
North Somerset Council
Oli and Pipelines Agency
Orange / EE
Passenger Transport Executives (PTEs)
Public Health England
Queen Camel Parish Council
Railway Heritage Trust
Ramblers Association
Redstone Managed Solutions
RNAS Yeovilton
Royal Society for the Protection of Birds (RSPB)
Scotia Gas Network
Secretary of State for Defence
Sedgemoor District Council
Serco Group plc
Somerset CCG
Somerset County Council
Somerset Drainage Boards Consortium
Somerset Health and Wellbeing Board
Somerset Partnership NHS Trust
Somerset Wildlife Trust
South Somerset District Council
South Somerset Together (SST)
South West England - The Forestry Commission
South West Heritage Trust
South West Tourism Alliance
South Western Ambulance Service NHS Foundation Trust
Sparkford Parish Council
SSE
SSE Pipelines
Sustrans

Swindon & Wiltshire LEP
Taunton Deane Borough Council
The British Waterways Board - Canal and River Trust (Kennet and Avon Waterways)
The Coal Authority
The Crown Estate Commissioners
The Joint Nature Conservation Committee - Headquaters
The Marine Management Organisation
The Maritime and Coastguard Agency - Head Office
The National Grid
The Office for Nuclear Regulation
Traffic Master
Trinity House Maritime Navigation
UK Hydrographic
UK Power Networks (IDNO)
UK Power Networks Limited
Verizon UK Limited
Virgin Media
West Camel Parish Council
West Dorset District Council
West of England LEP
West Somerset District Council
Western Power Distribution
Wiltshire Council
Yeovil Hospital
Yeovilton Parish Council

Appendix C – Response Logs

PUBLIC CONSULTATION QUESTIONNAIRE RESPONSE LOG Theme: Scheme Junctions		
Theme Area	**Public Feedback**	**Highways England Response**
Design	To improve traffic flow we need flyovers at Hazlegrove, Podimore and Cartgate roundabouts.	The scheme proposals include grade-separation of traffic movements at Hazlegrove Roundabout. The scheme extent does not include Podimore or Cartgate roundabouts which would be subject of proposals in the future road investment periods to achieve the long-term commitment to creating a new Expressway to the South West.
Downhead and Howell Hill	Having seen the proposed plans at the roadshow in West Camel a few days ago, I am somewhat concerned that Option 1 has the location of a potential junction on the new A303 between Podimore & Hazlegrove. Whilst I accept that access to RNAS Yeovilton has to be considered, this must not be to the detriment of West Camel and other villages. On the map, it showed a potential new junction located between the Downhead and Howell Hill junctions. This will cause traffic to 'rat run' through West Camel to head south towards Sherborne. Bearing in mind that we are told that there will be no link between Plowage Lane and Howell Hill on the existing A303, this will mean that traffic will be forced to use Plowage Lane, Keep Street, Fore Street and travel through the	Option 1 has been selected as the preferred route. These comments are noted and will be considered during the development of the next stage of the scheme's design.

	centre of the village. This is a route that, in part, is single carriageway with no footpath and is prone to flooding up to 3 feet deep and has a narrow bridge with a weight limit on it - not a wise choice. The route exiting the village, southbound, would take this traffic to our infamous crossroad, a location already famed for the number of accidents.	
Downhead Junction	Can the existing carriageway not be widened to dual carriageway, making Downhead right turn only?	The existing carriageway has been assessed to determine if it could be widened by constructing two additional lanes alongside. It has been determined that the alignment of the existing carriageway is not of a sufficient safe standard to enable this. However the route of Option 1, now selected as the preferred route, closely follows the existing road, making use of the existing corridor as much as possible but enabling the development of a safe, 70mph alignment and avoiding adjacent property as much as possible.
Hazlegrove roundabout	Access to the new road should be provided at Hazlegrove.	This comment is noted and will be considered during the development of the junction and local road designs for Option 1, the preferred route.
Hazlegrove roundabout	For residents in Sparkford, South Barrow, North Barrow and surrounding villages access to A303 at Hazlegrove is important; removing this would increase traffic on smaller roads getting to alternative access points and increase journey times. This could have a major impact on those who use the A303 for longer commutes and make smaller roads more dangerous if usage is increased.	This comment is noted and will be considered during the development of the junction and local road designs for Option 1, the preferred route.

Hazlegrove roundabout	A flyover at Hazlegrove roundabout? A 60mph speed limit - keep the current Hazlegrove junction. It is not the "give way" onto the roundabout that causes the problem of traffic backlog, it is the subsequent two-way road (Hazlegrove to Podimore) with the bottleneck effect. Roundabouts on dual carriageways still work efficiently – e.g. other sections of the A303.	This scheme has been identified in the Government's Road Investment Strategy, which commits to creating a dual-carriageway Expressway to the South West via the M5 at Taunton. Expressway junctions will be largely grade-separated. The new dual carriageway is likely to be subject to the national 70mph speed limit for that type of road. Grade-separated junctions comprise a continuous dual carriageway through the junction, with entry and exit slip roads which facilitate the safe and convenient movement of traffic between the new dual carriageway and the local road network.
Hazlegrove roundabout	The existing junction at Hazlegrove is extremely hazardous - the majority of cars do not slow enough from the Wincanton exit and cross the roundabout towards Ilchester at still high speed, with little or no indication as the natural exit looks like the A359 towards Yeovil. I hope this can be vastly improved in line with the dualling/upgrade.	Option 1 has been selected as the preferred route and plans to improve the Hazlegrove junction will be included as part of ongoing development of the scheme.
Junctions	I believe the current plan with Option 1 is to have a large, complicated junction just to the north of West Camel, and to close the Downhead junction altogether. This would also involve making a road up over the hill destroying what is currently a bridle way known as Slate Lane. This seems ridiculous.	Option 1 has now been selected as a preferred route. The comments regarding the Downhead Lane Junction and Slate Lane are noted and will be taken into consideration during the next stage of scheme development.
Junctions	I cannot believe there would be no Sparkford junction with the new A303	It is proposed that there will be a grade-separated junction at Hazlegrove, which will accommodate access to Sparkford. Further details will be provided at the next consultation stage.

Junctions	Junction layouts need to discourage rat running, in particular HGVs.	Highways England is committed to creating a network that works for adjacent communities as well as longer distance traffic. The aim of avoiding rat-running through adjacent communities will be to the fore in the development of the scheme proposals.
Local connectivity	We are also concerned that people with no connection to the village might override the interests of the local populations of Queen Camel, West Camel, Wales, Urgashay and Bridgehampton.	This concern is extremely pertinent and one of the reasons why Highways England undertakes Public Consultation early in the development of the scheme. The concern will be taken into account as part of the ongoing scheme development and the design proposals presented at the next consultation stage.
Local traffic	Need to consider alternative future provision for cyclists and agricultural vehicles to enable the route to be of expressway standard.	Walking, cycling and riding routes will be facilitated by safe and reliable crossings of the expressway. The safe movement of agricultural vehicles will also be accommodated. Associated proposals for rights-of-way enhancements and agricultural movements will be presented at the next consultation stage.
Podimore roundabout	Various comments expressing frustration that the scheme does not expressly deal with the problem of the Podimore roundabout which is central in the route being considered.	An upgrade of the Podimore Roundabout is part of the Government's planned programme of improvements, contained in its Road Investment Strategy, for upgrading the A303/A358 corridor to a dual carriageway expressway. However it is not part of this scheme; instead it is due to be brought forward in future road investment periods.
Queen Camel Bottleneck	The bottleneck at Queen Camel (A359) should also be looked at	This comment raises an issue that is outside the scope of this project. The A359 through Queen Camel is part of Somerset County Council's road network.
Steart Hill access	Access to and across the A303 at present is less than satisfactory from Steart Hill by reason of it being necessary to cross two opposite direction lanes of traffic that are often busy. Were the scheme to provide for some easier access and egress, that would be welcome.	This comment is noted and will be considered during the next stage of the preferred route's development.

Theme: Buildability and Construction		
Theme Area	**Public Response**	**Highways England Summary**
Buildability	Option 2 is more likely to be built to good design standards, unlike Option 1 which will most likely be riddled with relaxations and departures from standard to "make it fit".	The relative merits of Options 1 and 2 have been carefully weighed as set out in the Scheme Assessment Report, with Option having been chosen as the preferred route. Option 1 can be and will be designed to safe expressway standards. This will be demonstrated when the design proposals are presented at the next consultation stage.
Buildability	Option 2 - Easier to construct as away from the existing A303 - only requires joining at each end. Trying to construct a new road along much of the old A303 would lead to traffic chaos and congestion on local roads as and when the A303 would need to be closed. The old A303 would become a useful local road / amenity with the new road taking all the through traffic away farther to the north.	When selecting the preferred route, a number of factors are weighed, including the scheme objectives, benefits, safety, costs, environmental effects, construction and impacts on local communities. From weighing the relative merits of Options 1 and 2, Option 1 has emerged as the preferred route. A construction management plan will be developed in liaison with Somerset County Council to ensure that construction impacts are minimised. The existing A303 will be kept open throughout construction, for traffic to be kept moving with minimum disruption. Associated details will be presented at the next consultation stage.
Construction	How would traffic be kept moving during construction? our side roads are not suitable for diversions involving HGV's.	A traffic management plan will be produced to minimise the impact of construction on road users and local journeys during construction. The local highway authority and emergency services will be involved, with the agreed associated measures being designed and controlled to avoid traffic (including HGVs) being diverted to unsuitable local roads. More detail will be presented at the next consultation stage.
Ease of construction	Option 2 - Quicker and less expensive. Downhead will be reconnected in a much less isolated way. Reduce construction time and reduce inconvenience during the construction. Is it quicker and less expensive?	Relative costs and ease of construction have been taken into consideration in the comparative assessments of Options 1 & 2, as set out in the Scheme Assessment Report. With Option 1 having been chosen as the preferred route, the accompanying scheme design will secure the existing A303 remaining in use to serve local traffic. Details will be presented at the next consultation stage.

Theme: Highways Design		
Theme Area	**Public Response**	**Highways England Summary**
Bridges and underpasses	Where will bridges and underpasses be? It wasn't clear from the consultation. Detail will be refined at later design stages.	The purpose of the consultation was to inform the public about the scheme at an early stage of its development and to obtain feedback that could help to inform the choice of preferred route. Now that Option 1 has been chosen as a preferred route, the design of the scheme will be progressed to clarify the design proposals for features including bridges and any underpasses, and the associated details will be presented at the next consultation stage.
Congestion	Only occurs on Friday and Saturday evenings in the summer due to London and SW holiday traffic.	Peak traffic levels along the A303 at West Camel are observed during holiday periods, but analysis shows that westbound Friday pm peak traffic flows in March reach similar levels to an August Friday albeit over a shorter part of the day. As traffic grows over time then congestion will increase during the working week as well as during holiday periods. The full range of differing traffic flows at different times of the year will inform the design of the scheme.
Design	Whoever suggested upgrading Slate Lane to a highway to connect Downhead. To find such a proposal reaching an approval stage where it is published in a technical assessment raises the issue as to whether the current consultants are worthy of being retained or paid out of public funds.	These proposals will not reach approval stage before Summer 2018 when Highways England plans to submit their application for a Development Consent Order. Until that stage the design proposals will be subject to review and improvement to ensure the best solution is reached.
Design	It's not entirely clear whether the new A303 would use the present one and widen it?	Although the chosen preferred route (Option 1) new dual carriageway will follow the existing road corridor, it is unlikely much of the existing road will form part of the new dual carriageway as the alignment is not of a sufficient standard to be adopted for high speed (70mph) use. The extent to which the existing A303 will remain in use for local traffic will be made clear at the next consultation stage.
Design	Many comments about concern of a 6 lane highway being built. Please explain/confirm about junctions and dual carriageway.	This scheme is part of the Government's strategy to create a dual carriageway Expressway to the South West, with 2-lanes on each carriageway. Junction layouts will be developed and presented at the next consultation stage.

Design	If Route 2 is preferred, then what would happen to the corridor of land between the Route 2 and the existing A303? Would it be open to further development i.e. commercial or residential?	Option 1 has been chosen as the preferred route, so the basis of this question does not arise.
Design	How do you consider the impact on local villages when deciding on new junctions to be created?	Highways England is committed to creating a network that works for the local communities as well as longer distance traffic. Accommodating local traffic movements safely and efficiently will be integral to optimising the design of the new junctions, as will accommodating safe walking, cycling and equestrian movements. Details will be presented at the next consultation stage.
Design	Option 1 goes close by many residential properties, which is not good for the residences health and wellbeing. Option 2, although longer, does not have a steep uphill climb and has none of the above disadvantages (ref to residences health and wellbeing).	Health and well-being is a key consideration for Highways England and has been taken into account in the overall comparison of the relative advantages and disadvantages of the two options, leading to the choice of Option 1 as the preferred route. The overall assessment is presented in the Scheme Assessment Report which can be found on the scheme website.
Lighting	Option 2 will also bring noise and light pollution to a large population which at present has none i.e. the villages of Babcary, Foddington and South Barrow and outlying houses and farms.	These considerations have fed into the assessment (set out in the Scheme Assessment Report) which has led to Option 1 being chosen as the preferred route.
Local roads	Access: How would I access from the junction of Howell Hill and Steart Road?	The details of how access will be provided to all local destinations and facilities will be presented at the next consultation stage.
Local roads	Access of local facilities: How would access to Queen Camel via Gason Lane or Steart Hill be available?	The details of how access will be provided to all local destinations and facilities will be presented at the next consultation stage.

Local roads	Traits Lane is a single track road as are all of the adjoining roads which are used by agricultural vehicles any increase in traffic would be dangerous and cause significant congestion.	This comment is noted and will be considered during the next stage of the scheme's development.
Option 1 traffic	Option 1 would increase the traffic flow (rat run) via Downhead and Keep Street as Howell Hill would not be available for traffic travelling between Somerton and Sherbourne.	Access to Howell Hill will still be available with Option 1. It is not anticipated that the scheme will cause an increase of traffic on Keep Street, but the implications for local traffic movements will be clearly presented when the scheme details are presented at the next consultation stage.
Option 2	Option 2 pref - My decision is from a safety point of view. If Option 1 is decided upon I understand that Gason Lane and Traits Lane (Eyewell Lane) may be blocked off. What guarantee would you have to prevent travellers stopping at the top of these lanes?	There will be no stopping-up of local roads without there being satisfactory alternative means of accommodating local traffic movements. Relevant details will be made available at the next consultation stage.
Option 2 Access	Option 2: No access to road between Podimore and Sparkford, thus removing the Road Investment Strategy of accidents from joining traffic.	Option 1 has been selected as the preferred route. Access between the proposed dual carriageway and local roads to Podimore and Sparkford will be designed to ensure the safety of traffic making these journeys.
Options	Whilst I can see that, from the technical report, there is little difference between the two options, on balance I prefer Option 2. My reasons: It is more cost effective to the exchequer - which, as a tax payer, is an important consideration. During the period of construction it will, in my view, lead to far less disruption and will ensure a much smoother transition from the old to a new route at point of changeover. Once complete, should there be an accident on the new route (Option 2) it will lead to a	These considerations have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website.

	shorter recovery route for diverted traffic. Plus the old route will provide a natural relief route should there be an issue. Whereas, an accident on Option 1 would probably cause traffic to divert through our village which would be very unpleasant. As a walker - Option 2 will make my access to the areas I currently walk in on the north side of the current A303 much safer than is currently the case and make my life safer and more enjoyable. Whilst there will be winners and losers for both routes - from a noise pollution perspective - there will be a net benefit for more people via Option 2 - though not a main consideration this will be a life improvement for more people than Option 1.	
RNAS Yeovilton	There should be a new road linking the Podimore roundabout with RNAS Yeovilton. This would then take that traffic off the feeder road and give a quicker and more appropriate access into RNAS Yeovilton. Is this a local authority question - out of scheme scope?	While a new road linking Podimore roundabout with RNAS Yeovilton is not part of the scope of this scheme, we will work with the local highway authority to ensure this scheme does not have a negative impact on the local road network.
Safety	The roundabout at Sparkford is also an accident black spot. Vehicles have been travelling westbound on dual carriageway up to 70 mph for a considerable time. Suddenly they are thrown on to a roundabout that looks large and negotiable at speed. However the westbound exit of the A303 narrows and many lorries have failed to negotiate it. The speed traffic entering the roundabout presents a major	The scheme proposes a new grade-separated junction to replace the existing Hazlegrove Roundabout which will be designed to accommodate safe movements of through traffic and local traffic. Details will be presented at the next consultation stage.

	risk for those coming from Hazlegrove school entrance and the entry from Sparkford village.	
Scheme scope	Should the scheme not extend the dualling from S Petherton to the Ilminster/A358 junction - the existing single carriageway/single-dual lane section between these points is a much a bottleneck as the section between Sparkford and Ilchester.	Dualling the A303 from S Petherton to Ilminster is part of the Government's planned programme of improvements, contained in its Road Investment Strategy, for upgrading the A303/A358 corridor to a dual carriageway expressway. However it is not part of this scheme; instead it is due to be brought forward in future road investment periods.
Traffic	Traffic on this stretch frequently crawls along behind slow vehicles, although' another problem is traffic ignoring the speed limit. When approaching the Plowage Lane route to the village from the West one has to sit in the middle of the two lanes of traffic for what seems like ages, being buffeted by the wind from high sided vehicles in both directions. Turning right (eastwards) from the same junction is frequently hazardous as one has to negotiate both directions of traffic for a gap but also traffic coming from Downhead turning right and left onto the 303	This comment is noted and is one of the problems being addressed by the scheme.
Traffic Flow	Seems to give a better traffic flow for the heavy through flow on the new A303 and for local traffic and roads surrounding.	This comment is noted and is one of the many reasons why this scheme has been prioritised in the Government's Road Investment Strategy.

Non-motorised Users	Ensure there are well designed, safe, convenient crossing points for cyclists.	This is a fundamental aim of the scheme. Relevant proposals will be presented at the next consultation stage.
Non-motorised Users	I do want equestrian routes to be considered.	This will be considered during the ongoing development of the scheme, with details presented at the next consultation stage.
Non-motorised Users	The last few years footpaths have been blocked to discourage walkers and Downhead Lane hedges removed which is a shame as this is a lovely area.	Facilitating the use of existing footpaths intercepted by the A303 will be a key consideration in developing the scheme proposals for accommodating safe rights-of-way movements. Details will be presented at the next consultation stage.
Non-motorised Users	This junction is far too dangerous to use currently, there are bridleways over the A303 going into Babcary but I wouldn't want to cross here with a car let alone a horse.	Facilitating the use of existing bridleways intercepted by the A303 will be a key consideration in developing the scheme proposals for accommodating safe rights-of-way movements. Details will be presented at the next consultation stage.
Non-motorised Users	Option 2 would require up to 11 bridges to satisfy severance of Non-Motorised Traffic and all vehicular traffic.	Option 1 has been selected as the preferred route. Option 2 will not be progressed further.
Non-motorised Users	Option 2 will be easier to construct and avoids potential increased adverse effects on the properties adjacent to the existing A303. Option 2 as a completely new off-line route is also easier to make compatible with the aspiration for Expressway status, with less junctions and (perhaps) higher standard of alignment, not compromised by following existing A303. Option 2 with the complete retention of the existing A303 provides access for NMUs, local traffic and slow moving vehicles (e.g. horse drawn vehicles, agricultural traffic) whereas Option 1 does not - at least this level of detail isn't shown.	These considerations have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. Facilitating safe motorised and non-motorised local movements will be a key consideration in developing the scheme proposals further. More details will be presented at the next consultation stage.

	As prohibition of these types of users is a core Expressway requirement it isn't obvious how Option 1 can be compatible with Expressway requirements, unless a separate local access road is provided (based on the maps being from Howell Hill to the north of Gason Lane?), otherwise the prohibited users would face lengthy diversions which legally may not be a sustainable position?	
Non-motorised Users	At the moment as soon as the current stretch of A303 gets busy or delayed due to accident all of the traffic via sat nav attempts to come through Wales, this is a single track country lane that has lots of walkers and cyclists, we have no bridleways here either and we cannot ride safely due to traffic speeding through the village trying to find an alternative route.	This comment is noted. Consideration of how the scheme can best interact with the local road network will be integral to developing the best solution for local communities and longer distance traffic. Accompanying details will be presented at the next consultation stage.
Non-motorised Users	Although I do support option 2, I feel it would be important to install safe animal crossings, under or over the road.	Option 1 has been selected as the preferred route, and will be designed having consideration to this point.
Non-Motorised Users	It would impact on 2 byways, 4 restricted byways, 60 footpaths, one national cycle route.	Facilitating the use of existing rights-of-way intercepted by the A303 will be a key consideration in developing the scheme proposals for maintaining and accommodating safe rights-of-way movements with the scheme in place. Details will be presented at the next consultation stage.
Non-Motorised Users	As a dog walker who likes to walk in the Downhead and Steart Hill area, crossing the road (at either point) often feels like I am taking my life into my hands. It is high time the route is improved to a dual carriageway and access to the route from	Facilitating safe pedestrian movements intercepted by the A303 will be a key consideration in developing the scheme proposals moving forward. Details will be presented at the next consultation stage.

	our village (West Camel) improved from a safety perspective.	

Theme: Local Community		
Theme Area	**Public Response**	**Highways England Summary**
Equality and diversity	How will the needs of disabled and elderly drivers, passengers or pedestrians will be properly taken into account?	Highways England has recently published its Accessibility Strategy, which can be viewed online at https://www.gov.uk/government/publications/highways-englands-accessibility-strategy. Option 1, the preferred route, will be developed in line with this strategy.
Future Development	It will allow ribbon development along the existing road, bring services and jobs to the area and provide extra rest facilities for users of the A303.	This comment is noted although Highways England would make two points of clarification. Firstly, Highways England does not have any plans to promote development within this corridor of land. Any development beyond the scope of this strategic road project would be a matter for the local planning authority, South Somerset District Council. Secondly, there are no proposals to provide additional services facilities because there is nearby provision at the Podimore Junction.
Landholders	It would leave a strip of farm land marooned between two major roads, difficult to access and to farm.	We have begun consultation with affected land-owners and these discussions will continue to ensure that the scheme impacts are fully understood, with access being provided as necessary.
Landholders	The map for Option 2 provides no information on how landowners gain access to the cut-off fields. Can you confirm design approach to this?	Option 1 has been selected as the preferred route. Consultation with individual land-owners along the route has already begun and this will continue to ensure any impacts on land that is directly affected by the construction of the road are properly mitigated. In the case of direct accesses, it is likely that access to plots of land will need to be re-provided from the nearest junction or local road.
Local Businesses	Option 1 will help sustain the businesses that lie along that section of the A303 and rely on the passing traffic.	Option 1 has been selected as the preferred route and this point will be taken into consideration as part of the ongoing scheme development.
Local connectivity	Option 1 is an established route along where people live with proper provision for local road access.	Option 1 has been selected as the preferred route and these concerns will be taken into consideration as part of the ongoing scheme development.
Local Connectivity	Option 1 is far better, as long as you can still have access to Babcary and Queen Camel via a new junction. This is very important.	Option 1 has been selected as the preferred route. This comment is noted and will be considered during the next stage of the scheme's development.

Local impact	Less disruption: Residents of West Camel. Exiting A303. Less noise and pollution. Less properties affected, less intrusive. Local roads: keep the flow of commercial, holiday and passing traffic to the north and predominately away from local roads. Free up local roads for local purposes. Correct?	Option 1 has been selected as the preferred route. The scheme proposals will provide a modern dual carriageway serving both longer distance and local traffic. The concerns raised will be taken into consideration as part of the ongoing scheme development. The developed scheme proposals will then be presented at the next consultation stage.
Local impact	Option 2 will take the traffic away from the local village of West Camel. Construction would also be possible with less disruption and chaos to the current traffic flow.	These considerations have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website.
Local impact	Less traffic through Queen Camel	Option 1 has been selected as the preferred route. The current traffic model shows that there would be less vehicles on an average day going through Queen Camel of around 500 in 2022 and around 1000 in 2037. These figures will be updated at the next consultation stage.
Local impact	I would like more information on how traffic flow disruption would be minimised. Podimore roundabout dangerous when traffic for A37 comes against waiting traffic at the lights for A303 - widening lanes here would make it safer.	An upgrade of the Podimore Roundabout is part of the Government's planned programme of improvements, contained in its Road Investment Strategy, for upgrading the A303/A358 corridor to a dual carriageway expressway. However it is not part of this scheme; instead it is due to be brought forward in future road investment periods. More information of traffic flows relating to the assessment of this scheme will be presented at the next consultation stage.
Local impact	Option 2 would impact on the local farming community, hamlet, local communities and local businesses.	Option 1 has been selected as the preferred route and consideration of such impacts will continue to inform the ongoing scheme development. More information will be presented at the next consultation stage.
School access	Impact on the local school and local roads accessing the school	We have already begun engaging with Hazlegrove School, with access arrangements being determined during scheme's ongoing development. Details will be presented at the next consultation stage.

Theme: Public Consultation		
Theme Area	**Public Response**	**Highways England Summary**
Consultation	How much extra money has been spent having yet another consultation? This was all done very comprehensively 10 years ago and nothing has changed since then.	Things have changed, with the scheme now being promoted as part of the Government's strategy to create an expressway to the South West for example. The planning process has also changed through the introduction of the Development Consent Order process (under the Planning Act) being applicable to nationally significant infrastructure projects, which this scheme is. The large bank of knowledge gathered from previous iterations of the scheme has also helped to inform the options presented for consultation, and will continue to help the ongoing development of the scheme.
Funding	What assurances do we have that the next gov't will continue this project, or will it be yet another waste of money/ time. This is after all - what - the third proposal in 15 years.	The scheme is part of the Government's strategy to create an expressway to the South West. Without the scheme, and the others like it on the A303 corridor, the strategy would be called into doubt.
Consultation	I wish to register my major concern is with Highways England and their lack of information and openness in their public consultation meetings, with stakeholders, Councillors and with the public alike. This fuels uncertainty and fear and does not allow a reasoned decision to be made. The lack of openness with information, that is said not to exist yet is to be found in the Technical Appraisal Report, needs to be addressed.	Highways England seeks to be completely open about its proposals. The consultation was carried out at an early stage in the scheme's development, when limited information is available, specifically to provide the opportunity to offer their views on what they would like the scheme to be before details become fixed. Option 1 has now been selected as a preferred route and another round of consultation will be carried out when more detailed information will be available, enabling the public to offer their views on those more detailed proposals. The information supporting the choice of Option 1 as the preferred route can be found in the Scheme Assessment Report available on the scheme website.
Consultation	The lack of detailed plans/maps when compared to those available back in 1991 warrants further investigation. The removal of information published on websites is also	Information that was made available at the public enquiry in 1991 was different compared to that which was made available at the public consultation this year as the scheme was then at a later stage in its development with much more information available. In terms of removal of information from websites, all the consultation material can still be viewed here: https://highwaysengland.citizenspace.com/he/a303-sparkford-

	a concern which is unprofessional and can be seen as dishonest.	to-ilchester/. In addition, the website has also been updated to include information supporting the decision-making on the preferred route, including this Report on Public Consultation and the Scheme Assessment Report. Moving forward, the next stage will be a further consultation with more detailed information available for the public to comment on.
Government policy	Option 2 Does not fit in with current government policy to: -Protect undeveloped land, and favour the use of existing brownfield or already developed land. -Protect the environment -Protect the landscape -Protect heritage, archaeological and historical assets	The scheme is part of the Government's strategy to create a dual carriageway expressway to the South West. Its compliance with other relevant policies will continue to be assessed during its ongoing development and promotion through the planning process to secure the necessary Development Consent Order.
Past proposals	In 1993 The Department of Transport concluded that Option 1 was the decided route. In 2003 The Highways Agency concluded that Option 1 would also be the route. What is different now? The brochure states that the proposed works will take 2.5 - 3 years to construct. Why would it take so long when the 1993 brochure states that the work for the chosen option (option 1) would take 15 - 18 months. Why would it take double the length of time 25 years later?	Many things change over the years, such as environmental designations, flood zones, traffic volumes, and highway standards, meaning the old design cannot simply be dusted off and re-used. In addition, the planning process has changed for schemes of this nature which are deemed to be nationally significant infrastructure projects. The options have been re-assessed, as set out in the Technical Appraisal Report and Scheme Assessment Report, and Option 1 has emerged as the preferred route. The construction duration is a conservative estimates at present, and will be reviewed when the scheme has been developed to a more advanced stage, with more detail available of what is to be constructed. More information will be presented at the next consultation stage.

Theme: Environment		
Theme Area	**Public Response**	**Highways England Summary**
Noise	Option 2 It would increase the traffic noise in Babcary, South Barrow and the surrounding areas.	Option 1 has been selected as the preferred route, but potential noise impacts will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. Related details will be presented at the next consultation stage.
Countryside	It will ruin Camel Hill Farm, Vale Farm, Steart Hill Farm and Downhead Manor Farm plus a number of small holdings. Additionally it would also of course go through Paddle Wood, Yarcombe, the Old Pheasant Pen at Steart, and the Hunt coverts of Cogberry and Annis Hill.	These considerations have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. Such considerations will also continue to inform the ongoing development of the scheme moving forward.
Air quality	It will be taking a major road away from a residential area reducing air pollution. How will the air quality change?	Air quality impacts will be assessed, along with all other environmental impacts, during the ongoing development of the scheme. The assessments will inform the detailed design proposals and accompanying mitigation measures. Further information on changes to air quality will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.
Archaeology	Valley is full of archaeology. The oldest map in Somerset is from 1573, and shows Camel Hill Farm and Hazlegrove Park. Many of the field names and boundaries are the same now as they were then. There has been no archaeological investigation on this route, unlike Route 1.	Option 1 has been selected as the preferred route, but potential archaeological/heritage impacts will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. Related details will be presented at the next consultation stage.
Environmental factors	Route 2 less impact on quality of life (Noise, Pollution) for villagers from	These considerations have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led

	Podimore, West Camel, Queen Camel and Sparkford	to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website.
Environmental factors	At the consultation evening in Babcary one of your representatives confirmed that there would not be enough spoil generated to build screening bunds along the new route so this is a major concern as Babcary and its environs are a very quiet area.	The environmental assessment process and landscape design works are ongoing. Landscape, visual and noise effects will be fully assessed, with appropriate mitigation developed to minimise adverse effects, such as through the provision of bunds which would have an acoustic and landscape function, acoustic fences and planting. The design will be sensitive to each locality, and any necessary mitigation measures will be included as part of the scheme proposals. More details will be presented at the next consultation stage.
Environmental Impact Assessment	Has an Environmental Impact Assessment been conducted on both options? Biodiversity and wildlife population and activity are seasonal so a short time period would provide inaccurate information.	Sufficient environmental assessment has been undertaken to inform the comparison of both options as set out in Scheme Assessment Report which can be found on the scheme website. A full environmental impact assessment will be carried out on the proposals for Option 1, as the selected preferred route, as part of its ongoing development. Further preliminary information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.
Environmental studies	Some time ago the A303 improvements from Sparkford to Mere were carried out along virgin countryside and I do not recall the various landowners petitioning that it should follow the existing A303 route for biodiversity reasons. What studies have been carried out on the long-term impact on dualling such roads? Is it possible that some species may be better protected along the shoulders of such roads?	These considerations will be informed by the ongoing environmental impact assessment for Option 1 as the chosen preferred route. In terms of biodiversity and wildlife, the work to date has included a habitat survey which provided a high-level overview of the existing habitats and the types of species they have the potential to support. Further ongoing work includes surveys for bats, badgers, dormice, great crested news, birds (including barn owls), reptiles, otters and watervoles, all of which are seasonally constrained. We are undertaking the protected species surveys at the most optimal survey windows, for the length of time stated in guidance, to ensure the survey results are robust. We will also undertake a full arboricultural survey. The results will feed into the ongoing environmental impact assessment work. Preliminary information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.

Farmland	Farmland. Can you include the work we have / are and will undertake	The assessment work undertaken to date has been reported in the Technical Appraisal Report and Scheme Assessment Report, both of which can be found on the scheme website. The continuing assessment will include Agricultural Land Classification (ALC) surveys, and will allow the development of appropriate mitigation measures to reduce any adverse effects. More information will be made available at the next consultation stage.
Flood Risk	Option 1 is further from the flood risk, providing greater resilience to climate change.	Option 1 has been selected as the preferred route, but potential flood considerations will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. Related details will be presented at the next consultation stage.
Flooding	Can you include the work we have / are and will undertake	The potential flooding impacts associated with the construction and operation phases of the scheme are being assessed as part of the ongoing environmental impact assessment. We will produce a detailed Flood Risk Assessment (FRA) on the preferred Option 1, and an associated drainage design which will ensure that flood risk is not increased by the scheme. This will be managed through the implementation of an appropriate drainage strategy - such as through the use of balancing ponds, drainage ditches, pipes and gulleys - to ensure that the scheme does not increase the susceptibility of the local area to flooding. More information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.
Flooding	Pref op 2 - Flood risk - on the 13 December 2008 and 4 January 2014 run off from the A303 inundated houses on in West Camel. The houses affected by this pluvial event are a couple of metres above the recognised floodplain and as such the owners were unprepared for their properties flooding. Any increase in the road surface area on Camel Hill will increase the effect of future pluvial flooding events in West Camel would only be exacerbated by adopting Option 1. The orographic effect Camel Hill has on the prevailing south westerly warm moist air	The scheme will be designed and constructed to ensure it does not give rise to any increase to the risk of flooding. This will be managed through the implementation of an appropriate drainage strategy - such as through the use of balancing ponds, drainage ditches, pipes and gulleys - to ensure that the scheme does not increase the susceptibility of the local area to flooding. More information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.

	blowing over the area exacerbates the effect of excessive rainfall and adds to the flooding threat to the south of the hill.	
Flooding	Run-off water concerns what will happen to the run-off water as we already suffer with flooding (Resident lives at Church farm barn. Podimore)	Following the choice of Option 1 for the preferred route, the scheme will be designed and constructed to ensure it does not give rise to any increase to the risk of flooding. This will be managed through the implementation of an appropriate drainage strategy - such as through the use of balancing ponds, drainage ditches, pipes and gulleys - to ensure that the scheme does not increase the susceptibility of the local area to flooding. More information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.
Flooding	The Environment Agency Flood Zone maps do not reflect this reality. By how much will the new road need to be raised up and at what cost?	
Flooding	I have heard mentioned in the presentations that tanks, ponds and run-off into the Dyke Brook will be built with Option 2, some 0.5 metre above the level of Steart Lane. This is a farce and fails to address primary concerns.	
Flooding	Where will the run off go? What will be done to prevent the existing flooding of Steart Lane from becoming worse? How much will the new road need to be raised to avoid this?	
Habitat	Option 1 has less impact on the wildlife: deer, foxes, adders and grass snakes, slow worms, owls, buzzards, kites, sparrow Hawks.	Option 1 has been selected as the preferred route, but potential impacts on wildlife will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. Related details will be presented at the next consultation stage.
Heritage	NPPF there is a duty on the decision taker to assess the significance of the heritage asset and to ensure that any harm to its significance is outweighed by public benefits. Quite clearly a scheme that reduces harm (option1) should be favoured to one that creates a much more	Option 1 has been selected as the preferred route, but potential heritage impacts will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. Related details will be presented at the next consultation stage.

	destructive impact on the heritage asset (this being option 2).	
Land grade	In addition the route of Option 2 is Grade 2 and Grade 3 land (though it does not state whether Grade a or b, crucial as Grades 1 to 3a are classed as Best and Most Versatile Land) which should be preserved for agricultural use.	This consideration has fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website.
Land impact	We are very concerned about water run-off from new road onto our fields at Stockwich if option 1 is used.	Following the choice of Option 1 for the preferred route, the scheme will be designed and constructed to ensure it does not give rise to any adverse impacts from water run-off. This will be managed through the implementation of an appropriate drainage strategy - such as through the use of balancing ponds, drainage ditches, pipes and gulleys. More information will be presented at the next consultation stage.
Light pollution	Light pollution. Can you include the work we have / are and will undertake	The assessment work undertaken to date has been reported in the Technical Appraisal Report and Scheme Assessment Report, both of which can be found on the scheme website. Moving forward, light pollution will be part of the ongoing environmental impact assessment of the scheme during its continuing development. Further preliminary information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.
Long term impact	It would appear to have less long term effect on the life's of humans, animals and flora and fauna which we must take into serious consideration.	As part of the ongoing environmental impact assessment process, we are assessing potential impacts associated with flora, fauna and the local community. This will include a detailed assessment on Human Health and Wellbeing. Mitigation measures will be included as part of the scheme proposals to ensure that any adverse environmental effects are avoided or reduced. Further preliminary information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.

Loss of landscape	It would impact on registered parkland and ancient woodland, apart from destroying the landscape value as the Zone of Theological Visibility demonstrates.	This consideration has fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. Moving forward, the potential impacts will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. Related details will be presented at the next consultation stage.
Noise	Noise. Can you include the work we have / are and will undertake	The assessment work undertaken to date has been reported in the Technical Appraisal Report and Scheme Assessment Report, both of which can be found on the scheme website. Moving forward, noise impacts will be part of the ongoing environmental impact assessment of the scheme during its continuing development. Further preliminary information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.
Noise	Use off: Noise prevention slopes etc. should be used to keep as much noise as possible from housing villages Option 1 in particular would require this if this were the chosen option Option 2 makes better use of uninhabited areas and is therefore my favoured option.	Noise impacts have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. Moving forward, the potential impacts will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts, such as the inclusion of earth mounds or noise barriers if appropriate. Related details will be presented at the next consultation stage.
Noise	Option 1 seems messy with too many roads crossing underneath. If the 303 (old one) Is retained with the new, the noise will be deafening - also being on high ground the noise will carry for miles. Noise impact?	Noise impacts have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. Moving forward, the potential impacts will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts, such as the inclusion of earth mounds or noise barriers if appropriate. Related details will be presented at the next consultation stage.
Noise	Try to create noise breaks when building the road, the existing A303 Sparkford By-pass is heard distinctly in South Barrow. How can this be mitigated?	

Noise impact	By locating the dual carriageway on the low ground to the north of Howell Hill the prevailing south westerly winds will carry the road/traffic noise away from the main residences at Downhead, Steart Hill and West Camel.	This comment is noted. Noise impacts have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. Moving forward, the potential impacts, including the effects of the prevailing wind, will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts, such as the inclusion of earth mounds or noise barriers if appropriate. Related details will be presented at the next consultation stage.
Noise impact	All effort must be made to achieve maximum possible road noise reduction to local residents.	Noise impacts have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. Moving forward, the potential impacts will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts, such as the inclusion of earth mounds or noise barriers if appropriate. Related details will be presented at the next consultation stage.
Noise impact	Option 2 Significantly reduces noise pollution in the local villages.	
Noise mitigation	Incorporation of bunding or noise attenuating structures along the roadside past Podimore.	
Option 2 Noise	Option 2 - Noise from the road will travel northwards towards the village of Babcary?	Noise impacts have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. Moving forward, the potential impacts will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts, such as the inclusion of earth mounds or noise barriers if appropriate. Related details will be presented at the next consultation stage.

Noise impact	Planting of trees alongside the carriageway, as near Tintinhull further to the west, will help minimise the noise impact during northerly winds.	Noise impacts have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. Moving forward, the potential impacts will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts, such as the inclusion of earth mounds or noise barriers if appropriate. Related details will be presented at the next consultation stage. Tree planting will be considered, but in itself will do little to minimise noise impact without it being a substantial area of dense woodland.
Planting	Plant proper trees each side of the new carriageway and take that planting to the existing dual carriageway towards Mere.	A landscape design is currently being progressed as part of the environmental assessment work. Planting will be proposed to minimise adverse landscape and visual effects and integrate the scheme into the surrounding landscape. Related details will be presented at the next consultation stage.
Noise and pollution	The A303 Option 2 would bring increased noise, light and unacceptable levels of air pollution to the residential areas of Babcary and Foddington.	Option 1 has been selected as the preferred route, but potential environmental impacts, including noise, lighting and air quality, will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. Related details will be presented at the next consultation stage.
Pollution	Option 2 would bring noise and light pollution to our village (Babcary).	
Quiet tarmac	Quiet surface use. Complete the quiet tarmac project that was started two years ago. It was supposed to cover the whole road from Mere but patches were left which means the A303 noise at south and north Cadbury is as bad as it ever was.	The choice of surfacing will be determined in due course, taking into consideration the need to avoid creating unacceptable levels of traffic noise in the vicinity of local communities and amenities.
Road surface noise	It should be done in quiet tarmac, as the entire road should be. The noise from cars on dual carriageways is horrendous.	The choice of surfacing will be determined in due course, taking into consideration the need to avoid creating unacceptable levels of traffic noise in the vicinity of local communities and amenities.
Scheduled Monument	This site is also home to an undisturbed Scheduled Monument which would be	Option 1 has been selected as the preferred route, but potential heritage impacts will continue to be assessed and will inform the more detailed design proposals for the

	adversely affected by a main road passing within 100m.	scheme, with accompanying mitigation to avoid or reduce impacts. Related details will be presented at the next consultation stage.
Sparkford Vale	Option 2 would have a severe and damaging impact on the farmland and scenery of the Sparkford Vale, both visually and in terms of noise and pollution.	Option 1 has been selected as the preferred route, but all potential environmental impacts, including on the landscape and affected farmland, will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. Related details will be presented at the next consultation stage.
Sparkford Vale	Option 1 will damage the Sparkford Vale less	
Wildlife	Wildlife. Can you include the work we have / are and will undertake	The assessment work undertaken to date has been reported in the Technical Appraisal Report and Scheme Assessment Report, both of which can be found on the scheme website. Moving forward, impacts on wildlife will be part of the ongoing environmental impact assessment of the scheme during its continuing development. Further preliminary information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.
Woodland	Woodland. Can you include the work we have / are and will undertake	The assessment work undertaken to date has been reported in the Technical Appraisal Report and Scheme Assessment Report, both of which can be found on the scheme website. Moving forward, impacts on woodland will be part of the ongoing environmental impact assessment of the scheme during its continuing development. Further preliminary information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.

Letter comments from organisations

PUBLIC CONSULTATION – LETTERS FROM ORGANISATIONS RESPONSE LOG		
Organisation	**Organisation comments**	**Highways England Response**
A303/A358/A30 Steering Group	Strong support for the scheme as part of the expressway improving connectivity to the South West which would: · Create 21,400 jobs and deliver a £41.6bn boost to the economy · Deliver £21.2bn of taxation, welfare savings, disposable income and tourism benefits · Create £1.9bn in transport benefits from reduced journey times and greater resilience · Save 1807 fatal or serious accidents · Reduce carbon emissions by 9% Deliver the dual carriageway improvement at the earliest opportunity, including junctions with adequate capacity to accommodate peak traffic flows.	Highways England is committed to delivering the scheme in pursuit of the Government's commitment to deliver a dual carriageway expressway to the South West as set out in its Road Investment Strategy. With the choice of preferred route having been confirmed following the public consultation, the scheme will now be developed further to the next stage of statutory public consultation, prior to the planning application being submitted to secure development consent. This process will be pursued as quickly as possible whilst ensuring the best solution is developed to serve both longer distance and local traffic movements. This will secure a start of construction at the earliest opportunity.
Babcary Parish Council	Option 1 is essentially a brownfield site; it utilises the existing major trunk road to a considerable extent; impacting on homes and businesses already blighted by proximity to a main road. Option 2 is literally a greenfield site; it would put 3 miles of tarmac through the remarkably unspoilt Sparkford Vale and lose it for ever. Sparkford Vale is a sparsely populated and undeveloped farmland area rich in wildlife, very quiet and very dark (at night). This will be destroyed.	These considerations have informed the choice of Option 1 as the preferred route. The overall assessment informing the choice is set out in Scheme Assessment Report which can be found on the scheme website. Moving forward, issues such as flood risk will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. The scheme will be designed and constructed to ensure it does not give rise to any increase to the risk of flooding. This will be managed through the implementation of an

PUBLIC CONSULTATION – LETTERS FROM ORGANISATIONS RESPONSE LOG		
Organisation	**Organisation comments**	**Highways England Response**
Babcary Parish Council	Sparkford Vale is very flat, low lying, and already prone to flooding. The Environment Agency flood map doesn't show it but the lane from Steart Hill to Babcary regularly floods throughout its length and is impassable to ordinary vehicles perhaps two or three times a year. Three miles of tarmac will create more of a problem. Where will the run off go? Sparkford Vale is prone to low lying fog. This is particularly the case at the foot of Steart Hill where it seems to "pool". This will create a severe risk for high speed traffic. What can be done to mitigate this risk?	appropriate drainage strategy - such as through the use of balancing ponds, drainage ditches, pipes and gulleys - to ensure that the scheme does not increase the susceptibility of the local area to flooding. More information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.
Babcary Parish Council	We stress the necessity of a full east/west link road between Sparkford/Hazlegrove and Podimore roundabout (such as the existing A303) in addition to the new expressway regardless of the option chosen. This will help mitigate safety concerns during periods of construction and whenever the new expressway is compromised, in addition to providing local access.	Highways England is committed to creating a network that works for the local communities as well as longer distance traffic. Accommodating local traffic movements safely and efficiently will be integral to optimising the overall scheme proposals, as will accommodating safe walking, cycling and equestrian movements. This includes accommodating safe movements during construction. Details will be presented at the next consultation stage.
British Horse Society	The consultation does not appear to accord with Highways England recently published Accessibility Strategy.	The public consultation has enabled local residents, the travelling public, statutory bodies and user groups such as the British Horse Society to express their views about the proposed scheme at an early stage in its development, having regard to the problems they face with the existing road and how they might wish the scheme to address those problems. The consultation has captured all journey types and all types of user, providing a good foundation of background knowledge upon which to develop the design of the scheme in line with Highways England's relevant strategies (including the Accessibility Strategy). Moving forward, the scheme

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		design will take into account the feedback received. The design proposals will be presented at the next consultation stage, including proposals designed to accommodate non-motorised users.
Campaign for Better Transport	Overall, we are not happy with the expansion of the A303/A30/A358 road corridor which, if all of the various single carriageway sections are converted into dual carriageways, will significantly increase traffic over and above what might be expected from expanding just one section in isolation. This will lead to a worsening of congestion overall and if it encourages more people to drive to the south west, it could overload many of the rural roads that are an attractive feature of the area. It would be far better to encourage tourism and improve access by investing in public transport, walking and cycling to cut both longer distance and local motorised traffic.	The Strategic Road Network (SRN) plays an important role in the national economy. An improved and efficient SRN will maintain competitiveness and help the economy to grow, for example in accommodating the planned employment and housing growth in the south west region. Without investment in the A303 corridor, the existing congestion on the SRN caused by the single carriageway sections will worsen and potentially constrain economic development. The Government has been mindful of this in determining its strategy for creating a dual carriageway expressway to the South West as set out in its Road Investment Strategy. Highways England has been charged with delivering that strategy.
Campaign to Protect Rural England - Somerset	In CPRE Somerset's view, both options are unacceptable but, if there is to be a widening scheme at Sparkford, then Option 1 is very much preferable as it causes less damage to the countryside. Fundamentally, however, we believe that connectivity for the South West could be achieved in far less damaging and intrusive ways. There remains the desire for a robust railway link from Waterloo to Exeter and beyond via Basingstoke.	The Government has determined that improved connectivity to the South West is to be achieved by creating a dual carriageway expressway as set out in its Road Investment Strategy. Highways England has been charged with delivering that strategy, with this scheme being part of the programme of schemes needed to achieve the strategy. Potential impacts on the countryside have informed the choice of Option 1 as the preferred route. The overall assessment informing the choice is set out in Scheme Assessment Report which can be found on the scheme website.
	Option 1 follows the general direction and alignment of the existing single carriageway. Hence dualling it would involve minimal change to the existing	These considerations have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as

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Cary Moor Parish Council	environment; just 'more of the same' one might say. Option 2 on the other hand, would drive straight across that part of the Sparkford Vale to the North of the present road, destroying an area of natural beauty which includes four farms and affecting the Hazlegrove House Registered Park and Gardens to a much greater degree than Option 1. The view of the Sparkford Vale from the villages of Babcary and South Barrow would be ruined forever, to say nothing of the noise and light pollution and increased liability to flooding, resulting from the high water table in the area.	the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. Such considerations will also continue to inform the ongoing development of the scheme moving forward.
CLA	Registering strong support for Option 1, consistent with the findings of a previously-held public inquiry into the scheme in 1994, accompanied by an exposition of issues relating to a technical evaluation covering costs and benefits, plus an environmental evaluation covering: · Landscape · Historic environment · Biodiversity · Water · Severance · Environmental pollution.	These technical and environmental considerations have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. These considerations will also continue to inform the ongoing development of the scheme moving forward.
Heart of the South West Local Enterprise Partnership	The Heart of the South West Local Enterprise Partnership does not have a fixed view on whether the online route or the offline route should be chosen. However, we would stress:	These considerations will all be to the fore in developing the optimal design proposals for the scheme.

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	· the importance of creating a free-flowing route with grade-separation of new junctions · the desirability of reducing the number of junctions · the need to consider alternative future provision for cyclists and agricultural vehicles to enable the route to be of expressway standard.	
Historic England	From the information available it is appears clear that, notwithstanding the major impact upon the Registered Park and Garden (RPaG) from either option, the partially on-line Option 1 might avoid a significant adverse impact upon the setting of the Downhead Medieval settlement, provided that there is no impact upon the Roman settlement site, and any significant archaeological remains that might be associated with it beyond the present scheduling constraints.	Potential heritage impacts have informed the choice of Option 1 as the preferred route. Moving forward, potential heritage impacts will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. Related details will be presented at the next consultation stage.
Ilchester Parish Council	The council's reasons were that the existing A303 can remain as a filter road, with access to the B3151 which would alleviate local traffic volume, which will benefit local residents. This is based on the fact that RNAS Yeovilton is adjacent to the Parish with its Service personnel, who have to get to their place of employment. There is an Annual Air Day attracting 35,000 visitors and if the B3151 is closed by Wayne's Bistro to access onto the A303 as in Option 1, the impact on Ilchester and the adjacent villages will be considerable.	These considerations, as appropriate, have fed into the overall assessment of the relative advantages and disadvantages of the two options presented for consultation, which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. Moving forward, the considerations will continue to inform the more detailed design proposals for the scheme. Further details will be presented at the next consultation stage.

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	There is a need to maintain access onto and from the A303 both at the Podimore and Sparkford ends to allow businesses and local to use the A303.	
King's Bruton School	There is a concern that the route will create both noise and light pollution that will affect the school.	Environmental considerations such as these have fed into the overall assessment of the relative advantages and disadvantages of the two options which has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website. Moving forward, the potential impacts will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. Related details will be presented at the next consultation stage.
National Trust	We agree that the A303 from Sparkford to Ilchester needs upgrading in the form of a new section of dual carriageway but we strongly advocate the need for a sensitively designed scheme that minimises its impacts on the natural and historic environments. In particular, we would ask that potential impacts on the views and setting of Lytes Cary and its estate (and St Michael's Hill) are fully considered and that potential environmental enhancements along the route options are fully explored.	The potential effects on the views and setting of Lytes Cary and St Michael's Hill will be assessed as part of the ongoing environmental assessment for the scheme during its continuing development. Further preliminary information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.
Natural England	Based on the information available at this stage, Option 2 is likely to result in a more significant impact on biodiversity than Option 1. It intersects Annis Hill Local Wildlife Site which comprises Ancient Woodland, a priority habitat under the UK Biodiversity Action Plan (BAP). We would highlight paragraph 118 in the National Planning Policy Framework which states that	Potential biodiversity impacts have informed the choice of Option 1 as the preferred route. Moving forward, potential biodiversity impacts will continue to be assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. Related details will be presented at the next consultation stage.

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	there should be a presumption against authorising development resulting in the loss of irreplaceable habitats including ancient woodland.	
NFU	**Impact on Farm Businesses** We do understand the need to upgrade the single lane sections of the A303 to dual carriageways to improve traffic flow and safety for the benefit of local communities, business and tourists as well as the enhance connectivity to the South West region. But many of our members' businesses will be significantly impacted by the proposed route Option 2 and associated construction works between Sparkford and Ilchester. The amount of land that would have to be taken out of agricultural production is far greater for Option 2 than Option 1 and so the impact on the farm businesses is far greater. The proposal to take the A303 in a loop to the north of the existing A303 means that the dual road would have to be constructed through a very unspoilt valley presently with only agricultural production taking place. The Valley has the Dyke Brook lying to the north of the proposed route which is liable to flooding. Option 2 would as it is presently highlighted cut right through the middle of three existing farm businesses and so the road would sever the land holdings greatly affecting the running and operations taking place. Three bridges have been highlighted in the proposal of Option 2 to provide access to all the land that would be severed but the impact on the farm businesses from so much land	Considerations of impacts on farming, as relevant and appropriate at this early stage in the development of the scheme, have fed into the overall assessment of the relative advantages and disadvantages of the two options put forward for consultation. This has weighed in favour of Option 1, and led to it being chosen as the preferred route. The overall assessment is set out in Scheme Assessment Report which can be found on the scheme website.

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	being compulsory purchased, remaining land severed and only the bridges providing access will mean that some of the businesses will not be sustainable. It will completely affect how some of the arable and livestock units are run. One farm business has a successful high level equestrian business and if Option 2 was the chosen route there would be a very large question mark over whether it was possible or not to continue running this business. While the proposals for Option 1 following the existing road and carrying out expansion works to create the dualling has a far less of an impact on farm holdings due to the proposed new road only cutting through the top northern boundaries of holdings and fields. While the proposals for Option 1 following the existing road and carrying out expansion works to create the dualling has a far less of an impact on farm holdings due to the proposed new road only cutting through the top northern boundaries of holdings and fields. It has been stated that as it exists the A303 is preventing businesses from reaching their potential and hampering quality of life in communities. This might be so but if Option 2 is taken forward this will have a major impact on four farming businesses and be far worse than just preventing reaching their potential. It could	

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	greatly disadvantage or even destroy the businesses and so will do far more than just hamper quality of life. The NFU does understand that the infrastructure needs upgrading and for this to help improve the local economy but it must not be done to the detriment of farming businesses. Highways England must consider in greater detail the impact on the farm businesses and the amount of land that would have to be compulsory purchased when deciding on which option to take forward and the design. Further the NFU is very disappointed to see the lack of detail in regard to the impact on farming businesses covered in the technical report. It is mentioned at paragraph 3.1.2 how the local area is rural having mainly field boundaries and at paragraph 3.5.2 how the land is in agricultural use, with a mixture of arable and livestock and is grade two and three. There is no mention of the agricultural businesses that would be impacted and no areas of land that would have to be taken out of agricultural production have been highlighted. This is expected at the very least within a technical report. It has been stated that the field pattern to the north of the existing scheme comprises large geometric field patterns and it is these fields that will cut and severed so badly by Option 2. Whereas the fields affected by	

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	option 1 will only be cut to the north of the boundaries and so severance is not such an issue. Further under the heading Constraints at 4.1 in the technical report there is no mention of agricultural land/land take under the land use and community constraints. All efforts must be made to maintain access to land from either Option 1 or 2.	
NFU	**Use Restrictions & Access** Furthermore, we expect that the upgraded road will not carry any limitations or restrictions which would prevent any type of agricultural vehicles accessing and using the entire A303. As a result of this consultation we require Highways England to clarify that there will be no restrictions to agricultural vehicles on the A303 to appease the concerns that the local farming community have about this issue.	Recognising the need to maintain safe and efficient farm access, consideration as to how this can best be achieved will be a key input to the ongoing development of the scheme's design. Related proposals will be put forward at the next consultation stage, having been discussed with affected parties.
NFU	Weight Limit restrictions: No weight restrictions, or other restrictions, should be imposed on agricultural vehicles using the A303. In addition, there should be no weight or other restrictions placed on agricultural vehicles and the type of agricultural material being transported (for example hay and straw) on the A303. Any additional local weight limit restrictions imposed to protect communities from diverted or rat-run traffic	

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	before, during or after construction must not impact farm vehicles.	
NFU	Access to the A303: Agricultural vehicles must have access to the new proposed A303 dual carriageway and this must be considered early in the design stage once a preferred route has been identified. For example, long diversion routes to access the A303 will not be acceptable for farm traffic as this will have a massive impact on the viability of some farm businesses. The A303 is a very important link road for rural businesses in the area and as such should not leave any of them at a disadvantage.	
NFU	**Construction Impacts** The consultation documents highlight the need for careful and considered planning to ensure the least issues caused to road users and the World Heritage Site. However, we feel strongly that the impact on farm businesses in the immediate and local area must also be thoroughly reviewed and considered ahead of any construction works. Our comments on the construction of this scheme are as follows: **Economic Impacts** The consultation documents highlight the need to balance the cost of the project with the economic benefits to the area. We agree with the need to achieve the best value for money during major infrastructure works. However, this consultation does not recognise	These considerations relating to potential construction and economic impacts will also inform the ongoing development of the scheme's design, with a view to minimising temporary impacts during construction and in the permanent state post-construction. This will include the aim of minimising the amount of land needing to be acquired for the scheme.

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	the economic benefits that the food and farming sector delivers to this area, and we believe Highways England should seek ways in which to reduce the impact of these works on farm and food businesses, during and after construction. For example, farm businesses in our county contribute £217 million GVA annually with an output of £564 million agricultural output each year. Farm business support a huge range of other rural businesses such as feed, seed and fertiliser suppliers; machinery dealers, mechanics and engineers; legal, financial and advisory services; haulage and delivery companies; veterinary, genetics and nutritional specialists; builders, electricians and plumbers; local wholesalers and markets to name but a few. In addition, farm businesses themselves employ over 12,300 full time workers on holdings across the county and thousands of other part-time and seasonal workers. Our farmers grow arable and horticultural crops, sheep, beef, pigs and poultry and produce milk for sale in local, national and international markets – as well as produce environmental outcomes for the benefit and enjoyment of all.	

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	Conclusion The NFU believes that Option 2 would cause severe damage to our members' farm businesses and take far too much land out of agriculture production and therefore our preference is that Option 1 is taken forward. Highways England must take no more land than necessary to build the new road scheme so that the impact on the viability of farm businesses is reduced. Land taken on a temporary basis must be returned and reinstated in condition suitable for agricultural production.	
Somerset County Council	The Council notes Highways England's conclusion that at this stage, no option has clearly better performance in all aspects of safety and operation, environmental impacts and value for money; and that a judgement will need to be made on the balance of these aspects, which should include stakeholder feedback, in reaching a conclusion about the best option for a preferred route. We note the conclusion that option 2 (F1) performs slightly better than option 1 (A2) in economic terms; option 1 (A2) is the better option in environmental terms; and option 2 (F1) is better in terms of safety, buildability and maintenance.	The relative advantages and disadvantages of the two options have been assessed and compared, taking into consideration the consultation feedback, as set out in the Scheme Assessment Report which can be found on the scheme website. This has led to Option 1 being chosen as the preferred route.

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Somerset County Council	The Council has concluded based on the available information that it is not appropriate to express a route preference at this stage in the process, and that the choice of the preferred route should be a matter for Highways England to determine, taking into account community and stakeholder feedback from the consultation process along with appropriate technical appraisals.	
Somerset County Council	**Highways and Transport Issues** The Council has engaged with Highways England at a strategic level in developing the proposals but anticipates a number of matters in relation to the preferred route will have to be resolved in detail with Highways England if adversarial representation to the Planning Inspectorate Examination is to be avoided following submission of the Development Consent Order application. Such matters are likely to include: • Impact of the scheme on the local road network, including any TROs to regulate use of former A303 if necessary, and agreement in relation to construction access and construction vehicle routing. • Design of local road elements of the scheme, including alterations of junctions and side roads as appropriate. • Flood risk and surface water drainage. • Rights-of-way and access, including segregated crossings. • De-trunking and transfer of former Highways England assets to Somerset County Council.	Highways England will seek to liaise closely with Somerset CC during the ongoing development of the scheme, with the aim of securing an agreed best solution for a combination of local and longer-distance traffic movements, including non-motorised movements. This will include ensuring there is no increased risk of flooding arising from the scheme.

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	• Requirements for local Traffic Regulation Orders.	
Somerset County Council	**Construction Management** The impact of scheme construction and movement of materials is not set out in the consultation documents at this stage and The Council anticipates that a detailed construction traffic management plan will need to be agreed as part of the Development Consent Order process, explaining how construction impacts, in particular movement of materials will be minimised and mitigated. There could be considerable impact on the local highway network and in such circumstances the Council will seek to protect its roads under the legal provisions available.	A construction traffic management plan will be developed working collaboratively with Somerset CC, in preparing for the DCO process. This will include the presentation of related proposals at the next consultation stage, enabling others to comment and input to the preparation of the plan.
Somerset County Council	**Junctions and side roads** The Council notes in the TAR that all junctions are currently designed to fully grade-separated standards and that this approach will be reviewed as relevant design parameters become available.	All matters to do with the proposed junction arrangements and interaction with the local road network will be reviewed by working collaboratively with Somerset CC. The aim is to develop an agreed best solution serving a combination of local and longer-distance traffic movements, including non-motorised movements.
Somerset County Council	Option 1 (A2) proposes two junction locations: • At Downhead Lane to enable traffic to interchange between Steart Hill, Howell Hill and Downhead Lane and the proposed road; and • At Hazlegrove, enabling interchange between the proposed road and the A359, High Street Sparkford, the access to Hazlegrove House and the Sparkford services.	
Somerset County Council	Option 2 (F1) proposes only a junction at Hazlegrove. A junction at the centre of the scheme is not proposed due to retention of the existing A303 carriageway as a	

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	local road, including all the associated minor side road junctions. An overbridge is proposed at the Hazlegrove junction. Up to three further structures are proposed including accommodation bridges at Vale Farm and Downhead Lane, and a road overbridge at Steart Hill.	
Somerset County Council	The TAR notes the proposed size and layout of these junctions will be determined during further development and will be based upon predicted traffic volumes and relevant design standards.	
Somerset County Council	Further dialogue with The Council will be required following selection of the preferred route in order to ensure that that the impact of the proposed scheme and associated junction strategy on local traffic movement, safety and accessibility are fully quantified by Highways England, and understood by all parties, with any necessary mitigations agreed.	
Somerset County Council	Engagement with The Council will be essential in order that safe and appropriate layouts and designs are agreed for any elements of the scheme interfacing with or impacting on the local road network. This includes junctions, overbridges and underpasses, changes to alignment of side roads or any other elements of the scheme. The TAR includes an initial safety review of the indicative proposals for junctions, overbridges and underpasses etc. The Council notes that initial safety concerns have been recorded for a number of the early designs for alignment of underpasses and matters such as curves, tight radii and gradients on side roads. Suggestions for reduced cross sections for some minor side roads are also referred to. Engagement with The	

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	Council will be necessary to ensure that safe and appropriate design solutions are agreed.	
Somerset County Council	The proposals appear ambiguous about requirements for Non-Motorised User (NMU) provision at this stage, as NMUs may be banned from expressways and an objective for the scheme is to be expressway compatible. The scheme will need to ensure appropriate long-term provision for NMU movement is made particularly if Option 1 (A2) is chosen which does not leave a local road in place particularly for east-west movement.	
Somerset County Council	The TAR notes that if the Downhead Lane junction were removed from Option 1 (A2), the economic case for the scheme would be expected to improve. The Council expects good levels of local connectivity between the local road network and the new road and is of the strong opinion at this point in the process, that a junction should be retained at Downhead Lane under this option.	
Somerset County Council	**Flood Risk and Damage** Detailed proposals for drainage and flood risk management are not set out in the consultation documents and the Council will require further information on those matters in order to agree that any temporary proposals and permanent solutions have adequately considered all flood risk and drainage considerations, including how the drainage system will function once it is constructed. It will be imperative to ensure that this scheme does not increase the flood risk in other areas.	This aspect will also feature within the discussions to be held as part of our collaborative working with Somerset CC. The scheme will be designed and constructed to ensure it does not give rise to any increase to the risk of flooding. This will be managed through the implementation of an appropriate drainage strategy - such as through the use of balancing ponds, drainage ditches, pipes and gulleys - to ensure that the scheme does not increase the susceptibility of the local area to flooding.

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Somerset County Council	**Public Rights-of-way** The TAR identifies several Public Rights-of-ways (PRoW) and restricted byways within the vicinity of the route options: • Option 1 (A2): 21 footpaths, two bridleways, and two restricted byways • Option 2 (F1): 14 footpaths, one cycle route, two bridleways and one restricted byway	All aspects to do with maintaining and/or enhancing public rights-of-way affected by the scheme will be captured by the proposals we look to develop through working collaboratively with Somerset CC. This will include presenting our proposals at the next consultation stage to obtain the views of others before finalising the scheme's design. We also confirm that Somerset CC's 'Rights-of-way Improvement Plan 2' will be taken into consideration during the development of scheme solutions.
Somerset County Council	Both options being consulted on would result in the severance of several of these PRoWs. The technical appraisal report notes that these severed PRoWs would likely be replaced in the form of footbridges or underpasses, if deemed necessary following the completion of NMU surveys.	
Somerset County Council	Both options being consulted on would result in the severance of several of these PRoWs. The technical appraisal report notes that these severed PRoWs would likely be replaced in the form of footbridges or underpasses, if deemed necessary following the completion of NMU surveys. It is noted that the Council's adopted 'Rights-of-way improvement plan 2' is missing from the policy summary within the technical appraisal report and this contains several action and policy statements which are relevant to the scheme, particularly Action 1.4 and policy statements 3.1, 3.2 and 3.10.	
Somerset County Council	Mitigation for severed ProWs will be necessary and this will either be in the form of diversion to the closest over/underbridge or the provision of a purpose built crossing for NMUs. Engagement with the Council will	

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	be essential in order that appropriate off-road space for NMUs is provided, appropriate parapet heights are provided particularly for equestrians, and appropriate diversion alignments are agreed. Where the mitigation is provision of a dedicated NMU over/underbridge then every consideration should be given to providing access for all NMUs, and looking at what local improvements could be made either in physical or legal status to improve the situation for NMUs.	
Somerset County Council	It is noted that an indicative design solution is yet to be developed to retain an existing footpath through the proposed Hazelgrove junction. Engagement with The Council will be needed to ensure an appropriate solution is agreed.	
Somerset County Council	Any NMU studies should not be taken as a reflection of lack of demand. The current flows on the A303 are likely to be a deterrent for many NMUs in using the current path network.	No preconceived views will influence the development of appropriate proposals for maintaining and/or improving rights-of-way accommodating NMU movements affected by the scheme. Discussions will be held with local user group representatives as suggested.
Somerset County Council	It is highly recommended that detailed discussion takes place with local user group representatives to ensure that any routes believed to carry public rights, or higher rights than are already recorded, are captured and considered as part of proposal development.	
Somerset County Council	This development presents an opportunity to address an issue at Ilchester where a public bridleway now crosses the A303 at grade, following a public inquiry which upgraded the footpath to a bridleway on the line of the old road as opposed to a new accommodation bridge. The bridge parapets now require upgrading in order that the bridleway rights can be diverted onto the	This comment covers an issue that is outside the scope of the scheme. The issue should be pursued separately between Highways England and Somerset CC.

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	bridge. The current situation leaves Highways England exposed to potential enforcement action and the County Council are keen to work towards resolution of this issue. Whilst it falls just outside of the proposal, there could be significant cost savings to be made by including these works within the scheme. A second application has been made to delete the bridleway but this will not be determined for many years. Should Highways England wish to include the parapet works within the scheme then The Council will explore what opportunity there may be to determine the application as a priority. Whatever the recommendation is of the investigation into the second application, there is likely to be opposition to it, thus involving a referral to the Secretary of State for confirmation/ determination.	
Somerset County Council	**De-trunking and transfer of former Highways England assets to Somerset County Council.** Both the consultation options provide for sections of the existing A303 to be replaced by a new route. The existing road, where superseded by the new route, will be 'detrunked', downgraded or stopped up as circumstances require. Whichever way, those redundant sections of road will revert either to The Council as the Local Highway Authority, or to private interests if stopped up.	Arrangements for detrunking and transferring sections of the existing A303 will form part of the continuing discussions to be held between Highways England and Somerset CC about the scheme and its ongoing development.
Somerset County Council	The scheme details do not seek to identify the end uses of all parts of the road, but suggest that sections will need to be kept open for local use. For those sections which fall to the responsibility of the Council	

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	under Development Consent Order de-trunking procedures, it is normal practice for the Local Highway Authority to be compensated by HE for the additional maintenance burden the roads will present to the Council. The Council therefore needs to have agreed, when the Development Consent Order application is submitted, what the compensatory arrangements will be and what will be the end uses of all redundant sections of the A303 route.	
Somerset County Council	**Requirements for local Traffic Regulation Orders.** The Council will need to be assured, before the Development Consent Order application is made, that all identified necessary TROs are included in the process, in particular that it is not left for the Council to address TROs necessary to regulate traffic on the existing county road network before, during or after construction, or on any de-trunked sections of the existing A303.	TRO considerations will form part of the continuing discussions to be held between Highways England and Somerset CC about the scheme and its ongoing development.
Somerset Ramblers	We would, however, stress that there should be no at-grade crossings tor any public right-of-way and that proper provision for ensuring access to existing rights-of-way is retained in a safe way. Safe opportunities to connect RoW north and south of the new road must also be provided.	It is an objective of the scheme to provide safe rights-of-way across the road that are easy for non-motorised users to use. At-grade crossings are not currently being considered. Related proposals will be presented at the next consultation stage.
Somerset Wildlife Trust	Somerset Wildlife Trust would hope that this infrastructure project upholds the ambitions of the Government's White Paper and the guidance of the NPPF and aims at not just minimising impacts on the natural environment but also aims to enhance biodiversity through the scheme by careful	Opportunities to enhance biodiversity will be considered as part of the scheme's continuing development. Related proposals and accompanying preliminary environmental information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.

PUBLIC CONSULTATION – LETTERS FROM ORGANISATIONS RESPONSE LOG		
Organisation	**Organisation comments**	**Highways England Response**
	consideration to habitat creation and enhancement in the post-scheme landscape, with priority given to achieving strong habitat connectivity.	
South Somerset Bridleways Association	No mention is made of multiuser paths. Nor does this consultation appear to comply with many of Transport Focus' recommendations in 'Cyclists, pedestrians and equestrians: a summary of priorities for Highways England's Network'	This public consultation has canvassed the views of local residents, the travelling public, statutory bodies and user groups, such as the South Somerset Bridleways Association, on their views about scheme, having regard to the problems they face on the existing road and how might wish the scheme to address those problems. The feedback has covered all journey types and all types of user, providing a good foundation of background knowledge upon which to develop the design of the scheme in line with relevant policies, strategies and standards. This will inform the scheme's continuing development and we will be presenting our proposals for accommodating cyclists, pedestrians and equestrians at the next consultation stage.
Sparkford Parish Council	In summary either option would have little impact on Sparkford but the Parish Council are concerned about what is happening to the roundabout and access to Hazelgrove School east and west bound if they are not having run off to a roundabout like Wincanton. How will traffic access Queen Camel and the other smaller hamlets? Are they going to come off at North Cadbury and come through our village?	A grade-separated junction is proposed at Hazlegrove. This will include entry and exit slip roads in each direction providing a safe and convenient connection to the dual carriageway from locations such as Hazlegrove School, Sparkford and Queen Camel. Further details will be provided at the next consultation stage.
The Coal Authority	Responded confirming 'no comment' to make on the scheme.	No issues arising.
West Camel Parish Council	Should option 1 be chosen, how will the small local roads of West Camel and other villages be saved from 'rat run' traffic?	The relative advantages and disadvantages of the two options have been assessed and compared, taking into consideration the consultation feedback, as set out in the Scheme Assessment Report which can be found on the scheme website. Moving forward, potential environmental impacts will continue to be
West Camel Parish Council	Option 1 has a far greater and direct impact to main settlements of West Camel and so there is clear	

PUBLIC CONSULTATION – LETTERS FROM ORGANISATIONS RESPONSE LOG		
Organisation	**Organisation comments**	**Highways England Response**
	majority preference for Option 2 to be taken forward. In the following pages, option 1 therefore carries more issues and suggestions to help mitigate the visual, noise and environmental pollutions we will be directly subjected to should this option go ahead. We stress the necessity of a full east/west link road between Sparkford/Hazlegrove and Podimore roundabout (such as the existing A303) in addition to the new expressway regardless of the option chosen. This will help mitigate safety concerns during periods of construction and whenever the new expressway is compromised, in addition to providing local access. Construction of Option 2 (or indeed either of the other two discarded routes B4 or E4) would leave the existing A303 intact between Sparkford and Podimore to take overflow traffic in times of congestion due to accident or maintenance. This would save traffic diverting onto local lanes which are not capable of handling this type and volume of traffic.	assessed and will inform the more detailed design proposals for the scheme, with accompanying mitigation to avoid or reduce impacts. In addition, Highways England is committed to creating a network that works for the local communities as well as longer distance traffic. Accommodating local traffic movements safely and efficiently will be integral to optimising the overall scheme proposals, as will accommodating safe walking, cycling and equestrian movements. This includes accommodating safe movements during construction. Details will be presented at the next consultation stage. It is anticipated that the scheme will relieve rather than increase rat-running pressures - this can be reviewed at the next consultation stage with the help of an updated traffic model.
West Camel Parish Council	West Camel has a history of flooding and as such demands that proper consideration should be given to the flooding impacts to the village. Works should not simply plan to 'not make matters worse', but should look to improve measures during this once in a lifetime opportunity.	The responsibility of the scheme and the funding of it is to ensure it does not give rise to any increased risk of flooding. This will be managed through the implementation of an appropriate drainage strategy - such as through the use of balancing ponds, drainage ditches, pipes and gulleys - to ensure that the scheme does not increase the susceptibility of the local area to flooding. More information will be presented at the next consultation stage.
West Camel Parish Council	The proposed junction at Downhead for option 1 should be removed from all planning. 10 lanes of roadway will be created around the proposed junction, plus the	The Downhead junction would provide access for traffic and to local villagers which is currently provided by a number of side roads. It is not expected that rat-run traffic would increase across

PUBLIC CONSULTATION – LETTERS FROM ORGANISATIONS RESPONSE LOG		
Organisation	**Organisation comments**	**Highways England Response**
	creation of a new highway standard carriageway in place of Slate Lane. The overwhelming response of parishioners is that no additional junction should be created at Downhead, which will simply encourage 'rat run' traffic. An east/west link road as above negates the need for this.	the local area. There will be a further opportunity to review this at the next consultation stage, informed by updated traffic modelling.
West Camel Parish Council	Highways England describe Option 2 as being the better option in economic terms, safety, buildability and maintenance with environmental concerns more favourable for Option 1, so why not simply alter the Option 2 route to avoid Annis Hill wood? We would suggest that Highways England consider realigning Option 2 proposals to reflect initially the line shown in discarded Option B4 i.e. after leaving Podimore overbridge the route should pass to the north of Annis Hill Wood, before re-joining the existing line of Option 2. This would provide greater separation from properties, Newclose & Mead Farms as well as other properties in Downhead.	The Option 2 presented for consultation was identified to be the best alignment for this route corridor from a sifting process described in the Technical Appraisal Report. The Scheme Assessment Report now describes why Option 1 is preferred over Option 2.
West Camel Parish Council	Of the four options considered in the TAR, only one (A2 which became Option 1) impacts the continuity of the existing A303. Many residents have commented that keeping the existing A303 intact between Sparkford and Podimore would – • Provides a sensible diversion route in the event of an accident or maintenance on the new A303 Expressway • Avoids the need to use the A359 / Queen Camel (past new school – not on HE plans!) / Bridgehampton / Stockwich Cross and Podimore village as an alternative diversion route.	These considerations were, as relevant and appropriate, taken into account by the assessment informing the choice of Option 1 as the preferred route. They will continue to inform the design of the scheme during its ongoing development to ensure the accompanying proposals best accommodate local community movements and provide resilience in the event of incidents on the network.

PUBLIC CONSULTATION – LETTERS FROM ORGANISATIONS RESPONSE LOG		
Organisation	**Organisation comments**	**Highways England Response**
	• This could open up possibilities for local residents to use /walk to the bakery. • Would by default enhance community connectivity with Downhead and Steart Hill. • Would provide good access from Yeovilton Base to the new A303 Expressway. • Would allow slow moving agricultural traffic to move around the area with ease	
West Camel Parish Council	For many years after the completion of this upgrade, traffic will queue at Podimore as the first major westbound interchange on the new expressway. Should option 1 be chosen, how will the small local roads of West Camel and other villages be saved from 'rat run' traffic?	An upgrade of the Podimore Roundabout is part of the Government's planned programme of improvements, contained in its Road Investment Strategy, for upgrading the A303/A358 corridor to a dual carriageway expressway. However, it is not part of this scheme; instead it is due to be brought forward in future road investment periods. It is anticipated that this scheme will in its own right relieve rather than increase rat-running pressures - this can be reviewed at the next consultation stage with the help of an updated traffic model.
West Camel Parish Council	A major concern for residents of West Camel Village is about minimising the existing 'Rat-Run' usage by vehicles (HGVs, LGVs (white van man) and Cars) which pass through West Camel travelling north / south or south west / north west. Increased 'rat run' traffic will cause more accidents and injuries as travellers seek to avoid the major trunk route during closures and peak flows.	

PUBLIC CONSULTATION – LETTERS FROM ORGANISATIONS RESPONSE LOG		
Organisation	**Organisation comments**	**Highways England Response**
West Camel Parish Council	Residents expressed an overwhelming preference for – • No junctions on either option between Sparkford and Podimore and retain / realign the existing A303 to facilitate construction of the proposed Expressway in a cutting. • This will facilitate the construction of a bridge to connect Downhead Lane to the existing A303 and negate the need to upgrade Slate Lane – placing the new Expressway in a cutting at Conigore would facilitate construction of a bridge connecting Steart Hill to the retained (or realigned) old A303 to channel HGV traffic (Hopkins) east or west to join the Expressway at Podimore or Sparkford rather than using Howell Hill through West Camel.	These preferences will be taken into consideration as part of the ongoing scheme development. The design proposals, including junction arrangements, will be presented at the next consultation stage for further comment.
West Camel Parish Council	Both options destroy roughly equal amounts of productive farmland, with Option 1 directly affecting many more people who live close to this route, and Option 2 destroying a currently undisturbed valley and woodland.	These considerations have fed into the overall assessment Informing the choice of Option 1 as the preferred route. As relevant and appropriate, they will continue to inform the ongoing development and design of the scheme.
West Camel Parish Council	Against Option1 – Most of Option 1 would also be built on unspoilt countryside and good farmland. Proximity to the settlement of West Camel, potential for increased noise and pollution especially from the raised section east of Conigore Corner.	
West Camel Parish Council	Residents voiced concerns about congestion during construction should Option 1 be chosen, with possibly	Construction-related issues have been taken into consideration in the choice of preferred route. The existing A303 will remain open

PUBLIC CONSULTATION – LETTERS FROM ORGANISATIONS RESPONSE LOG		
Organisation	**Organisation comments**	**Highways England Response**
	3+ years of delayed traffic trying to find alternative routes to the existing A303.	during construction and a construction traffic management plan will be developed to ensure any temporary disruption is minimised. Related details will be presented at the next consultation stage.
West Camel Parish Council	• The construction phase is longer for option 1 and would disrupt travel for a far greater proportion if its build time.	
West Camel Parish Council	West Camel has a history of flooding and as such demands that proper consideration should be given to the flooding impacts to the village. Works should not simply plan to 'not make matters worse', but should look to improve measures during this once in a lifetime opportunity. While it is acknowledged that modern road construction should adequately deal with surface water issues, concern remains in a community with a serious history of flooding – • In any failure situation (option 1) – water travels downhill – into West Camel. • Designs need to be shared, publicly in detail with the community for both options including Dyke Brook and eventual outfall to the river system. • Existing / retained A303 surface water drainage is inadequate and needs to be re-engineered before retained carriageway is declassified and handed to Somerset County Council – again work with the community who have local knowledge. • Surface water discharge design should not impact existing River Cam flow rates – i.e. additional downstream discharge from A303 could cause flooding upstream in West Camel.	The responsibility of the scheme and the funding of it is to ensure it does not give rise to any increased risk of flooding. This will be managed through the implementation of an appropriate drainage strategy - such as through the use of balancing ponds, drainage ditches, pipes and gulleys - to ensure that the scheme does not increase the susceptibility of the local area to flooding. More information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent. This will include collaborative engagement with Somerset CC and the Environment Agency in considering measures relevant to the existing road as well as the new dual carriageway.

PUBLIC CONSULTATION – LETTERS FROM ORGANISATIONS RESPONSE LOG		
Organisation	**Organisation comments**	**Highways England Response**
West Camel Parish Council	A number of residents expressed concern over how close to their homes either option might be – • The owners of Newclose Farm have asked – can the road be moved further away? (see comments on Route Alignment below).	Concerns relating to the proximity of Option 2 to property fall away with the choice of Option 1 as the preferred route. But potential impacts on people and property will remain a key consideration feeding into the design of the scheme proposals for Option 1, with accompanying mitigation measures to avoid or reduce impacts. More detailed proposals will be presented at the next consultation stage.
West Camel Parish Council	• Orchard Park – residents pointed out that option 1 would be only 200m from their homes.	
West Camel Parish Council	• Two properties at Conigore Corner would be less that 30m from the proposed dual carriageway as would 'Blue haze' in neighbouring QC parish.	
West Camel Parish Council	Under Option 1 the proposed section of dual carriageway to the east and south of Conigore Corner appears to be elevated some 6m above the existing field level. We can only assume that this is to facilitate ease of construction and maintaining traffic flow during construction? The more logical construction of a cutting, in similar fashion to the route to the west, would help negate noise, pollution and visual impact.	The design of Option 1 will be optimised now that has been chosen as the preferred route. Heights of embankments and depths of cuttings will be clarified as part of the optimisation, with details presented at the next consultation stage when further comment will be invited before the design is finalised.
West Camel Parish Council	Highways England technical document clearly states that Option 1 would be the least safe route, and is also the only route option where there are no realistic route alternatives.	Safety is a foremost consideration, and Option 1 will be developed to a standard, with accompanying grade-separated junctions, that is able to provide a wholly safe service for all users – motorised and non-motorised. The new dual carriageway will immediately be more resilient than the existing single carriageway road in providing greater capacity, able to keep traffic flowing on the A303 itself at times of incidents, avoiding diversion to existing roads. But contingency plans will also be reviewed to consider the management arrangements needing to be implemented if incidents arose causing the road to be totally closed.
West Camel Parish Council	Any incident/closure would lead to drivers using poor local country roads, leading to yet more safety issues for local residents and causing severe disruption. We suggest Highways look to create and manage a proper alternative route for the anticipated incidents	

PUBLIC CONSULTATION – LETTERS FROM ORGANISATIONS RESPONSE LOG		
Organisation	**Organisation comments**	**Highways England Response**
	and closures alongside the complete length of the proposed expressway.	
West Camel Parish Council	Against Option 2 – The destruction of unspoilt countryside and farmland. The severance of four large farms, which would make conducting their business more difficult. If Option 2 is chosen, then, in addition to the two road bridges mentioned on the plans, it would be necessary to construct at least three extra bridges for farm vehicles and machinery from the affected farms to access land that would be severed.	These considerations fall away following the choice of Option 1 as the preferred route.
West Camel Parish Council	Potential flooding issues have been raised concerning Option 2, although this is limited to fields and not residential dwellings as in Option 1. Common concerns apply equally to Option 2 -	
West Camel Parish Council	Several residents queried concerns raised over loss of farm land and the following points were made – • Opponents of Option 2 cite the loss of relatively unspoilt farmland, bio-diversity etc. • Farmers in the Sparkford Vale are concerned about managing their farms which may be divided should Option2 be built. • Some farmers do farm to a very high eco-friendly standard, lay hedges and keep ditches clear and will be devastated by the loss of farm land and division of their farms. • From a local farmer – most of the bio-diversity was damaged years ago when field hedges were ripped out to facilitate modern arable farming methods.	The concerns raised in relation to Option 2 fall away with the choice of Option 1 as the preferred route. But farming and biodiversity will still be important considerations informing the design of the scheme proposals for Option 1, with accompanying mitigation measures to avoid or reduce impacts. More detailed proposals will be presented at the next consultation stage.

PUBLIC CONSULTATION – LETTERS FROM ORGANISATIONS RESPONSE LOG		
Organisation	**Organisation comments**	**Highways England Response**
	• Wildlife adapts as can be seen from existing stretches of dualled A303 e.g. Sparkford. • Unspoiled by human habitation perhaps but scarred by modern farming techniques requiring large fields.	
Woodland Trust	Ancient woodland and wood pasture are irreplaceable habitats; once lost they cannot be recreated. The Trust believes that any development resulting in damage or loss to an ancient woodland or wood pasture is unacceptable and that all possible measures should be explored in order to avoid these losses. The Woodland Trust objects to both route options 1 and 2 on the basis of damage and loss to ancient woodland and wood pasture. We believe Highways England need to further explore other options to avoid these irreplaceable and valuable habitats. Furthermore it is apparent that further surveys need to be undertaken to determine whether there are any ancient or veteran trees within the site that have not been previously identified.	Highways England is content that Option 1 provides the best route for improving this section of the A303, based on the assessments set out in the Technical Appraisal Report and Scheme Assessment Report. Potential effects on ancient woodland and woodland pasture will continue to be explored as part of the ongoing environmental impact assessment of the developing scheme proposals. A full arboricultural survey will be undertaken to inform the assessment. The woodland habitats, including those designated as Ancient Woodland, are highly valued, and mitigation measures will be included as part of the scheme proposals to ensure that any adverse environmental effects are avoided or reduced or, where practicable, seek enhancement by joining up pockets of existing woodland to reduce fragmentation. Further preliminary information will be presented at the next consultation stage, prior to a full Environmental Statement being published to accompany the planning application for development consent.

Appendix D – Public consultation materials

In this appendix, the following materials are included:

- Department for Transport press release;
- Example letter to organisations;
- Letter to residents within 1500m of either route; and
- Letter to landholders within 150m of either route.

In addition to the materials within the appendix, there are a series of materials which available on the Highways England Citizen Space website for scheme, which can be found here: https://highwaysengland.citizenspace.com/he/a303-sparkford-to-ilchester/

The materials available on the website include:

- the scheme brochure;
- the questionnaire;
- the public consultation event exhibition banners;
- separate diagrams of the two route options;
- the scheme Technical Appraisal Report;
- the consultation poster; and
- the Environmental Constraints Map.

Department for Transport press release

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News story

£170 million plan to dual vital Somerset road

From: Department for Transport, Highways England, and The Rt Hon Chris Grayling MP
Part of: Road network and traffic
First published: 13 February 2017
Last updated: 23 February 2017, see all updates

Drivers will see quicker, safer and more reliable journeys in Somerset under government plans to tackle congestion on the A303.

The key route between Sparkford and Ilchester is being upgraded to relieve the over-congested road and create 30 miles of dual carriageway between Mere and South Petherton.

The £170 million plan is part of the government's £15 billion investment in our motorways and major A roads between 2015 and 2020 – the biggest in a generation.

More than 26,000 vehicles use this stretch of road a day, double the number it was designed for. Dualling the route will cut journey times and new junctions will enhance safety.

Have your say on the A303 Sparkford to Ilchester upgrade.

Highways England is holding the following public information events:

- 12.00 noon to 8.30pm, Thursday 23 February: Sparkford Inn Function Room, Sparkford
- 10.00am to 5.00pm, Queen Camel Memorial Hall, High Street, Queen Camel, Yeovil
- 10.00am to 6.00pm, Friday, 10 March: Davis Hall, Howell Hill, West Camel, Yeovil

Roads media enquiries

Press enquiries
020 7944 3021

Out of hours
020 7944 4292

Switchboard
0300 330 3000

Transport Secretary Chris Grayling said:

> “ Almost 4 million trips are made on the A303 every year and we are investing more than £2 billion to improve these motorists’ journeys, making them quicker and safer.
>
> “ Tackling congestion on this vital road will also help boost the economy in the south-west, unlock thousands of jobs and homes and promote tourism.”

Work will include making junctions safer as well as providing better links for pedestrians and cyclists.

Highways England is consulting on the 2 routes and is urging residents to have their say on the plans. The consultation runs from 15 February to 29 March 2017.

The preferred route between Sparkford and Ilchester is due to be announced in autumn this year. Work is expected to start in 2020.

Highways England chief executive Jim O’Sullivan said:

> “ This scheme will be really good news for people travelling to and from the south-west, particularly during the busy summer months.
>
> “ Our consultation and public exhibitions will provide an excellent opportunity to explain further our plans and to hear feedback from people on our proposals to deliver the scheme.”

A separate consultation on building a tunnel for the A303 near Stonehenge is also underway. This will further improve journeys on the main road between London and the south-west.

Further details on upgrading the A358 between Taunton and Southfields will also be revealed shortly.

Example letter to organisations

Our ref: OptionsConsultation2017

David Stock
Project Manager
2/07K Temple Quay House
2 The Square
Temple Quay
Bristol BS1 6HA

Enquiries: 0300 123 5000

[Insert details]

7 February 2017

[Insert Sir/Madam]

A303 Sparkford to Ilchester Dualling
Public consultation from Wednesday 15 February until Wednesday 29 March 2017

The A303/A358 corridor is a vital connection between the south west and London and the south east. Highways England has been working on proposals to upgrade the A303 between Sparkford and Ilchester to a dual carriageway standard, creating a continuous 30-mile stretch of dual carriageway between South Petherton and Mere. This section acts as a bottleneck for users, causing congestion, particularly in the summer months and at weekends.

The scheme is classified as a Nationally Significant Infrastructure Project and forms part of a programme of planned improvements to the A303/A358 corridor. The scheme aims to relieve congestion, provide reliable journey times, unlock economic growth and improve safety whilst protecting the environment.

Following a detailed technical assessment process we have shortlisted two route options and would welcome your views before a decision on a preferred route option is made.

Event invitation
You are invited to attend a special preview event to view the proposed route option designs. Opening at 5.30pm, we will give a brief welcome presentation introducing the scheme at 6.00pm. The project team will be available to talk to throughout the event.

Date	Venue	Time
Tuesday 14 February 2017	Haynes International Motor Museum Sparkford, Yeovil, Somerset BA22 7LH	5.30pm to 8.30pm, welcome presentation at 6.00pm

If you are unable to attend the event above, you can still participate in the public consultation in the following ways:

View the proposed route options online
All consultation information will be available on our scheme webpage from Wednesday 15 February 2017 including a brochure with a summary of the proposed route options, event information boards and a link to the consultation questionnaire. For more information, go to: www.highways.gov.uk/Sparkford-to-Ilchester

Attend a public information event
Meet the project team and view the proposed route options at the following events:

Date	Venue	Time
Thursday 23 February 2017	Sparkford Inn, High Street, Sparkford, Yeovil, BA22 7JH	12.00 midday to 8.00pm
Saturday 25 February 2017	Queen Camel Memorial Hall, High Street, Queen Camel, Yeovil, BA22 7NF	10.00am to 5.00pm
Friday 10 March 2017	Davis Hall, Howell Hill, West Camel, Yeovil, BA22 7QX	10.00am to 6.00pm

Visit a public information point
Consultation materials will be available to view from Wednesday 15 February until Wednesday 29 March 2017 during normal opening hours at the following places:

Public Information Points	
Wincanton Library, 7 Carrington Way, Wincanton, Somerset, BA9 9JS	Barrington Court, Barrington, Ilminster, TA19 0NQ
Yeovil Library, King George Street, Yeovil, Somerset, BA20 1PZ	Lytes Cary Manor, near Somerton, Somerset, TA11 7HU
South Petherton Library, St. James Street, South Petherton, Somerset, TA13 5BS	Montacute House, Montacute, TA15 6XP
Taunton Library, Paul Street, Taunton, Somerset, TA1 3XZ	Somerset County Council, County Hall, Taunton, Somerset, TA1 4DY
Martock Library, The Shopping Centre, Martock, Somerset, TA12 6DL	South Somerset District Council, Brympton Way, Yeovil, Somerset, BA20 2HT

Have your say
Please complete a short questionnaire to let us know what you think of the proposals.

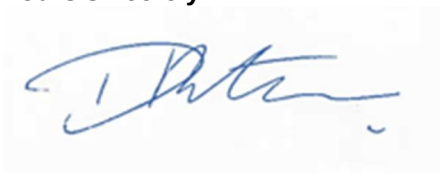
You can use one of the following methods to contact us and/or respond to the consultation:

- Complete the questionnaire online at: www.highways.gov.uk/Sparkford-to-Ilchester
- Email: A303SparkfordtoIlchesterDualling@highwaysengland.co.uk
- Call: 0300 123 5000 (9am to 5pm, Monday to Friday)
- Post all responses to: A303 Sparkford - Ilchester Dualling, Freepost Consultation, FPN 4016
- Write to us at: A303 Sparkford to Ilchester Project Team, Highways England, 2/07k Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6HA

The deadline for responses is 11.59pm on Wednesday 29 March 2017.

We look forward to hearing from you.

Yours sincerely



David Stock
Major Projects South West
Email: A303SparkfordtoIlchesterDualling@highwaysengland.co.uk
Tel: 0300 123 5000

Letter to residents within 1500m of either route

Our ref: OptionsConsultation2017

David Stock
2/07K Temple Quay House
2 The Square
Temple Quay
Bristol
BS1 6HA

Enquiries: 0300 123 5000

February 2017

Dear Occupier,

A303 Sparkford to Ilchester Dualling
Public Consultation from Wednesday 15 February until Wednesday 29 March 2017

The A303/A358 corridor is a vital connection between the south west and London and the south east. Highways England has been working on proposals to upgrade the A303 between Sparkford and Ilchester to a dual carriageway standard, creating a continuous 30 mile stretch of dual carriageway between South Petherton and Mere. This section acts as a bottleneck for users, causing congestion, particularly in the summer months and at weekends.

The scheme is classified as a Nationally Significant Infrastructure Project and forms part of a programme of planned improvements to the A303/A358 corridor. The scheme aims to relieve congestion, provide reliable journey times, unlock economic growth and improve safety whilst protecting the environment.

Following a detailed technical assessment process we have shortlisted two route options and would welcome your views before a decision on a preferred route option is made. We would like to invite you to take part in our public consultation, which will run from Wednesday 15 February until Wednesday 29 March 2017.

How to get involved and respond to the consultation

View the proposed route options online
All consultation information will be available on our scheme webpage from Wednesday 15 February 2017, including a brochure with a summary of the proposed route options, event information boards, and a link to the consultation questionnaire. For more information, go to: www.highways.gov.uk/Sparkford-to-Ilchester

Attend a public information event

Meet the project team and view the proposed route options at the following events:

Date	Venue	Time
Thursday 23 February 2017	Sparkford Inn, High Street, Sparkford, Yeovil, BA22 7JH	12.00 midday to 8.00pm
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Yeovil Library, King George Street, Yeovil, Somerset, BA20 1PZ	Lytes Cary Manor, near Somerton, Somerset, TA11 7HU
South Petherton Library, St. James Street, South Petherton, Somerset, TA13 5BS	Montacute House, Montacute, TA15 6XP
Taunton Library, Paul Street, Taunton, Somerset, TA1 3XZ	Somerset County Council, County Hall, Taunton, Somerset, TA1 4DY
Martock Library, The Shopping Centre, Martock, Somerset, TA12 6DL	South Somerset District Council, Brympton Way, Yeovil, Somerset, BA20 2HT

Have your say
Please complete a short questionnaire to let us know what you think of the proposals.

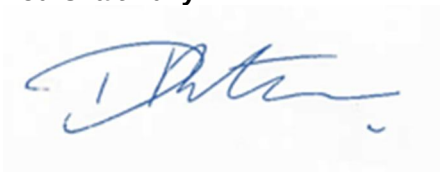
You can use one of the following methods to contact us and or respond to the consultation:

- Complete the questionnaire online at: www.highways.gov.uk/Sparkford-to-Ilchester
- Email: A303SparkfordtoIlchesterDualling@highwaysengland.co.uk
- Call: 0300 123 5000
- Post all responses to: Freepost Consultation, FPN 4016
- Write to us at: A303 Sparkford to Ilchester Project Team, Highways England, 2/07k Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6HA

The deadline for responses is 11.59pm on Wednesday 29 March 2017.

We look forward to hearing from you.

Yours faithfully



David Stock
Major Projects South West
Email: A303SparkfordtoIlchesterDualling@highwaysengland.co.uk
Tel: 0300 123 5000

Letter to landholders within 150m of either route

Our ref: OptionsConsultation2017

[Insert details]

David Stock
Project Manager
2/07K Temple Quay House
2 The Square
Temple Quay
Bristol BS1 6HA

Enquiries: 0300 123 5000

6 February 2017

[insert name]

A303 Sparkford to Ilchester Dualling
Public Consultation from Wednesday 15 February until Wednesday 29 March 2017

The A303/A358 corridor is a vital connection between the south west and London and the south east. Highways England has been working on proposals to upgrade the A303 between Sparkford and Ilchester to a dual carriageway standard, creating a continuous 30 mile stretch of dual carriageway between South Petherton and Mere. This section acts as a bottleneck for users, causing congestion, particularly in the summer months and at weekends.

The scheme is classified as a Nationally Significant Infrastructure Project and forms part of a programme of planned improvements to the A303/A358 corridor. The scheme aims to relieve congestion, provide reliable journey times, unlock economic growth and improve safety whilst protecting the environment. Following a detailed technical assessment process we have shortlisted two route options and would welcome your views before a decision on a preferred route option is made.

Event invitation
From our enquiries you have been identified as having an interest in land or property located in the vicinity of the proposed route options. You are invited to attend a special land interest event where you can talk to a member of our team. To arrange an appointment, please contact us by telephone on 0300 470 4465 or by email at: A303SparkfordtoIlchesterDualling@highwaysengland.co.uk

Date	Venue	Time
Wednesday 15 February 2017 Thursday 16 February 2017	Haynes International Motor Museum Sparkford, Yeovil, Somerset BA22 7LH	11.00am to 7.00pm Appointment only

If you are unable to attend, we are also holding several public information events which you are welcome to attend. You can participate in the public consultation in the following ways:

View the proposed route options online
All consultation information will be available on our scheme webpage from Wednesday 15 February 2017 including a brochure with a summary of the proposed route options, event information boards and a link to the consultation questionnaire. For more information, go to: www.highways.gov.uk/Sparkford-to-Ilchester

Attend a public information event
Meet the project team and view the proposed route options at the following events:

Date	Venue	Time
Thursday 23 February 2017	Sparkford Inn, High Street, Sparkford, Yeovil, BA22 7JH	12.00 midday to 8.00pm
Saturday 25 February 2017	Queen Camel Memorial Hall, High Street, Queen Camel, Yeovil, BA22 7NF	10.00am to 5.00pm
Friday 10 March 2017	Davis Hall, Howell Hill, West Camel, Yeovil, BA22 7QX	10.00am to 6.00pm

Visit a public information point
Consultation materials will be available to view from Wednesday 15 February until Wednesday 29 March 2017 during normal opening hours at the following places:

Public Information Points	
Wincanton Library, 7 Carrington Way, Wincanton, Somerset, BA9 9JS	Barrington Court, Barrington, Ilminster, TA19 0NQ
Yeovil Library, King George Street, Yeovil, Somerset, BA20 1PZ	Lytes Cary Manor, near Somerton, Somerset, TA11 7HU
South Petherton Library, St. James Street, South Petherton, Somerset, TA13 5BS	Montacute House, Montacute, TA15 6XP
Taunton Library, Paul Street, Taunton, Somerset, TA1 3XZ	Somerset County Council, County Hall, Taunton, Somerset, TA1 4DY
Martock Library, The Shopping Centre, Martock, Somerset, TA12 6DL	South Somerset District Council, Brympton Way, Yeovil, Somerset, BA20 2HT

Have your say
Please complete a short questionnaire to let us know what you think of the proposals. You can use one of the following methods to contact us and or respond to the consultation:

- Complete the questionnaire online at: www.highways.gov.uk/Sparkford-to-Ilchester
- Email: A303SparkfordtoIlchesterDualling@highwaysengland.co.uk
- Call: 0300 123 5000 (9am to 5pm, Monday to Friday)
- Post all responses to: A303 Sparkford - Ilchester Dualling, Freepost Consultation, FPN 4016
- Write to us at: A303 Sparkford to Ilchester Project Team, Highways England, 2/07k Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6HA

The deadline for responses is 11.59pm on Wednesday 29 March 2017.

We look forward to hearing from you.

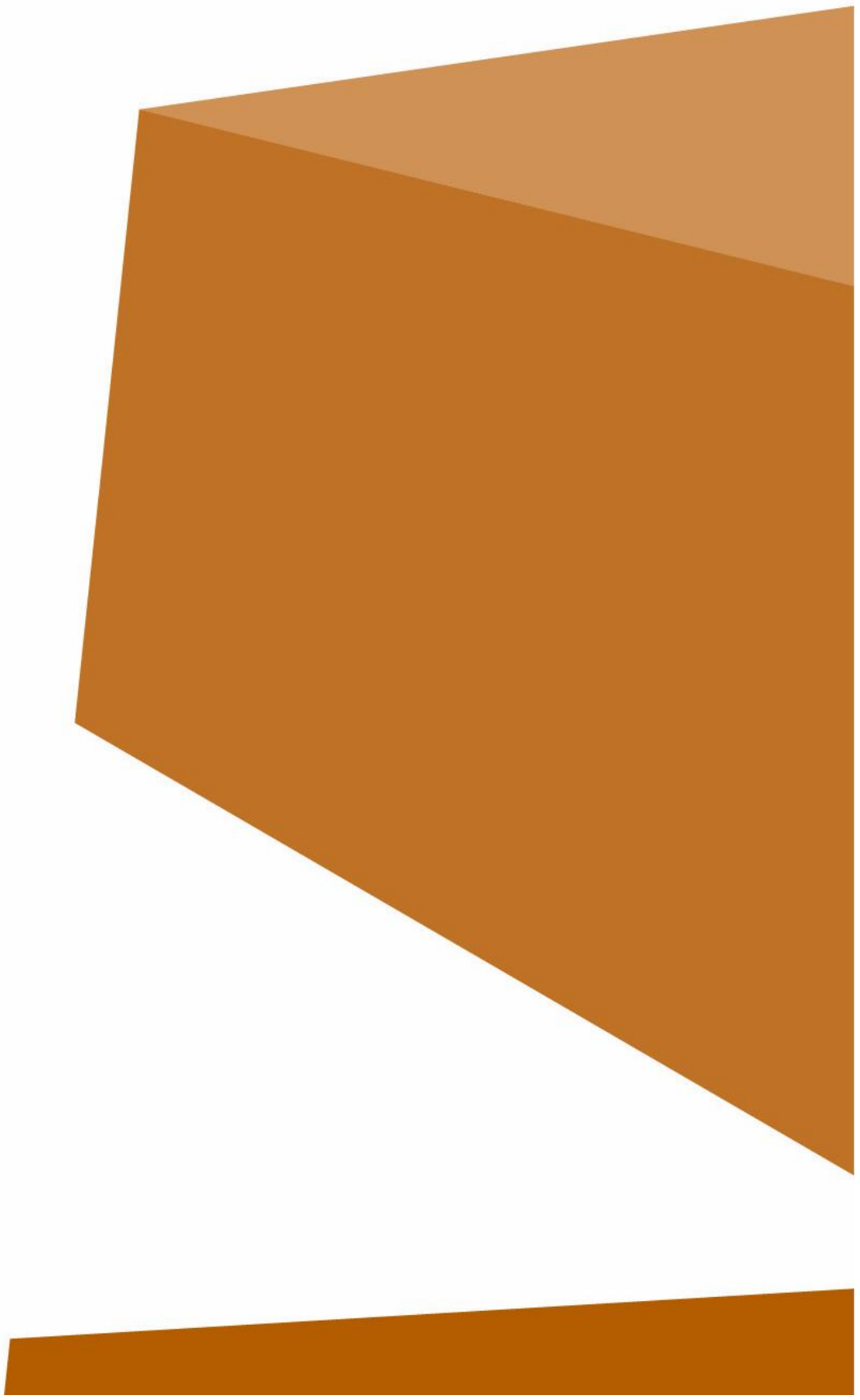
Yours sincerely

David Stock
Major Projects South West
Email: A303SparkfordtoIlchesterDualling@highwaysengland.co.uk
Tel: 0300 123 5000

Appendix E – Letter responses to the consultation from organisations

Appendix E has been uploaded separately from the main document to ensure the file size remains manageable.

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



A303
Sparkford to Ilchester
Dualling Scheme

Scheme Assessment Report

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Executive Summary

Introduction

Dualling of the A303 between Sparkford and Ilchester in Somerset was announced in the *Road Investment Strategy: for the 2015/16 – 2019/20 Road Period* (Department for Transport, December 2014, update March 2015) and is currently in the option selection stage.

The A303/A30 corridor forms part of the Strategic Road Network (SRN) and provides a main arterial link connecting London and the South East of England with Wiltshire, Dorset, Somerset, Devon and Cornwall in the South West of England. The corridor is used heavily by business and leisure traffic and is of critical importance to the varied economy of South West England. Not only is the A303 an important strategic long-distance road, it is also locally important, connecting several towns along the corridor including Andover, Amesbury, Salisbury, Shaftesbury, Warminster, Yeovil and Honiton.

This existing section of the A303 is predominantly single 2-lane carriageway with a short section of single 3-lane carriageway at its eastern end. It is subject to a 50mph speed limit and has long sections where overtaking is not permitted. There are several local road junctions, accesses to property and parking laybys. This section of road connects with existing dual carriageway sections of the A303 at Hazlegrove Roundabout near Sparkford to the east and at the junction with the B3151 to Podimore to the west.

The proposed scheme will create a continuous dual carriageway along this part of the A303 and will remove the existing at-grade junctions and direct accesses to property.

Key dates in the current programme include:

Preferred route announcement……....	Autumn 2017
Statutory Public Consultation	Early 2018
Submit DCO application……	Summer 2018
Secretary of State decision on DCO application…….	Winter 2019
Start of construction…….	Spring 2020
End of construction…….	Winter 2022/23

This report presents a summary of the results of the traffic and economic appraisal work carried out for this scheme at the option selection stage. It also includes the key findings of the non-statutory public consultation held in February and March 2017. From a review of this work, a recommendation is made as to the preferred route.

Scheme brief

The objectives for the A303 Sparkford to Ilchester scheme are set out in the *Client Scheme Requirements* (Highways England, last updated August 2017). Overarching the specific scheme requirements is the Department for Transport's aspiration for the strategic road network to be smoother, smarter and sustainable by 2040.

Existing setting

The A303 between Sparkford and Ilchester is in the South Somerset District of Somerset County. The proposed scheme sits within the National Character Area of the Yeovil Scarplands, which is characterised by a series of broad ridges and steep scarps separating sheltered clay vales. The landscape character of this section of A303 is largely rural with large geometric field patterns, narrow lanes, and thick hedgerows.

To the south of this section of road are a number of village settlements whilst the land to the north is more sparsely populated. The most notable settlement near the existing route is the Royal Naval Air Station (RNAS) Yeovilton which incorporates the Fleet Air Arm Museum, a noteworthy tourist attraction.

The A303 at this location is currently on a ridge line with lower ground located to the north and south. There are no river, rail or major road crossings along this section. Several statutory undertakers are known to have equipment in the area that may require protection or diversion depending on the scheme option chosen.

Existing traffic

The road currently experiences high levels of congestion and poor journey time reliability particularly at weekends and in the summer months consistent with weekly commuting traffic patterns and its use as summer holiday route. It is considered that the current delays and queues are caused by insufficient traffic capacity.

A base year traffic model has been prepared which shows that a significant amount of local traffic uses this section of the A303.

Journey time reliability has also been assessed which is defined as variation in journey times that transport users are unable to predict. An assessment of journey time reliability has been undertaken for a weekday in the neutral working month of October in accordance with Department for Transport guidelines. It should be noted that the Department for Transport method does not capture the high flow and stress levels during weekend, bank holiday and school holiday periods. For the neutral month weekday, the existing road suffers stress levels such that a scheme solution would achieve slight beneficial effects.

Accident rates on this road have been found to be above the national rate for A class trunk roads, 162 accidents per billion vehicle-kms travelled compared with the national rate of 113 accidents per billion vehicle-kms travelled.

Existing constraints

A number of constraints to development exist within the vicinity of this section of the A303 which can be seen on the constraints plan in Appendix B of this report. These include:

- Environmental constraints:
  - Scheduled Monuments
  - Site of Special Scientific Interest
  - Special Areas of Conservation for bats
  - Ancient woodland (and other Biodiversity Action Plan habitats)

- Local Wildlife Sites
- Rivers and areas of water
- Areas susceptible to surface water flooding
- Flood Zones 2 and 3
- Local Geological Sites
- Registered Common Land
- Noise Important Areas
- Registered Parks and Gardens
- Utilities
- Conservation Areas
- National Trust Land
- Historic Landfill
- Archaeological events and finds
- Surface Water Nitrate Vulnerable Zones

· Land-use and community constraints:
  - Listed buildings
  - Public Rights of Way
  - Planning applications
  - Strategic Development Areas

  Areas of tourism

Planning factors

A review of current legislation and planning policy has been carried out. This has identified the current international, European and national legislation and planning policy that the scheme would need to meet in relation to:

· Air quality
· Cultural heritage
· Nature conservation and biodiversity
· Noise and vibration
· Road drainage and the water environment
· Geology, soils and materials
· Climate change
· Environmental planning

The review has further identified funding that may be available to help meet a key environmental objective of the Highways England's *Strategic Business Plan 2015-2020* (Highways England, December 2014). The objective is for an 'improved environment'. Highways England have created a series of ring-fenced funds to address a range of specific issues over and above the traditional focus of road investment. Those of relevance to this scheme include:

· Environment: A £300 million fund to deliver specific enhancements to the network.
· Cycling, Safety and Integration: A £250 million fund to deliver improved outcomes for those living or working near the network.

A review of local planning policy has identified the following which will need to be taken into account in the further development of this scheme:

- *South Somerset District Council's Local Plan 2026-2028*
- *South Somerset District Council Housing and Economic Land Availability Assessment Report* (February 2017)
- *Somerset County Council's Future Transport Plan 2011-2026*

Do nothing consequences

The Annual Average Daily Traffic (AADT) along this section of the A303 was 23,500 in the 2015 base year scenario, which compares against a Congestion Reference Flow (CRF) of approximately 28,400. The CRF gives an indication of the flow level at which the route is likely to experience congestion during the peak periods on an average day. However, this route carries much higher traffic levels during holiday periods and weekends when this section of the route currently experiences regular occurrences of delay and congestion.

The AADT is forecast to increase to 33,500 by 2038, which indicates that the A303 would not have enough capacity, leading to increased queuing and congestion on an average day as well as during holidays and weekends.

When combined with additional forecast trips due to proposed future developments, the journey time is forecast to increase by 2038 by between 2 to 5 minutes during weekday peak and interpeak time periods and by over 6 minutes during the August weekend period. Congestion acts as a constraint to development, and has an impact on the productivity and attractiveness of the South West as a key holiday destination. The severity of these issues is likely to increase if no action is taken.

Alternative schemes

The *Technical Appraisal* Report (Highways England, November 2016) recommended two options to be assessed and taken to non-statutory public consultation at the option selection stage. These are:

- Route option 1 which would follow the existing corridor of the A303 very closely
- Route option 2 which take an offline course to the north of the existing route

It is proposed that the new road will be a dual carriageway with two lanes in each direction and subject to the national speed limit. There will be no at-grade junctions or direct accesses to the road. It will be accessed via slip roads connecting to grade-separated junctions. Existing local roads will either be diverted to connect with one of these new junctions or bridges across the new road will be provided to maintain existing north-south links. Design development at this stage is compliant with geometric design standards.

An outline non-motorised user (NMU) strategy has been developed based on feedback from local users groups, the Somerset County Council's Right of Way Officers, NMU surveys and a NMU audit undertaken during the option identification stage. For each proposed options, the strategy has identified each known NMU route which currently crosses the line of that options. For each NMU route, the strategy involves either diverting the route to a crossing

point or maintaining the route on its existing line via a bridge across the new road. Specific details are contained in Chapter 5.5of this report.

Development of the options has included preliminary consideration of structures, earthworks, drainage, statutory undertakers' services lighting and technology. These will be further developed for the selected option at the preliminary design stage following the Preferred Route announcement.

At this stage, it is envisaged that option 1 would involve construction of 2 overbridges, 2 underbridges and upgrade of an existing accommodation bridge to bridleway standards. Option 2 is envisaged to involve construction of 5 overbridges and upgrade of an existing accommodation bridge to bridleway standards.

In terms of earthworks, option 1 would require greater quantities of earthworks as a result of its proposed route over the top of Camel Hill. There are a number of geotechnical challenges which are pertinent to both options. Option 1 has higher potential sources of contamination and a number of historical quarries which may be poorly backfilled. Option 2 currently has limited existing ground investigation data so currently has a higher risk of unknown ground conditions. A more detailed ground investigation would be carried out for the selected option at the next stage. Option 2 potentially has thicker alluvial deposits being close to the Dyke Brook flood plain and therefore has the potential to require increased depth to suitable foundation strata for structures.

Based on preliminary statutory undertakers' enquiries, option 1 would incur greater costs in diverting existing utilities due to the greater concentration of utilities along the existing A303 corridor.

The technical requirements for drainage, lighting and technology are not significantly different for either option.

Consideration has also been given to land-take and buildability of the scheme. Option 2 is likely to require the greatest acquisition of third-party land. Construction of option 1 would be constrained by two pinch-points due to its proximity to existing properties, a Scheduled Monument and a Ministry of Defence (MOD signal station). It would also require more complex traffic management during construction due to it being built in part on the line of the existing A303. Traffic could be maintained on the existing A303 during most of the construction of option 2, which would largely require only local minor diversions. Work would have to be phased for option 1 and any road closures would involve long diversions along similar class roads. A potential offline haulage route has been identified which would require additional temporary land-take. This would be investigated further during preliminary design.

Traffic modelling

A traffic model has been prepared using the *South West Regional Traffic Model (SWRTM) Validation Report* (Highways England, March 2017) and will be used to support the scheme during the DCO Examination process. It was developed in the SATURN software to represent three weekday time periods consistent with the SWRTM model. To represent the higher traffic flows that occur at weekends and during holiday periods, a separate factor-based highway traffic model was also developed for use in the economic appraisal.

The study area comprised the A303 corridor, the A358 corridor, the M4/M5, and the surrounding areas, which takes into account the area which would be affected by the implementation of the scheme.

Flow validation has been undertaken against independent data not used in calibration of the model or for the matrix building exercise. The journey time validation is considered to be good in all time periods with the model recreating journey times that are representative on key routes in the modelled area: the journey time route validation meets Department for Transport's web-based *Transport Analysis Guidance*: *(WebTAG)* criteria and the journey time segment validation meets or nearly meets the WebTAG criteria across all time periods. It is considered that the model calibrates and validates to within acceptable margins of the WebTAG criteria and therefore demonstrates a good representation of traffic behaviour in the study area.

Traffic forecasts

Traffic forecasts have been prepared for the current estimated opening year for the scheme, 2023, and the scheme design year, 2038. Two additional forecast years, consisting of an intermediate year of 2031 and a final forecast year of 2051, have also been used to support the economic appraisal of the scheme. Forecast have been carried out for the 2 scheme options as well as a scenario without the scheme.

There is a predicted increase in journey times between the 2015 base and the Do Minimum scenario for both 2023 and 2038. This is a result of a higher level of traffic in both forecast years. The journey times decrease between Do Minimum and the Do Something scenarios in both forecast years and for all time periods. This indicates that either scheme option would have a positive impact on the A303 corridor.

In 2023 both options are predicted to provide an average reduction in journey time close to 2 minutes in each direction on a neutral weekday compared to the Do Minimum. The corresponding reduction during August weekends is close to 4 minutes. In 2038 the reductions are similar for the weekday but larger for the August weekend, increased to almost 5 minutes.

Modelled journey times for option 1 are consistently lower than those for option 2 due to its shorter distance.

Economic performance

Economic assessment has been carried out consistent with WebTAG requirements. An analysis of monetised costs and benefits is shown below. Values are given in £000s.

Item	Option 1	Option 2
Present Value of Benefits (PVB)	184,976	176,443
Broad Transport Budget Present Value of Costs (PVC)	115,073	108,376
Net Present Value (NPV)	69,903	68,067
Initial Benefit to Cost Ratio (BCR)	**1.61**	**1.63**

Reliability Benefits	11,183	10,526
Wider Economic Benefits	12,986	11,441
Adjusted Present Value of Benefits (PVB)	209,146	198,410
Adjusted BCR	**1.82**	**1.83**

The BCR value is used to assess the value of a transport project by weighing the benefits against the costs to indicate whether it is Value for Money. Both options result in adjusted BCRs between 1.5 and 2. Under the Department for Transport's value for money criteria, these represent medium value for money.

Operational performance

A Maintenance and Repair Strategy Statement has been prepared which identifies the key maintenance issues for the proposed scheme. The only difference between the 2 options identified at this stage is that the existing A303 could be used as a diversion route during a full road closure of any part of option 2. For option 1, any diversion would be considerably longer.

A Project Safety Plan has also been prepared. Neither of the route options has been identified as having significant safety or operational implications for the strategic road network.

Environmental assessment and design

An environmental assessment has been carried out for each option in line with WebTAG requirements. The key differences between the route options are:

Option 2 is considered to have a greater adverse impact on landscape character and visual amenity during operation, mainly due to it impacting on unspoilt landscape in an area of high amenity value
.
Option 2 is considered to have a slight beneficial impact on both noise and vibration during operation compared with option 1 which is considered to have a slight adverse effect. This is due to option 2 being further from the larger existing communities to the south of the existing road, which would benefit from a reduction in noise and vibration with the northerly route option.

Option 2 is considered to have a greater adverse impact on qualifying species for Natura 2000 sites (Special Areas of Conservation and Special Protected Areas) both during construction and operation.

Option 1 is considered to have a slight beneficial impact on amenity for people and communities during operation compared with option 2 which is considered to have a slight adverse effect. This is due to changes to barriers between people and traffic, flows and provision of new facilities.

Option 2 is considered to have a neutral impact on severance both during construction and operation compared with a slight adverse impact for option 1. This is due to the number of non-motorised users (NMU) experiencing adverse effects on journey times.

Environmental objectives

The route options have been compared against the environmental objectives for the scheme. The *Client Scheme Requirements* include a Strategic Outcome for 'the delivery of better environmental outcomes'. The Strategic Outcome includes a key performance indicator for 'Noise: Number of Noise Important Areas mitigated'. There are 2 Noise Important Areas on the existing A303, one just to the east of Camel Cross and one just west of Howell Hill. Both would be mitigated for with either option. Overall, option 2 would deliver a better environmental outcome for these Noise Important Areas than option 1.

The Strategic Outcome also requires that scheme development embraces the Highways England Biodiversity Action Plan, which aligns with the key performance indicator identified within the *Roads Investment Strategy* of 'no net loss of biodiversity by 2020'. To achieve this an Ecological Mitigation Strategy will be prepared at preliminary design stage. With suitable mitigation, it is considered that there will be a net neutral effect on biodiversity for both options, one mitigation planting has matured. Biodiversity enhancement measures will also be explored as the scheme progresses.

The *Client Scheme Requirements* also include a Strategic Outcome for 'helping cyclists/walkers and other vulnerable users', with a KPI of 'the number of new and upgraded crossings'. This has been addressed to date through the development of the NMU strategy which includes locations for diversions of existing NMU routes, new crossings and potential cycle routes. It is considered that the scheme development to date is addressing the Strategic Outcome.

Public Consultation

Highways England conducted a six-week period of route options Public Consultation for the A303 Sparkford to Ilchester scheme. The consultation ran between 14 February 2017 and 29 March 2017 and included a series of public information events.

The events enabled key, local community and landowner stakeholders the opportunity to discuss the scheme options proposals with the project team and to view the scheme route option proposals.

A questionnaire was provided at the events and a total of 1,237 responses were received primarily from community stakeholders, with a number of statutory stakeholders submitting formal reports and letters instead.

Analysis of the responses identified key themes and issues. A total of 82% of all respondents were in favour of upgrading this section of the A303 to dual carriageway, with 7% against and 11% unsure or not answered. Respondents in favour cited reduced congestion and improved safety as key themes. Respondents against an upgrade cited the impact on businesses and the environment and the fact that homes could be lost among their responses.

A total of 64% of all respondents preferred option 1 with 29% in favour of option 2 and 7% unsure or not answered. Those who preferred option 1 cited that it would preserve the countryside and make use of the existing road among the reasons for their preference. Those

who preferred option 2 cited that it would be easier to construct, would allow the existing A303 to be used as a local road and would reduce noise in existing villages among their answers.

Other questions related specifically to Downhead Junction and Hazlegrove Junction and were included to help inform junction strategy at the next stage of scheme development.

Among other comments or observations, common response themes included concerns relating to flooding, design, non-motorised users, impact on local communities, environmental impact, and junction strategy.

Conclusions and recommendations

An overall comparison of the advantages of each option identified in the assessments and public consultation at this stage of the scheme is shown below.

Advantages of option 1	Advantages of option 2
· Minimises land-take · Shortest of the two options, reducing journey time and carbon emissions · Route follows existing corridor very closely, minimising construction in unspoilt rural setting with high amenity value · Slightly less impact on biodiversity · Most popular with the public · Least public opposition likely to generate objections at DCO	· Less impact on existing local journeys · Easier to construct · Disruption to travelling public during construction will be less, due to alternative route available · Less impact on existing non-motorised user journeys · Greater reduction in noise for communities near the existing A303

Option 1 has more advantages and most of these are related to the permanent post-construction situation.

The options have similar BCR values demonstrating that they are both similar value for money. It is anticipated that, if landscape disbenefits were required to be included in the assessment at a later stage, the BCR of option 2 would reduce.

There is also considerably more public support for option 1.

It is therefore recommended that option 1 is announced as the Preferred Route.

1 Introduction

1.1 Scheme background

1.1.1 Dualling of the A303 between Sparkford and Ilchester was announced in the *Road Investment Strategy: for the 2015/16 – 2019/20 Road Period* (Department for Transport, December 2014, update March 2015) and is currently in the option selection stage.

1.1.2 Dualling of this section of the A303 has been investigated on previous occasions, most recently in 2003/04, when it was taken to public consultation but then dropped from the roads programme by the government of the day.

1.2 Scheme description

Existing route corridor

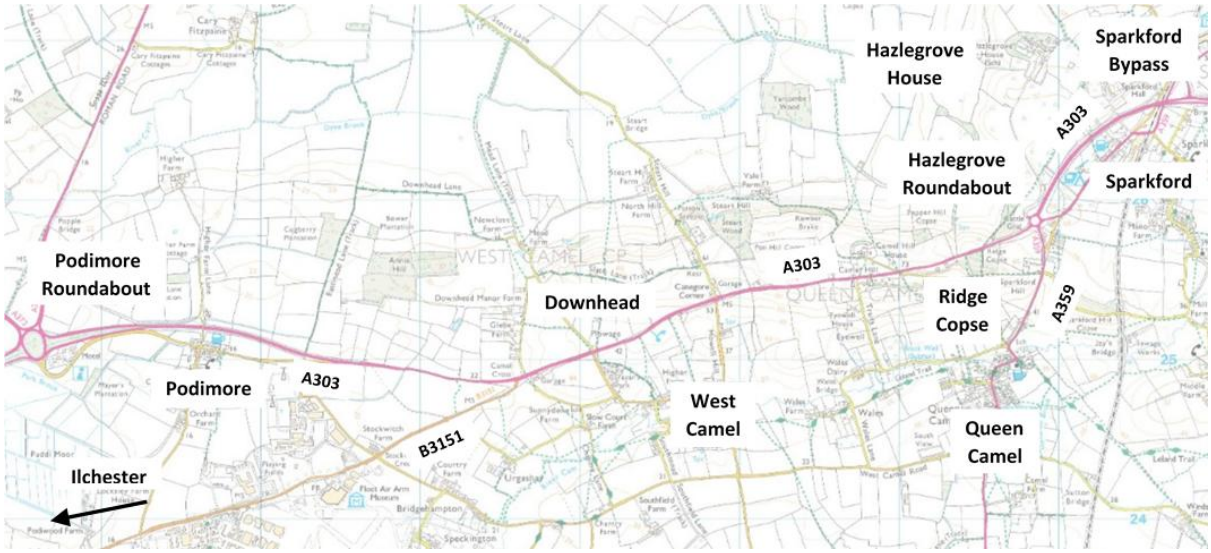
1.2.1 The A303/A30 corridor forms part of the Strategic Road Network (SRN) and provides a main arterial link connecting London and the South East of England with Wiltshire, Dorset, Somerset, Devon and Cornwall in the South West of England. The corridor is used heavily by business and leisure traffic and is of critical importance to the varied economy of South West England. Not only is the A303 an important strategic long-distance road, it is also locally important, connecting several towns along the corridor including Andover, Amesbury, Salisbury, Shaftesbury, Warminster, Yeovil and Honiton.

Existing project road

1.2.2 The section of the A303 between Sparkford and Ilchester includes Hazlegrove Roundabout which has five arms (see Figure 1.1 Sparkford to Ilchester Existing Road Layout). This roundabout forms a junction with the A359 including access to a service station located at the western end of the existing dual carriageway Sparkford bypass. Continuing west from the roundabout the A303 has 2 lanes in the westbound direction, one lane in the eastbound direction and is subject to a 50mph speed limit. This section continues up to the vicinity of Ridge Copse prior to a petrol filling station.

1.2.3 The remaining length of the Sparkford to Ilchester section is characterised by a single lane road, with double white lines negating overtaking and subject to a 50mph speed limit. There are several priority junctions along the route giving access to the settlements of Queen Camel and West Camel to the south, as well as several farm accesses and parking laybys. The road continues west until it becomes a dual carriageway road just west of the junction with the B3151 to Podimore. This section of the A303 is about 3.5 miles long.

Figure 1.1 Sparkford to Ilchester Existing Road Layout



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Proposed scheme

1.2.4 The proposed scheme is to provide a dual carriageway on the A303 between Sparkford and Ilchester in Somerset connecting the existing dual carriageway sections to the east and west. The scheme will involve the removal of at-grade junctions and direct accesses.

1.2.5 The current programme for the scheme is:

Preferred route announcement……....	Autumn 2017
Statutory Public Consultation	Early 2018
Submit DCO application…….	Summer 2018
Start of Development Consent Order examination…….....	Winter 2018
Secretary of State decision on DCO application…….	Winter 2019
Start of construction…….	Spring 2020
End of construction…….	Winter 2022/23

1.3 Report purpose and structure

1.3.1 The Scheme Assessment Report is a product required under Highways England's Project Control Framework. It has been prepared in accordance with *TD37/93 Scheme Assessment Reporting* (Highways England Design Manual for Roads and Bridges, Volume 5 Section 1 Part 2).

1.3.2 Paragraph 4.23 of TD37/93 requires that the Scheme Assessment Report should present a summary of the results of the traffic and economic appraisal work. It should

cover the following topics: modelling; forecasting; the expected effects of the scheme options; and the economic performance of the selected alternative schemes. The information presented should be sufficiently reliable to enable the relative merits of the selected alternative schemes to be compared.

1.3.3 The contents structure broadly follows Highways England's internal guidance for Scheme Assessment Reports, last updated in May 2016. It is set out as follows:

1. Introduction
2. Existing conditions
3. Planning factors
4. Do nothing consequences
5. Alternative schemes
6. Traffic and economics
7. Operational assessment
8. Environmental assessment and design
9. Public consultation
10. Appraisal summary tables
11. Conclusions
12. The recommended route

2 Existing Conditions

This chapter summarises the existing conditions described in chapter 3 of the *Technical Appraisal Report* (Highways England, November 2016).

2.1 The problem

2.1.1 The A303 Sparkford to Ilchester is a single carriageway section of the strategic road network between 2 dual carriageway sections. It currently experiences congestion and poor journey time reliability particularly at weekends and in the summer months consistent with weekly commuting traffic patterns and its use as summer holiday route.

2.1.2 The Department for Transport has identified this section of the A303 for improvement to dual carriageway in Part 2 page 17 of the *Road Investment Strategy: for the 2015/16 – 2019/20 Road Period*. This is part of its overall aspiration to achieve a smarter, safer, sustainable strategic road network by 2040 which includes transforming connectivity to and from the South West as set out in Part 1 page 55 of the *Road Investment Strategy*.

2.2 Existing conditions and constraints

Roads

Locality

2.2.1 The existing section of the A303 between Sparkford and Ilchester passes through the civil parishes of Sparkford, Queen Camel, West Camel and Yeovilton, which are located within South Somerset District. The district is situated within Somerset County and is bordered by the counties of Devon, Dorset and Wiltshire to the west, south and east, and by the districts of Taunton Deane, Sedgemoor and Mendip to the north.

2.2.2 South Somerset District is generally rural in character, with substantial levels of arable farming taking place.

2.2.3 There are small collections of agricultural and residential property immediately to the north of the existing A303, and the land further to the north is very sparsely populated until the villages of Babcary and Foddington are reached some 3-4 kilometres away. More concentrated settlements are located at Sparkford to the east and Queen Camel and West Camel to the south. The village of Ilchester lies approximately 3 kilometres to the south-west of the scheme limits.

2.2.4 The most notable development in the near vicinity of the scheme is the Royal Naval Air Station (RNAS) Yeovilton which lies on the low lying plain of the Rivers Cam and

Yeo. The site occupies approximately 2,000 hectares including 2 runways, numerous operational buildings and the Fleet Air Arm Museum.

Highway network

2.2.5 The A303/A30 forms part of the strategic road network and is a strategic link between the South West and the South East and London. The route is comprised of multiple road standards including dual carriageway, single carriageway and single carriageway sections with overtaking lanes together with associated varying speed limits (from 40mph to 70mph).

2.2.6 The existing A303 between Sparkford and Ilchester consists of approximately 5 kilometres of single carriageway adjoining existing dual carriageway sections at either end. The single carriageway section runs between the Podimore bypass (a dual carriageway) and Hazlegrove Roundabout.

2.2.7 The road is on a ridge line with lower ground located to the north and south. There are no river, rail or major road crossings along this section. From the west, the single carriageway starts 1.8 kilometres east of the Podimore Roundabout. It includes a number of priority junctions giving access to the settlements of Queen Camel and West Camel to the south, as well as a number of farm accesses and parking lay-bys. Just west of Hazlegrove Roundabout there is an overtaking lane in the westbound direction. To the east of Hazlegrove Roundabout, the route returns to dual carriageway.

Drainage

2.2.8 This section of the A303 is kerbed on both sides for most of its length with surface water runoff collected in either kerb inlet gullies or gullies set in the channels of the carriageway. There is a short section at Hawk House where runoff is collected in a filter drain.

2.2.9 Between the western end of the single carriageway near Podimore and the junction with the B3151 at Camel Cross, there is a low point where the drainage on both sides of the road is connected via a culvert which flows from north to south and outfalls into a ditch. Approximately 160 metres west of Hazlegrove Roundabout is a culvert connecting the southern side drainage to a soakaway on the northern side of the carriageway.

Utilities

2.2.10 During the options identification stage of this scheme, enquiries were undertaken in accordance with Appendix C2 of the Code of Practice *Measures Necessary where Apparatus is affected by Major Works (Diversionary Works)* (Department for Transport, June 1992) to determine the location of public utilities within the scheme area.

2.2.11 Several statutory undertakers were found to have equipment in the area that may require protection or diversion depending on the scheme option chosen. These included Wessex Water, Scottish and Southern Energy (SSE), BT, Global Crossing/Fibernet, Virgin Media and Network Rail. Most of the existing public utilities that may be affected by the scheme are alongside or across the existing A303 serving local communities.

Traffic

2.2.12 During the options identification stage of this scheme, data from a Highways England Open Data Automatic traffic count site on this section of the A303 were obtained for October 2015 and August 2015 to assess the traffic levels in both a neutral and peak month, as shown in Table 2.1. School holidays have been excluded from the October averages.

Table 2.1 A303 2015 Automatic Traffic Counts

Location: A303 between Hazlegrove Roundabout and Podimore Roundabout	October 24-hour 2-way daily flow	August 24-hour 2-way daily flow
Mon–Thurs Average 2015	22,300	26,100
Friday Average 2015	29,500	34,000
Saturday Average 2015	21,600	29,900
Sunday Average 2015	23,000	26,400

Note: Counts rounded to nearest 100 vehicles

2.2.13 The average October Friday flow of 29,500 is higher than the average October weekday as well as higher than the October daily average flows for Saturday and Sunday. The flows on October Saturdays and Sundays are, however, of a similar level to those on an average October weekday. During the summer peak month of August, the daily average flows are significantly higher than October on all days of the week and highest for an average August Friday, Saturday and Sunday when the road operates at capacity during certain times of the day. It is considered that the current delays and queues are caused by insufficient capacity on this section of the A303 especially at weekends and during holiday periods.

2.2.14 The 2015 base year model shows that on a neutral weekday between 35% and 45% of the traffic on the existing A303 travels through the local area entirely using the A303 between Cartgate Roundabout and North/South Cadbury, shown in Figure 2.1. The remaining traffic either serves local trip origin and destinations, or is longer distance traffic using routes such as the A37 so only part of their route uses the A303 in the local area. Daily A303 HGV traffic accounts for around 9.4% of the total traffic flow on the single carriageway section.

Figure 2.1 Existing A303 between Cartgate Roundabout and North/South Cadbury

Source: Prepared by Highways England Integrated Project Team. This Map is based upon Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Highways England 100030649 2017.

Accidents and journey time reliability

Accidents

2.2.15 Collision data for this section of the A303 has been obtained from Somerset County Council and Highways England for the period 1 January 2010 to 31 December 2014. This has been analysed using *KeyAccident v7.2* (software from Keysoft Solutions). Certain cleaning processes were carried out such as removing duplicates of the same accident.

2.2.16 A summary of accident numbers is shown in Table 2.2

Table 2.2 Accidents by severity (1 January 2010 to 31 December 2014)

Section Ref	Location	Fatal	Serious	Slight	Total
FA16-1	A303 single carriageway between A359 Roundabout and the A303 dual carriageway section	1	4	19	24
FA16-2	A303/A359 Sparkford Roundabout	0	3	7	10
	TOTAL	**1**	**7**	**26**	**34**

2.2.17 The accident rate has been calculated for the scheme and is presented in Table 2.3. It shows that the accident rate is higher than the national rate for A class trunk roads.

Table 2.3 Accident rates

Section Ref	Location	Accident rate per billion vehicle-km travelled	National Rate for all A trunk roads Accident rate per billion vehicle-km travelled *
FA16	A303 Sparkford to Ilchester	162	113

Calculated from:

- Strategic Road Network Traffic Report TRA41 - Table TRA4112
- Reported Road Casualties on the Strategic Network 2013 Report PR67/4 Table B.1

Journey time reliability

2.2.18 References in this section to WebTAG relate to the Department for Transport's web-based *Transport Analysis Guidance: (WebTAG)*.

2.2.19 According to WebTAG unit A1-3 on user and provider impacts (March 2017), reliability is defined as variation in journey times that transport users are unable to predict. Such variations could come from recurring congestion at the same period each day (day-to-day variability) or from non-recurring events such as incidents. It excludes predictable variation relating to varying levels of demand by time of day, day of week, and seasonal effects of which travellers are assumed to be aware.

2.2.20 The stress-based approach set out in the Department for Transport's *Transport Analysis Guidance* A1.3 Appendix C.5 has been used to assess journey time reliability benefits. An assessment of journey time reliability has been undertaken which shows that the existing road suffers stress levels such that a scheme solution would achieve slight beneficial effects. However, as the model has been produced at relatively low stress in the neutral working month of October, it does not capture the high flow and stress levels during weekend, bank holiday and school holiday periods.

Environment

Summary of environmental constraints

2.2.21 References to route options in this section relate to the route options described in chapter 5 of this report.

2.2.22 Constraint mapping has been undertaken and has identified the following constraints within 1 kilometre of the proposed route options:

- Environmental constraints:
  - Scheduled Monuments
  - Site of Special Scientific Interest
  - Special Areas of Conservation for bats

- Ancient woodland (and other Biodiversity Action Plan (BAP) Habitats)
- Local Wildlife Sites equivalent to Sites of Importance for Nature conservation
- Rivers and areas of water
- Areas susceptible to surface water flooding
- Flood Zones 2 and 3
- Local Geological Sites equivalent to Regionally Important Geological Sites
- Registered Common Land
- Noise Important Areas
- Registered Parks and Gardens
- Utilities
- Conservation Areas
- National Trust Land
- Historic Landfill
- Archaeological events and finds
- Surface Water Nitrate Vulnerable Zones

· Land-use and community constraints:
  - Listed buildings
  - Public Rights of Way
  - Planning applications
  - Strategic Development Areas
  - Areas of tourism

2.2.23 The environmental constraints plan can be found in Appendix B of this report and provides an illustration of the existing A303 between Sparkford and Ilchester in relation to statutory and non-statutory environmental designations within 1 kilometre of both proposed route options. A detailed description of the environmental constraints is contained below.

Air quality

2.2.24 Information on air quality in the UK can be obtained from a variety of sources including Local Authorities, the Department for Environment, Food and Rural Affairs (Defra), national network monitoring sites and other published sources. The most recent year of ratified monitoring data available from South Somerset District Council (SSDC) is for 2015.

2.2.25 There are no Air Quality Management Areas (AQMA) located within 1 kilometre of either route option. The nearest AQMA is located between 6-7.5 kilometres south of both route options, in Yeovil. This AQMA was declared in 2003 by SSDC for exceedances of the NO_2 (nitrogen dioxide) annual mean air quality objective.

2.2.26 No local authority monitoring is currently undertaken within the vicinity of the route options. SSDC undertakes NO_2 diffusion tube monitoring primarily within the Yeovil AQMA; in 2015, exceedances of the annual NO_2 objective were found at four sites within the AQMA. Monitoring is also undertaken at a Defra Automatic Urban and

Rural Network site at Charlton Mackrell, approximately 4.9 kilometres northwest of option 1, and 4.6 kilometres northwest of option 2. This rural background monitoring site has recorded annual mean NO_2 concentrations which are well below the annual NO_2 air quality objective.

2.2.27 Due to the lack of local authority monitoring data near to the proposed route options, a six-month air quality monitoring survey was undertaken by Highways England from December 2015 to June 2016, the results of which were adjusted to annual mean concentrations in accordance with Defra guidance[1]. This survey concluded that monitored NO_2 concentrations within the vicinity of the route options were well below the annual NO_2 air quality objective. The greatest NO_2 concentration of 29.7µg/m^3 was recorded at the Hawk House B&B monitoring site.

2.2.28 Defra uses the Pollution Climate Mapping (PCM) model to report compliance with the EU limit values and provides NO_2 concentrations for a number of roads across the UK for a number of future years. There are no PCM links within 10 kilometres of the route options exceeding 40µg/m^3 for the year of 2017. The PCM link closest to the route options, on Ilchester Road, predicts a 2017 annual NO_2 concentration of 21µg/m^3, which is well below the annual mean limit value of 40µg/m^3 for NO_2.

Cultural heritage

2.2.29 Information on the heritage and historic resources within the Somerset area was requested through the Somerset Historic Environment Record. In addition, analysis of aerial surveys and historical mapping has been undertaken as part of the option identification and option selection stages for this scheme, which has further developed the heritage and historic resources baseline.

2.2.30 There are 2 Scheduled Monuments within 1 kilometre of both route options. These are the Romano-British Settlement immediately south-west of Camel Hill Farm (list entry ID 1020936), and the medieval settlement remains north of Downhead Manor Farm (list entry ID 1021260). In addition, the scheduled multivallate hillfort and associated earthworks at South Cadbury is located at an elevated position 1.5 kilometres south-east of both options. This is outside of the 1 kilometre study area, but not necessarily outside of the zone of visual influence of the scheme.

2.2.31 There are numerous listed buildings within 1 kilometre of both options, consisting of Grade I, Grade II and Grade II* listed buildings. Both route options would pass through the southern third of the Hazlegrove House (Grade II listed) Registered Park and Garden (list entry ID 1000422).

[1] Defra (2016) Local Air Quality Management: Technical Guidance (TG16) [online] available at: https://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf (last accessed July 2017).

2.2.32 Queen Camel Conservation Area is located approximately 650 metres south of option 1, and approximately 800 metres south of option 2. In addition, West Camel Conservation Area is located approximately 550 metres to the south of option 1, and approximately 1.5 kilometres south of option 2.

2.2.33 There are numerous records of archaeological features and finds within 1 kilometre of the route options. An analysis of both route options shows an overall high potential for significant archaeological remains to be present along the option 1 route, with evidence for archaeology from the later prehistoric periods onwards. This includes the Iron Age and Romano-British settlements close to Camel Hill Farm, as well as an early medieval cemetery. The potential for significant archaeological remains is slightly less for option 2, which is partially a reflection of the low-lying topography this route traverses to the north of Camel Hill, but also because there has been less archaeological investigation in these areas. It should be noted that the overall archaeological potential for option 2 is still classed as medium for most periods. This includes possible Bronze Age funerary features within the southern boundary of Coages Park (a former medieval deer park), as well as the surviving park pale itself. Option 2 would also lie close to the scheduled Downhead deserted medieval settlement remains.

Landscape

2.2.34 Information relating to the landscape character within the local area is obtained from Natural England's National Character Area (NCA) profiles[2]. Information relating to landscape designations can be found on Natural England's MAGIC interactive map[3], and local Conservation Areas are identified on SSDC's interactive map[4]. Information relating to the local Public Rights of Way (PRoW) have also been obtained from SSDC's interactive map[4].

2.2.35 The scheme sits within Natural England's NCA 14 Yeovil Scarplands[2], which is characterised by a series of broad ridges and steep scarps separating sheltered clay vales, with less than 5% of the area being urban. The landscape character of this section of A303 is largely rural with large geometric field patterns, narrow lanes, and thick hedgerows. The existing A303 runs along the top of the partially wooded ridge of Camel Hill before descending to Sparkford. Intermittent farmsteads punctuate the landscape to the north of the A303, whilst to the south, lie the more populated villages of West Camel and Queen Camel. In addition, the villages of Podimore and Sparkford lie to the south of the existing A303 east and west of the route options

[2] Natural England (2014) National Character Area profile: 140. Yeovil Scarplands [online] available at: http://publications.naturalengland.org.uk/publication/5731196449325056?category=587130 (last accessed July 2017).
[3] Natural England (2017) MAGIC Interactive Map [online] available at: http://magic.defra.gov.uk/MagicMap.aspx (last accessed July 2017).
[4] South Somerset District Council (2017) 'Your Area' Interactive Map [online] available at: https://www.southsomerset.gov.uk/generic-map/ (last accessed July 2017).

respectively. The land to the west of Sparkford is a level area drained by a series of ditches leading to the Dyke Brook and westward to the River Cary. Blocks of woodland occasionally punctuate the field pattern and are particularly prominent on the western section from Camel Hill to Sparkford.

2.2.36 There are no Areas of Outstanding Natural Beauty (AONB), National Parks, or Heritage Coasts located within 1 kilometre of either route options[3]. However, there are 2 Conservation Areas identified on SSDC's interactive map[4], one at West Camel and the other at Queen Camel. There are a number of listed buildings within the study area, particularly within the villages of West Camel and Queen camel.

2.2.37 There are numerous visual receptors located within the scheme's likely Zone of Theoretical Visibility. Visual receptors with a high sensitivity to change within the study areas for the proposed options include people occupying residential properties (there are approximately 100 properties within 200 metres of option 1, and 50 properties within 200 metres of option 2), users of PRoW (there are approximately 60 footpaths, 2 bridleways, 4 restricted byways, and 1 national cycle route within the study area[4]) and those using recreational features for the enjoyment of the countryside There are also several elevated views outside of the 1 kilometre study area, including viewpoints from St Michael's Hill and Cadbury Castle.

Biodiversity

2.2.38 Information regarding statutory and non-statutory sites is available from Natural England's MAGIC Interactive Map[5], with further information available from Natural England and the Joint Nature Conservation Committee. Information on the Local Wildlife Sites (LWS) within the study area has been obtained from a data request from Somerset Environment Records Centre (SERC), in April 2015 and a further request for updated information was made in June 2017. Information relating to habitats and species have been obtained from ecological surveys that have been undertaken since February 2016.

2.2.39 Natura 2000 is a network of nature protection areas within the European Union, made up of Special Areas of Conservation (SAC) and Special Protection Areas (SPA). There are no SAC, SPA or Ramsar[6] designated sites within 2 kilometres of either route option, however one Site of Special Scientific Interest (SSSI) lies 1.3 kilometres north-east of both option 1 and option 2. In addition, there are also no National Nature Reserves, Local Nature Reserves, or Royal Society for the Protection of Birds (RSPB) reserves within 1 kilometre of the route options. However, there are 3 SAC designated for bat populations located within 30 kilometres both

[5] Natural England (2017) MAGIC Interactive Mapping [online] available at: http://magic.defra.gov.uk/MagicMap.aspx (last accessed July 2017).
[6] Ramsar sites are designated under the Convention on Wetlands, known as the Ramsar Convention, an intergovernmental environmental treaty established in 1971 by UNESCO

route options. These include North Somerset and Mendip Bats SAC, Mells Valley SAC and Bracket's Copse SAC.

2.2.40 There are 11 LWS within 1 kilometre of both route options; several of these LWS comprise of ancient woodland at least in part. The proposed route alignments of both route options would pass through the southern extent of Hazlegrove Park LWS. Option 2 would also lie approximately 25 metres from Annis Hill LWS (which includes ancient woodland), and option 1 would lie adjacent to Camel Hill Transmitter Site, and Gason Lane Field.

2.2.41 A Phase 1 habitat survey was undertaken in February and March 2016. This is a standardised method for classifying and mapping wildlife habitats. The nature and condition of the vegetation provides information about many of the living and non-living components of the environment. A study of the vegetation can thus provide an effective means of classifying and surveying habitats. Each habitat type/feature is defined by a brief description and is allocated a specific name, an alpha-numeric code, and unique mapping colour.

2.2.42 The main habitats recorded within the study area during the Phase 1 habitat survey were poor semi-improved grassland and arable fields intersected by hedgerows, and scattered trees with pockets of broad-leaved semi-natural woodland. In addition, this survey work in combination with desktop study has identified habitats suitable to support bats, breeding birds, barn owls, badgers, dormice, reptiles, great crested newts, otters, and water voles. The full findings of the survey are reported in the *Preliminary Ecological Appraisal* (Highways England, May 2016).

2.2.43 Phase 2 protected species surveys are currently being undertaken for a number of species. These define the vegetation of selected areas more precisely in terms of their plant communities and may include surveys of animal species and communities. The objective is to produce detailed information on the frequency or abundance of communities and species for site management and monitoring purposes.

2.2.44 Phase 2 protected species surveys have identified the presence of great crested newts and common reptiles such as slow worm, common lizard, and grass snake. Numerous bat roosts have been found within buildings and include species such as brown long-eared, lesser horseshoe and barbastelle bats. Along watercourses, evidence of both water vole and otter have been found. Schedule 1 bird species such as barn owl and kingfisher have been recorded and BAP species include sky lark, tree pipit, common linnet, yellowhammer, house sparrow, hedge accentor (dunnock), common starling and song thrush.

2.2.45 BAP Priority Habitats are located within 1 kilometre of both route options which include Ancient Woodland, Deciduous Woodland, Wood-pasture and Parkland,

Lowland Calcareous Grassland, Coastal and Floodplain Grazing Marsh, Traditional Orchards, and Lowland Meadows.

Geology and soils

2.2.46 Information on geology and soils within the UK can be obtained from the Geology of Britain viewer[7], and information from the Ministry of Agriculture, Fisheries, and Food (MAFF) Agricultural Land Classification mapping. The SERC data request (June 2017) also provided information on the Local Geological Sites (LGS) within the vicinity of the route options.

2.2.47 The Geology of Britain viewer[7] indicates that the Ridge Copse/Podimore area at the western extent of both route options is partially underlain by superficial deposits of Alluvium and River Terrace Deposits (undifferentiated). There is a large region of Alluvium underlying parts of option 2, approximately 1.4 kilometres to the north of the existing A303. There is another region of River Terrace Deposits (undifferentiated) immediately north of the A303 at Sparkford. The majority of the remaining study area does not appear to be underlain by any superficial deposits. In regions where superficial deposits are absent, the underlying bedrock will be near the surface.

2.2.48 The bedrock is comprised of Langport Member, Blue Lias Formation, and Charmouth Mudstone Formation (undifferentiated) for the majority of the area. There is also a region of Westbury Formation and Cotham Member (undifferentiated) partially underlying the route of the existing A303 and extending eastward, south of the Hazlegrove Roundabout, with a small outcrop of Mercia Mudstone Group present proximal to Sparkford Hill Lane and Hill View.

2.2.49 The Alluvium and River Terrace Deposits superficial geology, and Langport Member, Blue Lias Formation and Charmouth Mudstone Formation are designated as Secondary A Aquifers. The Environment Agency defines a ‘Secondary A’ aquifer as ‘permeable layers capable of supporting water supplies at a local rather than a strategic scale, and in some cases forming an important source of base flow to rivers, these are generally aquifers formerly classified as minor aquifers’.

2.2.50 The Westbury Formation and Cotham Member (undifferentiated) and Mercia Mudstone are designated as Secondary B Aquifers. The Environment Agency defines a ‘Secondary B’ Aquifer as ‘predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers’.

[7] British Geological Survey (2017) Geology of Britain Interactive Map [online] available at: http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html (last accessed July 2017).

2.2.51 There are no groundwater Source Protection Zones within 1 kilometre of either of the proposed route options.

2.2.52 No post 1988 Agricultural Land Classification (ALC) surveys have been undertaken within the vicinity of the proposed route options. However, provisional ALC maps[8] indicate that the majority of land is Grade 3 (Good to Moderate quality) with a small amount of Grade 2 (the Best and Most Versatile Land) and Grade 4 (Poor quality) ALC land present.

2.2.53 There are 2 LGS equivalent to Regionally Important Geological Sites. These are detailed below, identified by the SERC data request (June 2017):

- Camel Hill Quarry East (Local Authority File Code ST52/516), adjacent south of existing A303 (approximate central National Grid Reference (NGR) ST 59422 25575), described as 'hummocky area in woods assumed to be quarry'.
- Sparkford Hill Copse (Local Authority Field Code ST62/630), 140 metres southeast of existing A303 (NGR ST 60159 25368, described as 'Useful sections of Rhaetic Langport Beds in disused quarries in wood owned by the Sparkford Copse Trust'.

Materials

2.2.54 Information on the current waste arisings, and the waste management facilities have been determined through a desk-top study, using a number of readily available resources, in particular data from the Environment Agency, Defra, SSDC, and Somerset County Council.

2.2.55 The latest data from the Environment Agency indicated that England produced over 191.1 million tonnes of waste in 2015, which was managed in 6,427 permitted waste facilities[9]. The South West region produced over 22.6 million tonnes of waste in 2015, which was managed by 874 waste sites. With respect to construction and demolition waste, the Environment Agency recorded that 715,000 tonnes of inert construction and demolition waste was deposited in landfill in the South West region, with 27,000 tonnes landfilled in Somerset. Regarding hazardous waste, the ENV23 – UK Statistics on waste[10] produced by Defra details that in 2014, over 4 million tonnes was produced in the UK with just under 750,000 tonnes produced by the construction sector. Just over 600,000 tonnes of this was produced in England.

[8] Ministry of Agriculture, Fisheries, and Food (MAFF) (1995) Agricultural Land Classification: South Somerset Local Plan, Yeovil [online] available at: https://www.southsomerset.gov.uk/media/462854/north_alc_map.pdf (last accessed July 2017).
[9] Environment Agency (2017) Waste Management for England 2015 [online] available at: https://www.gov.uk/government/statistics/waste-management-for-england-2015#history (last accessed May 2017)
[10] Department for Environment, Food and Rural Affairs (updated 2017) ENV23 – UK statistics on waste [online] available at: https://www.gov.uk/government/statistical-data-sets/env23-uk-waste-data-and-management (last accessed May 2017)

2.2.56 In terms of sources of contamination, there are no authorised landfills and 2 historic landfills within 500 metres of both route options. There may also potential contamination risks from infilled historic quarries, fuel stations/garages and underground tanks, presence of made ground, and Ministry of Defence (MoD) land.

2.2.57 In terms of waste facilities, the Environment Agency reported that in 2015, 874 sites accepted waste in the South West and, at the end of 2015, 1,182 sites in the South West had environmental permits to accept waste. Somerset has 5 operational landfill sites accepting inert and non-hazardous waste[11]; approximately 27 facilities which generate recycled aggregates, treat, or transfer construction and demolition waste[12]; and approximately 10 inert waste recovery projects[13]. There are approximately four operational incinerators within 100 kilometres of both route options[14].

Noise and vibration

2.2.58 Information for noise is obtained from Defra's Noise Mapping[15] which identifies Noise Important Areas (NIA), as well as sensitive receptors within the vicinity of the proposed route options. There is currently no baseline noise environment data within the vicinity of the route options.

2.2.59 Two of Defra's NIA are located on the existing A303 just to the east of Camel Cross and approximately 150 metres to the west of Howell Lane. The NIA to the east of Camel Cross is located adjacent to option 1, and approximately 650 metres to the south of option 2. The NIA to the west of Howell Hill is located within the footprint of option 1, and approximately 900 metres from option 2.

2.2.60 There are several sensitive receptors within 500 metres of both route options. There are approximately 230 residential properties, 20 farms, 1 school and 12 commercial properties within 500 metres of option 1, and approximately 140 residential properties, 10 farms, 1 school and 10 commercial properties within 500 metres of option 2.

People and communities

2.2.61 Information relating to people and communities has been obtained from SSDC's interactive map[16]. During the option identification stage, a Non-motorised user (NMU)

[11] Somerset County Council (2015) Waste Core Strategy and Environment Agency (2017) What's in your backyard?
[12] Somerset County Council (2016) Inert Waste Review [online] available at: http://www.somerset.gov.uk/policies-and-plans/plans/somerset-waste-plan/ (last accessed June 2017)
[13] Somerset County Council (2016) Inert Waste Review [online] available at: http://www.somerset.gov.uk/policies-and-plans/plans/somerset-waste-plan/ (last accessed June 2017)
[14] Environmental Agency (2017) Waste Management in South West 2015
[15] Defra (2017) Noise Mapping [online] available at: http://noisemapping.defra.gov.uk/ (last accessed July 2017).
[16] South Somerset District Council (2017) 'Your Area' Interactive Map [online] available at: https://www.southsomerset.gov.uk/generic-map/ (last accessed July 2017).

Context Report was produced which considered existing NMU desire lines and trip generators, rights of way, potential survey locations and views of user groups.

2.2.62 Following on from this report, NMU counts were undertaken by Tracsis, a specialist NMU survey company, at 29 locations within the vicinity of the scheme.

Non-motorised users

2.2.63 There are a number of PRoW to the north and south of both route options. For option 1, there are 24 footpaths, 2 bridleways and 2 restricted byways. There is also a national cycle route, a long-distance path and 4 footways within the study area. For option 2, there are 16 footpaths, 2 bridleways and a restricted byway. There is also a national cycle route, a long-distance path and 3 footways within the study area.

Amenity

2.2.64 For both route options, amenity is considered to be generally poor, or very poor, due to the current lack of barriers between people and the existing traffic within the vicinity. There is only one crossing facility across the A303 for NMU at Higher Farm Lane, to the north of Podimore, where amenity is considered to be good.

Severance

2.2.65 Both route options would be located within the vicinity of several communities; Downhead and Camel Hill, Sparkford to the east of the A303, Queen Camel, West Camel, and Podimore to the south of the A303. Community facilities located within 250 metres of both route options include The Podymore Inn public house (located in Podimore) and Sparkford Inn public house (located in Sparkford). In addition, West Camel Methodist Church (150 metres east of Plowage Lane) would be located within 250 metres of option 1.

Agricultural land

2.2.66 The land within the study area of both route options is predominantly agricultural. The MAFF 1975 ALC data provides an indication of the ALC Grades for the entire land area; however, these Grades are indicative and not derived from assessment. MAFF ALC Grades indicates the majority of the land within the study area of both route options is Grade 3 (good to moderate) with a small amount of Grade 2 (very good quality) and Grade 4 (poor quality) agricultural land.

Individual farm businesses

2.2.67 The land within the study area contains approximately 60 field parcels, predominantly separated by hedgerows. These land parcels are owned by a number of landowners. It would appear that the land use ranges from pastoral and arable to commercial and

potentially subsistence, however in the absence of specific agricultural land use information which will be gained during preliminary design, this is speculative.

Private property

2.2.68 The area encompassing both option 1 and option 2 is predominantly rural, used for agriculture with some residential dwellings and businesses.

Driver stress

2.2.69 At present, significant congestion occurs between Sparkford and Ilchester on the A303, particularly during peak periods such as holidays, the summer and weekends, leading to delays for drivers and increased traffic flows. The inability for vehicles to travel at a speed with which they are comfortable in relation to the standard of the road leads to driver frustration, which is perceived to be high on the existing A303 between Sparkford and Ilchester. Congestion on the A303 may also lead to delays in public transport movements, community service vehicles and emergency services, further exacerbating driver frustration. Driver stress is considered to be high along the A303 between Sparkford and Ilchester during peak periods as a result of high traffic flow levels and inconsistent speeds. Route uncertainty is considered to be low along the A303, due to existing signage which provides the required standard of information to road users.

Road drainage and the water environment

2.2.70 Information relating to flood zones has been obtained from the Environment Agency's indicative flood mapping[17], and information on Surface Water Nitrate Vulnerable Zones, Water Framework Directive (WFD) waterbodies, and priority outfalls, has been obtained using the Environment Agency's Catchment Data Explorer[18].

2.2.71 The Environment Agency's indicative flood mapping[9] shows that option 1 lies approximately 400 metres to the north of Flood Zone 2 and Flood Zone 3, and option 2 lies adjacent to Flood Zone 2 and 3 to the north. Flood Zone 2 comprises land assessed as having between a 1-in-100 and 1-in-1000 (1%-0.1%) chance of flooding from fluvial sources each year. Flood Zone 3 comprises land assessed as having a 1% or greater chance of flooding from fluvial sources each year. The indicative flood mapping also shows that there are areas within the study area at risk of flooding from surface water, particularly along the existing A303 to the north of Podimore, as well as to the north of the existing A303 within areas identified as Flood Zones 2 and 3. In

[17] Environment Agency (2017) Flood mapping for Planning [online] available at: https://flood-map-for-planning.service.gov.uk/ (last accessed July 2017)
[18] Environment Agency (2017) Catchment Data Explorer [online] available at: http://environment.data.gov.uk/catchment-planning/ (last accessed July 2017).

addition, an area to the south following the route over the River Cam – Lower, is identified as an area at risk of flooding from reservoirs.

2.2.72 Both options 1 and 2 would lie within a Surface Water Nitrate Vulnerable Zone. Three WFD waterbodies are within the vicinity of both route options: the River Cam – Lower lies approximately 400 metres to the south of option 1 and approximately 1 kilometre to the south of option 2; and the River Cary – source to confluence with King's Sedgemoor Drain is 1 kilometre north of Options 1 and 2 at the western extent of the route alignments. In addition, the Dyke Brook is located approximately 1 kilometre to the north of option 1, and 70 metres to the north of option 2.

2.2.73 There are no priority outfalls within the footprint of option 1 and option 2. However, there is one priority outfall which is listed as 'not determined' within the proposed works extent of option 1. In addition, no balancing ponds have been identified within the vicinity of either route options. There is no underlying groundwater within the study area for either route options.

Climate change

2.2.74 Information relating to the existing climate within the UK as a whole and the South Somerset region has been obtained from Department for Business, Energy, and Industrial Strategy. Information relating to the vulnerability of the scheme to climate change has been obtained from the Met Office. The baseline information detailed below relates to both route options.

2.2.75 The UK 2015 greenhouse gas emissions decreased by 38% from 1990. In 2015, UK net carbon dioxide ($CO_{2)}$ emissions were estimated at 403.8 million tonnes, a decrease of 3.8% in comparison to 2014 levels[19]. In 2015, 24% of UK greenhouse gas emissions were from the transport sector with emissions of 120 $MtCO_2e$ (million tonnes of carbon dioxide equivalent) in 2015.

2.2.76 Within the South Somerset region, the carbon emissions from A roads in 2015 was 221.1$ktCO_2e$ (kilotonnes of carbon dioxide equivalent), which represents a 13% decrease since 2005 and an 8.2% decrease in overall transport emissions[20]. There were 36.5 million vehicles licensed for use on roads in the UK in 2015, of which 3.2 million extra vehicles were registered in 2015 alone. However, in 2015 the

[19] Department for Business, Energy and Industrial Strategy (2015) 2015 UK Greenhouse Gas Emissions [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/589602/2015_Final_Emissions_Statistics_one_page_summary.pdf

[20] Department for Business, Energy and Industrial Strategy (2017) Local Authority Carbon Dioxide Emissions Estimates [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/623015/2005_to_2015_UK_local_and_regional_CO2_emissions_statistical_release.pdf (last accessed July 2017).

percentage of ultra-low emission vehicles has reached 0.9% which is an 800% increase since 2013[21].

2.2.77 High-level climate observations for the South West of England[22] over a 30-year averaging period of 1981-2010 are presented in Table 2.4 below.

Table 2.4 Climate baseline for South West England (1981-2010)

Climatic Conditions	Climate Observations
Temperature	Mean daily minimum temperatures in Somerset can range from 1°C to 2°C in winter, whilst summer daily maximum temperatures are in the region of 21.5°C.
Rainfall	Vigorous Atlantic depressions are the source of the majority of rain in the south west in autumn and winter. Annual rainfall in the low-lying parts of central Somerset averages at 700mm. Monthly rainfall is variable, but is highest in the autumn and winter months. The number of days with rainfall totals greater than 1mm in Somerset are 12-13 days in winter, dropping to an average of 7-9 days in summer.
Wind	Southwest England is one of the more exposed areas of the UK. The strongest winds are associated with the passage of deep depressions close to or across the British Isles. The frequency and strength of these depressions is greatest in the winter half of the year when mean speeds and gusts are strongest at approximately 15 knots.
Sunshine	The southwest of England has a favoured location with respect to the Azores high pressure when it extends its influence north eastwards towards the UK, particularly in summer. Average annual sunshine totals are between 1450 and 1600 hours.
Air Frost	The first air frost in Somerset can be expected around mid-October with over 50 days per year experiencing air frost.

Combined and cumulative effects

2.2.78 For combined effects, the baseline is obtained from the preceding environmental disciplines.

2.2.79 For cumulative effects, the baseline data relating to other proposed developments within 2 kilometres of the route options have been identified using SSDC's Interactive Planning website[23], South Somerset District Council's Housing and Economic Land Availability Assessment (HELAA)[24], the Planning Inspectorate's Programme of Projects (although no Nationally Significant Infrastructure Projects (NSIP) are proposed within the 2 kilometres study area) and further information obtained directly from Somerset County Council and Highways England's Operations Directorate. The developments identified to be included within the cumulative effects assessment are contained within Table 2.5.

[21] Department for Transport (2016) Vehicle Licensing Statistics: Quarter 4 (Oct-Dec) 2015 [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/516429/vehicle-licensing-statistics-2015.pdf (last accessed July 2017).
[22] The Met Office (2016) South West England: Climate [online] available at: http://www.metoffice.gov.uk/climate/uk/regional-climates/sw (last accessed July 2017).
[23] South Somerset District Council (2017) Planning Interactive Map [online] available at: https://www.southsomerset.gov.uk/your-area/ (last accessed August 2017).
[24] South Somerset District Council (2017) https://www.southsomerset.gov.uk/planning-and-building-control/planning-policy/early-review-of-local-plan-2006-2028/evidence-base/south-somerset-housing-and-employment-land-availability-assessment/ (last accessed August 2017).

Table 2.5 Proposed – 'other developments' within 2 kilometres of both scheme options.

Proposed 'other development'	Description of the 'other development'
16/00725/OUT	**Other Development**: Outline planning application seeking permission for mixed use redevelopment (residential/commercial) together with associated works and access ways. **Site Address**: Haynes Publishing, High Street, Sparkford, Yeovil, BA22 7JJ **Applicant**: Boon Brown Architects (agent) **Development Description**: It is proposed to develop the site of 2.2ha for a mix of residential and commercial use.
14/04945/R3C and 15/00788/R3C	**Other Development**: Construction of a new single storey primary school **Site Address**: Land Opposite the Medical Centre, West Camel Road, Queen Camel, Yeovil, Somerset **Applicant**: Somerset County Council **Development Description**: Construction of a new single storey primary school (359437/124379) (1.4ha)
15/00024/OUT	**Other Development**: Outline application for the erection of up to 150 dwellings, site access, provision of associated landscaping and open spaces/play facilities (GR 352508/123950) **Site Address**: Land North of Troubridge Park, Ilchester, Yeovil, Somerset **Applicant**: Executors of PCH Young Deceased **Development Description**: Erection of up to 150 dwellings, site access, provision of associated landscaping and open spaces/play facilities

2.3 Scheme brief

Road Investment Strategy objectives

2.3.1 Part 1 chapter 2 of the *Road Investment Strategy: for the 2015/16 – 2019/20 Road Period* (Department for Transport, March 2015) sets out the Department for Transport's aspiration for the strategic road network to be smoother, smarter and sustainable by 2040. The Department for Transport aims to achieve this by focussing on eight key performance areas as set out in part 3 chapter 1 of the Road Investment Strategy. These are:

- Making the network safer
- Improving user satisfaction
- Supporting the smooth flow of traffic
- Encouraging economic growth
- Delivering better environmental outcomes
- Helping cyclists, walkers and other vulnerable users of the network
- Achieving real efficiency
- Keeping the network in good condition

Highways England scheme objectives

2.3.2 The objectives for the A303 Sparkford to Ilchester scheme are set out in the *Client Scheme Requirements* (Highways England, last updated August 2017). These are reproduced below

Transport and operational objectives

2.3.3 The scheme will be developed as a high quality all-purpose dual carriageway making an essential contribution to the 'expressway' link between the South East and South West. It is anticipated that future enhancements will make this section 'expressway' compatible to support the long-term aspirations of the Road Investment Strategy.

2.3.4 The specific Transport Objectives agreed through the Value Management Workshop at option selection stage are:

- Safe and serviceable network
- More free-flowing network
- More accessible and integrated network
- Improved environment

2.3.5 The specific Transport Objective agreed through Value Management Workshop are:

- To contribute to regeneration and sustainable economic growth
  - To support employment and residential development opportunities
- To improve the safety, operation and efficiency of the network
- Improve network reliability and reduce journey times
  - To deliver capacity enhancements to the Strategic Road Network
- Supporting the use of sustainable modes of transport
- Delivering better environmental outcomes
- To improve local and strategic connectivity

2.3.6 Throughout the design and delivery stages, the scheme should ensure that customers and communities are fully considered. Specifically, this should include:

- Understanding the needs of all segments of customers (including vulnerable users), stakeholders and partners.
- Responding to those needs such that the end product delivers an improved customer experience.
- Assessing the impact of works on roads users and communities, minimising disruption and delivering appropriate mitigation measures. This assessment should also look at issues through customers' eyes.

Organisational objectives

- During construction, the effect on the customer impact Key Performance Indicator (KPI) should be taken into account and close dialogue held with the Regional

Intelligence Unit (RIU), Operations Directorate and Somerset County Council to consider traffic delay.

- During design, close working with Operations Directorate to consider future maintenance requirements to ensure the scheme is maintainable in a safe manner.
- Current known maintenance requirements are picked up in construction of the scheme and that following completion there is a minimum 5-year maintenance free period to protect customer expectation.
- All asset data to be handed over within a reasonable timescale following agreed handover to Operations Directorate.

3 Planning Factors

3.1.1 As part of this scheme, a review of the current legislation and planning policy concerning the scheme has been undertaken.

Legislation

3.1.2 Relevant international, European, and national land use planning and environmental legislation applicable to the scheme and identified scheme constraints has been listed in Table 3.1 below. The legislation included in Table 3.1 contains key relevant legislation and is not exhaustive.

Table 3.1 Key international and national environmental legislation

Topic	Key international, European and national environmental legislation
Air Quality	International and European **The Ambient Air Quality Directive (2008/50/EC)** - Sets legally binding limit values and target values for concentrations of major outdoor air pollutants that impact public health such as particulate matter (PM_{10} and $PM_{2.5)}$ and nitrogen dioxide (NO_2). · The proposed options have the potential to reduce air quality. The scheme would need to ensure that air quality limit values are not exceeded
	National **The Air Quality Standards Regulations 2010** and **The Air Quality Standards Regulations (Amendment) 2016 -** Implements the EU's Directive 2008/50/EC and transposes the Directive's limit and target values into legally binding 'air quality standards' with attainment dates in line with the Directive. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive groups, and ecosystems. – The scheme would need to ensure that air quality standards are not exceeded and that sensitive receptors are not adversely affected. **Air Quality (England) Regulations 2000** and **Air Quality (England) (Amendment) Regulations 2002** – Set out air quality objectives within a given time period for local authorities in carrying out the air quality management duties in accordance with **Part IV of the Environment Act 1995**. This requires local authorities to monitor the air quality in their area and designate Air Quality Management Areas (AQMAs) where air quality objectives are not being achieved or are unlikely to be achieved by the relevant compliance date. Local authorities must then prepare an Air Quality Action Plan which sets out measures to pursue the achievement of the air quality objectives within the AQMA. – The proposed options have the potential to reduce air quality and the scheme would need to comply with the requirements of an air quality action plan. **The Environmental Protection Act 1990, Section 79(1)(d)** - Defines one type of 'statutory nuisance' as 'any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance'. Where a local authority is satisfied that a statutory nuisance exists, or is likely to occur or recur, it must serve an abatement notice. – The construction stage of either of the proposed options has the potential to cause nuisance from construction dust.
Cultural Heritage	International and European · No applicable legislation.
	National · **The Ancient Monuments and Archaeological Areas Act 1979 (as amended)** – This act relates to the investigation, preservation and recording of matters of archaeological

Topic	Key international, European and national environmental legislation
	and historical interest. The act provides for the protection of Scheduled Monuments through a designated schedule of monuments and allows the Secretary of State to designate areas of archaeological importance. – Relevant with regard to the impact upon the Scheduled Monuments, as well as the setting of the Scheduled Monuments that have the potential to be affected by the proposed scheme. · The Planning (Listed Buildings and Conservation Areas) Act 1990 (as amended) – Provides for the protection of Listed Buildings and Conservation Areas. – Relevant with regard to the direct impact upon Listed Buildings and Conservation Areas, as well as the setting of the Listed Buildings and Conservation Areas that have the potential to be affected by the proposed scheme.
Nature Conservation and Biodiversity	International and European · The EC Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna ('Habitats Directive 1982') (as amended) (92/43/EEC) – Promotes the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance. – There are numerous protected habitats and species within the footprint of both proposed options. · **The EC Directive on the Conservation of Wild Birds ('Birds Directive 1979') (as amended) (79/409/EEC)**. Provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. – There are habitats suitable for wild birds, including nesting and breeding birds, within the footprint of both proposed options.
	National · **Wildlife and Countryside Act 1981 (as amended)** – Protects all wild birds, certain wild animals, and certain wild plants. – There are numerous habitats and species of conservation importance within the footprint of all the proposed options. · **Conservation of Habitats and Species Regulations 2010** – Provide for the designation and protection of 'European sites', the protection of 'European protected sites', and the adaptation of planning and other controls for the protection of European sites. – There are three Special Areas of Conservation designated for their bat populations within 30 kilometres of the existing A303. · **Countryside and Rights of Way (CRoW) Act 2000** – Places a duty on Government Departments to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted. – There are numerous habitats and species of conservation importance within the footprint of both proposed options. · **Natural Environment and Rural Communities (NERC) Act 2006** – Requires public bodies, including local authorities, '*to have regard to the conservation of biodiversity in England*' when carrying out their normal functions. – There are numerous habitats and species of conservation importance within the footprint of both proposed options.
Noise and Vibration	International and European · **EC Directive on the assessment and management of environmental noise (2002/49/EC)** - Sets out a common approach to avoid, prevent, and reduce the effects on human health of exposure to noise, through an assessment of noise in Member States. Such information should be made available to the public. – Both construction and operation phases for all the proposed options have the potential to increase noise levels and adversely affect sensitive receptors.

Topic	Key international, European and national environmental legislation
	National · **The Environmental Noise (England) Regulations 2006 -** These Regulations implement European legislation requiring noise action plans to be developed on a five-year rolling programme. Action plans have to be developed for the major noise sources and areas for which maps have been produced. The action plans seek to manage noise issues and effects including noise reduction if necessary, based on the results obtained through the mapping process. – There are 2 NIAs within the scheme extents. Highways England has an obligation under its Key Performance Indicators (KPI) to reduce noise levels at NIAs. · **The Environmental Protection Act 1990, Part III** – Under Part III of the Act, certain matters are declared to be 'statutory nuisances', including 'noise that is prejudicial to health or a nuisance and is emitted from or causes by a vehicle, machinery…' – Construction activities associated with the proposed options could lead to a statutory nuisance if best practice measures are not undertaken to prevent noisy and dust-creating works.
Road Drainage and the Water Environment	International and European · **The EC Water Framework Directive (WFD) (2000/60/EC)** – Sets an overarching programme to deliver long-term protection of the water environment and to improve the chemical and ecological health of all waters (groundwater and surface water) and associated wetlands. – There are three WFD waterbodies within close proximity to the route options. · The EC Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna ('Habitats Directive 1982') as amended (92/43/EEC) – Promotes the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance. – There are rivers, streams, and areas of standing water with the potential to support biodiversity that require protection. · **The EC Directive on the Conservation of Wild Birds ('Birds Directive 1979') as amended (79/409/EEC)** - Provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. – There are numerous waterbodies with the potential to support wild birds that require protection.
	National · **The Water Environment (WFD) (England and Wales) Regulations 2017** – Implements the WFD Directive into UK Legislation to ensure that the objectives of the Water Framework Directive are met. – There are three WFD waterbodies within close proximity to the proposed options. · **The Flood and Water Management Act 2010** – Makes provisions about water, including provision about the management of risks in connection with flooding and coastal erosion. – The proposed options lie within close proximity to Flood Zones 2 and 3.
Geology, Soils and Materials	International and European · **The EC Water Framework Directive (WFD) (2000/60/EC)** - Sets an overarching programme to deliver long-term protection of the water environment and to improve the chemical and ecological health of all waters (groundwater and surface water) and associated wetlands. – There are three surface water WFD waterbodies within close proximity of the proposed route options. There are no groundwater WFD waterbodies within close proximity to the proposed route options.

Topic	Key international, European and national environmental legislation
	· **The EC Framework Directive on Waste (2008/98/EC)** – Requires member states to take appropriate measures to encourage the prevention or reduction of waste production and its harmfulness, and secondly the recovery of waste by means of recycling, re-use or reclamation or any other process with a view to extracting secondary raw materials, or the use of waste as a source of energy. – The construction activities associated with both route options would lead to the production of some waste.
	National · **The Environmental Protection Act (EPA) 1990, Part II** – This section sets out a regime for regulating and licencing the acceptable disposal of controlled waste on land. Controlled waste is any household, industrial and commercial waste. Part II stipulates that controlled waste must be treated, stored, and disposed of in a manner that is not likely to cause pollution of the environment or harm to human health. – The construction of the scheme will require the disposal of some controlled waste. · **The Environmental Protection Act (EPA) 1990, Part IIA – Part IIA** principally deals with sites where individual historic contamination linkages present a "Significant Possibility of Significant Harm" (SPOSH) or a "Significant Possibility of Significant Pollution to Controlled Waters" (SPOSPCOW) representing an unacceptable level of contamination risk for each linkage. – There are 2 historic landfills either directly within or adjacent to the footprints of the proposed options. · **The Contaminated Land (England) Regulations 2006 (as amended)** and **The Contaminated Land (England) (Amendment) Regulations 2012** – Set out provisions relating to the identification and remediation of contaminated land under Part 2A of the Environmental Protection Act 1990. – There are 2 historic landfills either directly within or adjacent to the footprints of the proposed options. · **Waste (England and Wales) Regulations 2011 (as amended)** and **The Waste (England and Wales) (Amendment) Regulations 2014** – Require organisations to confirm that they have applied the Waste Hierarchy, ensuring that waste is dealt in the priority of prevention, preparation for re-use, recycling, other recovery, and disposal. – Any waste generated during the construction of the proposed scheme is to be dealt with in line with the Waste Hierarchy. · **The Hazardous Waste (England and Wales) Regulations 2016** – Define what constitutes hazardous waste and set out the controls on handling such wastes. The movement of hazardous waste is to be documented by a system of consignment notes. – The construction of the scheme may lead to excess soil/rock materials to require off-site disposal, if contaminated some of this material may be classified as hazardous waste. · Environmental Protection (Duty of care) Regulations 1991 and The Environmental Protection (Duty of Care) (England) (Amendment) Regulations 2003 – Sets out the documentary requirements as part of waste management. Transfers of waste must be accompanied by a transfer note containing a description of the waste, details concerning the 'transferrer' and the 'transferee', and the place and time of the transfer. - The construction of the scheme may lead to excess soil/rock materials to require off-site disposal · **Clean Neighbourhoods and Environment Act 2005** – Sets out new provisions for local environmental and social issues such as litter, fly-tipping and anti-social behaviour. – Will be of particular relevance during the construction of the proposed scheme. · Landfill (England and Wales) Regulations 2002 (as amended) and The Landfill (England and Wales) (Amendment) Regulations 2005 – Aims to reduce the negative environmental and health impacts associated with landfilling waste. – The scheme has the potential to produce waste that cannot be used and will therefore need to be landfilled.

Topic	Key international, European and national environmental legislation
	- There are 2 historic landfills either directly within or adjacent to the footprints of the proposed options which could impact on engineering options and constructability. · **Water Resources Act 1991** – Section 161 allows the Environment Agency to recover the costs of cleaning up any poisonous, noxious, or polluting matter, or any solid waste matter, that persons have caused or knowingly permitted to be present in controlled waters. – There are 2 historic landfills either directly within or adjacent to the footprints of the proposed options with the potential for contaminated land to be present. · **Wildlife and Countryside Act 1981 (as amended)** – Although there are no geologically designated Sites of Special Scientific Interest in the vicinity of the scheme, there are Local Geological Sites which are protected under this Act from operations which may damage their interest. - There are Local Geological Sites within the vicinity of the scheme. · **Control of Substances Hazardous to Health Regulations 2002 (COSHH) and Construction and Design Management (CDM) Regulations 2015** – Under these sets of regulations, where a developer knows or suspects the presence of contaminated soil, provision must be made to ensure that risks to the public and site works are controlled.
Climate Change	International and European No applicable legislation.
	National · **Climate Change Act 2008** - forms part of the UK government's plan to reduce greenhouse gas emissions, committing the government to a reduction of greenhouse gases by at least 80% of 1990 levels by 2050. The Climate Change Act creates a new approach to managing and responding to climate change in the UK, by: – Setting ambitious, legally binding emission reduction targets; – Taking powers to help meet those targets; – Strengthening the institutional framework; – Enhancing the UK's ability to adapt to the impact of climate change; and, – Establishing clear and regular accountability to the UK Parliament and to the devolved legislatures. **The Carbon Plan 2011** - sets out how the UK will achieve decarbonisation within the framework of the energy policy. UK local authorities and at a regional level must report on their CO_2 emissions. However, all emissions from the motorways sector have been removed and are not factored into the annual CO_2 emissions.
Environmental Planning	International and European · **The Environmental Impact Assessment (EIA) Directive (2014/52/EU)** – Before development consent is given, Member States must take all measures necessary to make sure that projects likely to have significant effects on the environment by virtue of their nature, size or location are subject to an (EIA. – The scheme will be subject to an EIA as this type of development falls within Annex 1 of the EIA Directive.
	National · **The Planning Act 2008** – Establishes a system to deal with Nationally Significant Infrastructure Projects (NSIPs) and to introduce a community infrastructure levy that can be charged on developers by local authorities. – The area of development for the proposed options is, on average, 60 hectares, which exceeds the relevant threshold of 12.5 hectares in section 22 (4) (b) of the Planning Act 2008 2008 for the construction or alteration of highways, other than motorways, where the speed limit for any class of vehicle is expected to be 50 miles per hour or greater. The scheme is therefore considered an NSIP for the purposes of sections 14 (1) (h) and 22 of the 2008 Act.

Topic	Key international, European and national environmental legislation
	· **The Highway and Railway (Nationally Significant Infrastructure Project) Order 2013** – Made amendments to the Planning Act 2008 to ensure that highway-related development is only considered an NSIP where it exceeds specific limits and or is likely to have significant effects on the environment. – As described above, the scheme is considered to be an NSIP. · **The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017** – These regulations are in accordance with the Planning Act 2008 and impose various procedural requirements, in particular the carrying out of an EIA in relation to applications for development consent and subsequent consent. – The scheme will be subject to an EIA as this type of development falls within Annex 1 of the EIA Directive.

Source: Table prepared by Highways England Integrated Project Team

National Policy

3.1.3 Guidance at the national level for each environmental topic is set out in the *National Planning Policy Framework* (NPPF)[25], *National Planning Practice Guidance* (NPPG)[26] , and the *National Networks National Policy Statement* (NNNPS)[27]. A summary of each is given below, and Table 3.1 provides a summary of the guidance relevant to each environmental topic contained within the documents.

National Planning Policy Framework (NPPF) and National Planning Practice Guidance (NPPG)

3.1.4 The NPPF and guidance within the NPPG form the national planning policy guidance. The NPPF sets out the Government's planning policies for England and how these are expected to be applied. The framework acts as guidance for local planning authorities and decision-makers, both in drawing up plans and making decisions about planning applications. The NPPG brings together planning guidance on various topics into one place, and its launch coincided with the cancelling of the majority of Government Circulars which had previously given guidance on many aspects on planning. Listed in Table 3.2 are the policies from the NPPF of relevance to each environmental topic.

National Networks National Policy Statement (NNNPS)

3.1.5 There are no specific policies for NSIPs in the NPPF. The Secretary of State for Transport determines these in accordance with the Planning Act 2008 and relevant national policy statements for major infrastructure, as well as any other matters that

[25] Department for Communities and Local Government (March 2012) National Planning Policy Framework [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf (last accessed July 2017)

[26] Department for Communities and Local Government (March 2016) National Planning Practice Guidance [online] available at: https://www.gov.uk/government/collections/planning-practice-guidance (last accessed July 2017).

[27] Department for Transport (December 2014) National Networks National Policy Statement (NNNPS) [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/npsnn-web.pdf (last accessed July 2017).

are considered both important and relevant. The NNNPS sets out the need for, and Government's policies to deliver, development of NSIPs on the national road and rail networks in England. It provides planning guidance for promoters of NSIPs on the road and rail networks, and the basis for the examination by the Examining Authority and decisions by the Secretary of State. Listed in Table 3.2 are the policies from the NNNPS of relevance to each environmental topic.

Table 3.2 National Policy

Topic	Relevant National Policies
Air Quality	**NPPF** Paragraph 124 states that compliance with EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas (AQMAs) and the cumulative impacts on air quality from individual sites in local areas is a requirement. Developments which contribute to or put at an unacceptable risk from, unacceptable levels of air pollution, should be prevented.
	NNNPS Paragraphs 5.12 and 5.13 state that where (after considering mitigation) a project would lead to a significant air quality impact in relation to EIA and/or lead to deterioration in air quality in a zone/agglomeration, substantial air quality considerations should be given. The Secretary of State should refuse consent where, after taking into account mitigation, the air quality impacts of the scheme will either result in a zone/agglomeration which is currently reported as being compliant with the Air Quality Directive becoming noncompliant, or affect the ability of a non-compliant area to achieve compliance.
Cultural Heritage	**NPPF** Significant weight should be given to the conservation of heritage assets, and where development will lead to less than substantial harm to the significance of a designated heritage asset, the harm should be weighed against the public benefits of the proposal. Refusal of consent is required when a scheme would result in the substantial harm or total loss of significance of a designated heritage asset, unless substantial public benefits outweigh that harm or loss.
	NNNPS In accordance with Paragraph 5.128, the Secretary of State should identify and assess the particular significance of any heritage asset that may be affected by a development, whilst the significance of the heritage asset and value they hold now and in the future, should also be considered. Substantial harm to or loss of designated assets of the highest significance should be wholly exceptional. Where a proposed development would lead to the substantial harm or total loss of significance of a heritage asset, the Secretary of State should refuse consent unless it can be demonstrated that substantial public benefits outweigh the loss or harm.

Topic	Relevant National Policies
Landscape	**NPPF** The planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, geological conservation interest and soils (Paragraph 109), whilst decisions should encourage the effective use of land by re-using land which has been previously developed (Paragraph 111). Great weight should be given to conserving landscape and scenic beauty in AONBs and National Parks (Paragraph 115). Whilst preparing local plans, local planning authorities should set out environmental criteria against which planning applications will be assessed to ensure permitted operations do not have unacceptable adverse impacts on visual intrusion (Paragraph 143).
	NNNPS Where a development is subject to an EIA, an assessment of any likely significant landscape and visual impacts should be undertaken by the applicant within the EIA and described within the ES (Paragraph 5.144). The Applicant's assessment should consider any relevant national and local development policy, significant effects during construction and operation, and visibility and conspicuousness (Paragraphs 5.146-148). Compliance with the respective duties in section 11A of the National Parks and Access to Countryside Act 1949 and section 85 of the Countryside and Rights of Way Act 2000 is required. Local designations should be given consideration in decision making by the Secretary of State (SoS) (Paragraph 5.156), but not be used in themselves to refuse consent. The SoS will judge whether visual effects on sensitive receptors outweigh the benefits of the development (Paragraph 5.158).
Biodiversity	**NPPF** Paragraph 118 states that if significant harm (to biodiversity) cannot be avoided, adequately mitigated, or (as a last resort) compensated then consent should be refused. Consent should also be refused if irreplaceable habitats such as ancient woodland and/ or veteran trees are lost or deteriorate in quality as a result of the scheme, unless the need for and benefits of the development clearly outweigh the loss. Additionally, where a project would be likely to adversely affect a SSSI, the development would not ordinarily be permitted, unless the benefits of the development clearly outweigh impacts on the features of the qualifying features of the SSSI. Projects on land within or outside an ecological designation, but likely to have an adverse effect upon the site are not favoured.
	NNNPS Paragraph 5.22 requires that where the project is subject to EIA, the applicant should ensure that the environmental statement clearly sets out any likely significant effects on internationally, nationally, and locally designated sites of ecological or geological conservation importance on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity and that the statement considered the full range of potential impacts on ecosystems. Paragraph 5.23 states that the applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity conservation interests including appropriate mitigation measures. Prior to granting Development Consent, the Secretary of State must, under the Habitats Regulations, consider whether the project would be likely to have a significant effect on the objectives of a European site, or on any site to which the same protection.
Noise and Vibration	**NPPF** Paragraph 123 requires projects to avoid noise giving rise to significant adverse impacts on health and quality of life, to mitigate and reduce to a minimum, other adverse impacts on health and quality of life arising from noise, and to identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and

Topic	Relevant National Policies
	amenity value for this reason. Developments which contribute to unacceptable levels or place unacceptable risk of adverse effects from noise pollution should be prevented.
	NNNPS As stated in Paragraph 5.193, developments are to be undertaken in accordance with the statutory requirements for noise. Applicants should ensure that the development avoids significant adverse noise impacts on health and quality of life, and mitigates/ minimises other adverse impacts on health and quality of life from noise, and contributes to improvements to health and quality of life through effective management and control of noise. For most national network projects, the relevant Noise Insulation Regulations will apply.
Flood Risk, Road Drainage, and the Water Environment	**NPPF** Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, a Flood Risk Assessment (FRA) should support the proposal. The planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being adversely affected by unacceptable levels of water pollution.
	NNNPS As stated in Paragraph 5.92, applications for schemes in Flood Zones 2 and 3 should be accompanied by a FRA. In addition, applications for schemes that are located within Flood Zone 1 and are 1 hectare in area or greater, or subject to other sources of flooding (local watercourses, surface water, groundwater, or reservoirs), or where the Environment Agency has notified the local planning authority that there are critical drainage problems, should also be accompanied by an FRA. As per Paragraph 5.96, for projects which may be affected by, or may add to flood risk, sufficiently early pre-application discussions should be sought between the applicant and the Environment Agency, and, where relevant, other flood risk management bodies. Surface water flood issues also need to be understood and then taken account of (Paragraph 5.97).
People and Communities	**NPPF** The government is committed to ensuring that the planning system does everything it can to support sustainable economic growth. Planning decisions should guard against the unnecessary loss of valued facilities and services, particularly where this would reduce the community's ability to meet its day- to- day needs, whilst protection and enhancement of PRoW and access and seeking opportunities to provide better facilities for users, for example by adding links to existing rights of way networks should be sought by the applicant.
	NNNPS For the development of the national road networks to be sustainable they should be designed to minimise social and environmental impacts to improve quality of life. Evidence should be provided by applicants, demonstrating that reasonable opportunities have been considered to deliver environmental and social benefits as part of schemes. Existing open space should not be developed unless the land is surplus to requirements or the loss would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location. PRoW, National Trails, and other rights of access to land (e.g. open access land) are important recreational facilities for walkers, cyclists, and equestrians. Applicants should consider appropriate mitigation measures to address adverse effects on coastal access, National Trails, other PRoW, and open access land and, where appropriate, to consider what opportunities there may be to improve access.

Topic	Relevant National Policies
Geology and Soils	**NPPF** Paragraph 120 required that in order to prevent unacceptable risks from pollution and land instability, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account. Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner. Furthermore, Paragraph 121 states that planning policies and decisions should also ensure that the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation; after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990.
	NNNPS Paragraph 5.168 states that where possible, developments should be on previously developed (brownfield) sites provided that it is not of high environmental value. For developments on previously developed land, applicants should ensure that they have considered the risk posed by land contamination and how it is proposed to address this.
Materials	**NPPF** Paragraph 5 indicates that waste policy will be set out in the National Waste Management Plan for England (2013)[28]. In terms of achieving sustainable development, the NPPF identifies that minimising waste and pollution is a fundamental part of the environmental role of the planning system.
	NNNPS Section 5.52 of the National Networks National Policy Statement[29] requires the applicant to set out the arrangements that are proposed for managing any waste produced. It states that '*The arrangements described should include information on the proposed waste recovery and disposal system for all waste generated by the development. The applicant should seek to minimise the volume of waste produced and the volume of waste sent for disposal unless it can be demonstrated that the alternative is the best overall environmental outcome'.*
Climate Change	**NPPF** Paragraphs 93 to 98 state that local authorities should adopt proactive strategies to mitigate and adapt to climate change (in line with the objectives and provisions of the Climate Change Act 2008), taking into account flood risk, coastal change and water supply and demand considerations. The flood risk requirements outlined in the NPPF are stated in Section 13.2.6.
	NNNPS Paragraphs 4.36 to 4.47 set out how the effects of climate change should be taken into account when developing and consenting infrastructure. It states that the latest UK Climate Projections should be used to take into account the potential impacts of climate change and influence adaptation measures, covering the estimated lifetime of the new infrastructure.

Source: Table prepared by Highways England Integrated Project Team

[28] Department for Environment, Food, and Rural Affairs (2013) Waste Management Plan for England. [online] available at: https://www.gov.uk/government/publications/waste-management-plan-for-england (last accessed March 2017).

[29] Department for Transport (2015) National Networks National Policy Statement [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed March 2017).

Highways England Policy

Road Investment Strategy (RIS) Policy Paper and Highways England Strategic Business Plan

3.1.6 In addition to the above national guidance documents, the *Road Investment Strategy: for the 2015/16 – 2019/20 Road Period*[30] (Department for Transport, March 2015) outlines a long-term programme to improve England's strategic road network. The *Road Investment Strategy* has been produced in accordance with Highways England's licence (Department for Transport, April 2015), in which the Secretary of State outlines what they expect Highways England to achieve and how they must be behaving in discharging their duties. The *Road Investment Strategy* comprises:

- A long-term vision for England's motorways and major roads, outlining how the Department for Transport will create smooth, smart, and sustainable roads.
- A multi-year investment plan that will be used to improve the network and create better roads for users.
- High-level objectives for the first roads period 2015 to 2020.

3.1.7 There is substantial provision within the *Road Investment Strategy* to ensure that the programme of investment is delivered in a way that minimises impact on the environment. The *Strategic Business Plan 2015-2020* (Highways England, December 2014) sets out how Highways England will deliver the investment plan and performance requirements of the *Road Investment Strategy* over the coming five years. One of the key objectives of the Strategic Business Plan is for an 'improved environment', where the impact of the activities is further reduced ensuring a long-term and sustainable benefit to the environment. Highways England has created a series of ring-fenced funds to address a range of specific issues over and above the traditional focus of road investment. These funds allow for actions beyond business as usual and will help Highways England invest in retrofitting measures to improve the existing road network as well as maximising the opportunities offered by new road schemes to deliver additional improvements at the same time. Those of relevance to the scheme include:

- Environment: A £300 million Environment Fund to deliver specific enhancements to the network. This will enable Highways England to deliver the improved environmental outcomes. In particular, the fund will be used to mitigate the worst impacts of noise on those living close to the network, support the transition to low-carbon road transport, improve local water quality and resilience to flooding, maintain an attractive landscape, and work to halt the loss of biodiversity.
- Cycling, Safety, and Integration: Highways England strives to do even more to deliver improved outcomes for those living and working near the network, for

[30] Department for Transport (2015) National Networks National Policy Statement [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed March 2017).

example through the provision of new crossings and the intention to produce their first National Cycling Strategy by the end of 2015. Highways England has also ring-fenced £250 million in a Cycling, Safety, and Integration Fund to help deliver improvements in these areas through both bespoke interventions, as well as enhancements to new and existing schemes. This includes investing £100 million to improve cycling provision on at least 200 sections of the network, as well as ensuring all new schemes are cycle-proofed. Around another £105 million will be spent on additional measures to boost safety that extend beyond the high safety standards already in place. Highways England have also stated that the strategic road network must be easier to get over, under or around to ensure that roads serve communities instead of severing them. Around £45 million of the Cycling, Safety and Integration fund is therefore dedicated to improving all elements of integration.

Local Policy

3.1.8 Local planning and land-use policy of relevance to the scheme is outlined below.

South Somerset District Council Local Plan 2006-2028

3.1.9 The *South Somerset District Council (SSDC) Local Plan 2006-2028*[31] was adopted in 2015 and defines the spatial implications of economic, social, and environmental change. The local plan includes a collection of policies which set out the long-term vision and strategic context for managing and accommodating growth within South Somerset. Policies based around environmental protection include the following:

- **Policy EQ1: Addressing Climate Change in South Somerset** – The Council will support proposals for new development where they have demonstrated how climate change mitigation and adaptation will be delivered, through the inclusion of a number of measures.
- **Policy EQ2: General Development –** Development will be designed to achieve a high quality, which promotes South Somerset's local distinctiveness and preserves or enhances the character and appearance of the district.
- **Policy EQ3: Historic Environment** – Heritage assets will be conserved and where appropriate enhanced for their historic significance and important contribution to local distinctiveness, character and sense of place.
- **Policy EQ4: Biodiversity** - All proposals for development, including those which would affect sites of regional and local biodiversity, nationally and internationally protected sites of geological interest will:
  - Protect the biodiversity value of land and buildings and minimise fragmentation of habitats and promote coherent ecological networks.
  - Maximise opportunities for restoration, enhancement, and connection of natural habitats.
  - Incorporate beneficial biodiversity conservation features where appropriate.

[31] South Somerset District Council (March 2015) South Somerset Local Plan (2006 – 2028) [online] available at: https://www.southsomerset.gov.uk/media/707200/south_somerset_local_plan_2006-2028_adoption_version_march_2015.pdf (Last accessed April 2017).

  - Protect and assist recovery of identified priority species.
  - Ensure that habitat features, priority habitats, and geological features that are used by bats and other wildlife are protected and that the design including proposals for lighting does not cause severance or is a barrier to movement.
- **Policy EQ5: Green Infrastructure** – Development proposals should provide and/or maintain a network of connected and multifunctional open spaces that meet particular policy requirements.
- **Policy EQ6: Woodland and Forests** – The loss of ancient woodland as well as ancient or veteran trees should be protected against loss wherever possible.
- **Policy EQ7: Pollution Control** - Development that, on its own or cumulatively, would result in air, light, noise, water quality or other environmental pollution or harm to amenity, health or safety will only be permitted if the potential adverse effects would be mitigated to an acceptable level by other environmental controls, or by measures included in the proposals.

3.1.10 A major part of the local plan is the identification of broad locations for employment and housing growth and accompanying policies for assessing development proposals, taking account of the NPPF and the NPPG. Between Podimore and Sparkford, land has been set aside for one development only (an extension to the existing school at Queen Camel (Reference CR/QUCA/1)). No further development land has been allocated within the local plan between Sparkford and Podimore. South Somerset District Council had previously set aside land for upgrades to the A303 between Sparkford and Podimore through the previous local plan (1991- 2011 Policy TP9). However, within Appendix 2 of the adopted local plan, this Policy TP9 is considered to be completed and 'covered by the Highways Agency (sic)' and is no longer in place.

South Somerset District Council Housing and Economic Land Availability Assessment, February 2017

3.1.11 The *Housing and Economic Land Availability Assessment* (HELAA) *Report*[32] provides a suite of evidence that brings together important information related to future housing and employment land delivery in South Somerset. This report updates the *Strategic Housing Land Availability Assessment 2013* (South Somerset District Council, 2013) and part of the *Employment Land Review 2009/10*[33] to support the production of the *Early Review of the Local Plan* and the Council's five-year housing supply. Numerous potential housing and employment sites have been identified in

32 South Somerset District Council (2017) South Somerset Housing and Economic Land Availability Assessment (HELAA) 2017 [online] available at: https://www.southsomerset.gov.uk/planning-and-building-control/planning-policy/early-review-of-local-plan-2006-2028/project-management--monitoring/south-somerset-housing-and-employment-land-availability-assessment/ (Last accessed April 2017).
33 South Somerset District Council (2009) Employment Land Review (ELR) 2009/10 [online] available at: https://www.southsomerset.gov.uk/planning-and-building-control/planning-policy/evidence-base/district-wide-documents/employment-land-review-august-2009/ (Last accessed April 2017).

the HELAA. Development proposals within 1 kilometre of the scheme extents (all located towards the east) include the following:

- E/QUCA/0001A (mixed)
- E/QUCA/0001B (mixed)
- E/QUCA/0001C (mixed)
- E/SPAR/0001 (housing)
- E/SPAR/0003 (housing)
- E/SPAR/0004 (housing)
- E/SPAR/0005 (mixed)
- E/SPAR/1200 (employment)

3.1.12 The locations of these development sites are shown on the environmental constraints plan contained in Appendix B of this report.

Somerset County Council's Future Transport Plan 2011-2026

3.1.13 *Somerset County Council's Future Transport Plan* (Somerset County Council, February 2011) sets out the council's long-term strategy for getting the best from transport. The plan covers the period between 2011 and 2026 and replaces *Somerset's Second Local Transport Plan*, which expired in March 2011. The plan contains a schedule of policies that include the following:

- **SUS 10 Landscape and Biodiversity:** Enhancing the landscape and biodiversity of the local area.
- **ECN Sustainable Development:** Ensuring that sustainable development is at the forefront of thinking.
- **SAF 1 Road Safety:** Improving the road safety around Somerset.
- **HLT 3 Air Quality:** Minimising the effect any changes to Somerset's transport systems have on air pollution.

4 Do nothing consequences

4.1.1 The A303 between Sparkford and Ilchester currently consists of approximately 5 kilometres of single carriageway between adjacent sections of dual carriageway.

4.1.2 The Annual Average Daily Traffic (AADT), to the nearest hundred vehicles, along this section of the A303 was 23,500 in the 2015 base year scenario, which compares against a Congestion Reference Flow (CRF) of approximately 28,400. The CRF gives an indication of the flow level at which the route is likely to experience congestion during the peak periods on an average day. However, this route carries much higher traffic levels during holiday periods and weekends so even though the AADT is below the CRF at present, this section of the route experiences regular occurrences of delay and congestion. The AADT is forecast to increase to 28,400 in 2023 (the planned scheme opening year) and 33,500 in 2038 (15 years after scheme opening), which indicates that the A303 would not have enough capacity, leading to increased queuing and congestion on an average day as well as during holidays and weekends.

4.1.3 The increase in traffic in the forecast years is due to forecast growth in trips, as well as transport and development schemes which are expected to be completed. These include other transport schemes in the region as well as those in surrounding regions which could influence A303 traffic. Specific housing and employment developments planned for Somerset, Wiltshire and Devon have also been represented in the forecasts and these can have more local impacts on A303 traffic.

4.1.4 Table 2.2 in section 2.2 of this report shows that there were 34 personal injury accidents over the five-year period from 1 January 2010 to 31 December 2014. Table 2.3 shows that this is above the national average for A class trunk roads. The AADT is predicted to rise from 23,500 in the base year 2015 to 33,500 in 2038 (15 years after opening), a rise in AADT of 43%. It is anticipated that, without a scheme solution, the number of accidents would rise in proportion to the predicted growth in traffic. This would equate to 48 personal injury accidents over a five-year period.

4.1.5 This single carriageway section of the A303 acts as a significant bottleneck, especially during weekend and holiday periods, causing long queues and delays, with accident rates above the national average for similar class roads.. Without intervention, the journey time between Ilminster and Mere along the A303 is forecast to increase in the future, from the base year 2015 to 2038 by between 2 to 5 minutes during weekday peak and interpeak time periods and by over 6 minutes during the August weekend period. Congestion acts as a constraint to development, and has an impact on the productivity and attractiveness of the South West as a key holiday destination. The severity of the issues highlighted above is likely to increase if no action is taken.

5 Alternative schemes

5.1 Introduction

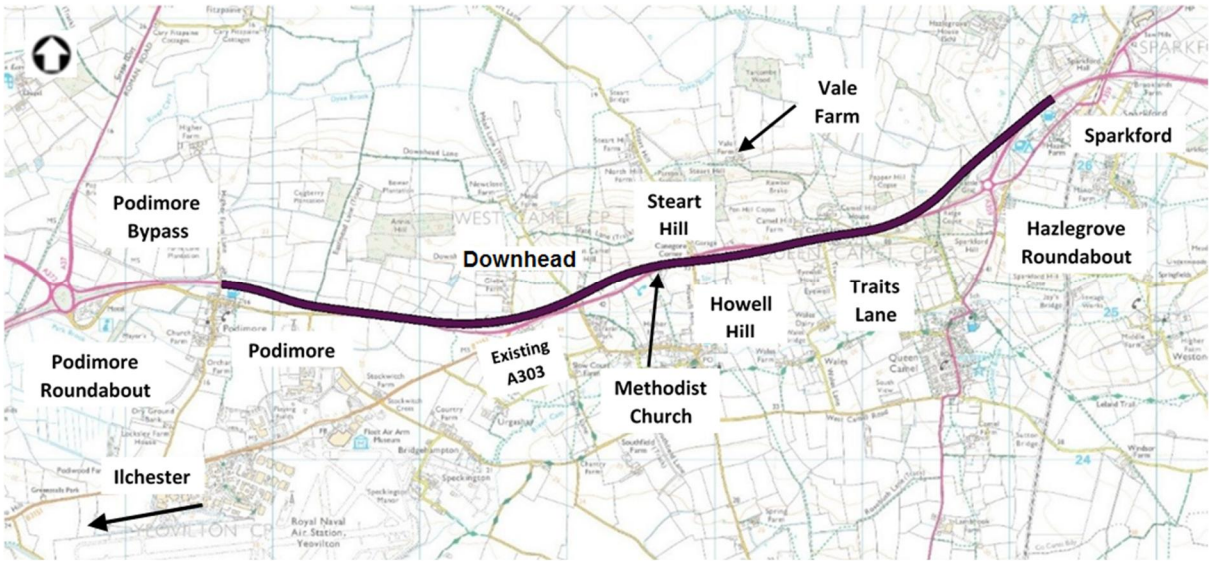
Route option 1

5.1.1 Option 1 would follow the existing corridor of the A303 very closely. It is generally considered to be the 'online option' although it is often deliberately aligned just to the side of the existing carriageway to allow re-use of the existing route for local access, avoid property or facilitate construction. At its maximum offset the route would typically be 100 metres either north or south of the existing A303.

5.1.2 The centreline of option 1 is illustrated in Figure 5.1.

5.1.3 At its western limits, it is proposed that the option would tie in with the existing A303 Podimore Bypass (a dual carriageway). Travelling eastwards, the route would bear north of the existing A303. The road would then rise up West Camel Hill before crossing over the existing A303 at the junction with Steart Hill and Howell Hill. This would pass very close to the Noise Important Area at the West Camel Methodist Church. The route would then take a southerly alignment briefly before meeting up with the existing road again to pass between the Scheduled Ancient Monument at Camel Hill Farm and the MOD signal station at Traits Lane. Finally, the route would bypass the existing Hazlegrove Roundabout to the north through the Registered Park and Garden associated with Hazlegrove House before tying into the existing A303 north of Sparkford Village.

Figure 5.1 Route option 1



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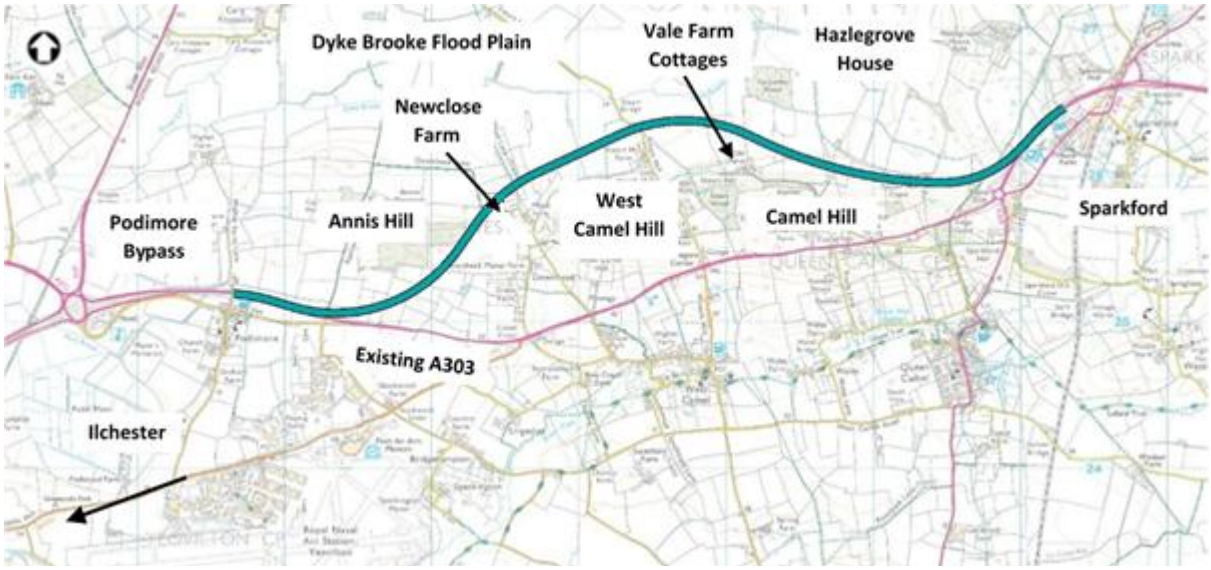
Route option 2

5.1.4 Option 2 would take an offline course to the north of the existing route. At its maximum distance the route would be approximately 1 kilometre north of the existing A303.

5.1.5 The centreline of option 2 is illustrated in Figure 5.2.

5.1.6 Immediately east of the tie-in with the Podimore Bypass, this route would bear north-east passing Annis Hill to the south-east. The route would then pass immediately north-west of Newclose Farm and continue north-east so that it ran close to, but not into, the Dyke Brook flood plain. The topography here is low-lying and the route would thus be separated from the existing route by intermediate hills of West Camel Hill and Camel Hill which lie between the proposed route and the existing A303. The proposed road would then bear south-east passing Vale Farm Cottages, then skirt around the foot of Camel Hill and through the Registered Park and Garden of Hazlegrove House to rejoin the existing A303 north of Sparkford Village.

Figure 5.2 Route option 2



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5.2 Junction strategy

Route option 1

5.2.1 A new all movements grade separated junction is currently being considered at Hazlegrove. This would provide connections to Hazlegrove House, the A359 (north and south) and access to villages south of the route.

5.2.2 A limited movements junction comprising eastbound slips only is currently being considered at Downhead. A limited movement junction would be provided at Camel Cross comprising a westbound exit slip road, a connection to the B3151 and a connection to West Camel via a retained section of the existing A303. At the western end of the scheme, a westbound entry slip would be provided enabling traffic from the B3151 and West Camel to join the westbound carriageway.

Route option 2

5.2.3 A new all movements grade separated junction is currently being considered at Hazlegrove. This would provide connections to Hazlegrove House, the A359 (north and south) and access to villages south of the route.

5.2.4 At the western end of the scheme, west-facing slip roads would be provided to connect the proposed route to the B3151 and West Camel via a retained section of the existing A303.

5.3 Treatment of local roads

Route option 1

5.3.1 Option 1 has the potential to be most disruptive to local journeys as it would directly impact on a greater number of side roads than option 2. Existing local roads along the proposed route include:

- The B3151, to and from Royal Naval Air Station (RNAS) Yeovilton and Ilchester
- Downhead Lane. This is the only access to the settlement of Downhead, to the north of the existing A303
- Plowage Lane, to and from West Camel
- Steart Hill, to and from Babcary
- Howell Hill, to and from West Camel
- Traits Lane, to and from Eyewell, Wales and Queen Camel
- Gason Lane, to and from Queen Camel
- An un-named lane to Camel Hill Farm and Vale Farm

5.3.2 Between Podimore and Steart Hill the proposed road is likely to be situated to the north of the existing A303, allowing the existing carriageway to be retained as a local link, connecting Podimore, the B3151, Plowage Lane and Howell Hill.

5.3.3 It is proposed that Downhead Lane would be connected to the retained section of the A303 carriageway via a new overbridge (the Downhead Junction Overbridge).

5.3.4 Steart Hill is likely to be connected to the retained section of the A303 carriageway via a new overbridge (the Steart Hill Overbridge).

5.3.5 Traits Lane is likely to be connected to the un-named road to Camel Hill Farm and Vale Farm via an agricultural underpass under the proposed road.

5.3.6 Additional accommodation structures may be required depending upon further consultation with land-owners and businesses who may be affected as a result of land being severed by the proposed road.

Route option 2

5.3.7 The existing A303 carriageway would be left in place entirely to provide access to local villages such as West Camel, Downhead, Wales and Queen Camel and to Camel Hill Farm and Vale Farm.

5.3.8 Steart Hill, which provides a route from the existing A303 to Babcary, would be crossed by the proposed route mid-way along its length. The road would be retained via a bridge over the proposed dual carriageway (the Steart Hill Overbridge). The byway known as Downhead Lane would also be crossed and would be retained via an overbridge (the Downhead Lane Overbridge).

5.3.9 It is expected that an accommodation bridge would be required across the proposed route to enable continued access from Vale Farm to associated land to the north (Vale Farm Overbridge).

5.3.10 Additional accommodation structures may be required depending upon further consultation with land-owners and businesses who may be affected as a result of land being severed by the proposed road.

5.4 Highway alignment and compliance with standards

Standards used

5.4.1 The geometric design of the proposed A303 main carriageway and associated junction connector roads for both route options has been developed in accordance with the *Design Manual for Roads and Bridges* (DMRB) Volume 6. In particular, the following Design Standards have been used:

- TD9/93 *Highway Link Design* (DMRB 6.1.1)
- TD27/05 *Cross Sections and Headroom* (DMRB 6.1.2)
- TD22/06 *Layout of Grade Separated Junctions* (DMRB 6.2.1)

5.4.2 Principles of DMRB Volume 6 will also be applied to the design of local roads although this approach is subject to agreement with the local highway authority, Somerset County Council. Relaxations from the requirements of the DMRB may be necessary along local roads to ensure these works are appropriate to the standard and character of adjacent existing roads.

Design speed

5.4.3 The mainline A303 is proposed to be a dual carriageway, subject to the National Speed Limit, with a Design Speed of 120kph in accordance with Figure 1 of TD 9/93. Slip roads and other junction link roads will have a Design Speed of 70kph as per Table 4/1 of TD22/06.

5.4.4 Design speeds for local roads will be subject to agreement with the local highway authority.

Cross sections

5.4.5 Dual carriageway sections have been designed as Dual 2 lane All-Purpose (D2AP) carriageways as detailed in Figure 4-3a in TD27/05. It is possible that a rigid (concrete) vehicle restraint system may be selected for the central reserve as an alternative to a flexible (steel) system that is conventionally used on D2AP carriageways.

5.4.6 Single carriageway sections will generally be single carriageway (S2) standard as detailed in Figure 4-3a in TD27/05. However, in many cases these cross-sectional standards may be relaxed by agreement with Somerset County Council to ensure works to local roads are appropriate to the standard and character of adjacent existing roads.

Junction design

5.4.7 For both options, all junctions will be designed as fully grade separated junctions in accordance with TD22/06 *Layout of Grade Separated Junctions*. However, these types of junctions generally occupy a large area and are sometimes inappropriate for lightly trafficked rural junctions. The approach will therefore be reviewed during preliminary design development to determine if design optimisations might be possible.

5.4.8 For both options, a grade separated junction is currently being considered for the Hazlegrove Junction. This would utilise the existing Hazlegrove Roundabout as part of the junction.

5.4.9 The traffic forecasts show the merging and diverging traffic at all junctions on the scheme will be sufficiently low to justify single lane slip roads and simple tapered merges and diverges.

Departures from standard

5.4.10 The layout of the main carriageway and junction links have all currently been developed to be compliant with geometric design standards, for both options.

5.5 Non-motorised users (NMU)

Existing facilities

5.5.1 Existing NMU routes along the proposed routes include:

- A footpath crossing of the Podimore Bypass via an existing bridge at Podimore (the Higher Farm Lane Accommodation Bridge).
- A byway, known as Eastmead Lane, which connects with the eastern end of the Podimore Bypass and runs northwards. This appears to be part of a historical north-south route that was severed by the construction of the bypass and, although it can still be accessed from the road, is not likely to be well used due to the difficulty of accessing it.
- Various north-south footpath connections across the existing A303 providing links between Downhead and West Camel; Steart Hill and Howell Hill; Traits Lane and Camel Hill Farm; and Gason Lane and the grounds of Hazlegrove House Registered Park and Garden.
- Byways known as Downhead Lane and Mead Lane which cross the proposed route of option 2 north of Downhead.
- A long-distance walking route known as the Celtic Way, which crosses the existing A303 adjacent to Traits Lane, and continues northwards to cross the route of option 2 near Vale Farm.
- An at-grade footpath crossing of the existing dual carriageway Sparkford Bypass which connects Sparkford village with the grounds of Hazlegrove House Registered Park and Garden.

Development of the NMU strategy

5.5.2 An outline NMU strategy for both route options was developed during the scheme option selection stage. This was based on:

- Initial feedback from user groups
- Initial feedback from Somerset County Council's Right of Way Officer
- An NMU audit undertaken during the scheme option identification stage
- NMU surveys undertaken during the scheme option identification stage

<u>Initial feedback from user groups</u>

5.5.3 In 2016, a number of user groups were contacted for their suggestions on the development of proposals for NMU. Somerset Ramblers, Somerset Bridleways Association and Blackmore Vale and Yeo Valley Cycling Touring Club all responded in writing. Feedback that was applicable to the scope of this scheme included:

- There is a popular cycle route between Babcary and West Camel which crosses the existing A303 carriageway at the Steart Hill/Howell Hill junction.

- The possibility of upgrading existing Higher Farm Lane Accommodation Bridge to bridleway standard should be considered.
- In principle, user groups would support short diversions of existing rights of way if this enabled at-grade crossings to be replaced by grade separated crossings.

5.5.4 Further liaison with user groups, including reviews of any formal responses received during the non-statutory consultation, will be used to inform the development of the preliminary design.

Initial feedback from Somerset County Council (SCC) Rights of Way Officer

5.5.5 During initial discussions SCC's Rights of Way Officer has made the following requests:

- Gateway treatments should be provided along the retained section of the A303 to control speeds and make the route more suitable for NMU.
- The upgrade of the Higher Farm Lane Accommodation Bridge to accommodate equestrian use and the connection of this bridge to the severed southern end of Eastmead Lane.
- SCC expects a regular spacing of NMU crossings between Sparkford and Podimore.

5.5.6 Further liaison with the Rights of Way Officer, including reviews of any formal responses received during the non-statutory consultation, will be undertaken to inform the development of the preliminary design.

2016 NMU survey results

5.5.7 In August and September 2016, an NMU survey was undertaken across the scheme area. Four locations with a relatively high number of NMU counts were observed:

- Podimore high street (cyclists)
- Higher Farm Lane (pedestrians)
- Steart Hill (cyclists)
- Grounds of Sparkford Hall (pedestrians)

NMU audit

5.5.8 An NMU audit, undertaken in 2016, made the following principal suggestions:

- Consideration be given to the upgrade of the Higher Farm Lane Accommodation Bridge to accommodate equestrian use and the continuation of this bridleway link to the severed southern end of Eastmead Lane.
- Consideration be given to the grade separation of the Celtic Way as it crosses the proposed route.

- Consideration be given to a grade separated NMU provision near Hazlegrove Junction, to connect Sparkford village and areas to the north of the proposed route.
- Careful consideration and accommodation be given to east-west cycle movements through the scheme area.
- Implementation of speed reduction measures along retained de-trunked sections of the existing A303 where it is proposed to use this for NMU provision.

5.5.9 The above suggestions and recommendations have been used to develop the following NMU strategy for each option.

Option 1 NMU strategy

5.5.10 Option 1 has the potential to be most disruptive to NMU journeys as it directly impacts on a greater number of routes than option 2.

5.5.11 It is proposed to upgrade the existing Higher Farm Lane Accommodation Bridge to enable use as a bridleway crossing. This is likely to involve upgrading the parapets to an appropriate standard for equestrian use, and may also require amendment to the legal status of the route across the existing bridge.

5.5.12 Footpaths in the vicinity of Downhead, Plowage Lane, Steart Hill and Howell Hill which would be directly affected by the proposed route would be locally diverted to cross the proposed route on the same structure(s) as the local road network. The cycle route from Babcary would be accommodated via the proposed Steart Hill Overbridge.

5.5.13 It is proposed that the route of the Celtic Way would be diverted under the proposed Traits Lane Underbridge.

5.5.14 At-grade crossings of the A303 to the west of the existing Hazlegrove roundabout would be extinguished and diverted to the existing roundabout and then through the junction via the Hazlegrove Junction Underbridge.

5.5.15 It is possible that the works would involve the closure of the at-grade crossing of the Sparkford Bypass, in which case the footway alongside Sparkford High Street would be extended to Hazlegrove Junction thus providing a link from the village to the Hazlegrove Registered Park and Garden.

Option 2 NMU strategy

5.5.16 It is proposed to upgrade the Higher Farm Lane Accommodation Bridge as for option 1.

5.5.17 The byway known as Downhead Lane would be reconnected via a new overbridge across the proposed road (the Downhead Lane Overbridge).

5.5.18 The byway known as Mead Lane would be extinguished and each end connected via the Downhead Lane crossing.

5.5.19 An existing footpath to the west of Steart Hill would be severed by the proposed route. It is proposed that this footpath would be diverted over the new route via the proposed Steart Hill Overbridge.

5.5.20 It is proposed that the Celtic Way, which currently runs to the east of Vale Farm, would be diverted across the proposed Vale Farm Overbridge.

5.5.21 It is possible that the works would involve the closure of the at-grade crossing of the Sparkford Bypass, in which case the footway alongside Sparkford High Street would be extended to Hazlegrove Junction thus providing a link from the village to the Hazlegrove Registered Park and Garden.

5.6 Structures

Existing structures

5.6.1 There are 2 existing structures adjacent to or within the scheme limits. At the western limits of the scheme is Higher Farm Lane Accommodation Bridge, a reinforced concrete voided deck slab with reinforced concrete substructures. No alteration is required to the superstructure, although it is proposed that the parapet will be upgraded for the structure to be used as a bridleway for both options. It is understood that the edge beams were strengthened in 2007 and the parapets replaced. Strengthening of the edge beams should therefore not be required to facilitate increasing the height of the parapets.

5.6.2 The other existing structure is Sparkford Railway Bridge, a three-span concrete beam and slab deck spanning 2 side roads and the Weymouth to Castle Cary railway line. This structure is currently outside the scheme limits and should not be affected by the current proposals for either option.

New structures

5.6.3 Four new structures are proposed for option 1, in addition to the parapet upgrades at Higher Farm Lane Accommodation Bridge. These structures are listed in Table 5.1.

Table 5.1 Option 1 structures

Name	Cross section	Main span length	Nominal minimum Headroom	Proposed Structural Form	Overall Bridge length	Overall Bridge Width
Higher Farm Lane Accommodation Bridge	As existing	As existing	As existing	Existing Structure	N/A	N/A

Name	Cross section	Main span length	Nominal minimum Headroom	Proposed Structural Form	Overall Bridge length	Overall Bridge Width
Downhead Junction Overbridge	Local Road + Footway	23m	6.45m	Steel composite 2 span	46m	14.1
Steart Hill Overbridge	Local road + Footway	24.3m	6.45m	Steel composite 2 span	88.6m	15.4
Traits Lane Underbridge	Dual Carriageway	14.5m	5.3m	Single Span PC Beam and RC slab (Integral)	15.5	27.2
Hazlegrove Junction Underbridge	Dual Carriageway	23.2m	5.3m	Single Span PC Beam and RC slab	26.5m	59m

5.6.4 Five new structures are proposed for option 2, in addition to the parapet upgrades at Higher Farm Lane Accommodation Bridge. These structures are listed in Table 5.2.

Table 5.2 option 2 structures

Name	Cross section	Main span length	Nominal minimum Headroom	Proposed Structural Form	Overall Bridge length	Overall Bridge Width
Higher Farm Lane Accommodation Bridge	As existing	As existing	As existing	Existing Structure	N/A	N/A
Podimore Overbridge	Slip road	38m	6.45m	Steel composite 2 span	74m	15.4m
Downhead Lane Overbridge	Byway	23m	6.45m	Steel composite 2 span	46.0m	6.1m
Steart Hill Overbridge	Local Road + Footway	27m	6.45m	Steel composite 2 span	51.2m	14.1m
Vale Farm Overbridge	Farm Access	23m	6.45m	Steel composite 2 span	46m	6.1m
Hazlegrove Junction Overbridge	Junction link road	40m	6.45m	Steel composite four span	129m	15.4m

5.6.5 It is proposed that overbridge structures will be designed as a family of structures, providing similar arrangements and details which consist of open span structures supported on reinforced concrete substructures. Proposed pier arrangements will consist of discrete piers, avoiding leaf piers, to maintain a more open appearance.

5.6.6 Where possible, piers will be avoided in the central reserve to minimise maintenance operations in this location. However due to limitations on some of the structural arrangements and the difficulties with accommodating skewed structures within the scheme layout this may not always be possible. The number of spans may therefore vary from structure to structure, depending on the specific circumstances.

5.6.7 It is proposed that underbridges will be single span reinforced concrete structures and, where possible, will be designed as integral structures. Typically underbridges will be formed of precast beam and slab superstructures on reinforced concrete sub-structures.

5.7 Earthworks and Geotechnics

Earthworks

5.7.1 The layout design is being developed in 3D modelling software. This enables the quantification of bulk excavation and deposition that will be required to establish the road foundation levels. A primary objective of the design of both options is to ensure there is an overall surplus of material (i.e. more excavation than deposition). The quantity of surplus has been deliberately engineered according to the anticipated requirement for landscaping fill which, although not assessed yet, may be required in order to mitigate visual and acoustic disturbance.

5.7.2 Modelling has assumed scheme wide slopes of 1:3. This approach will be refined during development of the preliminary design following ground investigation.

5.7.3 Anticipated quantities of material associated with each option are presented in Table 5.3. These quantities exclude items such as topsoil/resoil, granular material to structures and drainage, and removal of unsuitable in-situ material.

Table 5.3 Estimated bulk earthworks quantities

Option	Cut	Fill to embankments	Available fill for landscaping
1	773,959m^3	597,284m^3	176,675m^3
2	505,570m^3	296,155m^3	209,415m^3

5.7.4 It can be seen that option 1 would require greater quantities of earthworks as a result of its proposed route over the top of Camel Hill.

Geotechnical

5.7.5 A Preliminary Sources Study Report (PSSR) has been produced for this scheme. This report documents geotechnical (below ground) risks, implications and feasibility of scheme options. A geotechnical site investigation is planned for later in 2017 and,

in the interim, knowledge of the properties and risks associated with in situ material on the site is limited to the content of the PSSR.

5.7.6 Challenges associated with the site generally, and specifically with each option, are listed below.

Generic technical challenges pertinent to both route options

- Unforeseen ground conditions – potential issues regarding insufficient bearing capacity, excessive settlements, slope instability for cuttings and embankments, groundwater control and temporary works.
- Achieving earthworks mass balance across cut and fill operations on site.
- Ensuring a suitable volume of fill is generated to facilitate embankment construction – potential requirement to import large quantities of replacement fill if insufficient material produced on site.
- Acceptability of locally sourced fill – potential for site won embankment fill to be unsuitable for use thereby requiring replacement fill to be imported from an off-site source.
- High concentration of pyrites in natural strata and sulphates in made ground – potential for thaumasite sulphate attack on buried concrete affecting the integrity of concrete structures.
- Camel Hill Fault – most significant geological fault in the area and strikes roughly east west affecting both proposed route options around the location of the Steart Hill Overbridge.
- Compressible ground causing intolerable movements.
- Potential solution features in the White Lias Formation.
- Limestone bands and interbeds causing obstructions and creating permeable pathways - potential constructability issues (e.g. piling though limestone beds).
- Potential for variable ground conditions underlying highway structures – leading to foundation design and serviceability issues.
- High groundwater levels – potential issues surrounding elevated pore pressures driving slope instability, hydrostatic uplift effects on structures during and post construction, ingress into excavations leading to collapse and delays, periodic softening of formation strata where shallow groundwater persists during heavy rainfall.
- Stability of cut slopes within the Lower Lias deposits – target design slope angles may not be achievable.
- Relic shear surfaces and propensity for slope instability – potential for pre-existing slope failures which may be remobilised during construction of earthworks.
- Landfill in location of the tie-in to the Sparkford Bypass (common to both options) – laterally extensive deposits of material (potentially contaminated) which may be highly compressible.

Specific technical challenges relevant to option 1

- Potential sources of contamination – Existing and former fuel storage sites identified along proposed option 1 alignment in the vicinity of Steart Hill and Gason Lane. Potential for deleterious ground conditions which may require extensive remediation of potentially contaminated land.
- Historical quarries identified along option 1 alignment just to the west of Traits Lane and in the vicinity of the Camel Hill Services. Potential for quarries to be poorly backfilled leading to excessive/differential settlement, may require soft ground design solutions to be implemented.
-

Specific technical challenges relevant to option 2

- Severely limited existing ground investigation data across much of the proposed option 2 alignment. High risk associated with unknown ground conditions.
- Potential for increased thickness of alluvial/superficial deposits owing to low-lying land in close proximity to the Dyke Brook flood plain, particularly at the western and central sections of the proposed alignment.
- Consequential effects of potentially thicker alluvial deposits – increased depth to competent founding stratum; potential requirement to pile structural foundations; alluvial deposits potentially unsuitable for use as embankment fill; serviceability implications on proposed earthworks.

5.8 Drainage

5.8.1 Edge of carriageway drainage systems will be selected in accordance with the *Design Manual for Roads and Bridges* (DMRB) Volume 4, in particular HD33/16 *Design of Highway Drainage Systems* (DMRB 4.2.3). This approach is likely to lead to a mixture of solutions such as surface water concrete channels, filter drains and kerbs/gullies, depending on the location, road type and whether the road is in cutting or embankment.

5.8.2 A risk assessment will be undertaken in accordance with HD45/09 *Road Drainage and the Water Environment* (DMRB 11.3.10) to establish the potential for runoff from the proposed road to cause pollution to receiving watercourses. This risk assessment will inform the selection of treatment measures to address pollution risk.

5.8.3 Although the preferred destination for runoff water is normally via infiltration to ground, it is expected that the ground conditions in this area are not suitable for infiltration systems. However the potential for infiltration will be reviewed following acquisition of data from ground investigation studies.

5.8.4 It is proposed that carriageway drainage systems will connect to new detention basins which will provide attenuation prior to outfalling into the receiving watercourses. These basins will be sized to accommodate the runoff from a 1:100

year storm, ensuring that flood risk to surrounding property does not increase as a result of the proposed road drainage.

Option 1

5.8.5 The carriageway profile of option 1 consists of a high point towards the centre of the scheme, with the road falling away to low points to the west and east.

5.8.6 The drainage strategy for option 1 consequently comprises of 2 new detention basins, one at each end of the scheme. The basin at the western limits of the scheme would outfall, via a tributary, to the River Cary. The second basin, towards the eastern limits of the scheme, would outfall into the Dyke Brook via a short length of ditch.

5.8.7 An existing pond in the grounds of Hazlegrove Park and Garden which is part of the Sparkford Bypass drainage system would be retained.

5.8.8 During design development, opportunities will be considered to supplement the detention basins with intermediate attenuation features along the length of the road so that attenuation (and pollution control) is provided continuously along the length of the drainage system rather than only at a single point prior to outfall.

Option 2

5.8.9 The carriageway profile of option 2 consists of a low point towards the centre of the scheme with the road generally rising to the west and east away from this point. The low point is situated very close to the mapped extents of the Dyke Brook flood plain.

5.8.10 The drainage strategy for option 2 consequently involves the provision of a detention basin at the centre of the scheme, at the low point. This would outfall to the Dyke Brook via a short length of ditch. A second detention basin is also likely to be required at the western limits of the scheme at a similar location to the basin proposed in option 1.

5.8.11 The existing pond in the grounds of Hazlegrove Park and Garden which is part of the Sparkford Bypass drainage system would be retained.

5.8.12 During design development, opportunities will be considered to supplement the detention basins with intermediate attenuation features along the length of the road so that attenuation (and pollution control) is provided continuously along the length of the drainage system rather than only at a single point prior to outfall.

5.9 Statutory Undertakers

Existing utilities

5.9.1 Enquiries have been undertaken to determine the location of public utilities within the scheme area in accordance with Highways England's Interim Advice Note (IAN) 59/04 *The New Roads & Street Works Act 1991 - Diversionary Works* section 2 'Preliminary Inquiries (C2)'

The results of the preliminary (C2) enquiries highlight that several undertakers have equipment that may require protection or diversion as a result of the proposed options. These are described below and all locations referred to in are shown in **Figure 5.3**.

Figure 5.3 Locations referred to in relation to public utilities

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<u>Wessex Water</u>

5.9.2 Wessex Water records show a distribution main running along the northern verge of the B3151. The main crosses the A303 and continues in the northern verge until it reaches Howell Hill. Spurs run from this main to the village of Downhead, to Plowage Lane, to Steart Hill and to Howell Hill. Although not shown on Wessex Water's plans this distribution main is also likely to serve the properties along the A303. This main is only likely to be affected by option 1.

5.9.3 A further water main crosses the existing Hazlegrove Roundabout under the A359 arm and runs along the southern A303 verge up to the Camel Hill services. From Hazlegrove Roundabout this main also runs into Sparkford village through the Sparkford service area site. There is a chance that this main may be affected by option 1 but not option 2.

5.9.4 A third distribution main runs up Traits Lane from Queen Camel and crosses the A303 to supply Camel Hill Farm. This main is only likely to be affected by option 1.

5.9.5 Foul sewers generally fall from north to south and, as such, foul mains from any properties to the south of the existing road along Howell Hill, Plowage Lane and Traits Lane should not be affected by the scheme. A foul sewer runs down Steart Hill and crosses the existing A303, continuing down Howell Hill. This is likely to be affected by option 1.

5.9.6 Wessex Water records also indicate that 2 foul sewers cross the Sparkford bypass between Hazlegrove House and Sparkford village. These sewers are in the vicinity of the eastern tie-in for both options and so may be affected.

Scottish and Southern Energy (SSE)

5.9.7 SSE records show an 11KV overhead cable in fields to the north of the route between Podimore and Downhead. At Downhead this splits and runs south, crossing the A303 to feed properties along Plowage Lane and at the junction with the B3151.

5.9.8 A further 11kV overhead cable runs down the east verge of Steart Hill and crosses the A303 to supply properties on Howell Hill. A spur from this cable also supplies the cluster of properties alongside the A303 including the Camel Hill Methodist Church. A high voltage cable joins the A303 southern verge from West Camel to feed the MOD station at Camel Hill.

5.9.9 A low voltage supply crosses the A303 at Plowage Lane to feed The Spinney. This same supply also runs along the A303 southern verge for a short distance, although it is not clear what purpose this serves.

5.9.10 A low voltage supply also runs down Steart Hill. Whilst this does not cross the A303 it does run along the northern verge for a short distance and a spur appears to run across the carriageway to a camera situated in the southern verge.

5.9.11 SSE records show a low voltage supply running up Traits Lane, supplying properties along this road including the Camel Hill Ministry of Defence (MOD) and telecommunications sites. It then crosses the A303 to supply Camel Hill Farm and associated properties.

5.9.12 Finally, the records also show a low voltage cable crosses the A303 Sparkford bypass between Hazlegrove House and Sparkford village.

BT

5.9.13 BT records highlight cables that approach the scheme area along the northern verge of the B3151. At the B3151 junction this service runs along the northern verge of the A303 eastwards as far as the property known as Blue Haze. Spurs feed off this cable

to Downhead (as far as Mead Farm and Newclose House), The Spinney, Plowage Lane, Steart Hill (as far as Steart Hill Farm) and Howell Hill. The service to Vale Farm is fed from the Steart Hill cable.

5.9.14 To the east of Blue Haze to the cable crosses the A303 and runs in the southern verge until Traits Lane. At this point the service splits to feed properties along Traits Lane (including the MOD and telecommunications site) and properties to the north including Camel Hill Farm.

5.9.15 The BT supply to the Camel Hill service area is from the south, via Gason Lane and so should not be affected by the scheme.

5.9.16 Finally, BT records indicate a cable running across the Sparkford bypass between Hazlegrove House and Sparkford village.

Level 3

5.9.17 Instalcom, who act on behalf of a company called Level 3, have provided details of a fibre optic cable which is owned by Level 3, and appears to be located within the existing A303 corridor along entire length of scheme. The records provided are not clear enough to determine the exact location of this cable within the road cross section, or exactly what type of cable it is. However, measures to protect or divert this apparatus are likely to be required for both options, particularly option 1.

Virgin Media

5.9.18 Virgin Media's records indicate a fibre optic cable running along the existing A303 carriageway along the full length of the scheme. The records are clear enough to establish that this cable is in the southern verge along the dual carriageway section of the Podimore bypass, the northern verge between the bypass and the existing Hazlegrove Roundabout and the southern verge along the Sparkford bypass. It is understood that the Virgin Media cables occupy the same duct route as the Level 3 cables.

BSkyB

5.9.19 BSkyB did not provide any record information, although have since advised that they own or lease cables that are within Level 3's corridor, similar to Virgin Media.

Network Rail

5.9.20 Instalcom have provided records regarding the presence of a fibre optic cable running alongside the Wilts, Somerset and Weymouth Railway as it runs in a north-south direction at the eastern limits of the scheme. The proposed scheme is likely to tie into the existing A303 to the west of this point and therefore the railway and cable should not be affected.

Camel Hill signalling station

5.9.21 Camel Hill signalling station, situated to the south-east of the A303/Traits Lane junction, is believed to be disused although this needs to be verified. No records have been obtained relating to live services at this site. Neither option 1 nor option 2 pass through the site.

Camel Hill telecommunications site

5.9.22 A telecommunications site is located to the south-west of the A303/Traits Lane junction. Freehold and leasehold interests in this site have been identified during land searches, although no specific information relating to this installation has been received via the C2 process. The layout of option 1 has been designed to avoid this plot.

Diversionary works

5.9.23 Budgetary estimates have been obtained from utility companies who are likely to be affected by the works. The estimates have been added together and the resulting budgetary estimate is shown in Table 5.4.

Table 5.4 Budget estimates for statutory undertakers works

Option	Budget Estimate for Statutory Undertakers Works (incl VAT)
1	£4,355,429
2	£1,602,427

5.9.24 Option 1 is anticipated to incur the greatest costs due to there being a greater concentration of utilities along the existing A303 corridor. Of particular concern is the presence of three fibre optic services which run along the full length of the existing verge within the same duct route. The route is owned by Level 3 (who are represented by Instalcom) who lease space within this route to BSkyB and Virgin Media. Any work to this corridor will have to be well co-ordinated, and this exercise is likely to be complicated by numerous works phases that may be required in order to construct the scheme around the existing A303 traffic.

5.9.25 In view of the complexities surrounding planning of the diversionary works for the fibre optic services, these organisations will be engaged early in the preliminary design process to ensure their requirements and influence over the project programme are fully understood.

5.10 Land-take and pinch-points

5.10.1 The current design of both route options will require permanent and temporary land acquisition during construction. An estimate of the likely requirement for land acquisition is given in Table 5.5.

Table 5.5 Land acquisition requirements (figures in hectares)

	Option 1	Option 2
Total area of scheme footprint measured from the engineering model	53.0	55.3
Additional allowance for landscaping and drainage outfall works	10.7	11.6
Deductions		
Total area of land already registered to Secretary of State for Transport within the scheme footprint	-25.6	-20.4
Total Area of third party land requiring acquisition	**38.1**	**46.6**

5.10.2 It can be seen from Table 5.5 that option 2 is likely to require the greatest acquisition of third party land.

5.10.3 This estimate includes allowances for all works within a permanent highway boundary which will either be maintained by Highways England or by Somerset County Council. It excludes allowances for temporary works such as compounds, lay down areas, haulage routes, land required for wayleaves/easements, rights of way dedications and accommodation works such as access tracks. These items will be developed as part of the preliminary design.

5.10.4 Being an online option, much of option 1 would make use of the footprint of the existing A303 corridor. Some agricultural land would need to be acquired adjacent to the existing road. An area of the Hazlegrove Registered Park and Garden at the eastern end of scheme would also need to be acquired.

5.10.5 The majority of the land required for option 2 is agricultural farmland. An area of the Hazlegrove Registered Park and Garden, larger than that needed for option 1, would also be required.

Pinch-points

5.10.6 Of particular concern, in respect of ease of construction and impact on adjacent interests, are sections of the scheme where the available corridor for road construction appears to be limited. There are 2 pinch-points along the route of option 1.

5.10.7 At the Howell Hill/Steart Hill junction, the proposed route crosses the existing A303 carriageway to move south. At this location, there are also properties to the north and south of the road. The footprint of the scheme is particularly close to the property

known as Sheira-Leigh, located on the south-western corner of the A303/Steart Hill Junction.

5.10.8 At Camel Hill, the route of option 1 crosses the existing A303 carriageway near Traits Lane. At this location, the route alignment is constrained by a Scheduled Monument (a Romano-British settlement) to the north and the MOD signal station to the south, both of which are considered to be unavailable for the scheme.

5.10.9 Option 2 does not appear to be constrained by any such pinch-points.

5.11 Buildability

5.11.1 The services of a Delivery Partner were commissioned during the option selection stage to provide advice regarding the buildability of both options under consideration. Aspects considered included construction phasing, temporary works considerations, programme constraints, traffic management, potential environmental impacts and constraints, and risks and opportunities.

5.11.2 Principal findings from this work are summarised in the following sections.

Option 1

- As a result of this option being essentially online, there is a risk that full closures of the A303 may be necessary for items such as traffic management changes and lifting bridge beams over existing carriageways. If this is necessary the diversion routes, which will need to follow roads of similar or better class to the A303, may cover considerable distances. Full road closures will therefore need to be minimised or, if possible, avoided.
- Traffic management will be more complex than for option 2, and is likely to involve a number of phases resulting from construction of the new dual carriageway along both sides of the existing road. This is likely to complicate construction elements such as earthworks and statutory undertakers' diversionary works.
- The construction programme is highly dependent upon the early establishment of a haulage route to enable material to be moved from the main area of excavation in West Camel Hill to the main area of fill at Hazlegrove Junction. An online haulage route (i.e. adjacent to the existing A303 carriageway) is considered possible although will require sequential construction which would prolong the overall construction duration.
- Flexibility of construction sequencing is particularly constrained at the 2 pinch-points highlighted earlier in this chapter. The impact of these pinch-points on the construction programme would be minimised by the adoption of the offline haulage route.
- Working space will be at a premium along much of the site, due to adjacent property and live traffic.
- The proposed horizontal and vertical alignment of the proposed road will be influenced not only by geometric design standards but also by the requirement to

ensure the scheme is buildable in close proximity to the existing road. At locations where the proposed road is being constructed close to live traffic this may place constraints on the vertical alignment of the proposed road which will need to be similar to the existing road levels.

Option 2

5.11.3 The following items were raised as principle issues for consideration during the development of the preliminary design of option 2.

- There will be significant ecological and environmental restrictions as the majority of the route passes through undeveloped land, the landscape character of which is significant.
- Mitigation works could have a significant influence on the construction schedule, particularly during mobilisation.
- Option 2 passes in close proximity to the Dyke Brook flood zone. Management of surface water runoff during construction may stifle progress in inclement weather.

5.12 Lighting

5.12.1 It is not expected that the main carriageway will require lighting for either option.

5.12.2 All significant junctions have been assessed to determine if lighting is required, in accordance with TA49/07 *Appraisal of New and Replacement Lighting on the Strategic Motorway and All-Purpose Trunk Road Network* (DMRB 8.3). This assessment highlighted the need to light only Hazlegrove Roundabout (south), for both options 1 and 2. No other junctions, including the Hazlegrove Junction Roundabout (north) are expected to require illumination.

5.12.3 The proposed lighting at Hazlegrove Roundabout (south) is expected to comprise 10 metre columns and will use LED lanterns. The extent of lighting along each of the roundabout arms is expected to follow the guidance given in Institution of Lighting Professionals document PLG02 *The Application of Conflict Areas on the Highway*.

5.13 Technology

5.13.1 An assessment of the technology requirements for the scheme has been undertaken. Whilst the Road Investment Strategy commits to the A303/A358 becoming an expressway corridor from London to Exeter via the M5 by 2028, there are currently no technical standards for expressways with regards to the provision of technology. Proposals for this scheme therefore involve the provision of minimum technology required for a dual two-lane all-purpose carriageway. This is likely to involve the provision of National Traffic Information Service (NTIS) vehicle counting sites and Emergency Roadside Telephones only, including any ducting and cabling routes within the proposed verge to accommodate these installations.

5.13.2 It is currently not intended to provide any additional features that would constitute 'future-proofing' for anticipated expressway standards. Further assessment work will be undertaken during the preliminary design stage, and this will include adoption of any technical expressway standards that are formally published during this stage.

5.14 Cost Estimates

5.14.1 The current scheme estimates for the two options are:

- Option 1: £179,172,419
- Option 2: £168,105,795

6 Traffic and Economics

6.1 Traffic Modelling

6.1.1 References in this section to WebTAG relate to the Department for Transport's web-based *Transport Analysis Guidance: (WebTAG)*.

6.1.2 The proposed A303 dual carriageway scheme between Sparkford and Ilchester and the proposed A358 dual carriageway scheme between Taunton and Southfields in Somerset would be relatively close to each other so a traffic model has been developed to be used in the appraisal of both schemes. This model has been prepared using the *South West Regional Traffic Model (SWRTM) Validation Report* (Highways England, March 2017) and will be used to support the scheme during the Development Consent Order (DCO) Examination process. The traffic model is fully documented in the Local Model Validation Report (Highways England, May 2017).

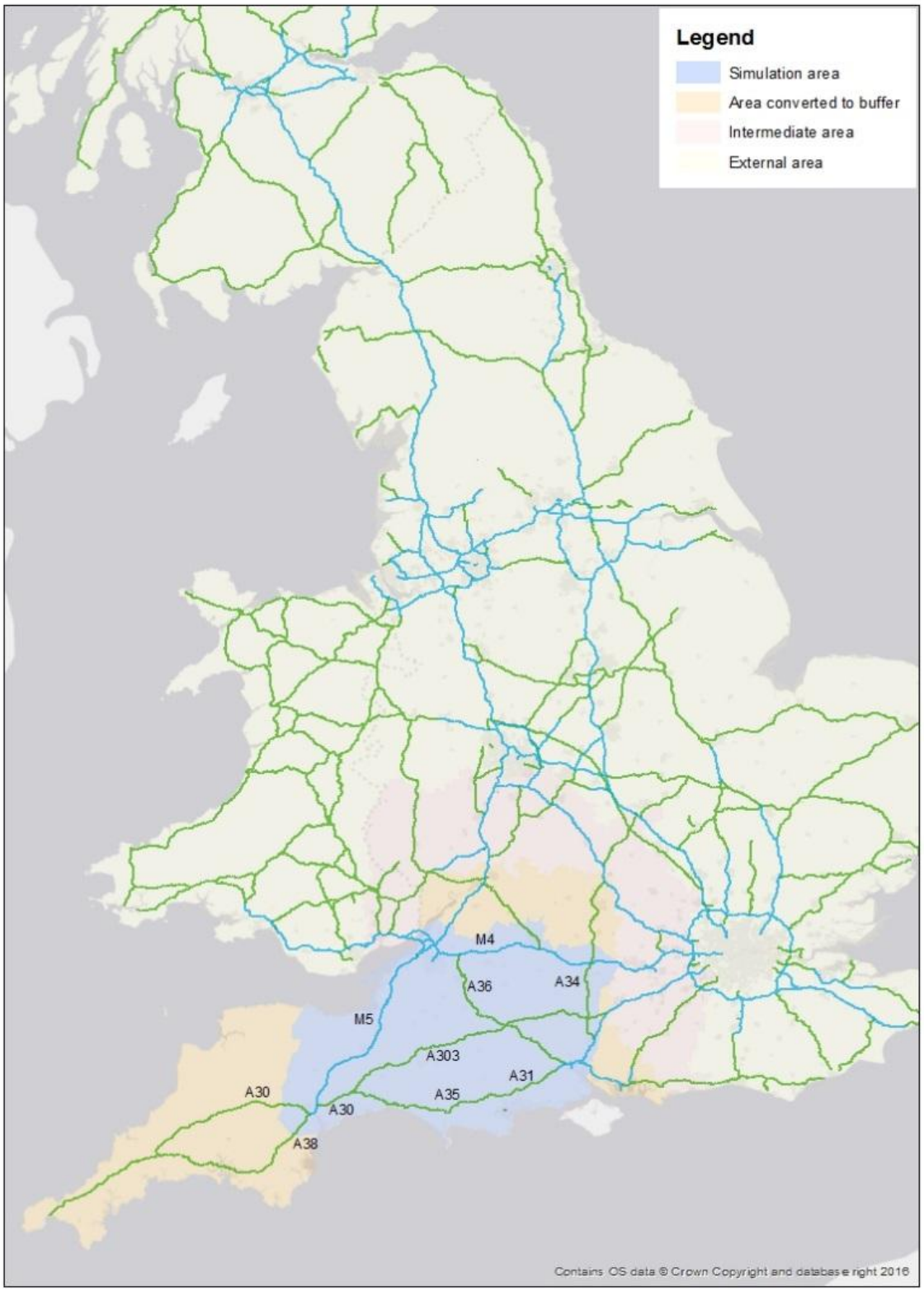
6.1.3 The traffic model has been developed in the SATURN software to represent three weekday time periods that are consistent with the SWRTM model time periods. These are an average AM peak period hour (07:00-10:00), an average hour in the inter-peak (10:00–16:00) and an average PM peak period hour (16:00–19:00) for an average Monday to Friday weekday in March 2015 (excluding school holidays and bank holidays).

6.1.4 To represent the higher traffic flows that occur at weekends and during holiday periods, a separate factor-based highway traffic model was also developed to represent these peak traffic periods in the economic appraisal.

6.1.5 The development of the traffic model relied on the data used in the SWRTM and the A358 and A303 models created at option identification stage as well as additional surveys carried out in autumn 2017.

6.1.6 The definition of the study area needs has taken into account the area which would be affected by the implementation of the scheme. In this sense, the study area was defined for both the A303 and A358 schemes with both schemes to be assessed using one model. Therefore, the study area comprised the A303 corridor, the A358 corridor, the M4/M5, and the surrounding areas. The simulation area is shown below in Figure 6.1.

Figure 6.1 Areas of Coverage



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6.1.7 The SATURN model comprised of 1,933 zones and a sub-regional road network. The simulation area covers the majority of the simulation area of the SWRTM; namely the area between Exeter to the south-west, the M4 to the north and the A34/M3 to the east. It was decided that it was unnecessary for the remainder of the SWRTM simulation area to be fully simulated in the option selection stage model so this has been converted into buffer coding and combined with the SWRTM buffer network to form the option selection stage buffer network which will allow movements into, out of and through the study area to be correctly allocated. Detailed local network has been added in the vicinities of the proposed schemes: predominantly between Taunton and Southfields and close to Sparkford and Podimore, but also near Exeter and between Honiton and Taunton.

6.1.8 The SWRTM trip matrices have been adapted with additional local zones added to better represent the distribution of trips local to the proposed schemes. A matrix estimation process was also carried out in the calibration process.

6.1.9 The SATURN model convergence meets WebTAG criteria in all time periods. The model achieves a good level of flow calibration with results indicating a close match to observations on the calibration screenlines and for individual link counts, with the required WebTAG criteria being met in all time periods.

6.1.10 Flow validation has been undertaken against independent data not used in calibration or for the matrix building exercise. An assessment of the validation process shows that the model achieves link flow validation in line with the WebTAG criteria and screenline flow validation close to the WebTAG criteria.

6.1.11 The journey time validation is considered to be good in all time periods with the model recreating journey times that are representative on key routes in the modelled area: the journey time route validation meets WebTAG criteria and the journey time segment validation meets or nearly meets the WebTAG criteria across all time periods.

6.1.12 In conclusion, it is considered that the 2015 base year traffic assignment model developed for the A303 Sparkford to Ilchester and A358 Taunton to Southfields option selection stage calibrates and validates to within acceptable margins of the WebTAG criteria and therefore demonstrates a good representation of traffic behaviour in the study area and forms a robust basis from which future year forecasts and option testing can be developed.

6.2 Traffic forecasting

6.2.1 Traffic forecasts have been prepared for the current estimated opening year for the scheme, 2023, and the scheme design year, 2038. Two additional forecast years, consisting of an intermediate year of 2031 and a final forecast year of 2051, have also been used to support the economic appraisal of the scheme. The forecasts have

used NTEM/TEMPRO v7.2 and Road Traffic Forecasts (RTF) 2015 forecasting data as well as accounting for local developments which have been assessed in an uncertainty log in accordance with WebTAG unit M4.

6.2.2 The traffic forecasts have been undertaken using a variable demand modelling approach that is consistent with that applied in the development of SWRTM. This represents redistribution, mode choice and time period choice in response to changes in travel costs.

6.2.3 Traffic forecasts have been prepared for the 2 scheme options as well as a scenario without the scheme.

6.2.4 Since the completion of the forecasting work the government has announced the removal of the toll charges from the Severn Crossing in 2018. This is likely to have a very small impact on the forecast traffic in the local area. These changes would occur both with and without the scheme so that the differences for economic and environmental appraisal would be limited. It is proposed that this will be fully assessed in the next stage of scheme development.

6.3 Effects of Scheme Options

6.3.1 The link flows on the network were compared between the Do Minimum scenario and both Do Something options for 2038, the design year (i.e. 15 years after planned scheme opening). The Do Minimum scenario is described in chapter 4 of this report. The Do Something scenarios include the proposed dual carriageway options. Both option 1 and option 2 are forecast to lead to an increase in Annual Average Daily Traffic (AADT) along the Sparkford to Ilchester section of the improved A303 in 2038 compared to the Do Minimum scenario.

6.3.2 Option 1 is forecast to result in an AADT of 40,000 in 2038. Option 2, the offline option, is projected to lead to an AADT in 2038 of 37,300 along the new dual carriageway and 2,000 along the existing single carriageway.

6.3.3 The impacts on journey times along this route are shown in Table 6.1.

Table 6.1 Journey Times (minutes)

Direction	Scenario	Weekday			August Weekend
		AM	IP	PM	IP
A - A303 Ilminster to Mere	2015 Base	39.76	39.50	39.55	43.67
	2023 Do Minimum	40.70	40.38	40.74	47.20
	2023 Option 1	38.40	38.19	38.95	42.58
	2023 Option 2	38.54	38.33	39.03	42.68
	2038 Do Minimum	44.42	42.25	42.72	49.92
	2038 Option 1	41.91	39.82	40.36	45.04

Direction	Scenario	Weekday			August Weekend
	2038 Option 2	41.96	39.93	40.46	45.10
B - A303 Mere to Ilminster	2015 Base	39.54	39.64	40.33	42.90
	2023 Do Minimum	40.21	40.65	41.78	46.16
	2023 Option 1	38.65	39.15	39.85	42.16
	2023 Option 2	39.34	39.82	40.52	42.35
	2038 Do Minimum	41.72	42.46	45.18	49.15
	2038 Option 1	39.63	40.42	42.72	44.56
	2038 Option 2	40.29	41.06	43.24	44.67

6.3.4 There is a predicted increase in journey times between the 2015 base and the Do Minimum scenario for both 2023 and 2038. This is a result of a higher level of traffic in both forecast years. The journey times decrease between Do Minimum and the Do Something scenarios in both forecast years and for all time periods. This indicates that the schemes have a positive impact on the A303 corridor.

6.3.5 In 2023 both options are predicted to provide an average reduction in journey time close to 2 minutes in each direction on a neutral weekday compared to the Do Minimum. The corresponding reduction during August weekends is close to 4 minutes. In 2038 the reductions are similar for the weekday but larger for the August weekend, increased to almost 5 minutes.

6.3.6 Modelled journey times for option 1 are consistently lower than those for option 2 due to its shorter distance.

6.3.7 The journey time savings are consistently higher in the eastbound direction compared to the westbound direction. This is related to increased delays at Podimore junction in the westbound direction.

6.4 Economic Performance of Options

6.4.1 Economic assessment has been carried out in a manner consistent with WebTAG Unit A1.1 Cost Benefit Analysis using TUBA v1.9.8. TUBA calculates benefits using trip and cost matrices output from the VDM process. In addition to the four weekday time periods, the economic assessment made use of a model of an August weekend to capture the full extent of benefits associated with the options. The assessment masked model noise at locations far away from the scheme, and therefore the benefits reported are for only for the primary traffic movements.

6.4.2 Scheme costs are presented in Table 6.2. Changes in maintenance costs have not been included in the economic assessment at this stage.

Table 6.2 : Scheme Cost Summary – Core Scenario

Cost Type	Option 1	Option 2
Preparation	£10,221,622	£10,679,487
Supervision	£2,461,438	£2,209,868
Works	£113,015,288	£104,717,776
Land	£12,469,991	£11,877,587
Total Costs (PVC)	£138,168,340	£129,484,718

Source: Highways England Options Estimates (July 2017). Values are expressed in 2010 prices, undiscounted

6.4.3 Both options have similar costs overall, the costs for option 1 are slightly higher largely due to the higher construction costs.

6.4.4 The benefits and costs of the 2 scheme options are presented in Table 6.3. In accordance with Department for Transport guidance, Reliability Benefits and Wider Economic Benefits are added to the Initial Benefit Cost Ratio (BCR) to produce an adjusted BCR.

Table 6.3 Analysis of Monetised Costs and Benefits - Core Scenario (£000s)

Item	Option 1	Option 2
Accidents (not assessed by TUBA)[1]	9,290	4,043
Roadworks (not assessed by TUBA)[2]	-19,195	-2,425
Greenhouse Gases (assessed by TUBA)	-21,417	-21,939
Noise (not assessed by TUBA)[3]	-121	747
Air Quality (not assessed by TUBA)[4]	-117	-167
Economic Efficiency: Consumer Users (Commuting)	15,554	13,372
Economic Efficiency: Consumer Users (Other)	27,662	24,319
Economic Efficiency: Business Users and Providers	129,863	114,412
Wider Public Finances (Indirect Taxation Revenues)	43,458	44,081
Present Value of Benefits (PVB)	184,976	176,443
Broad Transport Budget Present Value of Costs (PVC)	115,073	108,376
OVERALL IMPACTS		
Net Present Value (NPV)	69,903	68,067
Initial Benefit to Cost Ratio (BCR)	**1.61**	**1.63**
Reliability Benefits	11,183	10,526
Wider Economic Benefits	12,986	11,441
Adjusted Present Value of Benefits (PVB)	209,146	198,410
Adjusted BCR	**1.82**	**1.83**

Notes: [1] from COBALT, [2] from QUADRO,,[3] TAG Unit A3 Chapter 2,[4] TAG Unit A3 Chapter 3, All monetary values are expressed in 2010 prices discounted to 2010

6.4.5 The BCR value is used to assess the value of a transport project by weighing the benefits against the costs to indicate whether it is Value for Money and in doing this a wide spectrum of impacts is considered in a detailed appraisal, including various impacts on the economy, the environment and social welfare. Both options result in adjusted BCRs between 1.5 and 2. Under the Department for Transport's value for money criteria, these represent medium value for money. The BCRs differ slightly from those provided in the *Technical Appraisal Report* (Highways England,

November 2016) due to the use of the SWRTM in the traffic modelling. The SWRTM was not available when the traffic modelling was carried out for the Technical Appraisal Report.

7 Operational Assessment

7.1 Maintenance and repair strategy

7.1.1 A Maintenance and Repair Strategy Statement has been prepared which identifies the key maintenance issues for the proposed scheme. At this stage of the scheme, it considers aspects applicable to both options. It does not identify the maintenance and repair requirements for the 2 options separately as the level of detail considered at this stage shows similar maintenance requirements for both.

7.1.2 The strategy considers new assets that will require long-term maintenance and existing assets that will need to be repaired or replaced to bring them up to an acceptable standard at opening of the proposed scheme. These include:

- Safety barrier
- Drainage
- Structures
- Earthworks
- Street lighting

7.1.3 Requirements for future ease of maintenance of these assets are among the factors driving the design.

7.1.4 The only distinguishing aspect between the 2 options identified at this stage is that the existing A303 could be used as a diversion route when maintenance activities necessitated a carriageway or full road closure of any part of option 2. This would not be possible with option 1 and any diversion would be considerably longer in order to keep traffic on major county roads thus avoiding minor roads.

7.2 Safety management

7.2.1 A Project Safety Plan has been prepared for this scheme. The key outcomes of this plan are reproduced below.

- Interim Advice Note (IAN) 191/16 Safety Governance for Highways England (Highways England, March 2016) provides guidance on the selection and implementation of the appropriate safety management system for a scheme based on several criteria. The result of the classification process deems that whichever route option is chosen, the scheme should be subject to a Type A Safety Management System (SMS), with one Type B feature (for a definition of the types of SMS see paragraph 7.2.2).
- The preferred A303 Sparkford to Ilchester Dualling scheme will satisfy the road user safety objective if it is demonstrated from the Post Opening Performance period that:
  - The average number of Fatalities and Weighted Injuries (FWI) casualties per year is less than the safety baseline, where the safety baseline is based

on data for a national 'average' high quality all-purpose dual carriageway (D2AP) road.
  - The rate of FWI per billion vehicle-miles per annum is no more than the safety baseline where the safety baseline is based on data for a national 'average' D2AP road.
  - For each link, no population (eg car drivers, pedestrians, HGV drivers and motorcyclists) is disproportionately adversely affected in terms of safety and risk to each population remains tolerable.

7.2.2 The types of Safety Management System referred to in IAN 191/16 are:

- Type A – Basic. This is likely to apply to projects/interventions that are routine, familiar and without operational implications. As such, these will be largely satisfied by the application of existing standards and guidance.
- Type B – Moderate. This is likely to apply to:
  - Projects/interventions that could have some significant operational impacts.
  - Those which may lead to an increased level of stakeholder interest (specifically in terms of how safety will be addressed or managed).
  - This will include the application of existing standards and guidance.
- Type C – Complex. This is likely to apply to:
  - Complex, infrequent projects/interventions which may have major implications for the strategic road network.
  - This will include the application of existing standards and guidance.

7.3 Summary

7.3.1 Neither of the route options under consideration in this report have significant safety or operational implications for the strategic road network. There is no significant difference between the safety management or maintenance and repair requirements for the 2 route options under consideration. Option 2 has the benefit of a diversion route via the existing A303 road during maintenance activities and emergency closures of the new road.

8 Environmental assessment and environmental design

8.1 Introduction

8.1.1 This chapter summarises the results of the environmental assessment that has been undertaken for option 1 and option 2, during both construction and operation.

8.2 Summary of potential environmental effects

Air quality

8.2.1 The construction phase is expected to last approximately 3 years and could affect local air quality through the generation and subsequent deposition of construction dust arising from construction activities and vehicle movements. With the implementation of the mitigation measures identified, such as avoiding double handling of materials and minimising height of stockpiles, air quality effects from the construction phase of both option 1 and option 2 are not expected to be significant.

8.2.2 Nitrogen dioxide (NO_2) concentrations have been predicted for a number of receptors shown on the plans in Appendix C of this report. During operation for option 1, the highest predicted annual mean NO_2 concentrations occur at receptor 7, which is on the existing A303 near Stoke Sub Hamdon, to the west of the scheme. The greatest increase in annual mean NO_2 is predicted at receptor 4 and receptor 9, where increases of 1.1µg/m^3 are predicted due to option 1. The greatest reductions in predicted annual mean NO_2 concentrations occur at receptors 1 and 2. All predicted annual mean concentrations of NO_2 are well below 60µg/m^3 and therefore no exceedances of the 1-hour NO_2 objective are predicted. As such, an overall Not Significant Adverse effect on human health and wellbeing would result. With regards to ecological effects, the annual mean nitrogen oxide (NOx) concentrations at receptor E1 (Stockwood and Down Site of Special Scientific Interest (SSSI)) are predicted to exceed the critical level of 30µg/m3 at the closest point to the road. The change in NOx at this location is predicted to be 0.98µg/m3 and so is considered 'small' in accordance with *IAN 174/13. , Updated advice for evaluating significant local air quality effects for users of DMRB Volume 11, Section 3, Part 1 'Air Quality (HA207/07)*. This suggests that there is potential for a significant effect to occur at this site.

8.2.3 During operation for option 2, the highest predicted annual mean NO_2 also occurs at receptor 7 however, with the greatest increase occurring at receptor 5, where an increase of 1.2µg/m^3 is predicted due to the scheme. Similarly, the greatest reductions in predicted annual mean NO_2 occurs at receptor 2, as for option 1. The NO_2 levels would be well below 60µg/m^3 and therefore no exceedances of the 1-hour NO_2 objective are predicted. As such, an overall Not Significant Adverse effect on human health and wellbeing would result. With regards to ecological effects, the annual mean NO_X concentrations at receptor E1 (Stockwood and Down SSSI) are

predicted to exceed the critical level of 30µg/m3 at the closest point to the road. The change in NO_x at this location is predicted to be 0.85µg/m^3 and so is considered 'small' in accordance with IAN 174/13. This suggests that there is potential for a significant effect to occur at this site.

8.2.4 There is a low risk that either of the route options would lead to significant air quality effects at human receptors in accordance with IAN 174/13 and the change in NO_2 associated with the scheme is not expected to result in non-compliance with EU Directive 2008/50/EC, *Ambient Air Quality Directive*. There is a potential risk of a significant effect at the Stockton Wood and Down SSSI as a result of both route options. Therefore, during preliminary design, further assessment will be undertaken for this designation to assess the potential changes in nitrogen deposition.

Cultural heritage

8.2.5 Both route options have the potential to result in the adverse effects to heritage assets and buried archaeology. Previous archaeological surveys and investigations, as well as the archaeological aerial survey and appraisal undertaken as part of the option identification stage, has demonstrated that there is a high potential for multi-period archaeological remains spanning the prehistoric period to WWII within the study area, which have the potential to be permanently affected during construction. In addition to sub-surface archaeological features, there is the potential for significant effects to the setting of multiple Listed Buildings and significant effects from the physical impact to Hazlegrove Grade II Registered Park and Garden, and an early 19th century milestone. Therefore, during construction, the overall significance of effects on designated heritage assets would be Moderate to Large Adverse, and the overall significance of effect on buried archaeology would be Moderate Adverse for both route options.

8.2.6 During operation, the overall significance of effect on designated heritage assets would be Slight Adverse for both options due to the potential adverse effects on the setting of these assets. Option 1 would have a permanent adverse effect to Hazlegrove House (Grade II Listed Registered Park and Garden) due to total loss of approximately the southern third of the park, which would cause a fundamental alteration to its significance, and substantial alteration to the setting of the remainder. This effect would also occur for option 2 as there would be loss of large area of the park. A specific Conservation Management Plan for the Hazlegrove Grade II Registered Park and Garden would be produced, which would identify the heritage significance of the various elements of the park, determine the effect of the scheme and inform the design and mitigation in this area as well as identifying appropriate enhancements to the park.

8.2.7 During operation, there would be no impacts on sub-surface archaeological remains and therefore the overall significance of effect on buried archaeology would be Neutral for both route options.

Landscape and visual effects

8.2.8 During construction of option 1, new detracting features such as heavy machinery, materials stockpiling, compounds and haul routes, would be present in the local landscape. However, given the online or near online nature of the works the new road features would be in close proximity to the existing A303 which in places presents a detracting feature in its own right. Despite the existing A303, the moderate to high value of the landscape within the study area does lead to the potential for significant adverse effects during construction. In terms of visual effects, given the close proximity of receptors, such as Downhead, Eyewell, Camel Hill and Hazlegrove House to elements of the works, significant visual effects would be likely during construction, from the introduction of new features within the view such as those described above.

8.2.9 Given option 1 would have sections of being either online or very close to the existing A303 corridor, the effects upon landscape character and nearby visual receptors would limited to an isolated area already characterised by a major highway. In particular the eastern end of the route would have a direct effect upon the designated Hazlegrove House Registered Park and Garden with views likely from elevated positions towards the scheme in the south. Option 1 would also be in proximity to other designated assets, however they would not be directly affected by the scheme. Option 1 would also be visible from local visual receptors such as residential properties and PRoW, including those within villages to the south at West Camel and Queen Camel which are designated Conservation Areas. On balance, the overall effect is considered to be Slight Adverse by Year 15 of operation. Mitigation would aid the integration of option 1 however the route would still not quite fit the landform and scale of the landscape and would still have an effect upon certain views. It is unlikely that option 1 could be fully mitigated, particularly at its eastern extents where it would tie into the existing A303 at Sparkford.

8.2.10 The construction of option 2 would introduce new features into the landscape. Given that option 2 would pass through an open flat vale landscape in part, with rising ground to the north and south, it is likely that these new features would affect the wider landscape character to a greater degree than option 1. As such the magnitude of change associated with constructing a new highway across farmland is likely to be large and therefore lead to significant adverse effects. Whilst the ridgeline to the south would contain views from village settlements to the south of the A303, there would be individual farmsteads and small groups of properties to the north of the ridgeline that would be visually affected by the construction of option 2. Likewise, a

number of PRoW would likely be affected, although these would be addressed at the next stage of assessment.

8.2.11 Once operational, option 2 would be the furthest from the existing A303, and therefore its placement in an otherwise rural and tranquil environment would be at greater odds with existing landscape features than option 1. The scheme would be set at the base of the hillside which rises to the south. Despite this landform preventing views from settlements to the south, existing far-reaching views from the north of the ridgeline would be disrupted by the presence of the new route which would traverse from east to west. Planting would however help to settle the scheme in the surrounding landscape and reduce its visual prominence over time. Sections of the route placed in shallow cutting may help reduce these effects further.

8.2.12 Similar to option 1, the eastern end of option 2 would have a direct effect upon Hazlegrove House Registered Park and Garden, affecting the setting of this designated asset. Option 2 would also be immediately adjacent to the Scheduled Monument at Downhead, where a local access road would run along the northern boundary of the Scheduled Monument. Option 2 would also run in proximity to other designated assets, which would be indirectly affected by the scheme. On balance, the overall significance of effect at Year 15 is considered to be Moderate Adverse given the magnitude of change associated with option 2. The unspoilt and rural character, whilst not designated, is of high value and consequently option 2 would be very difficult to fully mitigate, and features of interest would be both partly destroyed or their setting affected as a result.

Biodiversity

8.2.13 It is anticipated that option 1 would have a Neutral effect on the Natura 2000 sites (see 2.2.39 of this report) both during construction and operation, if the mitigation proposed is implemented. Option 1 is anticipated to have a Neutral effect on Sparkford Wood SSSI during construction and operation, as the SSSI is located over 300 metres from this option. It is anticipated there would be a Slight Adverse effect in terms of air quality on Whitesheet Hill SSSI, Yarnbury Castle SSSI, Parsonage Down SSSI and Stockton Wood and Down SSSI during construction, and a Neutral effect for Whitesheet Hill SSSI, Yarnbury Castle SSSI, and Parsonage Down SSSI once operational. However, there would be a Slight Adverse/Moderate Adverse effect for Stockton Wood and Down SSSI. It is anticipated that there would be a Slight Adverse effect on Hazlegrove Park LWS during construction and operation, due to potential for pollution events and changes in airborne pollutants as well as loss of habitat within the Hazlegrove Park LWS. There would also be a Slight Adverse effect on Camel Hill Transmitter Site LWS, Gaston Lane Field LWS, Ridge Copse LWS, Vale Farm Field LWS, and Yarcombe Wood LWS, due to the potential for pollution events and changes in airborne pollutants. This would reduce to Neutral during operation.

8.2.14 In terms of protected species, potential effects include the loss, damage or fragmentation of habitats, and the potential for disturbance. Providing best practice mitigation measures are implemented, a Slight Adverse effect is considered to be likely for bats during construction, and a Neutral to Slight Adverse effect is likely for reptiles and invertebrates. A Slight Adverse effect reducing to Neutral is anticipated for bats, reptiles and invertebrates during operation. For barn owls, dormice, badgers, great crested newts (GCN) and White clawed crayfish, the effect is considered to be Slight Adverse both during construction and operation. It is anticipated that there will be no impact on otters and watervole during construction and operation, resulting in a Neutral effect. The overall on-balance significance of effects on Nature Conservation as a result of option 1 would therefore be Slight Adverse for construction and Neutral for operation.

8.2.15 It is anticipated that option 2 would have a Moderate to Slight Adverse effect during construction and operation on Mells Valley SAC and North Somerset and Mendip Bats SAC, due to the potential disturbance to qualifying species, the fragmentation of commuting and foraging routes, and the barrier to dispersal, preventing access to the SACs. A Neutral effect on Bracketts Coppice SAC and Sparkford Wood SSSI is anticipated during construction and operation. It is anticipated there would be a Slight Adverse effect in terms of air quality on Whitesheet Hill SSSI, Yarnbury Castle SSSI, Parsonage Down SSSI and Stockton Wood and Down SSSI during construction. However, a Neutral effect is considered for Whitesheet Hill SSSI, Yarnbury Castle SSSI, and Parsonage Down SSSI once operational. Also, a Slight Adverse/Moderate Adverse effect is considered once operational for Stockton Wood and Down SSSI.

8.2.16 A Slight Adverse effect is anticipated for Hazlegrove Park LWS and Downhead Manor Farm Candidate LWS during construction and operation, due to the potential for pollution events and changes in airborne pollution, and loss of habitat within these LWS. There would also be a Slight Adverse effect on Annis Hill Woodland LWS, Camel Hill Transmitter Site LWS, Gaston Lane Field LWS, Ridge Copse LWS, Vale Farm Field LWS, and Yarcombe Wood LWS, due to the potential for pollution events and changes in airborne pollutants. This would reduce to Neutral during operation.

8.2.17 For bats, a Moderate/Slight Adverse effect is anticipated during construction, depending which bat species are present in the study area and a Slight Adverse effect is anticipated during operation. For barn owls, dormice, badger, great-crested newts and white clawed crayfish, a Slight Adverse effect is anticipated during construction and operation. For reptiles, invertebrates, water voles and otters, a Slight Adverse effect is considered to be likely during the construction phase, providing all mitigation is implemented. A Slight Adverse effect reducing to Neutral is anticipated during operation. For breeding birds, a Slight Adverse effect is likely during construction, and a Neutral effect is anticipated during operation. The overall on-balance significance of effects on nature conservation as a result of option 2 is Slight Adverse for construction and Slight Adverse, reducing to Neutral for operation.

8.2.18 Both route options would result in temporary and permanent loss and severance of Priority Habitats, including hedgerows, lowland mixed deciduous woodland and ponds. Furthermore, there would be temporary habitat loss in order to facilitate works, although mitigation in the form of replacement planting would be undertaken in accordance with the National Planning Policy Statement (NPPS) to compensate for the loss of priority habitat.

Geology and soils

8.2.19 Both route options would require a range of construction activities which have the potential to result in adverse effects on geology and soils, including the permanent removal/sterilisation of site soils and superficial deposits, excess (waste) materials generated requiring off-site disposal/transport, soil deterioration and consolidation due to poor storage and handling, effects on controlled waters, encountering contaminated materials (within landfills/made ground, mobilisation of contaminants and generation of contaminant transport pathways from site activities), effects on construction workers, and the degradation of construction materials such as thaumasite concrete attack.

8.2.20 During construction, best practice mitigation measures would be implemented through construction documents including the Construction Environmental Management Plan (CEMP), Site Waste Management Plan (SWMP), Materials Management Plan, Soil Management Plan, and Contaminated Land Risk Assessment. With mitigation measures in place, effects on identified receptors are not considered to be significant for either option 1 or option 2, with an on-balance effect anticipated to be Slight Adverse for both options.

8.2.21 A scoping exercise carried out at the option selection stage concluded that there was no requirement for further assessment of geology and soils during operation, as neither route option is expected to result in any adverse effects on geology and soils.

Materials

8.2.22 The construction of a new carriageway and associated structures, including roundabouts, culverts, and bridges, would require the use of material resources, which has the potential to generate significant effects associated with the extraction, processing and transport of material resources, the manufacture of construction products, and their subsequent transport to and use on construction sites. During construction, it is anticipated that the quantity of materials required for both route options would be significant, especially steel, concrete and materials required for pavement construction. Whilst best practice mitigation measures within construction documents including the CEMP and SWMP would reduce the effect on material resources, due to the uncertainty at this stage regarding the exact material quantities required, it is concluded that there is potential for significant effects on material

resources during construction, for both options. Further assessment is required during the preliminary design stage to confirm this conclusion.

8.2.23 There is anticipated to be a large quantity of green waste generated during site clearance; particularly for option 2 which traverses through some woodland areas. However, this would be chipped and re-used on-site within the landscaping, or, if this is not possible, would be chipped and re-used on site for composting. All excavated/cut material could be re-used as fill material within the embankments and within the landscaping. Option 1 would result in an estimated 176,675m^3 of material available for landscaping, and option 2 would result in an estimated 209,415m^3. No demolition of structures or properties would be required, therefore quantities of waste arisings are not expected to result in significant effects. Specific quantities of waste arising from redundant pavements, road planings, metals from existing signage and the like have not been finally quantified at this stage. However, this waste would be minimised as far as possible through re-use on-site. If properly managed through the implementation of a SWMP, the construction phase has the potential to produce minimal waste.

8.2.24 A carbon assessment undertaken to support the environmental assessment of this scheme identified that option 2 would produce the largest quantity of carbon emissions. This can be attributed to the fact that option 2 would be greater in length than option 1, and is currently expected to require an additional structure. The results of the carbon assessment also identified that for both route options, the materials required for new pavement construction would have the largest contribution to the total carbon emissions, closely followed by concrete.

8.2.25 The scoping exercise carried out at the option selection stage of this scheme that further assessment for materials was not required, as neither route option is expected to result in any adverse effects on materials, through the use of material resources and the generation of waste.

Noise and vibration

8.2.26 For both options, there is potential for construction activities to result in significant effects through the noise levels likely to be generated, and mitigation would be necessary at some locations to reduce the noise and vibration levels. With suitable mitigation, including the shielding of noisy items of plant, appropriate siting of haul routes, enclosures, screening and monitoring, no significant adverse effects are anticipated. However, this conclusion will need to be confirmed when a construction method statement becomes available at a later stage.

8.2.27 The effect of noise in terms of human health and well-being can be assessed by considering the number of receptors subject to noise levels above Significant

Observed Adverse Effect Level (SOAEL). This is the level above which significant adverse effects on health and wellbeing occur.

8.2.28 During operation, the likelihood and occurrence of significant effects would depend on the balance between changing traffic flows on existing roads, new traffic noise sources on new or improved sections of road, and the level of mitigation designed into the preferred option. There would be a small increase in numbers of receptors at or above SOAEL with option 1 in the opening year compared to do-minimum in the same year. A small increase would remain by the design year, as is the case in the do-minimum scenario.

8.2.29 There would be no net increase in the number of properties above SOAEL in the short-term for option 2, but a modest increase in the long-term either with or without option 2. In terms of effects on human health and wellbeing, both options provide the same modest increase of 12 receptors above SOAEL in the long term.

8.2.30 Overall option 2 would produce a greater noise benefit for some receptors than option 1, but fewer receptors would be exposed to moderate and major increases for option 1 than for option 2. An overall Not Significant Adverse effect is therefore anticipated for Option1, and an overall Not Significant Beneficial effect is therefore anticipated for Option 2.

People and communities

8.2.31 For both options, journey length and time are predicted to temporarily increase for a number of non-motorised user (NMU) facilities during construction, which would result in a Slight Adverse effect for NMU. During operation, some benefits and adverse effects are predicted to occur for both options, due to increase or decreases in journey length, provision of new facilities or degradation to existing facilities. On balance, a Slight Adverse effect for NMU is predicted for both options during operation.

8.2.32 In terms of amenity, during construction, existing barriers between people and traffic would change for both options, which would result in a Slight Adverse effect on amenity. During operation, amenity would change in a number of ways, with changes to barriers between people and traffic, flows and provision of new facilities. Option 1 would result in an on-balance Slight Beneficial effect on amenity whilst option 2 would result in a Slight Adverse effect.

8.2.33 In terms of severance, a number of NMU routes connecting to community facilities would experience Slight Adverse effects to journey time and quality during both construction and operation for option 1. For option 2, a small number of NMU routes connecting to community facilities would experience Slight Adverse effects during both construction and operation. However the majority of NMU routes connecting to

facilities would not be affected during construction or operation, therefore option 2 would have a Neutral effect on severance.

8.2.34 For agricultural land, due to the absence of construction information, effects on agricultural land and individual farm businesses during construction of both options cannot be deduced, although there is the potential for adverse effects from agricultural land take. For both options, due to the Agricultural Land Classification (ALC) grade and the area of required land take, a Moderate Adverse effect is anticipated.

8.2.35 Due to the absence of construction information, effects on individual farm businesses during construction of both options cannot be deduced, although there is the potential for adverse effects from land take. For both options during operation, due to the number of land parcels anticipated to experience a significant magnitude of land take as a direct result of the scheme, particularly small land parcels, a Moderate Adverse effect is anticipated.

8.2.36 Due to the absence of construction information, demolition of private property and associated land take for both route options is currently unknown during construction. During operation, option 1 would result in a Slight Adverse effect due to the demolition of a small number of assumed derelict buildings as a direct result of the scheme. There would be no demolition of private property for option 2. During operation, both options would experience a Slight Adverse effect due to land take on areas of parking or private land.

8.2.37 Both options would be likely to result in some new views for vehicle travellers. However, the establishment of vegetation alongside the new road during Year 1 of operation would gradually screen open views to the wider area in part. An overall Slight Beneficial effect is anticipated for both options with a shift from restricted views to with open views in part from the new road.

8.2.38 For both options during construction, a Slight Adverse effect is predicted for driver stress due to the temporary presence of traffic management which would cause increases in driver frustration and fear of accidents, although the provision of a Traffic Management Plan would minimise effects on vehicle travellers. During operation, a Moderate Beneficial effect is predicted for both options with vehicle travellers able to drive along the road at a more consistent speed, with improved journey time reliability.

8.2.39 During construction, any temporary increases in journey length and time and subsequently in NMU physical activity resulting from diversions/closures to NMU routes would be considered beneficial for human health and wellbeing. Temporary reductions in amenity, severance to routes connecting to community facilities, and impacts to private property would detrimentally affect people’s health and wellbeing.

Once operational, permanent increases and decreases to journey length and time resulting from changes to NMU facilities from the baseline would be likely, and result in human health and wellbeing benefits and disbenefits. Changes to amenity, potential severance to routes connecting to community facilities and impacts to private property have potential to affect people's health and wellbeing.

Road drainage and the water environment

8.2.40 The construction and operation of highways can have a range of effects on the water environment, including the contamination of surface or ground waters with sediments or pollutants, thereby affecting their ecological or fishery value or their value as a source of water for human use; contamination as a result of construction site runoff associated with contaminated land, spillages during construction, routine runoff during operation, or spillages during operation (usually following road accidents); and increased flood risk as a result of increased areas of impermeable ground surfaces, loss of flood plain land, or changes in road drainage.

8.2.41 To attenuate surface water runoff, prevent pollution within surface water discharge, reduce physical effects from new structures such as piling, outfalls and embankments, and to ensure no increase in flood risk, standard mitigation measures would be included in the CEMP, and sustainable drainage systems (SuDS) would be implemented. With mitigation measures in place, Neutral effects are anticipated on the water environment for both option 1 or option 2 during construction.

8.2.42 During detailed design, groundwater level/flow would be considered and piling would be minimised where possible. Therefore, during operation, with the implementation of an appropriate drainage design, incorporating sustainable drainage systems (SuDs) and pollution control measures, and ensuring the design is in accordance with Environment Agency guidance and does not increase runoff rates in accordance with the NPPF and NNNPS, both route options would result in Neutral effects to the water environment.

Climate change

8.2.43 The carbon assessment encompasses 2 sub-topics: the effects on climate (effects of the scheme on climate change in terms of greenhouse gas emissions from the scheme and mitigation potential), and vulnerability of the scheme to climate change (effects relevant to climate resilience/adaptation including the effects of climate change on the scheme and the contribution of the scheme to wider resilience).

8.2.44 During construction, the carbon assessment has indicated that option 1 would release approximately 19,082tCO_2e (tonnes of carbon dioxide equivalent). The carbon output specifically from the materials required for option 1 would be 16,153tCO_2e. Option 2 would release approximately 19,193tCO2e. The carbon output specifically from the materials required for option 2 would be 16,942tCO_2e.

Option 2 would produce a larger quantity of carbon emissions due to its length and requirement for additional structures. In the absence of established assessment criteria for the effects on climate it is predicted that during the construction stage neither route option will have an impact on climate due to the relatively low quantity of emissions in comparison to the overall UK emissions for construction. Overall, effects on climate are anticipated to be Not Significant Adverse during construction for both route options.

8.2.45 During operation, option 1 is predicted to cause an increase in emissions of 467,314tCO_2e in non-traded emissions over 60-years and 1,637tCO_2e in traded emissions. Option 2 is predicted to cause an increase in emissions of 478,384tCO_2e in non-traded carbon over 60-years and 1,548tCO_2e in traded emissions. Option 2 has a greater predicted carbon output than option 1 due to its longer footprint. However, it is noted that the difference is negligible at 10,981tCO_2e over 60-years. This increase in carbon will be caused primarily by an increase in traffic volume and flow along the route. Maintenance work undertaken on the scheme will also increase carbon, but to a much lesser extent compared to the projected road transport emissions. Therefore, overall effects on climate are anticipated to be Neutral during operation, for both route options.

8.2.46 It is not expected that climate change would result in a change in the risk of severe weather by the end of the two-year construction period, although the construction site may be vulnerable to extremes of weather, leading to the risk of delay in activities. However, adaptation measures included in the CEMP, such as ensuring construction materials are covered when stored and pro-active planning, would minimise adverse effects. Therefore, changes in climate are not expected to significantly affect scheme construction, for both route options.

8.2.47 During operation, there would be the potential for scheme assets and environmental receptors to be affected by changes in climate, for example, increases in winter precipitation could result in increased sub-surface moisture content, decreasing the strength of the pavement foundations. Overall, a Slight Adverse effect is anticipated for both Scheme options.

Combined and cumulative effects

8.2.48 The assessment for combined effects involved the identification of effect interactions associated with both option 1 and option 2 upon separate environmental receptors.

8.2.49 As a result of the combined assessment, during construction is the following effects are anticipated:

- A Slight Adverse effect on geology and soils
- A Moderate Adverse effect on the local landscape
- A Slight to Moderate Adverse effect on heritage features

- A Not Significant Adverse effect on communities
- A Moderate Adverse effect on vehicle travellers
- A Slight Adverse effect on the water environment
- A Significant Adverse effect on material resources
- A Not Significant Adverse effect on ecological receptors, climate, and human health and wellbeing.

8.2.50 The on-balance residual combined effect during construction for both options is anticipated to be Not Significant Adverse.

8.2.51 During operation, it is anticipated that there would be a Neutral effect on geology and soils; the water environmental, material resources, and climate; and a Not Significant Adverse effect on the local landscape, heritage features, communities, vehicle travellers, ecological receptors, and human health and wellbeing. The on-balance residual combined effect during operation for both options is anticipated to be Not Significant Adverse.

8.2.52 The assessment for cumulative effects involved the identification of incremental changes likely to be caused by ‘other developments’ together with both option 1 and option 2.

8.2.53 As a result of the cumulative assessment, during construction it is anticipated that there would be a Significant Adverse effect on cultural heritage and landscape, a Not Significant Adverse effect on biodiversity, geology and soils, and people and communities, and a Neutral effect on road drainage and the water environment. Therefore, the residual cumulative effects during construction as a result of all of the ‘other developments’ with both options are anticipated to be Not Significant Adverse. During operation, it is anticipated that there would be a Not Significant Adverse effect on cultural heritage, landscape, and people and communities, a Not Significant Adverse reducing to Neutral effect on biodiversity, and a Neutral effect on geology and soils, and road drainage and the water environment. Therefore, during operation the on-balance, residual cumulative effects for both options are anticipated to be Not Significant Adverse

Conclusions

8.2.54 Table 8.1 below provides a summary of the potential effects for each of the specialist environment chapters, for option 1 and option 2. This is a summary of the conclusions of the environmental assessment that was produced for the option selection stage of this scheme.

Table 8.1 Summary of Residual Environmental Effects

Environmental Topic	Residual Effect during construction		Residual Effect during operation	
	Option 1	Option 2	Option 1	Option 2
Air Quality				
Human Health and Wellbeing	Not Significant Adverse	Not Significant Adverse	Not Significant Adverse	Not Significant Adverse
Ecological Effects	Significant Adverse	Significant Adverse	Significant Adverse	Significant Adverse
Cultural Heritage				
Heritage Assets	Significant Adverse	Significant Adverse	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)
Sub-Surface Archaeological Remains	Significant Adverse	Significant Adverse	Neutral (no effects anticipated)	Neutral (no effects anticipated)
Landscape and Visual Effects				
Landscape Character	Significant Adverse	Significant Adverse	Slight Adverse (Not Significant)	Moderate Adverse (Significant)
Visual Amenity	Significant Adverse	Significant Adverse	Slight Adverse (Not Significant)	Moderate Adverse (Significant)
Biodiversity				
Qualifying species for Natura 2000 sites	Neutral (no effects anticipated)	Moderate to Slight Adverse	Neutral (no effects anticipated)	Moderate to Slight Adverse
Nationally Designated Sites	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)
Locally Designated Sites	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)
Priority Habitats	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)
Protected and Notable Species	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)	Slight Adverse reducing to Neutral	Slight Adverse reducing to Neutral
Geology and Soils				
Geology, soils, surface water, groundwater, human receptors, buildings, structures and utilities, and flora	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)	Not assessed	Not assessed
Materials				
Material resource use	Potentially Significant Adverse	Potentially Significant Adverse	Not assessed	Not assessed
Waste generation	Not Significant Adverse	Not Significant Adverse	Not assessed	Not assessed
Noise and Vibration				
Noise and Vibration	Not Significant Adverse	Not Significant Adverse	Not Significant Adverse	Not Significant Beneficial(

Environmental Topic	Residual Effect during construction		Residual Effect during operation	
	Option 1	Option 2	Option 1	Option 2
People and Communities				
Human Health and Wellbeing	Unknown at this stage	Unknown at this stage	Unknown at this stage	Unknown at this stage
Non-Motorised Users	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)
Amenity	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)	Slight Beneficial (Not Significant)	Slight Adverse (Not Significant)
Severance	Slight Adverse (Not Significant)	Neutral (no effects anticipated)	Slight Adverse (Not Significant)	Neutral (no effects anticipated)
Agricultural Land and Individual Farm Businesses	Unknown at this stage	Unknown at this stage	Moderate Adverse (Significant Adverse)	Moderate Adverse (Significant Adverse)
Demolition of Private Property and Associated Land Take	Unknown at this stage	Unknown at this stage	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)
Motorised Travellers View from the Road	N/A	N/A	Slight Beneficial (Not Significant Beneficial)	Slight Beneficial (Not Significant Beneficial)
Motorised Travellers Driver Stress	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)	Moderate Beneficial (Significant Beneficial)	Moderate Beneficial (Significant Beneficial)
Road Drainage and the Water Environment				
Surface water, groundwater, and floodplain	Neutral (no effects anticipated)	Neutral (no effects anticipated)	Neutral (no effects anticipated)	Neutral (no effects anticipated)
Climate Change				
Effects on climate	Not Significant Adverse	Not Significant Adverse	Neutral (no effects anticipated)	Neutral (no effects anticipated)
Vulnerability to climate	Neutral (no effects anticipated)	Neutral (no effects anticipated)	Slight Adverse (Not Significant)	Slight Adverse (Not Significant)
Combined and Cumulative Effects				
Combined Effects	Not Significant Adverse	Not Significant Adverse	Not Significant Adverse	Not Significant Adverse
Cumulative Effects	Not Significant Adverse	Not Significant Adverse	Not Significant Adverse	Not Significant Adverse

Environmental Objectives

8.2.55 The *Client Scheme Requirements* (Highways England, last updated August 2017) includes a Strategic Outcome for 'the delivery of better environmental outcomes', with a key performance indicator (KPI) for 'Noise: Number of Noise Important Areas mitigated'. The scheme contribution section of this KPI states 'road surface materials to be selected to reduce noise alongside the A303 in the Camel Hill and West Camel areas'. Two of Defra's Noise Important Areas (NIA) are located on the existing A303 just to the east of Camel Cross and approximately 150 metres to the west of Howell Lane. The NIA to the east of Camel Cross is located adjacent to option 1, and approximately 650 metres to the south of option 2. The NIA to the west of Howell Hill is located within the footprint of option 1, and approximately 900 metres from option 2. Both the NIAs would be mitigated for as a result of both option 1 and option 2. Overall option 2 would produce a greater noise benefit for some receptors than option 1 but fewer receptors are exposed to moderate and major increases for option 1 than for option 2. Furthermore, generally the environmental effects are more adverse associated with option 2, rather than option 1. As such, option 2 would deliver a better environmental outcome with regards to NIAs than option 1.

8.2.56 The scheme contribution element of this Strategic Outcome states 'Scheme development will fully embrace the Biodiversity Action Plan throughout all aspects of the PCF process'. Highways England's BAP[34] identifies the approach to meeting the key performance indicator identified within the *Roads Investment Strategy* (RIS) of 'no net loss of biodiversity by 2020'. Biodiversity is required to be fully considered during the building of any new roads and opportunities sought to work with stakeholders and enhance the network for wildlife. In order to ensure there would be no net loss of biodiversity as part of either option, an Ecological Mitigation Strategy will be prepared as part of the preliminary design, detailing proposals to manage and mitigate for ecological effects associated with the scheme. This document will be a live document that will be updated as and when required during scheme design, and as protected species information is updated. This document will also be used to inform the CEMP for the scheme, which will be prepared by the contractor prior to construction. A SWMP will also be prepared outlining the correct handling, transport, and disposal of waste. Both option 1 and option 2 would result in an overall Neutral effect to biodiversity, once mitigation planting has matured.

8.2.57 Biodiversity enhancement measures would also be explored as part of the proposed scheme. Potential measures could include replanting of native species-rich hedgerows and trees, creation of species-rich grassland and the provision of nesting and roosting opportunities for bats and birds. New planting should be connected to existing habitat within the landscape to compensate for

[34] Highways England (2015) Biodiversity Plan [online] available at https://www.gov.uk/government/publications/biodiversity-plan (Last accessed July 2017)

the loss of wildlife corridors and reduce fragmentation of habitats caused by the scheme. The species composition of any new planting should take account of the habitats lost and those within the surrounding area. It is therefore considered that the scheme design and proposed mitigation measures meet the requirements of the Strategic Outcome and that the 'Scheme development will fully embrace the Biodiversity Action Plan throughout all aspects of the PCF process'.

8.2.58 The *Client Scheme Requirements* also include a Strategic Outcome for 'helping cyclists/walkers and other vulnerable users', with a KPI of 'the number of new and upgraded crossings'. An NMU strategy has been produced during the options selection stage for both options which sets out proposals for changes to NMU routes. These include the locations for diversions of existing NMU routes, new crossings, potential cycle routes and PRoW to be extinguished, which would ensure that NMU routes are not adversely effected as part of either route option. For individual farm businesses adversely affected by the scheme through loss of farm access points, replacement access would be provided. In addition, the provision of replacement land will be assessed, and compensation explored for landowners should agricultural land, individual farm businesses and private property currently in use be directly affected during operation of the proposed scheme, through the Compensation Code.

8.2.59 Both option 1 and option 2 are anticipated to have Slight Adverse effects in terms of changes to journey lengths and times for NMU. However, in terms of amenity, option 1 is anticipated to have Slight Beneficial effects, whilst option 2 is anticipated to have Slight Adverse effects, taking into account mitigation included within the NMU Strategy. This would predominantly be due to the provision of new NMU crossings where none previously existed and where NMU are also currently required to cross the A303 at-grade. The crossings provided for option 2 would minimise the effects of the scheme for NMU, however generally these effects are considered adverse as NMU in the vicinity of this route option are, on the whole, currently separated from traffic.

8.2.60 It is therefore considered that the scheme meets the requirements of the Strategic Outcome and that the 'the number of new and upgraded crossings' are being considered within the scheme design and proposed mitigation measures.

9 Public Consultation

9.1 Introduction to the route options public consultation

9.1.1 Highways England conducted a six-week period of route options Public Consultation for the A303 Sparkford to Ilchester scheme. The consultation ran between 14 February 2017 and 29 March 2017 and included a series of public information events.

9.1.2 The events enabled key, local community, and landowner stakeholders the opportunity to discuss the scheme options proposals with the project team and to view the scheme route option proposals.

Table 9.1 Consultation Launch Event

Date	Venue	Time
Thursday 14 February 2017	Haynes Motor Museum, Wolverlands, Sparkford, Yeovil BA22 7LH	6.00pm to 8.00pm

Table 9.2 Landowner events

Date	Venue	Time
Wednesday 15 February 2017 Thursday 16 February 2017	Haynes International Motor Museum Sparkford, Yeovil, Somerset BA22 7LH	11.00am to 7.00pm Appointment only

Table 9.3 Public information events

Date	Venue	Time
Thursday 23 February 2017	Sparkford Inn, High Street, Sparkford, Yeovil, BA22 7JH	12.00 midday to 8.00pm
Saturday 25 February 2017	Queen Camel Memorial Hall, High Street, Queen Camel, Yeovil, BA22 7NF	10.00am to 5.00pm
Thursday 9 March 2017	Red Lion, Babcary TA11 7ED	6.00pm to 8.30pm
Friday 10 March 2017	Davis Hall, Howell Hill, West Camel, Yeovil, BA22 7QX	10.00am to 6.00pm

- **Consultation launch event –** an evening event was held for local dignitaries with an interest in the scheme, a total of 20 people attended including Members of Parliament and representatives from local councils and statutory bodies.
- **Landowner Events** – landowner events were held to allow stakeholders who own land within 150 metres of the scheme, or land which the scheme proposes to intersect. These events were appointment only sessions where stakeholders could discuss their land titles with specialists from the project team. Issues and concerns were brought to the attention of Highways England. Over the two landowner events there were 23 stakeholder appointments confirmed and undertaken.
- **Public information events -** the public events provided valuable insight into how the local community felt about the scheme and how they use the existing

road network. There were 4 public information events held at venues along both route options, with a total number of 735 stakeholders visiting the events.

9.1.3 Additional presentations were undertaken at the request of Sparkford Parish Council and South Somerset District Council and these meetings are summarised in Table 9.4.

Table 9.4 Additional Presentations

Date	Stakeholders	Meeting type	Discussion / topics raised
28 February 2017	South Somerset District Council	Presentation followed by questions and answers.	Scheme overview, DCO process, future liaison.
6 March 2017	Sparkford Parish Council	Presentation followed by questions and answers.	Scheme overview, DCO process, future liaison.

9.2 Overview of consultation questionnaire responses

9.2.1 The consultation period closed on 29 March 2017, with a total of 1,237 responses received from key, local community and landowner stakeholders. The questionnaire responses received were primarily from community stakeholders, with a number of statutory stakeholders submitting formal reports and letters in place of a questionnaire. The additional reports and letters have been included with the free text responses in question 9 of the questionnaire for analysis.

9.2.2 Of the 1,237 questionnaires received, 389 paper questionnaires were submitted to the freepost address. These were manually entered onto the Highways England questionnaire portal Citizen Space, before all the responses were analysed collectively.

9.2.3 Postcode areas were used to classify responses by geographical area, allowing for the views of different communities to be identified and considered. Understanding how the local community views the scheme is important to Highways England as it will help to inform selection of a preferred route. Responses are analysed to understand the views of key, local community and landowner stakeholders to help refine the route options designs and inform the preferred route selection.

9.2.4 Analysis of the questionnaires and formal responses has identified key themes and issues from responding key, local community and landowner stakeholders. These key themes and issues have been collated and summarised in a response log for the project team specialists to review.

9.2.5 Highways England have used the analysis derived from consultation responses to develop and refine elements of scheme proposal prior to selection of a preferred route.

9.2.6 These findings are illustrated on Figures E-1 & E-2.

Figure E-1: Do you agree the A303 between Sparkford and Ilchester needs upgrading to a dual-carriageway?

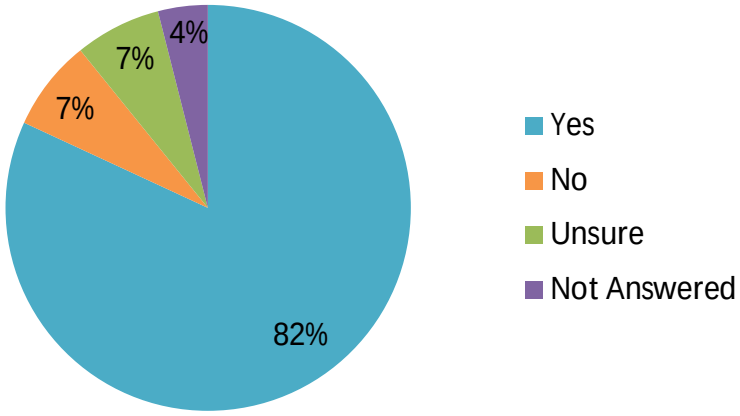
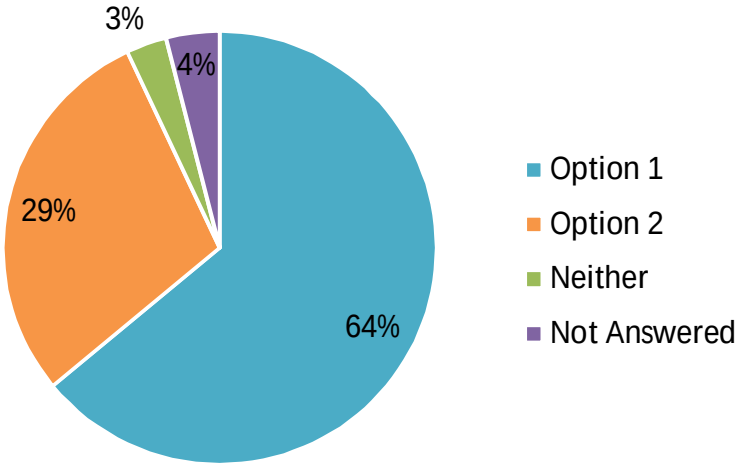


Figure E-2: Which option do you prefer?



9.2.7 It was clear from the consultation findings that there was overwhelming agreement for the proposed upgrading to a dual-carriageway, with a significant majority preferring Option 1. The main considerations raised by respondents centred on:

- flooding issues
- environmental effects, particularly in the Sparkford Vale area of Option 2
- safe provision for pedestrians, cyclists and equestrians
- the need for ready, safe access with the local road network

9.2.8 A more detailed report of the consultation feedback can be found in the *Report on Public Consultation, Highways England 2017* which can be viewed on the scheme website https://highwaysengland.citizenspace.com/he/a303-sparkford-to-ilchester/.

10 Appraisal Summary Tables

10.1.1 Appraisal Summary Tables have been prepared in accordance with the Department for Transport's web-based Transport Analysis Guidance: (WebTAG)[35]. These are included in Appendix D of this report.

[35] Department for Transport (October 2013, last updated July 2017) Transport Analysis Guidance: WebTAG [online] available at: https://www.gov.uk/guidance/transport-analysis-guidance-webtag (last accessed August 2017)

11 Conclusion

11.1 General

11.1.1 The existing single carriageway section of the A303 between Sparkford and Ilchester currently experiences congestion and journey time delays particularly at weekends and in the summer months consistent with its use for weekly commuting and holiday traffic.

11.1.2 Traffic levels are predicted to rise due to forecast growth in trips as well as transport and development schemes which are expected to be completed. The severity of the existing problems is likely to increase if no action is taken.

11.2 Route options

11.2.1 Dualling of this section of road was announced in the *Road Investment Strategy: for the 2015/16 – 2019/20 Road Period* (Department for Transport, December 2014, update March 2015). Two possible route options were taken to public consultation in February and March 2017. These were:

- Option 1 which would closely follow the existing corridor of the A303, although in some sections it would be aligned just to the north or south of the existing carriageway to facilitate construction.
- Option 2 which would take on offline course up to 1 kilometre to the north of the existing A303. This option would join the existing A303 at Sparkford roundabout to the existing dual carriageway east of Podimore roundabout.

11.3 Overall comparison of options

11.3.1 Based on the assessments in chapters 5-9 of this report, a comparison of the main differences between the two options is given in Table 11.1. A list of the main advantages of each option is given in Table 11.2.

Table 11.1 Comparison of options

Assessment criteria	Comparison
Engineering/ Buildability	**Differences identified in the description of options in chapter 5**
Disruption to local journeys	Option 1 would impact more on existing local journeys as more existing roads and non-motorised user routes would have to be diverted than with option 2.
Land acquisition	Option 2 would require the largest amount of third party land, an estimated 46.6ha compared with 38.1ha for option 1.
Buildability	Option 1 would be more difficult to construct due to being partly on the line of the existing road and there being more statutory undertakers' utilities that would require diversion. There would also be more disruption to traffic during construction as there

Assessment criteria	Comparison
	would be no alternative route available and the overall construction period is likely to be longer as a result.
Cost	Option 1 cost estimate is £179 million. Option 2 cost estimate is £168 million. Option 2 would be the cheaper of the two options to construct.
Traffic	**Comparison of forecast journey time savings summarised in chapter 6.3**
Journey time savings	Both options are predicted to result in journey time savings compared with the Do Minimum scenario. Journey times for option 1 are consistently lower than for option 2 due to its shorter length.
Economics	**Differences between options identified in Economic Assessment summarised in chapter 6.4**
Benefit to Cost Ratio (BCR)	Option 1 has higher Present Value of Costs (PVC) but also higher Present Value of Benefits (PVB). This results in BCRs as follows: Option 1 = 1.82 Option 2 = 1.83 Both options represent almost the same value for money.
Operation	**Differences between options identified in Maintenance and Repair Strategy Statement and Project Safety Plan summarised in chapter 7**
Maintenance and repair strategy	Option 2 has the benefit of a diversion route via the existing A303 road during maintenance activities and emergency closures of the new road.
Safety management	No significant difference between options
Environment	**Differences between options identified in Environmental Assessment summarised in chapter 8**
Air Quality	No significant difference between options
Cultural heritage	No significant difference between options. Both options would have a significant adverse effect on cultural heritage particularly Hazlegrove Registered Park and Gardens.
Landscape character and visual amenity	Option 1 is expected to have less impact than option 2 due to option 1 being on or close to the existing route. Option 2 will pass through unspoilt rural landscape with high amenity value.
Biodiversity	Overall, the two options are expected to have similar impacts. Option 1 is expected to have slightly less impact in the long term on bat populations.
Geology and soils	No significant difference between options

Assessment criteria	Comparison
Materials	In most respects, there is no anticipated difference between options, except option 1 is anticipated to generate a greater surplus cut material than option 2. The potential associated waste could be minimised through re-use on site.
Noise and vibration	Option 2 would produce a greater noise benefit for some receptors than option 1, due to it being further away from existing villages. Fewer receptors would be exposed to moderate and major increases for option 1 than for option 2, due to its proximity to the existing route. The overall assessment is not significant adverse for option 1 and not significant beneficial for option 2.
People and communities	In most respects, there is no anticipated difference between options, except that option 1 would result in increases in journey times on a larger number of non-motorised user routes.
Road drainage and the water environment	No significant difference between options
Climate change	Option 2 would result in greater carbon emissions due to its longer length
Public consultation	**Results of public consultation summarised in chapter 9**
	There is significant public preference for option 1
	Significant opposition to option 2 from local pressure groups likely to generate objection at DCO

Table 11.2 Advantages of each option

Advantages of option 1	Advantages of option 2
· Minimises land-take · Shortest of the two options, reducing journey time and carbon emissions · Route follows existing corridor very closely, minimising construction in unspoilt rural setting with high amenity value · Slightly less impact on biodiversity · Most popular with the public · Least public opposition likely to generate objections at DCO	· Less impact on existing local journeys · Easier to construct · Disruption to travelling public during construction will be less, due to alternative route available · Less impact on existing non-motorised user journeys · Greater reduction in noise for communities near the existing A303

12 The Recommended Route

12.1.1 In many respects, there is little difference between the options in terms of the assessment criteria. However, where there are differences, option 1 not only has more advantages but nearly all the advantages are associated with the scheme post-construction. The majority of advantages of option 2 occur during construction which is a temporary stage.

12.1.2 Option 2 has the lower cost estimate of the two route options.

12.1.3 The two options have BCRs which differ by 0.1 showing that they represent equal value for money. Although Option 2 is the lower cost option, it also has lower monetised benefits, hence the similar BCRs of the two options. At present, it is not required to monetise the landscape disbenefits associated with the proposals, however if this becomes a requirement at a later stage, the option 2 BCR would drop significantly.

12.1.4 There is considerably more public support for option 1 and least public opposition likely to generate objections at DCO.

12.1.5 It is therefore recommended that option 1 is announced as the Preferred Route.

Appendix A Glossary and Abbreviations

AADT	Annual Average Daily Traffic
ALC	Agricultural Land Classification
AQMA	Air Quality Management Area
BAP	Biodiversity Action Plan
BCR	Benefit to Cost Ratio - a ratio used by the Department for Transport to determine value for money of a scheme
CEMP	Construction Environmental Management Plan
D2AP	Dual 2-lane all purpose (a high quality all-purpose dual carriageway)
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges
FWI	Fatalities and Weighted Injuries
HELAA	Housing and Economic Land Availability Assessment
IAN	Interim Advice Note
KPI	Key performance indicator
LGS	Local Geological Site(s)
MAFF	Ministry of Agriculture, Fisheries, and Food (now part of Defra but MAFF ALC mapping is still in use)
MOD	Ministry of Defence
NCA	National Character Area
NIA	Noise Important Area(s)
NO2	Nitrogen dioxide
NMU	Mon-motorised user(s)
NNNPS	National Networks National Policy Statement
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
NSIP	Nationally Significant Infrastructure Project(s)
PCM	Pollution Climate Mapping
PRoW	Public Right(s) of Way
Ramsar	The Convention on Wetlands, known as the Ramsar Convention, is an intergovernmental environmental treaty established in 1971 by UNESCO
SAC	Special Area(s) of Conservation
SCC	Somerset County Council
SERC	Somerset Environmental Records Centre
SOAEL	Significant Observed Adverse Effect Level
SSDC	South Somerset District Council
SSE	Scottish and Southern Energy
SSSI	Site of Special Scientific Interest
SWMP	Site Waste Management Plan
SWRTM	Highways England's South West Regional Traffic Model
WebTAG	Department for Transport's web-based Transport Analysis Guidance
WFD	Water Framework Directive

Appendix B Environmental Constraints Plan

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River Cary - Source to confluence with King Sedgemoor Drain (KSD)
Dyke Brook
Celtic Way
Steart Hill
Meand Lane (track)
Option 2
Steart Hill
Celtic Way
A303
Sparkford
High Street
River Cam - Upper
Downhead Lane (track)
Eastnead Lane (track)
Downhead
West Camel Hill
Camel Hill
A303
Option 1
Hazell Hill
Trails Lane
Gason Lane
A359
Celtic Way
Sparkford Hill
A303
B3151
Podimore
River Cam - Lower
Leland Trail
West Camel
Queen Camel
Leland Trail
Leland Trail
Parsonage Road
Royal Naval Air Station, Yeovilton
1:10,000
0
500m
1000m

Key:

- Option 1
- Option 2
- Named Walking Routes
- Footpath Alongside Carriageway
- Footpath
- Bridleway
- Restricted Byway
- Cycle Route
- Fosse Way
- Registered Park and Garden
- Historic Landfill
- Ponds, Lakes and Running Water
- Listed Building
- Ancient Woodland
- Noise Important Area
- Candidate Local Wildlife Site (Somerset Environmental Records Centre, June 2017)
- Conservation Area
- Scheduled Monument
- Local Geological Site
- Flood Zone 2
- Flood Zone 3
- National Trust Land
- Local Wildlife Site (Somerset Environmental Records Centre, June 2017)
- Sites of Special Scientific Interest
- Registered Common Land
- Proposed developments identified in the Somerset District Council Housing and Economic Land Availability Assessment
- Ancient Woodland Identified by Somerset Environmental Records Centre

Appendix C Nitrogen dioxide ($NO_{2)}$ receptors

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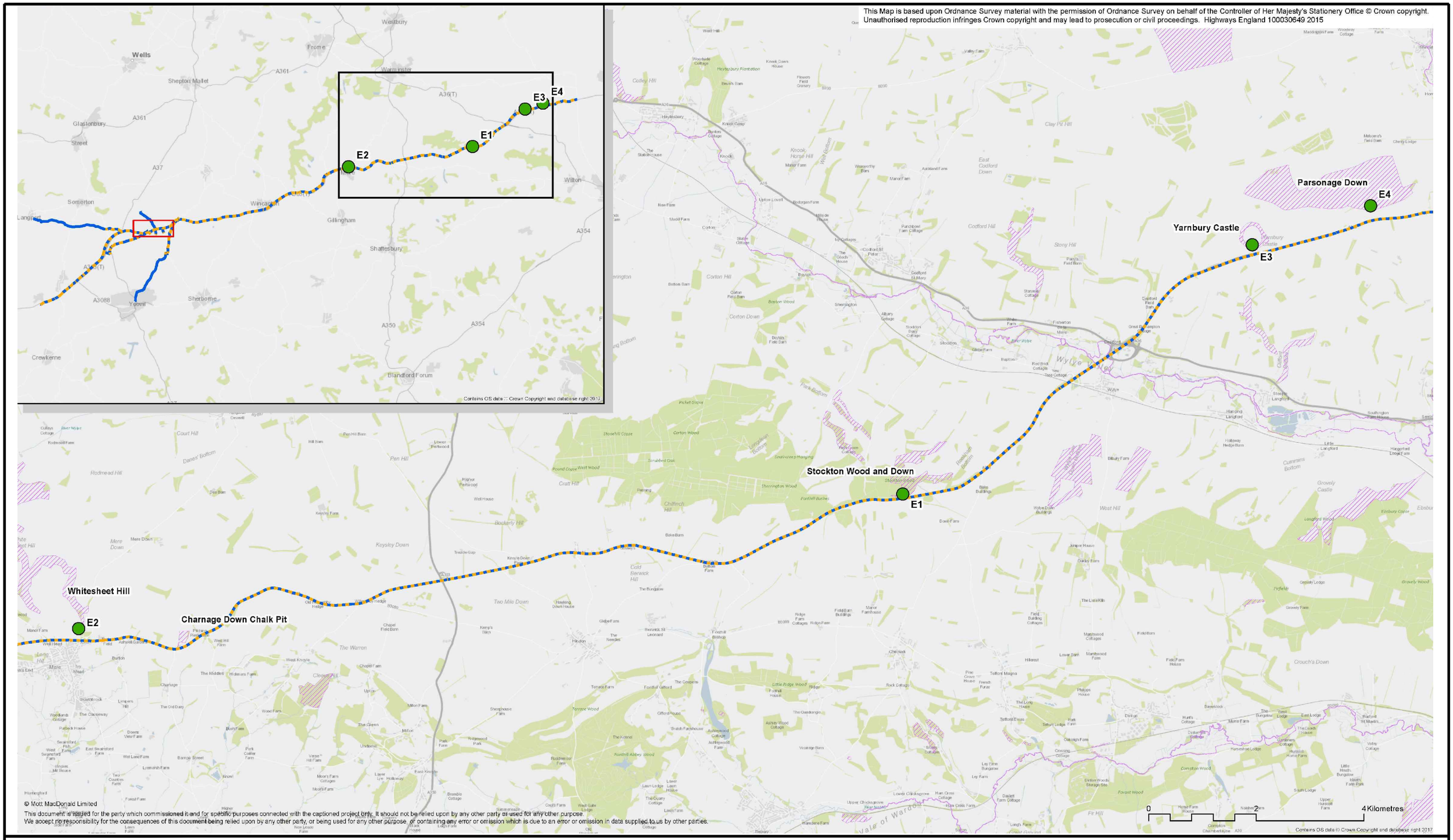

Key:

- Ecological receptor
- Option 1 local affected road network
- Option 2 local affected road network
- Site od Special Scientific Interest
- Scheme extent

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1:28,000 0 1.5 3 Kilometres

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Key:

- Human health receptors
- Option 2 2023 local affected road network
- Option 1 2023 local affected road network
- Scheme extent

Appendix D Appraisal Summary Tables

Appraisal Summary Table

Date produced:	September 2017

Contact:	
Name	Tom Roberts
Organisation	Highways England
Role	Promoter/Official

Name of scheme:	A303 Sparkford to Ilchester - Option 1
Description of scheme:	The proposed Scheme would provide a dual carriageway on the A303 between Sparkford and Ilchester in Somerset, connecting the existing dual carriageway sections to the east and west. Route Option 1 would follow the existing corridor of the A303 very closely. It is generally considered to be the online option although is often deliberately aligned just to the side of the existing carriageway to allow re-use of the existing route for local access, avoid property or facilitate construction. At its maximum offset the route would typically be 100m either north or south of the existing A303. This AST has been prepared at PCF Stage 2.

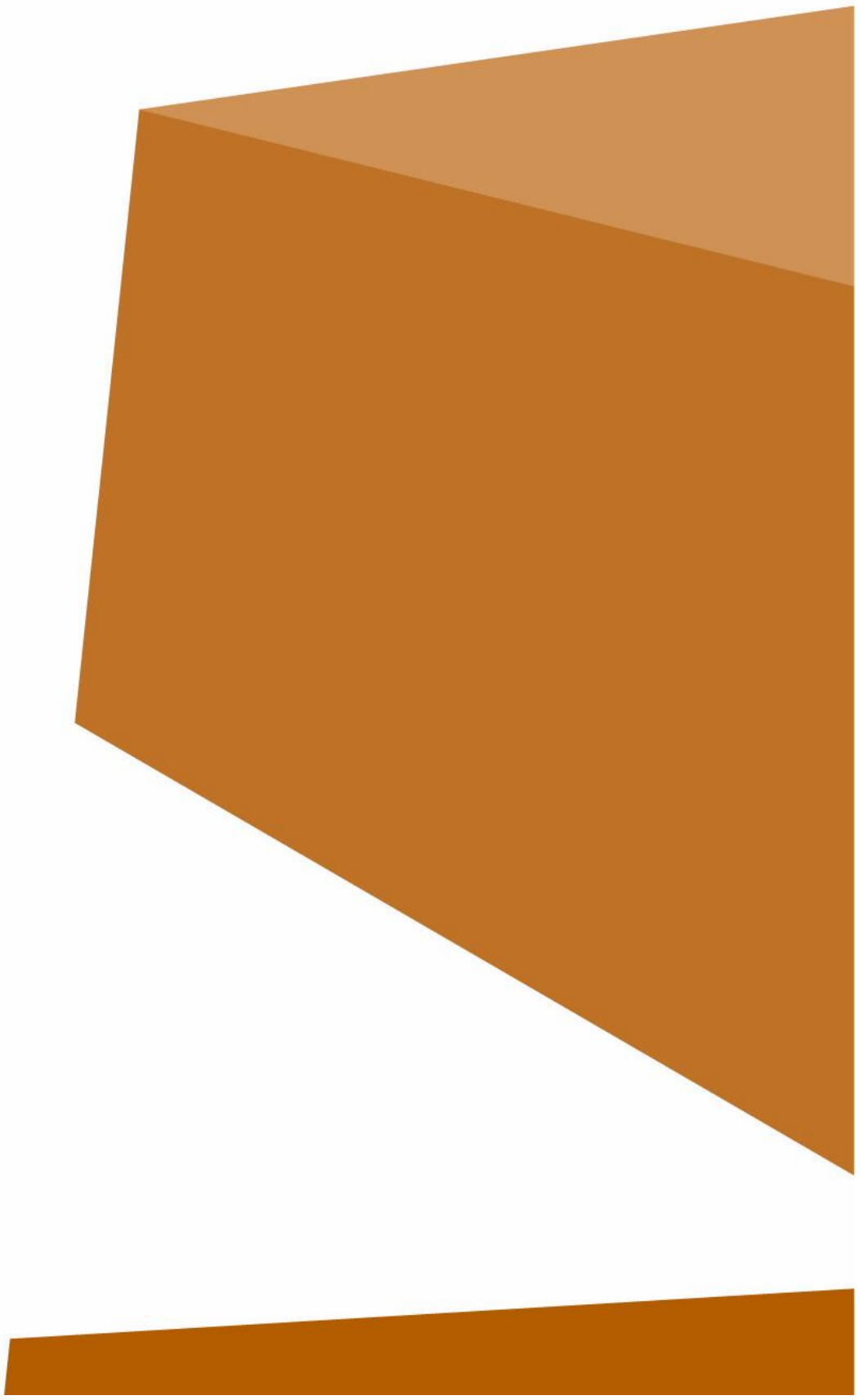
Impacts		Summary of Key Impacts	Assessment: Quantitative	Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	Journey time benefits by converting old single carriageway section to modern dual carriageway with associated junction improvements. Net journey time changes is the net of positive and negatives in a given time band. Monetary (NPV) includes both journey times and vehicle operating cost impacts.	Value of journey time changes(£): 128.9m Net journey time changes (£) 0 to 2min: 43.5m; 2 to 5min: 90.7m; > 5min: -5.3m	Not applicable	£129.9m	Yes
	Reliability impact on Business users	Reliability benefits by converting old single carriageway section to modern dual carriageway with associated junction improvements.	Not applicable	Not applicable	£6.4m	
	Regeneration	Option 1 does not lie within or close to regeneration areas.	Not applicable	Not applicable	Not applicable	
	Wider Impacts	Wider economic benefits (output change in imperfectly competitive markets) by converting an old single carriageway section to modern dual carriageway with associated junction improvements.	Not applicable	Not applicable	£13.0m	
Environmental	Noise	Results indicate an overall dis-benefit owing to re-alignment closer to residences, resulting in traffic noise increases, within the Affected Road Network (ARN). The Distributional Impacts (DI) Screening Matrix concluded that impacts of the Scheme would be sufficiently minor and spatially dispersed such that a detailed DI appraisal would be disproportionate to the potential impacts.	Households experiencing increased daytime noise in forecast year: 103. Households experiencing reduced daytime noise in forecast year: 74. Households experiencing increased night time noise in forecast year: 79. Households experiencing reduced night time noise in forecast year: 53	Not applicable	£121,193	No
	Air Quality	Net improvement in local air quality within the study area. The Scheme would not result in a new exceedance of the NO2 or PM10 annual mean air quality objectives. There are several PCM links which would overlap with the Scheme's ARN in the design year of the Scheme. While there is one AQMA within the study area (Yeovil AQMA), annual NO2 and PM10 concentrations are expected to be below the annual mean air quality objectives within the AQMA in the opening year. In addition, there is predicted to be an improvement in air quality in some areas of this AQMA as a result of the Scheme as there is predicted to be a decrease in vehicles travelling through the AQMA. The regional assessment predicts an increase in emissions of NOx and PM10 primarily as a result of an increase in the number of vehicles. Overall, the total change in NPV is negative indicating a net worsening in air quality when considering both local and regional effects.	Local Air quality effects at properties (Improvements / No effect / Deterioration) NO2 2023 (2127 / 62 / 1820) PM10 2023 (1764 / 1017 / 1228) Overall Assessment Score (negative score reflect benefit) NO2: (2023): -78.2 PM10: (2023): -25.7 Change in Regional Emissions NOx (2023): 4.3 t/year PM10 (2023): 0.4 t/year	Not applicable	Value of change in PM concentrations: £120,844 Value of change in NOx emissions: - £237,400 Total value of change in air quality: - £116,555	No
	Greenhouse gases	Not applicable	Change in non-traded carbon over 60y (CO2e): 467,314 Change in traded carbon over 60y (CO2e): 1637	468,951	-£21,417,000	
	Landscape	The proposed route would be either online or very close to the existing A303 route corridor, minimising impacts upon landscape character and nearby visual receptors by keeping the impacts of major road corridors limited to an isolated area already characterised by a major highway. The expansion to dual carriageway would however be at odds with the local landscape pattern and scale. There would be a direct impact upon the designated Hazlegrove House Registered Park and Garden and the Scheme would also be in proximity to other designated assets, including Conservation Areas at West Camel and Queen Camel, however they would not be directly affected by the Scheme. This Scheme option would be visible from local visual receptors including residential properties and Public Rights of Way, however views would be limited in some areas where the route would pass in cutting, aiding its visual integration, and limiting views of associated traffic in some areas. Whilst mitigation would aid the Scheme's integration, the route would still not quite fit the landform and scale of the landscape and would still have an adverse impact upon certain views. The overall effect on landscape would be Slight Adverse with mitigation in place.	Not applicable	Slight Adverse	Not applicable	
	Townscape	Not applicable	Not applicable	Not applicable	Not applicable	
	Historic Environment	For the purposes of the historic environment assessment construction and operational effects have been assessed. This is because permanent impacts to the historic environment will occur during construction, for example removal of archaeological or historic remains. Option 1 would require large areas of medium value unknown archaeological buried remains to be removed during the construction of the new route, resulting in potential damage. During construction, Option 1 would cut through the southern section of Hazlegrove House Registered Park and Garden, removing elements of the historic parkland and related archaeological and historic evidence. In the context of the park and garden the road would be out of scale, visually intrusive and alter the context of the asset even with mitigation screening in place. Agricultural earthwork remains within the proposed route corridor, although of low value, would be fully removed during construction by Option 1. The overall effect on the historic environment as a result of Option 1 would be Large Adverse with mitigation in place.	Not applicable	Large Adverse	Not applicable	
	Biodiversity	Option 1 is located adjacent to Camel Hill Transmitter Site LWS, Gason Lane Field LWS and Ridge Copse LWS and within Hazlegrove Park LWS. Small scale direct loss of broad-leaved woodland, parkland, hedgerows and ditches would be likely to occur for this option. These habitats are also listed on the Somerset Biodiversity Action Plan. Wildlife using these habitats such as bats, breeding birds, barn owls, dormice, reptiles, great crested newts, badger and water vole are likely to be subject to increased disturbance and loss of habitat. The loss of any habitat of conservation value would be replaced like-for-like as a minimum requirement. New planting should be connected to existing habitat within the landscape to compensate for the loss of wildlife corridors and reduce the fragmentation impact of the Scheme. The overall effect on biodiversity would be Neutral with mitigation in place.	Not applicable	Neutral	Not applicable	
	Water Environment	Option 1 is unlikely to affect waterbodies as works would include standard mitigation measures in the CEMP, and SuDS and pollution control measures would be incorporated in the drainage design. These would prevent adverse effects from pollutants or increased surface water run-off, during construction and operation reaching the downstream waterbodies. Some drainage ditches and ponds would be lost as they would be infilled to accommodate the new carriageway. Physical impacts due to the new/upgraded outfall during construction would cause a Slight Adverse Impact on drainage ditches. New drainage ditches and pond would be created. Option 1 would be located within Flood Zone 1 and would not affect the areas of Flood Zones 3 and 2. The overall impact on the water environment would be Neutral with mitigation in place.	Not applicable	Neutral	Not applicable	
Social	Commuting and Other users	Journey time benefits by converting old single carriageway section to modern dual carriageway with associated junction improvements. Net journey time changes is the net of positive and negatives in a given time band. Monetary (NPV) includes both journey times and vehicle operating cost impacts.	Value of journey time changes(£): 94.8m Net journey time changes (£) 0 to 2min: 21.6m; 2 to 5min: 72.8m; > 5min: 0.4m	Not applicable	£43.2m	Yes
	Reliability impact on Commuting and Other users	Reliability benefits by converting old single carriageway section to modern dual carriageway with associated junction improvements.	Not applicable	Not applicable	£4.7m	
	Physical activity	This option would result in the severance of some NMU routes, leading to the potential to increase journey times. This would have a beneficial effect on the physical activity of NMUs. The Scheme includes the provision of new cycle routes with an associated increase in connectivity to the wider areas north and south of the A303, increasing levels of physical activity.	Not applicable	Slight Beneficial	Not applicable	
	Journey quality	Option 1 is anticipated to improve traveller care through the provision of new signage and gantries. Traveller views are not anticipated to hugely alter with this option in place, with impacts anticipated to be Neutral as a result of the presence of additional road infrastructure and mitigation. Traveller stress is anticipated to significantly reduce on the whole, with the inclusion of new safety related infrastructure such as new lane markings, cat's eyes and road studs, as well as adequate NMU provisions ensuring the likelihood of encroachment onto the main road is minimised.	Not applicable	Slight Beneficial	Not applicable	
	Accidents	Reduction in the number of PIAs and casualties by converting old single carriageway section to modern dual carriageway with associated junction improvements.	Reduction in casualties Fatal = 4.1 Serious = 29.0 Slight = 194.7	Not applicable	£9.3m	Yes
	Security	Effects to security as a result of Option 1 are likely to be Neutral as there are not anticipated to be any changes to security indicators as a result of this proposed option.	Not applicable	Neutral	Not applicable	No
	Access to services	Access to services within the area are unlikely to be affected by Option 1. As such, no change is expected and Option 1 is considered to have a Neutral effect.	Not applicable	Neutral	Not applicable	No
	Affordability	Changes to vehicle operating costs and therefore changes to affordability as a result of Option 1 are unlikely. As such, no change is expected and Option 1 is considered to have a Neutral effect.	Not applicable	Neutral	Not applicable	No
	Severance	There are four community facilities within the study area, all of which connect to public rights of way. NMU connectivity to two of the facilities would experience a slight positive effect as a result of the provision of a new cycle route. Connectivity to the remaining two facilities would be severed due to the removal of several NMU routes, resulting in increases in journey times. The provision of a cycle route and new NMU crossings results in an overall Slight Beneficial effect on connectivity for these two facilities.	Not applicable	Slight Beneficial	Not applicable	No
	Option and non-use values	The Scheme is expected to have little or no impact on option and non-use values.	Not applicable	Neutral	Not applicable	
Public Account	Cost to Broad Transport Budget	The Scheme will be funded through Central Government Funds.	Central Government Funding: 115.1m	Not applicable	£115.1m	
	Indirect Tax Revenues	There would be some increase in the tax being paid to the Exchequer.	Central Government Funding: Wider Public Finances = -43.5m	Not applicable	£-43.5m	

Appraisal Summary Table

Date produced:	September 2017	**Contact:**	
Name of scheme:	A303 Sparkford to Ilchester - Option 2	**Name**	Tom Roberts
Description of scheme:	The proposed Scheme would provide a dual carriageway on the A303 between Sparkford and Ilchester in Somerset, connecting the existing dual carriageway sections to the east and west. Route Option 2 takes would an offline course to the north of the existing route. At its maximum distance, the route would be approximately 1km north of the existing A303. This AST has been prepared at PCF Stage 2.	**Organisation**	Highways England
		Role	Promoter/Official

Impacts		Summary of Key Impacts	Assessment: Quantitative	Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	Journey time benefits by converting old single carriageway section to modern dual carriageway with associated junction improvements. Net journey time changes is the net of positive and negatives in a given time band. Monetary (NPV) includes both journey times and vehicle operating cost impacts.	**Value of journey time changes(£)** 121.5m **Net journey time changes (£)** 0 to 2min: 47.0m; 2 to 5min: 78.8m; > 5min: -4.3m	Not applicable	£114.4m	Yes
	Reliability impact on Business users	Reliability benefits by converting old single carriageway section to modern dual carriageway with associated junction improvements.	Not applicable	Not applicable	£6.1m	
	Regeneration	Not applicable	Not applicable	Not applicable	Not applicable	
	Wider Impacts	Wider economic benefits (output change in imperfectly competitive markets) by converting an old single carriageway section to modern dual carriageway with associated junction improvements.	Not applicable	Not applicable	£11.4m	
Environmental	Noise	The alignment of Option 2 to the north of the existing A303 results in increases at relatively few dwellings compared with decreases at a greater number of dwellings to the south of the existing A303, within the Affected Road Network (ARN). The Distributional Impacts (DI) Screening Matrix concluded that it is unlikely that mitigation measures would fully eliminate all adverse residual effects, and as such, further assessment for Distributional Impacts associated with noise would be required.	Households experiencing increased daytime noise in forecast year: 77. Households experiencing reduced daytime noise in forecast year: 209. Households experiencing increased night time noise in forecast year: 70. Households experiencing reduced night time noise in forecast year: 91	Not applicable	£746,505	Yes
	Air Quality	Net improvement in local air quality within the study area. The Scheme would not result in a new exceedance of the NO2 or PM10 annual mean air quality objectives. There are several PCM links which would overlap with the Scheme's ARN in the design year of the Scheme. While there is one AQMA within the study area (Yeovil AQMA), annual NO2 and PM10 concentrations are expected to be below the annual mean air quality objectives within the AQMA in the opening year. In addition, there is predicted to be an improvement in air quality in some areas of this AQMA as a result of the Scheme as there is predicted to be a decrease in vehicles travelling through the AQMA. The regional assessment predicts an increase in emissions of NOx and PM10 primarily as a result of an increase in the number of vehicles. Overall, the total change in NPV is negative indicating a net worsening in air quality when considering both local and regional effects.	Local Air quality effects at properties (Improvements / No effect / Deterioration) NO2 2023 (792 / 145 / 1330) PM10 2023 (509 / 772 / 986) Overall Assessment Score (negative score reflects benefit) NO2: (2023): 14.60 PM10: (2023): -7.70 Change in Regional Emissions NOx (2023): 3.3 t/year PM10 (2023): 0.3 t/year	Not applicable	Value of change in PM concentrations: £58,830 Value of change in NOx emissions: -£225,817 Total value of change in air quality: - £166,987	No
	Greenhouse gases	Not applicable	Change in non-traded carbon over 60y (CO2e) 478,384 Change in traded carbon over 60y (CO2e) 1548	479,932	-£21,939,000	
	Landscape	This option would move away from the existing A303 (1100m at its furthest point) and therefore its placement in an otherwise rural and tranquil environment would be at greater odds with existing landscape features than those in close proximity to the existing A303 corridor. Given the undeveloped nature of the landscape, there would be a notable impact upon tranquillity surrounding the Scheme. Existing far reaching views would be disrupted by the presence of the new route which would be visible from elevated ground in the south. Planting would however help to settle the Scheme in the surrounding landscape and reduce its visual prominence over time. The route would have a direct impact upon the designated Hazlegrove House Registered Park and Garden. The Scheme would also be immediately adjacent to the Scheduled Monument at Downhead. This option would also run in proximity to other designated assets, which would not be directly affected by the Scheme. The unspoilt and rural character, whilst not designated, is of high value and consequently this option would be very difficult to fully mitigate, and features of interest would be both partly destroyed or their setting affected as a result of the Scheme. The overall effect on biodiversity would be Moderate Adverse with mitigation in place.	Not applicable	Moderate Adverse	Not applicable	
	Townscape	Not applicable	Not applicable	Not applicable	Not applicable	
	Historic Environment	For the purposes of the historic environment assessment construction and operational effects have been assessed. This is because permanent impacts to the historic environment will occur during construction, for example removal of archaeological or historic remains. Option 2 would require large areas of medium value unknown archaeological buried remains to be removed during the construction of the new route, resulting in potential damage. Option 2 would cut through the southern section of Hazlegrove House Registered Park and Garden, removing elements of the historic parkland and related archaeological and historic evidence. The road would be out of scale, visually intrusive and alter the context of the asset even with mitigation screening in place. The agricultural, rural context of Downhead Manor Farm Scheduled Monument would be modified by the introduction of the intrusive new route approximately 100m north of the asset. Agricultural earthwork remains within the proposed route corridor would be fully removed during construction. The overall effect on the historic environment would be Large Adverse with mitigation in place.	Not applicable	Large Adverse	Not applicable	
	Biodiversity	Option 2 would bisect open countryside, resulting in the loss of hedgerows, which may be used for commuting between roost sites and Mells Valley and North Somerset & Mendip Bats SAC. Option 2 is located 30m from Annis Hill Wood LWS and within Hazlegrove Park LWS and Downhead Manor Farm Candidate LWS. Small scale direct loss of broad-leaved woodland, parkland, hedgerows and ditches is likely to occur for this option. Wildlife such as bats, breeding birds, barn owls, dormice, reptiles, great crested newts, badger, invertebrates and water vole are likely to be subject to increased disturbance and loss of habitat. Species would be adversely affected until the replacement habitat has established, reducing the effect to these species to Neutral. The loss of any habitat of conservation value would be replaced like-for-like as a minimum requirement. New planting should be connected to existing habitat within the landscape to compensate for the loss of wildlife corridors and reduce the fragmentation impact of the Scheme. The overall effect on biodiversity would be Slight Adverse with mitigation in place.	Not applicable	Slight Adverse	Not applicable	
	Water Environment	Option 2 is unlikely to affect waterbodies as works would include standard mitigation measures in the CEMP, and SuDS and pollution control measures would be incorporated in the drainage design. These would prevent adverse effects from pollutants or increased surface water run-off, during construction and operation reaching the downstream waterbodies. Some drainage ditches and pond would be lost as they would be infilled to accommodate the new carriageway. Physical impacts due to the new/upgraded outfall during construction would cause a Slight Adverse Impact on drainage ditches. Option 2 would be located within the flood plain, however Flood Zone 3 and 2 are located along Dyke Brook (within 10m-185m to the north of the central section of the main carriageway), Cary - Source to conf with KSD (approx. 1.2km to the north-west/west) and Cam - Lower (approx. 460m to the south-west). The embankment of Steart bridge would be within Flood Zone 2 (along Dyke Brook), therefore compensatory flood storage would be provided to ensure no increase in flood risk. The overall effect on the water environment would be Neutral with mitigation in place.	Not applicable	Neutral	Not applicable	
Social	Commuting and Other users	Journey time benefits by converting old single carriageway section to modern dual carriageway with associated junction improvements. Net journey time changes is the net of positive and negatives in a given time band. Monetary (NPV) includes both journey times and vehicle operating cost impacts.	**Value of journey time changes(£)** 89m **Net journey time changes (£)** 0 to 2min: 23.5m; 2 to 5min: 65.3m; > 5min: 0.2m	Not applicable	£37.7m	Yes
	Reliability impact on Commuting and Other users	Reliability benefits by converting old single carriageway section to modern dual carriageway with associated junction improvements.	Not applicable	Not applicable	£4.4m	
	Physical activity	Option 2 would result in the severance of some NMU routes, leading to the potential to increase journey times. This would have a beneficial effect on the physical activity of NMUs. The Scheme includes the provision of new cycle routes with an associated increase in connectivity to the wider areas north and south of the A303, increasing levels of physical activity.	Not applicable	Slight Beneficial	Not applicable	
	Journey quality	Option 2 is anticipated to improve traveller care through the provision of new signage and gantries. Traveller views would be largely enclosed by mitigation planting and would include new infrastructure including signs and gantries; these views are anticipated to be Neutral given that there is no baseline in which conditions can be compared. Traveller stress is anticipated to significantly reduce on the whole, with the inclusion of new safety related infrastructure such as new lane markings, cat's eyes and road studs, as well as adequate NMU provisions ensuring the likelihood of encroachment onto the main road is minimised.	Not applicable	Moderate Beneficial	Not applicable	
	Accidents	Reduction in the number of PIAs and casualties by converting old single carriageway section to modern dual carriageway with associated junction improvements.	Reduction in casualties Fatal = 2.1 Serious = 14.7 Slight = 68.9	Not applicable	£4.0m	Yes
	Security	Effects to security as a result of Option 2 are likely to be Neutral as there are not anticipated to be any changes to security indicators as a result of this proposed option.	Not applicable	Neutral	Not applicable	No
	Access to services	Access to services within the area are unlikely to be affected by Option 2. As such, no change is expected and Option 2 is considered to have a Neutral effect.	Not applicable	Neutral	Not applicable	No
	Affordability	Changes to vehicle operating costs and therefore changes to affordability as a result of Option 2 are unlikely. As such, no change is expected and Option 2 is considered to have a Neutral effect.	Not applicable	Neutral	Not applicable	No
	Severance	There are two community facilities within the study area, all of which connect to public rights of way. NMU connectivity to one of the facilities would experience a slight positive effect as a result of the provision of a new cycle route. Connectivity to the remaining facility would be severed due to the removal of several NMU routes, resulting in increases in journey times. The provision of a cycle route and new NMU crossings results in an overall Slight Beneficial effect on connectivity for this facility.	Not applicable	Slight Beneficial	Not applicable	No
	Option and non-use values	The Scheme is expected to have little or no impact on option and non-use values.	Not applicable	Neutral	Not applicable	
Public Accounts	Cost to Broad Transport Budget	The Scheme would be funded through Central Government Funds.	Central Government Funding: 108.4m	Not applicable	£108.4m	
	Indirect Tax Revenues	There would be some increase in the tax being paid to the Exchequer.	Central Government Funding: Wider Public Finances = -44.1m	Not applicable	£-44.1m	

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



CARY
FITZPAINE

A37

Sheet 1 - West

Sheet 2 - East

SPARKFORD

STEART
HILL

DOWNHEAD

A359

A372

A303

PODIMORE

PODIMORE
ROUNDABOUT

B3151

WEST
CAMEL

WALES

QUEEN
CAMEL

ROYAL
NAVAL AIR
STATION,
YEOVILTON

YEOVILTON

INDIVIDUAL TREE

WOODLAND

GRASSLAND

NATIVE TRESS AND SHRUBS

NATIVE HEDGEROW

NATIVE HEDGEROW WITH TREES

highways england

A303
Sparkford to Ilchester Dualling Scheme
Statutory Public Consultation

26 January – 9 March 2018

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Foreword

Thank you for taking an interest in our proposal to upgrade the A303 between Sparkford and Ilchester to high quality dual carriageway. This is part of the Government's programme of schemes to improve connectivity between the south west and London and the south east. The purpose of the scheme is to improve safety, relieve congestion and support economic growth.

In February last year we conducted a route options consultation on our proposals for dualling the A303 between Sparkford and Ilchester. Based on the feedback you provided we announced a preferred route on 24 October 2017.

This consultation is your opportunity to express your views on the design of the proposed scheme in advance of our application for a Development Consent Order (DCO) to authorise construction of the project. Businesses, local authorities, public bodies, road users and the communities and neighbouring areas can all play an important part in the development of the scheme. Your feedback is therefore essential to this consultation as it will enable us to improve the proposal before we submit our planning application.

This booklet summarises our proposal, explains where you can find more detail and how you can let us know what you think about our plans.

The consultation runs from Friday 26 January until Friday 9 March 2018. Further information on our proposal, including a link to the preliminary environmental information as well as the online consultation questionnaire, can be found on our scheme website:

www.highways.gov.uk/Sparkford-to-Ilchester

Nick Aldworth
Regional Delivery Director (south west)

About Highways England – what we do

Highways England operates, maintains and improves England's motorways and major A-roads, the strategic road network. Our network totals around 4,300 miles, and while this represents only 2% of all roads in England by length, these roads carry a third of all traffic by mileage and two-thirds of all heavy goods traffic.

England's strategic road network forms the economic backbone of the country, is open 24 hours a day, 7 days a week, and is relied on by communities and businesses to get from A to B.

We aim to ensure that all our major roads are dependable, durable and most importantly, safe. In pursuit of that aim, we are delivering a £15 billion investment programme in our network as described in the Government's **Road Investment Strategy** (RIS), see **www.gov.uk/government/collections/road-investment-strategy**.

This A303 Sparkford to Ilchester Dualling Scheme is part of this investment programme.

The consultation process

The proposed scheme is categorised as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008. As such, we are required to make an application for a Development Consent Order (DCO) in order to obtain planning permission to construct the scheme.

This consultation exercise is a prescribed process as set out in the Planning Act 2008. It requires the developer of a proposal – in this case Highways England – to consult with statutory bodies, local authorities, landowners, those significantly affected by the proposal and the wider community. Consultation is intended to provide everybody with the opportunity to comment in detail on our proposal - including the route, engineering, environmental, construction and land-take impacts of the proposal – before we submit our DCO application.

All feedback received from this consultation exercise will be used to help shape our proposal ahead of a DCO application.

We have worked closely with local authorities in the area to define how we will undertake consultation with local communities, including hard to reach groups, and this is set out in our Statement of Community Consultation (SoCC). In addition to the SoCC, we have published a statutory notice under Section 47 and Section 48 of the Planning Act 2008, which was published in local and national papers to notify the wider public about the proposal.

Background

The A303/A358 corridor provides vital connectivity between the south west with London and the south east for people, communities and businesses, including the tourism industry which is so important to the south west. But there are problems along the route.

In particular there are 6 single carriageway sections where road users can suffer congestion and long delays. The problems are even worse at peak holiday times during the summer months and on weekends. These problems on this strategic road overspill onto the local road network and impact on the communities in the area.

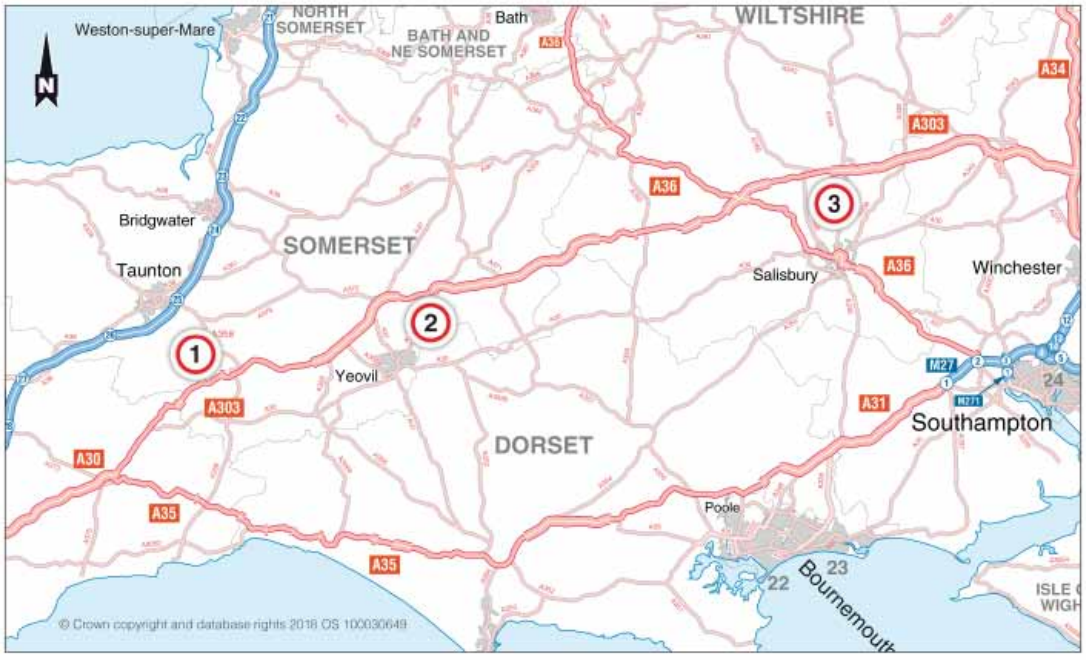
In recognition of this and the harmful effects this has on the south west's economy, the Government's **Road Investment Strategy** (RIS) sets out the intention to transform connectivity by upgrading the A303/A358 corridor to a high quality dual carriageway from the M3 motorway to the M5 motorway at Taunton.

A high quality dual carriageway is a road with typically limited local road access and no right-turning movements across it, thereby providing a level of service approaching that which is found on a motorway, where mile-a-minute journeys are the norm. To support this, we are developing the first of 3 major road improvement schemes along the A303/A358 corridor:

1. A358 Taunton to Southfields
2. A303 Sparkford to Ilchester
3. A303 Stonehenge, Amesbury to Berwick Down

You can find out more about the A303/A358 corridor plans by reading our booklet **'Creating an expressway to the south west - The case for the A303/A358 Corridor'**, available on our webpage and at our consultation events.

Figure 1: A303 /A358 route corridor schemes in RIS period 2015-2020



A303/A358 route corridor schemes

Why we need the scheme

The section of the A303 between Sparkford and Ilchester comprises of a mix of dual and single lane carriageway. This leads to localised congestion, impacting adversely on journey times and journey time reliability.

On a normal day, up to 23,500 vehicles use this single carriageway section. Due to higher volumes of traffic during the summer months and in particular at weekends, average travel times increase on a Friday in August, making it impossible to predict the time a journey will take.

This traffic is forecast to further increase as local authorities along the length of the corridor seek to deliver economic growth and new development.

The mixture of single and dual carriageway on the section of the A303 between Sparkford and Ilchester presents the following issues:

- poor junction visibility
- slow moving agricultural vehicles
- limited opportunities for overtaking
- increasing traffic levels outgrowing the capacity of the existing road design during peak periods

The consequences of these issues are:

- congestion and longer journey times during peak times and the summer months
- unreliable journey times
- queueing at the junctions due to the interaction between local and strategic traffic
- increased risk of incidents causing delays to surrounding local routes

Scheme objectives

Highways England is developing a scheme to address the need for improvement to this section of the A303, which has been clearly identified as part of the Government's Road Investment Strategy for improving connectivity to the south west.

Within that context, we have set ourselves a number of objectives for the scheme, which are:

- **Capacity:** Reduce delays and queues that occur during peak hours and at seasonal times of the year
- **Safety:** Improve the safety of the network by providing additional capacity, reducing driver stress and enabling safer access to and from the motorway. It will also improve the non-motorised user (NMU) routes in the area
- **Environment:** Avoid unacceptable impacts on the surrounding natural and historic environment and landscape and optimise opportunities for enhancement
- **Local communities:** Reduce community severance and promote opportunities for improving their quality of life
- **Support economic growth:** Facilitate growth in jobs and housing by providing a free-flowing and reliable connection between the south east and the south west
- **Connectivity:** Improve the connectivity of the south west to the rest of the UK and improve business and growth prospects
- **Resilience:** Improve journey time reliability and resilience, and provide extra capacity to make it easier to manage traffic when incidents occur

Developing the scheme

During our route options consultation, we asked for your views on 2 shortlisted options for improving this section of the A303 between Sparkford and Ilchester:

- **Option 1:** A dual carriageway that follows the existing A303 from east of Podimore Roundabout to Downhead. At this point, the road moves north before reverting to follow the route of the existing A303 in the direction of Hazlegrove
- **Option 2:** A dual carriageway that starts east of Podimore Roundabout before leaving the existing A303 to pass south of Annis Hill and then north of Steart Hill. It re-joins the existing A303 near Sparkford. The single carriageway section of the existing A303 would be retained as a local route

As well as listening to the consultation feedback, we continued to refine and further develop the design and undertake more surveys, including examination of the ground conditions, measuring the topography of the land, archaeological surveys and various environmental surveys. These included studies into the landscape and ecological impacts of each option.

We considered a number of factors in deciding between the options, including:

- scheme objectives
- safety
- economic benefits
- public consultation feedback
- costs
- environmental effects
- construction

Our assessment and feedback from the consultation demonstrated that Option 1 would on balance provide the better performing route, by reducing new construction in rural countryside, having a lesser environmental impact and providing the better journey time.

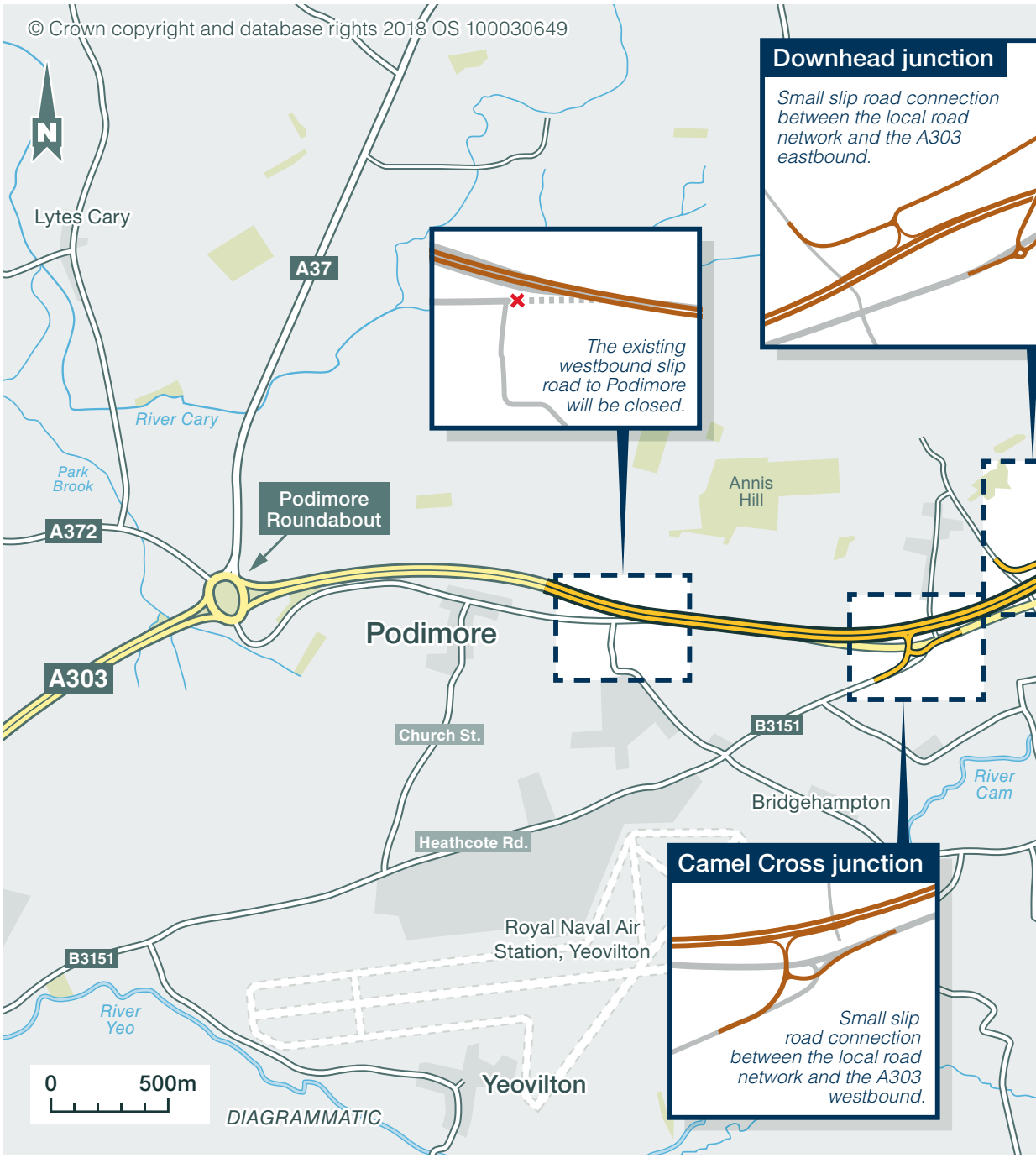
Details of our preferred route, which we announced on 24 October 2017, are available on our webpage.

Scheme proposal

Since announcing the preferred route, we have continued to develop our scheme proposal and we are now in a position to present this next stage of scheme development as part of a statutory consultation, in accordance with the Planning Act 2008.

Our proposal is for a dual carriageway that starts east of Podimore Roundabout and follows the alignment of the existing A303 to Downhead.

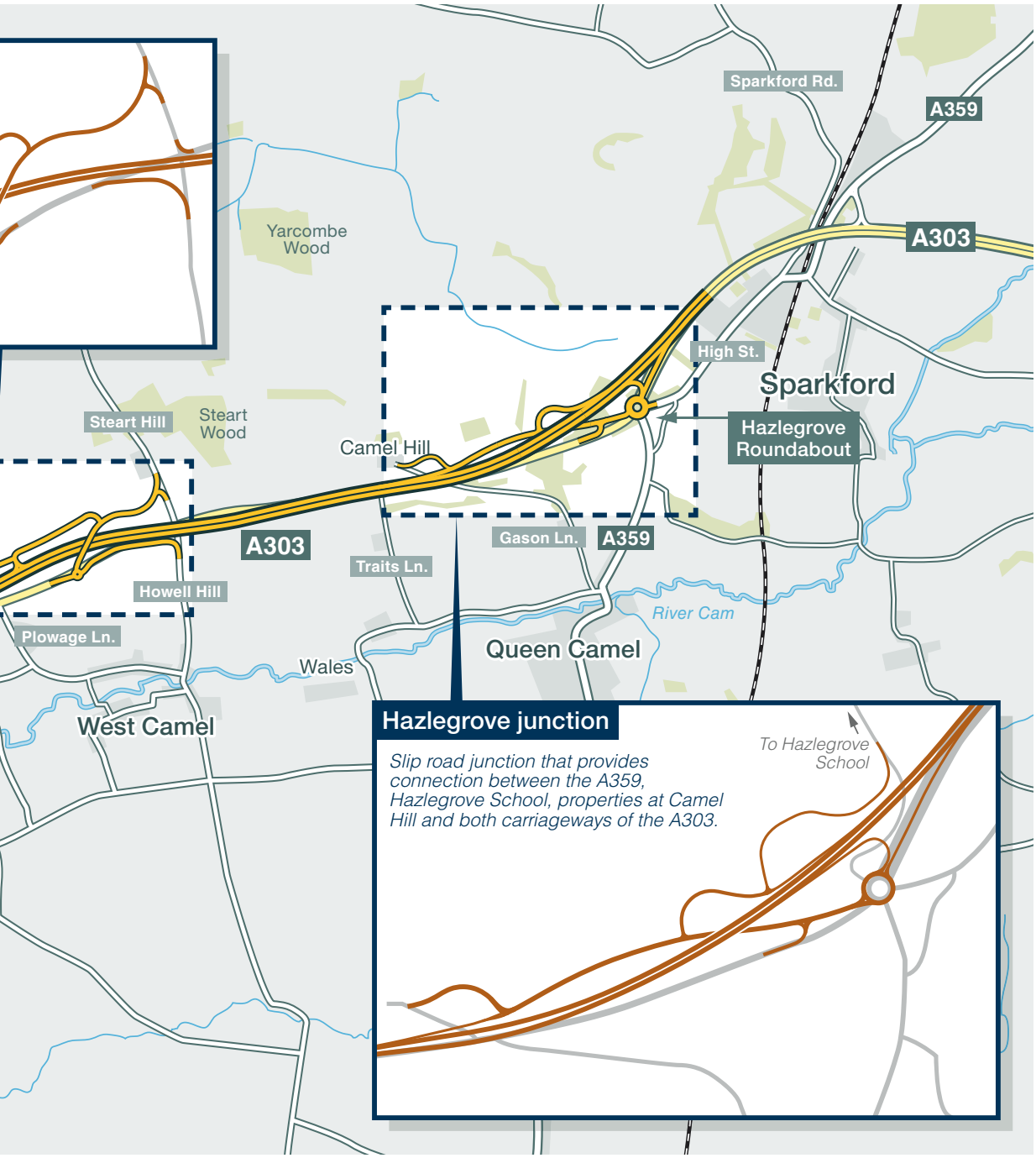
Travelling eastwards, the route moves north of the existing A303 single carriageway, allowing the existing road to be retained for use as a parallel local road in this section.



The route then rises up West Camel Hill before crossing over the existing A303 at the junction with Steart Hill/Howell Hill. The route then takes a southerly alignment briefly before meeting up with the existing road again to pass between Vale Farm and the MOD signal station at Eyewell/Traits Lane.

Finally, the route then bypasses the existing Hazlegrove Roundabout to the north through the Registered Park and Garden associated with Hazlegrove House, before tying into the existing A303 Sparkford Bypass.

Figure 2: The route



About the junctions

Hazlegrove

We are proposing a new split level junction at Hazlegrove, as shown in figure 3. The new junction design keeps the existing Hazlegrove roundabout to maintain access to the communities to the south and the A359. It includes a new bridge under the new A303 dual carriageway allowing access to Hazlegrove House and properties to the north at Camel Hill.

Our proposal for this junction takes into account the significant amount of feedback we received regarding this junction during the route options consultation.

In question 5 of the consultation questionnaire we ask for your views on this junction layout.

Figure 3: Proposed junction at Hazlegrove

Downhead Lane

Following feedback from the route options consultation, we have considered a number of different options for connecting with the local roads at Downhead, including:

- a split level all-movements junction allowing people to travel in any direction
- a limited access junction, which would be smaller but would only allow people to travel in certain directions
- no junction with the local roads

We have chosen a junction allowing access in any direction, as feedback from the last consultation told us that this is how people are likely to find it most useful and it provided economic benefit.

Figure 4 shows the proposed layout for a junction at Downhead. The new junction will use a proposed bridge over the dual carriageway near Steart Hill, allowing vehicles to join and leave the A303 in all directions and to travel north and south across the proposed dual carriageway. The junctions at Downhead will also maintain access to the B3151 and the section of the existing A303 that will be kept for local access.

In question 6 of the consultation questionnaire we ask for your views on this junction.

Figure 4: Proposed junction at Downhead

Further design work

Since the route options consultation and preferred route announcement in 2017, we have also continued to develop our overall proposal and have made a number of changes. We have moved the proposed new dual carriageway section between Podimore and Downhead Lane to the south slightly to align more closely with the existing single carriageway section.

We have also removed a proposed underpass at Traits Lane which we had included as part of the route in the route options consultation. At the time, this was proposed for local road access, maintaining a link to the north of the A303 which would otherwise have been severed.

We have carried out more work to understand what the underpass would involve, and found that:

- people living near the potential underpass did not feel it was required
- we are able to maintain local access to the north of the A303 via the new Hazlegrove junction, meaning this underpass is not needed
- we can provide more effective wildlife crossings elsewhere
- the cost and difficulty of building the underpass would not be justified by its limited benefit

For these reasons, we are no longer proposing an underpass at this location.

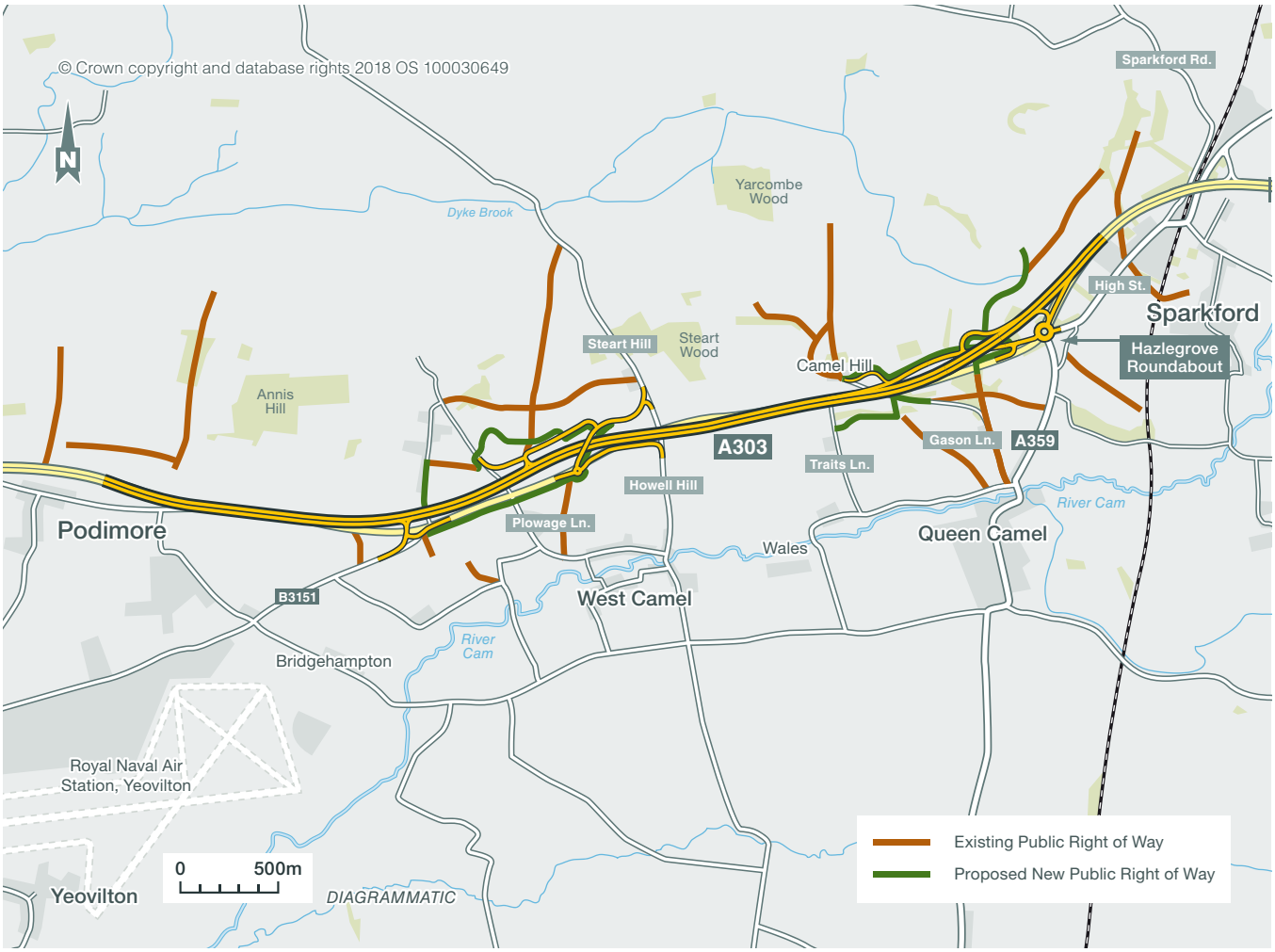
Provision for non-motorised users

We need to ensure that the design of the scheme allows people travelling on foot, bicycle or by horse to continue to get around the area. We have carried out surveys to identify the most frequently used routes that would be affected by the proposal. As part of this, we have considered how people with disabilities currently get around the area. We have engaged with a number of community groups to ensure we fully understand what is important to them and those that they represent. For safety reasons, pedestrians, cyclists or equestrians should not be allowed to directly cross the dual carriageway.

Based on this information, we have included in our proposal crossing points that use new bridges over the dual carriageway or underpasses beneath the dual carriageway to keep the access for these routes. These crossing points would be safer than the existing situation. This proposal is shown in figure 5.

Question 7 of the consultation questionnaire asks for your views on our proposal for pedestrians, cyclists and equestrians.

Figure 5: Proposed crossings for pedestrians, cyclists and equestrians



What our proposal means for you

We are committed to making sure our proposal brings long-term benefits for local communities, for regional growth and for national strategic traffic, at the same time as managing the impacts of development. This is supported by our continuing work with stakeholders including councils, statutory environmental bodies, businesses, specialist organisations, community representatives and user groups.

Transport

The scheme will have significant transport benefits, including:

- **Capacity:** The proposal will reduce congestion, by increasing the road's capacity for free-flowing traffic and making mile-a-minute travel the norm
- **Safety:** The proposal will boost road safety and ease driver stress. It will also make it safer and easier for cars, pedestrians and other local road users to reach facilities
- **Resilience:** There will be fewer road closures due to incidents or accidents

Economic growth

Economic benefits from the scheme include:

- enabling growth across the whole of the south west region, by making trips quicker and safer, and arrival times easier to predict
- making the south west more attractive for tourists and commerce, by making it an easier place to visit and do business
- raising the south west's productivity by creating world-class connections to other UK regions
- supporting the predicted growth in jobs and housing by increasing the capacity of the strategic road network

Caring for the environment

Understanding the impact on the environment and the community within the A303 corridor is very important to us. Our aim is to reduce any adverse effects while capturing the wider opportunities for improvement created by this scheme.

The area surrounding the A303 between Sparkford and Ilchester has a number of sensitive and valued environmental sites, as well as a number of dwellings and farm businesses. We have prepared a Preliminary Environmental Information (PEI) Report to help local people understand the potential environmental effects of our proposal. This is available on our website at **www.highways.gov.uk/Sparkford-to-Ilchester**

Impacts we have considered include:

- **Air quality:** We will put in place measures to mitigate potential impacts on air quality during construction and once the road is open to traffic. During construction, well established industry best practice controls will be implemented on site which would reduce the impact of emissions on residents and the local area and prevent nuisance to residents. While we do not expect there to be significant impacts on air quality once the road is operational, we will carry out further assessment work including at Stockton Wood and Down Site of Special Scientific Interest (SSS).
- **Noise and vibration:** The existing route currently passes adjacent to 2 Noise Important Areas. We will undertake noise surveys and continue to assess any potential noise and vibration impacts, to allow us to build in appropriate mitigation by design. During construction, mitigation may include the selection of the most appropriate method and machinery to reduce noise, adequate maintenance and storage of construction equipment and local noise screening. To help reduce noise levels from road traffic once the road is open, we will incorporate noise fences or bunds into the design. As a result, we do not expect the proposal to have a significant effect on noise and vibration.
- **Cultural heritage:** We are conducting archaeological surveys along the route to identify any risks that we may disturb significant remains during construction. The surveys will help us to determine what approach we need to take during construction to reduce risks to archaeological remains. We will produce a specific Conservation Management Plan to understand and mitigate our impact on the Hazlegrove House (Grade II Listed) Registered Park and Garden. The scheme has also been designed so that there is no encroachment of the Scheduled Monument located to the north of the existing A303 at Camel Hill.
- **Landscape and visual impacts:** Without mitigation the scheme would have an impact on a number of significant sites including the Hazlegrove House (Grade II

Listed) Registered Park and Garden and Conservation Areas in West Camel and Queen Camel, as well as other aspects of the local landscape. During construction mitigation measures such as keeping a well ordered and tidy site and limiting works to daylight hours will be included. To reduce the visual impact of the road once it is open to traffic we plan to drop the level of the road in a cutting. We will also create screening from native tree species to conceal the road, including areas in the southern third of the Hazlegrove House (Grade II Listed) Registered Park and Garden. Where the proposed road is on embankment, we will look to utilise a false cutting to reduce views of traffic on the road, particularly to the north of West Camel.

- **Nature conservation:** We have been carrying out ecology surveys and have identified the presence of bats, great crested newts, reptiles and badgers. Designated sites within the vicinity of the scheme include a number of Local Wildlife Sites, and habitats present include ancient woodland, broadleaved semi-natural woodland, species-rich hedgerows and calcareous grassland. We will use best practice mitigation measures to reduce the risk of impacts on designated sites, protected species and habitats. Measures during construction include the sensitive timing of work to avoid breeding seasons, directional and low-level lighting, and the sensitive location of construction machinery with all vehicles switching off their engines when stationary. Once operational, mitigation measures will include the creation of replacement habitat for great crested newts and reptiles, planting of new hedgerows, trees and scrub, and the provision of mammal underpasses.
- **Road drainage and the water environment:** To prevent pollution from surface water runoff, during construction we will use best practice mitigation measures including the storage of liquids, soils and powders appropriately away from the drains and waters, and in secondary containment.
- **Flooding:** To prevent an increase in flood risk, we will implement a sustainable drainage systems design. To support this, a flood risk assessment is being undertaken to inform the designs of the surface water drainage system that meets the requirements of the National Policy Statement for National Networks.
- **Geology and soils:** During construction, best practice mitigation measures will be implemented including measures to protect soil structure and quality, minimise waste generation, protect controlled waters from both general site works and foundation works, manage excavations and dewatering.
- **Materials:** We will reduce the amount of materials needed and waste produced by reusing soil materials onsite wherever possible. In addition, materials to be used onsite will, where possible, contain high proportions of recycled content. Our proposal will generate waste during construction which will need to be appropriately managed. To do this, a site waste management plan will be prepared in advance of construction, which will consider the sourcing, transport and use and disposal of waste materials in a sustainable manner.
- **Local communities:** We need to consider effects on local communities both during construction and once the new road is open to traffic. Before construction starts, we will develop a community relations strategy setting out how we will work alongside the local community to reduce disruption.

- **Cumulative effects:** Cumulative effects can result from the impacts of multiple projects, or from a number of different impacts from a single project, accumulating to affect a single environmental resource or area. We are aware of the need to understand potential cumulative impacts from other schemes proposed for the A303/A358 corridor. We are working across the corridor to understand the joint impact and how this can be reduced.

Following this consultation, we will prepare an Environmental Statement setting out in full our assessment of the potential effects of the scheme on the environment, and our proposed mitigation and enhancement measures. We will also produce a Construction Environmental Management Plan of how the mitigation and enhancement measures will be incorporated into our construction stage. We will submit these as part of our Development Consent Order application.

Question 8 of the consultation questionnaire provides an opportunity to share your views on our approach to environmental impact.

Planning for construction

We understand that local people will want to know the likely impact that building the scheme will have on their daily life, particularly in relation to traffic re-routing through local villages. A traffic management plan will be drawn up once the scheme proposals are finalised, together with a construction phase plan, detailing exactly how the works will be undertaken and how A303 and local traffic will be managed.

Community and environmental impacts will be taken fully into account at all stages of the development, planning and decision-making process. That means working closely with local communities, local authorities, environmental bodies and major employers as work progresses in continuing the development of the scheme into the construction phase.

Timing and phasing of construction works

If development consent for the proposed scheme is granted, construction of the main works would be expected to commence in spring 2020 and continue for a period of approximately 2.5 years.

Construction phasing arrangements would be developed to mitigate disruption to road users and the surrounding community during the period of construction. The safety of vulnerable road-user groups such as pedestrians and cyclists would be a particular consideration.

Site compounds and use of public roads

Working areas close to the proposed scheme would be required for site compounds, the storage of materials and equipment. The location of site compounds will be identified in our Development Consent Order application, together with proposed access and egress arrangements. Contractors will also need to use public roads to gain access to working areas. We will work closely with Somerset County Council to identify the routes that are appropriate and any restrictions that may apply.

Stakeholder engagement

Liaison officers will be appointed as a point of contact for the local community, businesses and other stakeholders during the period of construction to help address any concerns or issues as the scheme is built.

Regular scheme progress updates will be provided via the scheme website, social media, as well as regular updates via post and one-to-one meetings with interested parties.

What happens next

This is your opportunity to give your views on our proposal. If, after reading this booklet, you have further questions or would like to find out more, please come to one of our exhibition events, details of which are available on our website.

- **Visit our website at:** www.highways.gov.uk/Sparkford-to-Ilchester
- **Email us at:** A303SparkfordtoIlchesterdualling@highwaysengland.co.uk
- **Call us on:** 0300 123 5000
- **Write to us at:**
  A303 Sparkford to Ilchester Project Team
  Highways England
  2/07K Temple Quay House
  2 The Square
  Temple Quay
  Bristol BS1 6HA

Tell us what you think

When you are ready to give us your views please fill in and send us your completed consultation questionnaire. You can complete it online or download and print it from our website.

If you would like a hard copy, let us know and we can send one in the post to you. If you complete our questionnaire in paper format, please return it in the prepaid envelope provided or post it to:
Freepost HIGHWAYS CONSULTATION

The statutory consultation will run from Friday 26 January 2018 until 23:59 on Friday 9 March 2018 (inclusive). Please get involved and provide your responses by the closing date.

We will analyse your feedback, consider all suggestions made, and respond to it in the report we prepare on the consultation. Following the consultation, amendments can be made to the proposal. Your views will help the Secretary of State for Transport make a decision on our application.

Timeline and Development Consent Order process

This scheme is classified as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008. Because of its national significance, the scheme needs a Development Consent Order (DCO).

Following this statutory consultation, we will carefully consider all comments received before submitting our DCO application.

If the application is accepted by the Planning Inspectorate, there will then be an examination of the application in which the public can participate. This examination will take a maximum of 6 months. The Planning Inspectorate then has 3 months to make a recommendation to the Secretary of State, who then has a further 3 months to make a final decision. More information about the DCO process can be found on the Planning Inspectorate's website: **http://infrastructure.planningportal.gov.uk**

Sparkford 2
Wincanton 9½
Babcary 2¾
West Camel ½
Olympus

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News release
www.highways.gov.uk

Detailed plans to upgrade the A303 between Sparkford and Ilchester go on show

Detailed plans for major improvements to journeys on the A303 in Somerset will go on show next week.

Highways England has been working hard to develop the design for the £179 million scheme since the preferred route was announced in the autumn of 2017. And the details will be unveiled when consultation starts on Friday, 26 January.

The proposal is to dual a three-mile section of the A303 between Sparkford and Ilchester, cutting congestion, reducing journey times and improving safety for all road users.

Tom Roberts, Project Manager for Highways England, said: “The A303 is a vital route between the South West and the rest of the country and that is why this dualling scheme is so important.

“The A303 between Sparkford and Ilchester is used by 22,000 vehicles every day, and these plans will make real improvements to journeys as well as improving safety and providing nearly 30 miles of dual carriageway between South Petherton and Mere.

“We’ve worked hard with the local community and our partners to develop the right scheme for drivers, local residents and local business and we welcome all feedback on the detailed plans at consultation.”

As part of its £15bn investment in motorways and main A roads the Government is committed to upgrading all remaining single carriageway sections of the A303/A358 between the M3 and M5 to dual carriageway standard, starting with three schemes: the A303 at Stonehenge, the A303 between Sparkford and Ilchester and the A358 between the M5 at Taunton and the Southfields Roundabout on the A303, which launched consultation yesterday (16 January).

Two options for the three-mile section between Sparkford and Ilchester were consulted on last year with strong support for option one, which follows the corridor of the existing A303. In October 2017, Option one was confirmed as the preferred route that would be developed further.

A solution for this section of the A303 will support the local economy growth by making the area more accessible for both tourism and businesses.

It also offers a high quality dual carriageway with new two-level junction access with local roads and communities, protect biodiversity and improve access for pedestrians, equestrians and cyclists.

Public consultation events, offering people the chance to see the proposals and meet with members of the project team, will be held at the following:

• Saturday, 3 February – Queen Camel Memorial Hall, Flagstone Cottage, High Street, Queen Camel, Yeovil BA22 7NE, 10am-6pm
• Monday, 5 February – Fleet Air Arm Museum, RNAS Yeovilton, Ilchester BA22 8HT, 2pm-8pm.
• Friday, 9 February – The Davis Hall, Howell Hill, West Camel, Yeovil BA22 7QX, 2pm-8pm
• Friday, 15 February – Yeovil Town FC, Lufton Way, Brympton d'Evercy, Yeovil BA22 8YF, 2pm-8pm

And information will also be available to view, between 24 January and 9 March, at the following local information points:

• Wincanton Library, 7 Carrington Way, Wincanton, Somerset, BA9 9JS Barrington Court, Barrington, Ilminster, TA19 0NQ
• Yeovil Library, King George Street, Yeovil, Somerset, BA20 1PZ
• Lytes Cary Manor, near Somerton, Somerset, TA11 7HU
• South Petherton Library, St James Street, South Petherton, Somerset, TA13 5BS
• Montacute House, Montacute, TA15 6XP
• Taunton Library, Paul Street, Taunton, Somerset, TA1 3XZ
• Somerset County Council, County Hall, Taunton, Somerset, TA1 4DY
• Martock Library, The Shopping Centre, Martock, Somerset, TA12 6DL
• South Somerset District Council, Brympton Way, Yeovil, Somerset, BA20 2HT
• Ilchester Town Hall and Community Centre, High St, Ilchester, Yeovil, BA22 8NQ

In the meantime, details of the scheme can be found at the webpage www.highways.gov.uk/Sparkford-to-Ilchester

Following consultation, the scheme will then progress through the formal planning process and, subject to statutory approval under the 2008 Planning Act and the Secretary of State, construction is planned to start in spring 2020.

Images of traffic on the A303 Sparkford to Ilchester route:

https://dmscdn.vuelio.co.uk/publicitem/118fdf93-724d-43a3-81b0-30e70454e3e1

https://dmscdn.vuelio.co.uk/publicitem/f535e127-0894-4756-961e-c2188e830e58

Ends

NOTES TO EDITORS

Highways England is the government-owned company responsible for modernising, maintaining and operating England's motorways and major A roads.

Real-time traffic information for England's motorways and major A roads is available via its website (www.trafficengland.com), local and national radio travel bulletins, electronic road signs and mobile apps. Local Twitter services are also available at www.highways.gov.uk/twitter.

Issued by Highways England.

For further information please contact Highways England's press office (24hrs) on 0844 693 1448 and select the most appropriate option below:

Option 1: **National enquiries** (9am to 5.30pm) & **out of hours for urgent enquiries**
Option 2: **North West** (between 9am & 5.30pm)
Option 3: **Yorkshire, Humber and North East** (between 9am & 5.30pm)
Option 4: **West Midland** (between 9am & 5.30pm)
Option 5: **East Midlands** (between 9am & 5.30pm)
Option 6: **East** (between 9am & 5.30pm)
Option 7: **South East** (between 9am & 5.30pm)
Option 8: **South West** (between 9am & 5.30pm)

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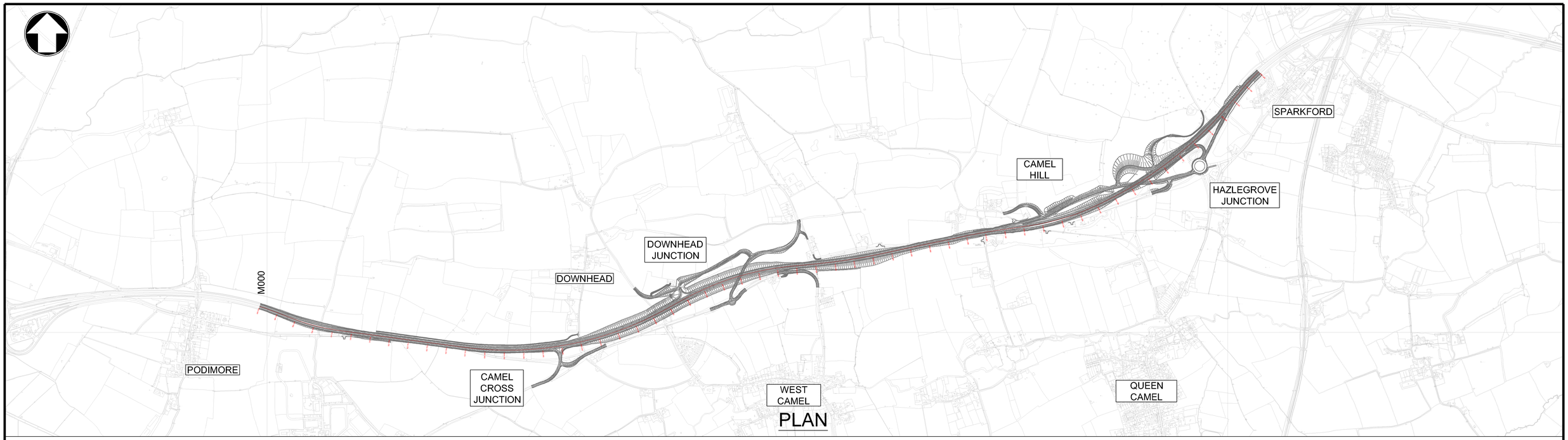

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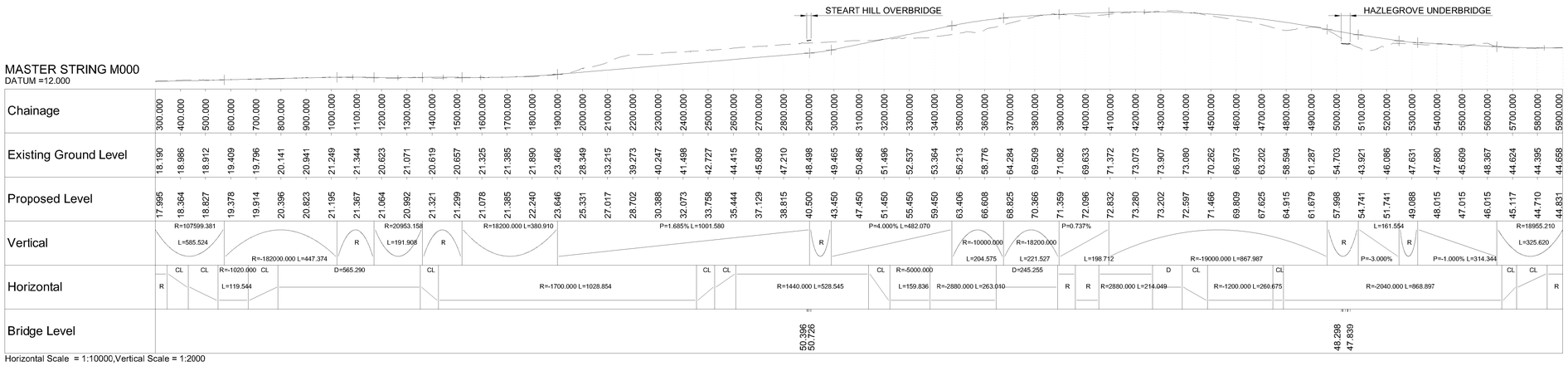

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Key to Symbols:

PROFILE

PROPOSED ROAD PROFILE

EXISTING GROUND PROFILE

Scale @ A1:

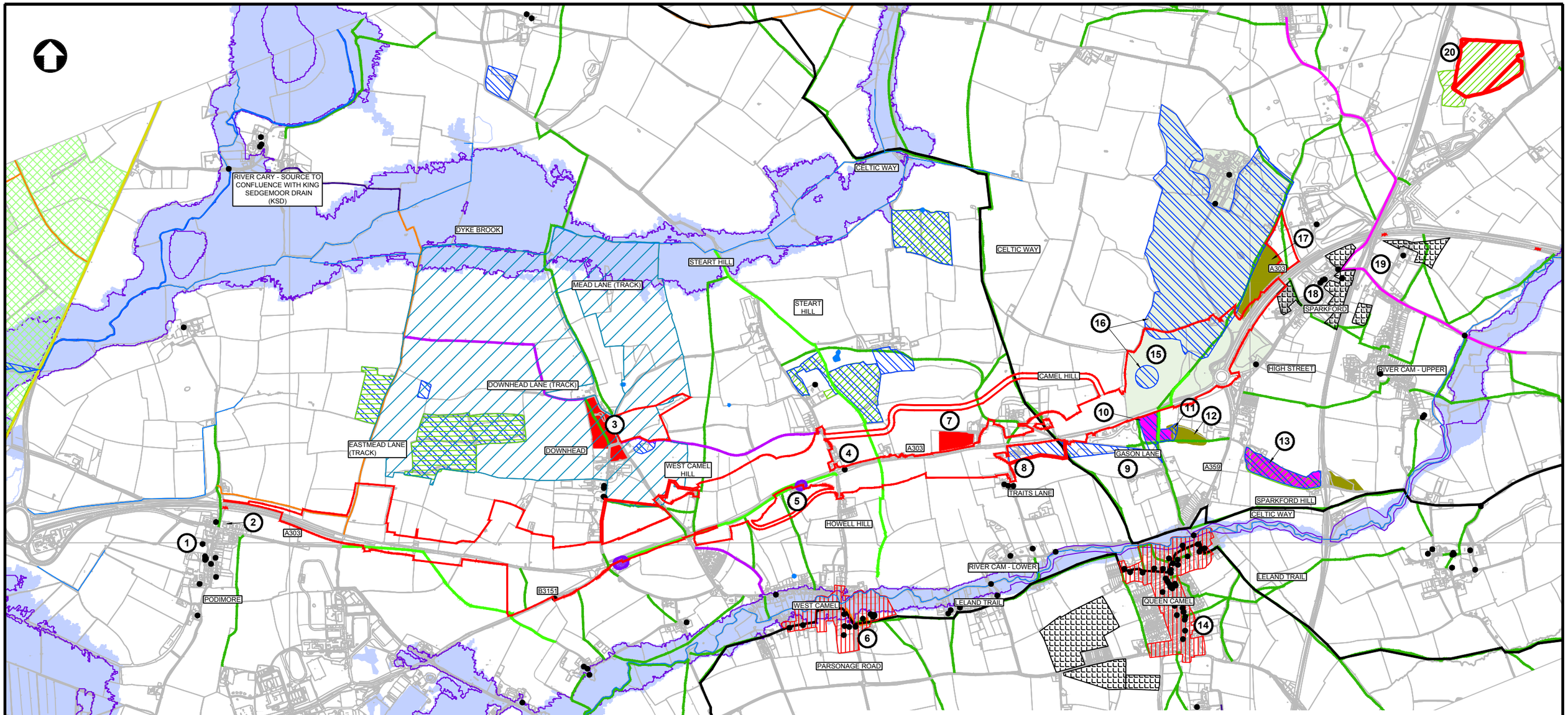
1:10,000 0 500m 1000m

Project Title:

A303 SPARKFORD TO ILCHESTER DUALLING

Drawing Title:

PLAN AND PROFILE



Target Notes:

1	ST PETERS CHURCH	8	CAMEL HILL TRANSMITTER SITE LWS	15	HAZLEGROVE HOUSE (GRADE II LISTED) REGISTERED PARK AND GARDEN
2	THE PODYMORE INN PUBLIC HOUSE	9	GASON LANE FIELD LWS	16	HAZLEGROVE PARK LWS
3	MEDIEVAL SETTLEMENT REMAINS 100M AND 250M NORTH OF DOWNHEAD MANOR FARM SCHEDULED MONUMENT	10	CAMEL HILL QUARRY EAST LGS	17	LAND ADJACENT TO HAZLEGROVE PARK HISTORIC LANDFILL
4	MILESTONE ON A303 AT NGR ST57892538 (GRADE II) LISTED BUILDING	11	RIDGE COPSE LWS	18	SPARKFORD INN PUBLIC HOUSE
5	WEST CAMEL METHODIST CHURCH	12	CAMEL HILL QUARRY HISTORIC LANDFILL	19	SPARKFORD CRICKET CLUB
6	WEST CAMEL CONSERVATION AREA	13	SPARKFORD HILL COPSE LWS AND LGS	20	SPARKFORD WOOD SSSI
7	ROMANO-BRITISH SETTLEMENT IMMEDIATELY SOUTH WEST OF CAMEL HILL FARM SCHEDULED MONUMENT	14	QUEEN CAMEL CONSERVATION AREA		

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Scale @ A1: 1:10,000 (0, 500m, 1000m)

Client: highways england

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Key to Symbols:

- DRAFT RED LINE BOUNDARY
- NAMED WALKING ROUTES
- FOOTPATH ALONGSIDE CARRIAGEWAY
- FOOTPATH
- BRIDLEWAY
- RESTRICTED BYWAY
- CYCLE ROUTE
- FOSSE WAY
- REGISTERED PARK ND GARDEN
- HISTORIC LANDFILL
- PONDS, LAKES AND RUNNING WATER
- LISTED BUILDING
- ANCIENT WOODLAND
- NOISE IMPORTANT AREA
- SITES OF SPECIAL SCIENTIFIC INTEREST (SSSI)
- CONSERVATION AREA
- SCHEDULED MONUMENT
- LOCAL GEOLOGICAL SITE (LGS)
- FLOOD ZONE 2
- FLOOD ZONE 3
- LOCAL WILDLIFE SITE (LWS) (SOMERSET ENVIRONMENTAL RECORDS CENTRE, JUNE 2017)
- NATIONAL TRUST LAND
- CANDIDATE LOCAL WILDLIFE SITE (SOMERSET ENVIRONMENTAL RECORDS CENTRE, JUNE 2017)
- REGISTERED COMMON LAND
- ANCIENT WOODLAND IDENTIFIED BY SOMERSET ENVIRONMENTAL RECORDS CENTRE
- PROPOSED DEVELOPMENTS IDENTIFIED IN THE SOMERSET DISTRICT COUNCIL HOUSING AND ECONOMIC LAND AVAILABILITY ASSESSMENT

Project Title:

A303 SPARKFORD TO ILCHESTER

Drawing Title:

ENVIRONMENTAL CONSTRAINTS PLAN

C:\pwlocal\pwise_cde_he\lee24793\dms16486\HE551507-MMSJV-EGN-000-DR-LP-0009.dwg Jan 10, 2018 - 3:38PM lee24793

highways england

A303
Sparkford to Ilchester Dualling Scheme

Public consultation

Welcome

Highways England – creative MCR18_0016

A303 Sparkford to Ilchester Dualling Scheme

Background

The A303/A358 corridor provides vital east-west connectivity between the south west and London and the south east for people, communities and businesses, including the tourist industry which is so important to the south west. However, there are problems along the route.

These include several single carriageway sections where road users can suffer congestion and long delays. The problems are even worse at peak holiday times during the summer months and on weekends.

In recognition of this and the harmful effects this has on the south west's economy, the Government's *Road Investment Strategy* (RIS) sets out the intention to transform connectivity by upgrading the A303/A358 corridor to a high quality dual carriageway from the M3 motorway to the M5 motorway at Taunton.

To support this, we are developing 3 major road improvement schemes along the A303/A358 corridor:

- A358 Taunton to Southfields
- A303 Sparkford to Ilchester
- A303 Stonehenge: Amesbury to Berwick Down

A303/A358 route corridor schemes

1. A358 Taunton to Southfields
2. A303 Sparkford to Ilchester
3. A303 Amesbury to Berwick Down

Why we need the scheme

The section of the A303 between Sparkford and Ilchester comprises of a mix of dual and single lane carriageway, which leads to localised congestion, impacting adversely on journey times and journey time reliability.

Currently, on a normal day, up to 23,500 vehicles use this single carriageway section. At weekends in the summer the number of vehicles using this section of road can increase by nearly half as many again. This is more traffic than the road is designed to carry.

Due to the increase in traffic, average travel times can double on the westbound direction on a Friday in August, making it impossible to predict the time a journey will take.

This traffic is forecast to further increase as local authorities along the length of the corridor seek to deliver economic growth and new development.

This scheme will have significant benefits for the local area including:

- **Capacity:** the proposal will reduce congestion, by increasing the road's capacity for free-flowing traffic and making mile-a-minute travel the norm
- **Safety:** the proposal will boost road safety and ease driver stress. It will also make it safer and easier for cars, pedestrians and other local road users to reach facilities
- **Resilience:** there will be fewer road closures due to incidents or accidents
- **Economic growth:** by making trips quicker and safer, and arrival times easier to predict the proposal will by making the south west more attractive for tourists and commerce. Increasing the capacity of the road will also support the predicted growth in jobs and housing

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A303 Sparkford to Ilchester Dualling Scheme

Looking at the options

During our previous consultation, we asked for your views on 2 shortlisted options for improving the A303 between Sparkford and Ilchester:

- **Option 1:** A dual carriageway that follows the existing A303 from east of Podimore Roundabout to Downhead. At this point, the road moves north before reverting to follow the route of the existing A303 in the direction of Hazlegrove.
- **Option 2:** A dual carriageway that starts east of Podimore Roundabout before leaving the existing A303 to pass south of Annis Hill and then north of Steart Hill. It re-joins the existing A303 near Sparkford. The single carriageway section of the existing A303 would be retained as a local route.

We considered a number of factors in deciding between the options, including:

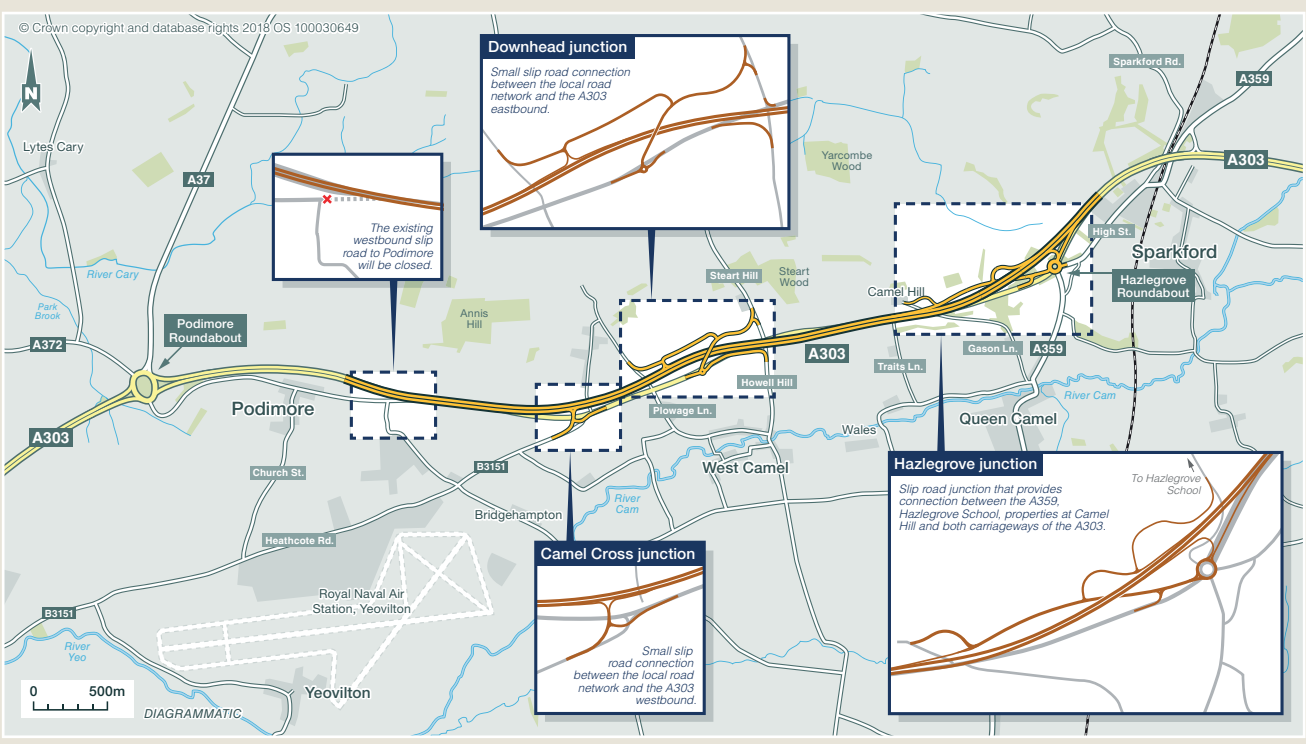
- Scheme objectives
- Safety
- Benefits
- Public consultation feedback
- Costs
- Environmental effects
- Construction

We selected Option 1 as our preferred route judged against the factors outlined above.

Scheme proposal

Since announcing the preferred route, we have continued to develop the scheme proposal.

The plan below shows the proposed dual carriageway and local access connections.



A303 Sparkford to Ilchester Dualling Scheme

Hazlegrove junction

We are proposing a new junction, built on 2 levels, at Hazlegrove. This would provide connections to Hazlegrove House, the A359, Camel Hill and access to villages south of the route. Our proposals for this junction take into account the significant amount of feedback we received on its design during the previous consultation.

Computer render of the redesigned junction after 15 years of planting growth.

A303 Sparkford to Ilchester Dualling Scheme

Downhead Lane junction

Following feedback from the previous consultation, we have considered a number of different options for a junction at Downhead, including:

- an all-movements junction allowing people to travel in any direction
- a limited movement junction, which might be smaller but would only allow road users to travel in certain directions
- no junction at all

Below is the proposed arrangement for a junction in the vicinity of Downhead Lane. The all movements junction, built across 2 levels, allows vehicles to join and leave the A303 in all directions.

Computer render of the redesigned junction after 15 years of planting growth.

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A303 Sparkford to Ilchester Dualling Scheme

Caring for the environment

Understanding the impact on the environment and the community within the A303 corridor is very important to us. Our aim is to reduce any adverse effects while capturing the wider opportunities for improvement created by this scheme.

The area surrounding the A303 between Sparkford and Ilchester has a number of sensitive and valued environmental sites, as well as a number of dwellings and farm businesses. We have prepared a Preliminary Environmental Information (PEI) Report to help local people understand the potential environmental effects of our proposal. This is available on our website at www.highways.gov.uk/Sparkford-to-Ilchester.

Following this consultation, we will prepare an Environmental Statement setting out in full our assessment of the potential effects of the scheme on the environment, and our proposed mitigation and enhancement measures. We will also produce a Construction Environmental Management Plan of how the mitigation and enhancement measures will be incorporated into our construction stage. We will submit these as part of our Development Consent Order application.

More information about the potential environmental impact is available on page 17 of the consultation booklet.

A303 Sparkford to Ilchester Dualling Scheme

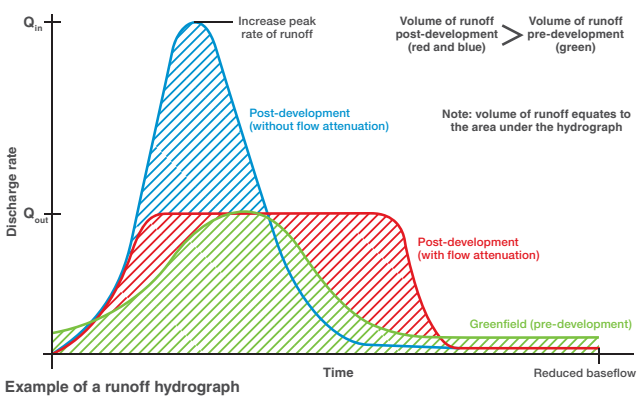
Highway drainage management

When rain falls on a natural landscape it soaks into the ground, evaporates, is taken up by plants (evapotranspiration) or some eventually finds its way into streams and rivers. This is often referred to as the Greenfield response.

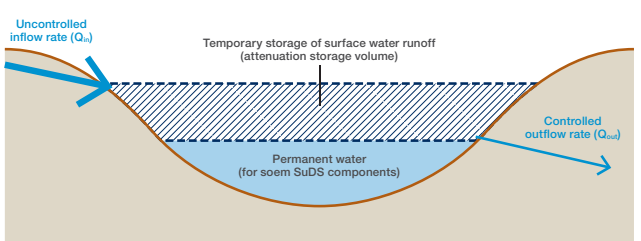
These stages of the water cycle can be impeded when land is altered by development. When rain falls on hard surfaces such as roads much more of it turns into surface water runoff, which can cause flooding, pollution and erosion problems.

To mitigate this, the highway drainage network will introduce Sustainable Drainage Systems (SuDS) to mimic the pre-developed Greenfield response to rainfall.

A study has found that the majority of the existing A303 carriageway between Sparkford and Illchester does not include SuDS features. As we plan to introduce these features where previously there were none, this will not only mitigate any impact from the development but should improve the current situation.



Example of a runoff hydrograph



Controlling runoff rates using attenuation storage

Provision for non-motorised users

We need to ensure that the design of the scheme allows people travelling on foot, bicycle or by horse to continue to get around the area. We have carried out surveys to identify the most frequently used walking, cycling and riding routes which would be affected by the proposals. As part of this, we have considered how people with disabilities currently get around the area. We have also engaged with a number of user groups to ensure we fully understand what is important to them and those that they represent.

Based on this, we have developed proposals for crossing points which use overbridges and underbridges to enable people to cross the road more safely than they do at present. For safety reasons, at no point will non-motorised users be able to cross directly on the dual carriageway.

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A303 Sparkford to Ilchester Dualling Scheme

Construction

We understand that local people will want to know the likely impact that constructing the scheme will have on their daily life, particularly in relation to traffic rat-running through local villages. A traffic management plan will be drawn up once the scheme proposals are finalised, together with a construction phase plan, detailing exactly how the works will be undertaken and how A303 and local traffic will be managed. In addition, we have appointed a specialist consultant to advise on how the scheme would be constructed and they have already attended site to understand some of the local constraints first hand.

Community and environmental impacts will be taken fully into account at all stages of the development, planning and decision-making process. That means working closely with local communities, local authorities, environmental bodies and major employers as work progresses in continuing the development of the scheme into the construction phase.

If development consent for the proposed scheme is granted, construction of the main works would be expected to commence in spring 2020 and continue for a period of approximately 2.5 years.

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A303 Sparkford to Ilchester Dualling Scheme

Tell us your views

This is the second stage of our consultation process and we would like to know what you think about our proposed scheme.

We will listen to your views and publish a consultation report which summarises your feedback and how it will be considered to inform the final design stage.

To help us with this, please complete a questionnaire which you can access online at our website www.highways.gov.uk/Sparkford-to-Ilchester

Paper copies of the questionnaire are available at this event, at public information points and can be requested from the project team by:

- Emailing: A303SparkfordtoIlchesterdualling@highwaysengland.co.uk
- Calling us on: 0300 123 5000
- Writing to us at: A303 Sparkford to Ilchester Project Team, Highways England, 2/07K Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6HA

Next steps

The consultation is your opportunity to give your views on our proposal. If you have further questions or would like to find out more, speak to a member of the project team here at the exhibition event, or visit our website.

The public consultation will run from Friday 26 January until 23.59 on Friday 9 March 2018 (inclusive). Please get involved and provide your responses by the closing date.

We will analyse your feedback, consider all suggestions made, and respond to it in the report we prepare on the consultation. Your views will help the Secretary of State for Transport make a decision on our application.

The Development Consent Order application process

This scheme is classified as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008. Because of its national significance, the scheme needs a Development Consent Order or DCO.

Following this public consultation, we will carefully consider all comments received before submitting our DCO application.

If the application is accepted by the Planning Inspectorate, there will then be an examination of the application in which the public can participate. This examination will take a maximum of 6 months. The Planning Inspectorate then has 3 months to make a recommendation to the Secretary of State, who then has a further 3 months to make a final decision.

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A303 Sparkford to Ilchester Dualling Scheme

We want to hear your views

Public consultation
26 January to 9 March 2018

Highways England is proposing to upgrade the A303 between Sparkford and Ilchester. This improvement is needed to relieve congestion and improve the safety performance of one of the busiest stretches of the A303/A358 route corridor.

You can see our plans, speak to the project team and give us your views at the following events:

Queen Camel Memorial Hall, High St, Queen Camel, Yeovil, BA22 7NF
Saturday 3 February 2018 10:00 – 18:00

Fleet Air Arm Museum, RNAS Yeovilton, Yeovilton, Ilchester, BA22 8HT
Monday 5 February 2018 14:00 – 20:00

The Davis Hall, Howell Hill, West Camel, Yeovil, BA22 7QX
Friday 9 February 2018 14:00 – 20:00

Huish Park Stadium, Lufton Way, Yeovil, BA22 8YF
Thursday 15 February 2018 14:00 – 20:00

All consultation information, including the consultation brochure and questionnaire, can also be found on our scheme webpage.

For further details, visit: **www.highways.gov.uk/Sparkford-to-Ilchester** or call **0300 123 5000**

A303 Sparkford to Ilchester Dualling Scheme

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For further details, visit: **www.highways.gov.uk/Sparkford-to-Ilchester** or call **0300 123 5000**

Our ref: HE551507-MMSJV-VSS-000-CO-ZH-0031

Key stakeholders

<Name>
<Address 1>
<Address 2>
<Address 3>
<Address 4>
<Postcode>

Tom Roberts
Project Manager
2/07K Temple Quay House
2 The Square
Temple Quay
Bristol BS1 6HA

Enquiries: 0300 123 5000

DATE

Dear <name>

A303 Sparkford to Ilchester Dualling scheme statutory consultation

During spring 2017, Highways England undertook a non-statutory consultation on 2 route options for upgrading the A303 between Sparkford and Ilchester. This process informed our decision of preferred route which we announced in October 2017, the details of which can be found on our website **www.highways.gov.uk/Sparkford-to-Ilchester** .

We are now progressing positively with the scheme, and will undertake a statutory public consultation on the proposed A303 Sparkford to Ilchester Dualling scheme. This is the final consultation before we submit a Development Consent Order (DCO) to the Planning Inspectorate. The statutory consultation will run from **26 January 2018 until 9 March 2018 (inclusive).**

Before a series of public and landholder events take place, we will be hosting a consultation preview event which offers you the opportunity to meet with the project team and learn more about the proposals. The event will take place at **Haynes International Motor Museum, Sparkford, Yeovil BA22 7LH** on **25 January 2018 from 18:30 – 21:30.**

We would be grateful if you could let us know whether you would be able to attend by emailing A303SparkfordtoIlchesterdualling@highwaysengland.co.uk or calling 0300 123 5000.

Public information events
We are also holding the following public information events:

Address	Date and Time
Queen Camel Memorial Hall, High St, Queen Camel, Yeovil, BA22 7NF	Saturday 3 February 2018 10:00 – 18:00
Fleet Air Arm Museum, RNAS Yeovilton, Yeovilton, Ilchester, BA22 8HT	Monday 5 February 2018 14:00 – 20:00
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Huish Park Stadium, Lufton Way, Yeovil BA22 8YF	Thursday 15 February 2018 14:00 – 20:00

Public information points
Consultation materials and feedback forms will also be available to view and complete from 26 January 2018 until 9 March 2018 during normal opening hours at the following places:

Public information points	
Wincanton Library, 7 Carrington Way, Wincanton, Somerset, BA9 9JS	Somerset County Council, County Hall, Taunton, Somerset TA1 4DY
Yeovil Library, King George Street, Yeovil, Somerset, BA20 1PY	South Somerset District Council, Brympton Way, Yeovil, BA20 2HT
South Petherton Library, St. James Street, South Petherton, Somerset, TA13 5BS	Talltrees Community Centre, 4 Taranto Hill, Ilchester, Yeovil BA22 8JP
Taunton Library, Paul Street, Taunton, Somerset, TA1 3XZ	Martock Library, The Shopping Centre, Martock, Somerset, TA12 6DL

Share your views
There are other ways you can provide feedback during the statutory consultation including:

- Contact us via telephone or email to request a consultation brochure and feedback form. This includes a Freepost address to return your forms at no cost to you.
- Visit the scheme website and complete the online feedback form at: www.highways.gov.uk/Sparkford-to-Ilchester

If you have any further questions that you feel are not addressed as part of this consultation please email us at: A303SparkfordtoIlchesterdualling@highwaysengland.co.uk

Yours sincerely

Tom Roberts
Project Manager, A303 Sparkford to Ilchester Dualling
Email: A303SparkfordtoIlchesterdualling@highwaysengland.co.uk
Tel: 0300 123 5000

Our ref: HE551507-MMSJV-VSS-000-CO-ZH-0032

S47 consultees

<Name>
<Address 1>
<Address 2>
<Address 3>
<Address 4>
<Postcode>

Tom Roberts
Project Manager
2/07K Temple Quay House
2 The Square
Temple Quay
Bristol BS1 6HA

Enquiries: 0300 123 5000

DATE

Dear Occupier,

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We are now undertaking a statutory public consultation on the proposed A303 Sparkford to Ilchester Dualling scheme. This is the final consultation before we submit a Development Consent Order (DCO) to the Planning Inspectorate.

The statutory consultation will run from **26 January 2018 until 9 March 2018 (inclusive)** and you can take part in the following ways:

Go to a public information event
Meet the project team and view the proposed route at the following events:

Address	Date and Time
Queen Camel Memorial Hall, High St, Queen Camel, Yeovil, BA22 7NF	Saturday 3 February 2018 10:00 – 18:00
Fleet Air Arm Museum, RNAS Yeovilton, Yeovilton, Ilchester, BA22 8HT	Monday 5 February 2018 14:00 – 20:00
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Yours sincerely

Tom Roberts
Project Manager, A303 Sparkford to Ilchester Dualling
Email: A303SparkfordtoIlchesterdualling@highwaysengland.co.uk
Tel: 0300 123 5000

Our ref: HE551507-MMSJV-VSS-000-CO-ZH-0033

Tom Roberts
Project Manager
2/07K Temple Quay House
2 The Square
Temple Quay
Bristol BS1 6HA

Enquiries: 0300 123 5000

<Name>
<Address 1>
<Address 2>
<Address 3>
<Address 4>
<Postcode>

12 January 2018

Dear <name>

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We are now undertaking a statutory public consultation on the proposed A303 Sparkford to Ilchester Dualling scheme. This is the final consultation before we submit a Development Consent Order (DCO) to the Planning Inspectorate. The statutory consultation will run from **26 January 2018 until 9 March 2018 (inclusive)**.

We have previously been in touch with you about your interest in land or property in the area of the scheme, and wanted to offer you a further opportunity to meet with us to discuss the project. To arrange an individual 45-minute appointment, please contact us by telephone on 0300 123 5000 or by email: A303SparkfordtoIlchesterdualling@highwaysengland.co.uk with your preferred date and time from the options below:

Address	Date and Time
Haynes International Motor Museum, Sparkford, Yeovil BA22 7LH	Tuesday 30 January 2018 11:00 – 19:00
Sparkford Hall, Yeovil BA22 7LD	Wednesday 31 January 2018 11:00 – 19:00

Public information events
Alternatively, you are welcome to meet the project team and view the proposed route at the following public information events:

Address	Date and Time
Queen Camel Memorial Hall, High St, Queen Camel, Yeovil, BA22 7NF	Saturday 3 February 2018 10:00 – 18:00
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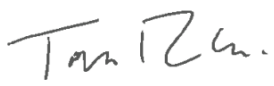
If you have any further questions that you feel are not addressed as part of this consultation please email us at: A303SparkfordtoIlchesterdualling@highwaysengland.co.uk

Yours sincerely



Tom Roberts
Project Manager, A303 Sparkford to Ilchester Dualling
Email: A303SparkfordtoIlchesterdualling@highwaysengland.co.uk
Tel: 0300 123 5000

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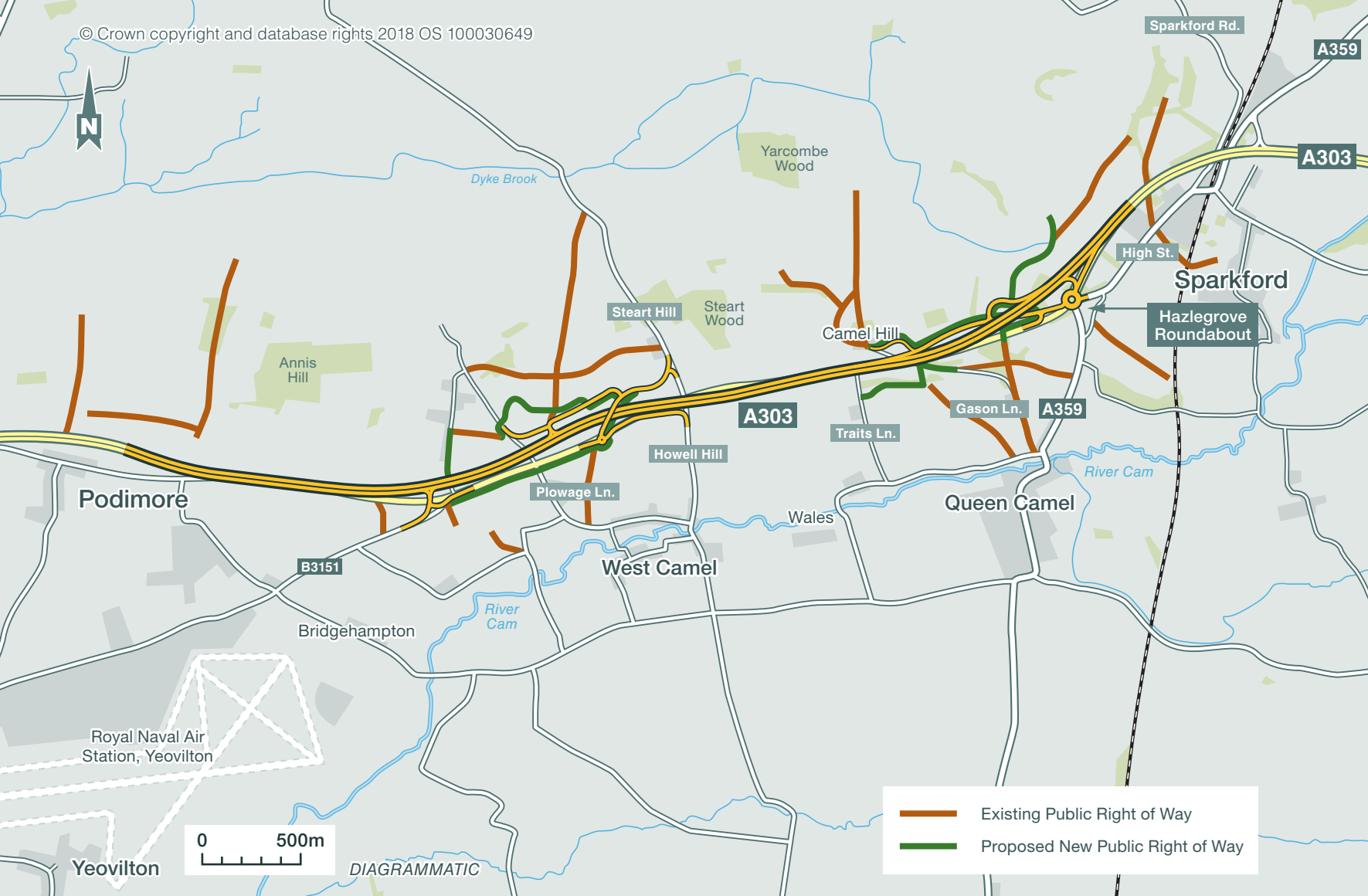

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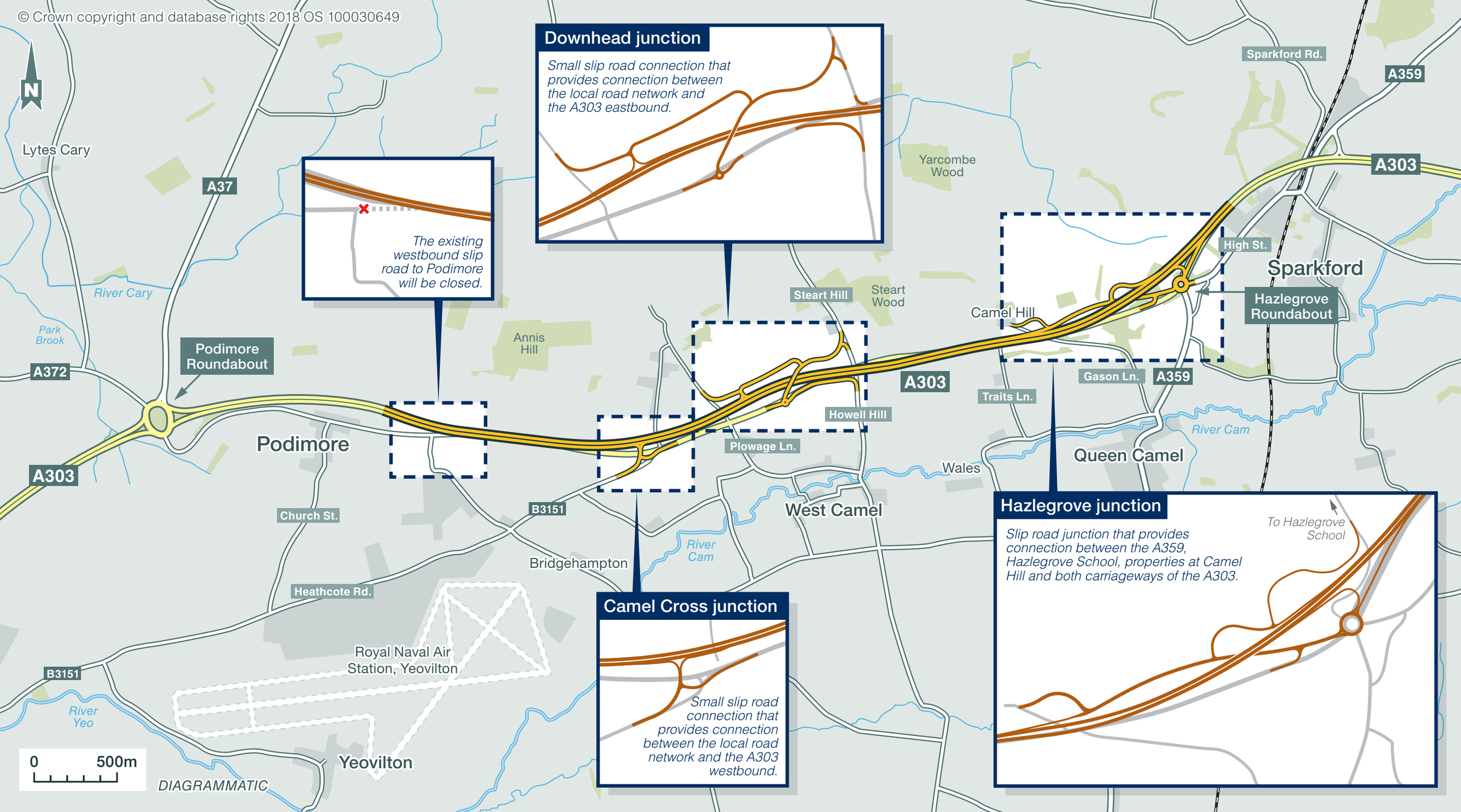

A303
Sparkford to Ilchester
Dualling Scheme

Preliminary Environmental Information
– Non-Technical Summary

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1 Introduction

A Preliminary Environmental Information report has been prepared as part of the Environmental Impact Assessment for the proposed A303 Sparkford to Ilchester Dualling scheme (the scheme). The aim of the report is to provide information on the Environmental Impact Assessment undertaken to date, that is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development. The Preliminary Environmental Information report is required to meet the statutory requirements of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 for the publication and consultation on preliminary environmental information.

This document provides a summary of the Preliminary Environmental Information report and is called the Non-Technical Summary. Further details are contained within the Preliminary Environmental Information report, available at: www.highways.gov.uk/Sparkford-to-Ilchester.

It should be noted that the scheme design is currently being developed and the process of gathering information and identifying how the environment might be affected by the scheme is still underway. The information contained within this document is therefore preliminary only, and the significance of effects remain 'likely' and may change in light of further information and assessment work.

1.1 Scope and content of the Preliminary Environmental Information report

The scheme meets the criteria to be considered as a Nationally Significant Infrastructure Project under the Planning Act 2008 (the Act) and The Highway and Railway (Nationally Significant Infrastructure Project) Order 2013. The scheme is a 'highways' Nationally Significant Infrastructure Project under section 22(5) of the Act (as amended) as it is an alteration of a highway that is wholly within England, where the Secretary of State is the highway authority and the alteration of the highway will be greater than 12.5 hectares.

As the scheme is a Nationally Significant Infrastructure Project, Highways England is required to make an application for a Development Consent Order (DCO) to the Planning Inspectorate. If granted, the DCO will provide the necessary authorisation to allow the scheme to be constructed.

The scheme is classified as an Environmental Impact Assessment development. Therefore, as part of the Environmental Impact Assessment process, a Preliminary Environmental Information report has been prepared to inform the consultation with the public and other stakeholders about the proposed scheme and likely significant environmental effects. An Environmental Statement will then be prepared to accompany the DCO application. The Environmental Statement will report the Environmental Impact Assessment for the scheme, including a description of the likely significant effects of the proposed development on the environment.

The Preliminary Environmental Information report is arranged into different topic chapters, which reflect those which will be used for the Environmental Statement, as follows:

- air quality (see section 2.1)
- cultural heritage (see section 2.2)
- landscape (see section 2.3)
- biodiversity (see section 2.4)
- geology and soils (see section 2.5)
- materials (see section 2.6)
- noise and vibration (see section 2.7)
- people and communities (see section 2.8)
- road drainage and water environment (see section 2.9)
- climate (see section 2.10)
- combined and cumulative effects (see section 2.11)

Each environmental topic chapter within the Preliminary Environmental Information report describes the local environment, and identifies any sensitive receptors such as designated sites, for example Sites of Special Scientific Interest, Conservation Areas or Noise Important Areas. Baseline environmental surveys that have been carried out for each topic are described, along with details of consultation with environmental stakeholders such as local authorities, Historic England, Natural England and the Environment Agency. Any likely impacts of the scheme on the local environment are then described.

1.2 Scheme proposals

The scheme is to provide a continuous dual-carriageway on the A303 linking the Podimore Bypass and the Sparkford Bypass. The scheme will involve the removal of at-grade junctions and direct accesses. Any new junctions include free-flowing merging and diverging slip roads, allowing the A303 to be free flowing and continuous.

The section of the A303 that is to be upgraded is approximately 6 kilometres (3.7 miles) long. The approximate footprint of the scheme is anticipated to be approximately 60 hectares, once open to traffic.

1.3 Description of the scheme

The scheme is located between the town of Sparkford, and the village of Podimore in the South Somerset district of Somerset. It follows the existing corridor of the A303 very closely (see Figure 1-1), although in some places it has been deliberately aligned just to the side of the existing carriageway to allow re-use of the existing route for local access, to avoid property or facilitate construction. At its maximum offset, the route is typically 100 metres either north or south of the existing A303.

At its western limits the route ties in with the existing dual carriageway A303 Podimore Bypass. Travelling eastwards, the route initially follows the existing A303 closely until the B3151 before moving north of the existing carriageway and rising up just to the south of Downhead before crossing over the existing A303 at Conegore Corner. This passes very close to the Noise Important Area at the West Camel Methodist Church (shown on the environmental constraints plan contained within appendix A). The route then takes a southerly alignment briefly before meeting up with the existing road again to pass between a Scheduled Monument and a Ministry of Defence signal station at the crest of Camel Hill. Finally, the route then bypasses the existing Hazlegrove

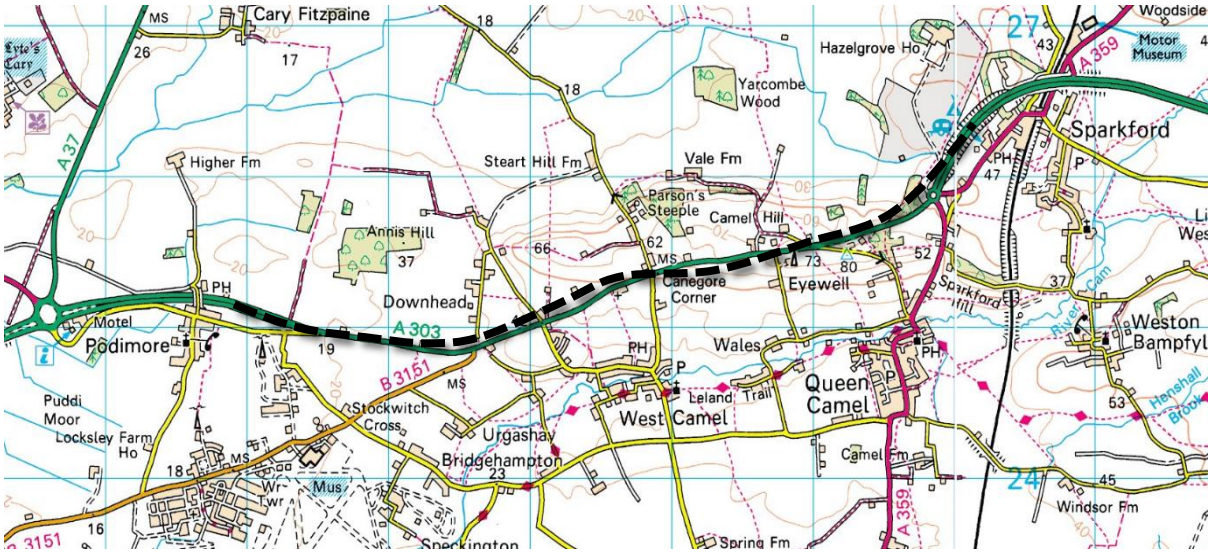
Roundabout to the north through the Registered Park and Garden associated with Hazlegrove House before tieing into the existing A303 north of Sparkford Village.

A new grade-separated junction would be provided within the vicinity of the Hazlegrove roundabout, and an all-movements junction in the vicinity of Downhead Lane. In addition, an overbridge is proposed in the vicinity of Conegore Corner, and the existing westbound slip road to Podimore village will be closed. The junction and local road designs are still evolving. Further details are contained in chapter 2 of the Preliminary Environmental Information report.

As part of the scheme, the construction phase is likely to require temporary traffic management areas, temporary working and storage areas, material stockpiles, construction compounds and haul routes, as well as enabling works including utility diversions and vegetation clearance works. Further construction information is provided within chapter 2 of the Preliminary Environmental Information report. A detailed construction strategy will be developed for inclusion within the Environmental Statement.

The full extents of the application site (the red line boundary) are shown on the environmental constraints plan which is provided in appendix A of this Non-Technical Summary. This includes temporary areas required for the construction of the scheme, such as construction compounds and haul routes.

Figure 1-1**:** Scheme extents



1.4 Objectives of the scheme

The objectives for the scheme are:

- **Capacity –** reduce delays and queues that occur during peak hours and at seasonal times of the year
- **Safety –** improve safety for all users of the A303 between Sparkford and Ilchester, as well as the wider A303 / A358 corridor
- **Support economic growth –** facilitate growth in jobs and housing by providing a free-flowing and reliable connection between the south east and the south west
- **Environment –** avoid unacceptable impacts on the surrounding natural and historic environment and landscape and optimise opportunities for enhancement
- **Local communities –** reduce community severance and promote opportunities for improving their quality of life
- **Connectivity –** improve the connectivity of the south west to the rest of the UK and improve business and growth prospects
- **Resilience –** improve journey time reliability and resilience, and provide extra capacity to make it easier to manage traffic when incidents occur

1.5 Alternatives

Several potential options for the scheme have been considered and consulted on previously prior to the announcement of the preferred route in October 2017. The design of the scheme has evolved through consideration of a number of highway arrangement options against economic, social and environmental data. The preferred route was chosen as it reduces land take and loss of valuable countryside and wildlife, reduces construction in an unspoilt rural setting as the route follows the existing corridor very closely, is preferred by the people that took part in the previous consultation, and will provide better journey time.

Further information on the previous options considered is contained within chapter 3 of the Preliminary Environmental Information report.

1.6 Consultation to date

Highways England has worked closely with local authorities, environmental bodies and other stakeholders such as the local community, landowners, business owners, tenants and people with other land interests located within or around the scheme area, in order to better understand local concerns and consider how to reduce environmental effects through carefully considered design.

A 6 week public consultation was held between 14 February and 29 March 2017. The public consultation presented the 2 shortlisted route options and requested feedback from all interested parties. A total of 1,237 responses were received to the consultation. Highways England analysed all responses before selecting the preferred route, which was announced on the 24 October 2017.

An Environmental Impact Assessment Scoping Report and request for a Scoping Opinion on the scope of the Environmental Impact Assessment to be undertaken for the scheme, was submitted to the Planning Inspectorate on 27 November 2017. The Planning Inspectorate have 42 days to respond to the Environmental Impact Assessment Scoping Report, in the form of the adoption of a Scoping Opinion. The Planning Inspectorate's Scoping Opinion is informed by responses from consultation bodies to the Environmental Impact Assessment Scoping Report.

Prior to receipt of the Scoping Opinion, consultation has been undertaken with South Somerset District Council, Environment Agency, South West Heritage Trust, Historic England, Natural England, National Trust and The Gardens Trust. Further consultation will be undertaken with these bodies with appropriate actions taken following the receipt of the Scoping Opinion.

2 Potential environmental effects

The environmental constraints within the vicinity of the scheme are shown on the drawing contained in appendix A.

2.1 Air quality

The scheme has the potential to cause changes to both local air quality and regional air quality during the construction and operation phases.

The construction of the main works are expected to last approximately 2.5 years, and could affect local air quality through the generation and subsequent deposition of construction dust arising from construction activities and vehicle movements. At this stage, it is not known where the site compound would be located and therefore only the construction boundary associated with the new scheme alignments in relation to sensitive receptors (aspects of the environment that can be affected through changes in the environment as a result of a scheme, e.g. residential properties and Sites of Special Scientific Interest) has been assessed. Well established industry best practice controls would be implemented during the construction as part of the Construction Environmental Management Plan, such as all vehicles to maintain a low speed limit on site to reduce the generation of dust. These measures would reduce the impact of emissions on residents and the local area and prevent nuisance to residents. With these mitigation measures in place, air quality effects from the construction phase are not expected to be significant.

During the operational phase key traffic related pollutants have been predicted at a number of human and ecological receptors within the surrounding area. For human health and wellbeing effects the predicted change in traffic related pollutants would not be significantly adverse, and no additional mitigation measures are required. For the nearby ecological receptors, the assessment identified a potential risk of an adverse effect at the Stockton Wood and Down Site of Special Scientific Interest. Therefore, further assessment will be undertaken to assess the potential changes in nitrogen deposition at this designated site to determine the overall significance of effect of the scheme.

There would be an increase in the number of vehicles travelling along the A303 and this is predicted to cause small changes in regional emissions during operation. Compared to national emissions the increase has been considered as small therefore effects have been assigned as being Not Significant Adverse.

In 2002-03, South Somerset District Council declared an Air Quality Management Area in Yeovil due to monitored and modelled exceedances of the nitrogen dioxide annual mean air quality objective. The Yeovil Air Quality Management Area is located approximately 4.5 miles south of the scheme. Changes in traffic characteristics that may lead to a significant air quality effect are not expected to occur within Yeovil. On this basis, the scheme is not expected to have an effect on the Yeovil Air Quality Management Area in the opening year. Further information is contained within chapter 5 of the Preliminary Environmental Information report.

2.2 Cultural heritage

There are several heritage assets which could potentially be adversely affected by the scheme, either directly through loss or damage during construction or indirectly through adverse effects on the setting and / or amenity value of assets. These heritage assets are shown on the environmental constraints plan contained in appendix A, and include a Scheduled Monument to the north of the existing A303 at Camel Hill Farm, Hazlegrove House (Grade II Listed) Registered Park and Garden, and numerous Grade I, Grade II and Grade II* Listed Buildings. In addition, the archaeological survey and investigation, as well as the archaeological aerial survey and appraisal undertaken, has demonstrated that there is high potential for archaeological remains spanning the prehistoric period to WWII within the study area.

Based on currently known information, the potential for encountering or affecting the different heritage assets is considered to vary substantially between different locations within the study area. During construction, it is currently considered that the overall significance of effects on designated heritage assets would be Moderate / Large Adverse due to the impact upon the setting of these assets. During operation, this would reduce to Slight Adverse once screening planting has matured. The overall significance of effects on buried archaeology during construction would be Moderate Adverse, reducing to Neutral during operation once archaeological investigations and recording are complete.

Further assessment to fully understand the likely effects and to enable to development of detailed mitigation strategies is underway. A detailed heritage desk-based assessment is currently being undertaken which includes targeted cartographic and documentary research, as well as more in-depth analysis of the Historic Environment Record and a detailed analysis of previous disturbance along the route. The assessment will help to highlight additional areas with the potential for buried archaeology, or conversely may demonstrate areas with a reduced potential for buried archaeology due to disturbance from the modern era. The setting of designated assets would be considered in this assessment, and detailed site visits and photography will be undertaken. The assessment of setting would be used to enable appropriate mitigation to be designed and to identify any residual significant effects on the setting of heritage assets from the scheme. A specific Conservation Management Plan will also be developed for the Hazlegrove House (Grade II Listed) Registered Park and Garden, which will inform the design and mitigation in this area as well as identifying appropriate enhancements to the park.

An archaeological geophysical survey was undertaken in December 2017 and January 2018. This may be followed by targeted archaeological evaluation trenching. The surveys would inform mitigation, in the form of final scheme design choices and landscaping, and can help establish pre-construction archaeological investigation strategies. Information relating to these aspects will be included as part of the Environmental Statement, to be submitted as part of the DCO application.

Further information is contained within chapter 6 of the Preliminary Environmental Information report.

2.3 Landscape

There are 2 Conservation Areas (Queen Camel and West Camel) within 1 kilometre of the scheme, and the scheme also lies within National Character Area 140 Yeovil Scarplands. Visual receptors include residential properties, public rights of way, schools, recreational facilities, and several elevated views.

Despite the presence of the existing A303 within the landscape, there is potential for the scheme to lead to a reduction in the quality of local landscape character, particularly during the construction phase when additional machinery and materials would exacerbate the presence of a new feature in the landscape. Large scale construction works, construction traffic, construction machinery and site compounds would all be visible, forming new additions within the landscape and views afforded by local visual receptors.

The eastern end of the route would have a direct effect upon the designated Hazlegrove House (Grade II Listed) Registered Park and Garden, with views likely from elevated positions towards the scheme in the south. Given the sensitivity and proximity of a number of nearby receptors there are likely to be significant adverse effects upon landscape character and visual amenity during construction, whilst other receptors would be affected to a lesser degree. Best practice mitigation measures would be implemented as part of the Construction Environmental Management Plan to ensure adverse effects are reduced as much as possible, such as keeping a well ordered and tidy site, and limiting works to daylight hours in the most part, with any night works to be kept to a minimum.

Once operational, the scheme would be visible from local visual receptors such as residential properties and public rights of way, including those within villages to the south at West Camel and Queen Camel which are designated Conservation Areas. Views would be limited in some areas where the route would be in a cutting below the level of the ground either side of the carriageway, helping to hide the road. Screening planting would also help to conceal the new road, so that by year 15 after opening, it is considered that on balance there would be a Slight Adverse effect for both landscape character and the effects to visual receptors. Additional mitigation such as keeping street lighting columns to a reduced height and using directional lanterns will help to reduce impacts on nearby properties and the wider night sky. Further information is contained within chapter 7 of the Preliminary Environmental Information report.

The Environmental Statement will further address the landscape character and receptors, identifying likely changes in the view for each receptor, the magnitude of change experienced and the resulting significance of effect during construction.

2.4 Biodiversity

Ecological designations within the vicinity of the scheme include 15 Local Wildlife Sites, and a Site of Special Scientific Interest (Sparkford Wood) located 1.3 kilometres (0.8 miles) north east of the scheme. There are 3 Special Areas of Conservation designated for bat populations within 30 kilometres (18.6 miles) of the scheme. These are shown within appendix A. There are valuable habitats and species of nature conservation importance present which could be affected by the scheme. Habitats present include ancient woodland, broad-leaved semi-natural woodland, species-rich hedgerows, and

calcareous grassland. Protected species present on site include bats, great crested newts, reptiles and badgers. Ecological surveys have been undertaken throughout 2017 and are on-going. These surveys and the associated on-going ecological impact assessment will help identify mitigation measures to reduce the magnitude of impacts through the development of a sensitive design and associated ecological and landscape master plan, and construction methodologies, which will safeguard the conservation status of populations through both the construction and operational phases.

A number of measures have been recommended to guide the design process and identify mitigation requirements for both the construction and operation stages of the scheme. However, these measures are not an exhaustive list and are likely to require a review following the completion of the survey and design work, and with the aid of ongoing consultation advice from Natural England. Best practice construction measures implemented through the Construction Environmental Management Plan, such as the sensitive timing of works to avoid breeding seasons, directional and low-level lighting, and the sensitive location of construction machinery with all vehicles switching off engines when stationary, would ensure that adverse effects are reduced as far as practicable. With these measures in place, and at this stage in the development of the scheme and ecological impact assessment, the overall significance of effect for biodiversity features is considered to be Slight Adverse during construction. This is due to the residual disturbance to protected species and the loss of habitats from vegetation clearance. Once operational, mitigation measures including the creation of replacement habitat for great crested newts and reptiles, planting of new hedgerows, trees and scrub and the provision of mammal underpasses where required would result in a Neutral effect.

This conclusion is informed by the surveys undertaken throughout 2017 and predicated on appropriate habitat enhancement and creation being included in the ecological and landscape master plan. The assessment is ongoing, with the full assessment results to be presented within the Environmental Statement. Further information is contained within Chapter 8 of the Preliminary Environmental Information report.

2.5 Geology and soils

There are 2 Local Geological Sites located within 1 kilometre (0.6 miles) of the scheme (see appendix A). The completed scheme would not result in direct effects upon geology and soils once open to traffic, and it is subsequently considered that there are no significant adverse effects on geology or soils for the operational scheme. However, there is the potential for adverse effects on geology and soils related receptors from the proposed scheme during construction, including encountering contaminated materials within landfills / made ground during construction, mobilisation of contaminants and generation of contaminant transport pathways from site activities. Appropriate mitigation measures to limit or potentially completely remove these effects will be included as part of the Construction Environmental Management Plan to ensure adverse effects are reduced as far as possible. This mitigation is outlined in chapter 9 of the Preliminary Environmental Information report and includes measures designed to:

- protect soil structure and quality
- minimise waste generation
- protect controlled waters from both general site works and foundation works
- manage construction machinery and materials

- manage excavations and dewatering

The final mitigation measures set out in the Environmental Statement will be sufficient so that all identified effects to receptors are reduced as much as is reasonably practicable, within the constraints of the proposed scheme and in accordance with all applicable legislation.

2.6 Materials

There are a number of British Geological Survey Mineral Sites in close proximity to the current A303, as well as a Mineral Safeguarding Site, and several landfills. There is potential for significant effects due to material usage and waste arisings during construction of the scheme. Through reusing soil materials onsite wherever possible, there would be a reduction in materials required and wastes produced. In addition, materials to be used onsite would, where practicable, contain high proportions of recycled content. However, the proposed scheme would generate waste during construction which would need to be appropriately managed. To do this, a Site Waste Management Plan will be prepared for construction, which will consider the sourcing, transport, and use and disposal of waste materials in a sustainable manner. A Materials Management Plan will also be produced for the earthworks. This would ensure that excavated and imported materials comply with an earthworks specification which will ensure that the geotechnical and chemical composition is acceptable before being used on-site during construction.

The current assessment concludes that the quantity of material resources required to construct the scheme would be significant. Further assessment for material resources will be undertaken and presented within the Environmental Statement, based on further construction information and the final design. Due to the nature of the scheme, effects associated with materials and waste during operation are anticipated to be Neutral, as it is anticipated that there would be minimal requirement for material resources and minimal waste generation, besides infrequent maintenance activities.

2.7 Noise and vibration

There are 2 Noise Important Areas located within the footprint of the scheme on the existing A303 just to the east of Camel Cross and approximately 1.5 kilometres (0.9 miles) to the west of Howell Lane. The assessment of noise and vibration effects completed to date shows that the construction and operation of the scheme has the potential to give rise to both temporary and permanent noise and vibration at the sensitive receptors in the area. With best practice mitigation measures in place during construction which will be designed to reduce and screen noise from construction machinery and vehicles, this effect is considered to be on-balance Not Significant Adverse. Mitigation measures may include the selection of the most appropriate construction method and construction machinery / vehicles for the job, adequate maintenance of construction equipment, the position of stationary construction machinery with respect to sensitive noise receptors, local noise screening and the education of the workforce. Restrictions may also be placed on early / late delivery times.

Mitigation in the form of noise fences or noise bunds where required are being incorporated as part of the ongoing scheme design development. These measures,

along with low noise road surfacing will help to reduce the level of noise from road traffic once the road is open. An overall Not Significant Adverse effect is therefore predicted during operation.

Further information is contained within chapter 11 of the Preliminary Environmental Information report.

2.8 People and communities

Potential effects associated with the proposed scheme upon people and communities including non-motorised users, amenity, severance, agricultural land, demolition of private property and associated land take, motorised travellers' views from the road and driver stress have been provisionally assessed. At this stage it is expected that there would be an overall Slight Adverse effect on people and communities during construction, due to the disturbance caused from the presence of construction machinery, temporary traffic management and associated delays. Construction stage effects for road users, pedestrian, cyclists and equestrians would be managed through the implementation of a Construction Environmental Management Plan and Community Relations Strategy, as well as the implementation of a Traffic Management Plan. These would ensure that construction is undertaken in a sensitive and considerate manner, with regards to people within the local community.

Once the scheme is operational, it is anticipated that there would be some benefits for non-motorised users through the provision of new facilities and safer access, although there may be some increase to journey times. Early consultation with Rights of Way Officers has been held, which has aided the further development of mitigation and enhancement opportunities for non- motorised users. This consultation is ongoing, and will further inform the design as it progresses.

Further detailed assessment for impacts upon private property and land will be carried out for the Environmental Statement. This will inform the final assessment of likely significance for people and communities. Additional information regarding the assessment undertaken to date is contained within chapter 12 of the Preliminary Environmental Information report.

2.9 Road drainage and the water environment

There are 2 Water Framework Directive (WFD) waterbodies in the vicinity of the scheme. These are 'The Cary – source to confluence with King Sedgemoor Drain' which runs to the north of the scheme, and 'The Cam – Lower', located approximately 650 metres of the south of the scheme. There are areas of Flood Zones 3 and 2 to the north and south of the scheme, mainly associated with the Dyke Brook and River Cam. No likely significant effects on the water environment have been identified once the scheme is open to traffic. This is because the scheme is not located within a flood zone, and because sustainable drainage systems and pollution control measures will be incorporated within the drainage design. Sustainable drainage systems will manage and reduce the likelihood of flooding outside of the scheme and provide protection to surrounding watercourses from road run-off. However, a Flood Risk Assessment will be prepared to support the DCO application, which will be used to demonstrate that there is no increased flood risk as a result of the road being built, and to help further develop appropriate mitigation and the drainage design to ensure that is the case.

Best practice construction measures will also be included in the Construction Environmental Management Plan to ensure that there is no risk of pollution during the construction stage. Mitigation measures will include the storage of liquids, soils and powders appropriately away from drains and waters, and in secondary containment, in accordance with guidance provided by the Construction Industry Research and Information Association.

Further information is contained within chapter 13 of the Preliminary Environmental Information report.

2.10 Climate

The effects of the scheme upon climate have been provisionally assessed, taking into account the greenhouse gases emitted through the materials used to construct the scheme, the greenhouse gases and carbon dioxide emitted during the life-time of the scheme, and the vulnerability of the scheme to climate change.

At this stage, it is anticipated that due to the quantity of materials required for the scheme, further assessment of the construction stage would be required using the Highways England Carbon Tool in conjunction with the Carbon Reduction Hierarchy to analyse the effect that the scheme has on the climate from construction stage emissions. This will be presented within the Environmental Statement. During operation, effects on climate are likely to result due to vehicle emissions from traffic using the road. This will be explored further as part of the assessment contained within the Environmental Statement.

In terms of the scheme's vulnerability to climate, during construction, Neutral effects are anticipated since it is not expected that substantial changes to climate will occur over the 2.5 year construction period. Mitigation measures within the Construction Environmental Management Plan, such as ensuring construction materials are covered when stored, and pro-active planning for extreme weather events, will reduce any adverse effects during construction. During scheme operation, there is the potential for scheme assets and environmental receptors to be affected by changes in climate such as from increased number of extreme weather events, hotter summers and wetter winters. This may result in changes to the maintenance of assets such as signs and signals, drainage systems and landscape planting. Whilst it is not currently considered that these effects are likely to be significant, the impact of this will be looked at in more detail for the Environmental Statement. Further information is contained within chapter 14 of the Preliminary Environmental Information report.

2.11 Combined and cumulative effects

Combined effects result when several individual effects from a scheme have a combined effect on a receptor. Cumulative effects result when several developments together have a cumulative effect on a receptor.

The combined assessment has brought together the provisional findings of each of the topic chapters in order to identify and assess the combined effects of the scheme, and has been presented within the Preliminary Environmental Information report. At present, the residual combined effect during construction and operation is anticipated to be Not Significant Adverse, with the implementation of the mitigation measures included in the individual discipline chapters.

The cumulative effects of the scheme in association with other existing or future major developments in the study area has also been assessed. The list of developments includes 1 mixed use development site in Sparkford (Former Haynes Publishing Site, planning application reference 16/00725/OUT), and 1 residential development in Ilchester (Land North of Troubridge Park, planning application reference 15/00024/OUT). Currently, the residual cumulative effects during construction as a result of all of the 'other developments' being implemented at the same time as the scheme would be anticipated to be Not Significant Adverse, as none of the other developments assessed have reported significant adverse effects. During operation, residual cumulative effects for the scheme would be anticipated to be Not Significant Adverse, as none of the other developments assessed have reported significant adverse effects.

Further detailed assessment of the combined and cumulative effects will be required as the scheme develops, to be presented as part of the Environmental Statement. The list of proposed developments to be included within the cumulative effects assessment will be reviewed and developed with South Somerset District Council's Planning Team to ensure that all necessary developments are captured as part of the assessment, and to ensure that construction start dates and lengths are fully understood. Further information is contained within chapter 15 of the Preliminary Environmental Information report.

3 Public Consultation

3.1 Public Consultation

Highways England wishes to obtain the views of the public on the proposed scheme during the consultation period, 26 January to 9 March 2018. These views will be taken into account in finalising the design, refining the Environmental Impact Assessment and preparing the Environmental Statement. Responses can relate to the environmental information set out in the Preliminary Environmental Information report or to any other aspect of the proposed scheme.

The following methods can be used to contact Highways England and / or respond to the consultation:

- Attend a public consultation exhibition to meet the project team and complete a consultation questionnaire
- Complete the consultation questionnaire online at: www.highways.gov.uk/Sparkford-to-Ilchester
- Collect a consultation questionnaire at 1 of the public viewing places (see list below) and return by post or by e-mail:
  - Address: A303 Sparkford to Ilchester Project Team, Highways England, 2/07k Temple Quay House,2 The Square, Temple Quay, Bristol, BS1 6HA
  - Email: mailto:A303SparkfordtoIlchesterDualling@highwaysengland.co.uk
- Call Highways England on 0300 123 5000 (9am to 5pm, Monday to Friday).

Consultation material explaining the proposal will also be available to view from 26 January to 9 March at the following community locations:

- **Wincanton Library**, 7 Carrington Way, Wincanton, Somerset, BA9 9JS
- **Yeovil Library**, King George Street, Yeovil, Somerset, BA20 1PYZ
- **South Petherton Library**, St. James Street, South Petherton, Somerset, TA13 5BS
- **Taunton Library**, Paul Street, Taunton, Somerset, TA1 3XZ
- **Somerset County Council**, County Hall, Taunton, Somerset, TA1 4DY
- **Martock Library**, The Shopping Centre, Martock, Somerset, TA12 6DL
- **South Somerset District Council**, Brympton Way, Yeovil, Somerset, BA20 2HT
- **Talltrees Community Centre**, 4 Taranto Hill, Ilchester, Yeovil, BA22 8JP

3.2 After the public consultation

Following the consultation period, a Consultation Report will be produced to summarise the views and comments received, and outline how they have been taken into consideration in refining the scheme. Highways England will include this report as part of the DCO application which is planned for submission in the summer of 2018. The Planning Inspectorate will decide whether the application meets the required standards to proceed to examination.

Appendix A – Environmental constraints plan

RIVER CARY - SOURCE TO CONFLUENCE WITH KING SEDGEMOOR DRAIN (KSD)
DYKE BROOK
CELTIC WAY
STEART HILL
MEAD LANE (TRACK)
STEART HILL
CELTIC WAY
A303
SPARKFORD
HIGH STREET
RIVER CAM - UPPER
DOWNHEAD LANE (TRACK)
CAMEL HILL
EASTMEAD LANE (TRACK)
DOWNHEAD
WEST CAMEL HILL
A303
GASON LANE
A359
TRAITS LANE
SPARKFORD HILL
CELTIC WAY
HOWELL HILL
A303
PODIMORE
B3151
RIVER CAM - LOWER
LELAND TRAIL
WEST CAMEL
QUEEN CAMEL
LELAND TRAIL
PARSONAGE ROAD
LELAND TRAIL
ROYAL NAVAL AIR STATION, YEOVILTON

Target Notes:

1. ST PETERS CHURCH
2. THE PODYMORE INN PUBLIC HOUSE
3. MEDIEVAL SETTLEMENT REMAINS 100M AND 250M NORTH OF DOWNHEAD MANOR FARM SCHEDULED MONUMENT
4. MILESTONE ON A303 AT NGR ST57892538 (GRADE II) LISTED BUILDING
5. WEST CAMEL METHODIST CHURCH
6. WEST CAMEL CONSERVATION AREA
7. ROMANO-BRITISH SETTLEMENT IMMEDIATELY SOUTH WEST OF CAMEL HILL FARM SCHEDULED MONUMENT
8. CAMEL HILL TRANSMITTER SITE LWS
9. GASON LANE FIELD LWS
10. CAMEL HILL QUARRY EAST LGS
11. RIDGE COPSE LWS
12. CAMEL HILL QUARRY HISTORIC LANDFILL
13. SPARKFORD HILL COPSE LWS AND LGS
14. QUEEN CAMEL CONSERVATION AREA
15. HAZLEGROVE HOUSE (GRADE II LISTED) REGISTERED PARK AND GARDEN
16. HAZLEGROVE PARK LWS
17. LAND ADJACENT TO HAZLEGROVE PARK HISTORIC LANDFILL
18. SPARKFORD INN PUBLIC HOUSE
19. SPARKFORD CRICKET CLUB
20. SPARKFORD WOOD SSSI

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Key to Symbols:

- DRAFT RED LINE BOUNDARY
- NAMED WALKING ROUTES
- FOOTPATH ALONGSIDE CARRIAGEWAY
- FOOTPATH
- BRIDLEWAY
- RESTRICTED BYWAY
- CYCLE ROUTE
- FOSSE WAY
- REGISTERED PARK ND GARDEN
- HISTORIC LANDFILL
- PONDS, LAKES AND RUNNING WATER
- LISTED BUILDING
- ANCIENT WOODLAND
- NOISE IMPORTANT AREA
- SITES OF SPECIAL SCIENTIFIC INTEREST (SSSI)
- CONSERVATION AREA
- SCHEDULED MONUMENT
- LOCAL GEOLOGICAL SITE (LGS)
- FLOOD ZONE 2
- FLOOD ZONE 3
- LOCAL WILDLIFE SITE (LWS) (SOMERSET ENVIRONMENTAL RECORDS CENTRE, JUNE 2017)
- NATIONAL TRUST LAND
- CANDIDATE LOCAL WILDLIFE SITE (SOMERSET ENVIRONMENTAL RECORDS CENTRE, JUNE 2017)
- REGISTERED COMMON LAND
- ANCIENT WOODLAND IDENTIFIED BY SOMERSET ENVIRONMENTAL RECORDS CENTRE
- PROPOSED DEVELOPMENTS IDENTIFIED IN THE SOMERSET DISTRICT COUNCIL HOUSING AND ECONOMIC LAND AVAILABILITY ASSESSMENT

Project Title:
A303 SPARKFORD TO ILCHESTER DUALLING

Drawing Title:
ENVIRONMENTAL CONSTRAINTS PLAN

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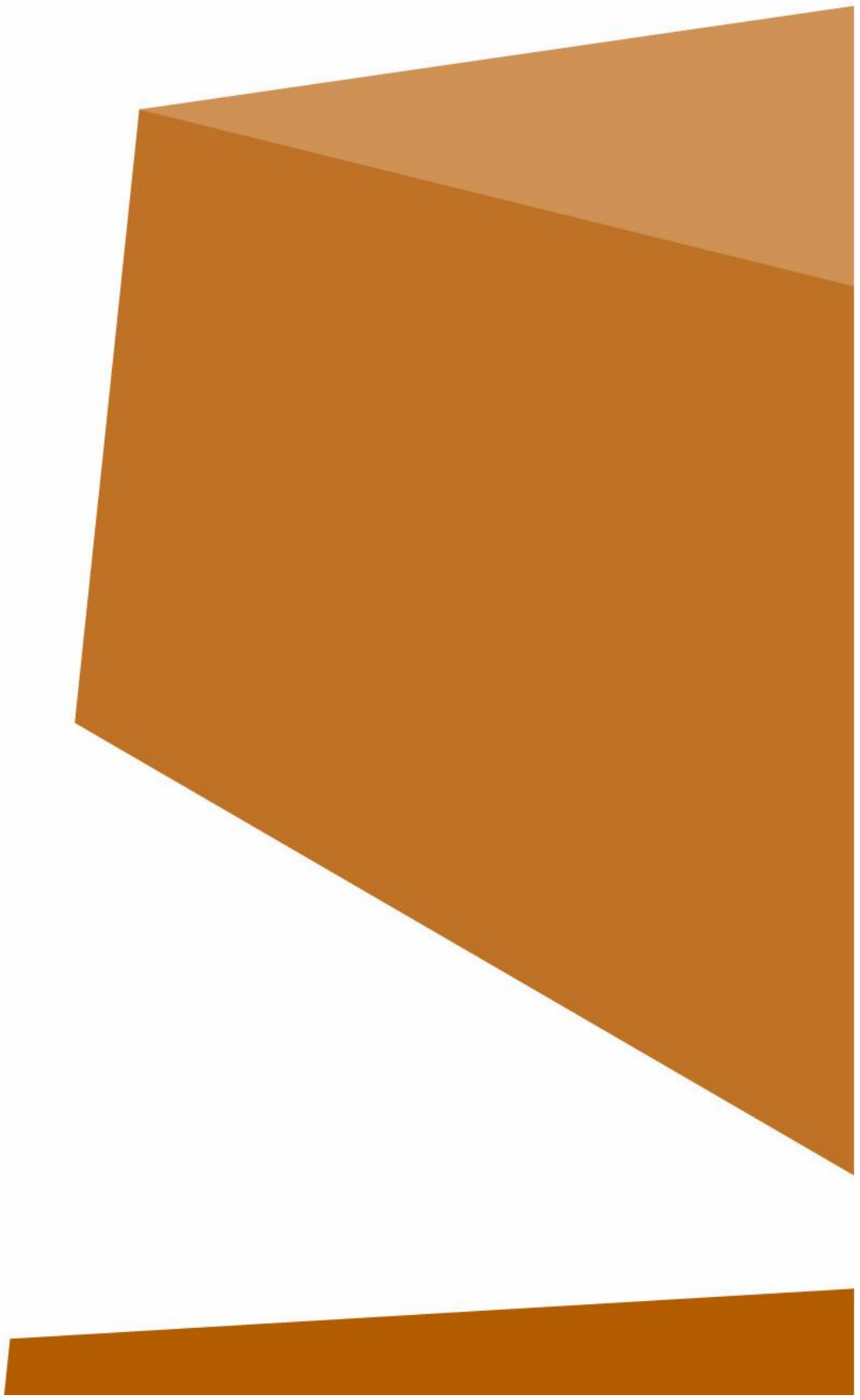

A303
Sparkford to Ilchester
Dualling Scheme

Preliminary Environmental Information

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Executive summary

This Preliminary Environmental Information (PEI) report has been prepared for the A303 Sparkford to Ilchester Dualling scheme (hereafter referred to as 'the scheme') as part of the statutory consultation.

The information contained within this report is 'preliminary' and has been produced to enable consultees to understand the likely environmental effects of the scheme and to help inform their consultation response on the scheme during the pre-application stage of the Development Consent Order (DCO). As such, the likely significance of the effects reported may change on the basis of information obtained after this point. The production of a PEI report is a requirement of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

Chapters 1 to 4 of this PEI report provide an overview of the scheme, summarise the alternative options considered, summarise the Environmental Impact Assessment (EIA) process, and provide an overview of the consultation to date. Chapters 5 to 15 of this PEI report include assessments for the following environmental disciplines:

- air quality
- cultural heritage
- landscape
- biodiversity
- geology and soils
- materials
- noise and vibration
- people and communities
- road drainage and the water environment
- climate
- combined and cumulative effects

Each environmental discipline chapter provides information on the likely environmental effects associated with the scheme, based on information available to date and with mitigation measures in place where these have been identified. Further mitigation measures may be identified for each discipline, following consultation and will be reported within the Environmental Statement (ES).

This PEI report is supported by a series of supporting drawings contained within the appendices.

A non-technical summary of the PEI report has also been produced to support the statutory public consultation, and is available at: www.highways.gov.uk/Sparkford-to-Ilchester.

The following methods can be used to contact Highways England and / or respond to the consultation:

- Attend a public consultation exhibition to meet the project team and complete a consultation questionnaire
- Complete the consultation questionnaire online at: www.highways.gov.uk/Sparkford-to-Ilchester
- Collect a consultation questionnaire at 1 of the public viewing places (see list below) and return by letter or by e-mail:
  - Address: A303 Sparkford to Ilchester Project Team, Highways England, 2/07k Temple Quay House,2 The Square, Temple Quay, Bristol, BS1 6HA
  - Email: mailto:A303SparkfordtoIlchesterDualling@highwaysengland.co.uk
- Call Highways England on 0300 123 5000 (9am to 5pm, Monday to Friday).

1 Introduction

1.1 The role of Preliminary Environmental Information

1.1.1 Preliminary Environmental Information (PEI) is defined in Regulation 12(2)(b) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 as:

1.1.2 'information referred to in regulation 14(2) which –

(a) has been compiled by the applicant; and
(b) is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and any associated developments)' to assess the environmental effects of the development (and of any associated development)'.

1.1.3 This PEI report has been prepared for the A303 Sparkford to Ilchester Dualling scheme (hereafter referred to as 'the scheme'). The information contained within this report is preliminary. This report has been produced to enable consultees (both specialist and non-specialist) to understand the likely environmental effects of the scheme and to help inform their consultation response on the scheme during the pre-application stage.

1.1.4 Feedback received from this consultation will then be taken into consideration within both the design of the scheme and the preparation of the Environmental Statement (ES).

Overview of the scheme

Existing route corridor

1.1.5 The A303 / A30 forms part of Highways England's Strategic Road Network (SRN) and a strategic link between the south west and the rest of the south, south-east and London. The route comprises multiple road standards, including dual-carriageway, single-carriageway and single-carriageway sections with overtaking lanes. Speed limits also vary between 40mph and 70mph, depending on the character of the road and its surroundings.

Existing scheme road

1.1.6 The section of the A303 that is being upgraded as part of this scheme commences at the eastern limits of the existing dual-carriageway Podimore Bypass. Travelling east, the route reaches the junction with the B3151 before bearing north-east and rising upwards through Conegore Corner to reach the crest of Camel Hill at Eyewell. This section of the route is characterised by a single carriageway road, with double white lines negating overtaking and subject to a 50mph speed limit. There are several priority junctions along the route giving access to the settlements of Queen Camel and West Camel to the

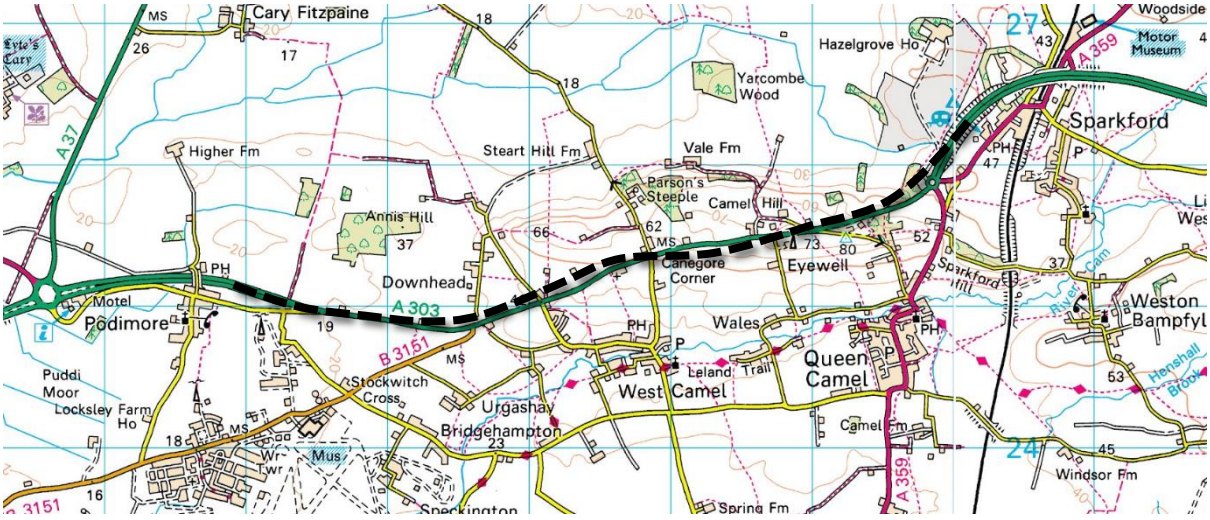
south and Downhead to the north, as well as several farm accesses and parking laybys.

1.1.7 From the crest of Camel Hill, the route descends to meet the roundabout at the western limit of the dual-carriageway Sparkford Bypass (Hazlegrove Roundabout). This section comprises 2 lanes in the westbound direction, 1 lane in the eastbound direction and is also subject to a 50mph speed limit. Hazlegrove Roundabout forms a junction between the A303 and the A359 which runs south through Queen Camel and north-east through Sparkford. The roundabout also provides access to a service station, and to a school at Hazlegrove House.

1.1.8 The section of the A303 that is to be upgraded is approximately 6 kilometres long.

1.1.9 The extents of the scheme are indicated by the draft red line boundary shown on the plans contained within both appendix A.1 and appendix A.2. Figure 1.1 illustrates the location of the proposed route.

Figure 1.1: Scheme location



Scheme proposals

1.1.10 The proposed scheme is to provide a continuous dual-carriageway on the A303 linking the Podimore Bypass and the Sparkford Bypass. The scheme will involve the removal of at-grade junctions and direct accesses. Any new junctions will be constructed to grade-separated standards, or to compact grade-separated standards depending upon anticipated traffic flows.

1.1.11 A detailed description of the scheme is provided within section 2.5, and a plan containing the proposed draft red line boundary is contained within appendix A.2.

1.2 Legislative context and the need for environmental impact assessment

1.2.1 The proposed scheme is classed as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 Section 22 as amended by The Highway and Railway (Nationally Significant Infrastructure Project) Order 2013, by virtue of the fact that it meets the following criteria, taken from Section 3 of the Order:

- The proposed scheme would involve the alteration of a highway that is wholly within England for which the Secretary of State is the highway authority
- The speed limit for the highway is expected to be 50 miles per hour or greater, and the area of development will be 12.5 hectares or more.

1.2.2 The scheme falls within Schedule II of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations). By virtue of the fact that the potential for significant adverse environmental effects has been identified, an ES is being prepared to accompany the Development Consent Order (DCO) application to the Planning Inspectorate that is being progressed for the scheme. The Regulation 8(1)(b) notice was submitted to the Planning Inspectorate on the 29 November 2017, notifying the Planning Inspectorate of the intention to provide an ES with respect to the scheme.

1.2.3 The ES will be carried out in accordance with the requirements of the Infrastructure Planning (EIA) Regulations 2017, which are the relevant EIA regulations for NSIPs.

Planning policy context

National Policy Statement for National Networks

1.2.4 The National Policy Statement for National Networks (NPSNN)[1] sets out the need for, and Government's policies to deliver development of NSIPs on the national road network in England. It sets out the primary basis for making decisions of development consent for NSIPs in England. The Government recognises in the Appraisal of Sustainability accompanying the NPSNN that some developments will have some adverse local impacts on noise, emissions, landscape / visual amenity, biodiversity, cultural heritage and water resources. The significance of these effects and the effectiveness of mitigation is uncertain at the strategic and non-locational specific level of the NPSNN. Therefore, whilst applicants should deliver developments in accordance with Government policy and in an environmentally sensitive way, including considering opportunities to deliver environmental benefits, some adverse local effects of development may remain.

[1] Department for Transport (2015) National Networks National Policy Statement [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed August 2017).

1.2.5 Evidence demonstrating compliance of the scheme with the NPSNN will be provided within the National Policy Statement for National Networks Accordance Table which will be submitted as part of the DCO application. Any environmental assessment principles outlined in the National Networks National Policy Statement Accordance Table will be taken into account within the ES.

National Planning Policy Framework

1.2.6 The National Planning Policy Framework (NPPF)[2] sets out the Government's planning policies for England and the requirements for the planning system. It provides a framework within which local authorities and residents can produce local and neighbourhood plans reflecting the needs and priorities of communities.

1.2.7 The NPPF does not contain specific policies for NSIPs for which particular considerations apply. NSIPs are determined in accordance with the decision-making framework set out in the Planning Act 2008 and relevant National Policy Statements for major infrastructure. For highways schemes, the relevant National Policy Statement is the NPSNN, details of which are outlined above. The Planning Statement, to be prepared to support the DCO application, will set out any material considerations given to the NPPF.

[2] Communities and Local Government (2012) National Planning Policy Framework [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf (last accessed November 2017).

2 Scheme description

2.1 Road Investment Strategy

2.1.1 In December 2014, the Department for Transport (DfT) published the Road Investment Strategy (RIS) for 2015-2020[3]. The RIS sets out the list of schemes that are to be developed by Highways England over the period covered by the RIS.

2.1.2 Highways England, as the strategic highways company and appointed by the Secretary of State must, in exercising its functions and complying with its legal duties and other obligations, act in a manner which it considers best calculated to, among others:

- Minimise the environmental impacts of operating, maintaining and improving its network and seek to protect and enhance the quality of the surrounding environment
- Conform to the principles of sustainable development

2.2 Need for the scheme

2.2.1 Dualling of the A303 between Sparkford and Ilchester was announced in the RIS for the 2015/16 to 2019/20 road period[4].

2.2.2 The single carriageway section of the A303 between Sparkford and Ilchester suffers from congestion and queuing, particularly during the summer months and at weekends. It also suffers from higher than national average accident rates for single-carriageway A-class trunk roads. Numerous at-grade junctions and accesses, non-motorised user (NMU) crossing points and limited space for road workers during maintenance create hazards for numerous user groups.

2.2.3 Dualling of the A303 between Sparkford and Ilchester is an appropriate solution which would meet the objectives of the DfT (see section 2.3 scheme objectives) and overcome the existing traffic problems on this section of road.

2.2.4 An assessment of alternative modal solutions would be contained within the National Policy Statement for National Networks Accordance Table to be submitted as part of the Development Consent Order (DCO) application.

[3] Department for Transport (2015) Road Investment Strategy: for the 2015/16 – 2019/20 Road Period [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/408514/ris-for-2015-16-road-period-web-version.pdf (last accessed October 2017).
[4] Department for Transport (2015) Road Investment Strategy: for the 2015/16 – 2019/20 Road Period.

2.3 Scheme objectives

Department for Transport objectives

2.3.1 The DfT has an aspiration for the Strategic Road Network (SRN) to be smoother, smarter and sustainable by 2040 (see Part 1, Chapter 2 of the RIS[5]). The DfT aims to achieve this by focussing on 8 key performance areas as set out in Part 3, Chapter 1 of the RIS. These are:

- Making the network safer
- Improving user satisfaction
- Supporting the smooth flow of traffic
- Encouraging economic growth
- Delivering better environmental outcomes
- Helping cyclists, walkers and other vulnerable users of the network
- Achieving real efficiency
- Keeping the network in good condition

2.3.2 Further information is available in the RIS.

Highways England objectives

2.3.3 The objectives of the scheme are:

- **Capacity** – reduce delays and queues that occur during peak hours at seasonal times of the year
- **Safety** – improve safety for all users of the A303 between Sparkford and Ilchester, as well as the wider A303 / A358 corridor
- **Support economic growth** – facilitate growth in jobs and housing by providing a free-flowing and reliable connection between the south east and the south west
- **Environment** – avoid unacceptable impacts on the surrounding natural and historic environment and landscape and optimise opportunities for enhancement
- **Local communities** – reduce community severance and promote opportunities for improving their quality of life
- **Connectivity** – improve the connectivity of the south west to the rest of the UK and improve business and growth prospects
- **Resilience** – improve journey time reliability and resilience, and provide extra capacity to make it easier to manage traffic when incidents occur

[5] DfT (2015) Road Investment Strategy: 2015 to 2020 [online] available at: https://www.gov.uk/government/collections/road-investment-strategy (last accessed November 2017).

2.4 Scheme location

2.4.1 The scheme would provide a dual-carriageway on the A303 between Sparkford and Ilchester in Somerset, connecting the existing dual-carriageway sections to the east and west between Hazlegrove roundabout and Podimore roundabout. The location of the scheme can be seen in the environmental constraints plan contained in appendix A.1. The scheme extent of the application site is also shown on the plan contained in appendix A.1, and is depicted by the red line (the red line boundary).

2.4.2 The landscape surrounding this section of the A303 between Sparkford and Ilchester is largely rural with field patterns and intermittent individual properties. Settlements in a rural environment lie to the south at West Camel and Queen Camel. The existing A303 runs along the top of the partially wooded ridge of Camel Hill, before descending to Sparkford. The land to the west of Sparkford is a level area drained by a series of ditches leading to the Dyke Brooke and westward to the River Cary, whilst the field pattern in this area comprises large geometric, narrow lands and thick hedgerows. Blocks of woodland occasionally punctuate the field pattern and are partially prominent on the western section from Camel Hill to Sparkford. At Podimore, the topography comprises flat low-lying level agricultural land, with the rising ground of Annis Hill to the east of Podimore forming a minor feature which is capped, before rising towards Camel Hill which is characterised by its sloping sides and blocks of woodland.

2.4.3 The following statutory environmental designations are located within the vicinity of the scheme:

- There are 2 scheduled monuments (Romano-British settlement immediately south-west of Camel Hill Farm and Medieval settlement remains 100 metres and 250 metres north of Downhead Manor Farm) within 1 kilometre of the scheme.
- There is 1 Site of Special Scientific Interest (SSSI) (Sparkford Wood) 1.3 kilometres north-east.
- There are 2 Conservation Areas (Queen Camel and West Camel) within 1 kilometre of the scheme.
- There are numerous Grade I, Grade II and Grade II* Listed Buildings within 1 kilometre.
- There are 3 Special Areas of Conservation (SACs) (Mells Valley SAC, North Somerset and Mendip Bats SAC, and Bracket's Coppice SAC) designated for bat populations within 30 kilometres of the scheme.
- The eastern end of the scheme would pass through the southern third of Hazlegrove House (Grade II Listed) Registered Park and Garden.
- There are 4 designated ecological sites within 200 metres of the Affected Road Network (ARN), including Stockton Wood and Down SSSI.

2.4.4 The following non-statutory environmental designations are located within the vicinity of the scheme:

- There are 15 Local Wildlife Sites (LWSs) within 2 kilometres of the scheme.
- There are 2 Local Geological Sites (LGSs) within 1 kilometre of the scheme.
- All of the environmental designations located within 2 kilometres of the scheme extents, or just outside, are shown on the plan contained within appendix A.1. In terms of material assets, there are a number of British Geological Survey (BGS) Mineral Sites in close proximity to the current A303, as well as a Mineral Safeguarding Site, and several landfill sites.

2.5 Scheme description

Introduction

2.5.1 The preferred route for the scheme was confirmed by Highways England in October 2017.

2.5.2 The scheme follows the existing corridor of the A303 very closely. It is generally considered to be an online solution although is often deliberately aligned just to the side of the existing carriageway to allow re-use of the existing route for local access, avoid property or facilitate construction. At its maximum off-set, the route is typically 100 metres either north or south of the existing A303.

2.5.3 The section of the scheme that is to be upgraded is approximately 6 kilometres long. The footprint of the scheme is anticipated to be approximately 60 hectares. However, the ES will provide more details on scheme parameters, along with any limits of deviation, and the description will reflect the description of the scheme within the draft DCO submission. The ES will be supported by appropriate figures and design drawings.

Description (mainline)

2.5.4 At its western limits, the scheme ties in with the existing dual-carriageway A303 Podimore Bypass. Travelling eastwards, the route initially follows the existing A303 closely until the B3151 before moving north of the existing carriageway and rising up to the south of Downhead, before crossing over the existing A303 at Conegore Corner. This would pass very close to the Noise Important Area (NIA) at the West Camel Methodist Church (see appendix A.1 for the location of this NIA). The route then takes a southerly alignment briefly before meeting up with the existing road again to pass between a Scheduled Monument and a Ministry of Defence (MOD) signal station at the crest of Camel Hill. Finally, the route then bypasses the existing Hazlegrove Roundabout to the north through Hazlegrove House (Grade II Listed) Registered Park and Garden in a false cutting, before tying into the existing A303 north of Sparkford Village.

Description (junctions)

2.5.5 A new all movements grade-separated junction would be provided in the vicinity of the Hazlegrove Roundabout. This will enable free flowing passage of traffic on the A303. The junction will incorporate entry and exit slip roads in both

directions providing connections to Hazlegrove House, the A359, access to villages south of the route and access to properties at Camel Hill to the north of the scheme. The junction design is currently evolving as part of on-going discussions with environmental stakeholders.

2.5.6 A limited movements junction, comprising eastbound slips only, will be provided in the vicinity of Downhead. A limited movement junction will be provided in the vicinity of the junction with the B3151 comprising westbound exit and entry slip roads.

Description (side roads)

2.5.7 A connection would be provided between local roads to the north and south of the route in the vicinity of Conegore Corner via an overbridge, incorporating a link to the A303 eastbound via the junction at Downhead. At the western end of the scheme the existing westbound slip road to Podimore village will be closed. Access to Podimore village will therefore be via the A303 / A37 junction (Podimore Roundabout).

Additional features

2.5.8 In addition to the above principal elements, additional features associated with the scheme will include drainage, landscaping, environmental mitigation, lighting, signage, and utility diversions. Precise information on these elements is unknown at this stage. Details of these additional features will be provided within the ES.

Land take

2.5.9 A plan showing the anticipated permanent and temporary land acquisition required to deliver the scheme is contained within appendix A.2. The temporary land requirements for construction purposes has been so far estimated, although does represent a worst-case estimation, and a final version of the temporary land areas will be included as part of the ES. Any changes from the areas currently identified would incorporate a reduction in temporary land; no expansion is anticipated.

Demolition

2.5.10 It is anticipated that the scheme would require the demolition of 1 farm building adjacent to the A303 approximately 850 metres to the east of Podimore. This can be seen within the extents of the red line boundary, south east of the ‘Eastmead Lane (track)’ label, as identified on the environmental constraints plan contained within appendix A.1, More details on the anticipated demolition will be provided within the ES and the location will also be indicated on a plan within the ES.

Scheme construction

2.5.11 As part of the proposed scheme, the following elements are likely to be required during construction:

- Temporary traffic management areas, temporary working and storage areas, material stockpiles, construction compounds, haul roads, and provision for site compounds to be used during the construction period
- Enabling works including utility diversions as required

2.5.12 For this PEI report, assumptions associated with the types of construction works required have been made within each of the environmental discipline chapters to inform the assessment of likely significant effects. The types of construction elements that are likely to form part of the scheme include the following:

- Pre-construction and mobilisation activities e.g. establishing site compounds, works areas, topsoil storage
- Earthworks to include noise attenuation bunds
- Diversion of Statutory Undertakers (SU) and other apparatus
- Installation of attenuation features
- Ground water management
- Site clearance
- General excavation
- Backfilling and compaction of soil
- Earthworks, i.e. the construction of embankments and the relocation of spoil
- Placing concrete foundations, may include piling
- Laying of asphalt
- Installation of drainage, which will include excavation and placement of pipes and chambers
- Construction of structures, which may include lifting of beams into place.

2.5.13 Details of the construction methodology will be included as part of the ES, once it has been fully developed.

2.5.14 The ES will also describe any phased approach to construction, the likely duration and location of construction activities, any need for night-time working, and the anticipated numbers and types of vehicle movements associated with the construction phase.

2.5.15 The development of the construction strategy will aim to ensure that adverse effects are reduced to sensitive receptors as far as possible.

2.6 Construction, operation, and long term management

Construction stage

2.6.1 Construction is anticipated to start in March 2020, and the construction duration is anticipated to last for approximately 2.5 years.

Environmental mitigation and management during construction and operation

2.6.2 In accordance with Interim Advice Note (IAN) 183/14[6], an Outline Environmental Management Plan (OEMP) will be prepared for the proposed scheme as part of the ES, to manage any environmental effects of the proposed scheme and to demonstrate compliance with environmental legislation.

2.6.3 The OEMP would inform the Construction Environmental Management Plan (CEMP) to be produced by the Contractor at the construction stage and eventually the Handover Environmental Management Plan (HEMP) which will contain essential environmental information needed for the future maintenance and operation of the asset.

2.6.4 The overarching objective of an Environmental Management Plan (EMP) is to provide the framework for managing the environmental effects of projects, and to demonstrate compliance with environmental legislation. DMRB Volume 11, Section 2 describes the function of the EMP as primarily to highlight the project commitments to environmental designs, mitigation or enhancement measures and/or longer-term monitoring, which have been recommended in the assessment. It provides the basis on which monitoring and auditing of the delivery of the environmental performance of the scheme can be measured.

Short and long term maintenance requirements

2.6.5 Short-term maintenance and repair activities are likely to comprise inspections on the new works and installed assets, and any unplanned works due to damage to assets in events such as road traffic incidents. Longer term maintenance and repair works are likely to be required for the following scheme assets, such as:

- Road restraint
- Drainage
- Earthworks
- Pavement and paved areas
- Signs, signals and lighting equipment
- Structures
- Communications and transmission equipment

2.6.6 There would also be on-going (annual) inspections and general routine maintenance works such as grass cutting, sign cleaning, and litter picking.

2.6.7 In the longer term, expected planned maintenance would include activities such as resurfacing the road and replacement of assets when they become life expired.

2.6.8 At this stage, full maintenance and repair details for each of the above assets have not been generated for the scheme, but will be included as part of the ES.

[6] Highways England (2014) Interim Advice Note (IAN) 183/14: 'Environmental Management Plans'.

2.7 Consultation undertaken to date

2.7.1 Under Section 42 of the Planning Act 2008, the applicant (Highways England) has a duty to consult with the following about the proposed application:

(a) Such persons as may be prescribed
(b) Each local authority that is within section 43 (of the Planning Act)
(c) the Greater London Authority if the land is in Greater London
(d) each person who is within one or more of the categories set out in section 44 (including land owners and tenants, and those with relevant land interests).

2.7.2 An extensive stakeholder mapping exercise was undertaken in the summer of 2015 to identify relevant stakeholders and their key interests. A number of key stakeholders were identified with whom Highways England directly engaged with. Among the key stakeholders identified were the section 43 local authorities of Somerset County Council and South Somerset District Council, several parish councils, the Environment Agency, Natural England, Historic England and a number of local business and agricultural organisations.

2.7.3 A series of public events and invitation only meetings will be held with key stakeholders, the local community and landowners. Members of the project team will be available at events to discuss the scheme with members of the public.

2.7.4 The following consultation material will be made available at all meetings and events, on the scheme website and at public information points:

- consultation scheme brochure
- consultation scheme questionnaire and freepost envelope
- poster detailing public events and scheme website

2.7.5 All feedback and formal responses received during the statutory public consultation period will be recorded and will appear in summary as part of a consultation report.

2.7.6 The feedback and formal responses received during this statutory consultation may influence the final design of the scheme, ahead of submitting a DCO application to the Planning Inspectorate.

Environmental engagement with consultation bodies

2.7.7 In addition to engagement with local authorities, landowners, hard to reach groups, and the community as part of the non-statutory and statutory public consultations, Highways England has engaged with the following consultation bodies during the scheme development period:

- Environment Agency
- South West Heritage Trust (archaeological advisors to South Somerset District Council)

- Natural England
- Historic England
- Somerset County Council
- South Somerset District Council
- National Trust
- The Gardens Trust

2.7.8 A summary of the meetings is provided in Table 2.1 below. Consultation bodies were engaged through group meetings, telephone discussions and email channels.

Table 2.1: Consultation body meetings

Date	Stakeholders	Discussion / topics raised	Influence
4 December 2015	National Trust, Environment Agency, and Natural England	Introduction to the scheme and route options DCO process, project timescales and engagement methodology.	Representatives confirmed their interest in the scheme and engagement approach. Initial discussions about proposed scheme options.
22 March 2016	National Trust, Environment Agency, South West Heritage Trust and Natural England	Scheme update and public consultation strategy discussion.	Discussions about development of public consultation strategy and specific stakeholder identification and engagement activities. Discussion about communications channels to be employed.
13 July 2016	National Trust, Environment Agency, South West Heritage Trust and Natural England	Stakeholder engagement progress meeting. Discussion about public consultation activities timing.	Feedback about route options presented. Discussion about planned public consultation programme.
11 November 2016	National Trust, Environment Agency, South West Heritage Trust and Natural England	Stakeholder engagement progress meeting. Update about public consultation activities planned.	Consideration of specific stakeholder groups including, landowners, discussions, parish councils, local authority politicians and Members of Parliament.
22 March 2017	Historic England and South Somerset District Council	Site visit to view Hazlegrove Registered Park and Garden and potential design options in their locality.	Discussion around the level of potential impact for design options in this area, as well as potential mitigation. In addition, the requirement for more detailed assessment and methodology for that assessment was discussed.
2 May 2017	Natural England	Survey effect to date and going forward. Methodology for bat surveys (in light of emerging Natural England guidance). Future engagement and EIA process. Ghost licences.	Advice received on conducting bat surveys prior to DCO submission, including scope of those surveys. Broad agreement on scope for remainder of surveys. Natural England now have an awareness of the overall programme and requirement for on-going engagement.
4 July 2017	Environment Agency	Survey effect to date and going forward. Proposed drainage design and run-off rates. Flood risk assessment and Water Framework Directive assessment.	Survey and assessment focus and on-going consultation requirements.

2.7.9 Engagement with the Environment Agency, Natural England, Historic England, Somerset County Council and South Somerset District Council, as well as any other relevant environmental organisations including The Gardens Trust and the National Trust, will continue through the format of an Environmental Technical Working Group (TWG).

2.7.10 The Environmental TWG will be responsible for studying specific scheme issues, considering appropriate scheme solutions and seeking to agree statements of common ground (SoCGs) on environmental matters between Highways England and key stakeholders. The Environmental TWG will also be provide a format for technical review of the Environmental Impact Assessment (EIA) and associated surveys, development and review of environmental design, mitigation requirements and environmental opportunities and enhancements.

2.7.11 Consultation bodies have also been formally consulted as part of the EIA Scoping process and in order for the Planning Inspectorate to form a Scoping Opinion. Further information on EIA Scoping and consultation on this process is contained within section 4.1.

3 Assessment of alternatives

3.1 Assessment methodology

3.1.1 Initial option sifting was undertaken in accordance with the Transport Analysis Guidance – The Transport Appraisal Process or WebTAG. The sift used the Early Assessment Sifting Tool (EAST)[7], which forms part of Step 6 of WebTAG – Initial Sifting. However, as EAST does not provide a numeric score, the assessment team produced a scoring mechanism to allow each option to be directly compared and ranked.

3.1.2 Following the completion of the EAST sifting process, initial environmental assessment in accordance with the Design Manual for Roads and Bridges, a scoping level of assessment was undertaken for the reduced number of options. The environmental assessment was further refined for the two route options taken to public consultation during 2017, to a DMRB Simple level of assessment. The preferred option is now subject to a detailed environmental assessment, the preliminary findings of which are presented within this Preliminary Environmental Impact (PEI) report, with the full assessment to be reported within the Environmental Statement (ES).

3.2 Alternative options considered

3.2.1 Thirteen potential route options were originally identified to ensure a broad range of possibilities were considered. These can be broadly classified as central, northern, or southern routes:

- Central: Option A1, Option A1 (South), and Option A2 (now Option 1)
- Northern: Option B2, Option B4, Option D1, Option E1, Option E2, Option E4, Option F1 (now Option 2), and Option G1
- Southern: Southern Route (i), Southern Route (ii)

Sifting of options

Initial option sifting was undertaken in accordance with the Transport Analysis Guidance – The Transport Appraisal Process or WebTAG. The sift used the EAST, which forms part of Step 6 of WebTAG – Initial Sifting EAST allows for the analysis of options against economics, management, financial and commercial criteria, which includes environmental under the economic case.

3.2.2 On completion of the EAST process, the following short listed options were then taken forward for further assessment:

- Option B4
- Option F1 (became Option 2)
- Option A2 (became Option 1)

[7] Department for Transport (2011) Early Assessment Sifting Tool (EAST) (online) available at: https://www.gov.uk/government/publications/transport-business-case (last accessed December 2017).

- Option E4

3.2.3 The 4 shortlisted options were subject to a technical appraisal, which concluded that 1 central and 1 northern route option should be taken forward to the non-statutory public consultation which was held in February and March 2017. These 2 options, Option 1 and Option 2, were subject to further environmental, economic, and technical assessment. The results of these assessments, along with the outcomes of the consultation, were used to inform the identification of the Preferred Route which was announced as Option 1 in October 2017.

3.2.4 This Preliminary Environmental Information (PEI) Report has therefore been prepared for Option 1 and the Environmental Statement (ES) will be produced following this report.

3.2.5 The Assessment of Alternatives presented within the ES will examine the design variations of the preferred route, in line with the Infrastructure Planning (EIA) Regulations 2017, including:

3.2.6 '*a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed scheme and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects'*

3.2.7 This will demonstrate the rationale and decisions made for the final preliminary design to be submitted as part of the Development Consent Order (DCO) application.

4 Environmental assessment methodology

4.1 Environmental scoping

4.1.1 The purpose of the scoping process is to determine which environmental factors (topics) should be included in the Environmental Statement (ES), and the level of detail to which they should be assessed.

4.1.2 An Environmental Impact Assessment Scoping Report was produced in November 2017. It was completed in accordance with the Design Manual for Roads and Bridges (DMRB) Volume 11[8] and the Planning Inspectorate Advice Note Seven[9], to a Scoping level for all environmental factors contained within Highways England's Interim Advice Note (IAN) 125/15[10], plus any additional factors introduced to the assessment by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations'). The Environmental Impact Assessment Scoping Report was informed by information gathered through desk top studies, initial environmental walkovers and surveys, and by the environmental assessment work carried out to inform the preferred option selection.

4.1.3 The Environmental Impact Assessment Scoping Report was submitted to the consultation bodies by the Planning Inspectorate and the responses from the consultation bodies have been taken into account in adopting the Scoping Opinion. A list of those consultees who responded can be seen found within Appendix 2 of the Scoping Opinion.

4.1.4 The Scoping Opinion was received from the Planning Inspectorate on 9 January 2018. Due to the limited time between the publication of this Preliminary Environmental Information (PEI) report and the receipt of the Scoping Opinion from the Planning Inspectorate, the comments within the Scoping Opinion have not been incorporated into the environmental assessments contained within this report. However, all relevant consultees will be contacted to further discuss the assessment scope as per the Scoping Opinion, and the ES will include a schedule of responses received from the Planning Inspectorate to explain and identify how each of the comments have been addressed.

4.1.5 EIA scoping is an iterative process and will therefore additionally take into account comments received as part of the statutory consultation, for which

[8] Highways Agency (2008) Design Manual for Roads and Bridges, Volume 11 'Environmental Assessment' [online] available at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section1.htm (last accessed December 2017).
[9] The Planning Inspectorate (December 2017) 'Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (Version 6) [online[available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/03/Advice-note-7v4.pdf (last accessed January 2018).
[10] Highways England (2015) Interim Advice Note 125/15 'Environmental Assessment Update' [online] available at: http://www.dmrb.net/ha/standards/ians/pdfs/ian125r2.pdf (last accessed December 2017).

further details are provided within Section 2.7 of this document. The preliminary assessment presented in Chapters 5 to 15 will be updated within the ES, to take into consideration the Scoping Opinion and any additional comments received as part of the consultation process. The ES will be submitted alongside the Development Consent Order (DCO) application.

4.2 Approach to assessment

4.2.1 This PEI report considers the following factors contained in Regulation 5(2) of the EIA Regulations. These include:

(a) Population and human health
(b) Biodiversity
(c) Land, soil, water, air and climate
(d) Material assets, cultural heritage and the landscape
(e) The interaction between the factors referred to in sub-paragraphs (a) to (d)

4.2.2 The assessment for each of these factors are covered in 1 or more environmental assessment chapters in this report. The chapters have been written in accordance with the requirements presented in the Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3[11] and Interim Advice Note (IAN) 125/15[12], for each of the relevant environmental factors (topics). This is shown in Table 4.1 below.

Table 4.1: Environmental factors and respective DMRB environmental topics

Factors contained within Regulation 5(2) of the Infrastructure Planning (EIA) Regulations	DMRB Topic
(a) Population and human health	Chapter 5 Air Quality Chapter 11 Noise and Vibration Chapter 12 People and Communities
(b) Biodiversity	Chapter 9 Biodiversity
(c) Land, soil, water, air and climate	Chapter 5 Air Quality Chapter 8 Geology and Soils Chapter 14 Climate
(d) Material assets, cultural heritage, and the landscape	Chapter 6 Cultural Heritage Chapter 7 Landscape and Visual Effects Chapter 10 Materials
(e) The interaction between the factors referred to in sub-paragraphs (a) to (d).	Chapter 15 Combined and Cumulative Effects

4.2.3 The stages of construction and operation are considered for each of the environmental factors. The scheme would be unlikely to be decommissioned as it would form part of and remain an integral part of the strategic road network (SRN). As such, decommissioning has not been considered within this PEI report and decommissioning will be scoped out of the ES.

[11] Highways England (2015) Design Manual For Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques.
[12] Highways England (2015) Interim Advice Note (IAN) 125/15 Environmental Assessment Update [online] available at: http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian125r2.pdf (last accessed November 2017).

Population and human health

4.2.4 There is no consolidated methodology or practice for the assessment of population and human health, however the scope of the assessment is considered to be covered by existing Highways England Guidance as set out below. This recognises the specific requirements of the National Policy Statement for National Networks (NPSNN)[13] for consideration of health, specifically within paragraphs 4.79 - 4.82. This will address health by utilising the following guidance:

- Air Quality: HA 207/07[14], IAN 185/15[15], IAN 175/13[16], IAN 174/13[17], IAN 170/12[18]
- Noise and vibration: HD 213/11[19], IAN 185/15[20]
- Equestrians, Cyclists, and Community Effects: DMRB Volume 11 Section 3 Part 8[21]

4.2.5 Reporting of population and human health effects will be provided within the relevant environmental factor chapters. The ES will set out the methodology recognising the requirements of the NPSNN, including how significance of effects are to be determined.

4.2.6 It is considered that these assessments, conducted principally in isolation as is required by their methodologies, will not provide a sufficient analysis of the effects of the scheme. To enable such conclusions to be drawn, a qualitative assessment of information collated via each of the environmental factors listed

[13] Department for Transport (2015) National Policy Statement for National Networks [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed November 2017).
[14] Highways England (2008) DMRB Volume 11 Section 2 Part 1 HA207/07 'Air Quality'.
[15] Highways England (2015) IAN 185/15 'Updated traffic, air quality and noise advice on the assessment of link speeds and generation of vehicle data into 'speed-bands' for users of DMRB Volume 11 Section 3 Part 1 Air Quality and Volume 11 Section 3 Part 7 Noise' [online] available at: http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian185.pdf (last accessed October 2017).
[16] Highways England (2013) IAN 175/13 'Updated air quality advice on risk assessment related to compliance with the EI Directive on ambient air quality and on the production of Scheme Air Quality Action Plans for user of DMRB Volume 11, Section 3, Part 1 Air Quality' [online] available at: http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian175.pdf (last accessed October 2017).
[17] Highways England (2013) IAN 174/13 'Updated advice for evaluating significant local air quality effects for users of DMRB Volume 11, Section 3, Part 1 Air Quality (HA207/07)' [online] available at: http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian174.pdf (last accessed October 2017).
[18] Highways England (2013) IAN 170/12 v3 'Updated air quality advice on the assessment of future Nos and NO2 projections for users of DMRB Volume 11, Section 2, Part 1 Air Quality' [online] available at: http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian170v3.pdf (last accessed October 2017).
[19] Highways England (2011) DMRB Volume 11 Section 3 Part 7 HD 213/11 Noise and Vibration.
[20] Highways England (2015) IAN 185/15 'Updated traffic, air quality and noise advice on the assessment of link speeds and generation of vehicle data into 'speed-bands' for users of DMRB Volume 11 Section 3 Part 1 Air Quality and Volume 11 Section 3 Part 7 Noise' [online] available at: http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian185.pdf (last accessed October 2017).
[21] Highways England (2008) DMRB Volume 11 Section 3 Part 8 'Pedestrians, Cyclists, Equestrians and Community Effects'.

in section 4.2.4 above will be undertaken and presented within the Combined and Cumulative Effects chapter of the ES.

Major accidents and disasters

4.2.7 The EIA 2017 require an assessment of '*the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned*'.

4.2.8 The scope of the assessment will cover:

- Vulnerability of the project to risks of major accidents and/or disasters
- Any consequential changes in the predicted effects of that project on environmental factors

4.2.9 To address the requirements of the EIA Regulations, the factor of major accidents and disasters will be assessed as part of the ES. In considering the elements of vulnerability, professional judgement will be applied to develop project specific definitions of major events. Major events, both man-made and naturally occurring, will be identified and any potential effects and likely mitigation measures will be included as part of the assessment. The conclusions of this assessment will be included within each of the individual environmental chapters of the ES.

Heat and radiation

4.2.10 Due to the nature of the scheme, it is considered unlikely that heat and radiation effects associated with the proposals are likely to arise. Further assessment as part of the ES has therefore been scoped out.

Future baseline scenario

4.2.11 A description of the relevant aspects of the current state of the environment (baseline scenario) is included for each environmental factor within chapters 5 to 15 of this report. Within the ES, an outline of the likely evolution of the baseline and future baseline scenarios, without implementation of the scheme and appraising only natural changes, will be included. This will make use of readily available information such as that available from Local Development Plan documents.

4.3 Surveys and predictive techniques and methods

4.3.1 This PEI report reviews the information gathered as part of the ongoing EIA for each environmental factor, and presents the assessment carried out to date. This will be updated for the ES, which will be submitted with the DCO application. The data gathering work undertaken is presented in each topic chapter of this report (chapters 5 to 15), but generally comprises the following elements:

- Consultation with third-party organisations, such as local councils, to obtain information
- Desk-based studies
- Field surveys, such as Phase 2 ecology surveys

4.4 General assessment assumptions and limitations

4.4.1 General assumptions are contained below. Topic-specific assumptions and limitations have been outlined in each of the individual environmental topic chapters (chapters 5 to 15).

Scheme designs

4.4.2 This PEI report is based on the scheme design as presented as part of the consultation in January 2018 (refer to section 2.5 for further information). Further design development is ongoing and will take into account the responses from the consultation. This information will be available for the ES.

4.4.3 The red line boundary shown within both appendix A.1 and appendix A.2 has been updated following the publication of the Environmental Impact Assessment Scoping Report, which was submitted to the Planning Inspectorate in November 2017. The key changes include the following:

- The inclusion of an additional haul route to the south of the scheme.
- The alignment of the northern haul route has moved south to reduce ecological effects.
- The drainage basin at the western end of the scheme in now longer but hugs the carriageway so is narrower.
- The inclusion of a drainage basin at Plowage Lane.
- The red line boundary now hugs the existing highway fence at both the Scheduled Monument (Romano-British settlement immediately south west of Camel Hill Farm) and the MoD site.
- Additional land is now included on the southern side of the road at Traits Lane for material storage, as advised by the delivery partner.
- The inclusion of an additional small strip of land near Glebe Farm, West Camel, due to further knowledge of the statutory diversions.
- The inclusion of the existing A303 carriageway to be de-trunked, by Plowage Lane and Ridge Copse (for access to the diner and petrol station).
- Land take has reduced at Steart Hill link due to the removal the connection between Traits Lane and Camel Hill, via an underbridge
- Land take has slightly increased at Camel Cross junction due to the change in junction design from a roundabout to a compact junction.
- The inclusion of noise bunds and false cuttings in areas requiring environmental mitigation.

South West Regional Traffic Model (SWRTM) assumptions

4.4.4 The base traffic model is for a March 2015 weekday (excluding school holidays and bank holidays). The base model is an average hour model, with the AM

model representing an average hour in the period 7am-10am, the inter-peak (IP) an average hour from 10am-4pm, and the PM an average hour from 4pm-7pm.

4.4.5 The model was built using SATURN, which is a standard software model used to predict future traffic flows.

Base model assumptions

4.4.6 Based on the South West Regional Traffic Model (SWRTM) base model and the A303 Sparkford to Ilchester / A358 Taunton to Southfields Stage 1 local traffic models, and represents average March 2015 weekday as per the SWRTM.

4.4.7 The base model has been calibrated in line with WebTAG Unit M3.1[22].

Forecast model assumptions

4.4.8 An Opening Year of 2023 and a Design Year of 2038 will be used.

4.4.9 An Uncertainty Log covering future network and developments will be formed using the uncertainty work generated as part of the early assessment work and any updates received from local authorities and Highways England.

4.4.10 Forecast car and rail growth are based on TEMPRO 7.2 and LGV/HGV growth are derived using Road Traffic Forecasts (RTF) 2015[23]. Development trip generation is based on TEMPRO and TRICS.

4.4.11 Variable Demand Modelling (VDM) is consistent with WebTAG M2[24] and based on DIADEM/HEIDI as per the SWRTM.

4.5 Significance criteria

4.5.1 The output of the environmental assessment is to report the likely significance of effects using established significance criteria, as presented within the DMRB Volume 11, Section 2, Part 5[25]. This requires an assessment of the receptor or resource's environmental value (or sensitivity) and the magnitude of the scheme's impacts (change).

4.5.2 The DMRB states that the approach to assigning significance of effect relies on reasoned argument, professional judgement and taking on board the advice and views of appropriate organisations. For some factors, predicted effects may

[22] Department for Transport (January 2014) TAG Unit M3.1: Highway Assignment Modelling [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427124/webtag-tag-unit-m3-1-highway-assignment-modelling.pdf (last accessed August 2017).
[23] Department for Transport (2015) Road Traffic Forecasts 2015 [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/411471/road-traffic-forecasts-2015.pdf (last accessed August 2017).
[24] Department for Transport (March 2017) TAG Unit M2: Variable Demand Modelling. [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/603266/webtag-tag-unit-m2-variable-demand-modelling-march-2017.pdf (last accessed August 2017).
[25] Highways England (2008) DMRB Volume 11, Section 2, Part 5 HA 205/08 'Assessment and Management of Environmental Effects'.

be compared with quantitative thresholds and scales in determining significance. Each environmental assessment chapter within the ES will describe the specific thresholds / criteria used to determine value / magnitude / sensitivity and will align within the general methodology described within this section.

4.5.3 Assigning each effect to 1 of the 5 significance categories enables different environmental factor issues to be placed upon the same scale, to assist the decision-making process at whatever stage the project is at within that process. These 5 significance categories are set out in Table 4.2 below.

Table 4.2: Descriptions of the significance of effect categories

Significance category	Typical descriptors of effects
Very Large	Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.
Large	These beneficial or adverse effects are very important considerations and are likely to be material in the decision-making process.
Moderate	These beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a resource or receptor.
Slight	These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project.
Neutral	No effects or those that are beneath levels of perception, within normal bounds or variation or within the margin of forecasting error.

Source: DMRB Volume 11, Section 2, Part 5, Table 2.3

4.5.4 The environmental value will be identified for each of the receptors identified within the individual environmental factor that have been carried forward from the Scoping exercise for further environmental assessment, along with the magnitude of change. Five significance categories can result from the assessment, as defined in Table 4.3. It is important to note that significance categories are required for positive (beneficial) as well as negative (adverse) effects. The greater the magnitude of impact, the greater significant the effect. For example, the consequences of a highly valued environmental resource suffering a major detrimental impact would be a Large or Very Large adverse effect.

4.5.5 Impacts that are Moderate Beneficial / Adverse or above will be considered significant.

Table 4.3: Assessing significance of potential effects

Environmental value (sensitivity)	Magnitude of potential impact (degree of change)					
	No change	**Negligible**	**Minor**	**Moderate**	**Major**
Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

Source: DMRB Volume 11, Section 2, Part 5, Table 2.4

4.6 Mitigation measures

4.6.1 Priority has been given to the avoidance of effects at source where practicable, whether through the design of the scheme or by regulating the timing or location of activities. Where it has not been possible to avoid significant negative effects, opportunities have been sought to reduce the effects, ideally to the point where they are no longer significant. Mitigation measures fall into 3 broad categories:

- **Mitigation** in the strict sense – i.e. measures taken to avoid or reduce negative effects. Measures may include locating the development and its working areas and access routes away from areas of high environmental sensitivity, fencing off sensitive areas during the construction period, or timing works to avoid sensitive periods
- **Compensation** – the use of replacement areas to make up for the loss of, or permanent damage to resources. Any replacement area should be similar to or, with appropriate management, have the ability to reproduce the functions and conditions of those resources that have been lost or damaged.
- **Offsetting** – the provision of a benefit that is related to the effect, but is not a like-for-like replacement of the feature to be lost.

4.6.2 Mitigation measures will further be developed during the production of the ES. In addition, where practicable the scheme will seek to provide environmental enhancements as part of the scheme design. Such measures have not yet been confirmed, but will be included as part of the ES. Chapters 5 to 15 have provided a list of potential enhancement measures.

5 Air quality

5.1 Introduction

5.1.1 This chapter presents the on-going work for the assessment of the potential air quality effects of the scheme. Potential changes in air quality at sensitive receptors as a result of the scheme are considered with reference to relevant policy and legislation, and in the context of existing air quality in the study area.

5.1.2 The construction phase of the scheme has the potential to result in temporary air quality impacts from the emission of dust, which can cause a nuisance in the form of dust soiling and elevated concentrations of fine particulates (particulate matter smaller than 10µm in aerodynamic diameter; PM_{10}). The operational phase of the scheme has the potential to affect air quality due to:

- Changes in vehicular emissions and pollutant concentrations resulting from changes in the flow, speed and composition of traffic on the road network
- Changes in road layout and alignment, leading to changes in the distance between vehicular emission sources and receptors

5.1.3 The potential effects have been considered following the guidance contained in DMRB Volume 11 Section 3, Part 1 – Air Quality (HA207/07)[26] and the associated Interim Advice Notes (IANs), namely IAN 170/12[27], 174/13[28], 175/13[29] and 185/15[30]. Further detailed assessment is currently under way, and will be reported within the Environmental Statement (ES) that will be submitted to support the Development Consent Order (DCO) application.

5.1.4 The scheme has the potential to cause air quality effects, both positive and negative, during the construction and operational phases. The air quality topic encompasses two sub-topics:

- Local air quality, which is concerned principally with emissions of pollutants that are of concern to human health, vegetation and ecosystems, at a local level
- Regional effects, which are concerned with total emissions of pollutants that can disperse over longer distances, affecting human health, vegetation and ecosystems

[26] Highways Agency (2007) Design Manual for Roads and Bridges, Volume 11, Section 3, Part 1, HA 207/07, Air Quality.
[27] Highways Agency (2012) IAN 170/12: Updated air quality advice on the assessment of future NOx and NO2 projections for users of DMRB Volume 11, Section 3, Part 1 'Air Quality' (HA207/07).
[28] Highways Agency (2013) IAN 174/13: Update advice for evaluating significant local air quality effects for users of DMRB Volume 11, Section 3, Part 1 'Air Quality' (HA207/07).
[29] Highways England (2013) IAN 175/13: Updated air quality advice on risk assessment related to compliance with the EU Directive on ambient air quality and on the production of Scheme Air Quality Action Plans for users of DMRB Volume 11, Section 3, Part 1 'Air Quality' (HA207/07).
[30] Highways England (2015) IAN 185/15: Updated traffic, air quality and noise advice on the assessment of link speeds and generation of traffic data into speed bands for users of DMRB Volume 11, Section 3, Part 1 'Air Quality'.

5.2 Legislation and policy context

5.2.1 The following legislation and policy are relevant to the proposed scheme.

European Union

5.2.2 Directive 2008/50/EC[31] on ambient air quality and cleaner air for Europe was adopted in May 2008. This Directive defines limit values and times by which they are to be achieved for the purpose of protecting human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants.

5.2.3 Directive 2008/50/EC[32] sets out that the Limit Values apply everywhere with the exception of:

a) Any locations situated within areas where members of the public do not have access and there is no fixed habitation
b) In accordance with Article 2(1), on factory premises or at industrial installations to which all relevant provisions concerning health and safety at work apply
c) On the carriageway of roads
d) On the central reservations of roads except where there is normally pedestrian access to the central reservation

5.2.4 Defra assesses and reports on the compliance with the Air Quality Directive for each of the 43 zones and agglomerations across the UK.

National legislation and policy

Air quality legislation

5.2.5 The Air Quality Standards Regulations 2010[33] came into force in June 2010, which implement EU Directive 2008/50/EC on ambient air quality for the UK.

5.2.6 Part IV of the Environment Act 1995[34] requires that every local authority shall periodically carry out a review of air quality within its area, including likely future air quality. As part of this review, the local authority must assess whether air quality objectives (AQO) are being achieved, or likely to be achieved within the relevant periods. Any parts of a local authority's area where the AQOs are not being achieved, or are not likely to be achieved within the relevant period, must be identified and declared as an Air Quality Management Area (AQMA). Once such a declaration has been made, authorities are under a duty to prepare an Action Plan which sets out measures to pursue the achievement of the AQOs within the AQMA.

[31] European Union (April 2008) Directive on Ambient Air Quality and cleaner Air for Europe, Directive 2008/50/EC Official Journal (Volume 152, pp 0001-0044).
[32] European Union. (April 2008) Directive on Ambient Air Quality and cleaner Air for Europe, Directive 2008/50/EC Official Journal, vol. 152, pp. 0001-0044.
[33] Statutory Instrument (2010) The Air Quality Standard Regulations, No. 1001.
[34] Defra (2003) Part IV of the Environment Act 1995 Local Air Quality Management.

5.2.7 The AQOs, specifically for use by local authorities in carrying out their air quality management duties, are set out in the Air Quality (England) Regulations 2000[35] and the Air Quality (England) (Amendment) Regulations 2002[36].

5.2.8 The Air Quality Strategy (AQS) establishes the UK framework for air quality improvements. The air quality objectives in the AQS are a statement of policy intentions and policy targets. As such, there is no legal requirement to meet these objectives, although authorities are also required to work towards achieving the Strategy's objectives.

5.2.9 The AQOs and limit values relevant to the assessment are summarised in Table 5.1 below.

Table 5.1: Air quality objectives and limit values

Pollutant	Averaging Period	Air Quality Objectives and Limit Values		Attainment Date	
		Concentration	Allowance	Air Quality Objectives	EU Limit Values
Nitrogen dioxide (NO_2)	Annual	40 µg/m^3	-	31 December 2005[(a)(b)]	1 January 2010[(c)]
	1 Hour	200 µg/m^3	18	31 December 2005[(a)(b)]	1 January 2010[(c)]
Nitrogen Oxides (NO_X)[(d)]	Annual	30 µg/m^3	-	1st January 2001[(c)]	
Particulates (PM_{10})	Annual	40 µg/m^3	-	31 December 2004[(a)(b)]	1 January 2005[(c)]
	24 Hour	50 µg/m^3	35	31 December 2004[(a)(b)]	1 January 2005[(c)]

Notes: [(a)] Air Quality (England) Regulations 2000 as amended in 2002.
[(b)] Air Quality Strategy 2007.
[(c)] EU Directive 2008/50/EEC on ambient air quality and cleaner air for Europe and The Air Quality Standards Regulations 2010. Derogations (time extensions) have been agreed by the EU for meeting the NO_2 limit values in some zones/agglomerations.
[(d)] Designated for the protection of vegetation and ecosystems and referred to as the 'critical level' for NO_x.

5.2.10 The AQOs only apply in locations of relevant exposure. Table 5.2 provides details of where the respective objectives should and should not apply, and therefore the types of receptors that are relevant to the assessment of air quality.

[35] Statutory Instrument. (2000) Air Quality (England) Regulations, No. 928.
[36] Statutory Instrument. (2002) Air Quality (England) (Amendment) Regulations, No. 3043.

Table 5.2: Locations where the air quality objectives should and should not apply

Averaging period	Objectives should apply at:	Objectives should not apply at:
Annual	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term.
24 Hour	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term.
1 Hour	All locations where the annual mean and 24-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.

Source: Department for Environment, Food and Rural Affairs (2016), Local Air Quality Management – Technical Guidance (TG16).

Construction dust legislation

5.2.11 Section 79(1)(d) of the Environmental Protection Act 1990[37] defines one type of 'statutory nuisance' as "*any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance*". Where a local authority is satisfied that a statutory nuisance exists, or is likely to occur or recur, it must serve an abatement notice. Failure to comply with an abatement notice is an offence. However, it is a defence if an operator employs the best practicable means to prevent or to counteract the effects of the nuisance.

[37] Parliament of the United Kingdom (1990) Environmental Protection Act 1990.

Air quality policy

National Policy Statement for National Networks (2014)

5.2.12 The National Policy Statement for National Networks[38] (NPSNN) notes that the applicant should undertake an assessment of the impacts of the proposed project as part of the Environmental Statement (ES), which should describe:

- *Existing air quality levels*
- *Forecasts of air quality at the time of opening, assuming that the scheme is not built (the future baseline) and taking account the impact of the scheme*
- *Any significant air quality effects, their mitigation and any residual effects, distinguish between the construction and operation stages and taking account of the impact of road traffic generated by the project*

5.2.13 Paragraphs 5.12 and 5.13 of the NPSNN provides advice for decision makers:

"5.12 The Secretary of State must give air quality considerations substantial weight where, after taking into account mitigation, a project would lead to a significant air quality impact in relation to EIA and / or where they lead to a deterioration in air quality in a zone / agglomeration."

"5.13 The Secretary of State should refuse consent where, after taking into account mitigation, the air quality impacts of the scheme will:

- *Result in a zone / agglomeration which is currently reported as being compliant with the Air Quality Directive becoming non-compliant*
- *Affect the ability of a non-compliant area to achieve compliance within the most recent timescales reported to the European Commission at the time of the decision"*

5.2.14 Advice set out in Highways England's Interim Advice Notes (IAN) 174/13[39] and 175/13[40] ensures that an assessment to inform the reasonable and robust decision making on the judgements of significant air quality effects (NPSNN para 5.12) and determining whether a scheme would affect the UK's reported ability to comply with the Air Quality Directive (NPSNN para 5.13) can be completed and evaluated in line with the requirements of the NPSNN.

[38] Department for Transport (2015) National Networks National Policy Statement [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed August 2017).
[39] Highways England (2013) Interim Advice Note 174/13 Updated advice for evaluating significant local air quality effects for users of DMRB, Volume 11, Section 3, Part 1 'Air Quality' (HA 207/07).
[40] Highways England (2013) Interim Advice Note 175/13 Updated air quality advice on risk assessment related to compliance with the EU Directive on ambient air quality and on the production of Scheme Air Quality Action Plans for user of DMRB Volume 11, Section 3, Part 1 Air Quality.

5.3 Assessment methodology

5.3.1 The assessment methodology for all air quality assessment work completed to date to inform this PEI report, including model verification, can be found in appendix B.1 and appendix B.2.

5.3.2 The assessment methodology for defining the significance of effects upon air quality to be used to develop the air quality chapter within the ES is contained within section 6.11 of the Environmental Impact Assessment (EIA) Scoping Report submitted to the Planning Inspectorate in November 2017. The EIA Scoping report can be accessed here:

5.3.3 https://infrastructure.planninginspectorate.gov.uk/projects/south-west/a303-sparkford-to-ilchester/?ipcsection=docs.

5.4 Study area

Local assessment

5.4.1 The local air quality assessment involves estimating the change in pollutant concentrations at sensitive receptors resulting from the operation of the scheme. The study area for the local air quality assessment covers human health receptors (appendix B.3) and designated sites (appendix B.4) within 200m of roads that are expected to be affected by the scheme. The local ARN from the previous assessment (refer to section 5.8 for differences between the previous and current assessments) is shown in appendix B.5.

5.4.2 Under DMRB Volume 11, Section 3, Part 1 (HA 207/07), affected roads are defined where:

- Road alignment will change by 5m or more
- Daily traffic flows will change by 1,000 Annual Average Daily Traffic (AADT) flow or more
- Heavy Duty Vehicle (HDV) flows will change by 200 AADT or more
- Daily average speed will change by 10kph or more
- Peak hour speed will change by 20kph or more

5.4.3 The majority of the affected links identified for the scheme met the 1,000 AADT criteria.

5.4.4 The traffic model predicted that the scheme would lead to an increase of approximately 2,000-3,000 vehicles a day on the section of the A303 near Sparkford and Ilchester. This change is likely due to the improved alignment along the A303 which encourages traffic to use this section of the A303 instead of local B roads and some reassignment from the M4 and A35 corridors. This increase in AADT along the A303 covers a large distance beyond the scheme extents. The local ARN for the scheme extends approximately 90km from Winterbourne Stoke to Buckland St Mary.

Regional assessment

5.4.5 The regional air quality assessment assesses the change in emissions resulting from the scheme. This is required as emissions not only affect local air quality, but also have an effect on a regional, national and international scale.

5.4.6 The criteria stated in DMRB which was used to determine the regional affected road network is presented below:

- A change of more than 10% in AADT
- A change of more than 10% to the number of HDVs
- A change in daily average speed of more than 20 km/hr

5.4.7 Similar to the local assessment, the majority of the affected road links meet the AADT criteria. The drawing contained within appendix B.6 presents the locations of the regional ARN for the scheme.

5.5 Existing baseline

5.5.1 Information on air quality in the UK can be obtained from a variety of sources including Local Authorities, national network monitoring sites and other published sources. For the purpose of this assessment, data has been obtained from South Somerset District Council, Department for Environment Food and Rural Affairs (Defra) and Highways England. The most recent full year of bias adjusted monitoring data available from South Somerset District Council is for 2016.

Local authority review and assessment

5.5.2 In 2002/03, South Somerset District Council declared an AQMA in Yeovil due to monitored and modelled exceedances of the NO_2 annual mean air quality objective. These exceedances were primarily associated with the A30 and A37 but the whole town of Yeovil was declared an AQMA as *"a town wide action plan would be required to manage the local and through traffic."*

5.5.3 The Yeovil AQMA is located approximately 7 kilometres south of the scheme and is outside the local ARN of the scheme in the Opening Year. Therefore, changes in traffic characteristics that may lead to a significant air quality effect are not expected to occur within Yeovil. On this basis, the scheme is not expected to have an effect on the Yeovil AQMA in the Opening year.

Automatic monitoring

5.5.4 South Somerset District Council does not currently undertake any automatic monitoring. The automatic monitoring site at Yeovil District Hospital, which monitored NO_2 and PM_{10}, was removed following failure of the equipment and has not been replaced.

5.5.5 The nearest automatic monitoring site to the scheme is the Defra Automatic Urban and Rural Network (AURN) rural background site at Charlton Mackrell, approximately 6 kilometres northwest of the scheme. This monitoring site is

considered representative of background concentrations. Tables 5.1 and 5.2 below present the latest results from the Charlton Mackrell monitoring site. For the past 3 years, annual and hourly NO_2 concentrations at this site have been well below their respective objectives.

Table 5.1: Annual automatic monitoring data for NO_2

Site name	Site classification	National grid reference		Annual mean NO_2 concentration (µg/m^3)		
		X	Y	2014	2015	2016
Charlton Mackrell	Rural background	352196	128768	6.6	6.0	7.4

Source: Defra UK AIR 2017
Note: Annual Mean Objective is 40 µg/m^3
All results presented have >99% data capture

Table 5.2: Hourly automatic monitoring data for NO_2

Site name	Site classification	National grid reference		Number of hours NO2 concentrations were greater than 200 µg/m3		
		X	Y	2014	2015	2016
Charlton Mackrell	Rural background	352196	128768	0	0	0

Source: Defra UK AIR 2017
Note: Hourly mean objective is 200 µg/m^3 not to be exceeded for more than 18 hours per calendar year
All results presented have >99% data capture

Diffusion tube monitoring

5.5.6 South Somerset District Council currently undertakes diffusion tube monitoring at 20 sites to assess compliance with the annual mean NO_2 air quality objective. These monitoring sites are located approximately 7 to 10 kilometres south of the scheme within the Yeovil AQMA and exceedances of the annual mean NO_2 objective were found at five sites in 2016. However, as none of these monitoring sites are located within the study area of the scheme, and therefore do not represent relevant exposure of receptors likely to affected by the scheme, are not discussed further.

5.5.7 A 6 month air quality monitoring survey was undertaken by Highways England from January 2016 to June 2016. Monitoring was carried out and reported at 16 locations along roads near the scheme as well as at the Charlton Mackrell AURN. The results from monitoring were bias adjusted and annualised in accordance with Defra's Local Air Quality Management Technical Guidance (TG16), as described in appendix B.6.

5.5.8 This monitoring survey concluded that NO_2 concentrations within the vicinity of the scheme are well below the annual mean NO_2 air quality objective. The greatest annual mean NO_2 concentration within the vicinity of the scheme of 29.7µg/m^3 was recorded at the Hawk House B&B monitoring site, on the existing A303.

5.5.9 The bias adjusted and annualised results from this monitoring survey are presented in Table 5.3 below. The locations of these monitoring sites in relation to the scheme is presented in appendix B.7.

Table 5.3: Project specific diffusion tube monitoring data for NO_2

Site ID	Location	Site classification	National grid reference		Bias adjusted and Annualised NO_2 ($\mu g/m^3$)
			X	Y	2016
A303SPAR_001_1215	Chapel Cross Tearoom	Roadside	363096	126330	13.3
A303SPAR_002_1215	Brains Lane	Roadside	360781	126516	11.7
A303SPAR_003_1215	A359	Roadside	360913	126904	13.3
A303SPAR_004_1215	High Street	Roadside	360471	126423	18.7
A303SPAR_005_1215	Gason Hill	Roadside	358967	125551	19.7
A303SPAR_006_1215	Steart Hill 1	Roadside	357851	125391	19.8
A303SPAR_007_1215	Steart Hill 2	Roadside	357435	126624	7.7
A303SPAR_008_1215	A303 West of Howell Hill	Roadside	357724	125321	25.6
A303SPAR_009_1215	Plowage Lane	Roadside	357074	125029	28.6
A303SPAR_010_1215	A303 Hawk House B&B	Roadside	356760	124922	29.7
A303SPAR_011_1215	Church Street	Roadside	354621	125071	14.4
A303SPAR_012_1215	Higher Farm Lane	Roadside	354653	125228	16.4
A303SPAR_013_1215	Heathcote Road	Roadside	354326	123937	13.7
A303SPAR_014_1215	Somerton Road	Roadside	352190	123964	20.8
A303SPAR_015_1215	Queen Street	Roadside	349768	120271	13.7
A303SPAR_016_1215	Colocation Charlton Mackrell AURN	Rural Background	352196	128768	7.5
A303SPAR_017_1215	Colocation Charlton Mackrell AURN	Rural Background	352196	128768	7.0
A303SPAR_018_1215	Colocation Charlton Mackrell AURN	Rural Background	352196	128768	7.2

Note: Annualisation factor = 1.08, bias adjustment factor = 0.94. Annual NO_2 AQO = 40µg/m^3

Summary

5.5.10 Scheme specific monitoring data indicates that annual mean NO_2 concentrations are well below the annual NO_2 AQO in the study area. Nearby automatic monitoring at Charlton Mackrell also recorded NO_2 concentrations which were well below the short and long-term NO_2 AQOs. While some exceedances were recorded by South Somerset District Council diffusion tube sites in the Yeovil AQMA, these exceedances occurred at sites outside the study area. It is expected that air quality at receptors within the study area would currently meet the relevant NO_2 AQOs.

5.6 Value (sensitivity of resources and receptors)

5.6.1 IAN 174/13 provides advice for evaluating significant local air quality effects for public exposure and Designated Sites. Evaluation of the significance of local air quality effects will be undertaken in accordance with IAN 174/13, a summary of which is provided here.

5.6.2 The difference in pollutant concentrations between the Do-Minimum and Do-Something scenario is used to describe the 'magnitude' of change in

accordance with Table 5.4. The larger the magnitude of change, the more certainty there is that there will be an impact as a result of the proposed scheme. Where the scheme impact on concentrations is less than 1% of the air quality threshold, then the change at these receptors is considered to be imperceptible, and these receptors are scoped out of the judgement on significance.

Table 5.4: Magnitude of change criteria

Magnitude of change in concentration (µg/m³)	Value of change in annual average NO_2 and PM_{10}
Large (>4)	Greater than full MoU value of 10% of the air quality objective (4µg/m^3)
Medium (>2)	Greater than half of the MoU (2µg/m^3), but less than the full MoU (4µg/m^3) of 10% of the air quality objective
Small (>0.4)	More than 1% of objective (0.4µg/m^3) and less than half of the MoU i.e. 5% (2µg/m^3). The full MoU is 10% of the air quality objective (4µg/m^3)
Imperceptible (</= 0.4)	Less than or equal to 1% of objective (0.4µg/m^3)

Notes: MoU = Measure of Uncertainty (10% of the objective)

5.6.3 Only receptors which exceed the air quality objective (NO_2 annual mean of 40µg/m³) in either the Do Minimum or Do Something scenarios are used to inform significance. The total number of receptors in each magnitude band are then aggregated and compared to the guideline number of receptors constituting a significant effect as shown in Table 5.5. The guideline bands have been developed for each magnitude category, and set the upper level of likely non-significance and the lower level of likely significance. Between these 2 levels are the ranges where likely significance is more uncertain, and therefore professional judgment would be required.

Table 5.5: Guideline to number of properties constituting a significant effect

Magnitude of change in concentration (µg/m³)	Number of receptors with:	
	Worsening of air quality objective already above objective or creation of a new exceedance	Improvement of an air quality objective already above objective or the removal of an existing exceedance
Large (>4)	1 to 10	1 to 10
Medium (>2)	10 to 30	10 to 30
Small (>0.4)	30 to 60	30 to 60

5.6.4 If a scheme is above the lower level of likely significance, consideration should be given to all the evidence that may support or detract from the conclusion of a significant effect. The information compiled to complete Table 5.11 is then used along with the following key criteria to determine the overall evaluation of local air quality significance:

- Is there a risk that environmental standards will be breached?
- Will there be a large change in environmental conditions?
- Will the effect continue for a long time?
- Will many people be affected?
- Is there a risk that protected sites, areas, or features will be affected?
- Will it be difficult to avoid, or reduce, or repair, or compensate for the effect?

5.6.5 IAN 174/13 provides advice on how to determine the significance of effect significance in relation to each of the criteria above, and this advice has been used when determining the overall significance. However, not every receptor has been modelled in areas where exceedances of the annual mean NO_2 AQO may occur. This would be undertaken at the next stage of assessment and the findings will be presented within the ES. The results predicted at the most sensitive receptor locations (receptors closest to roads with the largest changes in traffic characteristics) have been used here to estimate how many receptors (with an exceedance) are likely to be affected by the scheme, in relation to the criteria shown in Table 5.10 and Table 5.11, and therefore whether there could potentially be a significant effect.

5.7 Consultation

5.7.1 Initial consultation with South Somerset District Council has been progressed through the key stakeholder engagement exercises which have been undertaken since project inception, as detailed within section 2.7 of this report.

5.7.2 Consultation with South Somerset District Council will be undertaken to inform the ES and to ascertain the most up-to-date ambient air quality monitoring data.

5.8 Assumptions and limitations

5.8.1 Air quality modelling predictions have been based on the most reasonable, robust and representative methodologies in accordance with best practice guidance. However, there is an inherent level of uncertainty associated with the Screening Method predictions which have been used in previous assessments, including:

- Uncertainties with traffic forecasts
- Uncertainties with vehicle emission predictions
- Uncertainties with background air quality data
- Simplifications made within Screening Method calculations or post processing of the data that represent chemical reactions

5.8.2 To best manage these uncertainties, the air quality Screening Method was evaluated using air quality measurements to verify outputs. The Screening Method verification process was undertaken in line with Defra guidance[41] to manage the uncertainties referred to above. It does this by comparing modelled and monitored pollutant concentrations and, if necessary, adjusting the Screening Method output to account for systematic bias. However, it should be noted that modelled results following verification can still contain an element of residual uncertainty, which in IAN 174/13 is referred to a Measure of Uncertainty (MoU).

5.8.3 Following the verification process for the scheme an overall Root Mean Square Error value of less than 10% of the mean annual air quality objective is

[41] Defra (2016) Part IV of the Environment Act 1995, Environment (Northern Ireland) Order 2002 Part III: Local Air Quality Management Technical Guidance (TG16), available online at http://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf (last accessed August 2017).

achieved, which is considered robust according to Defra guidance. On this basis, the modelled results were considered appropriate to allow a robust professional judgement of significance to be determined. The model verification for the scheme in the previous assessment is presented in appendix B.1.

5.8.4 The assessment which will be undertaken for the ES will have similar assumptions and limitations, although full dispersion modelling will be used instead of Highways England's DMRB Screening tool. Nonetheless, model verification will be undertaken to limit uncertainties associated with using dispersion models.

5.9 Design and mitigation measures

Construction

5.9.1 To mitigate against construction dust effects at receptors (drawings contained within appendix B.3) the construction contractor shall carryout construction works in accordance with the Best Practicable Means (BPM), as described in Section 79 (9) of the Environmental Protection Act 1990, to reduce emissions which may affect air quality. This could include, but not be limited to, the following mitigation measures that will be included within the Construction Environmental Management Plan (CEMP):

- Avoid double handling of materials
- Minimise height of stockpiles and profile to minimise wind-blown dust emissions and risk of pile collapse
- Locate stockpiles out of the wind (or cover, seed or fence) to minimise the potential for dust generation
- Ensure that all vehicles with open loads of potential dusty materials are securely sheeted or enclosed
- Provide a means of removing mud and other debris from wheels and chassis of vehicles leaving the site. This may involve a simple coarse gravel running surface or jet wash, or in the case of a heavily used exit point, wheel washers
- Maintain a low speed limit on site to prevent the generation of dust by fast moving vehicles
- Damp down surfaces in dry conditions
- Water should be sprayed during cutting / grinding operations (i.e. cutting kerbs)
- All vehicle engines and plant motors shall be switched off when not in use

Operation

5.9.2 No operational air quality specific mitigation measures have been designed into the scheme, and it is not likely that any operational mitigation would be incorporated into the design, on the basis that no likely significant effects have been identified to date. Further information on the likely significance of effects is contained within section 5.10.

5.10 Assessment of effects

5.10.1 Effects have been predicted at a selection of worst-case receptors which are within 200m of the Local ARN for the scheme. This section presents results from a previous assessment which was undertaken to inform option selection at receptors where the highest NO_2 concentrations and greatest effects are predicted (see Section 5.8 for the for differences between the previous and current assessments). Based on IAN 174/13, effects were only likely to be considered significant where AQOs are exceeded.

Construction

Human health and wellbeing effects

5.10.2 The construction phase is expected to last approximately 2.5 years and could affect local air quality through the generation and subsequent deposition of construction dust arising from construction activities and vehicle movements. A construction assessment was undertaken in accordance with DMRB HA207/07, which involves identifying sensitive receptors within 200m of the construction site. The drawing contained in Appendix B.8 shows the sensitive receptors identified for the construction phase. The plan contained within appendix A.2 provides an indication of the likely construction areas required for the scheme. However, at this stage, it is not known exactly where the site compound would be located and therefore only the construction boundary associated with the scheme alignment in relation to sensitive receptors was considered.

5.10.3 With the implementation of the mitigation measures identified above, air quality impacts from the construction phase of the scheme are not expected to be significant.

Operation

Human health and wellbeing effects

5.10.4 Predicted NO_2 concentrations at key receptors are presented in Table 5.6.

5.10.5 The highest predicted annual mean NO_2 concentrations occurred at receptor 7, which is on the existing A303 near Stoke Sub Hamdon, to the west of the scheme. Predicted annual mean NO_2 concentrations increased by 0.7µg/m^3 from 22.8µg/m^3 in the Do Minimum scenario to 23.5µg/m^3 in the Do Something scenario. Receptor 7 is located within 23m of the existing A303 (which has approximately 39,000 vehicles per day in the Do Minimum Scenario). At this location, total vehicle flows as a result of the scheme would increase by approximately 2,000 vehicles per day.

5.10.6 The greatest increase in annual mean NO_2 predicted at receptor 4 and receptor 9, where increases of 1.1µg/m^3 were predicted due to the scheme. Receptor 4 is located approximately 63m from a section of the A303 which would have approximately 28,400 vehicles per day on it in the Do-Minimum scenario. In the Do Something scenario, this receptor would be located approximately 38m from the new A303 alignment, which would have approximately 32,500 vehicles per

day. Receptor 9 meanwhile is located approximately 183m from a section of the A303 with 28,000 vehicles in the Do Minimum scenario and would be located approximately 84m from a section of the A303 which would have 32,000 vehicles in the Do Something scenario.

5.10.7 The greatest reductions in predicted annual mean NO_2 concentrations occurred at receptors 1 and 2, where a decrease of 7.3µg/m^3 and 6.9µg/m^3 respectively was predicted. Receptors 1 and 2 are both located within 10m of a section of the existing A303 which has approximately 28,000 vehicles per day in the Do Minimum Scenario. In the Do -Something Scenario, the new A303 alignment would have approximately 32,500 vehicles per day, but the scheme would move the A303 approximately 20m and 70m further from receptors 1 and 2 respectively.

5.10.8 All predicted annual mean concentrations of NO_2 were well below 60µg/m^3 and therefore no exceedances of the 1-hour NO_2 objective were predicted for the scheme. As such, an overall Not Significant Adverse effect was allocated.

Table 5.6: Annual mean NO_2 concentrations

No.	Location	NO_2 annual mean concentration (µg/m^3)			
		2015 Base Year	2023 DM	2023 DS	Change (DM to DS)
1	The Hollies (Plowage Lane/A303)	23.0	18.5	11.2	-7.3
2	Crusty Cottage (A303)	24.8	20.4	13.5	-6.9
3	The Firs (Steart Road/A303)	14.4	11.1	11.1	0.0
4	Pepperhill Cottage (Camel Hill)	12.1	9.4	10.5	1.1
5	Downhead Lane	7.7	5.7	5.7	0.0
6	Spring Lodge (A303)	17.1	13.9	14.3	0.4
7	Halfway House (A303)	27.9	22.8	23.5	0.7
8	Fosse Way	14.4	11.4	11.5	0.1
9	Plowage Lane	9.8	7.4	8.5	1.1
10	Hill View (A359)	12.2	9.4	9.2	-0.2
11	Vale Farm (Camel Hill)	7.4	5.5	5.5	0.0

Ecological effects

5.10.9 Concentrations of NO_X were predicted along 4 receptor transects at 10 metre intervals up to 200 metres maximum of from the scheme ARN centreline within the Whitesheet Hill, Stockton Wood and Down, Yarnbury Castle and Parsonage Down Designated sites, as presented in the drawing contained within Appendix B.5. As indicated in Table 5.7, annual mean NO_X concentrations at receptor E1 (Stockton Wood and Down) were predicted to exceed the critical level of 30µg/m^3 at the closest point to the road. The change in NO_x at this location was predicted to be 0.98µg/m^3, which is considered 'small' in accordance with IAN 174/13. This suggests that there is potential for a significant effect to occur at this site.

5.10.10 The exceedance of the NO_x critical level only affected a small area of the Stockton and Wood and Down Designated site; concentrations of NO_x were predicted to be below 30 µg/m^3 beyond approximately 5 metres into the SSSI away from the road. Further assessment detail is provided within Chapter 8

Biodiversity. More detailed assessment will also be undertaken for the ES to assess the potential changes in nitrogen deposition at the Stockton Wood and Down Designated site to determine the overall significance of effect of the scheme in accordance with IAN 174/13.

5.10.11 Predicted NOx concentrations at the remaining ecological receptor locations were below 30µg/m^3 and changes were imperceptible. Therefore, ecological receptors E2, E3 and E4 (Whitesheet Hill, Yarnbury Castle and Parson Down) were not considered further.

Table 5.7: Annual mean NOx concentrations at ecological receptors

Receptor ID	Distance to the scheme ARN centreline (m)	Annual mean NO_x concentration (µg/m^3)		
		2023 DM	2023 DS	Change (DM to DS)
E1 (Stockton Wood and Down)	9.5*	30.9	31.9	0.98
	14.5	22.3	22.9	0.60
	19.5	18.7	19.1	0.44
	29.5	15.3	15.6	0.30
	39.5	13.6	13.8	0.23
	49.5	12.6	12.8	0.19
E2 (Whitesheet Hill)	151.5	9.1	9.1	0.09
E3 (Yarnbury Castle)	83	10.7	10.8	0.11
E4 (Parsonage Down)	196	9.5	9.5	0.04

Note: change in NO_x presented to 2dp to indicate magnitude of change and is not an indication of model accuracy.
*Distance of 9.5 metres from the scheme ARN centreline equivalent to 5 metres from the edge of the road.

Assessment of significance

5.10.12 No exceedances of air quality objectives were predicted at human receptors in the Do Minimum and Do Something scenario, and therefore effects are not expected to be significant in accordance with IAN 174/13.

5.10.13 As discussed in section 5.3.40, the scheme is expected to have a low compliance risk rating and is therefore unlikely to cause non-compliance with EU Directive 2008/50/EC.

5.10.14 There was a small increase in NO_x concentrations at the boundary of the Stockton Wood and Down SSSI (E1), which was predicted to be exceeding the NO_x annual objective in the Opening Year Do-Minimum and Do Something scenarios. More detailed assessment will be undertaken for the ES for this designated site to assess whether the predicted changes in NO_x concentrations and nitrogen deposition are significant.

Regional effects

5.10.15 Results from the regional assessment are presented in Table 5.8. The scheme is predicted to cause an increase in emissions of NO_X, PM_{10} and CO_2 in the Opening and Design Year. This is due to an increase in the number of vehicles travelling along the A303 in the Do Something scenario relative to the Do Minimum scenario.

Table 5.8: Regional effects

Pollutant	2023			2038		
	DM	DS	Change (DM to DS)	DM	DS	Change (DM to DS)
NOx (kg/yr)	45,397	49,706	4,309	87,544	95,804	8,260
PM_{10} (kg/yr)	6,009	6,408	399	14,951	16,077	1,126
CO_2 (tn/yr)	37,832	40,908	3,077	94,886	102,652	7,765

5.11 Monitoring requirements for significant adverse effects

5.11.1 As no significant adverse effects on human receptors are anticipated, no operational air quality monitoring is required for the scheme. Further work will be undertaken for the ES to determine the likelihood of a significant effect at Stockton Wood and Downs SSSI. Any requirements for monitoring of significant effects for Stockton Wood and Downs SSSI will subsequently be established as part of this more detailed assessment, and reported within the ES. At this stage, it is not considered that further monitoring will be required.

5.12 Conclusions

5.12.1 This chapter provides a summary of the assessments that have been undertaken so far of the potential air quality effects of the scheme in accordance with DMRB Volume 11 Section 3, Part 1 – Air Quality (HA207/07) and relevant IANs.

5.12.2 Some construction activities would be likely to generate dust, which has the potential to cause annoyance (e.g. discolouration of surfaces) at nearby properties if uncontrolled. These effects would be mitigated through the implementation of best practicable means included as part of the CEMP.

5.12.3 Operational air quality effects have been predicted at worst-case receptors using the DMRB Screening Method. In the ES, effects will be predicted using the ADMS-roads dispersion model.

5.12.4 The operational local air quality effects can be summarised as:

- There is a low risk that the scheme would lead to significant air quality effects at human receptors in accordance with IAN 174/13 and the change in NO_2 associated with the scheme is not expected to result in non-compliance with the EU Directive. The overall effects to human health and wellbeing are anticipated to be Not Significant Adverse, during both construction and operation

- There is a potential risk of a Significant Adverse effect at the Stockton Wood and Down SSSI during operation, from the scheme. Therefore, more detailed assessment will be undertaken for this designated site to assess the potential changes in nitrogen deposition, and will be reported within the ES

5.12.5 The scheme is predicted to cause small changes in regional emissions during operation, although the effects have been assigned as being Not Significant Adverse.

6 Cultural heritage

6.1 Introduction

6.1.1 This chapter presents the on-going work for the assessment of the potential effects upon the cultural heritage resource that are anticipated from the scheme and outlines proposed measures to help mitigate these potential effects.

6.1.2 The assessment is undertaken in accordance with the DMRB Volume 11, Section 3, Part 2 'Cultural Heritage'. Further detailed assessment is currently under way, and will be reported within the Environmental Statement (ES) that will be submitted to support the Development Consent Order (DCO) application.

6.2 Legislation and policy context

National legislation

6.2.1 The overarching legislation in relation to the historic environment in the UK is provided by:

- The Ancient Monuments and Archaeological Areas Act 1979
- The Planning (Listed Buildings and Conservation Areas) Act 1990

National policy

National Policy Statement for National Networks

6.2.2 The National Policy Statement for National Networks[42] (NPSNN) includes Section 5 'The Historic Environment' which addresses impacts to heritage assets and the conservation and enhancement of the historic environment. The statement sets out requirements for the applicant's assessment and the Secretary of State's responsibilities when dealing with planning proposals which have the potential to impact on cultural heritage assets.

6.2.3 Paragraphs 5.122 and 5.127 concern setting. Paragraph 5.122 states that heritage value is not just derived from the physical presence of the asset but also from its setting.

6.2.4 Paragraphs 5.123 to 5.1225 notes that the Secretary of State should not just consider designated assets in their assessment, but also non-designated assets.

6.2.5 Paragraph 5.131 notes that when considering the impact of a proposed development on the significance of a designated heritage asset, the SoS should give great weight to the asset's conservation. Paragraph 5.132 goes on to say

[42] Department for Transport (2015) National Networks National Policy Statement [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed August 2017).

any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development.

6.2.6 Paragraph 5.139 notes that a documentary record of our past is not as valuable as retaining the heritage asset and therefore the ability to record evidence of the asset should not be a factor in deciding whether consent should be given.

6.3 Assessment methodology

6.3.1 The assessment methodology for defining the significance of effects upon cultural heritage is contained within section 7.11 of the Environmental Impact Assessment (EIA) Scoping Report submitted to the Planning Inspectorate in November 2017. The Scoping Report can be accessed here:

6.3.2 https://infrastructure.planninginspectorate.gov.uk/projects/south-west/a303-sparkford-to-ilchester/?ipcsection=docs.

6.4 Study area

6.4.1 The cultural heritage assessment is based on a 1 kilometre study area. The study area has been developed in consultation with Historic England, South West Heritage Trust and the South Somerset District Council Conservation Officer. This allows a full understanding of the context and setting of the heritage assets identified; facilitating an assessment of the potential effects of the scheme during construction and operation upon heritage assets. The extent of the study area is based upon the guidance provided in DMRB Volume 11, Section 3, part 2, though the 1 kilometre area is larger than that advised in order to include effects on setting from the erection of new structures.

6.5 Existing baseline

Topography and geology

6.5.1 The A303 between the villages of Sparkford and Podimore climbs over Camel Hill before descending to the south-west into the Yeo Valley; an upland area between the rivers Carey and Yeo on the southern fringe of the Somerset Levels.

6.5.2 Sparkford, at the eastern end of the scheme, lies at approximately 46m AOD. Podimore, at the western end of the scheme, lies at approximately 19m AOD. Camel Hill rises to a height of approximately 68m AOD.

6.5.3 The underlying bedrock across the study area comprises of Jurassic and Triassic mudstones (Blue Lias formation and Charmouth Mudstone formation). Quaternary river gravel deposits (undifferentiated) are recorded as the superficial deposits[43].

[43] British Geological Society (BGS) (2016). *Geology of Britain viewer* [online] available at: http://mapapps.bgs.ac.uk/geologyofbritain/home.html (last accessed July 2017).

Archaeological and historical background

6.5.4 A full description of the archaeological and historical background will be provided within the Environmental Statement (ES), and a summary is provided below.

Designated Assets

6.5.5 There are 2 Scheduled Monuments located within the study area:

- Romano-British settlement immediately south-west of Camel Hill Farm (list entry ID 1020936), situated adjacent to the A303.
- Medieval settlement remains north of Downhead Manor Farm (list entry ID 1021260) approximately 400 metres to the north-north-west of the scheme.

6.5.6 There are 90 Listed Buildings within 1 kilometre of the scheme, comprising:

- 3 Grade I Listed Buildings, all churches, the closest of which is the Church of St Peter (NHLE 1295400), Podimore, 170 metres south of the scheme
- 6 Grade II* Listed buildings, the closest of which is the Triumphal arch gateway to Hazlegrove House (NHLE 1272919), 110 metres east of the eastern end of the proposed scheme
- 81 Grade II Listed Buildings, including Hazlegrove House and the formal garden wing walls and gateway (NHLE1277545, NHLE1248865), and one 19th century milestone (NHLE1345996) which is in the line of the scheme. The majority of the remaining 80 Listed Buildings are situated within historic settlements, away from the scheme

6.5.7 The settings of these listed structures need to be taken into account. At this early stage in the assessment process, while the design and location of some elements of the scheme (such as balancing ponds and construction compounds) remain unknown; it is necessary to base this assessment of setting impacts upon generalised assumptions. Proximity to the scheme is the main consideration in this context. As noted at the start of section 6.10, below, further stages of research, survey, and evaluation are to follow as part of the on-going assessment process (in tandem with the evolving scheme design) and therefore it is possible that the assessment of setting effects within section 6.10 will be revised.

6.5.8 The scheme would pass through the southern end of Hazlegrove House (Grade II Listed) Registered Park and Garden (list entry ID 1000422, Historic Environment Record (HER) 54430). This originated as a medieval deer park, which was altered during the 18th century to include an altered driveway / approach through the parkland to the south. This included the addition of the Triumphal Arch gateway at Sparkford. This was severed from the bulk of the parkland by the construction of the 1990s Sparkford Bypass, which necessitated a further alteration of the driveway approaching the house.

6.5.9 The proposed new A303 dual-carriageway and junction (and roads leading to it) would require land take of approximately one third of the area of the designated parkland for the scheme. This would be at the southern end of the parkland; an

area currently comprising 1 substantial arable field (approximately 50% of this area), an area of woodland, and open parkland used for grazing cattle. The arable area was historically part of the parkland of the Hazlegrove estate. The current entrance and driveway to the school also leads through this area from the Sparkford Roundabout.

6.5.10 There are 2 Conservation Areas located within the study area; West Camel Conservation Area and Queen Camel Conservation Area, both on the southern flank of Camel Hill. They lie approximately 575 meters and 650 metres respectively from the scheme.

6.5.11 South Somerset District Council has highlighted an area of high archaeological potential for prehistoric and Romano-British settlement remains in the vicinity, as demonstrated by evidence from aerial photographs, as well as subsequent archaeological survey and investigation undertaken over the last 20 years.

6.5.12 The archaeological aerial survey identified traces of several possible funerary monuments in the area of the Camel Hill Services. The most likely of these is a possible Bronze Age round barrow in the field opposite the filling station. This lies directly in the line of the scheme. Previous geophysical survey in the south-eastern part of this field identified traces of what were thought to be 3 further possible barrow sites, although subsequent trial trenching yielded negative results (HER 11600, 11604). Several further ring ditch cropmarks are visible approximately 190 metres to the north-west, on the western side of Pepper Hill Copse (approximately 110 metres from the scheme). The former quarry now occupied by the Camel Hill Services is the site of a known early medieval cemetery site (see below) and it is likely that this prominent hilltop location provided an optimum setting for burial from the prehistoric period onwards due to its high visibility within the surrounding landscape.

6.5.13 An area of Iron Age settlement to the south-west of Camel Hill Farm (HER 11595) has been identified through geophysical survey and trial trenching on both sides of the A303. The proposed new side-road on the south-eastern side of Camel Hill Farm would lie immediately adjacent to this area. The aerial survey and transcription undertaken as part of the Historic Environment Appraisal identified slight traces of former boundary banks which may be associated with this on the southern side of the A303. The scheme would pass through this area.

6.5.14 Multiple sites of Iron Age settlement and findspots have been recorded across the study area, including a settlement to the south-east of Podimore (HER 54794), approximately 115 metres to the south of the western end of the scheme.

6.5.15 Between the A303 and Camel Hill Farm, a large square banked enclosure was visible on vertical aerial photographs of 1947. The bank was approximately 2 metres wide, and enclosed an area measuring 30 metres by 26 metres. Its proximity to both the areas of prehistoric and Romano-British settlement to the west, as well as the early medieval cemetery to the south (see paragraph 6.5.26 below) raises the possibility of an association with one of these. Alternatively, it may have had an origin related to the nearby historic and modern limestone

quarrying and processing. In addition to the Scheduled Monument noted in section 6.5.5, the A303 roughly follows the course of the Roman road between Ilchester (Roman *Lindinis*) to the south-west, and Andover (the A303 roughly follows the same route).

6.5.16 An early medieval inhumation cemetery is known at the former quarry site which is now partially occupied by the Camel Hill Services (between the A303 and Gason Lane) (HER 54429).

6.5.17 Areas of abandoned medieval and post-medieval settlement at Podimore extend beyond the limits of the current village, especially to the north and south (HER 54802). Evidence of this was mapped during the aerial survey from earthworks visible on lidar in the field on the western side of Higher Farm Lane, on the northern side of the A303. This is near to the western termination of the scheme.

6.5.18 Extensive areas of medieval (and possibly also post-medieval) ridge and furrow, as well as former field boundaries, are clearly visible across the study area on aerial photographs and lidar.

6.5.19 By far the most frequent evidence of activity dating to the post-medieval period from across the study area are the extensive former quarry sites. Limestone was extracted from sites across the ridge that forms Camel Hill, to be converted to lime for use in the building trades, as well as in agriculture. This was done in the numerous small limekilns that existed previously across the Camel Hill area. The closest historic quarry and limekiln sites to the scheme are:

- An area to the west of Camel Hill Farm, on the northern side of the A303. A small roadside portion of this area has subsequently been re-opened as a modern quarry. The scheme would run alongside the southern edge of this area
- The area between Camel Hill Farm and Pepper Hill Cottage, on the northern side of the A303. These areas would be partially overlapped by the scheme
- The quarry site at Ridge Copse (HER 24645), on the southern side of the A303. This site included a limekiln at its southern extent (HER 54442). The scheme would run alongside the northern edge of this area

6.5.20 Royal Naval Air Station (RNAS) Yeovilton, which dates from WWII (HER 55405), lies to the south of the western end of the scheme. Its northernmost extent lies just to the south of the current A303. The scheme would partially overlap the northern extent of a former Royal Observer Corp (ROC) radar station HER 56969, on the south-eastern side of the junction of the A303 with Traits Lane.

6.5.21 Further possible nearby WWII related sites and features identified by the aerial survey include:

- 11 rows of rectangular temporary structures visible on vertical aerial photographs of 1943 and 1944 alongside the A303 and B3151 roads (towards the western end of the scheme). These have been interpreted

as temporary storage or accommodation associated with RNAS Yeovilton during the war

- 2 possible bomb craters visible within the triangular area of land between the A303 and the B3151 (at the western end of the scheme)
- 4 possible air raid shelters or bunkers visible on vertical aerial photographs of 1947 and 1960 as oblong mounds in the field on the south-eastern side of Conegore Corner. Though they appear to have been levelled by the time of the 2009 lidar imagery; it is possible that sub-surface features may remain. The scheme would encompass the northernmost two of these features

6.6 Value (sensitivity of resources and receptors)

6.6.1 The value / sensitivity of the known heritage assets along the scheme is discussed below, and is also itemised in the impact assessment tables in section 6.10.

6.6.2 Many of the non-designated archaeological remains anticipated as being present on Camel Hill along the scheme would be considered as receptors of medium or high value / sensitivity (heritage significance). This includes the area of Iron Age and Roman period settlement to the south-west of Camel Hill Farm (the scheduled area is of high value / sensitivity), as well as the possible prehistoric funerary monuments near the Camel Hill Services. The early medieval cemetery at this location is thought to have been partially removed by historic limestone quarrying. However, any parts of it that remain (the HER records it as extending beyond the former quarry site) would be of potentially medium value / sensitivity (depending on the nature of any surviving features, and level of preservation of the remains).

6.6.3 Heritage assets of medium value / sensitivity may be encountered in the area of High Archaeological Potential identified by South Somerset District Council at the western end of the scheme. These may be prehistoric and Romano-British settlement remains.

6.6.4 The medieval and post-medieval Hazlegrove House (Grade II Listed) Registered Park and Garden is of medium value / sensitivity. The grade II listed Hazlegrove House Registered Park and Garden wing walls and gateway are also assets of medium value. The Grade II* Triumphal Arch is an asset of high value.

6.6.5 Areas of abandoned medieval settlement, medieval and post-medieval ridge and furrow and the former limestone quarry and kiln sites near to the scheme are likely to be of low value / sensitivity. However, the condition of these possible sub-surface remains has not previously been ascertained through archaeological investigation, and therefore the assessment of their value / sensitivity is tentative.

6.6.6 The 2 former WWII Royal Observer Corp sites on Camel Hill, as well as the remainder of the possible nearby WWII related sites and features identified are of low and negligible heritage value / sensitivity. The sites of former such structures are of negligible value / sensitivity.

6.6.7 Listed buildings are not expected to be physically affected (except for a Grade II Listed milestone adjacent in line of the scheme; medium value / sensitivity). They are however sensitive receptors, and their settings will need to be taken into consideration during the design process. The majority of Listed Buildings in proximity to the route will already have had their settings compromised by the existing road. In the majority of cases this is through increased noise intrusion and the visual erosion of their historic rural setting.

6.7 Consultation

6.7.1 Consultation has been carried out with Historic England and the South West Heritage Trust (SWHT) as part of the key stakeholder engagement exercises, as detailed within section 2.7 of this report. Additional consultation focused specifically on the Registered Park and Garden is currently taking place with the following heritage stakeholders:

- South Somerset District Council Conservation Officer
- South Somerset District Council Landscape Architect
- The Gardens Trust (formerly The Garden History Society, statutory consultee for Registered Parks and Gardens[44,45])
- Historic England Inspector of Ancient Monuments
- Historic England 'Heritage at Risk' Landscape Architect
- SWHT (Archaeological Advisors to the Local Planning Authority)

6.7.2 The stakeholders were provided with the scheme information via the public consultation website[46], and were invited to a meeting on-site at Hazlegrove House (Grade II Listed) Registered Park and Garden on 15 March 2017. The Gardens Trust was to be represented at this meeting by a member of the Somerset Gardens Trust, but unfortunately they were unable to attend at short notice. The SWHT consultees chose not to attend this meeting, as it was focussed on the registered park and garden itself. This meeting was a preliminary discussion ahead of the non-statutory public consultation phase on this scheme.

6.7.3 The Historic England response to the non-statutory public consultation (dated 29 March 2017, reference PL00069502) can be summarised as follows:

- There is the potential for remains associated with the Scheduled Romano-British settlement at Camel Hill Farm (list entry ID 1020936, on the northern side of the A303) to be encountered on the southern side of the A303. This is in the path of the scheme. If identified during archaeological evaluation, such remains may be of equal significance to the Scheduled remains.

[44] Historic England (2017) *Park & Garden Registration FAQs*. https://historicengland.org.uk/listing/what-is-designation/registered-parks-and-gardens/pag-faqs/ Accessed 1/3/2017.
[45] The Gardens Trust (2017) *About us*. http://thegardenstrust.org/about-us/ Accessed 1/3/2017.
[46] Highways England (2017) *A303 Sparkford to Ilchester: Overview* [online] available at: https://highwaysengland.citizenspace.com/he/a303-sparkford-to-ilchester/ (last accessed July 2017).

- Historic England notes that the scheme would lead to physical effects to approximately 30% of the Hazlegrove House (Grade II Listed) Registered Park and Garden (Grade II, list entry ID 1000422).
  - Historic England recommended that as the potential harm to this asset is so great; the highest level of detail of research will be required to fully understand its significance.
  - Historic England also noted that within Highways England's Heritage Impact Assessment; the scheme should then be tested against the significance of this heritage asset. A preference was stated for this assessment to take the form of a simple narrative, supported by illustrations (rather than purely in the form of a matrix deriving from EIA methodology).
  - Historic England recommended that mitigation of the effects of the proposals on the registered park and garden should include as an initial step a Conservation Management Plan (CMP). This should *"…consider how best to conserve (what remains of) the park, and retain its significance"*.
  - It was noted that as the direct effects on the registered park and garden would constitute, in Historic England's view, substantial loss; it will therefore be necessary to demonstrate substantial public benefits that outweigh that harm or loss. This is in accordance with paragraph 133 of the National Planning Policy Framework (NPPF). This should include an explanation of how such benefits might be delivered to the surviving portion of the registered park and garden.

6.7.4 Following the meeting at Hazlegrove House (Grade II Listed) Registered Park and Garden on 15 March 2017, South Somerset District Council issued a summary of its consultees' responses in an email (from the South Somerset District Council Landscape Architect, dated 21 March 2017). This can be summarised as follows:

- It is considered that the effect on the Registered Park and Garden will be substantial, and that the integrity of the park will be compromised. Although the immediate effect would be on the southern third of the park; the effects also extend across the remainder of the park.
- The current negative effect of the Camel Hill service station on the setting of Hazlegrove House itself is noted, and therefore the opportunity for potential scheme enhancement measures to improve this by reducing the visual profile of the service station.
- Parts of the scheme will lie out of sight from the house and its immediate surroundings, concealed from that viewpoint within the dip to the south of the plateau on which the house sits. However, there is the potential for the heads of lighting columns to protrude above this point, and therefore the possibility of light spill as a possible effect on setting. It is noted that *"mitigation options such as planting and ground modelling will be essential if the landscape and visual effects of the new roads are to be suitably contained"*.
- The historic connection to Hazlegrove Lodge and to Sparkford were severed by previous road modifications (the 1990s Sparkford Bypass), resulting in access to the park from Sparkford Roundabout, instead of

directly from Sparkford itself. The scheme is likely to further change this, with access to the park subsequently likely to be from a new roundabout on the northern side of the new dual-carriageway. They consider this to be a potential substantive adverse effect, which will be difficult to mitigate for either proposed route option.

- The potential effect of the proposed works (including the new dual-carriageway as well as a new roundabout) on the southern third of the park is substantial and harmful.
- Although mitigation options were discussed, South Somerset District Council is unable to support the scheme at this stage due to the likely adverse effects on the historic landscape of the Registered Park and Garden. An alternative design is suggested, disposing of the need for the new roundabout on the northern side of the dual-carriageway. This would retain the Hazlegrove access as a *"separate, distinct entity, as close to its current alignment as is feasible, to thus reduce the level of impact upon the registered park"*.

6.7.5 These suggestions have subsequently been discussed at length between the South Somerset District Council consultees and the design team. Discussions will continue as the design evolves following the statutory public consultation.

6.8 Assumptions and limitations

6.8.1 The site visits undertaken to date have been restricted to external visual inspection from publicly assessable areas only.

6.8.2 Non-intrusive geophysical surveys were progressed during December 2017 and January 2018. The geophysical survey results are therefore not yet available. Depending on the results of these geophysical surveys, a series of intrusive surveys such as trial trenching may be required as part of the scheme. In the absence of these intrusive and non-intrusive surveys, the archaeological potential along the scheme cannot be considered to have been fully examined or determined yet.

6.8.3 Information provided by HERs can be limited because it depends on random opportunities for research, fieldwork, and discovery. Where nothing of historic interest is shown in a particular area, this can be down to a lack of targeted research or investigation rather than the genuine absence of sub-surface archaeological deposits.

6.8.4 Documentary sources are rare before the medieval period, and many historic documents are inherently biased. Older primary sources often fail to accurately locate sites and interpretation can be subjective.

6.8.5 Where archaeological sites have been identified solely from aerial imagery without confirmation from archaeological excavation or supporting evidence in the form of, for example, findspots, it is possible the interpretation may be revised in the light of further investigation. It should be noted that the absence of indications of archaeological features on aerial imagery does not confirm an absence of sub-surface archaeological deposits, as visibility from the air is dependent upon a complex combination of factors. These include:

- Unsuitable conditions at the time of image capture (such as lighting, ground moisture content and crops or other ground cover)
- Variable quality of photography
- Variable type of photography, i.e. purpose-flown oblique imagery taken for archaeological purposes or 'blanket' vertical aerial photography which is usually at a much smaller scale
- Underlying features being masked by alluvial build-up

6.8.6 Conclusions and recommendations may therefore be revised during the production of the ES, on the basis of updated information following further research, survey, and investigation.

6.9 Design and mitigation measures

Construction

6.9.1 The scheme would be likely to adversely affect designated and non-designated heritage assets during construction.

6.9.2 The close proximity of Scheduled Monuments and Listed Buildings to the scheme presents the potential for significant effects upon the setting of heritage assets. The scheduled monument of the Romano-British settlement immediately south-west of Camel Hill Farm is situated on the northern side of the A303; alterations to the road have the potential for a significant adverse effect upon the setting of the asset. There is also the adverse physical effect on the Hazlegrove House Grade (Grade II Listed) Registered Park and Garden which is likely to be significant, and additionally, the potential for significant adverse effects on below-ground archaeological remains from the prehistoric period onwards. A Grade II Listed early 19th century milestone would also likely need to be relocated. Depending on the method of moving and chosen site of the relocated milestone, this has the potential to result in a Significant Adverse effect.

6.9.3 For Hazlegrove House (Grade II Listed) Registered Park and Garden mitigation measures will be determined based on a specific CMP. This will ensure that mitigation works are carried out in an informed manner to protect and enhance the special character of the asset as far practicable.

6.9.4 Where effects to heritage assets are unavoidable, mitigation would be included during the preliminary and detailed design and within the ES. For effects on setting, this may include planting, screening, noise attenuation and appropriate lighting, with the aim of reducing the effect on heritage assets in the vicinity. Effects (both physical and setting) may be mitigated through alteration of the scheme design, or elements of it, such as the placement of bunds, drainage, ponds, landscaping and planting. Preserving archaeological remains in-situ would be explored during the design process. Best practice measures to limit impacts on heritage assets would be employed during construction through the implementation of a Construction Environmental Management Plan (CEMP).

Operation

6.9.5 Below-ground archaeological deposits would not be affected by the operation of the new dual-carriageway. However, the presence of faster moving traffic than previously would affect to a varying degree on the setting of some heritage assets. These would include Listed Buildings / structures in close proximity to the scheme, as well as the Hazlegrove House (Grade II Listed) Registered Park and Garden.

6.9.6 However, there are also opportunities for enhancement measures to improve the setting of these and other designated heritage assets, such as from the positive effect of screening vegetation. As noted above, measures such as the placement of bunds, noise attenuation screening and appropriate lighting would also contribute to both mitigation of the proposed changes, as well as the improvement of the current setting of designated heritage assets (see Section 6.11 Enhancement measures below).

6.10 Assessment of effects

6.10.1 The assessment of effects set out below is based on what is known of the heritage assets from research undertaken to date. This has identified key heritage assets from the HER and NHLE datasets (as well as the aerial survey results) likely to be affected by the scheme. The assessment of the value/ sensitivity of the heritage assets identified to date (section 6.6) may therefore be revised in the light of this further work. Additional heritage assets may also be identified during this process.

6.10.2 In accordance with DMRB guidance, effects with an assessment of moderate and above are considered to be significant.

Construction

6.10.3 The assessment of effects during construction is shown below in Table 6.1.

Table 6.1: Summary of the assessment of value, magnitude of impacts, and significance of effects upon key heritage assets (construction)

Asset	Description of impact	Sensitivity of asset	Magnitude of impact	Significance of effect
Camel Hill Farm prehistoric settlement (HER 11595)	Permanent adverse – total or partial removal of elements of the settlement on the southern side of the A303 during construction.	Medium	Moderate	Moderate
Possible round barrow(s) opposite Camel Hill Services	Permanent adverse – total removal of heritage asset(s) during construction.	Medium	Major	Moderate / Large
Possible square barrow to south of Gason Lane	Permanent adverse – possible removal of associated features in what may be a wider prehistoric funerary location.	Medium	Minor	Slight
Square banked enclosure between Camel Hill Farm and the A303	Permanent adverse – possible partial removal of the southern edge of this feature (though it's current survival is unknown).	Low	Moderate	Slight
Camel Hill Farm Romano-British settlement (HER	Permanent adverse – partial or total loss of any possible associated features on the	High	Moderate	Moderate / Large

Asset	Description of impact	Sensitivity of asset	Magnitude of impact	Significance of effect
11607, Scheduled, list entry ID 1020936)	southern side of the A303 during construction.			
Camel Hill Services early medieval cemetery (HER 54429)	Permanent adverse – partial or total loss of features at the edge of the cemetery (which is not defined with any certainty) during construction.	Medium	Moderate	Moderate
Podimore possible medieval settlement remains (HER 54802)	No direct impact.	Low	No change	Neutral
South Somerset District Council Area of High Archaeological Potential (likely prehistoric or Romano-British settlement remains)	Permanent adverse – possible minor loss of associated elements beyond the limits of the South Somerset District Council polygon. Setting unaltered.	Medium	Negligible	Neutral / Slight
Hazlegrove House (Grade II Listed) Registered Park and Garden (list entry ID 1000422)	Permanent adverse – total loss of approximately the southern third of the park, which would cause a fundamental alteration to its significance, and substantial alteration to the setting of the remainder. Temporary adverse – impact on setting from noise during construction, as well as the presence of large machinery, construction compounds, hoardings & workforce etc.	Medium	Major	Moderate / Large
Hazlegrove House (Grade II, list entry ID 1277545) Garden Gateway and Wing Walls (Grade II, list entry ID 1248865)	Permanent adverse – partial loss or alteration to their setting, which is key to the significance of these assets. Temporary adverse – impact on setting from noise during construction, as well as the presence of large machinery, construction compounds, hoardings & workforce etc.	Medium	Moderate	Moderate
Hazlegrove Triumphal Arch (Grade II*, list entry ID 1272919)	Permanent adverse – further alteration of setting (previously compromised by the 1990s bypass), which may slightly further impact its significance. Temporary adverse – impact on setting from noise during construction, as well as the presence of large machinery, construction compounds, hoardings & workforce etc.	High	Minor	Slight / Moderate
Ridge and furrow and former field boundaries	Permanent adverse – partial loss of some areas of ridge and furrow during construction.	Low	Moderate	Slight
Limestone quarries and limekilns	Permanent adverse – partial loss of some poorly preserved areas of former quarry pits, spoil heaps, or limestone processing.	Low	Minor	Neutral / Slight
Camel Hill WWII ROC station (south of A303) (HER 56969)	Permanent adverse – loss of up to 10m at the northern edge of the site (which doesn't include any above-ground structures).	Low	Minor	Neutral / Slight
Camel Hill WWII ROC station site (north of A303) (HER 15747)	No direct impact. No structures remaining to have setting impacted.	Negligible	No Change	Neutral
WWII former temporary storage / accommodation	No direct impact – these temporary structures were removed post-WWII. No known	Negligible	No Change	Neutral

Asset	Description of impact	Sensitivity of asset	Magnitude of impact	Significance of effect
structures near RNAS Yeovilton	sub-surface features at these sites.			
Possible air raid shelters / bunkers near Conegore Corner	Permanent adverse – partial destruction of 2 of these features during construction.	Low	Moderate	Slight
Petter-Nissen 'Round Houses' at Howell Hill (HER 50296-7)	Permanent adverse – upgraded road would be *c*.30m closer to the houses than at present, potentially impacting their setting to some degree (this is yet to be determined). Temporary adverse - impact on setting from noise during construction, as well as the presence of large machinery, construction compounds, hoardings & workforce etc.	Low	Moderate	Slight
A303 milestone (Grade II, list entry ID 1345996)	Permanent adverse physical impact – this asset lies directly on the line of the scheme. Would need to be relocated, perhaps to the northern side of the existing A303. It should retain its context next to the route it is intended to mark.	Medium	Minor	Slight
Eyewell House (Grade II, list entry ID 1039625) Range of outbuildings attached to north of Eyewell House (Grade II, list entry ID 1258875) East boundary wall and gateway c.15m east of Eyewell House (Grade II, list entry ID 1258884)	Permanent adverse slight impact upon setting – although the upgraded road would lie only c.7m closer than the current A303; the house and associated assets would lie c.30m to the SW of a proposed new side road cutting. This is a realignment of the existing Traits Lane into a cutting to pass under the new road. The upgraded A303 would sit on a slight embankment at this location, and may therefore make the road slightly more prominent within the rural setting of the property. Temporary adverse – impact on setting from noise during construction, as well as the presence of large machinery, construction compounds, hoardings & workforce etc.	Medium	Minor	Slight
Milestone on B3151 (Grade II, list entry ID 1056780)	Permanent impact - This asset would lie approximately 30m to the SW of the tie-in to the existing B3151 (which would follow the same alignment of the current lane, and would not be any wider). This alteration is unlikely to alter the setting of this heritage asset.	Medium	Negligible	Neutral/ Slight
The Roundhouse, Sparkford (Grade II, list entry ID 1272897)	Permanent impact - This building currently lies between High Street, Sparkford; and the Sparkford Bypass (dual-carriageway). It would be located approximately 200m from the easternmost end of the scheme; the point at which the new alignment of the A303 will merge with the Sparkford Bypass. This alteration is unlikely to alter the setting of this heritage asset. Temporary adverse – there is the potential for some slight impact on setting from noise during construction, as well as the	Medium	Negligible	Neutral/ Slight

Asset	Description of impact	Sensitivity of asset	Magnitude of impact	Significance of effect
	presence of large machinery, construction compounds, hoardings and workforce etc.			
Sparkford Inn (Grade II, list entry ID 1273205) Outbuilding c.5m NE of Sparkford Inn (Grade II, list entry ID 1243391)	Permanent impact - These buildings currently lie between High Street, Sparkford; and the Sparkford Bypass (dual-carriageway). They would be located c.185-200m from the easternmost end of the scheme; the point at which the new alignment of the A303 will merge with the Sparkford Bypass. This alteration is unlikely to alter the settings of these heritage assets. Temporary adverse – there is the potential for some slight impact on setting from noise during construction, as well as the presence of large machinery, construction compounds, hoardings & workforce etc.	Medium	Negligible	Neutral/ Slight

Operation

6.10.4 There will be no effects on sub-surface archaeological remains from the operation of the scheme. Any potential effects on these types of heritage assets will have taken place during the construction phase, and have been addressed in Table 6.1 above. As such they are not included in the assessment of operational effects in Table 6.2.

6.10.5 Table 6.2 below summarises the assessment of effects on key heritage assets during operation.

Table 6.2: Summary of the assessment of value, impacts, and effects upon key heritage assets (operation)

Asset	Description of impact	Sensitivity of asset	Magnitude of impact	Significance of effect
Hazlegrove House (Grade II Listed) Registered Park and Garden (list entry ID 1000422)	Adverse – impact on setting and significance due to the road passing through the southern third of the park. Road noise, as well as lighting from vehicles and lamp posts may therefore be slightly more noticeable throughout the remainder of the park and consequently slightly impact its setting.	Medium	Minor	Slight
Hazlegrove House (Grade II, list entry ID 1277545) Garden Gateway and Wing Walls (Grade II, list entry ID 1248865)	Adverse – impact on setting and significance due to the road passing closer to the house and gardens than previously – road noise, as well as lighting from vehicles and lamp posts may therefore be more noticeable and slightly impact their setting.	Medium	Minor	Slight
Hazlegrove Triumphal Arch (Grade II* listed, list entry ID 1272919)	No change – heavy traffic already passes adjacent to this area with the current arrangement of the A303, and there is already junction lighting in place adjacent to this asset.	High	No change	Neutral
Camel Hill WWII ROC station (south of A303) (HER 56969)	No change – heavy traffic already passes adjacent to this area with the current arrangement of the A303.	Low	No change	Neutral
Petter-Nissen 'Round Houses' at Howell Hill (HER 50296-7)	Adverse – impact on setting and significance due to the road passing closer to the houses than previously –	Low	Minor	Neutral / Slight

Asset	Description of impact	Sensitivity of asset	Magnitude of impact	Significance of effect
	road noise, as well as lighting from vehicles and lamp posts may therefore be more noticeable and slightly impact their setting.			
A303 milestone (Grade II, list entry ID 1345996)	Asset will have been either removed or relocated during construction. If relocated to the other side of the road, there will be no further impact from the adjacent passing of traffic.	Medium	No change	Neutral
Eyewell House (Grade II Listed, list entry ID 1039625) Range of outbuildings attached to north of Eyewell House (Grade II, list entry ID 1258875) East boundary wall and gateway c.15m east of Eyewell House (Grade II, list entry ID 1258884)	These assets are already located adjacent to Traits Lane, and c.190-200m to the south of the current A303. The operation of the altered alignment of Traits Lane, and the upgraded A303 is unlikely to produce any operational effects (in terms of noise, visible traffic) not already experienced at this location. One exception to this may be if lighting of the underpass leading to Camel Hill Farm were to be intervisible with Eyewell House at night as this would slightly diminish the rural setting of the property.	Medium	Minor	Slight
Milestone on B3151 (Grade II, list entry ID 1056780)	This asset would lie c.30m to the SW of the tie-in to the existing B3151 (which would follow the same alignment of the current lane, and would not be any wider). There are unlikely to be any operational differences to the current arrangement that would alter the setting of this heritage asset.	Medium	No change	Neutral
The Roundhouse, Sparkford (Grade II, list entry ID 1272897)	This building would not be located any closer to a dual-carriageway than it is currently. There are unlikely to be any operational differences to the current arrangement that would alter the setting of this heritage asset.	Medium	No change	Neutral
Sparkford Inn (Grade II, list entry ID 1273205) Outbuilding c.5m NE of Sparkford Inn (Grade II, list entry ID 1243391)	These buildings would not be located any closer to a dual-carriageway than they are currently. There are unlikely to be any operational differences to the current arrangement that would alter the setting of these heritage assets.	Medium	No change	Neutral

6.11 Enhancement measures

6.11.1 It is considered that the existing A303 (and associated features such as the Camel Hill services, and the lighting / signage around the current Sparkford roundabout) currently has a negative effect on the setting of the Hazlegrove House (Grade II Listed) Registered Park and Garden. Although the scheme would require substantial additional land take within the southern third of the park, it is possible that some enhancement to the setting may be gained through design measures that could introduce screening of both the new road and the Camel Hill services.

6.11.2 This would be achieved through placing the route in a false cutting as it climbs Camel Hill. Trees planted on cuttings would better screen Camel Hill services from view from the park, as well as from Hazlegrove House (Grade II Listed) Registered Park and Garden. Such planting will be in keeping with the types of trees currently within the park, as well as in the nearby Ridge Copse and

Pepper Hill Copse. The possibility of screening the Camel Hill services from the park may also be explored through additional tree planting in the land parcel immediately to the west of the park (opposite the services). Additional measures to enhance the setting of the park, house, and gardens may include limited or absent junction lighting; and lower height and alternative colour lighting columns and signage columns.

6.11.3 As with mitigation measures introduced for Hazlegrove House (Grade II Listed) Registered Park and Garden, enhancement measured will be determined based on a specific CMP. This will ensure that any enhancements are carried out in an informed manner to project and enhance the special character of the asset.

6.11.4 Enhancement measures have not so far been explored for other heritage assets along the route; these will be explored as part of on-going assessment work and details will be included within the ES.

6.12 Monitoring requirements for significant adverse effects

6.12.1 A CMP for Hazlegrove House (Grade II Listed) Registered Park and Garden will be prepared in conjunction with other related disciplines, including landscape and nature conservation, to ensure integration across disciplines. This will focus on the monitoring and management of any historic environment mitigation work undertaken, such as visual screening and restoration and conservation of historic landscape and planting. Monitoring of vegetation establishment during the aftercare period will ensure successful mitigation of significant adverse effects. In the event of plant failure, action can be taken during the monitoring to rectify failures and ensure mitigation measures come to fruition. The CMP will also establish principles to ensure that any management of mitigation areas is completed in a way which is sympathetic to the character and significance of the Registered Park and Garden.

6.13 Conclusions

6.13.1 Previous archaeological survey and investigation, as well as the archaeological aerial survey and appraisal undertaken, has demonstrated that there is a high potential for multi-period archaeological remains spanning the prehistoric period to WWII within the study area. In addition to sub-surface archaeological features; there is the setting of multiple Listed Buildings and the physical effects on Hazlegrove House (Grade II Listed) Registered Park and Garden and an early 19th century milestone to consider. The potential for encountering or affecting the different heritage assets varies significantly between different locations within the study area.

6.13.2 During construction, the overall significance of effects on designated heritage assets would be Moderate / Large Adverse. During operation, this would be Slight Adverse for designated heritage assets. The overall significance of effects on buried archaeology during construction would be Moderate Adverse, reducing to Neutral during operation.

6.13.3 As noted above in section 6.10, these conclusions are based upon research undertaken to date. A detailed heritage desk-based assessment is currently

being undertaken which would include targeted cartographic and documentary research as well as more in-depth analysis of the HER and a detailed analysis of previous disturbance along the routes. The assessment would also help to highlight additional areas of archaeological potential, or conversely may demonstrate reduced potential in areas of modern disturbance. The setting of designated assets would be considered in this assessment, and detailed site visits and photography will be undertaken. The assessment of setting would be used to determine any significant effects on the setting of heritage assets from the scheme and enable appropriate mitigation to be designed.

6.13.4 A specific CMP for the Hazlegrove House (Grade II Listed) Registered Park and Garden would be undertaken, which would identify the heritage significance of the various elements of the park, determine the impact of the scheme and inform the design and mitigation in this area as well as identifying appropriate enhancements to the park.

6.13.5 Archaeological monitoring of geotechnical ground investigations (GI) undertaken within the scheme is planned. It is likely that the GI will take place early in 2018. This will consist of on-site monitoring of geotechnical test-pits, monitoring of borehole drilling in archaeologically sensitive area and the archaeological analysis of borehole logs. This may assist in clarifying the level and extent of possible modern and post-medieval truncation at these points, as well as potentially the depth of possible alluvial deposits at the lower-lying locations. The results of the GI surveys will inform the assessment to be reported within the ES.

6.13.6 An archaeological geophysical survey was undertaken in December 2017 and January 2018. This is likely to be followed by targeted archaeological evaluation trenching, prior to the DCO submission. The surveys would inform mitigation, in the form of scheme design changes and can help establish pre-construction archaeological investigation strategies. Information relating to these aspects will be included as part of the ES, to be submitted as part of the DCO application.

7 Landscape

7.1 Introduction

7.1.1 This chapter presents the on-going work for the assessment of the potential effects associated with the proposed scheme upon surrounding landscape character and visual amenity during both construction and operation.

7.1.2 The assessment is undertaken in accordance with the DMRB Volume 11, Section 3, Part 5 'Landscape Effects'. Further detailed assessment is currently under way, and will be reported within the Environmental Statement (ES) that will be submitted to support the Development Consent Order (DCO) application.

7.1.3 Landscape encompasses many more elements than the common association which focuses merely upon the view or appearance of the land. The notion of landscape can be applied to both rural and urban environments with the term townscape frequently adopted within the urban context. From the perspective of environmental assessment, landscape applies to physical elements such as topography, drainage, land use, land management, and vegetation, as well as ecological, historical and cultural associations.

7.2 Legislation and policy context

National Policy Statement for National Networks

7.2.1 The National Policy Statement for National Networks (NPSNN)[47] states that, where a development is subject to an Environmental Impact Assessment (EIA), an assessment of any likely significant landscape and visual impacts should be undertaken by the applicant within the EIA and described within the ES (Paragraph 5.144). The applicant's assessment should consider any relevant national and local development policy, significant effects during construction and operation, and visibility and conspicuousness (Paragraphs 5.146-148). Compliance with the respective duties in section 11A of the National Parks and Access to Countryside Act 1949 and section 85 of the Countryside and Rights of Way Act 2000 is required. Local designations should be given consideration in decision making by the Secretary of State (Paragraph 5.156), but not be used in themselves to refuse consent. The Secretary of State will judge whether visual effects on sensitive receptors outweigh the benefits of the development (Paragraph 5.158).

7.3 Assessment methodology

7.3.1 The assessment methodology for defining the significance of effects upon landscape is contained within section 8.11 of the Environmental Impact

[47] Department for Transport (2015) National Networks National Policy Statement [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed August 2017).

Assessment (EIA) Scoping Report submitted to the Planning Inspectorate in November 2017. The Scoping Report can be accessed here:

7.3.2 https://infrastructure.planninginspectorate.gov.uk/projects/south-west/a303-sparkford-to-ilchester/?ipcsection=docs.

7.4 Study area

7.4.1 To accord with the guidance given in DMRB Volume 11 Section 3 Part 5 Landscape Effects, the study area for the assessment extends 1 kilometre from the scheme limits. However, the study area has been extended for any receptors sitting outside of the 1 kilometre which have the capacity to experience significant effects as a result of the scheme (such as views from Cadbury Castle and St Michael's Hill located on elevated ground affording views to site).

7.5 Existing baseline

Landscape baseline - national and county level

7.5.1 The scheme is located within National Character Area 140 Yeovil Scarplands. At a county level *The Landscape of South Somerset, 1993, South Somerset District Council*, identifies the scheme as sitting within Visual Character Region 7- Central Plain Moors and river basins, Area 3 Lower Lias Clay Vales, Rivers and Floodplains. Key characteristics of these character areas are provided within Table 7.1 below.

Table 7.1: Landscape characteristics

Landscape character assessment	Character area reference	Key characteristics
National Character Areas as defined by Natural England	NCA 140 Yeovil Scarplands.	The Yeovil Scarplands run, in an arc, from the Mendip Hills around the southern edge of Mid Somerset Hills and the Somerset Levels and Moors to the fringes of the Blackdowns. Remote, rural landscape comprising a series of broad ridges and steep scarps separating sheltered clay vales. Less than 5% of the area is urban, though Yeovil, lying in south of area, has grown to become a sizeable town with a busy industrial zone. A long history of settlement reflected through archaeology, from Neolithic hill forts, through Roman villas, to remnant medieval open fields – along with many Listed Buildings.
The Landscape of South Somerset, 1993, South Somerset District Council	Visual Character Region 7- Central Plain Moors and river basins, Area 3 Lower Lias Clay Vales, Rivers and Floodplains (covers extent of study area).	Area 3 covers the entire study area extending from Ilchester in the west to Maston Magna and Lovington in the east. Extending from moors near Long Road north-east to the edge of Babcary and south-east to Rimpton, encompassing the flood plains of Rivers Cary, Yeo and part of the Brue. Area 3 can be divided into 2, either side of the long low limestone ridge at Sparkford Ridge is quite wooded with many calcareous-loving plants. North of Sparkford Ridge is a broad low vale encompassing the course of River Cary. Expanse of vale is crossed by several watercourses, mostly defined by Alders and Willows. South of Sparkford Ridge lies the Vale of Ilchester. Broad area of mixed farming, with arable mainly located on slightly drier clay ridges or islands. Hedges are generally kept low. Hedgerow trees are fairly infrequent.

Landscape character assessment	Character area reference	Key characteristics
		Royal Navy Air Station (RNAS) Yeovilton interrupts clay vale landscape by 'sea of concrete and outsize scale of buildings'. The sound of revving aircraft provides constant audible intrusion. Ilchester and West - great number of ditches and rhynes, often filled and few hedgerows. River Yeo has been straightened and embanked. A303 corridor provides a 'spinal column of steel concrete and tarmac inducing land use and scenery on its east-west trajectory.' Influence of road extends beyond the visual. Noise, particularly on its concrete sections, is carried miles down wind across the flat terrain. Extensive landscaping, kestrels hunting along corridors of rank grassland are a common site. Settlements lie on 'islands or ridges of better drained soils, on river gravel terraces or stretched along ridge top roads. Vulnerable features in south Somerset - hedges and hedgerow trees, woodlands, orchards, parklands. Concern of urbanising of the countryside.

Landscape baseline - the local landscape

7.5.2 The local landscape character within the vicinity of the scheme is heavily rural in character with the A303 forming a significant detracting feature dissecting the landscape as it runs on an east to west axis. Away from the A303, farmland dominates with fields of varying shapes and sizes. To the north of the A303, an open vale landscape is found with hedgerow field boundaries and woodland plots, some of which are ancient woodland. The low-lying topography in this area is managed through land drains which cross the landscape. The open and expansive landscape allows long distance visual connectivity across the vale to gently rising land in the north. Settlement is sparse to the north of the A303 with isolated farmsteads within 1 kilometre of the existing A303.

7.5.3 To the south of the A303, the ground falls away from the ridgeline to a series of villages which run along the base of the ridge. This includes settlements of West Camel and Queen Camel which are designated Conservation Areas. A series of Listed Buildings are also located in these villages and beyond. The River Cam runs along the bottom of the ridgeline passing through open fields as well as local villages. Vegetation is limited to field boundaries in the most part, and traces alongside the River Cam. Arable farming practices dominate the land use elsewhere.

7.5.4 There are no Areas of Outstanding National Beauty (AONBs), National Parks, or Heritage Coasts located within 1 kilometre of the scheme.

Landscape designations

7.5.5 Relevant landscape designations are highlighted on the Environmental Constraints Plan contained within in appendix A.1 of this report. Table 7.2 below highlights key designations within the study area and their distance from site.

Table 7.2: Landscape designations within 1 km of the scheme

Landscape designations within 1km	Distance
Queen Camel Conservation Area	Approximately 650m
West Camel Conservation Area	Approximately 450m
Hazlegrove House (Grade II Listed) Registered Park and Garden	Within scheme footprint
Leland Trail long distance footpath	Approximately 550m
Listed Buildings	Numerous within 1km; closest within just over 100m
Scheduled Monument	Camel Hill Farm within 15m. Downhead within approximately 300m

Visual baseline

7.5.6 The visual baseline has identified settlement hubs as well as notable viewpoints, in accordance with the guidance set out in IAN 135/10[48]; the visual receptors currently identified as part of the DMRB Simple level assessment can be seen in the drawing contained within appendix C.1. Given the rural nature of the study area and the presence of isolated farmsteads rather than larger village settlements to the north of the existing A303, farms have been grouped to essentially form their own small settlements to ensure they are captured at this stage of the assessment. To the south of the A303 small hamlets and villages are common place and have been identified in the usual way. Table 7.3 below highlighted the visual baseline description.

[48] Highways England (2010) Interim Advice Note 135/10 'Landscape and Visual Effects Assessment'.

Table 7.3: Visual baseline description

Visual receptor group	Approximate distance from scheme	Visual baseline description
Podimore	100m	Existing views north from the village are generally contained by vegetation running along the A303 as it runs from east to west a short distance to the north of Podimore. Despite the vegetation, glimpsed views to traffic travelling on the A303 immediately beyond can be seen, even during summer months. During the winter months, more open views are likely afforded from the village looking north and north east through bare vegetation onto the A303 and associated traffic. This linear belt of vegetation stops in line with the edge of the village which allows open views across flat agricultural fields to the A303 from the most north easterly extents of the village only. Views looking north from the southerly part of the village are set in the context of intervening built form of village properties, whilst views east look out upon arable fields before the notable presence of YNAS Yeovilton. Views south and west are again more of a rural nature.
Urgashay, Bridgehampton and Speckington	175m 400m 400m	The flat topography in this area, combined with numerous lines of mature field boundary vegetation encloses and heavily limits distant views from these small hamlets.
West Camel	280m	West Camel lies towards the base of rising ground which extends northwards to the ridgeline that traverses this area. Looking north, agricultural landscape dominates the view with managed hedgerow field boundaries. The rising topography prevents far reaching views from this location. Views to the A303 are afforded from the most northerly extents looking north east.
Wales	280m	Views are afforded over rising fields and hedgerows to the ridgeline to the north which accommodates the A303. Traffic can be seen above and through gaps in existing hedgerow, forming the horizon in this view.
Queen Camel	570m	Views are afforded from this settlement across rising agricultural ground which begins on the northern edge of the village, rising towards the local ridgeline which prevents long distance views. The existing A303 runs along this ridge and is not visible in the most part due to the location of the village at the bottom of the hillside and the steeply rising ground above. However, views from the most southerly aspects of the settlement do afford further reaching views to ridgeline beyond although a linear tree belt running along the top of the ridgeline prevents longer distance views.
Sparkford	60m	Vegetation along the northern boundary of Sparkford prevents views to the existing A303 from this location, enclosing and limiting views to a short distance only.
Downhead	Immediately adjacent	Existing views looking south capture a rural scene with numerous intermittent hedgerows breaking up long distance views.
Steart Hill (includes Vale Farm, Vale Farm Cottages, North Hill Farm, Steart Hill Farm and Pearsons Steeple)	100m	Looking south, long distance views are restricted due to rising landform building to the ridgeline that accommodates the existing A303. The current topography and intervening vegetation prevents views to either the A303 or associated traffic from this location.
Camel Hill (includes Camel Hill Farm, Camel Hill House)	Immediately adjacent	Looking south short distance views towards the existing A303 are restricted by intervening vegetation alongside the access lane to the A303 as well as the field bounding the A303. Where views may be afforded through gaps in vegetation, long distance views are restricted by the ridge line which the A303 runs along at this location.
Hazlegrove House	350m	Hazlegrove House and the associated Registered Park and Garden affords varying degrees of long distance views to the south and south-east from its elevated position. This includes views to the existing A303, including petrol station and local roadside diner which are pronounced built features amongst the vegetated ridgeline.
Sparkford Hill	30m	This group of residential properties located on Sparkford Hill Lane face west towards the A359. They afford restricted short distance views only, due to a mature hedgerow on the far side of the lane which forms the eastern boundary of the petrol station and services immediately opposite. This hedgerow prevents views to the proposed site and the A303 is not visible from this location.
South Barrow	1.2km	Views across raised plateau to the rear of Hazlegrove School. To the south-east, the opposing ridgeline can be seen although the A303 is not visible from this location.
Cadbury Castle	2.5km	Extensive far reaching panoramic views are afforded from this highly-elevated hill fort. Lowland fields defined by hedgerow field boundaries can be seen with areas of woodland belt and more substantial plots. Individual farm steads can be seen amongst an otherwise heavily rural landscape dominated by arable farming practices.
Babcary	2.8km	Varying degrees of view from this settlement. Some southern extents enclosed by mature hedgerow along local lane before moving east where extensive views open up over falling ground to the south.
St. Michael's Hill, Montacute	10km	This view from this elevated hill and 18th century tower is both panoramic and exceptionally far reaching given its height above the surrounding landscape. The village of Montacute can be seen below with RNAS Yeovilton visible beyond. Other more distant features are difficult to differentiate at this distance.

7.6 Value (sensitivity of resources and receptors)

Landscape value

7.6.1 Whilst the majority of the study area is not designated for its landscape value, it remains in the most part, an attractive and cohesive rural landscape with well-defined features and would be considered to be of moderate to high sensitivity across the study area as a whole.

7.6.2 The A303 does however provide a detracting feature both visually and audibly which around its immediate alignment brings about a decrease in tranquillity. One location that is designated with the study area is Hazlegrove House (Grade II Listed) registered Park and Garden. This parkland landscape has been designated as an interesting and representative example of an 18th century park, parts of which are of much earlier origin. Enough of the layout survives to reflect the original design, and a proportion of the original layout of its early-18th century formal garden is still visible; and is considered to be of great value. Its inherent value means it is sensitive to change both directly, but also indirectly through the notion of a borrowed landscape, when considering the connection with the wider environment and sensitivity to a change in the setting of the designated site.

7.6.3 At this stage of assessment, the landscape character of the study area as a whole, whilst not within an AONB or National Park, is considered to be high due to the presence of designated assets such as Hazlegrove House (Grade II Listed) Registered Park and Garden and the conservation areas to the south of the A303. The strong defined cohesive landscape has a well established sense of place adding to this value and sensitivity to change.

Visual receptor value

7.6.4 Under the guidance of Highways England's Interim Advice Note (IAN) 135/10 on Landscape and Visual Effects Assessment, the DMRB Simple level of assessment reported in this chapter focuses in the most part upon settlement groups rather than individual receptors. It also identifies key viewpoints in addition to settlements. Key views are ordinarily publicly accessible and frequently upon Public Rights of Way (PRoWs), which, as described in Table 7.2 above, PRoWs are considered to be highly sensitive receptors. Likewise, residential properties and in this instance settlement groups are also considered to be highly sensitive to change. An assessment to DMRB Detailed level is currently being undertaken and will focus on individual receptors that afford key views during both construction and operation, including those with lower sensitivity to change.

7.7 Consultation

7.7.1 In addition to the consultation described in section 2.7, a Chartered Landscape Architect has been party to consultation with Statutory Environmental Bodies regarding the potential impacts upon Hazlegrove House (Grade II Listed) Registered Park and Garden. This included a site visit with landscape and conservation specialists from Historic England and South Somerset District

Council where the potential effects and possible mitigation measures of the scheme was discussed. Further details can be sought in chapter 6 Cultural Heritage. Further consultation is currently on-going as part of the preparation of the Detailed Landscape and Visual Impact Assessment (LVIA) to agree key viewpoint locations with South Somerset District Council's Landscape Architect, and to develop mitigation measures further.

7.8 Assumptions and limitations

7.8.1 The information presented within this chapter is not a detailed LVIA and as such only high-level receptor groups have been identified, focusing on key views and settlement hubs only. As previously mentioned further detail would be addressed during Detailed level of assessment in line with guidance set out in IAN 135/10. The assessment was restricted to publicly accessible areas only and from the curtilage of private properties / residential receptors.

7.9 Design, mitigation and enhancement measures

Construction

7.9.1 During construction, similar mitigation measures should be implemented. These would include adhering to general best practice methods during construction, such as:

- Keeping a well ordered and tidy site, including keeping stockpiles to a minimum, with delivery of goods on an as needed basis
- Works should be limited to daylight hours in the most part, with any night works to be kept to a minimum
- Minimal, low level and directional lighting should be used for compound security and night works, whilst successfully meeting safety requirements
- Existing trees and vegetation to be retained should be protected during the construction phase with protective fencing, where deemed necessary and should be in accordance with BS 5837:2012

Operation

7.9.2 A general approach to mitigation design would be to include the lowering of the vertical alignment of the route including junctions, wherever practicable, keeping the scheme settled within the surrounding landscape as much as possible. This could be strengthened with the use of earth bunds as appropriate, as well as planting to aid the integration of the scheme with the surrounding landscape. Native hedgerows, hedgerows with trees, and blocks of planting would sit well within the vernacular land cover, reducing the visibility of the scheme.

7.9.3 Lighting columns, whilst currently proposed at key junctions only, should be kept to a minimum height and be directional to minimise impact on nearby properties and the wider night sky. Finally, any new structures should have a low solid to void ratio and consideration given to colour, form, and materials to minimise the visual prominence of these new features.

7.10 Assessment of effects

General construction effects

7.10.1 Construction effects may be short-term, long-term, temporary or permanent in nature. Potential impacts and effects in terms of landscape and visual amenity during construction include:

- Presence of construction traffic, plant and equipment
- Introduction / removal of built structures
- Storage of topsoil mounds
- Movement of excavated earth and change in the landform on site
- Temporary security fencing
- Construction compound
- Vehicle movements including private vehicles belonging to site staff
- Removal of mature tree and vegetation
- Presence and views of lighting for compounds and floodlighting when night work is required

General operation effects

7.10.2 Operational effects may be short-term, long-term, temporary or permanent in nature. Potential impacts and effects on landscape character and visual amenity during operation would result from:

- Increased road related infrastructure
- Loss of mature vegetation within and outside the existing highway boundary
- Additional slip roads and grade-separated roads and junctions increasing the overall width and perception of the road

Construction

7.10.3 Construction works would bring the introduction of new detracting features to the local landscape, with heavy machinery, materials stockpiling, compounds, and haul routes all associated with the works, as the existing A303 is widened. However, given the online or near online nature of the works, these new features would be in close proximity to the existing A303 which in places presents a detracting feature in its own right. Despite the existing A303, the moderate to high value of the landscape within the study area does lead to the potential for significant adverse effects during construction.

7.10.4 Views from visual receptors towards site during construction would see the introduction of new features within the view, as those described above. Given the varying sense of enclosure around the ridgeline the A303 runs along, the magnitude of change for each receptor would vary with the distance from site and nature of change in view. However, given the close proximity of receptors, such as Downhead, Eyewell, Camel Hill and Hazlegrove House to elements of the works, significant visual effects would be likely during construction.

Operation

7.10.5 Given the scheme would have sections of being either online or very close to the existing A303 route corridor, the effects upon landscape character and nearby visual receptors would be minimised by keeping the impacts of major road corridors limited to an isolated area already characterised by a major highway. The expansion to dual-carriageway would however be at odds with the local landscape pattern and scale.

7.10.6 The eastern end of the route would have a direct effect upon the designated Hazlegrove House (Grade II Listed) Registered Park and Garden with views likely from elevated positions towards the scheme in the south. The scheme would also be in proximity to other designated assets, however they would not be directly affected by the scheme.

7.10.7 The scheme would be visible from local visual receptors such as residential properties and PRoW, including those within villages to the south at West Camel and Queen Camel which are designated Conservation Areas. Views would be limited in some areas where the route would pass in cutting, aiding the visual integration of the scheme, and limiting views of associated traffic in some areas.

7.10.8 On balance, the overall effect is considered to be Slight Adverse by Year 15 of operation. Mitigation would aid the scheme's integration however the route would still not quite fit the landform and scale of the landscape and would still have an impact upon certain views. It is unlikely that the scheme could be fully mitigated, particularly at its eastern extents where it ties in to the existing A303 at Sparkford.

7.11 Monitoring requirements for significant adverse effects

7.11.1 Details regarding monitoring requirements during construction will be detailed within the ES, but it is likely that this will include the requirement for monitoring of construction practices to ensure all necessary controls are in place. These measures will be detailed within the CEMP.

7.11.2 Whilst long-term significant adverse effects are not anticipated, post-construction, monitoring should be undertaken to ensure that mitigation planting is developing to provide the visual screening, landscape integration or biodiversity value as was intended within the environmental design, and as reported within the LVIA, as well as other affected disciplines such as cultural heritage and nature conservation. Monitoring of vegetation establishment during the aftercare period will ensure successful mitigation of potentially significant adverse effects in the immediate periods after scheme opening. In the event of plant failure, action can be taken during the monitoring to rectify failures and ensure mitigation measures come to fruition.

7.12 Conclusions

7.12.1 It is considered that the scheme would result in an overall Significant Adverse effect during construction, for both the landscape character and the effects to

visual receptors. Individual visual receptors are also likely to be significantly affected.

7.12.2 The mainline of the scheme would be online or close to the existing A303 alignment, and therefore the implications on the wider landscape and surrounding visual receptors is lessened.

7.12.3 It is considered on balance that there would be a non-significant Slight Adverse effect by Year 15 for both landscape character and the effects to visual receptors.

7.12.4 An assessment to DMRB Detailed level is currently being progressed and will be included within the ES, to be submitted as part of the DCO application.

8 Biodiversity

8.1 Introduction

8.1.1 This chapter presents the on-going work for the l assessment of the potential effects of the scheme for ecology and nature conservation during both construction and operation.

8.1.2 The assessment is undertaken in accordance with the DMRB Volume 11, Section 3, Part 4 'Ecology and Nature Conservation'[49], IAN 130/10[50] and the guidelines for Preliminary Ecological Impact Assessment (EcIA)[51] produced by the Chartered Institute of Ecology and Environmental Management (CIEEM). Further detailed assessment is currently under way, and will be reported within the Environmental Statement (ES) that will be submitted to support the Development Consent Order (DCO) application.

8.1.3 Potential changes in the local ecology at sensitive receptors affected by the Scheme are considered with relevant policy and legislation, and in the context of existing air quality in the study area. The proposed works could result in the permanent loss of habitat suitable for notable species where the new carriageway would be constructed, both through direct and indirect effects. Temporary loss of habitat is also anticipated to be required to allow the works.

8.2 Legislation and policy context

8.2.1 The construction and operational activities for the scheme must comply with international and national nature conservation legislation, and with national and local biodiversity policies. The 2 main pieces of legislation relating to nature conservation are the Conservation of Habitats and Species Regulations 2010 and the Wildlife and Countryside Act 1981 (WCA 1981). Other key national policies which influence the ecology and nature conservation assessments are detailed below:

- The National Policy Statement for Networks National [52]
- National Planning Policy Framework [53]
- The Natural Environment and Rural Communities (NERC) Act 2006[54]

[49] Highways England, DMRB Volume 11, Section 3, Part 4 'Ecology and Nature Conservation'.
[50] Highways England (2010) IAN 130/10: Ecology and Nature Conservation Criteria for Impact Assessment.
[51] Chartered Institute of Ecology and Environmental Management (CIEEM) (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland.
[52] Department for Transport (2015) National Networks National Policy Statement [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed August 2017).
[53] Department for Communities and Local Government (2012) National Planning Policy Framework [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf (last accessed March 2017).
[54] Natural England (2006) Natural Environment and Rural Communities Act 2006.

- UK Post-2010 Biodiversity Framework[55]
- Biodiversity 2020: A strategy for England's wildlife and ecosystem service (2011)[56]

National policy

National Policy Statement for National Networks

8.2.2 Where the project is subject to an Environmental Impact Assessment (EIA), the applicant should ensure that the Environmental Statement (ES) clearly sets out any likely significant effects on internationally, nationally and locally designated sites of ecological or geological conservation importance (including those outside England) on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity and that the statement considers the full range of potential impacts on ecosystems.

UK Post-2010 Biodiversity Framework (2012)

8.2.3 The country strategies for biodiversity and the environment in each of the 4 countries of the United Kingdom underpin the UK Post-2010 Biodiversity Framework. The UK Biodiversity Framework supersedes the UK BAP 2007[57] and Conserving Biodiversity – the UK Approach (2007)[58]. The UK Framework sets out the overarching vision, strategic goals and priority activities for the UK's work towards international biodiversity targets. The Framework's overall vision is that "*by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people*".

8.2.4 Objectives include, but are not limited to:

- Halt the loss of biodiversity and continue to reverse previous losses through targeted actions for species and habitats
- Restore and enhance biodiversity in urban, rural and marine environments through better planning, design and practice
- Develop an effective management framework that ensures biodiversity is considered in wider decision making

[55] Joint Nature Conservation Committee (JNCC) and Department for Environment, Food and Rural Affairs (Defra) (on behalf of the Four Countries' Biodiversity Group) (2012) UK Post-2010 Biodiversity Framework [online] available at: http://jncc.defra.gov.uk/pdf/UK_Post2010_Bio-Fwork.pdf (last accessed March 2017).

[56] Department for Environment, Food and Rural Affairs (Defra) (2011) Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69446/pb13583-biodiversity-strategy-2020-111111.pdf (last accessed November 2017).

57 UK Government (1994) UK Biodiversity Action Plan [online] available at: http://jncc.defra.gov.uk/PDF/UKBAP_ConBio-UKApproach-2007.pdf (last accessed November 2017)

58 Department for Environment, Food and Rural Affairs (Defra). 2007. Conserving Biodiversity – The UK Approach.

Biodiversity 2020: A strategy for England's wildlife and ecosystem service (2011)

8.2.5 In England, Biodiversity 2020: A strategy for England's wildlife and ecosystem services is the national strategy for biodiversity and environment, which supersedes the 'Working with the grain of nature - A Biodiversity Strategy for England 2002'. Biodiversity 2020's stated mission is "…*to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.*" To focus activity and assess performance in achieving this mission, Biodiversity 2020 sets objectives relating to terrestrial and marine habitats and ecosystems, species and people. These include:

- Establishing coherent and resilient ecological networks, described as "*a network of high quality sites, protected by buffer zones, and connected by wildlife corridors and smaller, but still wildlife-rich, 'stepping-stone' sites*"
- Taking targeted action for the recovery of priority species whose conservation is not delivered through wider habitat-based and ecosystem measures
- Establishing Nature Improvement Areas and Marine Protected Areas;
- Bringing more Site of Special Scientific Interest (SSSIs) into favourable condition
- Reducing environmental pressures by working with sectors such as agriculture, forestry, planning and development

8.2.6 Legislation and policies specific to individual species likely to be present within the scheme extents are presented in appendix D.1.

8.3 Assessment methodology

8.3.1 The assessment methodology for defining the significance of effects upon biodiversity is contained within section 10.11 of the Environmental Impact Assessment (EIA) Scoping Report submitted to the Planning Inspectorate in November 2017. The Scoping Report can be accessed here:

8.3.2 https://infrastructure.planninginspectorate.gov.uk/projects/south-west/a303-sparkford-to-ilchester/?ipcsection=docs.

8.4 Study area

8.4.1 The Zone of Influence (ZoI) is the area surrounding a scheme within which the environmental conditions could be affected. The ZoI includes the following areas:

- Areas that will be lost to construction
- Areas that would be temporarily affected during construction
- Areas likely to be impacted by hydrological disruption
- Areas where there is a risk of pollution and noise disturbance during construction and/or operation

8.4.2 For ecological features, taking in to account the above factors, the ZoI is taken to be the scheme footprint and 250 metre radius around this. However, for certain features it is necessary to extend the ZoI to ensure effects are adequately assessed. The ZoI is calculated using the professional experience of the assessing ecologist, and following guidelines as presented within the generally accepted best practice guidance for the specific species or sites. Where this extension has occurred, this is presented in Table 8.1.

Table 8.1: Zone of influence extensions for species and habitats

Sensitive receptor	Zone of influence
Sites with national or international designations for nature conservation.	Up to 2km from the scheme footprint, in line with DMRB Volume 11, Section 4, Part 1 HD 44/09 'Assessment of Implications (of Highways and/or Roads Projects) on European sites (including Appropriate Assessment).
Sites with local designations for nature conservation.	Up to 2km from the scheme footprint.
Sites affected by changes in air quality with national or international designations for nature conservation	200m from roads that are expected to be affected by the scheme. The local Area Road Network (ARN)[59] is considered to extend from Wimbourne Stoke to Buckland St Mary or South Petherton. This covers an extent of approximately 90km and 75km respectively.
Great crested newt *Triturus cristatus*	500m from the scheme footprint.
Barn Owl	1.5km from the scheme footprint.
Badgers	500m from the scheme footprint.
Phase 1 habitat survey	500m from the scheme footprint.
Sites designated for bat populations	30km from the scheme footprint.

8.5 Existing baseline

8.5.1 This section describes the existing baseline, as it is currently known. Much of the information has been gathered through desk-top studies; the information on qualifying features of European and nationally designated sites was sourced from the Natura 2000 forms for each site, held on the Joint Nature Conservation Committee website. Some ground truthing has been carried out, in terms of protected species surveys, to check if suitable habitats are present.

Designated sites

8.5.2 For further details of all the designations below, reference should be made to the Joint Nature Conservation Committee website[60].

[59] Highways Agency (2007) Design Manual for Roads and Bridges Volume 11 Environmental Assessment, Section 3 Part 1 Air Quality. [online] available at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf (last accessed May 2017).

[60] JNCC (2018) Protected Areas [online] available at: http://jncc.defra.gov.uk/page-5332 (last accessed January 2018).

International

8.5.3 No internationally designated sites are present within 2 kilometres of the scheme, but the following internationally designated sites are located within 30 kilometres (for sites designated for bats) of the scheme.

- The Mells Valley SAC is located approximately 22 kilometres north of the scheme. Its primary reason for designation is due to the presence of the greater horseshoe bat (*Rhinolophus ferrumequinum)*. The qualifying features include habitats such as semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*).
- North Somerset & Mendip Bats SAC is located approximately 29 kilometres north of the scheme. Its primary reason for designation is due to the presence of greater horseshoe bats *Rhinolophus ferrumequinum* and lesser horseshoe bats *Rhinolophus hipposideros*. The qualifying feature includes habitats such as semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) and *Tilio-Acerion* forests of slopes, screes and ravines.
- Bracket's Coppice is located approximately 17 kilometres south of the scheme. Its primary reason for designation is due to the presence of Bechstein's bat *Myotis bechsteinii*. The qualifying feature includes habitats such as Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).

Nationally designated sites

8.5.4 Sparkford Wood SSSI is located 1.2 kilometres north east of the scheme. It is of special interest due to the broadleaved semi-natural woodland which largely comprises penduculate oak *Quercus robur* together with locally common ash *Fraxinus excelsior* and an understory of hazel coppice *Corylus avellana*. The ground flora, which includes abundant bluebell *Hyacinthoides non-scripta*, varies in conjunction with different soil types which range from mildly calcareous to acid. The woodland supports a large population of homostyle primroses *Primula vulgaris* which are recognised to be of international significance.

8.5.5 There are 4 designated sites within 200 metres of the affected road network for the scheme:

- Whitesheet Hill SSSI
- Stockton Wood and Down SSSI
- Yarnbury Castle SSSI
- Parsonage Down SSSI

8.5.6 All the above designated sites, have been designated for the presence of chalk grassland which supports many notable, and in some cases rare, species of flora, some of which may be sensitive to NO_x and nitrogen deposition. In addition, the Stockton Wood and Down SSSI consists of scrub and woodland.

Regional

8.5.7 Regionally designated Local Wildlife Sites (LWS) within 2 kilometres are as follows:

- River Cary LWS is located 1.05 kilometres north-west
- Cogberry Plantation LWS is located 0.58 kilometres north-west
- Bower Plantation LWS is located 0.76 kilometres north-west
- Annis Hill LWS is located 0.36 kilometres north-west
- Home Ground Pond LWS is located 0.26 kilometres north
- Lindsay House Quarry LWS is located 0.55 kilometres north
- Vale Farm Field LWS is located 0.5 kilometres north
- Parsons Steeple LWS is located 0.38 kilometres north
- Yarcombe Wood LWS is located 0.94 kilometres north-east
- Gason Lane Field LWS is located 0.01 kilometres south
- Ridge Copse LWS is located 0.05 kilometres south
- Camel Hill Transmitter Site LWS is located adjacent to the scheme
- Hazlegrove Park LWS is within the footprint
- Sparkford Hill Copse LWS is located 0.48 kilometres northeast
- Downhead Manor Farm Candidate LWS is located 0.19 kilometres north

Habitats

8.5.8 Priority habitats within the scheme's ZoI consist of hedgerows, broadleaved semi-natural woodland, ditches, parkland, calcareous grassland and ponds (refer to appendix D.3 for details in full).

Protected and notable species

8.5.9 Surveys have been completed for the following species and are presented within appendix D.3:

- Bat activity surveys (completed October 2017)
- Bat roost surveys (completed September 2017)
- Breeding bird and barn owl surveys (completed August 2017)
- Dormouse surveys (partly completed September 2017)
- Reptile surveys (completed September 2017)
- Water vole and otter surveys (completed September 2017)
- Macro-invertebrate surveys (completed September 2017)
- National vegetation classification surveys (completed June 2017)
- Hedgerow surveys (completed October 2017)
- Terrestrial invertebrates: brown hair streak butterfly (November 2017)

8.5.10 Completion of surveys is required for the following species to further inform the mitigation methods and design. The findings of all the surveys will be reported in the ES:

- Badger bait marking surveys to be completed in March 2018 following the resolution of access constraints
- Dormouse surveys to be completed March 2018 following resolution of access constraints
- Terrestrial invertebrates: spring invertebrates (April 2018)

8.6 Value (sensitivity of resources and receptors)

8.6.1 An evaluation of the ecological receptors within or adjacent to the study area has been undertaken to inform this assessment. Table 8.2 below provides a list of the ecological receptors and their assigned ecological value.

Table 8.2: Site evaluation

Feature		Evaluation	Rationale
Designated sites	SAC for bats	Very High	Internationally designated sites with limited potential for substitution.
	SSSI	High	Nationally designated site with limited potential for substitution.
	LWS	Medium	Locally designated sites with potential for substitution.
Habitats	Broadleaved semi-natural woodland	High / medium	Regionally important habitat. Recognised on the Local BAP.
	Plantation broadleaved semi-natural woodland	Medium	Regionally important habitat. Recognised on the Local BAP.
	Parkland	Medium	Regionally important habitat. Recognised on the Local BAP.
	Species rich hedgerow	Medium	Regionally important habitat. Recognised as on the Local BAP.
	Species poor hedgerows	Low	Undesignated habitat of some local biodiversity and earth heritage interest.
	Calcareous grassland	Medium	Regionally important habitat. Recognised as in the Local BAP.
	Ponds and ditches	Medium	Regionally important habitat. Recognised in the Local BAP.
	Watercourses	Medium	Regionally important habitat. Recognised in the Local BAP.
Species	Bats	High	Species protected by European legislation.
	Dormouse	High	Species protected by European legislation.
	GCN	High	Species protected by European legislation.
	Otters	High	Species protected by European legislation
	Water Voles	Medium	Species protected by national legislation
	Breeding birds	Medium	Species protected by national legislation
	Barn owls	Medium	Species protected by national legislation
	Badgers	Low	Species protected by national legislation from a welfare perspective
	Reptiles	Medium	Species protected by national legislation
	Invertebrates	High / medium	Species protected by European /national legislation
	White clawed crayfish	High	Species protected by European legislation.

8.7 Consultation

8.7.1 A meeting was held with Natural England on the 2 May 2017 to discuss the proposed survey methodology for bats and other protected species, to develop

mitigation proposals and to confirm Natural England's current biodiversity principles. Minutes from the meeting can be found in appendix D.2. Consultation has now also progressed with Natural England in the form of the Environmental Technical Working Groups (TWGs) (refer to section 2.7 for further details); full details of this consultation will be included within the ES.

8.8 Assumptions and limitations

8.8.1 This assessment is based on information gathered from a desk study, Phase 1 habitat survey and protected species surveys. Further protected species surveys, as detailed in section 8.5.10 must be undertaken to establish the baseline fully. Not all land was intensively searched, due to the dense nature of some of the vegetation present on site and health and safety concerns, regarding surveying immediately adjacent to the live A303 carriageway.

8.9 Design and mitigation measures

8.9.1 An Ecological Mitigation Strategy will be prepared, detailing proposals to manage and mitigate for ecological effects associated with the scheme. This document will be a live document that will be updated as and when required during scheme design, and as protected species information is updated. This document will also be used to inform the Construction Environmental Management Plan (CEMP) for the scheme, which will be prepared by the Contractor prior to construction. A Site Waste Management Plan (SWMP) will also be prepared outlining the correct handling, transport, and disposal of waste.

8.9.2 Once the status of protected and notable species is known, the scheme design has been frozen and the extent of vegetation clearance and earthworks are known, a landscape planting specification will be produced. Where the presence of European protected species (EPS) has been confirmed through further surveys, EPS mitigation licences will be obtained from Natural England (where required) which will contain a method statement giving details of appropriate mitigation to ensure no long-term effects on the species. Where there are no EPS constraints, but there are other factors requiring mitigation, such as nationally protected species, designated habitats and policy requirements, any unavoidable habitat loss should be off-set through landscape mitigation planting, which will be detailed in the Ecological Mitigation Strategy.

Construction

Designated sites

International

8.9.3 As the proposed scheme follows a similar alignment to the current A303, it is considered unlikely to affect foraging or commuting routes for bats, which are qualifying features of the SACs. However, mitigation measures have been proposed for bat species, to ensure any potential impacts are reduced. See section 8.10.14 for further details of mitigation proposed.

Regional

8.9.4 Direct effects to LWSs such as Hazlegrove Park, Downhead Manor Farm, Camel Hill Transmitter Site, Gaston Lane Field and Ridge Copse will be avoided where practicable. Where direct effects would result from the construction works, such as at Hazlegrove Park LWS and Downhead Manor Farm Candidate LWS, the mitigation measures may include: replacing lost habitat such as woodland, grassland and hedgerows. In terms of the botanical and invertebrate assemblages present, appropriate mitigation will be informed by the invertebrate and/or habitat surveys. This may include the translocation of plants / invertebrates to newly created habitats. In addition, the drainage assessment and design will provide attenuation storage to ensure that the existing highways drainage system is adequate to cope with the additional hard standing run-off.

Priority habitats

8.9.5 During construction, measures to mitigate the effects of dust on sensitive habitats could include the use of screens and sediment booms. Cutting, grinding or sawing equipment should use suitable dust suppression techniques such as water sprays or local extraction (e.g. suitable local exhaust ventilation systems). Materials with potential to produce dust should be removed from site as soon as possible, unless being re-used on site. Stockpiles being re-used should be seeded or fenced to prevent wind whipping. All vehicles should switch off engines when stationary to reduce air pollution, noise and vibration.

8.9.6 To minimise adverse effects on watercourses and associated species, measures would be taken to prevent or minimise any sediments entering the freshwater, using control measures as outlined in CIRIA C532 Control of Water Pollution from Construction Sites[61].

8.9.7 Loss of deciduous woodland and hedgerows would be minimised as far as practicable, and new areas of these habitats will be incorporated into the landscape design to ensure no net loss of habitat and a gain where practicable.

8.9.8 The loss of veteran trees within the Hazlegrove House (Grade II Listed) Registered Park and Garden should also be minimised. The scheme design has been sensitively designed to avoid the existing veteran trees. An arboricultural survey is still required to determine if construction will impact any tree roots within close proximity to excavations. This survey is programmed to take place at the beginning of 2018.

8.9.9 It is recommended that where hedgerows are removed to facilitate the works, these be replaced within the same location and any existing gaps planted with appropriate native species, where practicable. It is recommended that replacement hedgerows be species rich continuous intact hedgerows within the construction footprint, which would provide a wildlife corridor, visual screening to surrounding habitats and suitable habitat for nesting protected species.

[61] Master-Williams (2001) Control of water pollution from construction sites: Guidance for consultants and contractors. CIRIA C532 [online] available at: http://www.orkneywind.co.uk/advice/SEPA%20Pollution%20Advice/ciria%20c532.pdf (last accessed June 2017).

Specific hedgerows may need to be maintained for protected species mitigation, which will be determined once the protected species surveys are complete as part of the ES.

Protected and notable species

8.9.10 If the presence of EPS is confirmed and adverse effects are unavoidable, the legal requirements of the EPS licence conditions and the requirement of 'no net loss in biodiversity' in line with Section 40 of the NERC Act 2006 will guide the landscape planting requirements. In addition to habitat enhancement for protected species, mitigation and compensation with regards to off-setting habitat loss will also be required.

8.9.11 The loss of any habitat of conservation value would be replaced like-for-like as a minimum requirement. Habitats of negligible conservation value should not require mitigation for nature conservation.

8.9.12 Vegetation clearance and earthworks would be supervised by a suitably experienced ecologist in areas confirmed to have protected species present or habitat considered to have high potential for protected species. Toolbox Talks (protected species and invasive species with potential to be encountered on site) will be prepared and delivered onsite to all personnel by a suitably experienced ecologist, prior to any works commencing.

8.9.13 All vehicles should switch off engines when stationary to mitigate air pollution, noise and vibration disturbance during construction. During night works, hoods would be used to direct lighting away from features and habitat considered to be suitable for protected species, such as hedgerows, retained scrub and woodland.

Bats

8.9.14 Sensitive working methods would ensure that the risk of killing, injuring or disturbing bats is minimised. If any bat roosts are anticipated to be adversely affected by the works, a comprehensive mitigation strategy including a sensitive working method and a habitat replacement package would be required to accompany the EPS licence application to Natural England.

8.9.15 If lighting is required for the scheme, it would be kept to a minimum, to minimise effects on bats and other protected species. The following would be considered during the lighting design process:

- No bat roost, including access points, should be directly illuminated. If it is considered necessary to illuminate an area near a roost or roost access point, the lighting should be positioned to avoid the sensitive areas
- LED lighting produces no ultraviolet component and therefore is ideally suited as it greatly reduces the attraction of insects
- Lighting column (luminaires) design would restrict disability glare and minimise obtrusive light. Referring to Table A.1 'Luminous intensity classes' within EN 13201-2:2003 - G4, G5 & G6 correspond to

traditional full cut-off therefore as an absolute minimum G4 rating must be utilised, ideally a G6 rating is preferable however this greatly limits the number and type of luminaries available. Generally, luminaries should be mounted at a zero-degree tilt to further assist in the reduction of light pollution

- Lighting should be directed to where it is needed and light spill avoided. This can be achieved by the design of the luminaire and when required using accessories such as hoods, cowls, louvres and shields to assist in directing the light to the intended areas
- Landscaping should also be designed to provide light shielding to sensitive areas
- The height of lighting columns in general should be as low as practicable as the light at a low level reduces the ecological impact. However, there are cases where taller columns will enable light to be directed downwards at a more acute angle and therefore reduce horizontal spill light
- Lighting levels should be as low as current standards and guidelines allow. Lighting should only be provided in essential areas

8.9.16 All works likely to affect bats would be supervised and provision of Toolbox Talks would be given by a suitably qualified ecologist to all operatives prior to any works commencing. Once the scheme design has been finalised, the scale and quality of habitat suitable for bats will be assessed to confirm whether bat boxes would be installed or habitat enhancement would be recommended to compensate for the loss of suitable roosting, foraging or commuting habitat.

Breeding birds

8.9.17 During bird nesting season (generally taken as March to August inclusive), sensitive working methods, to minimise the impacts on nesting birds, would be implemented. If works commence in the bird breeding season a suitably experienced ecologist would carry out a nesting bird check on any vegetation to be cleared, or vegetation to be retained, but which is directly adjacent to major works, no more than 24 hours prior to works commencing. All vegetation clearance carried out outside the nesting bird season would be supervised by a suitably experienced ecologist.

8.9.18 Loss of suitable nesting bird habitat would be mitigated by replacement planting of hedgerows and the installation of bird boxes in woodland that experienced partial loss.

Barn owls

8.9.19 To compensate for any loss of breeding sites, replacement barn owl boxes would be required. These would be installed at least 1 kilometre away from any major highway, as early as pacticable in areas where evidence of occupation is already present. Barn owls are known to suffer high levels of mortality when attempting to cross roads and to minimise this risk, screening planting with closely spaced trees should be used along as much of the highway as practicable. Areas of rough grassland should be created within 500 metres of

the nest boxes or existing nest sites, to encourage foraging. If the areas are within close proximity of the road, continuous screening should be employed.

8.9.20 Any work required in close proximity to a nest site would take place outside of the breeding season. Breeding is considered to be between March to August, although eggs and fledglings can be present as late as October. Before work commences outside of this window, confirmation should be attained that any identified nest site is no longer active.

Water vole

8.9.21 Sustainable Drainage Systems (SuDS) would be incorporated into the detailed design to mitigate adverse effects on any ditches which water voles may use from siltation or pollution events.

Great crested newts

8.9.22 Sensitive working methods would ensure that the risk of killing, injuring or disturbing GCN is minimised. An EPS licence from Natural England would be required to allow the proposed works to be undertaken. The Method Statement of the EPS licence would detail a comprehensive mitigation strategy including translocation, a sensitive working method, timing of works and a habitat replacement package. Population monitoring would also be required as part of the EPS licence to ensure there is no long-term detrimental effect to the existing GCN population.

8.9.23 All vegetation clearance of suitable GCN habitat would be supervised by a suitably experienced, licensed ecologist and all site operatives would receive a Toolbox Talk prior to works commencing.

8.9.24 Habitat planting along the road verge would ensure there is no net loss of terrestrial habitat and provide areas of foraging for GCN.

Hazel dormouse

8.9.25 The requirement for mitigation for this species depends on the outcome of the dormice surveys. If no evidence of dormice is found during the surveys, it will be assumed that dormice are absent from the survey area and therefore this species will not be affected by the scheme. If dormice are found during the surveys, sensitive working methods would ensure that the risk of killing, injuring or disturbing dormice is minimised and an EPS licence from Natural England would be required to allow the proposed works to be undertaken. The Method Statement of the EPS licence would detail a comprehensive mitigation strategy including a sensitive working method, timing of works and a habitat replacement package. Population monitoring would be required as part of the EPS licence.

8.9.26 All vegetation clearance of suitable dormouse habitat would be supervised by a suitably experienced, licensed ecologist and all site operatives would receive a Toolbox Talk prior to works commencing.

8.9.27 Removal of vegetation will be replaced like-for-like as a minimum requirement. This will provide replacement foraging and shelter habitat for dormice to use, once established. Nest boxes will also be required to provide alternative habitat until the vegetation has established and provide monitoring data on the local dormouse population.

Otters

8.9.28 Otters have been identified in Dyke Brook, which is over 1 kilometre from the proposed scheme. Therefore, no mitigation is required for otters.

Reptiles

8.9.29 Sensitive working methods would ensure that the risk of killing or injuring (during hibernation and the active period) reptiles is minimised. All vegetation clearance and construction activities likely to harm reptiles would be supervised by a suitably experienced ecologist and all site operatives would receive a Toolbox Talk prior to works commencing.

8.9.30 A combination of habitat manipulation and translocation may be required, dependent on the numbers of reptiles recorded during the surveys and the degree of habitat loss. A suitable receptor site would need to be identified and would need to meet a list of criteria to determine its suitability. For example, there should not be a resident population of reptiles. Or, if a low population is present, the area would need to be enhanced to increase its carrying capacity. Reptile exclusion fencing may also be required to prevent reptiles re-entering the construction area.

Badgers

8.9.31 Works that directly affect active badger setts would require a development licence which would only be granted outside the breeding season (November – June). Any sett closure would need to be carried out under licence, with badgers permanently excluded from their setts to prevent them re-entering. Any open trenches should be covered overnight during the works to prevent badgers from becoming trapped. If this is not possible, then mammal ladders should be installed to allow any trapped mammals to escape safely.

8.9.32 Badgers are creatures of habit and will continue to use their pathways. Should the scheme cross these pathways, then badger proof fencing and the provision of mammal passes would be incorporated into the design to ensure badgers are excluded from accessing the live carriageway.

Invertebrates

8.9.33 Brown hairstreak butterflies have been identified. This species uses hedgerows to overwinter their eggs and the larvae predominantly feed on blackthorn. Any removal of hedgerows would be replanted and include species favourable to brown hairstreak. Other species recorded in the wider area include white letter hairstreak *Satyrium w-album*, Essex skipper, silver washed fritillary *Argynnes paphia* and brown argus *Aricia agestis*. Species rich grassland and shrubs will

be planted along the new road and include a mix of species which are favourable for the larval stages of these butterflies. Species should include privet, bramble, common rock rose *Helianthemum nummularium*, common dog violet *Viola riviniana*, cock's foot *Dactylus glomerata*, and common couch *Elytrigia repens*.

General

8.9.34 Ecological Toolbox talks should be given to contractors prior to the works commencing to make them aware of the legislation afforded to protected species, and the working practices implemented to minimise impacts on the sensitive habitats within the designated sites.

8.9.35 Although non-native and invasive species have not been identified onsite, Toolbox talks would be given to ensure contractors are aware of their legal obligations. If any are encountered, the contractor must seek further guidance to prevent spreading and breach of legislation.

8.9.36 Deer proof fencing will be incorporated into the design to minimise risk of collision with oncoming traffic.

Operation

8.9.37 Replacement habitats would be implemented through planting works in the first available planting season following completion of construction works. Any opportunities for early planting in areas that would not be affected during construction will be explored in the ES.

8.9.38 A 3-year aftercare period would follow completion of the works. During this time, maintenance activities will be undertaken to ensure the successful establishment of planting and provision of new habitats.

8.9.39 Maintenance and monitoring tasks will be prescribed in the Landscape and Ecological Management Plan (LEMP). This will include the replacement of failed or defective plants. Long-term maintenance objectives and activities would be provided in the Handover Environmental Management Plan (HEMP) which would be issued at the end of the aftercare period. The HEMP would detail maintenance and monitoring for Years 3 to 20 and would be consistent with the wider landscape and habitat management routine of the surrounding highway network. The HEMP will ensure the on-going success of habitat reinstatement to maturity.

8.10 Assessment of effects

8.10.1 This section describes the residual effects that are likely for each option following implementation of the mitigation within section 8.9, and the ecological receptors at each option. Table 8.3 below presents a summary of the value of receptors, magnitude of impact and significance of effects for the construction and operational phases of the scheme.

Construction

Designated sites

8.10.2 The scheme is located within 30 kilometres of Mells Valley SAC, North Somerset and Mendip Bats SAC and Bracket's Coppice SAC, which are designated for bat conservation. However, due to the distance between the SACs and the scheme, no direct adverse effects such as habitat loss, noise and air pollution are anticipated. As the scheme follows a similar alignment to the current A303 and is considered unlikely to affect foraging or commuting routes, no effect on any of the bat SACs is considered likely.

8.10.3 No significant effects on the integrity of Sparkford Wood SSSI are anticipated as the site is over 1 kilometre away from the scheme. Therefore, it is considered that Sparkford Wood SSSI is at a sufficient distance for it not to be directly affected by the works.

8.10.4 In relation to air quality and the affected road network, Stockton Wood and Down SSSI is located 10 metres from the nearest affected road, Yarnbury Castle SSSI is 83 metres away, Whitesheet Hill SSSI is located 152 metres away, and Parsonage Down SSSI 196m. Construction activities could increase the risk of a pollution incident, such as contaminated land run-off or spills / leaks of oils and fuels and increased levels of airborne pollutants during the construction phase may occur.

8.10.5 Part of Hazlegrove Park LWS is located within the footprint of the scheme. There will be a partial loss (<1%) of the LWS from its periphery to accommodate the new roundabout and access road.

8.10.6 The scheme is also adjacent to Camel Hill Transmitter Site, Gason Lane Field and Ridge Copse LWSs. Construction activities could increase the risk of a pollution incident, such as contaminated land run-off or spills / leaks of oils and fuels.

8.10.7 Downhead Manor Farm Candidate LWS is located approximately 190 metres from the scheme. This is at a sufficient distance to not be directly impacted during construction by habitat loss, noise and light disturbance. However, increased levels of airborne pollutants during the construction phase may occur.

8.10.8 The remaining LWSs are located over 300m from the scheme and are considered to be at a sufficient distance to not be directly or indirectly impacted by the scheme. Therefore, they are not considered any further.

Habitats

8.10.9 The ecological importance of the habitats present has been assessed against their presence on Section 41 of the Natural Environment and Rural Communities Act (NERC, 2006), the UK and Local BAPs and their potential to support protected or notable species.

8.10.10 Small scale direct loss of broadleaved woodland, parkland, hedgerows and ditches is likely to occur for the scheme. Wildlife using the area would likely be subject to increased disturbance.

8.10.11 To enable construction, 1.64 hectares of broadleaved woodland would be directly affected. It is anticipated that 2 species rich hedgerows, 45 species poor hedgerows and 5 ditches would also be intersected by the scheme. One veteran tree from within the parkland would require removal and the scheme would also intrude into the root protection area (RPA) of 2 other veteran trees.

8.10.12 Other possible impacts to habitats would be associated with pollution from mobilised suspended solids and spillages of materials associated with routine run-off or spillages and increased levels of airborne pollutants during the construction phase. Works in close proximity to trees would have the potential to adversely affect them through ground compaction, thereby causing damage to the root system.

8.10.13 There would be no direct loss of priority habitats such as ponds and calcareous grassland, therefore these are not considered further in the assessment.

Protected species

Bats

8.10.14 During construction, it is anticipated that both habitats and species such as bats would experience increased disturbance from lighting, noise and a decrease in air quality (up to 30 kilometres from the scheme).

8.10.15 Direct and indirect impacts on bats are considered likely, due to the following factors:

- Artificial lighting used during construction could affect the feeding behaviour of bats, some species, including pipistrelle and serotine, feeding on insects attracted to light from external lighting with a high ultraviolet content. This behaviour is not common to all bat species, as the slower flying broad winged species such as long eared bats, myotis species, barbastelle and greater and lesser horseshoe bats generally avoid light
- Insects may be attracted to lit areas from a distance, potentially reducing the food source for bats feeding in more natural darker locations
- Artificial lighting is thought to increase the chances of bats being preyed upon. Many avian predators will hunt bats which may be one of the reasons that bats avoid flying in the day
- Artificial lighting disrupts the normal 24-hour pattern of light and dark which is likely to affect the natural behaviour of bats. Bright lighting may reduce social flight activity and cause bats to move away from the lit area. Studies have shown that continuous lighting along roads creates barriers which some species cannot cross
- Lighting can be particularly harmful if used along river corridors, near woodland edges and near hedgerows used by bats. In mainland

Europe, in areas where there are foraging or commuting bats, stretches of road are left unlit or lighting is designed in such a way as to avoid isolation of bat colonies

8.10.16 The vegetation clearance required to construct the scheme would result in the loss of small areas of broadleaved woodland and hedgerows located in close proximity to the existing A303. The removal of vegetation would be likely to temporarily disrupt foraging areas, however, the extent of this is considered small scale as there is an abundance of other foraging areas available. The existing A303 is also considered to be an existing barrier to bats due to the frequent use of HGVs. Therefore, the development of the scheme is not going to create a new barrier to dispersal as the existing baseline already has this present.

Breeding birds

8.10.17 If works are to commence during the nesting bird season, breeding birds are likely to be disturbed by noise, lighting (if night works) and vibration due to suitable habitat located adjacent to the works. Vegetation clearance is also likely to reduce the habitat available for breeding birds within the ZoI.

Barn owls

8.10.18 Existing records do show barn owls are present within the wider landscape.

8.10.19 As barn owls are a Schedule 1 species, birds and their nests are protected under the WCA (1981). If a nest site would be disturbed or lost as a result of works in the vicinity, this would result in an effect on the local barn owl population and could constitute an offence.

Badgers

8.10.20 Although the badger bait marking surveys are yet to be completed, existing survey information gathered during 2016 and 2017 has identified a number of setts within the scheme footprint. The construction of the scheme would directly affect several outlier setts. Construction works within 30 metres of existing badger setts has the potential to disturb badgers and potentially damage setts.

Great crested newts

8.10.21 The construction works would result in the loss of medium quality terrestrial habitat for GCN, including habitats such as woodland and hedgerows. However, no ponds would be directly affected. Vegetation clearance of habitat suitable for GCN has potential to adversely affect this species as a result of disturbance or direct injury, potentially leading to death. In addition, the works have potential to cause noise, vibration and light (if night works) disturbance during construction.

Dormice

8.10.22 If this species was present within the ZoI (surveys not yet completed) the species could be affected by works resulting in the loss and severance of low to

medium quality dormouse habitat. Vegetation clearance of habitat suitable for dormice has the potential to adversely affect this species as a result of disturbance or direct injury, potentially leading to death. In addition, the works have potential to cause noise, vibration and light (if night works) disturbance during construction.

Otters

8.10.23 No evidence of this species within the ZoI has been identified during the surveys. Therefore, the scheme is not anticipated to affect this species.

Water vole

8.10.24 Construction activities could increase the risk of a pollution incident, such as contaminated land run-off or spills / leaks of oils and fuels. Such pollution incidents and changes in hydrological environment could reduce the habitat available for this species.

Reptiles

8.10.25 The works have potential to cause noise, vibration and light (if night works) disturbance during construction. There would be habitat loss for reptiles due to construction works and to accommodate design. In addition, vegetation clearance and earthworks in suitable reptile habitat have potential to adversely affect reptiles as a result of disturbance or direct injury, potentially leading to death.

Invertebrates

8.10.26 The scheme largely affects poor semi-improved grazed grassland and arable fields located adjacent to the existing A303. These habitats offer low potential for notable terrestrial invertebrate species. Part of the scheme would be located within Hazlegrove LWS which is partly designated for its invertebrate species. However, the scheme has been designed to minimise any loss or damage to the existing veteran trees, which provide habitat for these invertebrate species. Therefore, it is not anticipated that the scheme would have any significant adverse effect on terrestrial invertebrates.

8.10.27 There are 2 ditches within close proximity to the footprint of the works, at the eastern extent of the scheme. Construction activities could increase the risk of a pollution incident, such as contaminated land run-off or spills / leaks of oils and fuels.

Operation

Designated sites

8.10.28 As the scheme follows a similar alignment to the current A303 and is considered unlikely to cause fragmentation of habitats or effect foraging or commuting routes, no impact on any of the bat SACs is considered likely.

8.10.29 The scheme is predicted to lead to an increase of approximately 2,000 to 3,000 vehicles a day on the section of the A303 near Sparkford and Ilchester. This change is likely due to the improved alignment along the A303 road as a result of the scheme, will encourage traffic to use this section of the A303 instead of local B roads.

8.10.30 It is anticipated that there would be a small increase in NO_x concentrations at the boundary of the Stockton Wood and Down SSSI, which is predicted to be exceeding the NO_x annual objective in the opening year Do Minimum and Do Something scenarios. Further assessment will be undertaken as part of the ES for this designated site to assess whether the predicted changes in NO_x concentrations and nitrogen deposition are significant. Refer to sections 5.10.9 to 5.10.14 of chapter 5 Air Quality.

8.10.31 Predicted NOx concentrations at the remaining ecological receptor locations (Whitesheet Hill SSSI, Yarnbury Castle SSSI and Parsonage Down SSSI) are below 30µg/m^3 and changes are imperceptible. Therefore, these receptors will not be considered further.

8.10.32 Once operational, the new dual-carriageway would result in traffic travelling at higher speeds compared to the existing A303. However, as Sparkford Wood SSSI is located over 1km from the carriageway and is considerably outside the ZoI for air quality impacts (>300m), it is considered that the SSSI is at a sufficient distance for it not to be directly or indirectly affected by the scheme.

8.10.33 Once operational, there would be a permanent but very small loss of Hazlegrove Park LWS due to the new roundabout and access road. The habitats lost would include a small area of broadleaved woodland and grazed poor semi- improved grassland. This loss would represent <1% of the total LWS and is located along its periphery. Therefore, the integrity of the LWS is still maintained. Habitat planting will also be incorporated into the landscape design to create areas of woodland, shrubs and species rich grassland, which once established, would be of benefit to invertebrate species and compensate for the loss of LWS habitat.

8.10.34 Once operational, it is not anticipated that the scheme would adversely affect either Camel Hill Transmitter Site, Gason Lane Field, Ridge Copse or, Downhead Manor Farm LWSs. The sites are already subjected to the existing A303 and exposed to car emissions to varying degrees. The change from single to dual-carriageway is not anticipated to significantly change in terms of air quality and emissions. Therefore, it is considered that there would be no degradation of habitats within any of the LWSs.

Habitats

8.10.35 The scheme would result in the small scale direct loss of broadleaved woodland, parkland, hedgerows and ditches. There would be a short-term adverse effect whilst the replacement planting establishes. However, once established, it is anticipated that there would not be any significant adverse effects to habitats of conservation value.

Protected species

Bats

8.10.36 There would be a short-term adverse effect whilst the replacement planting establishes. Once established, this would provide replacement foraging and potentially commuting habitat for bats to use.

8.10.37 Under the current design, it is not proposed that there would be lighting along the length of the scheme. Therefore, no effects arising from light disturbance are anticipated.

8.10.38 The A303 is considered to form an existing barrier to bats, due to the frequent use of HGVs and heavy traffic. Therefore, the realignment of the scheme is not considered to create a new barrier to dispersal when compared to the existing baseline present. In the long-term, it is not anticipated that there would be any significant adverse effects on bats.

Breeding birds

8.10.39 There would be a short-term adverse effect whilst the replacement planting establishes. In the interim, bird boxes would provide instant replacement habitat in woodlands that would experience partial loss. This would ensure there are no long-term significant effects on breeding birds.

Barn owls

8.10.40 There would be a short-term adverse effect whilst the replacement planting establishes.

8.10.41 Under the current design, it is not proposed that there would be lighting along the length of the scheme. Therefore, no effects arising from light disturbance are anticipated.

8.10.42 The existing A303 is considered to be an existing barrier to barn owls due to the frequent use of HGVs and heavy traffic. Therefore, the realignment of the scheme is not considered to create a new barrier to dispersal when compared to the existing baseline. In the long-term, it is not anticipated that there would be any significant adverse effects to barn owls.

Badgers

8.10.43 Once operational, it is considered that the scheme would form a barrier to dispersing badgers and is likely to result in increased mortality with live traffic. At the eastern extent, the new access road and roundabout would result in further barriers to badger movements. However, with the incorporation of badger proof fencing and mammal underpasses, it is anticipated that direct mortality of badgers would be reduced.

8.10.44 The reinstatement habitat planting would provide long-term foraging and sett construction areas. Therefore, it is not anticipated there would be any significant adverse effects to badgers.

Great crested newts

8.10.45 There would be a short-term adverse effect whilst the replacement planting establishes. The lost habitat would be replaced with native planting of higher value for GCN, such as woodland, shrubs, hedgerows and species rich grassland. There would be no loss or indirect effects to breeding ponds and it is not anticipated that there would be any long-term significant adverse effects on GCN.

Dormice

8.10.46 If this species is present within the ZoI (surveys not yet completed) works could affect the species due to the small-scale loss of broadleaved woodland, notably around the registered park and garden and hedgerows adjacent to the A303.

8.10.47 It is not considered that the scheme would create any barriers to dispersal or result in isolation of habitats, when compared to the existing baseline.

8.10.48 There would be a short-term adverse effect whilst the replacement planting matures. However, in the long-term, it is not anticipated that there would be any significant adverse effects on dormice.

Otters and water vole

8.10.49 The scheme is not anticipated to directly affect any water courses used by otters and/or water vole or result in fragment or isolation of habitats that these species may use. Once operational, there is potential for indirect effects due to pollution events and sediment changes, which may filter through the ditch network. However, this is considered not to have a measurable change on these species or habitats. In the long-term, it is not anticipated that there will be any significant adverse effects on either species.

Reptiles

8.10.50 The scheme would result in the loss of low quality habitats for reptiles, such as species-poor hedgerows, arable field margins, and the existing A303 verge. However, these habitats would be replaced with habitats of a higher quality such as species rich grassland, native shrubs and hedgerows. This would provide reptiles with areas for both foraging and shelter and the new roadside embankments would also provide basking opportunities. Therefore, in the long-term, it is not anticipated that there would be any significant adverse effects on common reptiles.

Invertebrates

8.10.51 The scheme would largely affect poor semi-improved grazed grassland and arable fields located adjacent to the existing A303. Replacement habitat such

as grassland and hedgerows would be planted along the majority of the scheme, providing additional habitats for a variety of invertebrate species. Therefore, it is not anticipated that the scheme would have any significant adverse effects on terrestrial invertebrates.

8.10.52 The scheme is not anticipated to directly affect any water courses used by aquatic macroinvertebrates. Once operational, there is potential for indirect effects due to pollution events and sediment changes, which may filter through the ditch network. However, this is considered not to have a measurable change on these species or their habitats. In the long-term, it is not anticipated that there would be any significant adverse effects on aquatic invertebrates.

Table 8.3: Summary of assessment of significance of effect

Receptor		Summary of effects	Mitigation	Sensitivity	Magnitude (with mitigation)	Overall significance of effect with Mitigation
Receptors and impacts						
Natura 2000 Sites	Mells Valley SAC	No adverse effects anticipated.	If bat roosts are found, requirements of the EPS licence conditions would guide the landscape planting and other mitigation (to avoid disturbing bat roosts). Mitigation for foraging and commuting routes would include habitat enhancement and compensation; green bridge or similar structure to maintain connectivity, offsetting habitat loss. Landscaping design would provide a barrier between active road and wider landscape. Vegetation clearance and earthworks to be supervised by a suitably experienced ecologist. Lighting and noise disturbance would be minimised through implementation of method statement. Operational lighting is not currently in the design, however, if required, follow best practice guidelines regarding light spill, and wave length. At detailed design stage, the requirement for and type / number of bat boxes to be installed will be finalised.	Very High	*No change* (construction or operational phase)	Neutral (construction and operation).
	North Somerset & Mendip Bats SAC	As above.	As above.	Very High	*No change* (construction or operational phase).	Neutral (construction and operation).
	Bracket's Coppice SAC	No adverse effects anticipated for either option due to the distance and type of qualifying feature.	Not applicable.	Very High	**Construction Phase:** *No change.* **Operational Phase:** *No change.*	Neutral (construction and operation).
Nationally designated sites	Sparkford Wood SSSI	Potential for increased level of airborne pollutants.	Sparkford Wood SSSI is located over 300m from the scheme and outside the ZoI for air quality effects, no mitigation required.	High	**Construction Phase:** *No change.* **Operational Phase:** *No change.*	Neutral (construction and operation).
	Whitesheet Hill SSSI; Stockton Wood and Down SSSI; Yarnbury Castle SSSI; and, Parsonage Down SSSI.	Potential for increased level of airborne pollutants.	Best practice measures implemented to store, handle, transport and dispose of waste, SWMP and CEMP to be prepared and implemented.	High	**Construction Phase:** Potential for pollution events and changes in airborne pollutants. *Minor adverse.* **Operational Phase:** No change for Whitesheet Hill SSSI Yarnbury Castle SSSI Parsonage Down SSSI Minor adverse for Stockton Wood and Down SSSI.	Slight Adverse (construction phase). Neutral (operation phase). Slight Adverse / Moderate Adverse (operation phase). *Further assessment will be undertaken to determine whether the predicted changes in NOx concentrations and nitrogen deposition are significant.*
Locally designated sites	Hazlegrove Park LWS	Potential for pollution incidents and changes in airborne pollutants. Loss of LWS (<1%) Potential for loss of veteran trees	Loss of any habitat of conservation value would be replaced like-for-like as a minimum requirement. Landscape planting to be of value for biodiversity, including areas of species rich grassland, hedgerows and woodland. Invertebrate and botanical surveys to be undertaken on LWS to assess the impact and inform mitigation. Possible translocation of plants / invertebrates to newly created habitats. Best practice measures implemented to store, handle, transport and dispose of waste, SWMP and CEMP to be prepared and implemented. Working methodology in accordance with CIRIA C532: Control of Water Pollution from Construction Sites.	Medium	**Construction Phase:** Potential for pollution events and changes in airborne pollutants. Loss of habitat within LWS *Minor adverse.* **Operational Phase:** *Minor adverse.*	Slight Adverse (construction and operation).
	Downhead Manor Farm Candidate LWS	Potential for pollution incidents and changes in airborne pollutants.	Loss of any habitat of conservation value would be replaced like-for-like as a minimum requirement.	Medium	**Construction Phase** Potential for pollution events and changes in airborne pollutants.	Slight Adverse (construction phase).

Receptor		Summary of effects	Mitigation	Sensitivity	Magnitude (with mitigation)	Overall significance of effect with Mitigation
			Landscape planting to be of value for biodiversity, including areas of species rich grassland, hedgerows and woodland. Invertebrate and botanical surveys to be undertaken on LWS to assess the impact and inform mitigation. Possible translocation of plants / invertebrates to newly created habitats. Best practice measures implemented to store, handle, transport and dispose of waste, SWMP and CEMP to be prepared and implemented. Working methodology in accordance with CIRIA C532: Control of Water Pollution from Construction Sites.		**Operational Phase:** *Minor adverse.*	Neutral (operation).
	Annis Hill Woodland LWS	No adverse effects anticipated.	Best practice measures implemented to store, handle, transport and dispose of waste, SWMP and CEMP to be prepared and implemented. Working methodology in accordance with CIRIA C532: Control of Water Pollution from Construction Sites.	Medium	*No change (construction or operational phase).*	Neutral (construction and operation).
	Camel Hill Transmitter Site LWS, Gaston Lane Field LWS, Ridge Copse LWS, Vale Farm Field LWS, Yarcombe Wood LWS	Potential for pollution incidents and changes in airborne pollutants.	Incorporate SuDS into detailed design to mitigate adverse impacts from run-off. Best practice measures implemented to store, handle, transport and dispose of waste, SWMP and CEMP to be prepared and implemented. Working methodology in accordance with CIRIA C532: Control of Water Pollution from Construction Sites. Habitat planting will be placed along the length of the scheme and act as a buffer and screen to the wider landscape and LWS.	Medium	**Construction Phase:** Potential for pollution events and changes in airborne pollutants. Minor adverse. **Operational Phase:** Negligible.	Slight Adverse (construction phase). Neutral (operational phase).
Priority Habitats	Hedgerows	Removal of hedgerows to facilitate construction works, loss of hedgerows to accommodate design.	Hedgerows removed to facilitate the works, to be replaced and enhanced. Species rich hedgerows to be incorporated into landscape design. Specific hedgerows may be required to be maintained for protected species mitigation. This will be addressed as part of the ES, once protected species surveys are complete.	Medium	**Construction:** Removal of hedgerows to facilitate construction works. Minor Adverse **Operation:** Negligible	Slight Adverse (construction phase). Slight Adverse reducing to Neutral (operational phase).
	Broadleaved semi-natural woodland	Removal of small areas of woodland to facilitate construction works, loss of woodland to accommodate design.	Woodland removed to facilitate the works, to be replaced and enhanced. Woodland to be incorporated into landscape design, including native and locally sourced species. Additional woodland planting may be required for protected species mitigation. This will be addressed as part of the ES, once protected species surveys are complete.	Medium	**Construction:** Potential for pollution incidents and change in sediment dynamics. Loss of woodland to facilitate construction works and to accommodate design. Minor Adverse. **Operation:** Negligible Adverse.	Slight Adverse (construction phase). Slight Adverse reducing to Neutral (operational phase).
	Parkland	Limited loss of this habitat to accommodate design. Potential loss of veteran trees	Woodland and species rich grassland to be incorporated into landscape design, including native and locally sourced species to compensate for lost habitat, although not a direct replacement. Arboricultural assessment required on final design to determine if trees are to be affected. The design has considered the location of veteran trees and been realigned to mitigate direct impacts on veteran trees. Best practice measures implemented to store, handle, transport and dispose of waste, SWMP and CEMP to be prepared and implemented. Working methodology in accordance with CIRIA C532: Control of Water Pollution from Construction Sites.	Medium	**Construction:** Potential for pollution incidents. Limited loss of this habitat to accommodate design. Minor Adverse. **Operation:** Minor adverse.	Slight adverse (construction and operation).
	Ditches	Limited loss of some habitat to facilitate construction works and to accommodate design.	Loss of any habitat of conservation value would be replaced like-for-like as a minimum requirement or enhanced where this is not feasible.	Medium	**Construction Phase:** Loss of some habitat to facilitate construction works and to accommodate design. Minor Adverse. **Operational Phase:** Negligible Adverse.	Slight Adverse (construction). Neutral (operation).
Protected and Notable Species	Bats	Fragmentation of foraging and commuting routes, due to vegetation clearance, lighting and noise disturbance. Potential for disturbance, damage to or loss of bat roosts.	If bat roosts are found, requirements of the EPS licence conditions will guide the landscape planting and other mitigation (to avoid disturbing bat roosts). Mitigation for foraging and commuting routes would include habitat enhancement and compensation; offsetting habitat loss. Landscaping design would provide a barrier between active road and retained vegetation.	High	**Construction Phase:** Fragmentation of foraging and commuting routes, due to vegetation clearance, lighting and noise disturbance. Potential for disturbance, damage to or loss of bat roosts. Minor Adverse **Operational Phase:** Potential for disturbance, damage to or loss of bat roosts.	Slight Adverse (construction). Slight Adverse reducing to Neutral (operation)

Receptor		Summary of effects	Mitigation	Sensitivity	Magnitude (with mitigation)	Overall significance of effect with Mitigation
			Vegetation clearance and earthworks to be supervised by a suitably experienced ecologist. Lighting and noise disturbance would be minimised through implementation of the method statement. Operational lighting will either not be included in design, or follow best practice guidelines regarding light spill, and wave length. At detailed design stage, the requirement for and type / number of bat boxes to be installed will be finalised.		Minor Adverse.	
	Breeding birds	Loss of vegetation and disturbance reduces nesting potential within construction and operational area Vegetation clearance could result in the destruction of nests and eggs, and killing/injuring of birds.	Vegetation clearance (including reedbeds) to be undertaken outside of breeding bird season (March to September inclusive) or sensitive working methods within this season. Loss of suitable nesting bird habitat mitigated by landscape planting incorporating breeding bird habitats and installation of bird boxes in woodland that experienced partial loss.	Medium	**Construction Phase:** Loss of vegetation and disturbance, potential of killing and injuring and destruction of nests. Decrease in nesting habitat. Minor Adverse. **Operational Phase:** Loss of vegetation and disturbance. Negligible Adverse.	Slight Adverse (construction). Neutral (operation).
	Barn Owls	Loss of foraging habitat; Loss of nesting sites; Direct mortality through vehicle collisions	The specific areas for mitigation will be informed by the survey results and will be presented within the ES. Provision of barn owl nest boxes should be located over 1km away from any major highway. High levels of mortality are caused by barn owls attempting to cross roads. To minimise this risk, screen planting of closely spaced trees should be used along as much of the highway as practicable. Areas of rough grassland should be created for foraging. These should be within 500m of the nest boxes or existing nest sites. If the areas are within close proximity of the road, continuous screening should be employed.	High	**Construction Phase:** Disturbance, loss of foraging habitat and potential loss of nesting sites. Minor Adverse. **Operational Phase:** Minor Adverse.	Slight Adverse (construction and operation).
	Dormice	Loss and severance of low to medium quality dormouse habitat. Vegetation clearance resulting in the disturbance or direct injury/death of dormice. Noise vibration and light (if night works) disturbance during construction and operation.	If dormice are found, requirements of the EPS licence conditions would guide the landscape planting and other mitigation. Mitigation would include habitat enhancement and compensation; offsetting habitat loss. Landscaping design will provide a barrier between active road and retained vegetation. Vegetation clearance and earthworks to be supervised by a suitably experienced ecologist. Lighting and noise disturbance would be minimised through implementation of method statement. Provision of nest boxes to compensate for lost habitat. Monitoring surveys	High	**Construction Phase:** Fragmentation of habitat due to vegetation clearance, lighting and noise disturbance. Potential for disturbance. Minor Adverse **Operational Phase:** Potential for disturbance. Minor Adverse.	Slight Adverse (construction and operation).
	Badger	Loss and severance of low to medium Vegetation clearance resulting in the disturbance or direct injury/death of badger. Noise, vibration and light (if night works) disturbance during construction and operation. Damage, or permanent exclusion from setts.	If sett closure is required, requirements of the mitigation licence conditions will guide the need for sett creation, landscape planting and other mitigation. Mitigation would include habitat enhancement and compensation; offsetting habitat loss. If a main sett would be lost, provision of an artificial sett is required. Badger proof fencing and tunnels should be incorporated into the landscape design. Sett closure, vegetation clearance and earthworks to be supervised by a suitably experienced ecologist. Lighting and noise disturbance will be minimised through implementation of method statement.	Low	**Construction Phase:** Fragmentation of habitat due to vegetation clearance, lighting and noise disturbance. Potential for disturbance. Potential for sett closure and destruction. Minor Adverse. **Operational Phase:** Potential for disturbance. Minor Adverse.	Slight Adverse (construction and operation).
	Otters	No adverse effects anticipated.	Working methodology in accordance with CIRIA C532: Control of Water Pollution from Construction Sites.	High	*No change for both construction and operational phase.*	Neutral (construction and operation).
	Water vole	No adverse effects anticipated.	Working methodology in accordance with CIRIA C532: Control of Water Pollution from Construction Sites.	Medium	*No change for both construction and operational phase.*	Neutral (construction and operation).
	Great Crested Newts (GCN)	Loss of terrestrial GCN habitat. Vegetation clearance resulting in the disturbance or direct injury/death of GCN.	If GCN are found, requirements of the EPS licence conditions will guide the landscape planting and other mitigation. Mitigation would include habitat enhancement and compensation; offsetting habitat loss.	High	**Construction Phase:** Loss and fragmentation of habitat due to vegetation clearance, lighting and noise disturbance. Potential for disturbance.	Slight Adverse (construction and operation).

Receptor		Summary of effects	Mitigation	Sensitivity	Magnitude (with mitigation)	Overall significance of effect with Mitigation
		Noise, vibration and light (if night works) disturbance during construction and operation.	Translocation of GCN, between 30 and 60 days for a small/medium population. Landscaping design will provide additional habitat for GCN to forage and commute within. Vegetation clearance and earthworks to be supervised by a suitably experienced ecologist. Population monitoring surveys.		Potential for injury and even death. Minor Adverse. **Operational Phase:** Minor Adverse.	
	Reptiles	Potential to cause noise, vibration and light (if night works) disturbance during construction. Habitat loss. Potential to kill and injure reptiles during earthworks and vegetation clearance.	Sensitive working methods, possible translocation to a receptor site and ecological supervision. Landscaping would provide replacement habitat.	Medium	**Construction Phase:** Habitat loss and potential for killing and injury Minor Adverse. **Operational Phase:** Negligible adverse.	Neutral to Slight Adverse (construction). Neutral to Slight Adverse (operation).
	Invertebrates	Loss of low quality terrestrial habitat. Potential for pollution incidents, infilling and earthworks creates potential for change in sediment dynamics to impact on the flora and invertebrate community due to hydrological links. Potential for ditch to be realigned.	Both terrestrial and aquatic Invertebrate surveys required to assess impact and inform appropriate mitigation: could include translocation of invertebrates. New ditch design / existing ditches enhanced for biodiversity. Species rich grassland, hedgerows and woodland incorporated into the landscape design, would be of benefit to invertebrate species.	Medium	**Construction Phase:** Direct impacts due to construction activities on ditches. Loss of habitat. Minor Adverse. **Operational Phase:** Potential for pollution events and siltation. Negligible Adverse.	Slight Adverse (construction). Neutral to Slight Adverse (operation).

8.11 Enhancement measures

8.11.1 In accordance with the NPSNN, works should not only avoid or mitigate ecological effects, but also seek to compensate and enhance biodiversity within the area. Therefore, compensation and enhancement measures for the scheme should be implemented. Potential measures could include replanting of native species rich hedgerows and trees, creation of species rich grassland and the provision of nesting and roosting opportunities for bats and birds. New planting should be connected to existing habitat within the landscape to compensate for the loss of wildlife corridors and reduce fragmentation of habitats caused by the scheme. The species composition of any new planting should take account of the habitats lost and those within the surrounding area. Enhancement measures will be developed in full and detailed as part of the ES.

8.12 Monitoring requirements for significant adverse effects

8.12.1 The scheme is not anticipated to result in significant effects. Therefore, monitoring for significant adverse effects is not required. This will be updated as part of the ES.

8.13 Conclusions

8.13.1 A summary of the assessment presented within this report for ecological receptors for the scheme is presented in Table 8.6 above. The overall on-balance significance of effects on biodiversity is anticipated to be Slight Adverse for construction and Neutral for operation.

8.13.2 The overall significance of effects for each ecological receptor is reliant on the mitigation measures within section 8.9 being implemented. Much of the mitigation for the operational phase is dependent on appropriate habitat enhancement and creation being included in the environmental master plan. Whilst no significant effects have been identified, further assessment work to calculate the area (m^2) loss of each habitat, and the habitat areas gained through mitigation will be undertaken to provide further confidence to the assessment of overall effect. These results will be presented as part of the biodiversity assessment to be included within the ES, which will reconfirm the significance of effect for biodiversity.

9 Geology and soils

9.1 Introduction

9.1.1 This chapter presents the on-going work for the assessment of the potential effects associated with the scheme upon geology and soils, including contaminated land and mineral resources.

9.1.2 The assessment has been undertaken in accordance with the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 11, Geology and Soils. Further detailed assessment is currently under way, and will be reported within the Environmental Statement (ES) that will be submitted to support the Development Consent Order (DCO) application.

9.1.3 The key objectives of this chapter are:

- To identify the geology and soils (including contaminated land and mineral resources) factors to be taken into account during design in developing and defining the scheme during the construction phase
- To address any potential effects identified at the Scoping level

9.1.4 The effects of the scheme upon agricultural land have been assessed in chapter 12 People and Communities and are not considered in detail in this chapter.

9.2 Legislation and policy context

Environmental Protection Act 1990

9.2.1 The primary legislative regime under which historical contaminated land is managed in the UK is Part IIA of the Environmental Protection Act (EPA). Part IIA principally deals with sites where individual historical contamination linkages present a Significant Possibility of Significant Harm (SPOSH) or a Significant Possibility of Significant Pollution to Controlled Waters (SPOSPCoW) representing an unacceptable level of contamination risk for each linkage. The Part IIA clean-up is the minimum which can be done on a cost basis to make and keep the site in a just safe condition for an existing use.

Contaminated Land (England) Regulations 2006 (as amended)

9.2.2 The Contaminated Land (England) Regulations set out provisions relating to the identification and remediation of contaminated land under Part IIA of the EPA. The Regulations make provision for an additional description of contaminated land that is required to be designated as a special site where the Environment Agency is to be the enforcing authority.

Water Resources Act 1991

9.2.3 Under the Water Resources Act (WRA) 1991, risks from historical groundwater pollution can be considered under Section 161. This allows the Environment Agency to recover the costs of cleaning up any poisonous, noxious or polluting matter or any solid waste matter that persons have caused or knowingly permitted to be present in controlled waters. The WRA and WRA 1991 (amendment) (England and Wales) Regulations 2009, Section 93, provides for the establishment of water protection zones. The regulations are implemented through the definition of Source Protection Zones (SPZs), within which the Environment Agency seeks to restrict certain potentially polluting activities.

Wildlife and Countryside Act (WCA) 1981 (as amended)

9.2.4 Geological and geomorphological features considered to be of national importance are designated as Sites of Special Scientific Interest (SSSI). They have some legal protection under the WCA against operations which may damage their interest. The WCA provides statutory protection to SSSIs in England. SPAs and Ramsar Sites, as well as limestone pavements, are also protected under this Act. Environmentally Sensitive Areas (ESAs) are agricultural areas benefiting from special protection. The importance of nature conservation, including areas with geological features, is also emphasised in the EPA.

Environmental Permitting (England and Wales) Regulations, 2016

9.2.5 The prevention of pollution is regulated by several pieces of legislation including the Environmental Permitting Regulations, which regulate pollution control by requiring permits for emissions to, for example, air and water.

Waste legislation

9.2.6 There are also a number of waste-related regulations which serve to protect soils from contamination by waste management, such as the Hazardous Waste (England and Wales) Regulations 2005 (as amended), Environmental Protection (Duty of care) Regulations 1991, Waste Management Licensing Regulations 1994 (as amended), Landfill Directive 1999, Landfill Tax (Contaminated land) Order 1996 and Landfill (England and Wales) Regulations 2002 (as amended) and the Waste (England and Wales) Regulations 2011 (as amended).

Other regulations

9.2.7 Under the Control of Substances Hazardous to Health Regulations 2002 (COSHH) and the Construction Design and Management (CDM) Regulations 2015, where a developer knows or suspects the presence of contaminated soil, provision will be made to ensure that risks to the public and site workers are minimised.

National Policy Statement for National Networks

9.2.8 In the context of this assessment, the National Policy Statement for National Networks[62] (NPSNN) states the following:

9.2.9 "*Where possible, developments should be on previously developed (brownfield) sites provided that it is not of high environmental value. For developments on previously developed land, applicants should ensure that they have considered the risk posed by land contamination and how it is proposed to address this*."

9.2.10 "*Where the project is subject to EIA the applicant should ensure that the environmental statement clearly sets out any likely significant effects on internationally, nationally and locally designated sites of ecological or geological conservation importance…The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests.*"

9.2.11 "*Development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives.*"

Contaminated land guidance documents

9.2.12 The framework for the assessment of potential land contamination is based on current guidance documents regarding the implementation of Part IIA of the EPA and the assessment of potentially contaminated land, with particular reference to:

- Environmental Protection Act 1990: Part 2A, Contaminated Land Statutory Guidance[63]
- Human Health Toxicological Assessment of Contaminants in Soil[64]
- Updated technical background to the Contaminated Land Exposure Assessment (CLEA) Model[65]
- BS 10175:2011+A1:2013, Investigation of Potentially Contaminated Sites. Code of Practice[66]

[62] Department for Transport (2015) National Networks National Policy Statement [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed August 2017).
[63] Defra (2012) Environmental Protection Act 1990: Part 2A, Contaminated Land Statutory Guidance.
[64] Environment Agency (2009) Human Health Toxicological Assessment of Contaminants in Soil, Report ref. SC050021/SR2 [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291014/scho0508bnqw-e-e.pdf (last accessed July 2017).
[65] Environment Agency (2009) Updated technical background to the CLEA Model, Report ref. SC050021/SR3 [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291014/scho0508bnqw-e-e.pdf (last accessed July 2017).
[66] British Standard (2013) BS 10175:2011+A1:2013, Investigation of Potentially Contaminated Sites. Code of Practice.

- BS 8485:2015, Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings[67];
- Groundwater protection guides covering: requirements, permissions, risk assessments and controls (previously covered in GP3)[68]
- Model Procedures for the Management of Contaminated Land, Contaminated Land Report 11 (CLR11)[69]

9.3 Assessment methodology

9.3.1 Assessment methodology for defining the significance of effects upon geology and soils is contained within section 9.10 of the Environmental Impact Assessment Scoping Report submitted to the Planning Inspectorate in November 2017. The Scoping Report can be accessed here:

9.3.2 https://infrastructure.planninginspectorate.gov.uk/projects/south-west/a303-sparkford-to-ilchester/?ipcsection=docs.

9.4 Study area

9.4.1 In general, the study area for this assessment considers features within 500 metres of the scheme, however for hydrogeological and hydrological features with the potential for further reaching impacts, a wider area is considered to be more appropriate. For example, where there are features that may be affected by pollutants transported downstream of the works, these features would be included in the assessment as appropriate. Additionally, for groundwater the potential zone of impact during construction and operation phases will be assessed on the underlying Water Framework Directive (WFD) groundwater body.

9.4.2 The sensitivity (value) of these resources / receptors has then been determined using the methodology previously outlined and the magnitude of change (impact) evaluated to determine a significance category for the effect. This has enabled the overall significance of each effect within the study area to be predicted.

9.5 Existing baseline

9.5.1 Area-wide baseline conditions are discussed initially, followed by a detailed review of those conditions relating to the scheme contained within Table 9.1 (including chainage-specific baseline data where relevant).

[67] British Standard (2015) BS 8485:2015, Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.
[68] Environment Agency (2017) Groundwater protection guides covering: requirements, permissions, risk assessments and controls (previously covered in GP3) [online] available at: https://www.gov.uk/government/collections/groundwater-protection (last accessed July 2017).
[69] Environment Agency (2004) Model Procedures for the Management of Contaminated Land, Contaminated Land Report 11 (CLR11) [online] available at: http://www.eugris.info/displayresource.aspx?r=4023 (last accessed June 2017).

9.5.2 Throughout this section, reference is made to numerous geology and soil features located in the vicinity of the scheme, the majority of which are shown on the environmental constraints plan contained within appendix A.1.

Area-wide baseline conditions

Geographical setting

9.5.3 The area is dominated by the east-west trending ridge of Camel Hill formed by the relatively resistant beds of the White Lias and the Blue Lias. Surrounding Camel Hill are the relatively flat, low lying Vales of Sparkford and Ilchester[70].

Geological setting

Superficial deposits

9.5.4 According to BGS mapping[71,72], superficial deposits located along the scheme are limited. A broad east-west trending ribbon of alluvium (clay, silt, sand and gravel) is present to the north of the existing A303. BGS boreholes record alluvium (as well as 'Taele Gravel') at approximate chainage 1200 metres.

9.5.5 A small area of River Terrace deposits (sand and gravel) is shown 500 metres west of Sparkford on BGS mapping. This is indicated to underlie the easternmost section of the scheme (less than 0.5 kilometres) at the existing dual-carriageway alignment.

9.5.6 River Terrace deposits are also indicated to be present at Podimore, extending some 300 metres to the east of the settlement and south of the existing A303 and it is possible they may be encountered during construction.

Solid geology

9.5.7 BGS mapping[71,72], indicates the area is principally underlain by solid strata of the Langport Member, Blue Lias Formation and the Charmouth Mudstone Formation (undifferentiated), of the Lias Group consisting of mudstones (previously referred to as the Lower Lias):

- The Langport Member (previously referred to as the Langport Beds or the White Lias) comprises a series of tough cream and buff calcite mudstones with thin interbedded pale grey and buff marls anticipated to be ~6.4m in thickness at Sparkford

[70] OS Explorer (2015) *1:25,000 Scale Sheet 129: Yeovil and Sherborne – Somerton and Wincanton*. ISBN 9780319243251.
[71] British Geological Survey (1973) Geological Survey of England and Wales 1:63, 360/1:500,000 geological map series, New Series p(Sheet number 296 – Glastonbury), 1:50,000 scale, Solid and Drift [online] available at: http://www.bgs.ac.uk/data/maps/maps.cfc?method=viewRecord&mapId=10187 (last accessed August 2017).
[72] British Geological Survey (2017) Online viewer – bedrock and superficial geology and borehole search functions [online] available at: http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html (last accessed May 2017)

- The overlying Blue Lias comprises an interbedded sequence of grey and blue-grey limestones and mudstones / shales. At Camel Hill, the Blue Lias is anticipated to be ~7.6m in thickness
- The Charmouth Mudstone Formation comprises dark grey laminated shales, and dark, pale and bluish grey mudstones with locally concretionary and tabular limestone beds and abundant argillaceous limestone, phosphatic or ironstone nodules in some areas.

9.5.8 The BGS[73] note that much of the Lias has high pyrite and sulphate content.

9.5.9 In the vicinity of Camel Hill, the A303 is crossed by a small inlier of undifferentiated interbedded mudstone and limestone of the Westbury Formation and the Cotham Member of the Penarth Group (previously known as the Rhaetic Beds). The inlier is bounded to the southern side by an east-west trending normal fault (Camel Hill Fault) which passes beneath the scheme, down-throwing the strata to the south by an unspecified amount.

9.5.10 The regional inclination of strata is variable across the scheme, but broadly inclined to the north.

Anticipated strata

9.5.11 The following general sequence of deposits exists in the vicinity of the scheme:

- Topsoil / Made Ground
- River Terrace Deposits (near Podimore and Sparkford)
- Lower Lias Clay / Mudstone / Siltstone / Limestone
- Blue Lias Clay / Mudstone / Limestone (at Camel Hill)
- White Lias Clay / Mudstone / Limestone (at Camel Hill)
- Westbury Formation and Cotham Member Limestone (at Camel Hill)

Coal mining and brine extraction

9.5.12 According to the Coal Authority Interactive Map Viewer[74], historic or current coal mine workings are not present on site. Brine excavation is not anticipated within the vicinity of the site based on the geology of the surrounding area.

Hydrogeology

Bedrock

9.5.13 According to Environment Agency online mapping[75], the bedrock geology present across the site (solid strata of the Langport Member, Blue Lias

[73] Hobbs, P.R.N., Entwisle, K.L., Northmore, K.J., Sumbler, M.G., Jones, L.D., Kemp, S., Self, S., Barron, M. and Meakin, J.L ((2012) Engineering Geology of British Rocks and Soils - Lias Group. British Geological Survey, 323pp. (OR/12/032) (unpublished) [online] available at: http://nora.nerc.ac.uk/17270/ (last accessed June 2017).
[74] Coal Authority (2017) Interactive Map Viewer [online] available at: http://mapapps2.bgs.ac.uk/coalauthority/home.html (last accessed July 2017).
[75] Environment Agency (2017) What's In Your Backyard online viewer [online] available at: http://apps.environment-agency.gov.uk/wiyby/search%20function (last accessed July 2017).

Formation and the Charmouth Mudstone Formation) is classed as a Secondary A Aquifer, defined as the presence of "*permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers*".

9.5.14 In the vicinity of Camel Hill, the interbedded mudstone and limestone of the Westbury Formation and the Cotham Member of the Penarth Group is classed as a Secondary B Aquifer, defined as "*lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering*".

9.5.15 No part of the scheme is located within a Groundwater SPZ, with the nearest Zone 2 (outer zone) located approximately 3.5 kilometres distant from Sparkford.

Superficial deposits

9.5.16 The overlying drift deposits, where present, are classified as a Secondary A Aquifer. These deposits, do not provide any groundwater resource but may contain localised groundwater that could become a consideration in terms of construction, dewatering and impacts on surface water bodies.

Abstractions

9.5.17 There are few abstraction boreholes in the area with only 2 abstraction licences recorded to the west of Sparkford dating back to 1967-70. It is not known if these abstractions are still active.

Hydrology

9.5.18 The scheme lies within the catchment of the River Cam to the south and the River Cary via Dyke Brook to the north. The River Cam runs approximately 500 metres south of the scheme in a roughly parallel direction to the west before it joins the River Yeo at a confluence near Yeovilton. Dyke Brook ranges from being around 1,200 to 1,650 metres north of the scheme where it flows to the west in a roughly parallel direction and meets with the River Cary.

Foot and mouth burial sites

9.5.19 Consultation has been undertaken with the Department for Environment Food and Rural Affairs (Defra) regarding the location of Foot and Mouth burial sites within the scheme area. The State Veterinary Service reported that there were no foot and mouth cases within the district and that the nearest burial site is to the west of Taunton.

Unexploded ordnance

9.5.20 An unexploded ordnance (UXO) pre-desk study assessment of the scheme has identified a likely low UXO hazard level. The report, full details of which will be included as part of the ES, refers to a WWII aircraft crash site at Camel Cross

(no further location details provided) and there is the potential that this may present constraints if encountered.

Table 9.1: Baseline data

Aspect	Details and chainage (where applicable)	
Geology	• There are approximately 80 No. relevant exploratory boreholes along the route of the existing A303, which provide information on the ground conditions. However, these are restricted to the westbound carriageway of the scheme and do not provide sufficient data along the eastbound section of the scheme.	
	0-200m	• Thin layer of topsoil up to 0.5m thick, underlain by firm to very stiff, grey clay. Some layers contain calcareous shells and concretions, occasional thin beds of slightly laminated mudstone (Lias Group).
	2,000 – 3,500m	• Topsoil around 0.3m thick overlying sand and gravel superficial deposits (River Terrace Deposits). Rockhead is recorded at a maximum of 8m bgl with stiff to very hard, grey, silty sometimes shelly clay. • The Camel Hill fault crosses the scheme at a chainage of approximately 3,200m with Westbury Formation and Cotham Member limestone beds 100m east of the fault line.
	3,500 – 5,000m	• Thin layer of superficial deposits to a max depth of 1.45m bgl, generally described as brown sand and gravel with Blue Lias Formation (limestone) proven to 15m bgl. • To the south of the road up to 1m thick River Terrace Deposits of gravel are recorded.
	5000 – 6000m	• Approximately 0.3m thickness of topsoil occasionally underlain by River Terrace Deposits of gravel to a maximum of 0.7m thick. Bedrock comprises Charmouth Mudstone Formation (of Lias Group).
Sites of geological interest	Historic Quarrying	• There are a number of historic quarries located in close proximity to the current A303 in the vicinity of Camel Hill although the closest lie to the south of the existing A303 alignment. Other than one used for landfilling purposes the presence or composition of any backfilled materials is unknown.
	Local geological Sites	There are 2 Local Geological Sites in close proximity to the scheme: • Camel Hill Quarry East – Hummocky area in woods located adjacent to the south of the existing A303 at approximate Ch. 4950 • Sparkford Hill Copse – Useful sections of Rhaetic Langport Beds in disused quarries in wood owned by the Sparkford Copse Trust located approximately 350m south-east of the existing A303 just west of the Hazlegrove Junction Roundabout
	BGS Recorded Mineral Sites	• There are a number of BGS Recorded Mineral Sites[76] in close proximity to the current A303 in the vicinity of Camel Hill. They predominantly relate to Camel Hill Farm and Ridge, Queen Camel for the excavation of Westbury Formation and Cotham Member (limestone) along with Langport Member, Blue Lias Formation and Charmouth Mudstone (limestone). Several of them coincide with the location of historic quarry sites.
Hydrology	Dyke Brook and the River Cam are fed by a number of springs that can be seen on the OS map of the area. Numerous springs are indicated on site mapping and a number of the fields have linear drainage ditches which appear to flow southwards. The scheme does not cross any major water courses however there are 8 existing culverts passing beneath the existing A303.	

[76] British Geological Survey (2017) Mineral resource maps in England and parts of north Wales [online] available at: https://www.bgs.ac.uk/mineralsuk/planning/resource.html (last accessed July 2017).

Aspect	Details and chainage (where applicable)
Soil survey	The MAGIC online map viewer[77] shows a map of the soil types present. Two different soil types are shown in the area. At Ch. 0-2,000m the soil is described as slightly acid, loamy and clayey soils with impeded drainage. From Ch. 2000m to the east, the soil is described as lime-rich loamy and clayey soils with impeded drainage. The Agricultural Land Classification is predominantly Grade 3.
Landfill records	Two landfills are located within 500m of the scheme: • Land Adjacent to Hazlegrove Park, which accepted inert and household waste from June 1989 to June 1990. The scheme crosses the southern boundary of the landfill at approximately Ch. 5650m • Camel Hill Quarry, which accepted inert and industrial waste from 29 November 1989 to 5 June 1992, which is located to the immediate south of the existing A303 at the approximate Ch. 5050m
Current land use and man-made features	The principal land use throughout the area of interest is agriculture including arable farming and pasture for dairy farming. The principal man-made feature in the vicinity is the existing highway network. Also important are the towns of Sparkford and Podimore at either end of the scheme and the numerous smaller settlements. An active Shell petrol station is located at approximate Ch. 4700m to the immediate south of the existing A303 while Steart Road Garage with associated underground fuel tanks is located in close proximity to the north of the scheme alignment at Ch. 3300. A filling station is also present south of Hazlegrove Roundabout, to the south of the scheme. Ministry of Defence (MOD) land with a visible array is present immediately to the south of the current A303 / proposed scheme alignment at approximate Ch. 4250m. Adjacent to the MOD site is an approximately 25m tall communication tower located 30m from the edge of the road. Made Ground has been encountered within boreholes to a maximum depth of 1.4m. The material is variable, generally described as sandy clay with fragments of brick, concrete and hardcore. Made ground is anticipated with the existing road construction, comprising asphalt over DoT Type 1 sub-base.
Area history	• The historical development of the area has been summarised from historical mapping contained within the Landmark Envirocheck Report. Historic mapping shows that the vicinity of the scheme has comprised generally agricultural land, wooded areas and orchards throughout its history and generally runs parallel to the line of historic roads / lanes prior to the construction of the current A303 (~1979) and junctions including Hazlegrove Roundabout to the east. • On the earliest mapping (1886), several quarries were indicated to the north and south of the eastern half of the scheme. However, the majority of these were no longer marked by 1904 mapping suggesting abandonment / infilling. The quarry to the north of Gason Lane was only marked as disused on 1982 mapping suggesting a longer active period. • The filling station to the south of the existing A303 at Ch. 4700 was first marked on 1975 mapping. A garage was also shown to the south of the road at Camel Cross Ch. 2050m on 1975 mapping, however the site is now in use as a B&B and restaurant. The garage at Steart Road was also first indicated on 1975 mapping. • The MOD land (understood to be a signalling station) to the immediate south of the A303 Ch. 4250m was first identified on 1962 mapping (although unlabelled, its exact date of construction between 1904-1962 is unknown). • Over time, the surrounding settlements have grown and the number of mapped ponds and springs in the vicinity has risen.
Potential contamination risks	• Infilled historic quarries containing potentially unknown fill present potential soil and groundwater contamination risks. • Historic and current fuel stations / garages with underground tanks adjacent to scheme. • Eastern end of scheme passes over existing landfill site known as Land Adjacent to Hazlegrove Park and the landfill site known as Camel Hill Quarry is located in close proximity to the south. Both are potential sources of contaminated soils, landfill leachate and landfill gas. • Presence of made ground from the construction of the existing A303 and isolated commercial / residential / agricultural uses. • Details of the MOD site present directly next to the existing A303 at Ch. 4250 are unknown. Hazard signs for asbestos are displayed, possibly forming the roofs of the older buildings on the site. • A historic saw pit is identified at Chainage 5175m.

9.6 Value (sensitivity of resources and receptors)

9.6.1 Using Table 9.1, each principal receptor identified has been assigned a sensitivity, with reasoning as provided within Table 9.2.

[77] Defra (2017) MAGIC Online Map [online] available at: http://magic.defra.gov.uk/ (last accessed May 2017).

Table 9.2: Sensitivity of principal receptors

Receptor	Receptor sensitivity	Reasoning
Geology – superficial deposits of resource value	Low	According to BGS mapping, superficial deposits are present in the northern central section (Alluvium) and to the far east (River Terrace Deposits). However, intrusive ground investigations (GI) has shown generally limited thicknesses to be present elsewhere.
Geology – local geological sites	Medium	Present to the immediate south of the existing A303.
Soils - natural	Medium	The scheme would cross predominantly ALC Grade 3 land.
Soils – made ground	Negligible	Urban Classified Soil.
Surface water	Medium	Numerous springs, drainage ditches and small surface water courses are present in the vicinity of the scheme. The River Cam is classed as a Main River while Dyke Brook is understood to be an Ordinary Watercourse.
Groundwater	Medium	Superficial and bedrock geology predominantly forms a Secondary A Aquifer with areas of Secondary B.
Human receptors	Low	Highway development is considered to be a low sensitivity land use.
Built environment	Low	Final end use is of low sensitivity (infrastructure).
Site flora (future landscaping and grassed areas)	Low	Future landscaped areas will require regular maintenance and will have generally low ecological value.
Mineral resources	Medium	River Terrace Deposits and Alluvium.

9.7 Consultation

9.7.1 Initial consultation with the Environment Agency has been progressed through the key stakeholder engagement exercises, as detailed within section 2.7. However, specific consultation with the Environment Agency will be necessary to discuss the impact of the scheme on the landfill sites identified and vice versa. Other scheme aspects will also need to be discussed. A meeting was held with the Environment Agency on the 4 July 2017 and a further meeting on 7 December 2017, although this primarily focussed on flooding and water quality issues, rather than the historic landfills along the scheme.

9.8 Assumptions and limitations

9.8.1 The baseline information on the scheme has been based on a desk study of currently available information at the time of writing.

9.8.2 A GI will need to be carried out to confirm the ground conditions in the vicinity of the scheme and establish whether any contamination is present in near surface soils.

9.9 Design and mitigation measures

Construction

9.9.1 The following general measures should be adopted during the construction stage to minimise effects upon geology, soils and contaminated land.

Construction Environmental Management Plan

9.9.2 All construction works should be carried out in accordance with a Construction Environmental Management Plan (CEMP) detailing the reasonable and practicable steps to be undertaken to prevent pollution of the surrounding environment including site soils, groundwaters and surface waters.

Protection of soil structure and quality

9.9.3 Topsoils and subsoils should be stripped first, segregated and stockpiled appropriately for re-use across the site where practicable. Where re-use on-site is not possible for all soils, alternative sites in close proximity should be prioritised.

9.9.4 Other possible mitigation measures may include (but not be limited to) the use of a proprietary geotextile membrane to protect the existing ground condition, a layer of inert crushed granular material on the membrane to form temporary running surfaces for construction plant and reinforcement of access tracks.

9.9.5 The inclusion of a Soil Management Plan (SMP) within the CEMP would ensure works are undertaken in accordance with appropriate guidelines such as Defra's 2009 'Code of Practice for the Sustainable Use of Soils on Construction Sites' and BS2882: 2015 'Specification for Topsoil' particularly in areas where reinstatement of agricultural land will be required.

Minimisation of waste generation

9.9.6 Where major earthworks are required a cut and fill balance should be aimed for, however surplus soils may be suitable for re-use elsewhere on the scheme depending on testing of the soils and providing the results fall within defined acceptability criteria.

9.9.7 The scheme would cross a relatively limited area of River Terrace Gravels and potentially Alluvium, although additional un-mapped deposits may be encountered. Therefore, where practicable the re-use of excavated gravels across the site or of excess materials on nearby sites should be promoted to minimise the volume of resource sterilised. Appropriate mass balance calculations, a robust Materials Management Plan (MMP), a Site Waste Management Plan (SWMP) and compliance with the CL:AIRE document 'The Definition of Waste: Development Industry Code of Practice Version 2 (2011)' will help to maximise the re-use of suitable geological resources while minimising waste generated.

9.9.8 The earthworks specification should provide geotechnical and chemical acceptability criteria to which site won and imported materials would comply before being used during construction.

Dust suppression

9.9.9 Dust suppression using best practice methods would also assist in the prevention of the spread of potentially contaminated windblown material. The

CEMP should include detailed measures relating to dust suppression. Dust Suppression is also addressed in chapter 5 Air Quality.

Protection of controlled waters: general

9.9.10 Excavated materials should be managed in line with best practice guidance. Stockpiles should be located away from watercourses and there should be clear segregation of materials with dust suppression measures and covers for stockpiles as necessary.

9.9.11 The CEMP will prevent the pollution of the local environment by addressing construction methods and ensuring they are adopted into the works including an auditing programme to verify environmental performance. Furthermore, it is recommended that the works are monitored by a suitably qualified Site Environmental Engineer / Environmental Manager, to be responsible in identifying and approving all methods of pollution control.

9.9.12 Cut-off ditches would be used to collect site run-off, where practicable, with run-off passed through a settling lagoon to allow removal of sediments prior to discharge.

9.9.13 Since portions of the exploratory works would be undertaken over a Secondary A Aquifer there is a risk that the boreholes would create vertical pollution pathways to that aquifer. To prevent the contamination of the aquifer the Contractor must take precautions, in line with all associated pollution prevention guidelines and best practice, to ensure that pollution of the aquifer cannot occur and new pathways for contaminant migration are not established when working in areas where Made Ground or landfilled materials are present.

Protection of controlled waters: foundation works

9.9.14 Where piling or penetrative ground improvement is required through potentially contaminated ground into aquifers, the works should be carried out in accordance with the Environment Agency publication (2002) Piling into contaminated sites and (2001) Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention" (National Groundwater & Contaminated Land Centre report NC/99/73). A Foundation Works Risk Assessment may need to be undertaken to determine the potential likely effects relating to the driving of piles through any contaminated made ground / landfilled materials and into the underlying Secondary A Aquifer, and to identify what mitigation measures are appropriate for the site.

9.9.15 The pouring of concrete in close proximity to surface water features could result in associated pollution entering the groundwater body. Therefore, appropriate measures should be included within the contractor's method statement for the protection of the environment, such as the placement of temporary bunds down-slope to contain any spillages, and the development of a spill response protocol.

9.9.16 The discharge of potentially contaminated groundwater should be appropriately managed.

Management of construction plant and materials

9.9.17 The storage of oil, fuel and other potentially hazardous substances should be within a secure site compound located on a hardstanding area. Storage of these substances should be within an appropriately bunded area (110% of total capacity volume). There should be a designated refuelling and maintenance area. Regular inspections of site plant should be carried out and the use of drip trays and training in the location and use of spill kits and emergency spillage procedures should be provided for site workers (via tool box talks or similar). Wheel washing facilities should be utilised to prevent transfer of site soils to adjacent roads and best practice dust suppression methods should be employed on-site to prevent soil erosion. Adjacent areas outside the development boundary should be protected to prevent accidental encroachment and damage of topsoil.

Excavations and dewatering

9.9.18 Excavations below ground level may require dewatering of run-off waters/perched waters/groundwaters from the Superficial Secondary Aquifer. This water should be appropriately managed on-site. Pumping the water to a settling lagoon to remove suspended solids would be advisable. Discharge to ground/surface waters will need an appropriate Environmental Permit from the Environment Agency or a Discharge Consent from the local public sewerage services provider for discharges to sewer. If contamination is present / suspected on-site treatment or off-site disposal may be required.

Management of contamination risks

9.9.19 A Contaminated Land Risk Assessment (CLRA) will be required to inform the GI (to be completed prior to the GI scope being finalised), with the geo-environmental scope to be agreed with the Local Authority Contaminated Land Officer and the Environment Agency.

9.9.20 The GI should include the collection of soil and groundwater samples for laboratory analysis to enable assessment of risks from contamination to human, environmental and structural / utilities receptors along with waste classification.

9.9.21 At the earliest opportunity following the GI a Quantitative Risk Assessment (either Generic or Detailed as influenced by the GI findings) and Remediation Strategy should be completed which, along with geotechnical assessment will inform the final scheme design. The Remediation Strategy will manage all identified risks and ensure that the scheme does not result in the creation of additional contamination transport pathways.

9.9.22 In addition, the following measures should be implemented to mitigate risks associated with contaminated waste:

- Hazardous substances such as excavated contaminated land, fuels, chemicals, waste and construction materials should be stored, handled, transported and disposed of in accordance with the CEMP and SWMP

- It is the responsibility of the producer to ensure that all waste created on site undergoes basic characterisation prior to disposal to an appropriate landfill. To ensure on-site waste management is in line with best practice and the Waste Hierarchy the following should be implemented:
  - Full characterisation of soil and macadam samples in accordance with the Environment Agency's Guidance on the Classification and Assessment of Waste[78]
  - Once waste characterisation has been undertaken, Waste Acceptance Criteria testing (WAC) (where necessary) to establish the acceptability of hazardous, hazardous non-reactive and inert wastes for landfill disposal. Every effort should be made to minimise waste to be landfilled with treatment at an appropriate facility considered in the first instance

9.9.23 Due to the nature of their work construction and maintenance workers are likely to ingest, inhale, or come into dermal contact with any potentially contaminated soils / waters / gases if present. Construction and maintenance workers may also be at risk from exposure to ground gas, particularly when undertaking works in excavations and confined spaces. Risks to construction and maintenance works can be mitigated through risk assessments undertaken by the Contractor specific to the works in order to identify risks and appropriate mitigation measures in line with all relevant health and safety legislation and guidance. These are likely to include (but not be limited to) appropriate provision of personal protective equipment (PPE), appropriate hygiene facilities and ventilation with gas detection monitoring in confined spaces.

Works in areas of historic landfills, infilled quarries or made ground

9.9.24 Based on assessment of historical mapping, Environment Agency and Local Authority records, it is anticipated that works would be undertaken across a historic landfill and potentially crossing limited areas of backfilled quarries. A CLRA should be undertaken to determine the nature of the material and quantify the risks posed to receptors.

9.9.25 Confirmation of requirements would be sought from the Environment Agency during planning of the GI and subsequent construction works, but they are likely to include aquifer protection measures such as casing through any backfilled materials, recirculation or safe containment of drilling flush, plugging/reinstatement of landfill linings and of capping materials if encountered.

9.9.26 Landfill material has the potential to produce ground gases. There is the potential for construction works to alter the existing ground gas regime in some areas and/or the possibility that site operations and construction staff may be at

[78] Environment Agency (2015) Waste Classification – Guidance on the classification and assessment of waste (1st Edition): Technical Guidance [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427077/LIT_10121.pdf (last accessed July 2017).

risk from the presence of ground gases. These risks should be assessed in accordance with current guidance.

Operation

9.9.27 The completed and operational scheme is not expected to result in any adverse effects on geology or soils. As a result, no mitigation is suggested and no further assessment of operational stage effects will be undertaken for the scheme.

9.10 Assessment of effects

Construction phase

9.10.1 The scheme would include a range of construction activities which have the potential to result in adverse effects on geology and soils. Principal construction activities are anticipated to include:

- Shallow excavation works – Resulting in the permanent removal of shallow deposits (soils, made ground and superficial deposits), potential for contaminated materials to be disturbed
- Earthworks – Resulting in waste generation and disturbance of groundwaters, generation of excavations which will require dewatering, and ground / landfill gas risks
- General construction works – The movement of materials, construction plant and storage of materials may lead to compaction of agricultural soils and the storage of hazardous chemicals leading to secondary effects on soils and groundwater
- Foundation Works – Piling or penetrative ground improvement as part of foundation construction may pose risks to controlled waters along with environmental risks relating to the use of concrete in construction

9.10.2 Table 9.3 summarises the assessment of effects, detailing the potential effect identified and appropriate mitigation measure for a particular receptor. The receptor sensitivity and magnitude of impact has estimated followed by the identification of the significance category after mitigation, as detailed in section 9.9 above.

Table 9.3: Assessment of effects

Receptor	Summary of effects	Mitigation measures	Action by	Receptor sensitivity	Magnitude	Significance category (with mitigation)
Geology	Potential for permanent removal / sterilisation of Superficial Deposits (and their future use as a potential resource during site construction). Alluvium and River Terrace Deposits (although unmapped deposits are also known to be present).	• Minimisation of waste generation	Contractor	Medium	Minor (impact on a moderate volume of geological material).	Neutral – Slight Adverse
	Potential for impacts on Local Geological Sites.	• None required as scheme does not intersect. Potential for enhancement (see section 9.12).	Contractor	Medium	No change.	Slight Beneficial
Geology/ Soils	Potential for excess material to be generated requiring off-site disposal/transport and re-use with associated waste/carbon generation impacts.	• Minimisation of waste generation	Contractor	Medium	Moderate (generation of material for off-site disposal).	Slight Adverse
Soils	Potential for permanent removal of high quality site soils during site construction.	• Minimisation of waste generation • Protection of soil structure and quality • Management of contamination risks	Contractor	Medium	Moderate (removal of a moderate area of soils).	Slight Adverse
	Soil deterioration and consolidation may occur due to poor storage and handling or due to vehicle movements and loading.					
	Potential for removal/remediation of any areas of contaminated soils identified.		Designer (GI) / Contractor (site work)	Negligible	Minor (remediation/improvement of a minor area of soil).	Neutral / Slight Beneficial
Surface Water	Potential for surface water run-off to become entrained with sediment and pollute nearby watercourses.	• CEMP • Protection of Controlled Waters: General • Excavations and dewatering • Management of contamination risks • Protection of controlled waters: foundation works • Works in Areas of Historic Landfills, Infilled Quarries or Made Ground	Contractor	Medium	Minor - Moderate (dependent on extent of pollution and change in chemical quality - EQSs)	Neutral – Slight Adverse
	Discharge of potentially contaminated / sediment laden groundwater to watercourses following dewatering of excavations / foundation works.					
	Concrete spillages entering local drainage ditches.					
Groundwater	Potential for creation of contamination pathways / driving down of contaminants during GI / foundation works, presenting a risk to groundwater.		Designer (GI) / contractor (site work)	Medium	Minor - Moderate (dependent on extent of pollution and change in chemical quality - DWSs)	Neutral – Slight Adverse
	Increased turbidity within the aquifer due to GI / foundation construction operations.					
	Injection of grouts or pastes into groundwater during foundation works potentially leading to quality deterioration.					

Receptor	Summary of effects	Mitigation measures	Action by	Receptor sensitivity	Magnitude	Significance category (with mitigation)
Human receptors	Contact of construction and maintenance workers with potentially contaminated soils / leachates / ground gases.	• Management of contamination risks	Contractor	Medium	Minor - Moderate (dependent on characteristics of contamination and exposure period)	Neutral
	Effects on final end users are considered to be very limited given the nature of the proposed use as a highway.		Designer (GI) / Contractor (site work)	Low	Negligible	Neutral
Buildings, structures and utilities	Potential for degradation of construction materials e.g. concrete and pipe materials in areas of contamination or natural high sulphate content.	• Management of contamination risks	Designer	Low	Minor - Moderate (depending on exact chemical conditions encountered)	Neutral
Flora	Potential for impairment of landscape and grassland re-development. While the linear areas to be re-vegetated after construction are considered to be of low ecological potential, if the soil chemical composition is not suitable for vegetation establishment the strips of land may be left vulnerable to erosion.	• Management of contamination risks	Contractor	Low	Minor - Moderate (depending on extent of damage to soil structure and chemical composition)	Neutral / Slight Adverse
Multiple	Potential contamination of soils, groundwater and surface water through contaminant mobilisation during excavation or remediation activities, particularly in vicinity of historic landfills and former (potentially infilled) quarries.	• CEMP • Protection of soil structure and quality • Dust suppression • Protection of controlled waters: general • Excavations and dewatering • Management of contamination risks • Works in areas of historic landfills, infilled quarries or made ground.	Contractor	Medium	Minor - Moderate (depending on specific site activities and nature of landfilled materials / made ground)	Neutral / Slight Adverse
	Potential contamination of soils, groundwater and surface water through accidental spills and leaks relating to construction plant and fuels / oils.					

9.11 Monitoring requirements for significant adverse effects

9.11.1 Incorporating the mitigation measures as outlined in section 9.9, the maximum residual effect identified is Slight Adverse. Therefore, no effects are considered to be significant. However, the scheme would pass over an area of historic landfill to the far east, north of Hazlegrove Roundabout. The requirement for monitoring will be discussed with the relevant consultation bodies. Monitoring requirements should be included within the Contaminated Land reporting for the site.

9.12 Enhancement measures

9.12.1 The removal / remediation of any areas of contaminated soils would result in a slight beneficial effect from the scheme.

9.12.2 There are limited opportunities for additional enhancement in relation to geology and soils for the scheme given the nature of the development. However, the presence of Local Geological Sites adjacent to the scheme may present an opportunity for the provision of improvements to these sites, should they be affected in any way. For example, the provision of public information boards in consultation with local geological groups at Camel Hill Quarry East to provide background on the geology and history of the site, or boundary / safety improvements may be an option. These opportunities will be explored as part of the ongoing environmental assessment in advance of the DCO application.

9.13 Conclusions

9.13.1 This chapter has provided an assessment of the potential effects of the scheme on geology and soils. The site baseline has been summarised and an assessment of potential effects completed with subsequent mitigation measures identified.

9.13.2 It is considered that the scheme has the potential to result in adverse effects upon geology, soils and the associated environment during construction, such as the potential for:

- Permanent removal / sterilisation of site soils and superficial deposits
- Excess (waste) materials generated requiring off-site disposal/transport
- Soil deterioration and consolidation due to poor storage and handling
- Effects on controlled waters – for example, relating to discharges of sediment laden groundwaters, entrainment of sediments in surface waters and foundation works increasing turbidity
- Encountering contaminated materials within landfills / made ground, mobilisation of contaminants and generation of contaminant transport pathways from site activities
- Removal / remediation of any areas of contaminated soils identified (beneficial effect)
- Effects on construction workers relating to contact with, for example, contaminated materials and landfill gases

- Impairment of landscape and grassland re-development.

9.13.3 However, a number of measures have been highlighted as being suitable for mitigating the effects identified above, which include measures designed to:

- Protect soil structure and quality
- Minimise waste generation
- Protect controlled waters from both general site works and foundation works
- Manage construction plant and materials
- Manage excavations and dewatering

9.13.4 Recommendations are also provided to manage risks from contaminated land and works in areas of historic landfills/infilled land.

9.13.5 Where necessary, further work required has been identified both in relation to contaminated land investigation and reporting, and in relation to required construction documents such as the CLRA, CEMP, SWMP, MMP and SMP.

9.13.6 In summary, with the inclusion of appropriate mitigation measures, construction stage effects on identified geology and soils receptors are not considered to be significant for the scheme. However, it is considered necessary to undertake further assessment to DMRB Simple level which will incorporate the results of additional surveys including GI. This assessment will be reported within the ES, to be submitted as part of the DCO application.

9.13.7 The completed and operational scheme is not expected to result in any significant adverse effects on geology or soils, and this will therefore be scoped out of the ES.

10 Materials

10.1 Introduction

10.1.1 This chapter presents the on-going work for the assessment of the potential effects on material assets as a result of the scheme, that has been undertaken to date. The assessment presented in this chapter concentrates on the use of primary, secondary, recycled, and manufactured materials, and the generation and management of waste.

10.1.2 The assessment has been undertaken in accordance with guidance provided by Highways England in the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2, Part 5 Assessment and Management of Environmental Effects (HD 205/08)[79]. Further detailed assessment is currently under way, and will be reported within the Environmental Statement (ES) that will be submitted to support the Development Consent Order (DCO) application.

10.1.3 For the purposes of the assessment, materials are defined as comprising:

- The use of material resources
- The generation and management of waste

10.1.4 The Environmental Impact Assessment Scoping Report (November 2017) highlighted the potential for significant effects on material assets during the construction phase, although the operational phase of the scheme has been scoped out of further assessment, as it is anticipated that there would be minimal requirement for material resources and minimal waste generation, besides infrequent maintenance activities, and as such, no operational stage assessment has been undertaken within this report.

10.2 Legislation and policy context

National legislation and policy

10.2.1 A wide range of legislation, policies and guidance that regulate the control and management of waste have been considered. The key legislation and policies relevant to the scheme include the following:

- Landfill Directive, 1999/31/EC
- Revised Waste Framework Directive, 2008/98/EC
- Environmental Protection Act 1990
- Clean Neighbourhoods and Environment Act 2005
- National Networks National Policy Statement (2014)
- National Planning Policy for Waste 2014
- National Planning Policy Framework (NPPF) 2012

[79] Highways Agency (2008) Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2, Part 5 Assessment and Management of Environmental Effects (HD 205/08) [online] available online at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section2/ha20508.pdf (last accessed March 2017).

- Environmental Permitting (England and Wales) Regulations 2010, as amended
- The Waste (England and Wales) Regulations 2011, as amended
- Hazardous Waste (England and Wales) Regulations 2005, as amended
- The List of Waste Regulations 2005
- The Landfill (England and Wales) Regulations 2002, as amended
- The Landfill Tax (England and Wales) Regulations 2016, as amended
- The Aggregates Levy (General) Regulations 2002, as amended
- The Finance Act 1996, as amended
- Waste Management Plan for England 2013
- The Waste Prevention Programme for England 2013

10.2.2 The key policy and legislation has been summarised below.

The Waste Framework Directive 2008[80] and the Waste (England and Wales) Regulations 2011, as amended[81]

10.2.3 The revised Waste Framework Directive sets out a 5-step waste hierarchy for waste management as an important requirement which applies to anyone who produces or manages waste. The waste hierarchy ensures that waste is dealt with in the following order or priority:

1) Prevention
2) Preparing for re-use
3) Recycling
4) Other recovery (for example energy recovery)
5) Disposal, only as a last resort

10.2.4 The following considerations must be taken into account:

- The general environmental protection principles of precaution and sustainability
- Technical feasibility and economic viability
- Protection of resources
- The overall environmental, human health, economic and social impacts

10.2.5 The Waste (England and Wales) Regulations 2011, implement parts of the revised Waste Framework Directive, particularly the principles of Waste Hierarchy.

10.2.6 Site Waste Management Plans[82] (SWMPs) are no longer mandatory for projects commencing after 1 December 2013. They are, however, recommended, and the principles behind the Regulations remain best practice.

[80] European Union (2008) Waste Framework Directive 2008/98/EC.
[81] Statutory Instrument (2011) The Waste (England and Wales) Regulations. No.988.
[82] Department for Transport (2004) Guidance for Construction Contractors and Climate Voluntary Code of Practice

Environmental Protection Act 1990

10.2.7 The Environmental Protection Act[83] defines the fundamental structure and authority for waste management and control of emissions into the environment. It outlines:

- The definition of controlled waste
- The requirements of the duty of care on in respect of waste and transferral of waste
- Waste collection and waste disposal authorities and their roles

The Landfill (England and Wales) Regulations 2002, as amended

10.2.8 The Landfill (England and Wales) Regulations 2002 (as amended)[84] require that landfill sites are classified into 1 of 3 categories, dependent on the chemical composition of the material. These are hazardous, non-hazardous, and inert. Prior to disposal, all waste must be pre-treated and waste producers must apply the waste hierarchy in the management of their wastes. If excavated materials are in accordance with Waste Acceptance Criteria (WAC) testing and Soil Guideline Values (SGVs), then a number of re-use and recycling opportunities exist.

The Waste Prevention Programme for England

10.2.9 The development of a Waste Prevention Programme[85] is a requirement of the revised Waste Framework Directive (2008/98/EC)[86] and takes forward a commitment in the government Review of Waste Policy in England 2011[87]. The programme sets a number of objectives to help people and organisations make the most of opportunities to save money by reducing waste.

National Policy Statement for National Networks

10.2.10 Section 5.52 of the National Policy Statement for National Networks (NPSNN)[88] requires the applicant to set out the arrangements that are proposed for managing any waste produced. It states that '*The arrangements described should include information on the proposed waste recovery and disposal system for all waste generated by the development. The applicant should seek to minimise the volume of waste produced and the volume of waste sent for*

[83] Chapter 43 - http://www.legislation.gov.uk/ukpga/1990/43/introduction accessed 08/09/2016
[84] Statutory Instrument (2002) The Landfill (England and Wales) Regulations. No.1559.
[85] Department for Environment, Food and Rural Affairs (2013) Waste Prevention Programme for England [online] available online at: https://www.gov.uk/government/publications/waste-prevention-programme-for-england, (last accessed March 2017).
[86] European Union (2008) Waste Framework Directive 2008/98/EC.
[87] Department for Environment, Food and Rural Affairs (2011) Government Review of Waste Policy in England [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69401/pb13540-waste-policy-review110614.pdf (last accessed March 2017).
[88] Department for Transport (2015) National Networks National Policy Statement [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed March 2017).

disposal unless it can be demonstrated that the alternative is the best overall environmental outcome'.

National Planning Policy for Waste

10.2.11 The National Planning Policy for Waste[89] replaces 'Planning Policy Statement 10: Planning for Sustainable Waste Management' (PPS 10) and sets out detailed waste planning policies. It should be read in conjunction with other national planning policies for England, such as those contained in the NPPF (2012), Defra's Waste Management Plan for England (2013) and the National Policy Statements for Waste Water[90] and Hazardous Waste[91] (2012 and 2013 respectively).

10.2.12 The updated policy maintains the core principles of the plan led approach, with a continued focus of moving waste up the waste hierarchy.

10.2.13 The document sets out detailed waste planning policies to facilitate a more sustainable and efficient approach to resource use and management. When determining planning applications for non-waste development, the policy requires that local planning authorities should, to the extent appropriate to their responsibilities, ensure that:

- The likely impact of proposed, non-waste related development on existing waste management facilities, and on sites and areas allocated for waste management, is acceptable and does not prejudice the implementation of the waste hierarchy and/or the efficient operation of such facilities
- New, non-waste development makes sufficient provision for waste management and promotes good design to secure the integration of waste management facilities with the rest of the development and, in less developed areas, with the local landscape
- The handling of waste arising from the operation of developments maximises re-use / recovery opportunities, and minimises off-site disposal

The Waste Management Plan for England, 2013

10.2.14 Defra published the National Waste Management Plan for England in July 2013[92]. The plan outlines the waste hierarchy as a guide to sustainable waste management.

[89] Department for Communities and Local Government (2014) National Planning Policy for Waste [online] available at: https://www.gov.uk/government/publications/national-planning-policy-for-waste (last accessed March 2017).
[90] Department for Environment, Food and Rural Affairs (2012) National Policy for Waste Water [online] available at: https://www.gov.uk/government/publications/national-policy-statement-for-waste-water (last accessed March 2017).
[91] Department for Environment, Food and Rural Affairs (2013) Hazardous Waste National Policy Statement [online] available at: https://www.gov.uk/government/publications/hazardous-waste-national-policy-statement (last accessed March 2017).
[92] Department for Environment, Food and Rural Affairs (2013) Waste Management Plan for England [online] available at: https://www.gov.uk/government/publications/waste-management-plan-for-england (Last accessed March 2017).

10.2.15 The Waste Management Plan for England sets out the Government's ambition to work towards a more sustainable and efficient approach to resource use and management. Positive planning plays a pivotal role in delivering England's waste ambitions through ensuring the re-use, recovery or disposal of waste is undertaken without endangering human health or harming the environment and delivering sustainable development and resource efficiency through all schemes.

10.3 Assessment methodology

10.3.1 There is currently no defined methodology for assessing the significance of effects on material assets. As such, the methodology used to determine the significance of potential environmental effects will be based on professional judgement recognising the requirements of the NPSNN. This approach will be clearly set out in the Environmental Statement (ES).

10.4 Study area

10.4.1 Currently there is no guidance available for defining the study area to be used for materials assessment. As a result, the study area, which will be adopted in the ES, has been determined through professional judgement by the influence of the scheme, rather than through a set geographical location. Therefore, the study area encompasses the use of material resources and the potential waste arisings that would occur within the scheme footprint.

10.4.2 During construction, the majority of waste will be generated within the immediate environment of the construction site and any re-use, recycling or treatment will, wherever practicable, take place on-site. However, where re-use or recycling is not practicable on-site, wastes will need to be removed to external facilities elsewhere. There is potential that disposal to landfill of some waste materials may be required, either locally or further afield, depending on the nature of the waste. The assessment will, therefore, take into account waste facilities located within the County of Somerset, which represent the closest waste facilities to the scheme.

10.5 Existing baseline

Material resources

10.5.1 Aggregates (sand, gravel and crushed rock) are the raw materials used to make construction products. There are 3 main sources of aggregate in the UK, these are as follows:

- Land-won (often referred to as natural or primary aggregates) – these are extracted directly from the ground in quarries or pits
- Marine-dredged – these comprise sand and gravel dredged from the sea floor
- Secondary/recycled – secondary aggregates are a by-product from mineral operations or industrial processes, and recycled aggregates are materials produced by treatment of construction and demolition waste.

Current local aggregate reserves

10.5.2 Baseline conditions for material resources have been established through desk-top research, and has been based on available aggregate resources data for Somerset County Council. Information has been obtained from the Somerset Local Aggregate Assessment[93] and the Somerset Minerals Plan[94].

10.5.3 Somerset is the largest producer of crushed rock in the south of England, the vast majority of which is extracted from the quarries in the east Mendip Hills, with an average of over 10 million tonnes per year produced in recent years.

10.5.4 The permitted reserves of crushed rock in Somerset at the end of 2015 were approximately 380 million tonnes.

10.5.5 Somerset currently has no land-won sand and gravel workings and superficial deposits of sand and gravel in Somerset are generally limited. Therefore, Somerset does not currently maintain its own landbank of permitted reserves for sand and gravel and has not extracted sand and gravel during the past 10 years. The sand and gravel apportionment for the county was previously shared with that of Devon and Cornwall.

10.5.6 Devon's fifth Local Aggregate Assessment (2016) reported sand and gravel permitted reserves at the end of 2015 of 7 million tonnes, with a landbank period of 12.5 years.

10.5.7 Marine dredged sand and gravel originating from the Bristol Channel is landed at Dunball Wharf. Approximately 55,000 tonnes of marine-dredged sand and gravel was landed at this wharf in 2015.

Permitted aggregate quarries

10.5.8 Table 10.1 below outlines the active permitted aggregate quarries and the mineral extracted across Somerset and Exmoor (excluding inactive and dormant sites).

[93] Somerset County Council (2015) Somerset Local Aggregate Assessment *Fourth Edition:* incorporating data from 2006-2015 [online] available at: http://www.somerset.gov.uk/policies-and-plans/plans/somerset-minerals-plan/ (last accessed November 2017)
[94] Somerset County Council (2015) Somerset Minerals Plan: Development Plan Document up to 2030 [online] available at: http://www.somerset.gov.uk/policies-and-plans/plans/somerset-minerals-plan/ (last accessed November 2017)

Table 10.1: Permitted aggregate quarries in Somerset and Exmoor

Quarry	Operator	Mineral	Permitted Annual Output (tonnes)	Grid Reference
Battscombe	Hanson Quarry Products Europe Ltd.	Carboniferous Limestone	1.3 million	ST 459 544
Callow Rock	Aggregate Industries UK Ltd.	Carboniferous Limestone	1.3 million	ST 447 560
Cannington Park Castle Hill	Castle Hill Quarry company Ltd.	Carboniferous Limestone	190,000 combined output	ST 251 403
Gurney Slade	Morris and Perry Ltd.	Carboniferous Limestone	2.0 million	ST 625 493
Halecombe	Lafarge Tarmac Ltd.	Carboniferous Limestone	1.0 million	ST 701 474
Moons Hill	John Wainwright and Company Ltd.	Igneous Silurian andesite	Unlimited	ST 662 460
Torr Works	Aggregate Industries UK Ltd.	Carboniferous Limestone	8.0 million	ST 693 463
Whatley Hanson	Quarry Products Europe Ltd.	Carboniferous Limestone	8.0 million	ST 732 480

Source: Somerset County Council (2015) Local Aggregate Assessment

Recycled aggregates

10.5.9 Table 10.2 below outlines the permitted, fixed aggregate recycling facilities in Somerset.

Table 10.2: Fixed aggregate recycling plans in Somerset

Location	Application Number
O.S. 2000 (pt) Colham Lane, Cricket St Thomas, Chard, TA20 4BX	13/02398/CPO
Emborough Quarry, Emborough, Radstock	106720/008
Rear of Sycamore House, Walrow, Highbridge	1/12/06/006
Dunwear Depot, Rivers Lane, Dunwear, Bridgwater	1/09/97/009
Land off A359/A303 slip road, Sparkford, Yeovil	96/02117/CPO
Southwood Waste Management Facility, Southwood Common, Evercreech, Shepton Mallet, BA4 6LX	054492/028
Colemans Quarry, Holwell	077905/012
Lower Farm, Podimore	02/02128/CPO

Source: Somerset County Council (2015) Local Aggregate Assessment

Generation and management of waste

10.5.10 The most recent information available relating to current waste generation and operational waste facilities in Somerset and the South West region has been gathered to provide the baseline for this assessment. Information on the current waste arisings, and the waste management facilities have been determined through a desk-top study, using a number of readily available resources, in particular data from the Environment Agency, Defra, South Somerset District Council, and Somerset County Council.

Waste Generation in the south west and England

10.5.11 The latest data from the Environment Agency indicated that England produced over 191.1 million tonnes of waste in 2015 (Table 10.3), which was managed in 6,427 permitted waste facilities[95]. The South West region produced over 22.6 million tonnes of waste in 2015 (Table 10.3), which was managed by 874 waste sites.

Table 10.3: Waste Breakdown by Site Type (2015)

Site Type	Somerset (tonnes)	South West (tonnes)	England (tonnes)
Landfill	464,000	3,461,000	43,932,000
Transfer	263,000	3,653,000	44,946,000
Treatment (excluding metal recycling sector)	506,000	6,468,000	64,156,000
Metal Recovery	82,000	1,327,000	13,182,000
Incinerated	0	209,000	10,379,000
Use of Waste	153,000	730,000	2,009,000
Land Disposal	259,000	1,851,000	12,578,000
Total	**1,727,000**	**22,699,000**	**191,182,000**
Use of Waste			
In construction	150,000	413,000	1,063,000
In reclamation	3,000	284,000	848,000
To manufacture timber	0	32,000	98,000
Land Disposal			
Deposited in landfill for recovery/benefit	259,000	1,817,000	12,336,000
Borehore and lagoon inputs	0	34,000	242,000
Hazardous Waste*			
Managed	46,768	417,435	4,607,527
Deposited	38,715	433,719	4,966,543**

Source: Environment Agency (2017) Waste Management for England 2015

Notes: *The data is a summary of the registered hazardous waste movements. The same waste may have been moved between multiple facilities and each separate movement is recorded.

**Does not include 2,525 tonnes to unspecified destinations

10.5.12 With respect to construction and demolition waste, the Environment Agency recorded that 715,000 tonnes of inert construction and demolition waste deposited in landfill in the South West region, with 27,000 tonnes landfilled in Somerset. There are no figures available showing how much construction and demolition waste was recovered or recycled or how much was contaminated soil. However, the Environment Agency recorded that 413,000 tonnes of waste material were used in construction (under permits) within the south west and 150,000 tonnes of waste material was used in construction in the Somerset in 2015. A further 1.8 million tonnes were deposited in landfill for recovery/ land benefit with 259,000 tonnes deposited in the Somerset (Table 10.3).

10.5.13 Regarding hazardous waste, the ENV23 – UK Statistics on waste[96] produced by Defra details that in 2014, over 4 million tonnes were produced in the UK with just under 750,000 tonnes produced by the construction sector, of which just over 600,000 tonnes was produced in England.

[95] Environment Agency (2017) Waste Management for England 2015 [online] available at: https://www.gov.uk/government/statistics/waste-management-for-england-2015#history (last accessed May 2017)

[96] Department for Environment, Food and Rural Affairs (updated 2017) ENV23 – UK statistics on waste [online] available at: https://www.gov.uk/government/statistical-data-sets/env23-uk-waste-data-and-management (last accessed May 2017)

Potential Hazardous Waste Arisings

10.5.14 To identify potential sources of contamination an initial review of the landfill sites, both authorised and historic, in the area was undertaken, these are shown on the environmental constraints plan in appendix A.1. Potential sources of contamination that are greater than 500 metres away from the study area have not been considered, as these are considered unlikely to affect the proposed scheme.

10.5.15 There are no authorised landfills and 2 historic landfills within 500 metres of the scheme. For details of these historic landfills, see Table 10.4 below.

Table 10.4: Historic landfill sites within 500m of the scheme

Site name	Site address	Type/wastes accepted	Status	Distance from scheme
Land Adjacent to Hazlegrove Park	Sparkford Bypass, Sparkford	Accepted inert and household waste.	Last received waste: 20 June 1990.	Adjacent / within the boundary of the scheme.
Camel Hill Quarry	Queen Camel, Sparkford	Accepted inert and industrial waste (which excludes waste from mines, quarries, and agricultural wastes).	Last received waste: 5 June 1992.	160m from the scheme (at the closest point).

Source: Environmental Agency (2017) What's in your backyard?

10.5.16 In addition, as indicated in chapter 9 Geology and Soils, there may also potential contamination risks from infilled historic quarries, fuel stations / garages and underground tanks, presence of made ground, and Ministry of Defence (MOD) land. For more information on the potential contamination risks see chapter 9 Geology and Soils.

Waste facilities

10.5.17 The Environment Agency reported that in 2015, 874 sites accepted waste in the South West, and at the end of 2015, 1,182 sites in the South West had environmental permits to accept waste (Table 10.5).

Table 10.5: Permitted waste facilities (2015)

Site Type	South West		England	
	Number of sites with an environmental permit at the end of 2015	*Number of sites that accepted waste in 2015*	*Number of sites with an environmental permit at the end of 2015*	*Number of sites that accepted waste in 2015*
Landfill*	60	40	493	343
Land Disposal	64	50	317	191
Incineration	18	8	141	78
Transfer	355	301	3,063	2,364
Treatment	343	276	2,688	2,052
Metal Recovery	278	160	2,474	1,277
Use of Waste	64	39	226	122
Total	**1,182**	**874**	**9,402**	**6,427**

Source: Environmental Agency (2017) Waste Management in South West 2015

Waste disposal sites

10.5.18 Regarding landfill sites, Table 10.6 outlines operational landfill sites within Somerset, and the distance of these sites from the scheme.

Table 10.6: Operational landfills accepting inert and non-hazardous waste in Somerset

Site Name	Site address	Type of waste accepted	Approximate distance from the scheme
Walpole Landfill Site	Walpole Landfill Site, Pawlett, Bridgewater, Somerset, TA6 4TF	Non-hazardous and stable non-reactive hazardous waste (such as asbestos)	29km
Dimmer Landfill Site*	Dimmer Landfill Site, Dimmer, Somerset, BA7 7NR	Non-hazardous	6km
Whiscombe Hill Landfill	Whiscombe Hill Landfill Site, Westcombe Hill, Somertonfield Road, Somerton, Somerset, TA11 6PZ	Non-hazardous	9km
Lime Kiln Hill Quarry Landfill Site	Lime Kiln Hill Quarry, Mells, Somerset, BA11 3PH	Inert	27km
Whiteball Landfill	Land / Premises at, Whiteball Hill, Wellington, Somerset, TA21 0LT	Inert	49km

Source: Somerset County Council (2015) Waste Core Strategy and Environment Agency (2017) What's in your backyard?
Notes: *Dimmer Landfill Site also has facilities for consolidating hazardous material waste before treatment or disposal elsewhere.

10.5.19 The Somerset Waste Core Strategy outlines that there is sufficient capacity at Walpole, Dimmer, and Whiscombe Landfill Sites to meet Somerset's requirements for non-hazardous landfilling until at least 2028, however due to the limited planning life remaining at Lime Kiln Hill Quarry and Whiteball Landfill there will be a theoretical need to plan for over 300,000m^3 of inert landfill void space post 2015[97].

Waste recycling facilities

10.5.20 Table 10.7 outlines facilities in Somerset which generate recycled aggregates, treat or transfer construction and demolition waste and / or treat / handle soil.

10.5.21 These sites are estimated to provide capacity to recycle more than 1 million tonnes of inert waste per annum[98].

[97] Somerset County Council (February 2015) Somerset Waste Core Strategy: Development Plan Document up to 2028 [online] available at: http://www.somerset.gov.uk/policies-and-plans/policies/somerset-waste-core-strategy/ (last accessed May 2017)
[98] Somerset County Council (2016) Inert Waste Review [online] available at: http://www.somerset.gov.uk/policies-and-plans/plans/somerset-waste-plan/ (last accessed June 2017)

Table 10.7: Facilities which generate recycled aggregates, treat or transfer construction and demolition waste and / or treat / handle soil in Somerset (May 2015)

Company / operator	Site / location	Time limit
AA Pike Construction Ltd	Colham Lane Waste Transfer Station, Chard	
Aggregate Industries UK Ltd	Colemans Quarry – aggregate recycling, Frome	21/02/2042
Burnham Waste Ltd	Unit 2, Walrow Industrial Estate, Highbridge	
Cheddar Skips	Burcott House Farm Waste Transfer Station, Wells	
Commercial Recycling Ltd.	Southwood Waste Management facility, Shepton Mallet	30/09/2019
Erwin Rhodes Contracting Ltd.	Axe Road Waste Transfer Station, Bridgwater	
Glastonbury Skip Hire	The Mound, Glastonbury	
J D Pope & Sons Ltd	rear of Sycamore House, Highbridge	
J W Ransome & Sons	Bunns Lane Waste Transfer Station, Frome	
L A Moore Demolition Ltd	The Old Railway Yard, Wells	
Luffman Plant Ltd	Norton Fitzwarren Sidings, Taunton	31/12/2019
Minehead Skip Hire (formerly)	Blackmores Yard, Minehead	
Podimore Recycling	Lower Farm – asphalt processing plant, Yeovil	
Podimore Recycling	Lower Farm – C&D recycling, Yeovil	
R K Bell Ltd	Dunwear Depot, Bridgwater	
RM Penny (Plant Hire + Demolition)	Emborough Quarry - inert recycling Depot, Radstock	
S Roberts and Son (Bridgwater) Ltd.	Castlefields Waste Transfer Station, Bridgwater	
S Roberts and Son (Bridgwater) Ltd.	Spaxton Road, Bridgwater	31/12/2016
Smilers Sand and Gravel	The Old Quarry, North Newton	
Towens	Compound 3, Bridgwater	
Viridor	Walpole - inert waste, Bridgwater	Expires on completion of the landfill
Wasteology Ltd	Greenham Quarry Waste Transfer Station, Wellington	
Wellington Waste Management	Wellington Waste Transfer Station, Wellington	
West Somerset Skip Hire	West Somerset Skip Hire, Minehead	
Westcombe Waste Ltd	Whiscombe Hill Waste Transfer Station, Somerton	31/12/2042
Western Skip Hire	Lime Kiln Hill Waste Transfer Station, Frome	30/03/2020
YPH Waste Management	5, Artillery Road, Yeovil	

Source: Somerset County Council (2016) Inert Waste Review [online] available at: http://www.somerset.gov.uk/policies-and-plans/plans/somerset-waste-plan/ (last accessed June 2017)

Waste recovery facilities

10.5.22 The latest information available on recovery operations in Somerset is from 2013. Table 10.8 lists the inert waste recovery sites operating under Environment Agency permits in Somerset in 2013. Collectively these 10 sites provide capacity in excess of 1.25 million tonnes, which is well in excess of the amount of inert waste generated in Somerset[99]. However, recovery operations tend to be relatively short, fixed-term projects where only the minimum amount of inert waste must be used to achieve the stated purpose. Therefore, the operational recovery facilities in Somerset are likely to change over time, however, Table 10.8 gives an indication of the potential capacity of recovery operations in Somerset. Suitable recovery operation facilities should be identified before commencement of construction.

[99] Somerset County Council (2016) Inert Waste Review [online] available at: http://www.somerset.gov.uk/policies-and-plans/plans/somerset-waste-plan/ (last accessed June 2017)

Table 10.8: Inert waste recovery projects in Somerset (Operational during 2013)

Company / operator	Site / location	Environment Agency permit type	Estimated capacity for project (tonnes)*
B+J Haulage	Middlemoor Water Park, Woolavington	A25	225,000
Beaton,	Ashley Ash View farm acoustic bund, Somerton	SR2010 No 8	59,400
Canvin Anthony	The Old Quarry, Somerton	SR2010 No 10	99,999
Commercial Recycling Ltd	Riding Gate Acoustic Bund, Wincanton	A25	49,999
Davies, Robert	Haygrass Nurseries, Taunton	SR 2010 No 7	49,999
Hazelden, Keith + Janet	Fulwood, Taunton	SR 2010 No 8	99,999
Hopkins Development	Sutton Farm, Yeovil	SR2010 No 8	99,999
Ling, Steve John	Bowler Eggs, West Buckland	SR2010 No 7	49,999
Notaro, S	Huntworth Golf Club, North Petherton	A25	475,200
RM Penny (Plant Hire + Demolition)	Clapton Lane Piggeries, Chilcompton	SR2010 No 7	49,999
Total			**1,259,593**

Source: Somerset County Council (2016) Inert Waste Review [online] available at: http://www.somerset.gov.uk/policies-and-plans/plans/somerset-waste-plan/ (last accessed June 2017).

*Projects can be multi-year, so this does not equate to an annual throughput. Actual throughput was less than 250,000 tonnes in total for these 10 sites in 2013, indicating the potential capacity provided by these types of projects.

10.5.23 Operational incinerators within the South West region have also been identified and are presented in Table 10.9.

Table 10.9: Operational incinerators (during 2015) in the south west region (within 100km of the scheme)

Operator name	Site name and address	Sub-region	Type	Permitted capacity (tonnage)	Approximate distance from the scheme
Earthminded UK Ltd	Avonmouth Drum Incinerator Plant, Avonmouth Way West, Avonmouth, Bristol, BS11 9HD	West of England Unitaries	Hazardous	9,000	53km
Cyclerval (UK) Ltd	Exeter Transfer Station, Grace Road South, Marsh Barton Trading Estate, Exeter, Devon, EX2 8QE	Devon	Municipal and/or industrial & commercial	60,000	72km
Avonmouth Bio Power Energy Ltd	Avonmouth Energy Facility, Former Britannia Zinc Works, Kings Weston Lane, Avonmouth, Avon, BS11 8AZ	West of England Unitaries	Municipal and/or industrial & commercial	120,000	54km
SITA UK Ltd*	Avonmouth End of Life Plastics Facility, Avonmouth Resource Park, Merebank Road, Kings Weston Lane, Avonmouth, Bristol, Avon, BS11 9FG	West of England Unitaries	Municipal and/or industrial & commercial	6,000	55km

Source: Environmental Agency (2017) Waste Management in South West 2015
Notes: *Site now operational, albeit at very reduced capacity

10.6 Value (sensitivity of resources and receptors)

10.6.1 Materials required for the construction of the scheme are likely to be obtained from a range of different sources, all of which will have their own specific environmental effects, which may or may not have been subject to an environmental assessment. Therefore, there are no obvious environmental receptors or resources for materials in the way that there are for other topic areas. Consequently, this precludes the application of a methodology to derive a measure of significant of the use and consumption of materials based on the value or sensitivity of a resource / receptor and the magnitude of an identified impact.

10.7 Consultation

10.7.1 No consultation regarding the materials assessment has been undertaken with consultation bodies to date.

10.8 Assumptions and limitations

10.8.1 Estimates of the cut and fill volumes are included within this chapter, although these figures are likely to change as the scheme design progresses and evolves. Quantities of materials required and the waste anticipated to be generated for the construction of the scheme are not available at this stage, as the preliminary design has not been finalised. Therefore, only a qualitative assessment has been carried out at this stage, limited to identifying activities that are likely to require significant quantities of materials, or are likely to generate significant quantities of waste.

10.8.2 Conclusions and recommendations may be revised within the ES, on the basis of updated information following further research, survey, and investigation.

10.9 Design and mitigation measures

Construction

10.9.1 Measures would be implemented to reduce the effects of material resource use and waste generation by the scheme during construction.

10.9.2 Consideration would be given throughout the scheme design to minimising the use of virgin materials, through reducing the material requirements within the design itself, through utilising new infrastructure that contains a high proportion of recycled content (where design constraints allow), and by designing to re-use and recycle site-won materials, wherever possible. The Mott MacDonald Carbon Portal would continue to be used throughout the scheme progression, in order to inform a low carbon design which would subsequently aid in reducing the material requirements of the scheme.

10.9.3 The scheme would apply the waste hierarchy to minimise disposal and maximise re-use and recycling. For example, through the re-use of excavated soils on-site for landscaping, and through the recycling of inert material by crushing, blending and subsequent re-use e.g. as an aggregate. Where waste cannot be re-used or recycled on-site, opportunities should be sought for the re-use of material on other nearby schemes, or in other uses with clear benefits to the environment, e.g. in the remodelling of agricultural land, or in the restoration of nearby quarries or other excavation sites. The Somerset Waste Core Strategy[100] outlines that Somerset has a long history of aggregate and building stone production, and therefore there may be opportunities for the re-use of inert waste in quarry restoration, subject to the waste being suitable. Therefore, the re-use of inert waste material in the restoration of nearby quarries, would be

[100] Somerset County Council (February 2015) Somerset Waste Core Strategy: Development Plan Document up to 2028 [online] available at: http://www.somerset.gov.uk/policies-and-plans/policies/somerset-waste-core-strategy/ (last accessed May 2017)

investigated. By re-using and recycling as much waste as practicable, this would reduce the amount of waste going to landfill.

10.9.4 The appointed Contractor would produce a Construction Environmental Management Plan (CEMP) which would detail mitigation measures to be adhered to on-site to reduce impacts on material resources and waste generation during the remediation / preparation, demolition and construction phases. An Outline CEMP will also be prepared in support of the Development Consent Order (DCO) application as part of the Environment Impact Assessment (EIA).

10.9.5 Consideration would be given to the need for a SWMP, which would consider the sourcing, transport, and use and disposal of waste in a sustainable manner. The SWMP would also take account of, and capture, design changes as the scheme design evolves and would ensure that unavoidable construction waste is identified and able to be managed in accordance with the waste hierarchy and other relevant legislative requirements. The SWMP would be used to derive the management options that would achieve the highest practicable performance levels within the hierarchy.

10.9.6 A Materials Management Plan (MMP) should also be produced by the Contractor for the earthworks. This would ensure that site-won and imported materials comply with an earthworks specification ensuring that the geotechnical and chemical composition is acceptable before being used on-site during construction. The MMP would also detail information on the cut and fill balance.

10.9.7 The preparation of a CEMP, SWMP and MMP would ensure that any adverse effects associated with material resource use and the management and generation of waste are managed. If developed and used appropriately, it is feasible that through the implementation and use of these plans, any potentially significant effects resulting from material resource use and waste generation from the construction phase could be reduced.

Operation

10.9.8 No mitigation measures have been identified with respect to materials.

10.10 Assessment of effects

Use of material resources

Construction

10.10.1 The scheme is likely to require large quantities of material resources and will therefore have permanent direct adverse effects on the environment, specifically through the depletion of natural resources. It is outside of the scope of the assessment to assess the environmental effects associated with the raw materials extraction, and processing and manufacturing of products, as these are likely to be subject to separate environmental assessments. The use of material resources would also be likely to generate adverse environmental effects through the transportation of materials (for use on-site), however the

effects of this are more logically dealt with within chapter 5 Air Quality and chapter 11 Noise and Vibration, and will therefore not be included within the scope of the materials assessment.

10.10.2 The scheme is likely to require large quantities of material resources for the construction of the carriageway and associated structures. The types of material resources likely to be required are as follows:

- Steel
- Concrete
- Fly ash
- Plastic
- Clay
- Iron
- Cement
- Aggregate
- Bitumen

10.10.3 Specific quantities of materials have not been quantified at this stage. However, the cut and fill volumes have been estimated and are presented in Table 10.10 below. At this stage it is assumed that all fill material would be suitable for re-use on-site, and therefore as there would be sufficient quantity of cut material to be used for fill, it is unlikely that significant effects regarding the consumption of material resources would result from this aspect of the works.

Table 10.10: Estimated cut and fill volumes for the scheme

Cut	Fill	Overall balance
773,959m^2	597,284m^2	176,675m^2 surplus

* Cut fill balance figures are indicative at this stage and subject to change as the design of the scheme progresses. The cut fill balance figures reflect estimated required landscaping volumes rather than surplus volumes currently within the engineering model

Operation

10.10.4 There would be minimal requirements for materials, besides in frequent maintenance activities, and therefore there are unlikely to be any significant adverse effects.

Generation and management of waste

Construction

10.10.5 The generation and management of waste as a result of the construction of the proposed scheme, may result in adverse environmental effects including the temporary occupation of waste management facility space (from treatment of waste) and the permanent reduction to landfill capacity (from disposal of waste). However, the proposed scheme would aim to minimise the generation of waste wherever practicable, through the implementation of the waste hierarchy (see Section 11.8 below). The generation and management of waste would require transport off-site, however as per paragraph 10.10.1, this is more logically dealt with in chapter 5 Air Quality and chapter 11 Noise and Vibration and is therefore considered within the Construction phase assessment for these topics.

10.10.6 Exact quantities of waste likely to be generated by the construction of the proposed scheme have not been quantified at this stage. However, waste may result from the following:

- Surplus excavated materials (soils or substrata)
- Green waste (from vegetation removal or management)
- Waste from the demolition of existing structures (only 1 agricultural barn requires demolition)
- Contaminated soils from excavations (which may be classified as hazardous waste)
- Surplus construction materials (e.g. concrete, aggregates, asphalt)

10.10.7 As noted in Table 10.10, there would be a surplus of cut material of approximately 176,675m^2, it is assumed at this stage that this surplus material is suitable to be used in the landscaping for the scheme. As long as waste is managed appropriately, implementing the mitigation measures outlined in section 10.9 it is unlikely that the generation and management of waste would result in significant effects.

Operation

10.10.8 The operation of the proposed scheme would be unlikely to generate significant quantities of waste.

10.11 Enhancement measures

10.11.1 No enhancement measures over and above the mitigation measures outlined in section 10.9 are proposed. Unlike other topic areas, there are no enhancement measures that can be proposed to enhance the material resource environment within the study area, as much of this is governed by the waste management facilities in the area, which are out of the control of the project.

10.12 Monitoring requirements for significant adverse effects

10.12.1 There are potential for significant adverse effects from the quantity of material resources required for the construction of the scheme. Material and waste audits should therefore be undertaken throughout the construction phase. This would ensure that re-use and recycling targets are met on-site and would ensure that there is no surplus of materials. By conducting audits regularly this would give an indication of where continual improvements to waste management and minimisation can be made throughout the construction phase.

10.12.2 The SWMP should also be used to measure and monitor the types and quantities of waste taken off-site, to ensure that the waste hierarchy is being implemented where practicable.

10.13 Conclusions

10.13.1 At this stage, it is anticipated that the quantity of material resources required to construct the scheme would be significant. Mitigation measures would ensure

that the re-use of materials is made a priority, and would ensure that preference is given to the use of recycled materials or materials with a high proportion of recycled content. It is likely that significant effects can be appropriately mitigated. However, in the absence of accurate material quantification of the preliminary design, this assumption cannot be confirmed. Therefore, further assessment will be required to confirm this assumption, and will be included as part of the ES.

10.13.2 The scheme would be likely to generate waste during construction which would need to be appropriately managed. Consideration will be given to the need for a SWMP, which would consider the sourcing, transport and use and disposal of waste materials in a sustainable manner. Following the implementation of a SWMP and appropriate mitigation measures, the generation and management of waste is not anticipated to result in significant direct or indirect effects. However, in the absence of accurate quantification and a construction strategy, further assessment will be required within the ES to confirm this assumption.

11 Noise and vibration

11.1 Introduction

11.1.1 This chapter presents the on-going work for the assessment of the potential effects associated with the scheme upon noise and vibration, during both construction and operation.

11.1.2 This chapter has been prepared in accordance with DMRB Volume 11, Section 3, Part 7[101] which provides guidance on the assessment of noise and vibration associated with highway schemes. Further detailed assessment is currently under way, and will be reported within the Environmental Statement (ES) that will be submitted to support the Development Consent Order (DCO) application.

11.1.3 Construction and operation of the scheme has the potential to give rise to both temporary and permanent noise and vibration at the sensitive receptors in the area, which in turn may cause effects, beneficial or adverse. One of the key environmental objectives of the scheme is to avoid or mitigate adverse impacts.

11.2 Legislation and policy context

11.2.1 The following legislation and policy are relevant to the scheme.

The Noise Policy Statement for England

11.2.2 The Noise Policy Statement for England (NPSE)[102] was issued by the Department for Environment Food and Rural Affairs (Defra) in 2010. Its purpose is to promote, *"good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development"*. The 3 main aims are to:

- Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development
- Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development
- Where practicable, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development

11.2.3 Within the aims stated above there are several key phrases that lead to additional concepts now considered in the assessment of noise impact, these and their definitions are detailed below:

[101] The Design Manual for Roads and Bridges Volume 11, Section 3, Part 7 'Noise and Vibration', HD 213/11.
[102] DEFRA (2010). "The Noise Policy Statement for England"

- Lowest Observed Adverse Effect Level (LOAEL): this the level above which adverse effects on health and quality of life can be detected
- Significant Observed Adverse Effect Level (SOAEL): this is the level above which significant adverse effects on health and quality of life occur

11.2.4 There are no pre-defined levels for these effect levels as it is acknowledged that they will be different for different sources, different receptors and at different times. The levels used in this assessment are defined in section 11.3 of this report.

National Policy Statement for National Networks

11.2.5 The National Policy Statement for National Networks[103] (NPSNN) sets out *"the Government's vision and policy for the future development of nationally significant infrastructure projects on the national road and rail networks in England*". The NPSNN provides guidance for promoters of Nationally Significant Infrastructure Projects (NSIP) and provides the basis for examination by the examining authority and decision making by the Secretary of State (SoS).

11.2.6 The NPSNN requires that:

11.2.7 *"Due regard must…be given to the relevant sections of the Noise Policy Statement for England, National Planning Policy Framework and the Government's associated planning guidance on noise" and,*

11.2.8 *"Applicants should consider opportunities to address the noise issues associated with the Important Areas as identified through the noise action planning process."*

Planning Practice Guidance

11.2.9 Planning Practice Guidance[104] is a Government web-based resource which provides guidance on how the policies set out in NPPF may be interpreted in practice for a wide range of issues. There is a subsection of PPG relating specifically to noise:

11.2.10 *"Local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:*

- *Whether or not a significant adverse effect is occurring or likely to occur*
- *Whether or not an adverse effect is occurring or likely to occur*
- *Whether or not a good standard of amenity can be achieved*

11.2.11 *In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during construction wherever applicable) is, or would be, above or below the significant observed adverse effect level…"*

[103] Department for Transport (2015) National Networks National Policy Statement [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed August 2017).
[104] Department for Communities and Local Government (2014) Planning Practice Guidance,

The Environmental Noise (England) Regulations 2006

11.2.12 These Regulations[105] implement European legislation requiring noise action plans to be developed on a five-year rolling programme. Action plans have to be developed for the major noise sources and areas for which maps have been produced. The action plans seek to manage noise issues and effects including noise reduction if necessary, based on the results obtained through the mapping process. As a result of the process, the "Noise Action Plan: Roads (Including Major Roads)[106]" was published, which identified 'Important Areas' for future mitigation.

The Land Compensation Act 1973 Part 1

11.2.13 The Land Compensation Act 1973 Part 1[107] includes provision for compensation for loss in property value resulting from physical agents, including noise and vibration, resulting from the use of public works, such as new or improved roads.

The Noise Insulation Regulations 1975 (amended 1988)

11.2.14 The Noise Insulation Regulations 1975 (amended 1988)[108] were made under Part 2 of the Land Compensation Act for the obligatory and discretionary provision of noise mitigation measures for dwellings adjacent to new highways.

Sections 60 and 61 of the Control of Pollution Act 1974

11.2.15 Local Authorities have other statutory controls on noise and vibration. Sections 60 and 61 of the Control of Pollution Act 1974[109] concern impacts relating to construction sites, and the Environmental Protection Act [110]1990 Sections 79 and 80 place a duty on local authorities to serve abatement notices where noise from premises, vehicles and machinery are judged to constitute a statutory nuisance. Compliance with these controls is required, although the requirements fall outside the planning system.

British Standard (BS) 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise'[111]

11.2.16 British Standard (BS) 5228 'Code of practice for noise and vibration control on construction and open sites' – Part 1: Noise, provides a methodology for predicting noise levels generated by fixed and mobile plant used for a range of typical construction operations and describes criteria for the assessment of potential significance of noise effects. The standard includes a database of noise levels at a reference distance of 10m from the source and a simple noise

[105] Environmental Noise Regulations available online at http://www.legislation.gov.uk/uksi/2006/2238/pdfs/uksi_20062238_en.pdf
[106] Noise Action Plan: Roads (Including Major Roads) Environmental Noise (England) Regulations 2006, as amended January 2014
[107] HMSO, (1973). "Land Compensation Act."
[108] HMSO,(1975). "Noise Insulation Regulations. Statutory Instruments No. 1763. Building and Buildings."
[109] HMSO (1974). "Control of Pollution Act – Part III Noise."
[110] Parliament of the United Kingdom (1990) Environmental Protection Act, C.43
[111] BSI, (2009), amended 2014. "British Standard BS 5228 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise."

propagation model that can be used to make allowances for effects such as source-receiver distances, ground properties and utilisation time.

BS5228-2:2009 'Code of construction practice for noise and vibration control on construction and open sites - Part 2: Vibration'[112]

11.2.17 BS 5228 'Code of construction practice for noise and vibration control on construction and open sites - Part 2: Vibration' provides guidance on the effect of vibration and the likelihood it will cause complaint and cosmetic damage to buildings. This Standard also provides criteria for the assessment of the significance of effects. The assessment of vibration effects arising due to the scheme has been carried out in accordance with this Standard.

Calculation of Road Traffic Noise (CRTN) 1988[113]

11.2.18 Calculation of Road Traffic Noise 1988 (CRTN) provides procedures for predicting noise levels for a given flow of road traffic at sensitive receptors. These methodologies are used in the determination of entitlement under the Noise Insulation Regulations and for traffic noise change assessments undertaken in accordance with the DMRB methodology cited below.

DMRB Volume 11, Section 3, Part 7 'Noise and Vibration; (HD213/11 - Revision1) 2011

11.2.19 The DMRB Volume 11 Section 3 Part 7 HD213/11 Noise and Vibration describes a methodology for the assessment of road projects in the UK and best reflects EIA methodology as applied to highways. A method for assessment of both long and short-term effects has been introduced where previously only long-term effects were considered in evaluating effects.

11.3 Assessment methodology

11.3.1 Assessment methodology for defining the significance of effects upon noise and vibration is contained within Section 12.12 of the Environmental Impact Assessment Scoping Report submitted to the Planning Inspectorate in November 2017. However, it should be noted that the assessment methodology that will be used for the ongoing EIA will define significance where noise levels exceed Significant Observed Adverse Effect Level (SOAEL) and there is an increase of 1dB in the long-term or the short-term. Further details will be provided within the ES.

11.3.2 The Environmental Impact Assessment Scoping Report can be accessed here:

11.3.3 https://infrastructure.planninginspectorate.gov.uk/projects/south-west/a303-sparkford-to-ilchester/?ipcsection=docs.

[112] BSI, (2009) amended 2014. “British Standard BS 5228 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.”
[113] Department of Transport (1988) “Calculation of Road Traffic Noise”

11.4 Study area

11.4.1 The DMRB Volume 11 Section 3 Part 7 HD213/11 Noise and Vibration (2011) provides the methodology for assessment of road projects within the UK.

11.4.2 For operational noise, the methodology requires that the study area is identified as an area within 1km of the physical works associated with the scheme. Within this study area, road traffic noise predictions are performed at any sensitive receptor within 600m of a road where this is the possibility of a change of 1dB $L_{A10, 18hr}$ upon scheme opening, or 3 dB $L_{A10, 18hr}$ in the long-term.

11.4.3 For potential effects due to road traffic noise outside of the 1km area, the methodology requires that sensitive receptors be identified adjacent to roads where the change in received road traffic noise level would, as a result of the scheme, increase or decrease by at least 1dB $L_{A10, 18hr}$ on opening or 3dB in the long-term. Consequently, the spatial extents of the assessment extend beyond the physical works associated with the scheme.

11.4.4 For construction noise, the extent of the assessment is limited to areas where the calculated total noise (construction noise plus baseline noise) exceeds the baseline noise level by 5 dB or more, subject to threshold values of 65 dB(A) for daytime (weekdays 07:00 – 19:00; Saturdays 07:00 – 13:00), 55 dB(A) for evenings and weekends (weekdays 19:00 – 23:00; Saturdays 13:00 – 23:00; Sundays 07:00 – 23:00), and 45 dB(A) for night periods (23:00 – 07:00). This is largely restricted to the scheme envelope, although could extend along elements of the existing road network, depending on haul routes and the quantity of construction related traffic.

11.5 Existing baseline

11.5.1 The method for determining and appraising baseline conditions has been based on best practice guidance. This involves both desktop study and baseline survey work.

11.5.2 Sources included in the desk study are:

- Noise mapping undertaken as part of the requirements of The Environmental Noise (England) Regulations 2006
- OS mapping
- Consultation with the Local Authority
- Traffic flows
  Review of any previous surveys and assessments

11.5.3 The existing noise and vibration baseline is as follows:

- Two Noise Important Areas (NIAs) which are located within the footprint of the scheme on the existing A303 just to the east of Camel Cross and approximately 150 metres to the west of Howell Lane
- There are approximately 230 residential properties, 20 farms, 1 school and 12 commercial properties within 500 metres of the scheme

- Noise levels within the study area are dominated by traffic noise, reducing in level with distance from the main noise source, the A303

11.6 Value (sensitivity of resources and receptors)

11.6.1 Noise and vibration affects people in a number of different ways. This may include factors such as annoyance and sleep disturbance, anxiety, enjoyment of quiet spaces, ability to communicate with others, ability to concentrate at home or at work, participation in social and community activities.

11.6.2 Table 11.1 sets out typical classes of sensitive receptors. As a consequence, it is not appropriate to consider a single criterion when assessing the sensitivity of an existing noise environment, for the purposes of this assessment expressed as value.

11.6.3 Table 11.2 sets out criteria used in this assessment to determine the sensitivity of a receptor. It should be noted that, generally, the variation in the sensitivity of receptors in terms of noise impact is taken into account by applying different scales to classify magnitude of impact (e.g. by using different scales for day-time and night-time) rather than by varying the assignment of sensitivity to specific types of receptors.

11.6.4 The majority of the receptors that are expected to be affected by noise and vibration impacts arising due to the scheme would be dwellings. Therefore, according to Table 11.2, receptors are considered to be of high sensitivity.

Table 11.1: Noise and vibration resources and receptors

Resource / Receptor	Description
Dwellings	Houses and any other building in residential use such as public houses, hotels etc.
Commercial premises	Shops, offices etc.
Community facilities	Libraries, public halls, sports centres, theatres, concert halls, places of worship etc.
Recreational facilities	Amenity areas, footpaths, sports grounds etc.
Educational establishments	Schools, university campus.
Designated sites	If relevant, environmentally sensitive areas and buildings sensitive to the effect of noise and vibration.
Other	Any other premises highly sensitive to noise and vibration such as laboratories etc.

Table 11.2: Receptor Sensitivity

Sensitivity	Criteria
High	Receptors where occupants or activities are particularly susceptible to noise. Examples include: residences, quiet outdoor areas used for recreation, conference facilities, auditoria/studios, schools in daytime, hospitals/residential care homes and religious institutions e.g. churches or mosques.
Medium	Receptors moderately sensitive to noise, where it may cause some distraction or disturbance. Examples include: offices, restaurants and sports grounds where spectator noise is not a normal part of the event and where quiet conditions are necessary (e.g. golf or tennis).
Low	Receptors where distraction or disturbance from noise in minimal. Examples include residences and other buildings not occupied during working hours, factories and working environments with existing high noise levels and sports grounds where spectator noise is a normal part of the event.

Source: Adapted from the Guidelines for Environmental Noise Impact Assessment[114]

[114] IEMA (2014) Guidelines for Environmental Noise Impact Assessment [online] available at: https://www.iema.net/search-results?search=Guidelines+for+Environmental+Noise+Impact+Assessment (last accessed July 2017).

11.7 Consultation

11.7.1 To date, no topic specific consultation has been undertaken with respect to noise and vibration. For scheme wide consultation refer to section 2.7. Once the scheme design develops, consultation with the Local Authority Environmental Health Officer (EHO) will be necessary to discuss the effects of noise and vibration.

11.8 Assumptions and limitations

Assumptions regarding the baseline

11.8.1 To adequately characterise the baseline environment an extensive and detailed noise survey will be necessary. DMRB advises *"This [Detailed] level of assessment may be a desk-based exercise, supplemented with site-collected information needed to inform a quantitative assessment… [which] should include a noise measurement survey"*. Noise surveys occur at Detailed stage of assessment and will therefore be conducted for the scheme, as part of the Environmental Statement (ES).

11.8.2 Conclusions and recommendations may be revised within the ES, on the basis of updated information following further research, survey, and investigation.

Assumptions regarding the assessment of impacts

Construction assessment

11.8.3 Information on construction activities at this stage of the scheme is limited to a high-level description of construction sequences and provisional details of likely plant to be used.

11.8.4 To provide a quantitative assessment, detailed information would be required on plant, duration, method, location of construction compound, haul routes etc. At this stage in the assessment process insufficient information is available to quantify construction impacts, and these will be discussed qualitatively in the following sections. This section of the report identifies the potential impacts, describes how the effects of the impacts will be assessed, and what generic mitigation measures would be considered with regard to noise and vibration.

Operational assessment

11.8.5 The traffic data to be used for noise predictions is based upon the South West Regional Traffic Model (SWRTM) traffic data and standard prediction methodology. A full DMRB assessment requires extensive and detailed modelling of the scheme and the surrounding area, using detailed topographical data. At this stage of assessment, horizontal and vertical alignments of the scheme are incorporated into the acoustic model, however as the design progresses these may change.

11.8.6 Public domain LiDAR data is used to provide topographical and existing height data. Ordnance Survey Address-point data is used to locate residential receptors.

11.8.7 Mitigation measures in the form of acoustic bunds have been incorporated into the scheme design. Assessment within the ES will verify the sufficiency of the proposed mitigation.

11.9 Design, mitigation and enhancement measures

Construction

11.9.1 It is anticipated that the limits for normal working hours and levels of noise at nearby properties would be agreed by the Contractor in advance with local Authority EHOs and incorporated into the Construction Environment Management Plan (CEMP).

11.9.2 The Section 61 application (11.2.15) would require the use of best practicable means (BPM) for noise control at all times during construction. These should include the selection of the most appropriate method and plant for the job, adequate maintenance of plant, optimum siting of stationary plant, local screening and the education of the workforce. Restrictions may also be placed on early/late delivery times. Potentially affected residents should be kept informed in advance of the works and contact details be provided to request further information or to report disturbance. The production of this Section 61 application will include consultation with the local authority.

11.9.3 Incorporated mitigation related to construction noise and vibration will be set out within the CEMP This will identify the series of measures to reduce the environmental effects during the construction period and covers environmental and safety aspects affecting the interests of residents, businesses, all road users and the general public in the vicinity of the works. These measures will include considerations of the residents of early phases of the scheme during the construction period for later phases.

11.9.4 The effects of potential noise and vibration on local communities can be mitigated by effective communication between the promoter, contractor and the public. Prior notification of construction works to any potential affected residents will be required. Following that, investigation and remediation of noise issues during construction may also be required.

11.9.5 Where potentially significant effects of construction noise and vibration are predicted, the contractor would consult the Local Authority to determine potential additional mitigation measures for the scheme.

Operation

11.9.6 DMRB advises on reductions of sound from thin surface courses and acoustic barriers / bunds. For the purposes of this assessment it has been assumed that by the Design Year (2038) in the Do Minimum case, all existing trunk roads and motorways would be surfaced with thin surface course. The potential requirement for acoustic bunds or fences will be established as part of the detailed assessment which will be reported within the ES.

11.10 Assessment of effects

Construction noise

11.10.1 Precise details of construction activities for the scheme are not available and an inventory of likely construction plant and associated noise levels has therefore been set out using professional judgement. Reference noise levels from Annexes C and D of BS 5228–1 have been assigned to the plant. Conservative assumptions have been made regarding the likely percentage of any given construction day that plant of a particular type would be operating. This information, broken down by construction activity is incorporated in Table 11.3. Each activity has been provided with a percentage operating time for any given hour of construction activity. In the absence of detailed contractor's information, professional judgement has been used in the assignment of this percentage.

Table 11.3: Plant information assumed for the construction noise assessment

Phase of work	Item of plant	Sound pressure level at 10m (dBA)	BS5228-1 reference	% on-time in any given hour
Site clearance	Tracked excavator	77	C2#2	50
	Lorry	80	C2#34	50
	Roller (rolling fill)	79	C2#37	25
Drainage	Wheeled excavator	70	C5#34	50
	Road lorry (full)	80	C6#21	50
Earthworks	Dozer	83	C5#15	50
	Lorry	80	C2#34	50
	Vibratory roller	75	C5#20	25
	Road lorry (full)	80	C6#21	50
Pavements and footways	Paving	77	C5#7	50
	Rolling and compaction of surface course	80	C5#31	25
	Rolling and compaction	77	C5#19	25
	Mixing Concrete	75	C5#28	50
Breaking and planing of existing carriageway	Planing existing carriageway	82	C5#7	50
	Backhoe mounted hydraulic breaker	88	C5#1	50
	Road Breaker (hand-held pneumatic)	86	C5#4	50
Signing and street lighting	Lorry with lifting boom	77	C4#53	50
Structures	Mobile telescopic crane	78	C4#38	50
	Concrete mixer truck (discharging)	75	C4#28	50

11.10.2 The plant noise levels and utilisation set out in Table 11.3 enable construction noise levels to be estimated for each construction activity as a function of distance from the works as set out in Table 11.4. It will be noted, even in the absence of mitigation, that the construction noise day-time SOAEL of 75dB L_{Aeq} (11.3.37) is generally not exceeded at a distance greater than 25 metres from the works. Conversely the night-time SOAEL of 55dB L_{Aeq} (11.3.37) is generally exceeded at all distances below 100 metres for most activities.

Table 11.4: Construction noise levels [dB] from typical activities

Typical activities	L_{Aeq} at 10m	L_{Amax} at 10m	L_{Aeq} at 25m	L_{Amax} at 25m	L_{Aeq} at 50m	L_{Amax} at 50m	L_{Aeq} at 100m	L_{Amax} at 100m
Site clearance	74	77	66	69	59	62	51	54
Earthworks and drainage	72	80	64	72	56	65	49	57
Pavements and footways	77	80	69	66	62	59	54	51
Breaking and planing of existing carriageway	88		80		72		65	
Signing and street lighting	74		66		59		51	
Structures	79		71		63		56	
Piling (augured)	80		72		64		57	

11.10.3 Figure 11.1 shows that most plant (excluding piling) would not exceed the vibration SOAEL of 1mm/s (11.3.39) at distances greater than 12m but where piling is required SOAEL may be exceeded at distances below 32m from the seat of the piles.

11.10.4 Construction traffic would need to increase flow by at least 25% to lead to a 1dB increase in noise levels and there is currently insufficient evidence to suggest that this will arise.

Operation

11.10.5 In terms of absolute noise levels and compliance with the aims of NPPF, the following exceedances of day-time SOAEL would occur:

- Do Minimum Opening Year (DMOY), 39 properties are at or above SOAEL
- Do Something Opening Year (DSOY), 42 properties are at or above SOAEL
- Do Minimum Design Year (DMDY), 44 properties are at or above SOAEL
- Do Something Design Year (DSDY), 51 properties are at or above SOAEL

11.10.6 From the above it can be seen that there is a small increase in numbers of receptors at or above SOAEL in the Opening Year compared to Do Minimum in the same year. A small increase would remain by the Design Year, as is the case in the Do Minimum case.

11.10.7 Results of traffic noise calculations at potentially affected dwellings are presented in accordance with HD 213/11 procedure in the following tables. Calculation results presented represent noise changes at the worst-affected façade of each property, at a height equivalent to first floor level.

11.10.8 The results for noise impacts at dwellings within 600 metres of affected routes within 1 kilometre, and adjacent to affected routes beyond 1 kilometre are presented in Table 11.5 and Table 11.6. In terms of night-time impacts, traffic noise effects are only assessed in the long-term, and for receptors subject to noise levels above 55dB.

Table 11.5: Short-term change in noise levels, Do Minimum 2023 - Do Something 2023

Change in noise level		Day-time	
		Number of dwellings	Number of other sensitive receptors
Increase in noise level, $L_{A10,18h}$	0.1-0.9	280	33
	1.0-2.9	89	10
	3.0-4.9	1	0
	5.0+	1	1
No change	0	20	1
Decrease in noise level, $L_{A10,18h}$	0.1-0.9	133	8
	1.0-2.9	19	3
	3.0-4.9	44	2
	5.0+	2	9

Table 11.6: Long-term change in noise levels, Do Minimum 2023 - Do Something 2038

Change in noise level		Day-time		Night-time
		Number of dwellings	Number of other sensitive receptors	Number of dwellings
Increase in noise level, $L_{A10,18h}$	0.1-2.9	510	50	82
	3.0-4.9	8	0	0
	5.0-9.9	1	0	2
	10.0+	0	1	0
No change	0	4	1	0
Decrease in noise level, $L_{A10,18h}$	0.1-2.9	62	5	2
	3.0-4.9	2	2	2
	5.0-9.9	1	5	1
	10.0+	1	3	0

Human health and wellbeing

11.10.9 The impact of noise in terms of human health and wellbeing can be assessed by considering the number of receptors subject to noise levels above SOAEL as this is the level above which significant adverse effects on health and wellbeing occur (section 11.3.2). The number of receptors above SOAEL for the Opening Year and Design Year are set out in Table 11.7.

Table 11.7: Number of receptors exceeding SOAEL

Scenario and Period	Number of residential receptors
DMOY	39
DSOY	42
DMDY	44
DSDY	51
Short-term increase DSOY v DMOY	3
Long-term increase DSDY v DMOY	12

11.10.10 Even when noise levels are below SOAEL, noise may affect health and wellbeing since LOAEL is the level at which adverse effects on health and quality of life can be detected.

11.11 Monitoring requirements for significant adverse effects

11.11.1 Any requirement for construction noise and vibration monitoring can only be established when full details of the plant involved and schedule have been determined. Construction monitoring guidance is given in Annex G of BS5228 Part 1 (11.2.16) for noise and in Section 9 of BS5228 Part 2 (11.2.17) for vibration.

11.11.2 The procedure for monitoring operational noise is set out in Section III of CRTN (11.2.18) which specifies what to measure and how the measured data should be processed.

11.12 Conclusions

11.12.1 An assessment has been undertaken that is broadly in line with the Simple assessment approach set out in DMRB (11.2.21). This chapter has set out the criteria to determine the significance of noise and vibration effects of the scheme and has presented tables which show the changes in noise level in both the short-term and the long-term.

11.12.2 Analysis shows a small increase in the number of receptors would be exposed to noise levels above SOAEL in both the short-term and long-term.

11.12.3 During construction, with best practice mitigation measures in place, an on-balance Not Significant Adverse effect is anticipated. An overall Not Significant Adverse effect is anticipated during operation.

12 People and communities

12.1 Introduction

12.1.1 This chapter presents the on-going work for the assessment of the potential effects associated with the proposed scheme upon People and Communities including Non-Motorised Users (NMUs), Amenity, Severance, Agricultural Land, Demolition of Private Property and Associated Land Take, Private Property, Development Land, Local Economy, Community Land, Motorised Travellers Views from the Road and Driver Stress. To address the requirements of the Infrastructure Planning (EIA) Regulations 2017, this chapter also covers effects on population and health.

12.1.2 People and Communities is identified as a Design Manual for Roads and Bridges (DMRB) factor within Interim Advice Note (IAN) 125/15[115]. However, the guidance contained within the DMRB Volume 11 Section 3 has not yet been updated. As a result, and pending new guidance, the assessment of People and Communities for this report has been prepared in accordance with the DMRB Volume 11, Section 3, Parts 6[116], 8[117] and 9[118].

12.1.3 To date, DMRB Simple level assessments have been undertaken for NMUs, Amenity, Severance, Agricultural Land, Demolition of Private Property and Associated Land Take, Motorised Travellers Views from the Road and Driver Stress sub-factors. Assessments for Private Property, Local Economy and Community Land sub-factors have been undertaken to a Scoping level.

12.1.4 Development Land was scoped out of further assessment at an early stage of the EIA. However, the baseline has been reviewed for this sub-factor, given the evolving nature of this type of land.

12.1.5 Further detailed assessment for those in-scope topics identified above is currently under way, and will be reported within the Environmental Statement (ES) that will be submitted to support the Development Consent Order (DCO) application.

12.2 Legislation and policy context

National legislation and policy

National Policy Statement for National Networks

12.2.1 The policies in the National Policy Statement for National Networks (NPSNN)[119] largely build on those originally stated in the National Planning Policy

[115] Highways England (2015) IAN 125/15 'Environmental Assessment Update'.
[116] The Design Manual for Roads and Bridges Volume 11, Section 3, Part 6 Land use.
[117] The Design Manual for Roads and Bridges Volume 11, Section 3, Part 8 Pedestrians, Cyclists, Equestrians and Community Effects.
[118] The Design Manual for Roads and Bridges Volume 11, Section 3, Part 8 Pedestrians, Cyclists, Equestrians and Community Effects.
[119] Department for Transport (2014) National Networks National Policy Statement: Presented to Parliament pursuant to Section 9 (8) and Section 5 (4) of the Planning Act 2008 [online] available at:

Framework (NPPF), but also confirms its commitment to providing people the opportunity to choose sustainable modes; expecting applications to identify opportunities to invest in infrastructure where communities (including pedestrians and cyclists) appear to be severed by the road network and in turn addressing historic problems, by designing and delivering schemes taking into account accessibility requirements for all, including disabled users.

12.2.2 Planning Practice Guidance[120] '*Open space, sports and recreation facilities, public rights of way and local green space'* is also of relevance.

12.2.3 It is also worth noting the importance of the Equalities Act 2010 which requires decision making to have regard to the desirability of reducing socio-economic inequalities[121].

12.2.4 In addition, *Safeguarding our Soils: A Strategy for England*[122] provides the national policy context for soils and *Technical Information Note 049* (TIN049)[123] describes the Agricultural Land Classification (ALC) system as a means to protect the best and most versatile agricultural land.

12.3 Assessment methodology

12.3.1 Assessment methodology for defining the significance of effects upon people and communities is contained within Section 13.11 of the Environmental Impact Assessment Scoping Report submitted to the Planning Inspectorate in November 2017. The Scoping Report can be accessed here:

12.3.2 https://infrastructure.planninginspectorate.gov.uk/projects/south-west/a303-sparkford-to-ilchester/?ipcsection=docs.

12.4 Study area

12.4.1 No study areas for People and Communities are specified in the DMRB Volume 11 Section 2 Part 4, and the DMRB Volume 11 Section 3 Parts 6, 8 and 9, and therefore the study areas used for this chapter have been defined through professional judgement, based on the type and scale of the scheme and the context of the surrounding area. These study areas are considered more than sufficient in terms of identifying the significance of effects in full.

- **Non-Motorised Users:** The study area comprises all NMU facilities including Public Rights of Way (PRoWs), footways, long distance walks and cycle routes within 250m of the scheme
- **Amenity:** The study area comprises all NMU facilities identified within 250 metres of the scheme

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387222/NNNPS-print.pdf (Last accessed April 2017).

[120] Department for Communities and Local Government (2012) Planning Practice Guidance.

[121] Equalities Act (2010) [online] available at: http://www.legislation.gov.uk/ukpga/2010/15/contents (Last accessed March 2017).

[122] DEFRA (2009) Safeguarding our Soils: A Strategy for England.

[123] Natural England (2009) Technical Information Note 049 (TIN049) [online] available at: http://publications.naturalengland.org.uk/publication/35012 (Last accessed April 2017)

- **Severance:** The study area includes community facilities and connecting NMU routes within 250 metres of the scheme. For the basis of this assessment, community facilities include those outlined in the DMRB Volume 11 Section 3 Part 8 Chapter 2, such as doctor's surgeries, hospitals and medical facilities, schools, churches, leisure facilities (e.g. cinemas) and formal recreation facilities (e.g. parks, sports and recreation grounds, children's play areas and outdoor sports facilities). Shops include large shops such as supermarkets
- **Motorised Travellers view from the Road:** The study area considers views from the proposed route alignments
- **Driver Stress:** The study area consists the A303 and all side roads connecting to it within 250 metres of the scheme
- **Demolition of Private Property and Associated Land Take:** The assessment applies to direct effects of the Scheme on residential, industrial and commercial properties, including businesses such as independent shops. The assessment considers an area within 250 metres of the scheme boundary
- **Community Land and Community Facilities, and Development Land:** The study area is defined as the area within 250 metres of the scheme boundary
- **Local Economy:** The study area for the local economy is the District of South Somerset
- **Agricultural Land:** The study area for agricultural land as a National resource encompasses the ALC grade of land directly within the scheme footprint required to accommodate infrastructure associated with the scheme. The effects on individual farm businesses encompasses farms directly affected by the scheme during construction and operation

12.5 Existing baseline

NMU surveys

12.5.1 NMU counts were undertaken at 23 locations within the vicinity of the scheme. The scheme is situated within a rural area and given the associated potential for tourism and leisure, NMU trips surveys were undertaken on a summer school holiday day and term time day for comparison. Video surveys were undertaken for a 10-hour period (0800 to 1800) on Wednesday 31 August and Thursday 1 September 2016 to capture summer holiday flows and on Wednesday 14 September, Thursday 15 September and Friday 16 September 2016 to capture term time flows. The video surveys categorised flows for pedestrian, pedestrians with dogs, pedestrians pushing pram/ pushchair, wheelchair users, joggers / runners, cyclists, equestrians and other mobility impaired users.

12.5.2 A total of 142 NMUs were counted during the summer holidays and 79 during term time. The surveys identified 4 sites with counts of higher than 10 users per day, at Podimore High Street, Higher Farm Lane overbridge, Steart Hill and Sparkford Hall grounds. Please refer to Table 12.1 below for a summary of the NMU video counts.

12.5.3 Origin destination surveys were also commissioned at four locations including Right of Way (RoW) 3, RoW13, RoW15 and SR6. Please refer to the

assumptions and limitation section 12.8 of this report for further information on these surveys.

Table 12.1: 2016 NMU survey video counts during the summer holidays and term time

Survey location	Closest settlement	Neighbouring NMU facilities or side roads	Summer (August) NMU flows	Term- time (September) NMU flows
RoW1	Sparkford	WN 27/16	0	0
RoW2	Sparkford	WN 27/16	0	0
RoW3	Sparkford	WN 23/38	7 pedestrians, 12 pedestrians with dogs, 1 jogger	1 pedestrians, 5 pedestrians with dogs, 2 joggers
RoW4	Queen Camel	WN 23/12	N/A	N/A
RoW5	Queen Camel	WN 23/11	N/A	N/A
RoW6	Queen Camel	WN 23/14	N/A	N/A
RoW7	Queen Camel	WN 23/15	0	0
RoW9	Downhead	WN 23/37, WN 23/33, Celtic Way	0	1 cyclist, 2 equestrians
RoW10	Downhead	Y 27/19	2 pedestrians, 2 pedestrians with dogs	0
RoW11	Downhead	Y 27/ 10, Y 27/9, Footway adjacent to A303, Downhead Lane-side road	0	0
RoW12	Downhead	Y 27/9, Y 27/20	5 pedestrians, 1 pedestrian with dog, 1 equestrian	0
RoW13	West Camel	Y 27/6	0	0
RoW14	West Camel	Y 27/7	1 pedestrian	0
RoW15	Downhead	Y 27/ UN, Footway adjacent to A303	0	0
RoW16	Downhead	Y 27/26, Y 27/17	0	1 pedestrian
RoW17	Downhead	Y 27/26	N/A	N/A
RoW18	Downhead	Y 27/18, Downhead Lane – side road	0	0
RoW19	Podimore	Y 30/28	4 pedestrians	0
RoW20	Downhead	Y 30/28 Y 27/26	N/A	N/A
RoW21	Podimore	Y 30/UN, Y 30/29	11 pedestrians, 2 pedestrians with dogs	1 pedestrian with a dog
RoW22	Queen Camel	WN 23/32	N/A	N/A
RoW23	Queen Camel	WN 23/33, Celtic Way	0	0
RoW24	Podimore	Y 30/UN	1 pedestrian, 3 cyclists	0
SR1	Queen Camel	WN 23/10, Celtic Way, Gason Lane – side road	0	0
SR2	Queen Camel	Traits Lane – side road	2 pedestrians with dogs, 1 cyclist	1 pedestrian with a dog
SR3	Downhead	Steart Hill – side road	16 cyclists	1 pedestrian, 3 cyclists
SR4	West Camel	Howell Hill – side road	0	0
SR5	West Camel	Plowage Lane – side road	1 pedestrian, 3 cyclists	1 pedestrian with a dog, 1 cyclist
SR6	Podimore	Podimore high street – side road	17 pedestrians, 32 joggers, 17 cyclists	8 pedestrians, 28 joggers, 23 cyclists

Non-Motorised Users

12.5.4 PRoW to the north and south of the scheme consist of 24 footpaths, 2 bridleways and 2 restricted byways[124]. There is also one national cycle route[125], a long-distance path[126] and four footways[127] within the study area. Baseline conditions for NMUs have been established using an audit, which was undertaken in accordance with the DMRB standard HD 42/05. The environmental constraints plan (appendix A.1) provides a general overview of PRoW locations, however drawings to support the ES will detail each NMU route more precisely.

12.5.5 Table 12.2 below provides a description of each NMU facility within the study area.

Table 12.2: NMU amenities within the study area for the scheme

NMU facility	Facility type	Description	Distance from the scheme
WN 23/10	Footpath	Footpath intersects the A303 to the south, running between the west of Gason Lane and Blackwell Road to the south.	Within footprint
WN 23/11	Footpath	Footpath intersects the A303 to the south, passing east of Ridge Copse before running alongside Gason Lane to the south.	50m south
WN 23/12	Footpath	Footpath intersects the A303 to the north, running through Hazlegrove Park until it reaches the school access road 250m to the north of Sparkford junction.	Within footprint
WN 23/14	Footpath	Footpath intersects the A303 to the south, running through Ridge Copse.	30m south
WN 23/15	Footpath	Footpath running west of Gason Lane past the southern fringes of Ridge Copse and connecting to path WN 27/4 to the east.	150m south
WN 23/32	Footpath	Footpath intersects the A303 to the north, running between Camel Hill and Steart Hill.	Within footprint
WN 23/33	Footpath	Footpath intersects the A303 to the north, running between Camel Hill east of Camel Hill Farm to Newlands Lane in the north.	Within footprint
WN 23/37	Footpath	Connects PRoWs WN 23/32 and WN 23/33 at Camel Hill.	200m north
WN 23/38	Footpath	West of the existing A303 dual-carriageway at Sparkford, between Sparkford Hall and PRoW WN 23/12 in the west.	Within footprint
WN 27/14	Footpath	Runs between High Street and the railway in Sparkford.	150m east
WN 27/16	Footpath	Path between High Street Sparkford and Sparkford Hall, severed by the existing A303.	50m north east
WN 27/4	Footpath	Path between Ridge Copse and the A358 in the east.	200m south
WN 27/6	Footpath	Path between Wolfester Terrace, crossing the railway at Sparkford before connecting to Church Road.	100m S
Y 27/10	Footpath	Footpath intersecting the A303 to the north, running along Downhead Lane before heading west towards Glebe Farm.	Within footprint
Y 27/11	Footpath	Between the B3151 and Urgashay in the south.	20m east
Y 27/20	Restricted Byway	Slate Lane passes between Steart Hill and Downhead Lane, passing West Camel Hill.	Adjacent
Y 27/21	Footpath	Footpath intersects the A303 to the south, connecting to the B3151.	50m south
Y 27/22	Footpath	To the west of Slow Court Lane.	230m south
Y 27/27	Restricted Byway	Between Plowage Lane and Keep Street along Cottis Lane.	60m S
Y 27/29	Footpath	Between Plowage and Downhead Lane.	Within footprint

[124] Somerset County Council (2017) Explore Somerset Interactive Mapping, [online] available at https://roam.somerset.gov.uk/roam/map (last accessed November 2017)
[125] Sustrans (2017) National Cycle Network, [online] available at: https://www.sustrans.org.uk/ncn/map (Last accessed November 2017).
[126] The Walking Englishman (2017) Long Distance Footpath Directory [online] Available at: https://www.walkingenglishman.com/ldp/ldp.html (Last accessed November 2017)
[127] Google Maps (2017) [online] available at: https://www.google.co.uk/maps/@52.8382004,-2.3278149,6z (last accessed November 2017).

NMU facility	Facility type	Description	Distance from the scheme
Y 27/6	Footpath	Footpath intersects A303 to the south, between the church adjacent to the A303 and West Camel.	30m south
Y 27/7	Footpath	Footpath intersects the A303 to the south, between the A303 to the east of Plowage and Cottis Lane.	Adjacent
Y 27/9	Footpath	Footpath intersects the A303 to the north, between Plowage and Slate Lane, before connecting to Steart Hill 1km to the north.	Within footprint
Y 27/UN	Footpath	Footpath severed by the existing A303 to the west of Wayne's before connecting to Downhead.	Within footprint
Y 30/24	Footpath	Starting 100m east of Podimore Inn, moving south towards RNAS Yeovilton.	200m west
Y 30/28	Bridleway	Bridleway intersects the A303 to the north, along Eastmead Lane until Downhead Lane.	Within footprint
Y 30/29	Bridleway	Between Higher Farm Lane and Eastmead Lane.	40m north
Y 30/UN	Footpath	Between Podimore and Higher Farm Lane, running over the A303.	20m west
	Footway	Alongside Church Street in Podimore, starting at the main road which connects to the A303 to the southernmost fringes of Podimore.	110m south
	Footway	Runs adjacent to the south of the A303 between Howell Hill until Camel Cross.	Within footprint
	Footway	Footway along Wolfester Terrace to the north, between the A359 (north of services) and the A359 which heads to Queen Camel, both sides of the road.	100m east
	Footway	Footway between Wolfester Terrace and High Street Sparkford, either side of the road to the north of the Sparkford Inn.	Adjacent
Route 26	Cycle Route	National Route 26 runs from Portishead on the Somerset coast to Portland Bill on the Dorset coast via Wells, Castle Cary, Yeovil and Dorchester.	150m east
Celtic Way	Long distance path	The route visits more than 100 pre-historic sites through South Wales and the South West peninsula and includes 111 miles of the Land's End Trail.	Within footprint

Amenity

12.5.6 NMU facilities within the study area have been identified within Table 12.2 above. The environmental constraints plan contained within appendix A.1 provides a general overview of PRoW locations. Drawings will be prepared to support the ES which will detail each NMU route more precisely. At present, there is one crossing facility over the A303 for NMUs within the study area, at Higher Farm Lane to the north of Podimore, where amenity is considered to be good.

12.5.7 Existing worst-case amenity has been considered for each NMU facility. There are 11 PRoWs and 1 long distance route which intersect the A303 within the study area where amenity is considered to be very poor comprising PRoWs WN 23/10, WN 23/11, WN 23/12, WN 23/14, WN 23/32, WN 23/33, WN 27/16, Y 27/21, Y 27/9, Y 27/UN, Y 30/28 and the Celtic Way, as NMUs currently have to cross the A303 at uncontrolled crossings at-grade. Amenity is considered to be poor for 5 PRoWs comprising Y 27/11, Y 27/21, Y 27/6, Y 27/7 and Y 30/24, as well as 2 footways at A303 Howell Hill to Camel Cross and Footways – Sparkford, to Queen Camel and Route 26 with a lack of barriers between traffic and NMU facilities or routes conflicting with B-roads.

12.5.8 The current lack of barriers between people and traffic in the locations above may cause a fear of crossing the road, due to a feeling of it being unsafe.

12.5.9 Nine PRoWs WN 23/15, WN 27/14, WN 27/6, Y 27/10, Y 27/20, Y 27/22, Y 27/27, Y 27/29, Y 30/24 and one footway at Church St. Podimore connect to side roads and amenity is considered to be acceptable here, whilst 6 PRoWs

WN 23/37, WN 23/38, WN 27/4, Y 30/29, Y 30/UN (bridge solely used by NMUs) are completely separated from traffic and therefore amenity is good.

Severance

12.5.10 The scheme is located within the vicinity of several communities; Downhead and Camel Hill to the north of the A303, Sparkford to the east of the A303 and Queen Camel, West Camel and Podimore to the south of the A303.

12.5.11 NMU routes such as PRoW footpaths, bridleways, footbridges and cycle routes within 250 metres of the scheme are outlined above in the Non-Motorised Users section.

12.5.12 Community facilities and connective NMU facilities within 250 metres of the scheme are outlined in Table 12.3 and were identified using Google Maps[128].

Table 12.3: Community Facilities and connecting NMU Routes within 250m

Community Facility	NMU Routes Connecting to Community facility
The Podymore Inn public house	Footpath Y 30/UN Footpath Y 30/24 Bridleway Y 30/29 Bridleway Y 30/28
West Camel Methodist church	Footpath Y 27/6 Footpath Y 27/9 Footpath Y 27/10 Footpath Y 27/29 Restricted Byway Y 27/20
Sparkford Inn public house	Footpath WN 27/16 Footpath WN 27/14 Footpath WN 23/38

Driver stress

12.5.13 The A303 / A30 forms part of the Strategic Road Network and is a strategic link between the south-west peninsula and the rest of the south, south-east and London. The route is comprised of multiple road standards including dual 2-lane all purpose (D2AP), single-carriageway 2 lane (S2) and single-carriageway sections with overtaking lanes (S2+1) together with associated varying speed limits (from 40mph to 70mph).

12.5.14 The single carriageway section runs between the Podimore Bypass (a dual-carriageway) and Hazlegrove Roundabout. There are a number of side roads which tie in to the existing A303 and provide access to the local community.

12.5.15 At present, significant congestion occurs between Sparkford and Ilchester on the A303, particularly during peak periods such as holidays, the summer and weekends, leading to delays for drivers and increased traffic flows. The inability for vehicles to travel at a speed with which they are comfortable with in relation to the general standard of the road leads to driver frustration, and as such driver frustration is perceived to be high on the existing A303 between Sparkford and

[128] Google Maps (2017) [online] available at: https://www.google.co.uk/maps/@52.8382004,-2.3278149,6z (last accessed November 2017).

Ilchester. Congestion on the A303 may also lead to delays in public transport movements, community service vehicles and emergency services, further exacerbating driver frustration. Driver Stress is considered to be High along the A303 between Sparkford and Ilchester during peak periods as a result of flow increased and inconsistent speeds.

12.5.16 Route uncertainty is considered to be low along the A303, given the presence of existing signage.

12.5.17 The accident rate on this section of the A303 is also higher than the national rate for A class trunk roads, with 162 accidents per billion vehicle kilometres travelled, compared to the national rate for all A road of 113 accidents per billion vehicle kilometres travelled. There is one NMU crossing over the A303, one footway alongside the A303 between Camel Cross and Howell Hill and approximately 16 points at which PRoWs intersect the A303 at-grade between Higher Farm Lane and Sparkford Hall, which NMUs do use, although in fairly low numbers (refer to Table 12.1). As such, the fear of potential accidents amongst vehicle travellers is considered to be Moderate.

12.5.18 Frustration amongst drivers on the A359, B3151 and side roads situated within the study area is likely to be low, with congestion largely marginalised to the A303 and therefore, vehicles can drive at speeds consistent with their own wishes.

Demolition of private property and associated land take

12.5.19 The area encompassing the scheme is predominantly rural, used for agriculture with some residential dwellings and businesses. Google Maps[129] and MAGIC[130] have been used to identify the baseline for this sub-factor

12.5.20 There is a farm adjacent to the A303 approximately 850 metres to the east of Podimore. At Camel Cross, there is a farm just north of the A303 on an unnamed road off Plowage Lane. In addition, Hawk House country lodging and bistro is situated adjacent to the south of the A303. At the intersection of Plowage Lane and the A303, there are 2 residential dwellings immediately south of the A303 and a derelict shed and residential property The Spinney north of the A303. Approximately 600 metres east of the Plowage Lane / A303 intersection, there are 2 residential properties, a bakery and West Camel Methodist church.

12.5.21 At the intersection of Steart Hill and the A303, there are 3 residential properties and Steart Road garage. Approximately 300 metres east of the Steart Hill/A303 intersection, there is a residential property Blue Haze adjacent to the A303.

12.5.22 At Camel Hill, there are 2 farms north of the A303, Camel Hill Farm and Vale Farm. There are also 4 residential properties in the vicinity of these 2 farms. South of the A303, along Traits Lane there is an electricity mast, buildings belonging to the Fleet Air Arm and 1 residential property Eyewell House.

[129] Google Maps (2017) [online] available at: https://www.google.co.uk/maps/@52.8382004,-2.3278149,6z (last accessed November 2017).
[130] [130] Defra (2017) MAGIC Online GIS Mapping System [online] available at: http://magic.defra.gov.uk (last accessed October 2017).

Adjacent to the south of the A303 just north of Gastons Lane is a Shell garage and Mattia diner.

12.5.23 At Hazlegrove Roundabout there is a service station with convenience shop and garage and a McDonalds. Just north of the roundabout along the east of the A303 is Long Hazel Dairy Farm and Long Hazel Park Campsite.

Community land and community facilities

12.5.24 Sparkford Cricket Club pitch is located in the study area. No other community land is present in the study area, based on a review of Google Maps[131].

12.5.25 Community facilities located in the study area include West Camel Methodist Church and St Peter's Church, based on a review of Google Maps[132].

12.5.26 A number of other community facilities, including a primary school, tennis club, bowls club, medical centre and Church are located outside the study area in Queen Camel (approximately 850 metres south of the scheme). Although Hazlegrove Preparatory School main building is approximately 465 metres north of the current A303, the sole private access to the school is currently via the Hazlegrove Roundabout. However, the school grounds and playing fields border the existing A303 and are therefore located within the study area.

Development land

12.5.27 The South Somerset Local Plan (2006-2028) does not identify any development sites within 250 metres of the scheme. However, the Local Plan outlines a target for the construction of at least 141 homes and 1.02 ha of employment land in Ilchester between 2006 and 2028[133].

Local economy

12.5.28 South Somerset has a population of 165,600, of whom 95,900 (58%) are of working age (16-64 years old). Children (aged under 16 years) make up 18% of the population, which is in line with the national average of 19%. Older people (over 65 years) comprise 25% of the general population, which is higher than the national average of 18%[134].

12.5.29 Table 12.4 below shows the economically active population and, amongst them, those who are in employment and those who are unemployed. It shows there are the same proportion of economically active people in South Somerset as nationally (78%). It also shows that unemployment in South Somerset is the same as the South West region (4%), meaning both are in line with the national

[131] Google Maps (2017) [online] available at: https://www.google.co.uk/maps/@52.8382004,-2.3278149,6z (last accessed November 2017).
[132] Google Maps (2017) [online] available at: https://www.google.co.uk/maps/@52.8382004,-2.3278149,6z (last accessed November 2017).
[133] South Somerset District Council (2015): 'South Somerset Local Plan 2006 – 2028'. See: https://www.southsomerset.gov.uk/media/707200/south_somerset_local_plan_2006-2028_adoption_version_march_2015.pdf
[134] ONS (2016): 'Population estimates – local authority based by five-year age band'. Accessed October 2017.

figure (5%). The South Somerset economically active population is the same as the national figure (78%), whilst the South West figure for the South West is slightly higher (81%).

Table 12.4: Employment and unemployment (April 2016 – March 2017)

All people	South Somerset	South Somerset (%)	South West (%)	Great Britain (%)
Economically active	80,000	78%	81%	78%
In employment	77,800	76%	77%	74%
Unemployed (Model-based)	2,800	4%	4%	5%

Source: ONS annual population survey (April 2016 - March 2017)

12.5.30 The English Indices of Deprivation 2015 are commonly used for the measurement and comparison of deprivation between neighbourhoods in England. In terms of deprivation, the study area contains three Lower layer Super Output Areas (LSOA) neighbourhoods, ranked 22,979, 16,939, and 20,669 out of 32,844 LSOAs in England, with 1 being the most deprived LSOA. This indicates that the scheme is located within the 50% least deprived neighbourhoods in the country.

Agricultural land

12.5.31 The land within the study area of the scheme is predominantly agricultural. Post 1988 ALC survey data is not available on MAGIC[135] therefore this ALC assessment will be based on 1975 Ministry of Agricultural Fisheries and Food (MAFF) ALC grades. The MAFF 1975 ALC data provides an indication of the ALC Grades for the entire land area; however, these Grades are indicative and not derived from assessment. MAFF ALC Grades indicates the majority of the land within the study area as Grade 3 (good to moderate) with a small amount of Grade 2 (very good quality) agricultural land.

Individual farm businesses

12.5.32 The land within the study area contains approximately 60 field parcels, predominantly separated by hedgerows and owned by numerous landowners, based on a review of OS Master Map data. It would appear that the land use ranges from pastoral and arable to commercial and potentially subsistence, however in the absence of specific agricultural land use, this is speculative.

12.6 Value (sensitivity of resources and receptors)

12.6.1 Criteria defining significance of effects are not outlined within DMRB Volume 11 Section 3 Part 6 or Part 8. However, DMRB Volume 11 Section 2 Part 5 provides an approach to determining significance of effects as outlined in Table 4.6 in chapter 4; relying on reasoned argument, professional judgement and the views of appropriate organisations. This also takes into account the value (sensitivity) of the receptor and the magnitude of impact, in accordance with Table 4.2 within this report.

[135] MAGIC [online] available at: http://magic.defra.gov.uk/ (last accessed November 2017).

12.6.2 Interpreting the guidance from DMRB, the effect categories have been allocated the following value (sensitivity) (Table 12.5). All NMUs are highly sensitive to change and are considered to be highly valued. Therefore, the descriptors included in the magnitude of change table also correspond to the overall significance of effects for both NMUs (refer to Table 12.6) and amenity (refer Table 12.7). Table 12.6 and Table 12.7 draw on the guidance set out in the DMRB Volume 11 Section 3 Part 8 Chapters 2, 6 and 9. The assessment of amenity also considers the criteria set out in sections 12.3.

12.6.3 For agricultural land, the value assigned is based on the ALC Grade and the magnitude of change is dependent on the area of land take (refer to Table 12.9). The significance of individual farm businesses, derived from professional judgement and interpreting the DMRB 11.3.8 Chapters 6 to 10, is based on the area of land take and proportion of land lost (refer to Table 12.9). Effects on severance of the land, husbandry, access and drainage for individual farm businesses will be considered within the ES, when more detailed design information will be available.

12.6.4 For severance, the significance of effects is derived from professional judgement, DMRB Volume 11 Section 3 Parts 6 and 8 and using Table 12.5 which considers the value of each receptor. Severance considers the effect of a scheme on key community facilities, primarily through assessing the effects on NMU routes connecting to these facilities, as described in DMRB Volume 11 Section 3 Part 8 Chapter 2, using guidance in DMRB Volume 11 Section 3 Part 8 Chapters 6 and 9. This assessment will use the magnitude criteria set out in Table 12.7 and Table 12.8 below to determine the effect on NMU routes connecting to key community facilities within the study area.

12.6.5 People are particularly sensitive to change and are vulnerable receptors with very little capacity and means to absorb changes. People are therefore considered to be highly valued for the assessment of demolition of private property and land take. This is based on professional judgement and aligns with the DMRB; however, this is in line with national policy which promotes good health and quality of life for people and requires applicants identify any ‘likely significant environmental impacts that would have an effect on human beings’ and ‘identify measures to avoid, reduce or compensate adverse health impacts as appropriate’ (paragraph 4.81 -4.82 of the NPSNN)’. Refer to sections 12.6.7 to 12.6.12 for further information describing the assessment for private property and associated land take, community land and community facilities, development land, and local economy.

12.6.6 Views from the road assesses only views from the new road during operation, and considers where any change in views are beneficial, (where there would be a shift in category from no view to restricted, intermittent or open view), adverse (where there would be a shift in category from open view towards intermittent, restricted or no view) or neutral (no change in view category). A Low, Moderate and High descriptive scale is used to provide a qualitative description on driver stress changes from the baseline for motorised travellers (MTs). The overall significance of effect is assessed using an on-balance approach.

Table 12.5: Value (sensitivity)

Effect Category	Value
Non-Motorised Users	High
Amenity	High
Agricultural land	Dependent on ALC (refer to Table 12.9)
Individual farm businesses	Dependent on area of land take
Severance	Low or medium (depending on the community facility severed)
Demolition of private property	High
Land take	High
View from the road	Low
Driver Stress	Low
Community land and development land	Dependent on magnitude criteria (refer to Table 12.12)
Community facilities	Dependent on magnitude criteria (refer to Table 12.12)
Local economy	Dependent on magnitude criteria (refer to Table 12.12)

Source: Derived by professional judgement and based on DMRB 11.3. 6, 11.3.8, and 11.3.9

Table 12.6: Impacts and magnitude of change on non-motorised users

Description of impacts on non-motorised users	Magnitude
• Substantially improve NMU network through the provision of new amenities for NMUs where none existed previously • Length of journeys decreased by over 500m	Major Beneficial
• Improve existing NMU network through the provision of new amenities for pedestrians and cyclists where few or none existed previously • Length of journeys decreased by 250-500m	Moderate Beneficial
• Improve existing NMU network through the upgrading of existing amenities or provision of new amenities for NMUs where some already exist. • Length of journeys decreased by up to 250m	Minor Beneficial
• Length of journeys not materially changed	Negligible Beneficial
• No change to journey length	No Change
• Length of journeys not materially changed	Negligible Adverse
• Improvements to existing NMU amenities are not provided • Length of journeys increased by up to 250m	Minor Adverse
• Existing NMU facilities are degraded • Length of journeys increased by 250 to 500m	Moderate Adverse
• Closure/ removal of NMU amenities where they previously existed • Length of journey journeys increased by over 500m	Major Adverse

Source: Derived using professional judgement and based on DMRB 11.3.8 Chapter 6

Table 12.7: Impacts and magnitude of change on amenity

Description of impacts on amenity	Magnitude
• Substantial improvement to NMU network through the provision of new amenities for pedestrians and cyclists where none existed previously.	Major Beneficial
• Improvement to a greater degree than Minor (determined through professional judgement) for the existing NMU network through the provision of new amenities for pedestrians and cyclists where few or none existed previously	Moderate Beneficial
• Improve existing NMU network through the provision of new amenities for pedestrians and cyclists where few or none existed previously	Minor Beneficial
• No change in facilities	No Change
• Pedestrian at-grade crossing of a new road carrying below 8000 vehicles per day (annual average daily traffic AADT) • A new bridge would need to be climbed or a subway traversed	Minor Adverse
• Pedestrian at-grade crossing of a new road carrying between 8,000 and 16,000 vehicles per day (AADT) in the opening year	Moderate Adverse
• Pedestrian at-grade crossing of a new road more than 16,000 vehicles per day (AADT) in the opening year	Major Adverse
• Description of impacts on amenity	Magnitude
• Substantial improvement to NMU network through the provision of new amenities for pedestrians and cyclists where none existed previously.	Major Beneficial

Source: Derived using professional judgement and based on DMRB 11.3.8 Chapter 6

Table 12.8: Value and magnitude assigned to the assessment of Agricultural Land as a National resource

		Magnitude		
		Land take		
Grade	Value	>20ha	<20ha	Indirect
1 and 2	High	Major Adverse	Moderate Adverse	Minor Adverse
3a	Medium	Moderate Adverse	Minor Adverse	Minor Adverse
3b and 4	Low	Minor Adverse	Minor Adverse	Minor Adverse

Source: derived by professional judgement and based on DMRB 11.3.6 Chapters 6-10

Table 12.9: Value and magnitude assigned to the assessment of individual farm businesses

Land take from individual farm business	Value	Magnitude		
		25% permanent land lost and/or access severely severed	10 - 24% permanent land lost and/or access partially severed	1-9% permanent land lost and/or minor access severed
Total area < 20ha and/or limited or highly specific range of high-value crops/livestock and low operational flexibility	High	Large or very Large Adverse	Moderate or Large Adverse	Slight or Moderate Adverse
Total area 20-50 ha and/or some diversification or range of crop/livestock types	Medium	Large or Moderate Adverse	Moderate Adverse	Slight Adverse
Total area >50ha and/or highly diversified income and flexible management	Low	Slight or Moderate Adverse	Slight Adverse	Neutral or Slight Adverse

Source: Derived using professional judgement and based on DMRB 11.3.6 Chapters 6-10

Private property and associated land take, community land and community facilities, development land, and local economy

12.6.7 For the sub-topics of private property and associated land take, community land and community facilities, development land, and local economy receptors include:

- Residents in the immediate area of the scheme
- Landowners in the immediate area of the scheme
- Local employers and businesses in the area
- Employees and job-seekers, particularly those who live locally
- Users of community facilities in nearby villages, such as educational establishments, health facilities, recreational facilities, places of worship and public transport

12.6.8 Resources include existing and potential:

- Residential properties and business premises
- Residential, business, community and development land affected by the scheme, construction works, and compounds
- Community facilities and services including, for example, public transport, hospitals and community health facilities, primary and secondary schools, nurseries, places of worship and leisure and recreation services

12.6.9 The sensitivity of these receptors and resources is governed by their capacity to absorb changes arising from the scheme. It ultimately reflects their vulnerability to the impacts of the proposed activities and their access to additional or

alternative resources of a similar nature. If a resource is frequently used, if few alternatives exist, or if receptors have limited capacity to absorb the changes arising from the scheme, that receptor is considered to be sensitive to the changes. Criteria describing the sensitivity of receptors are identified Table 12.10.

Table 12.10: Socio-economic sensitivity criteria

Sensitivity	
High	• An already vulnerable receptor with very little capacity and means to absorb changes. • No alternative facilities, access arrangements or opportunities are available within an easily accessible distance • A highly or frequently accessed resource
Medium	• A non-vulnerable receptor with limited capacity and means to absorb changes • A limited range of alternative facilities, access arrangements or opportunities are available within an easily accessible distance • A moderately, or-semi-frequently accessed resource
Low	• A non-vulnerable receptor with sufficient capacity and means to absorb changes • A wide range of alternative facilities, access arrangements or opportunities are available within an easily accessible distance • An infrequently accessed resource

12.6.10 To assess the magnitude of an impact on these receptors and resources, each impact arising is assessed in terms of the following indicators:

- Spatial scope – whether impacts are likely to be felt within the proposed scheme boundary, within the Local Impact Area (LIA) which extends to 250 metres from the scheme boundary (refer to section 12.4) or Wider Impact Area (WIA) which extends to the District of Somerset, or more widely
- Extent – how many social and community resources and receptors are likely to be impacted
- Duration – whether the impacts would be short or long-term
- Reversibility – whether the impact is permanent or temporary

12.6.11 Taking these indicators into consideration, and also any mitigation measures that can be applied; the criteria are used as guidelines to assess the magnitude of each impact. This is described in more detail in Table 12.11.

Table 12.11: Socio-economic and community impact magnitude criteria

Magnitude	Criteria guidelines
Major	• Affects receptors within the WIA and beyond • Affects the well-being of many receptors (or the well-being of a few receptors in an acute way for an extended period) • Affects receptors for an extended period (e.g. the majority of the construction period or is permanent) • Requires considerable intervention to return to the baseline
Moderate	• Affects either the well-being of receptors beyond the site boundary into the LIA • Affects the well-being of a moderate number of receptors • Continues over a number of years, but the baseline is re-established quickly • May require some intervention to return to the baseline conditions
Minor	• Affects the well-being of a small number of receptors • Occurs exceptionally, mostly within the site boundary • Does not extend beyond the life of the scheme (the end of the construction period or first year of operation) • Baseline returns naturally or with limited intervention within a short timescale
Negligible	• Localised to a specific location within the site • Temporary or unlikely to result in detectable impact on the well-being of people or a socio-economic resource • Considered to be a risk that is manageable with intervention • Baseline remains consistent

12.6.12 The significance of any potential effects is evaluated by combining the assessment of magnitude of each impact and the sensitivity of the receptor or resource; effects can be beneficial or adverse. The significance of effect is then determined using Table 4.2. For the purposes of the assessment, effects that are Moderate, Large, or Very Large are considered significant.

12.7 Consultation

12.7.1 A meeting was held with Somerset County Council's Rights of Way Officer on 28 November 2016. Key points discussed at the meeting included requirements for the Celtic Way; which is not promoted as a long-distance walk by the Council, good spacing for NMU crossings, requirements for right of way diversions and provisions for grade-separated crossings. A previous meeting was held with Somerset County Council in January 2016. Initial consultation was also held with stakeholder user groups, with the Blackmore Vale and Yeo Valley CTC, Somerset Ramblers and South Somerset Bridleways Association providing feedback in early 2016.

12.8 Assumptions and limitations

12.8.1 Assumptions made with regard to the People and Communities assessment are as follows:

- Given the uncertainties associated with the NMUs, amenity, severance, agricultural land and demolition of private property and associated land take subtopics, the significance of effects has not been considered at this stage for human health and wellbeing. This will be assessed in further detail as part of the ES once further design information is available.
- Origin destination surveys were undertaken in August and September 2016 and also in April 2017 for 1 location. The 2016 results proved to be inconclusive with only 4 interviews attempted and 1 conducted for the 4 locations. It was decided that interview surveys should be carried out for a second time to the east of Hazlegrove House (at RoW 3). Tracsis carried out the additional surveys on a weekday and weekend day in April 2017. Six interviews were attempted and 5 conducted, although all

attempts were not undertaken on the PRoWs, rather on a desire line in a nearby field.

- The assessment of agricultural land is limited by the availability of specific information regarding the ALC Grades. As ALC grades are not available on MAGIC, the indicative MAFF 1975 ALC data are used, however as these grades are not derived from assessment they cannot be taken as the true ALC of the agricultural land.
- Full information on the uses of the agricultural land such as land use information, the nature of activities associated with the land and farm buildings and infrastructure is not fully known at this stage.
- Landowner information was collated using land registry data and in some cases field boundaries may be out of date or incorrect.
- Full information on the uses of the agricultural land such as the type of husbandry, severance and major accommodation works is not known at this stage and would be obtained as part of the assessment to inform the ES through an agricultural questionnaire to landowners. The assessment of the effect on individual farm business is limited to an assessment of the approximate land take and the proportion of land lost to the business.
- Information on community facilities has been primarily based on desk-based research using Google Maps. This may not contain the most up to date information therefore the list of community facilities outlined in section 12.5 should be viewed as an indication of provisions rather than a comprehensive assessment of provisions.
- Traffic data has not been used to support the Simple assessments for amenity and driver stress. Therefore, the assessments are qualitative in nature and will be assessed in further detail in the ES.
  At this stage, Private Property, Local Economy and Community Land assessments have only been undertaken to a DMRB Scoping level. These assessments will be considered in greater detail within the ES.

12.9 Design, mitigation and enhancement measures

Construction

12.9.1 Mitigation measures of relevance during construction include the following:

- A Construction Environmental Management Plan (CEMP) would be prepared by the appointed Contractor and implemented during the construction period. The CEMP would ensure that the construction of the scheme is undertaken in as sensitive a manner as possible, with regards to people within the local community.
- A Traffic Management Plan (TMP) would be implemented during the construction phase of the scheme. The TMP would ensure that access is maintained and disruption is minimised wherever practicable, and would include measures to minimise severance by ensuring diversions for pedestrians are well signed, alternative access arrangements are made, and access to properties are retained.
- Effects upon NMUs would be minimised through ensuring that all temporary diversions for users of NMU amenities around the work site are clearly signed, with alternative access arrangements maintained through the full construction period, as required.

- Reinstatement measures would be implemented if agricultural land during the construction phase is altered, damaged or lost, ensuring that land is reinstated to its previous ALC grade prior to works commencing.
- On-going consultation to take into account the individual needs of landowners and inform mitigation design if agreed, such as the location of replacement access points.
- Compensation would be explored for landowners should agricultural land, individual farm businesses and private property currently in use be directly affected during construction of the scheme, through the Compulsory Purchase Acquisition mechanism.
- Management of soils: In areas of land which would be temporarily acquired, soils would be managed in accordance with Defra (2009) 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' whilst a Soil Handling and Management Plan will be followed which will include details of how agricultural land will be restored at the end of construction.

Operation

12.9.2 Mitigation measures of relevance during operation include the following:

- An NMU strategy has been produced which sets out proposals for changes to NMU routes. These include the locations for diversions of existing NMU routes, new crossings, potential cycle routes and PRoWs to be extinguished.
- For individual farm businesses adversely affected by the scheme through loss of farm access points, replacement access would be provided.
- Compensation would be explored for landowners should agricultural land, individual farm businesses and private property currently in use be directly affected during operation of the scheme, through the Compulsory Purchase Acquisition mechanism.

12.10 Assessment of effects

Construction

Human health and wellbeing effects

12.10.1 The temporary closure or diversions of NMU facilities during construction has the potential to result in temporary increases in journey times and lengths for NMUs which would increase levels of physical activity for NMUs. Any temporary journey length increases would be considered beneficial in terms of effects on human health and wellbeing, with a reduction in risk of relative all-cause mortality. Wellbeing and therefore a person's state of feeling comfortable and happy, could be temporarily affected through the presence of construction related machinery, lighting and changes in traffic flows. Temporary severance to routes connecting to community facilities and the subsequent enjoyment of using these facilities, as well as temporary impacts to private property / businesses could cause stress and health issues for people. Refer to section 12.8 for the assumptions and limitations regarding the assessment of human health and wellbeing.

Non-motorised users

12.10.2 Slight Adverse effects are predicted for 12 PRoWs WN 23/10, WN 23/12, WN 23/32, WN 23/33, WN 23/38, Y 27/10, Y 27/20, Y 27/29, Y 27/7, Y 27/9, Y 27/UN, Y 30/28, the Celtic Way and 2 footways between Sparkford to Queen Camel and Howell Hill to Camel Cross with construction works resulting in temporary journey length and time increases. No effects are anticipated for 16 PRoWs WN 23/11, WN 23/14, WN 23/15, WN 23/37, WN 27/14, WN 27/16, WN 27/4, WN 27/6, Y 27/11, Y 27/21, Y 27/22, Y 27/27, Y 27/6, Y 30/24, Y 30/29, Y 30/UN, Route 26 cycle route and a footway at Church Street, Podimore.

12.10.3 Mitigation measures such as the creation of diversions routes (refer to section 12.9) would be implemented, to ensure that users of these facilities would not be significantly affected.

12.10.4 A temporary on balance Slight Adverse effect is anticipated for NMUs as a result of the scheme. This is not considered to be significant.

Amenity

12.10.5 As stated in section 12.5, 12 PRoWs, 2 footways and a long-distance route would be temporarily affected during construction and therefore existing barriers between people and traffic are likely to be altered. Subsequently footpath widths could be changed, NMUs could be moved closer to traffic and barriers including street furniture and planting temporarily may be removed, to allow for construction traffic. Therefore, construction works could alter peoples' perception of fear and safety and detrimentally affect the pleasantness of journeys for people for a temporary period. However, the provision of mitigation described in section 12.9 would ensure that effects on people and the local community are minimised.

12.10.6 As such, an overall Slight Adverse effect on amenity is predicted for the scheme. This is not considered to be significant.

Severance

12.10.7 The severance of NMU routes and potential effects on access to community facilities are assessed in Table 12.12. Taking an on-balance approach, it is anticipated that there would be a Slight Adverse effect on NMU access to community facilities during construction.

Table 12.12: Severance assessment for the scheme

Community facility	NMU route connecting to community facility	Effect during construction and operation
The Podymore Inn public house	Footpath Y 30/UN Footpath Y 30/24 Bridleway Y 30/29	There would be no change to these footpaths.
	Bridleway Y 30/28	This bridleway would experience a minor adverse change in journey length and time. This bridleway recorded a small number of NMUs in the NMU count, indicating that the bridleway is used. Mitigation is therefore important.
West Camel Methodist church	Footpath Y 27/6	There would be no change to this footpath.
	Footpath Y 27/9 Footpath Y 27/10 Footpath Y 27/29	These footpaths would experience a minor adverse change in journey length and time. Footpath Y 27/9 recorded a number of NMUs in the NMU count.
	Restricted Byway Y 27/20	This byway would experience a negligible adverse change in journey length and time. This byway recorded a number of NMUs in the NMU count.
Sparkford Inn public house	Footpath WN 27/16 Footpath WN 27/14	There would be no change to these footpaths
	Footpath WN 23/38	This footpath would experience a minor adverse change in journey length and time. This footpath experienced a high number of NMUs in the NMU survey count, indicating that the footway is regularly used and therefore the importance that any adverse effects should be mitigated against.

Driver stress

12.10.8 During construction, vehicles would need to travel through road works within the scheme area, with associated delays to journey time due to congestion and heavily fluctuating traffic flows. At this early stage of design, traffic management is likely to be temporarily required on the A303 between March 2020 and February 2023 and adjoining side roads, which would comprise temporary speed limits and narrow lanes. The presence of roadworks and traffic management is likely to cause an increase in driver frustration along the A303, A359, B3151 and adjoining side roads, and result in an increase in the fear of accidents for vehicle travellers who use these roads. The provision of temporary signage would minimise route uncertainty amongst vehicle travellers.

12.10.9 Given the increases in driver frustration and fear of accidents, driver stress is likely to be High along the A303 and A359 during construction and Moderate along the B3151, and would increase from the baseline. Driver stress is not predicted to increase on side roads connecting to the A303.

12.10.10 Taking into account the comprehensive TMP which would be implemented, diversions that are adequately signposted and a phasing plan, the overall changes in driver stress during construction of the scheme are considered to be not significant and a temporary Slight Adverse effect is predicted.

Demolition of private property and associated land take

12.10.11 There is the potential for adverse effects as a result of the scheme, relating to the demolition of one farm building approximately 850m to the east of Podimore and also the requirement for land take from private property. However, as the full details of the construction footprint are not yet known, specific details on demolition and land take will be included as part of the ES.

Community Land and Community Facilities

12.10.12 Based on an initial scoping exercise, during construction, the scheme would result in traffic management measures, which may result in temporary speed reductions, temporary traffic lights, and single direction traffic. This could increase journey times and therefore affect those travelling to community facilities, such as the 2 churches within the study area.

12.10.13 Although Hazlegrove Preparatory School is located outside of the 250m study area, the sole private access to the school is currently via the Hazlegrove Roundabout, which falls within the study area. The scheme would permanently change this access to the school, which would potentially cause disruption to the community facility.

Local economy

12.10.14 Based on an initial scoping exercise, the scheme would require new construction workforce, which if local, could have a beneficial effect on employment rates. However, because of the size of the scheme, this effect is unlikely to be significant.

12.10.15 For the duration of the construction phase, there would be construction workers on-site. It is anticipated that there would be a slight and indirect temporary beneficial effect on the local economy as a result of these workers using local facilities, for example hospitality and catering establishments. This effect is also unlikely to be significant as any uplift would be minor for a scheme of this size, taking into account the mitigation described in section 12.9.

Agricultural land as a national resource

12.10.16 The need for temporary associated agricultural land take along the scheme is likely, therefore there is the potential for adverse effects. However, in the absence of construction information, the extent of agricultural land acquisition during construction will be determined as part of the on-going assessment and reported within the ES.

Individual farm businesses

12.10.17 The acquisition of temporary land take belonging to individual farm businesses is likely therefore there is the potential for adverse effects. However, as the construction footprint is unknown at this stage, the extent of land take of individual farm businesses will be determined as part of the on-going assessment and reported within the ES.

Operation

Human health and wellbeing effects

12.10.18 Permanent changes to NMU facilities have the potential to alter journey times and lengths for NMUs which would permanently increase levels of physical activity of NMUs in the area. Any permanent journey length increases would be considered beneficial in terms of human health and wellbeing, with a

reduction in all-cause mortality. Conversely, journey length decreases which could occur through provision of new and improved facilities would result in adverse effects on human health and wellbeing. Wellbeing, and therefore a person's state of feeling comfortable and happy, would be permanently affected through any potential changes in amenity due to changes in exposure to traffic. Severance to routes connecting to community facilities and the subsequent enjoyment of using the facilities and permanent impacts to private property and associated businesses could cause stress and health issues for people. Refer to section 12.8 for the assumptions and limitations regarding the assessment of human health and wellbeing.

Non-motorised users

12.10.19 Approximately 16 NMU facilities could be directly affected by the scheme, with permanent changes to journey length, provision of new facilities or degradation to existing facilities for NMUs. An NMU strategy has been developed alongside the scheme design, following consultation with the public, Somerset County Council's Right of Way Officer and stakeholder groups and taking into account NMU counts (refer to section 12.9), which would comprise new facilities for NMUs in operation.

12.10.20 No change in journey length or facilities are predicted for PRoWs WN 23/14, WN 23/15, WN 23/37, WN 27/14, WN 27/4, WN 27/6, Y 27/11, Y 27/20, Y 27/21, Y 27/22, Y 27/27, Y 27/6, Y 30/24, Y 30/29, Y 30/UN, Route 26 Cycle Route and footway Church St. Podimore.

12.10.21 Based on the assessment in Table 12.13, an on-balance Slight Adverse effect is anticipated on NMUs as a result of the scheme. This is not considered to be significant.

Table 12.13: Significance of effects for NMUs during operation

NMU amenity reference	Commentary	Change to journey length	Change to and within the vicinity of NMU facilities	Significance
PRoW WN 23/10	Potential for significant change in journey length for NMUs. The provision of new facilities would minimise adverse effects for NMUs.	Major Adverse	Slight Beneficial	Moderate Adverse
PRoW WN 23/11	No change in journey length or facilities.	No change	No change	Neutral
PRoW WN 23/12	This PRoW would be extinguished resulting in significant change in journey length in a registered park and garden. The provision of new facilities nearby would minimise adverse effects for NMUs.	Major Adverse	Slight Beneficial	Moderate Adverse
PRoW WN 23/32	Potential for significant change in journey length for NMUs. The provision of new facilities would be considered beneficial for NMUs.	Major Adverse	Slight Beneficial	Moderate Adverse
PRoW WN 23/33	Potential for significant change in journey length for NMUs. The provision of new facilities would minimise adverse effects for users of the PRoW. Low NMU flows were recorded here.	Major Adverse	Slight Beneficial	Moderate Adverse
PRoW WN 23/38	Potential journey length increases and decreases for NMUs. The provision of a new NMU crossing would be a major improvement for NMUs as the previous crossing was unsafe. Notable NMU flows were recorded here.	Minor Adverse	Major Beneficial	Large Adverse

NMU amenity reference	Commentary	Change to journey length	Change to and within the vicinity of NMU facilities	Significance
PRoW WN 27/16	This PRoW would be extinguished, potentially resulting in significant journey length increases for NMUs. As this PRoW would be extinguished and there would be a loss of facilities here a Major Adverse effect is predicted.	Major Adverse	Major Adverse	Large Adverse
PRoW Y 27/10	This PRoW would be diverted resulting in no journey length change. The provision of a new route towards Camel Hill and crossing towards Plowage Lane would be considered a major improvement for NMUs in this location.	No change	Major Beneficial	Large Beneficial
PRoW Y 27/29	This PRoW would be diverted resulting in no change to journey length. The provision of a new route towards Camel Hill and crossing to Plowage Lane would be considered a major improvement.	No change	Major Beneficial	Large Beneficial
PRoW Y 27/7	No change in journey length or facilities.	No change	No change	Slight Adverse
PRoW Y 27/9	Part of the PRoW would be extinguished resulting in negligible journey length changes. As this PRoW would be extinguished and there would be a loss of facilities here a Major Adverse effect is predicted.	Negligible Adverse	Major Adverse	Large Adverse
PRoW Y 27/UN	This PRoW would be extinguished and NMUs would be required to cross the A303 at Downhead which would considerably add to journey lengths. No NMUs were recorded, however this option would result in a degradation to NMU facilities.	Major Adverse	Major Adverse	Large Adverse
PRoW Y 30/28	Part of the PRoW would be extinguished and NMUs would be unable to cross the A303, resulting in large journey length increases. Low NMU flows were recorded here, whilst a new NMU route would be provided south of the A303.	Major Adverse	Minor Beneficial	Slight Adverse
Footway – A303 Howell Hill to Camel Cross	Potential for this footway to be partially located within the option footprint and currently there are no plans to improve it. The provision NMU crossing facilities would be considered an improvement.	No change	Slight Adverse	Slight Adverse
Footway – Sparkford to Queen Camel	No change to journey length for users of this footway. New routes would connect to this footway improving connections.	No change	Slight Beneficial	Slight Beneficial
Celtic Way	Potential for significant change in journey length for NMUs. The provision of new facilities would minimise adverse effects for NMUs.	Major Adverse	Slight Beneficial	Moderate Adverse

Amenity

12.10.22 During the operation of the scheme, the pleasantness of journeys experienced by NMUs is anticipated to change in a number of different ways. Several sections of the existing A303 would be closed to traffic, such as between the existing Hazlegrove junction and Howell Hill, and other sections of the existing A303 would be handed over to the local authority, such as between Plowage and Camel Cross. New NMU facilities would be provided as outlined in the NMU Strategy, which would improve amenity for NMUs. Table 12.14 below provides a high-level assessment of change in amenity for NMU facilities taking into account potential mitigation measures (refer to section 12.9).

12.10.23 No change in amenity is predicted during operation for PRoWs WN 23/37, PRoW WN 23/38, WN 27/14, WN 27/4, WN 27/6, Y 27/22, Y 27/27, Y 30/24, Y 30/29, Y 30/UN, Route 26 cycle route, footways at Church St. Podimore and Sparkford, to Queen Camel.

12.10.24 Based on the assessment in Table 12.14 below, an on balance Moderate Beneficial effect is anticipated on NMUs as a result of the scheme. This is considered to be significant.

Table 12.14: Change in amenity for facilities during operation

NMU facility	Change in amenity in operation	Significance
PRoW WN 23/10	Amenity improved from very poor to acceptable with PRoWs diverted along a new side road between Hazlegrove junction and Camel Hill.	Moderate Beneficial
PRoW WN 23/11	Amenity improved from very poor to poor with a new route provided alongside the stopped up existing A303 and the PRoW diverted over bridge to the east, however NMUs would still be required to cross the A359 at-grade.	Slight Beneficial
PRoW WN 23/12	This PRoW would be extinguished, with a new crossing provided to the east.	Large Beneficial
PRoW WN 23/14	This A303 section would be stopped up for traffic and therefore amenity would improve from very poor to good.	Large Beneficial
PRoW WN 23/15	Gason Lane would no longer connect to the A303, so a reduction in traffic and slight improvement in amenity would be anticipated, although this would remain as acceptable.	Slight Beneficial
PRoW WN 23/32	Amenity improved from very poor to acceptable with this PRoW diverted along a new side road between Hazlegrove junction and Camel Hill.	Moderate Beneficial
PRoW WN 23/33	Amenity improved from very poor to acceptable with this PRoW diverted along a new side road between Hazlegrove junction and Camel Hill.	Moderate Beneficial
PRoW WN 27/16	This PRoW would be extinguished.	Large Adverse
PRoW Y 27/10	The slip roads for the new road would be brought closer to PRoW slightly reducing amenity from acceptable to poor.	Slight Adverse
PRoW Y 27/11	This section of the B3151 would be stopped for traffic and therefore amenity would improve from poor to good.	Large Beneficial
PRoW Y 27/20	The slip roads for the new road would be brought closer to PRoW slightly reducing amenity from acceptable to poor.	Slight Adverse
PRoW Y 27/21	This section of A303 would become a local road meaning a reduction in traffic and slight improvement in amenity from very poor to poor.	Slight Beneficial
PRoW Y 27/29	The slip roads for the new road would be brought closer to PRoW slightly reducing amenity from acceptable to poor.	Slight Adverse
PRoW Y 27/6	This section of A303 would become a local road meaning a reduction in traffic and slight improvement in amenity from poor to acceptable.	Slight Beneficial
PRoW Y 27/7	This A303 section would be stopped up for traffic and therefore amenity would improve from very poor to good.	Large Beneficial
PRoW Y 27/9	Amenity improved from very poor to acceptable with this PRoW diverted over bridge.	Moderate Beneficial
PRoW Y 27/UN	This PRoW would be extinguished.	Large Adverse
PRoW Y 30/28	PRoWs would be diverted and the existing crossing extinguished so amenity would improve from very poor to good.	Large Beneficial
Footway – A303 Howell Hill to Camel Cross	This section of A303 would become a local road meaning a reduction in traffic and slight improvement in amenity from poor to acceptable.	Slight Beneficial
Celtic Way	Amenity improved from very poor to acceptable with PRoWs diverted along a new side road between Hazelgrove junction and Camel Hill.	Moderate Beneficial

Severance

12.10.25 The severance of NMU routes and potential effects on access to community facilities are assessed in Table 12.12. Taking an on-balance approach, it is anticipated that there would be a Slight Adverse effect on NMU access to community facilities during the operation of the scheme.

Motorised travellers view from the road

12.10.26 The scheme would be online and adjacent to the existing A303 and is situated in a heavily rural landscape, with agricultural land dominating the scene away from the A303, although the existing A303 does form a prominent feature throughout its length. No view to the wider area is anticipated for motorised travellers between Camel Cross and Conegore Corner, with the new road set in cutting for approximately 1.5km. For the section in cutting, overbridges would be visible for motorised travellers. The new junction at Hazlegrove would be grade-separated and at this location motorised travellers would be able to see overbridges, mitigation planting, earth bunds and acoustic fencing.

12.10.27 The section of new road between Conegore Corner and Camel Hill would be on an embankment, with overbridges provided at several locations along the length of the route. Mitigation planting would be provided alongside the scheme, which would gradually establish over time, eventually screening any open views to the wider area, such as along the ridgeline between Sparkford and Podimore. The provision of bunds, the presence of field boundaries, hedgerows and acoustic fencing would further limit views for vehicle travellers and result in a Restricted view. Nonetheless, there would still be some far-reaching views to the wider area for vehicle travellers between Podimore and Conegore Corner and also at Camel Hill, to a high-quality landscape.

12.10.28 An overall Slight Beneficial effect is anticipated for vehicle travellers with open views from the new road where they were previously restricted, although as mitigation planting establishes over time effects would gradually dissipate to Neutral.

Driver stress

12.10.29 In the first 15years after opening driver stress is predicted to decrease along the A303, with reduced congestion and decreased levels of driver frustration, with vehicle travellers able to drive along the road at a more consistent speed, giving improved journey time reliability, particularly with vehicles no longer required to stop at Hazlegrove junction travelling along the A303. The fear of potential accidents is also predicted to improve with a new safety barrier provided and NMUs moved off the network with the provision of new crossing facilities, and a predicted improvement in the accident record. Route uncertainty has not been considered at this stage, although it is anticipated that this would generally improve through the provision of new signage and gantries designed to align with current standards and methodology (i.e. reduced clutter, clear messages and inform travellers). Driver stress is predicted to decrease from High to Low during operation of the scheme, predominantly due to vehicles able to travel at consistent speeds, along with a reduction in fear of potential accidents and route uncertainty.

12.10.30 An overall Moderate Beneficial effect is anticipated once in operation for driver stress. This is considered to be significant.

Demolition of private property and associated land take

12.10.31 Potential demolition and land take would be required to construct the scheme and therefore potential effects are considered for the construction phase only. Therefore, this sub-factor has been scoped out of further assessment for effects during operation.

Community land and community facilities

12.10.32 Based on an initial scoping exercise, it is not anticipated that community land would be affected; however, with regards to community facilities, the scheme would result in relief from congestion on the local road network, which is likely to improve access to community facilities in the study area, in terms of journey time.

12.10.33 Although Hazlegrove Preparatory School is located outside of the 250m study area boundary, the sole private access to the school is currently via the Hazlegrove Roundabout, which falls within the study area. The scheme would re-route access to the school, with a new slip road provided from a new grade-separated junction. During operation, there is therefore potential for access to the school to be improved. The creation of an additional junction separate to the A303 would separate traffic for the school from general vehicular traffic. This could also ease congestion around the entrance to the school, thereby improving access.

Local economy

12.10.34 Based on an initial scoping exercise, direct operational employment is not expected to be created as a result of the scheme. However, there are likely to be increased indirect employment opportunities related to reduced congestion and improved journey times.

Agricultural land as a national resource

12.10.35 The scheme would require the land take of approximately 40 hectares of agricultural land indicated by the MAFF as ALC Grade 3. According to Table 12.8, this would result in a Moderate Adverse effect.

Individual farm businesses

12.10.36 There are approximately 22 farms with the potential to be directly affected by the proposed scheme. It is anticipated that this would result in an overall Moderate Adverse effect, due to severance of land use for agricultural purposes and permanent land take requirements.

12.10.37 Compensation would be explored for landowners should agricultural land, individual farm businesses and private property currently in use be directly affected during construction of the scheme, through the Compulsory Purchase Acquisition mechanism and will be reported in the ES.

12.11 Additional monitoring requirements

12.11.1 Monitoring requirements will be explored as part of the on-going assessment and reported within the ES following the assessment of effects on human health and wellbeing and further discussions with land-owners and the community.

12.12 Conclusions

Human health and wellbeing

12.12.1 Any temporary increases in journey length and time and subsequently in NMU physical activity resulting from diversions/closures to NMU routes would be considered beneficial for human health and wellbeing. Temporary reductions in amenity, severance to routes connecting to community facilities and impacts to private property would detrimentally affect people's health and wellbeing.

12.12.2 Permanent increases and decreases to journey length and time resulting from changes to NMU facilities from the baseline would be likely and result in human health and wellbeing benefits and disbenefits. Changes to amenity, potential severance to routes connecting to community facilities and impacts to private property have potential to affect people's health and wellbeing.

Non-motorised users

12.12.3 Journey length and time are predicted to temporarily increase for a number of NMU facilities during construction resulting in a Slight Adverse effect for NMUs. During operation, some benefits and adverse effects are predicted to occur, due to increase or decreases in journey length, provision of new facilities or degradation to existing facilities. On balance, a Slight Adverse effect has been predicted.

Amenity

12.12.4 During construction, existing barriers between people and traffic would change resulting in a Slight Adverse effect on amenity. Once in operation, amenity would change in a number of ways, with barriers between people and traffic changed, changes in flows and provision of new facilities. The scheme would result in a Moderate Beneficial effect on amenity on balance.

Severance

12.12.5 A number of NMU routes connecting to community facilities would experience Slight Adverse effects to journey time and quality during both construction and operation.

Motorised travellers view from the road

12.12.6 The scheme would be likely to result in some new views for vehicle travellers. However, the establishment of vegetation alongside the new road during Year 1 of operation would gradually screen open views to the wider area in part. An overall Slight Beneficial effect is anticipated with a shift from restricted views to with open views in part from the new road.

Driver stress

12.12.7 A Slight Adverse effect is predicted for driver stress due to the temporary presence of traffic management which would cause increases in driver frustration and fear of accidents, although the provision of a TMP would minimise effects on vehicle travellers. During operation, a Moderate Beneficial effect is predicted with vehicle travellers able to drive along the road at a more consistent speed, and improved journey time reliability.

Demolition of private property and associated land take

12.12.8 Due to the absence of construction information, demolition of private property and associated land take for the scheme is unknown.

12.12.9 Effects on private property and land take would occur only during the construction phase of the scheme, and would dissipate during the operation phase, and therefore effects on demolition of private property and associated land take would be Neutral during operation.

Community Land and Facilities

12.12.10 A scoping exercise has been undertaken for the community land and facilities sub-factor, which noted potential changes to journey times and to access to community facilities during construction and operation.

Local economy

12.12.11 A scoping exercise has been undertaken for the Local Economy sub-factor, which noted the potential creation of jobs as a result of the scheme during construction.

12.12.12 During operation, permanent jobs are not anticipated to be created.

Agricultural land

12.12.13 Due to the absence of construction information, effects on agricultural land during construction cannot yet be deduced though there is the potential for agricultural land take resulting in potential adverse effects. Due to the ALC grade and size of required land take for scheme operation, a Moderate Adverse effect is anticipated.

Individual farm businesses

12.12.14 Due to the absence of construction information, effects on individual farm businesses during construction cannot yet be deduced though there is the potential for land take resulting in potential adverse effects.

12.12.15 Due to the number of land parcels anticipated to experience a significant magnitude of land take, particularly small land parcels, a Moderate Adverse effect is anticipated.

13 Road drainage and the water environment

13.1 Introduction

13.1.1 This chapter presents the ongoing work for the assessment of the potential effects of the scheme upon the water environment, during both construction and operation. The assessment has been undertaken in accordance with Design Manual for Roads and Bridges (DMRB) Volume 11, Section 2, Part 4[136], and DMRB Volume 11, Section 3, Part 10[137].

13.1.2 For the purposes of this assessment, the water environment is assumed to comprise:

- Surface waters (ponds, lakes, watercourses)
- Groundwater, including Source Protection Zones (SPZ)
- Nitrate Vulnerable Zones (NVZ)
- Abstractions and discharges
- Flood risk

13.1.3 The construction and operation of highways can have a range of effects on the water environment, as follows:

- Contamination of surface or ground waters with sediments or pollutants, thereby affecting their ecological or fishery value or their value as a source of water for human use.
- Contamination can occur as a result of construction site run-off associated with contaminated land, spillages during construction, routine run-off during operation, or spillages during operation (usually following road accidents).
- Increased flood risk as a result of increased areas of impermeable ground surfaces, loss of flood plain land, or changes in road drainage.

13.1.4 The results of the assessment contained in this chapter were reported within the Environmental Impact Assessment Scoping Report submitted to the Planning Inspectorate in November 2017. Following receipt of the Scoping Opinion from PINS on 9 January 2018 (further information contained within section 4.1), it has been recommended as part of this Scoping Opinion that the road drainage and water environment assessment is scoped in to the Environmental Statement (ES). The information contained within the Scoping Opinion will be reviewed in detail and consultation will continue with the relevant consultation bodies to confirm the scope of the road drainage and water environment assessment to be included as part of the ES.

[136] Highways England (2008) DMRB Volume 11 Section 2 Part 4 HA 204/08 Scoping of Environmental Impact Assessments.
[137] Highways England (2008) DMRB Volume 11 Section 3 Part 10 HD 45/09 Road Drainage and the Water Environment.

13.2 Legislation and policy context

Water Framework Directive (2000/60/EC)

13.2.1 The key EU legislation covering the water environment which has a bearing on this scheme is the Water Framework Directive (WFD) (2000/60/EC), which establishes a framework for the management of water resources throughout the European Union. The WFD are translated into UK law through the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. The key objectives of the WFD, provided for in the area River Basin Management Plan (RBMP), are to:

- Prevent deterioration, enhance and restore bodies of surface water, achieve good chemical and ecological status of such water and reduce pollution from discharges and emissions of hazardous substances
- Protect, enhance and restore all bodies of groundwater, achieve good chemical and quantitative status of groundwater, prevent the pollution and deterioration of groundwater, and ensure a balance between groundwater abstraction and replenishment
- Preserve protected areas

The Environmental Permitting Regulations (2010)

13.2.2 The Environmental Permitting Regulations (EPR) 2010 aim to protect groundwater and surface waters from pollution by controlling the inputs of potentially harmful and polluting substances. The Regulations implement the WFD and the Groundwater Daughter Directive 2006. The EPR replace those parts of the Water Resources Act (WRA) 1991 that relate to the regulation of discharges to controlled waters (including groundwater).

The Highways Act 1980

13.2.3 Under the Highways Act 1980 (Section 100), the Highways Agency has a right to discharge runoff from highways into inland and tidal waters, or groundwaters (i.e. controlled waters as defined under the Water Resources Act 1991), but is subject to the requirement not to pollute controlled waters.

The Water Resources Act (1991)

13.2.4 Section 93 of the WRA provides for the establishment of groundwater protection zones. The requirements of Section 93 are implemented and set out in the Environment Agency's Groundwater protection guides[138] covering: requirements, permissions, risk assessments and controls (previously covered in GP3). Source Protection Zones (SPZs) are defined for groundwater supplies used for human consumption. The Environment Agency's position statement relating to the use of sustainable drainage systems within these guides.

[138] Department for Environment Food and Rural Affairs (2017) Groundwater protection [online] available at: https://www.gov.uk/government/collections/groundwater-protection (last accessed January 2018).

The Land Drainage Act (1991)

13.2.5 The Land Drainage Act 1991 is also relevant to manage flood risk for any works within 8 metres of ordinary watercourses.

The National Policy Statement for National Networks

13.2.6 The National Policy Statement for National Networks (NPSNN)[139] 2014 has been considered within this assessment. This policy confirms that applications for schemes in Flood Zones 2 and 3 should be accompanied by a Flood Risk Assessment (FRA). In addition, applications for schemes that are located within Flood Zone 1 and are 1ha in area or greater, or subject to other sources of flooding (local watercourses, surface water, groundwater or reservoirs), or where the Environment Agency has notified the Local Planning Authority (LPA) that there are critical drainage problems, should also be accompanied by an FRA. For projects which may be affected by, or may add to flood risk, sufficiently early pre-application discussions should be sought between the applicant and the Environment Agency, and, where relevant, other flood risk management bodies (Paragraph 5.96 of the NPSNN). Surface water flood issues also should be understood and then taken account of (Paragraph 5.97 of the NPSNN)).

13.3 Assessment methodology

13.3.1 Assessment methodology for defining the significance of effects upon road drainage and the water environment is contained within Section 14.12 of the Environmental Impact Assessment Scoping Report submitted to the Planning Inspectorate in November 2017. The Scoping Report can be accessed here:

13.3.2 https://infrastructure.planninginspectorate.gov.uk/projects/south-west/a303-sparkford-to-ilchester/?ipcsection=docs.

13.4 Study area

13.4.1 The study area encompasses surface water features and human health receptors (taken to be drinking water abstractions in the context of this chapter) within a 1 kilometre area around the scheme. This is extended where there are features that may be affected by pollutants transported downstream of the works, and therefore these features are included in the assessment as appropriate. Additionally, for groundwater, the potential zone of impact during construction and operation phases is assessed on the underlying WFD groundwater body.

13.4.2 The study area is based on professional judgement to ensure that effects are sufficiently identified and is extended where there are features downstream of the scheme that may be affected.

[139] Department for Transport (2014), National Networks National Policy Statement. Available online at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf

13.5 Existing baseline

13.5.1 Information to assist with the existing baseline has been collected from the following sources:

- RBMP South West River Basin District[140];
- Environment Agency's Catchment Data Explorer[141];
- Environment Agency's website: "What's In Your Backyard?"[142];
- Environment Agency's website: Flood Map for Planning[143]; and
- DEFRA's 'Magic' interactive map[144].

Surface water

13.5.2 The land alongside the scheme is mainly used for arable cropping, interspersed with residential properties and farms. There is a network of drainage ditches and field drains, some of which are spring fed and some are partially culverted where they flow under the existing A303. This network forms tributaries of the Cam - Lower waterbody to the south of the scheme, Park Brook to the west of the scheme and Dyke Brook to the north of the scheme.

13.5.3 The Cam - Lower WFD waterbody (GB108052015650) is located approximately 680 metres to the south of the scheme. It is not classified as an artificial or heavily modified water body (HMWB) and is currently rated as Moderate status in the 2015 South West RBMP with objective of achieving Good status by 2027.

13.5.4 The Yeo Ds Over Compton WFD waterbody (GB108052015682) is the downstream waterbody of Cam - Lower and is located approximately 4.4 kilometres downstream to the south-west of the scheme. It is classified as a HMWB and is currently rated as Moderate potential in the 2015 South West RBMP with objective of achieving Good potential by 2027. It supports the Wet Moor Sites SSSI and the Somerset Levels & Moors SPA and Ramsar site.

13.5.5 To the south-west and to the north of the scheme, the drainage ditches outfall into Park Brook (1.2 kilometres downstream) and Dyke Brook (1.6 kilometres downstream). These are not classified as WFD waterbodies but are tributaries of the Cary - source to conf with KSD WFD waterbody (GB108052015140, which is located to the west of the scheme, approximately 4.5 kilometres downstream from the eastern section of the scheme via Dyke Brook and approximately 2.9 kilometres downstream from the west end of the scheme via Park Brook. The Cary - source to conf with KSD WFD waterbody is not

[140] Environment Agency (2015) RBMP, South West River Basin District [online Available https://www.gov.uk/government/collections/river-basin-management-plans-2015 (last accessed November 2017).
[141] Environment Agency (2018) Catchment Data Explorer: Cam – Lower [online] available at http://environment.data.gov.uk/catchment-planning/WaterBody/GB108052015650 (last accessed November 2017).
[142] Environment Agency. What's In Your Backyard? Available at http://apps.environment-agency.gov.uk/wiyby/default.aspx, accessed 24/04/2017.
[143] Environment Agency (2017). Flood Map for Planning. Available at https://flood-map-for-planning.service.gov.uk/, accessed 05/05/2017.
[144] Magic Interactive Mapping. Available at http://www.magic.defra.gov.uk, accessed 24/04/2017.

designated as an artificial or HMWB and is currently rated as Moderate status in the 2015 South West RBMP with objective of achieving Good status by 2027.

13.5.6 The Cary - source to conf with KSD WFD waterbody is designated as an aquatic Local Wildlife Site (LWS) and supports the King's Sedgemoor SSSI, the Somerset Levels & Moors SPA and Ramsar and the Somerset Levels National Nature Reserves (NNR).

Groundwater

13.5.7 There is no underlying WFD groundwater body within the study area. However, the groundwater is mainly classified as Secondary A both for superficial and bedrock deposits.

13.5.8 The scheme lies over an area of bedrock classed as a Secondary A aquifer with a small area classed as Secondary B around Queen Camel[145]. To the north and to the south of the A303 there are superficial groundwater layers classed as a Secondary A aquifer. The groundwater vulnerability is predominantly Minor Aquifer Intermediate with areas of Minor Aquifer High around the surface waterbodies.

13.5.9 Due to the geology of the area, which is mainly loamy and clay soils, the natural drainage system drains to surface watercourses with impeded drainage to the groundwater[146]. However, this is not valid for the areas along Dyke Brook and Park Brook where, despite the loamy and clay soil, the area is naturally wet with a high-water table and the natural drainage system drains to the local groundwater feeding into surface watercourses.

13.5.10 There are no SPZs within the study area, the closest is an SPZ2 4.4 kilometres to the south-east of the eastern end of the scheme.

Flood zones

13.5.11 There are areas to the north and south of the scheme classified as Flood Zones 3 and 2, mainly associated with the Dyke Brook and River Cam. These zones are defined as follows:

- Flood Zone 3 is land assessed as having a 1-in-100 or greater annual probability of river flooding (>1%)
- Flood Zone 2 is land having a 1-in-1000 or greater annual probability of river flooding (0.1%)

[145] Environment Agency (2018) What's In Your Backyard? [online] available at: http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=360500.0&y=126500.0&topic=groundwater&ep=map&scale=9&location=Sparkford, Somerset&lang=_e&layerGroups=default&distance=&textonly=off#x=357685&y=125967&lg=4,10,&scale=7 (last accessed November 2017).
[146] Cranfield University (2017) Soilscapes Map [online] available at: http://www.landis.org.uk/soilscapes/ (last accessed Novemebr 2017).

13.5.12 Flood defences are located to the south of the scheme in Queen Camel, West Camel and Bridgehampton. However, there are no areas benefitting from flood defences.

Protected zones and sites

13.5.13 The surface water to the north of the existing A303 is within an NVZ. This is likely to be due to the nitrates contained in runoff from agricultural land that is causing, or could cause, pollution of the water environment.

13.5.14 The scheme is located within the SSSI Impact Risk Zone (IRZs) of Sparkford Wood, Babcary Meadows, East Polden Grassland and Wet Moor SSSIs. IRZs have been developed by Natural England to define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified, and indicate the types of development proposal which could potentially have adverse impacts.

13.5.15 Sparkford Wood SSSI, is located 1.4 kilometres north-east of the scheme and is designated for broadleaved, mixed and yew woodland. Babcary Meadows SSSI, is located 3.9 kilometres to the north of the scheme and is designated for neutral grassland. East Polden Grassland SSSI, is located 4.2 kilometres north-west of the scheme and is designated for calcareous grassland. However, these sites are not hydraulically linked to the scheme, and they are therefore scoped out of this assessment.

13.5.16 The Wet Moor SSSI is located 15.5 kilometres to the west of the scheme, via the Cam – Lower waterbody and is designated for birds, invertebrates, neutral grassland, rivers and streams, standing open water and canals. The Wet Moor SSSI forms part of the Somerset Levels & Moors SPA and Ramsar site.

13.5.17 The King's Sedgemoor SSSI is located to the west of the scheme, 17.9 kilometres via Park Brook and 20 kilometres via Dyke Brook. It is designated for birds, invertebrates, otters, neutral grassland, standing open water and canals. The King's Sedgemoor SSSI include the Somerset Levels NNR and forms part of the Somerset Levels & Moors SPA and Ramsar site.

13.5.18 Several LWS are located in the study area and are reported in Table 13.1. However, the LWS that are not water dependent or hydraulically linked with the scheme will not be considered further within this assessment.

Table 13.1: Existing LWS within the study area (from east to west)

LWS	Distance and direction from scheme	Features	To be considered within the assessment
Hazlegrove Park	Crossed by the scheme	Important assemblage of veteran trees and specialist invertebrate fauna	No
Sparkford Hill Copse	400m, south-east	Ancient woodland	No
Ridge Copse	50m, south	Semi-natural broadleaved woodland and quarry workings	No
Gason Lane Field	25m, south	Semi-improved calcareous grassland, with a narrow strip of broadleaved woodland	No
Camel Hill Transmitter Site	Adjacent, south	Unimproved calcareous grassland and semi-natural broadleaved woodland	No
Yarcombe Wood	840m, north	Ancient semi-natural broadleaved woodland and pond	Yes
Vale Farm Field	470m, north	Remnants of calcareous grassland	No
Parson's Steeple	230m, north	Ancient woodland site with semi-natural broadleaved woodland and mixed plantation stands	No
Lindsay House Quarry*	290m, north	Small quarry with herb rich calcareous grassland, scrub and broadleaved woodland	No
Annis Hill*	330m, north	Ancient semi-natural broadleaved woodland	No
Bower Plantation*	750m, north	Semi-natural broadleaved woodland	No
Cogberry Plantation	590m, north	Ancient semi-natural broadleaved woodland	No
River Cary	1.5km, north-west	Aquatic habitat with rare flora, bird and invertebrate interest including legally protected species	Yes
Downhead Manor Farm (candidate LWS[147])	Adjacent, north	Ancient semi-natural & semi-natural broadleaved woodland. Small quarry with herb rich calcareous grassland and broadleaved woodland and Secondary broadleaved woodland.	No – not hydraulically linked

* Included in Downhead Manor Farm Candidate LWS

Licenced abstractions

13.5.19 There are no surface water or groundwater abstractions in the study area. The closest surface water abstraction is approximately 2.9 kilometres south-west of the scheme, in Ilchester; while the closest groundwater abstraction is approximately 3.5 kilometres north-west of the scheme, in Charlton Adam[148]. As these lie outside of the study area, they will not be considered further within this assessment.

Consented discharges

13.5.20 The active consented discharges within 1 kilometres of the scheme[149] are reported in Table 13.2.

[147] Somerset Environmental Record Centre (2017). Evaluated Site Details – Around site at ST 5798 2543.
[148] Environment Agency. What's In Your Backyard? Available at: http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=360500.0&y=126500.0&topic=water_abstractions&ep=map&scale=9&location=Sparkford, Somerset&lang=_e&layerGroups=default&distance=&textonly=off#x=357226&y=125882&lg=2,1,&scale=7 accessed 26/04/2017
[149] Environment Agency. Environmental Permitting Regulations [online] available at: https://environment.data.gov.uk/public-register/view/search-water-discharge-consents (last accessed March 2017)

Table 13.2: Existing water consented discharges within 1km of the scheme

Owner	Location	Grid reference	Approximate distance and direction from the scheme	Nature of discharge
Chartman Limited	Wakes Garage, A359/A303, Sparkford, Somerset, BA22 7JE	ST6000025820	225m, south-east	Shop including garden centre/retail trade (not motor vehicle)
Mr M Penn	Haynes Motor Museum, Sparkford, Yeovil, Somerset	ST6090026900	860m, north-east	Single domestic property including farm house
Kelda Water Services (Estates) Limited	Dwelling, Eyewell House, Camel Hill, Queen Camel, Yeovil, Somerset	ST5875025300	35m, south	Multiple domestic property including farm houses
Wessex Water Services Ltd	Green Lane Pumping Station, Green Lane, Queen Camel, Somerset, BA22 7NP	ST5929424948	645m, south	Storm tank/combined sewer overflows on sewerage network (water company)
G P Spiller	Wales Farm, Queen Camel, Yeovil, Somerset, BA22 7PA	ST5849024640	780m, south	Farms (not house)/crop and animal rearing/plant nursery
Mr W J Down & Partners	Slocourt Farm, Urgashay, Yeovil, Somerset	ST5709024470	575m, south	Farms (not house)/crop and animal rearing/plant nursery
Wessex Water Services Limited	Frog Lane Pumping Station, West Camel, Somerset	ST5753024630	540m, south	Pumping station on sewerage network (water company)
D L & H L Board	Church Farm, Podimore, Yeovil, Somerset	ST5456024780	465m, south-west	Farms (not house)/crop and animal rearing/plant nursery
Wessex Water Services Ltd	Podimore Sewage Treatment Works	ST5443024700	630m, south west	Waste water/sewage treatment works (water company)

Contaminated land

13.5.21 No authorised landfills are present within the study area.

13.5.22 Three historic landfills are located to the east area of the scheme, as follows:

- Land Adjacent to Hazlegrove Park is adjacent to the existing A303 to the north-west of Sparkford and would be crossed by the scheme
- Camel Hill Quarry is approximately 160 metres to the south of the new Hazlegrove roundabout area
- Sparkford Refuse Tip that is approximately 770 metres to the south-east of the new Hazlegrove roundabout area

13.5.23 These areas might be subject to contamination; reference should be made to chapter 9 Geology and Soils for detailed information. The works would not affect Camel Hill Quarry and Sparkford Refuse Tip. In addition, these 2 historic landfills are not hydraulically linked to the scheme and will therefore not be considered further within this assessment.

13.6 Value (sensitivity of receptors)

13.6.1 The following receptors contained in Table 13.3 have been identified that could potentially be affected as a result of the scheme.

Table 13.3: Receptor sensitivities

Receptor	Receptor sensitivity	Reasoning
Drainage ditches	Low	Not designated under the WFD, some flow through non-aquatic LWS and downstream WFD waterbodies.
Ponds	Low	Not designated under the WFD and some are located within non-aquatic LWS.
Cam- Lower waterbody	Medium	WFD status of Moderate and a target of Good by 2027 and it also lies upstream of the Wet Moor SSSI and Somerset Level & Moors SPA and Ramsar Site.
The Yeo Ds Over Compton waterbody	Very High	Part of it is a European designated conservation site (Wet Moor SSSI and Somerset Level & Moors SPA and Ramsar Site).
The Dyke Brook The Park Brook	Medium	Although not designated under the WFD these are both tributaries of the Cary - source to conf with KSD waterbody, which have a target status of Good by 2027. It also supports the River Cary aquatic LWS.
The Cary	High	Source to conf with KSD. current WFD status of Moderate and a target of achieving Good status by 2027. In addition, it is designated as aquatic LWS and support the downstream King's Sedgemoor SSSI, Somerset Level and Moors SPA and Ramsar Site and Somerset Levels NNR.
The Groundwater (superficial deposit)	Medium	Although it is not designated under the WFD it is a Secondary A aquifer with groundwater vulnerability classified as Minor Aquifer Intermediate with areas of Minor Aquifer High. The groundwater is potentially in use as agricultural water supply (farming and domestic, aquaculture).
The Groundwater (bedrock deposit)	Medium	Although it is not designated under the WFD it is a Secondary A aquifer with areas of Secondary B aquifer. Its vulnerability is classified as Minor Aquifer Intermediate with areas of Minor Aquifer High. The groundwater is potentially in use as agricultural water supply (farming and domestic, aquaculture).
Flood Risk	Very High	The scheme lies in a floodplain with more than 100 residential properties. There are areas of Flood Zones 3 and 2 alongside Dyke Brook and Cary - Source to conf with KSD (approx. 1km to the north of the scheme) and Cam - Lower (500m to the south of the scheme). There are no areas benefitting from the presence of flood defences.

13.7 Consultation

13.7.1 A meeting was held with the Environment Agency on the 4 July 2017 to discuss the proposed scheme options in relation to aquatic ecology, flood risk and the WFD. Discussion was held relating to the assessment methodology, mitigation proposals and to confirm the Environment Agency's requirements.

13.7.2 A further meeting was held on the 7 December 2017, at which the scope of the ongoing assessment was discussed. Following the receipt of the Scoping Opinion received from the Planning Inspectorate in January 2018, further discussions regarding the scope of the assessment will be undertaken with the relevant environmental consultees, prior to the production of the ES.

13.8 Assumptions and limitations

13.8.1 A full quantitative assessment using the Step 1 and 2 Highways Agency Water Risk Assessment Tool (HAWRAT) model was not possible given the limited drainage information available at this stage of the scheme design. This assessment therefore represents a qualitative assessment based on professional judgement at this stage. It is recognised that a full HAWRAT assessment will need to be undertaken as part of the scheme's drainage design.

13.8.2 It is assumed that the design would ensure treatment/containment facilities are fully incorporated to control any risk to the water environment, and all mitigation measures in accordance with standard guidance will be adhered to.

13.9 Design, mitigation and enhancement measures

13.9.1 Without mitigation measures in place, there is the potential for mobilisation of sediment and contaminants from road runoff to the watercourses during construction. In addition, with attenuation of run-off, there is the potential for increased flood risk.

Construction

13.9.2 During construction, best practice measures for pollution prevention and water management would be implemented as part of a Construction Environmental Management Plan (CEMP), which would be produced for the scheme. Guidance on best practice in relation to pollution prevention and water management is set out in CIRIA's 'Environmental good practice on site'[150] and the Environment Agency's 'Protect groundwater and prevent groundwater pollution'[151].

13.9.3 To mitigate potential adverse effects upon surface waters and groundwater during the construction phase, the following measures would be implemented:

- All construction workers would be briefed on the importance of maintaining water quality, the location of surface water features, and the location and use of spill kits as part of the site induction
- The construction drainage network would incorporate measures (e.g. interceptors) to prevent the discharge of hydrocarbons to surface or ground water systems
- In areas where there is increased risk of hydrocarbon/chemical spillage and around hazardous substance stores, additional precautions would be taken. These will include bunding, impermeable bases, suitable drainage systems, and siting away from any open drainage channels
- Any stockpiled materials would be stored within enclosed areas to enable the runoff to be stored and treated where required

[150] Audus, Charles and Evans (2010) Environmental Good Practice on Site (Third Edition) (C692).
[151] Environment Agency (2017) Protect groundwater and prevent groundwater pollution [online] available at: https://www.gov.uk/government/publications/protect-groundwater-and-prevent-groundwater-pollution/protect-groundwater-and-prevent-groundwater-pollution (last accessed March 2017)

- Any concrete works would be carefully controlled and where required, any concrete tankers would be washed out in controlled areas
- All plant and machinery would be maintained in a good condition and any maintenance required would be undertaken within safe areas
- Pollution Prevention and Spill Response Procedures would be developed by the Contractor and a spill kit and clean up equipment maintained on site
- Wheel washers and dust suppression measures would be used to prevent the migration of pollutants
- Monitoring of the surface watercourses would be carried out before, during, and after construction to ensure no adverse impact on water quality

Operation

13.9.4 Where the assessment of the risks of pollution from road runoff shows the need for mitigation, there are several options available. The use of conventional drainage systems to reduce pollution is described in HD33 (DMRB 4.2). Vegetated drainage systems are described in HA103 (DMRB 4.2) and guidance on design of soakaways is given in HA118 (DMRB 4.2). Advice on Grassed Surface Water Channels for Highway Runoff is given in 119 (DMRB 4.2).

13.9.5 Vegetated systems can reduce the pollution risk and enhance aspects of the water environment and landscape, as well as benefiting biodiversity, and in such cases should be designed with the assistance of the appropriate specialist for landscape/biodiversity. However, it should be recognised that the primary function of the drainage system would be the attenuation and treatment of highway runoff. Drainage systems may be either active or passive in operation:

- Active systems (requiring operators)
  - Penstocks
  - Valves
  - Notched weirs
- Passive systems
  - Swales
  - Ponds and wetlands
  - Ditches
  - Basins and silt traps
  - Filter drains and soakaways
  - Oil separators

13.9.6 While there is no drainage strategy available at this stage of the scheme, in accordance with the requirements of the NPSNN and NPPF, surface water runoff would be attenuated to ensure there is no increase in surface water run-off rates from the scheme. Opportunities to provide a fully SuDS based drainage system will be explored and implemented where feasible.

13.10 Assessment of effects

Construction

13.10.1 Construction activities could mobilise sediments and contaminants through surface water runoff to the drainage ditches adjacent to the scheme. In the absence of adequate mitigation this could result in water quality deterioration. Chemical spillages/leaks during construction, for example fuel or oils, could have a similar result.

13.10.2 The CEMP would include mitigation measures specifically for runoff and spillages as described in section 13.9. Therefore, the impact of contaminated runoff and spillages would be Negligible for the drainage ditches and ponds, Cam - Lower, Yeo Ds Over Compton, Dyke Brook, Park Brook, Cary - Source to conf with KSD, Secondary A aquifer – groundwater superficial deposit and Secondary A aquifer – groundwater bedrock deposit. Consequently, the effect on all waterbodies would be Neutral.

13.10.3 Contaminated land disturbance is of concern due to the vicinity of the Land Adjacent to Hazlegrove Park historic landfill site. The drainage ditches, ponds, Dyke Brook, Cary - Source to conf with KSD, the Secondary A aquifer – groundwater superficial deposit and Secondary A aquifer – groundwater bedrock deposit are considered to be receptors for this potential impact. To prevent pollution from contaminated land, GI would be carried out prior to construction, with remediation or capping of known contaminated areas carried out where appropriate. Therefore, there would be a Negligible impact on the drainage ditches and ponds, the Dyke Brook, Cary - Source to conf with KSD and on the groundwater superficial and bedrock deposit.

13.10.4 Temporary and localised dewatering of areas of shallow groundwater due to high water table may be required where excavation works are necessary for the road construction (e.g. insertion of deep piling). This is considered to be a Negligible impact, and therefore, a Neutral effect as dewatering would be minimised where practicable through design. There is also the potential for effects on the waterbody to which the dewatering effluent would be discharged (assumed to be the drainage ditches). However, measures would be laid out within the CEMP to ensure settlement of suspended sediments within the discharged effluent and this would therefore be a Negligible impact, and a Neutral effect.

13.10.5 Changes to groundwater level or flow due to the presence of below ground structure are considered to be a Negligible impact, and therefore, a Neutral effect due to the mitigation measurement within the CEMP and consideration during the detailed design stage.

13.10.6 Mitigation within the CEMP, specific consideration of biological and hydromorphological conditions of the receiving watercourse during the detailed design stage and the timing of the works would reduce the physical impact due to the construction of new outfalls and the upgrade of existing outfalls. This is considered to be a Minor Adverse impact on drainage ditches and therefore would be a Neutral effect.

13.10.7 The construction assessment is summarised in Table 13.8.

Operation

13.10.8 Contaminants within surface water runoff due to traffic typically include vehicle emissions (including atmospheric deposition), vehicle part wear and vehicle leakages, catalytic converters, road surface erosion, and seasonal and regular maintenance practices. Possible contaminants include particulate solids, hydrocarbons (diesel, petroleum, lubricating oil leakages, and grease), heavy metals (especially copper and zinc but also cadmium, iron, lead and chromium in lesser amounts), oxides of nitrogen, sulphates, rubber, asbestos, tyre wear deposits including lead, zinc, and hydrocarbons, and de-icer during cold weather. All these can have adverse effects on receiving watercourses.

13.10.9 The details of the proposed drainage design are not known at the time of writing, but it is assumed for the purposes of this assessment that SuDS and pollution control measures would be incorporated within the design, which would reduce the levels of pollutants and provide protection to the surrounding watercourses from routine runoff and in the event of a major spillage or accident. The impact of surface water runoff would therefore be Negligible for drainage ditches, Cam - Lower, Yeo Ds Over Compton, Dyke Brook, Park Brook, Cary - Source to conf with KSD. Consequently, the effect would be Neutral for all the surface waterbodies.

13.10.10 Drainage ditches would be infilled to construct the road embankment. This would have a Moderate Adverse impact and therefore a Slight Adverse effect.

13.10.11 The design of the new outfall and the upgrade of those already present on the A303 would be carried out in accordance with Environment Agency guidance. This is considered to be a Negligible impact on drainage ditches, Dyke Brook, and Cary – Source to conf with KDS and therefore would be a Neutral effect for all of these surface waterbodies.

13.10.12 Piling may be required in some areas due to local geology (refer to chapter 9 Geology and Soils). However, piling would be minimised where practicable during the detailed design stage. Therefore, the physical impact and the creation of preferential pathway due to this activity are considered to be a Negligible impact on the Secondary A aquifer – groundwater superficial deposit and Secondary A aquifer – groundwater bedrock deposit; this would be a Neutral effect for both groundwater bodies.

13.10.13 The additional impermeable area resulting from the new road would generate additional surface water runoff, which if not attenuated, could increase flood risk to the surrounding area. At the time of writing, the details of the proposed drainage design are not known, however, the design of the drainage for the scheme would ensure no increase in run-off rates, in accordance with the NNPF and the NPSNN. This would, therefore, be a Negligible impact, and a Neutral effect.

13.10.14 The operational assessment is summarised in Table 13.8.

Table 13.8: Summary of impact assessment for construction and operation

Receptor	Value	Potential impact	Mitigation	Magnitude of impact	Significance of effect
Construction					
Drainage ditches	Low	Pollution from suspended sediment/contaminated runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Pollution from chemical spillages/leaks and water runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Disturbance of contaminated ground causing pollution.	GI prior to construction and remediation or capping of known contaminated areas.	Negligible	Neutral
		Discharge of dewatering.	Discharges would be in accordance with the CEMP.	Negligible	Neutral
		Physical impact from new/upgraded outfall.	Consideration of biological and hydromorphological condition of the drainage ditches during the detailed design stage. Selection of best timing for the works.	Minor Adverse	Neutral
Ponds	Low	Pollution from suspended sediment/contaminated runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Pollution from chemical spillages/leaks and water runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Disturbance of contaminated ground causing pollution.	GI prior to construction and remediation or capping of known contaminated areas.	Negligible	Neutral
Cam - Lower (GB108052015650)	Medium	Pollution from suspended sediment/contaminated runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Pollution from chemical spillages/leaks and water runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
Yeo Ds Over Compton (GB108052015682)	High	Pollution from suspended sediment/contaminated runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Pollution from chemical spillages/leaks and water runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
Dyke Brook	Medium	Pollution from suspended sediment/contaminated runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Pollution from chemical spillages/leaks and water runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Disturbance of contaminated ground causing pollution.	GI prior to construction and remediation or capping of known contaminated areas.	Negligible	Neutral
Park Brook	Medium	Pollution from suspended sediment/contaminated runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Pollution from chemical spillages/leaks and water runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
Cary - source to conf with KSD waterbody (GB108052015140)	High	Pollution from suspended sediment/contaminated runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Pollution from chemical spillages/leaks and water runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
Groundwater - superficial deposit	Medium	Pollution from suspended sediment/contaminated runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Pollution from chemical spillages/leaks and water runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Disturbance of contaminated ground causing pollution.	GI prior to construction and remediation or capping of known contaminated areas.	Negligible	Neutral
		Dewatering affecting groundwater level	Dewatering minimised where practicable, through design reducing the requirement for deep excavations	Negligible	Neutral

Receptor	Value	Potential impact	Mitigation	Magnitude of impact	Significance of effect
		Changes to groundwater level/flow	Below ground structure minimised where practicable during detailed design stage. Selection of best timing for temporary below ground structure utilisation in relation to the seasonal variation of groundwater level.	Negligible	Neutral
Groundwater - bedrock deposit	Medium	Pollution from suspended sediment/contaminated runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Pollution from chemical spillages/leaks and water runoff.	Compliance with CIRIA Guidance. Construction related runoff would be controlled by measures listed in the CEMP.	Negligible	Neutral
		Disturbance of contaminated ground causing pollution.	GI prior to construction and remediation or capping of known contaminated areas.	Negligible	Neutral
		Dewatering affecting groundwater level	Dewatering minimised where practicable, through design reducing the requirement for deep excavations	Negligible	Neutral
		Changes to groundwater level/flow	Below ground structures minimised where practicable during detailed design stage. Selection of best timing for temporary below ground structure utilisation in relation to the seasonal variation of groundwater level.	Negligible	Neutral
Operation					
Drainage ditches	Low	Contaminants within surface water runoff due to traffic	SuDS and pollution control measures would be incorporated within the drainage design.	Negligible	Neutral
		Physical impact from new/upgraded outfall	Design will be in accordance with Environment Agency guidance.	Negligible	Neutral
		Physical impact from waterbody infilled due to presence of embankment	Loss due to infilling minimised where practicable during detailed design. Creation of new drainage ditches/ponds.	Moderate Adverse	Slight Adverse
Cam - Lower (GB108052015650)	Medium	Contaminants within surface water runoff due to traffic	SuDS and pollution control measures would be incorporated within the drainage design.	Negligible	Neutral
Yeo Ds Over Compton (GB108052015682)	High	Contaminants within surface water runoff due to traffic	SuDS and pollution control measures would be incorporated within the drainage design.	Negligible	Neutral
Dyke Brook	Medium	Contaminants within surface water runoff due to traffic	SuDS and pollution control measures would be incorporated within the drainage design.	Negligible	Neutral
		Physical impact from new/upgraded outfall	Design will be in accordance with Environment Agency guidance.	Negligible	Neutral
Park Brook	Medium	Contaminants within surface water runoff due to traffic	SuDS and pollution control measures would be incorporated within the drainage design.	Negligible	Neutral
Cary - source to conf with KSD waterbody (GB108052015140)	High	Contaminants within surface water runoff due to traffic	SuDS and pollution control measures would be incorporated within the drainage design.	Negligible	Neutral
		Physical impact from new/upgraded outfall	Design will be in accordance with Environment Agency guidance.	Negligible	Neutral
Groundwater - superficial deposit	Medium	Changes to groundwater level/flow	Consideration of groundwater level/flow during detailed design stage.	Negligible	Neutral
		Physical impact/creation of preferential pathway from piling	Piling minimised where practicable during detailed design stage.	Negligible	Neutral
Groundwater - bedrock deposit	Medium	Changes to groundwater level/flow	Consideration of ground level/flow during detailed design stage.	Negligible	Neutral
		Physical impact/creation of preferential pathway from piling	Piling minimised where practicable during detailed design stage.	Negligible	Neutral
Floodplain	Very High	Increased surface water runoff from the scheme.	Drainage design to ensure no increase in runoff rates in accordance with the NNPF and NPSNN.	Negligible	Neutral

13.11 Monitoring requirements for significant adverse effects

13.11.1 At the time of writing, no significant adverse effects are anticipated on the water environment. However, water quality monitoring may be carried out during construction as a requirement of the CEMP. Further information will be included within the ES.

13.12 Conclusions

13.12.1 This assessment has been carried out at a qualitative level in terms of receptor value, predicted impact magnitude and significance of effect. To attenuate surface water run-off, prevent pollution within surface water discharge, prevent physical effects from new structures (i.e. piling, outfalls, embankments) and to ensure no increase in flood risk, standard mitigation measures would be included in the CEMP, and SuDS would be implemented. Therefore, no significant effects are anticipated on the water environment, during both construction and operation.

13.12.2 Mitigation measures will be contained within the CEMP for Land Adjacent to Hazlegrove Park, the historic landfill site adjacent to the north-east of the scheme, to avoid mobilisation of contaminated soil or contaminated runoff in the nearby drainage ditches. The overall on balance significance of effects on the water environment would be Neutral during both construction and operation.

13.12.3 As highlighted in paragraph 13.1.4, the information contained within the Scoping Opinion will be reviewed in detail and consultation will continue with the relevant consultation bodies to confirm the scope of the assessment to be included as part of the ES.

13.12.4 A Water Framework Directive (WFD) screening assessment and a Flood Risk Assessment (FRA) will be appended to the ES as part of the Development Consent Order (DCO) application.

14 Climate

14.1 Introduction

14.1.1 This chapter presents the on-going work for the assessment of the potential effects of the scheme on climate change related environmental factors. To align with the requirements of the Infrastructure Planning (Environmental Impact Assessment) (EIA) Regulations 2017 and the National Policy Statement for National Networks[152] (NPSNN) it has been divided into 2 separate aspects:

- Greenhouse gas (GHG) impact assessment – effects on climate change of GHG emissions arising from the proposed scheme, including how the project will affect the ability of Government to meet its carbon reduction plan targets (in accordance with Paragraph 5.17 of the NPSNN);
- Climate change resilience assessment – the resilience of the proposed scheme to climate change impacts, including how the proposal will take account of the projected impacts of climate change (in accordance with Paragraph 4.40 of the NPSNN and the Infrastructure Planning (EIA) Regulations 2017

14.1.2 It is now established that as a result of rising concentrations of carbon, Carbon Dioxide (CO_2), and other greenhouse gases in the atmosphere, a degree of climate change is inevitable and is expected to have significant implications for infrastructure assets in the future, particularly those with long operational lifetimes. This makes them sensitive not only to the existing climate at the time of their construction, but also to climate variations over the decades of their use. In addition, the Climate Change Act was passed in November 2008, which sets ambitious, legally binding targets of reducing CO_2 emissions by 34% by 2020 and 80% by 2050, relative to the 1990 baseline.

14.2 Legislation and policy context

National legislation and policy

Infrastructure Planning (EIA) Regulations 2017

14.2.1 The Regulations introduced clear references to climate change, identifying the need to assess 'the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change'.

Climate Change Act 2008

14.2.2 The Climate Change Act 2008 forms part of the UK government's plan to reduce greenhouse gas emissions, committing the government to a reduction of greenhouse gases by at least 80% of 1990 levels by 2050. The Climate Change

[152] Department for Transport (2015) National Networks National Policy Statement [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed August 2017).

Act creates a new approach to managing and responding to climate change in the UK, by:

- Setting ambitious, legally binding emission reduction targets
- Taking powers to help meet those targets
- Strengthening the institutional framework
- Enhancing the UK's ability to adapt to the impact of climate change
- Establishing clear and regular accountability to the UK Parliament and to the devolved legislatures[153]

14.2.3 Key provisions of the act in respect to climate change mitigation include the requirement for the Government to set legally binding 'carbon budgets' capping the amount of greenhouse gas emitted in the UK over a 5-year period.

14.2.4 Key provisions of the act in respect to climate change adaptation include:

- A requirement for the Government to report, at least every 6 years, on the risks to the UK of climate change, and to publish a programme setting out how these will be addressed. This Act also introduces powers for Government to require public bodies and statutory undertakers to carry out their own risk assessment and make plans to address those risks
- The Adaptation Sub-Committee of the Committee on Climate Change, will provide advice to, and scrutiny of, the Government's adaptation work

The Carbon Plan 2011

14.2.5 The Carbon Plan was presented to Parliament pursuant to Sections 12 and 14 of the Climate Change Act 2008. The plan sets out how the UK will achieve decarbonisation within the framework of the energy policy. UK local authorities and at a regional level must report on their CO_2 emissions. However, all emissions from the motorways sector have been removed and are not factored into the annual CO_2 emissions.

UK Climate Change Risk Assessment

14.2.6 This replaces the first UK climate change risk assessment, published in 2012 and fulfils the requirement of the Climate Change Act for the Government to report on the climate change risks to the UK every 5 years.

14.2.7 The government endorses 6 priority areas of risks and opportunities. The area of relevance to this scheme is:

- Flooding and coastal change risks to communities, business and infrastructure

[153] DECC (2012) Climate Change Act 2008

National Adaptation Programme

14.2.8 The National Adaptation Programme sets out over 370 actions for the UK Government, businesses, councils, civil society and academia to address the findings of the first UK Climate Change Risk Assessment (2012) and to build the nation's resilience to climate change. The programme addresses the requirement in the Climate Change Act to publish a programme for adaptation to climate change.

14.2.9 The programme contains the following objectives relevant to the scheme:

- Objective 1: To work with individuals, communities and organisations to reduce the threat of flooding and coastal erosion, including that resulting from climate change, by understanding the risks of flooding and coastal erosion, working together to put in place long-term plans to manage these risks and making sure that other plans take account of them;
- Objective 7: To ensure infrastructure is located, planned, designed and maintained to be resilient to climate change, including increasingly extreme weather events;
- Objective 9: To better understand the particular vulnerabilities facing local infrastructure from extreme weather and long-term climate change to determine actions to address the risks

National Policy Statement for National Networks

14.2.10 The NPSNN[154] contains a section on 'climate change adaptation', setting out how the effects of climate change should be taken into account when developing and consenting infrastructure. It states that the latest UK Climate Projections should be used to take into account the potential impacts of climate change and influence adaptation measures, covering the estimated lifetime of the new infrastructure.

14.3 Assessment methodology

14.3.1 Assessment methodology for defining the significance of effects upon climate is contained within 15.12 of the Environmental Impact Assessment Scoping Report submitted to the Planning Inspectorate in November 2017. The Scoping Report can be accessed here:

14.3.2 https://infrastructure.planninginspectorate.gov.uk/projects/south-west/a303-sparkford-to-ilchester/?ipcsection=docs.

[154] Department for Transport (2015) National Networks National Policy Statement [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/NNNPS-web.pdf (last accessed August 2017).

14.4 Study area

Effects on climate

14.4.1 The assessment will consider the greenhouse gas emission potential throughout the lifecycle of the scheme for both construction and operation.

Vulnerability of the scheme to climate

Spatial scope

14.4.2 The assessment will consider climate effects on the proposed scheme assets such as pavements, drainage and geotechnical receptors in addition to the in-combination effects of climate on the environmental receptors.

Temporal scope

14.4.3 The construction and operational effects on the proposed scheme as a result of climate change will be considered. The operational assessment will be informed by the lifespan of key elements within the scheme design and availability of UK Climate Projections.

14.5 Existing baseline

Effects on climate

14.5.1 In this context, existing carbon emissions from a variety of sources in the area are considered, including those from transport infrastructure. From a UK perspective, national greenhouse gas emissions in 2015 decreased by 38% from 1990. In 2015, UK net CO_2 emissions were estimated at 403.8 million tonnes, a decrease of 3.8% in comparison to 2014 levels[155]. In 2015, 24% of UK greenhouse gas emissions were from the transport sector with emissions of 120 $MtCO_2e$ in 2015.

14.5.2 Within the South Somerset region, the carbon emissions specifically from A roads in 2015 was 221.1$ktCO_2$, which represents a 13% decrease since 2005 and an 8.2% decrease in overall transport emissions[156]. There were 36.5 million vehicles licensed for use on roads in the UK in 2015, which is approximately 3.5 million extra vehicles. However, in 2015 the percentage of ultra-low emission vehicles (ULEVs) has reach 0.9% which is an 800% increase since 2013[157].

14.5.3 The UK construction industry is the largest consumer of natural resources with an average of over 400 million tonnes of material consumed every year. This

[155] Department for Business, Energy and Industrial Strategy (2015) 2015 UK Greenhouse Gas Emissions [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/589602/2015_Final_Emissions_Statistics_one_page_summary.pdf (last accessed August 2017).
[156] Local Authority Carbon Dioxide Emissions estimates 2015 (June 2017)- https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/623015/2005_to_2015_UK_local_and_regional_CO2_emissions_statistical_release.pdf (last accessed July 2017).
[157] Vehicle Licensing Statistics: Quarter 4 (Oct-Dec) 2015, Department for Transport (April 2016)- https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/516429/vehicle-licensing-statistics-2015.pdf (last accessed July 2017).

accounts for approximately 10% of the total UK carbon emissions [158].Therefore, approximately 40.38 million tonnes of CO_2 are attributed to the embodied carbon of construction materials.

Vulnerability of the scheme to climate change

14.5.4 The Met Office contains regional climate information for which Somerset is included in the south-west England[159] region. High-level climate observations for south-west England[160] over a 30-year averaging period between 1981-2010 are presented in Table 14.1 below.

Table 14.1: Climate baseline for South West England (1981-2010)

Climatic conditions	Climate observations
Temperature	Mean daily minimum temperatures in Somerset can range from 1°C to 2°C in winter, whilst summer daily maximum temperatures are in the region of 21.5°C.
Rainfall	Vigorous Atlantic depressions are the source of the majority of rain in the south-west in autumn and winter. Annual rainfall in the low-lying parts of central Somerset averages at 700mm. Monthly rainfall is variable, but is highest in the autumn and winter months. The number of days with rainfall totals greater than 1mm in Somerset are 12-13 days in winter, dropping to an average of 7-9 days in summer.
Wind	South-west England is one of the more exposed areas of the UK. The strongest winds are associated with the passage of deep depressions close to or across the British Isles. The frequency and strength of these depressions is greatest in the winter half of the year when mean speeds and gusts are strongest at approximately 15 knots.
Sunshine	The south-west of England has a favoured location with respect to the Azores high pressure when it extends its influence north eastwards towards the UK, particularly in summer. Average annual sunshine totals are between 1450 and 1600 hours.
Air Frost	The first air frost in Somerset can be expected around mid-October with over 50 days per year experiencing air frost.

14.5.5 The flood zones within the scheme extents are displayed on the environmental constraints plan in appendix A.1.

14.6 Future projections

Effects on climate

14.6.1 The transport sector is a key driver in projected UK emissions increases with road transport emissions projected to rise by 28 $MtCO_2e$ over 2023-2027 (the fourth carbon budget)[161].

Vulnerability of the scheme to climate change

14.6.2 South-west England is predicted to experience changes in temperature, rainfall, and frequency of extreme weather events, particularly flooding as a

[158] Alinden, B. (2014) Embodied Energy and Carbon, ICE [online] available at: https://www.ice.org.uk/knowledge-and-resources/briefing-sheet/embodied-energy-and-carbon (last accessed July 2017).
[159] The Met Office (2016) South West England: Climate [online] available at: http://www.metoffice.gov.uk/climate/uk/regional-climates/sw (last accessed July 2017).
[160] The Met Office (2016) South West England: Climate [online] available at: http://www.metoffice.gov.uk/climate/uk/regional-climates/sw (last accessed July 2017).
[161] Department for Business, Energy and Industrial Strategy (2017) Updated Energy and Emissions Projections 2016 [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/599539/Updated_energy_and_emissions_projections_2016.pdf (last accessed June 2017).

consequence of climate change. These changes are predicted to occur under all 3 emissions scenarios (i.e. low, medium, and high greenhouse gas emissions), which are incorporated into the climate change models produced by the Met Office Hadley Centre. The general trend for the region is warmer and drier summers, and warmer and wetter winters.

14.6.3 Under the high emissions scenario for the 2080s, estimated changes in climatic conditions are outlined in Table 13.2 below.

Table 14.2: Future climate baseline for the 2080s

Climatic conditions	Climate observations
Temperature	The average summer temperature is estimated to increase by 5°C under the central estimate, which represents 'as likely as not' probability of change (50th percentile), and average winter temperature is estimated to increase by 3.4°C (50th percentile).
Rainfall	The average summer rainfall rate is estimated to decrease by 30%, whereas the average winter rainfall rate is estimated to increase by 31% (in the 50th percentile or central estimate).
Wind	Climate projections for wind are more uncertain than those for temperature and precipitation, due to inherent difficulty in modelling future wind conditions. However, overall an increase in extreme weather including wind is projected (Committee on Climate Change, 2017).

Source: UKCP09 Climate Projections

14.7 Consultation

14.7.1 Initial consultation has been undertaken with the Environment Agency during and will continue during the production of the ES to inform the Flood Risk Assessment (FRA). Consultation with the scheme design team and environmental topic specialists is currently on-going and details will be included within the ES.

14.8 Assumptions and limitations

14.8.1 Information on the climate baseline and future projections are based on freely available information from third parties, including the historical meteorological variables recorded by the Met Office and the UK Climate Projections (UKCP09) developed by the Met Office. In addition, the assessment has been informed by a selected range of existing climate change research and literature, available at the time of writing this assessment.

14.8.2 Climate projections are not predictions or forecasts but simulations of potential scenarios of future climate, under a range of hypothetical emissions scenarios and assumptions. Therefore, the results from running the climate models cannot be treated as exact or factual, but projection options. They represent internally consistent representations of how the climate may evolve in response to a range of potential forcing scenarios, and their reliability varies between climate variables. Scenarios exclude outlying "surprise" or "disaster" scenarios in the literature, and any scenario necessarily includes subjective elements and is open to various interpretations. Generally global projections are more certain than regional, and temperature projections are more certain than those for precipitation. Further, the degree of uncertainty associated with all climate change projections increases for projections further into the future.

14.8.3 Highways England has not independently verified the climate projections and does not accept responsibility or liability for any inaccuracies or shortcomings in

this information. Should the information sources be modified by the third parties we assume no responsibility for any of the resulting inaccuracies in any of our reports. Issued reports are relevant to the project information provided and are not intended to address changes in project configuration or modifications which occur over time.

14.8.4 Accordingly, any further research, analysis or decision-making should take account of the nature of the data sources and climate projections and should consider the range of literature, additional observational data, evidence and research available, and any recent developments in these.

14.8.5 It should also be noted that at present, there is no single accepted methodology for the assessment of climate change within Environmental Impact Assessments (EIAs). A qualitative methodology for assessing the vulnerability of the scheme to climate change will be produced in line with DMRB Volume 11 Section 2 Part 5. This will be updated as and when consolidated methodology or practice for this environmental factor is published.

14.8.6 Conclusions and recommendations may be revised within the ES, on the basis of updated information following further research, survey, and investigation.

14.9 Design and mitigation measures

Effects on climate

Construction

14.9.1 The scheme design aims to reduce the overall footprint of the scheme by re-using the existing A303 where practicable. Where the scheme is on-line, less materials would be required and land use change would be minimal, resulting in lower levels of CO_2 being emitted. This would also be the case for slip roads, as the road lengths and widths will be reduced where practicable.

14.9.2 The footprint of structures and junctions will be made as compact where practicable, ensuring minimal land use change and materials use.

14.9.3 The scheme design aims to balance the cut and fill, reducing the need to import additional fill material. Furthermore, the design aims to zone earthworks to avoid double handling, which will be achieved through early engagement with the Contractor. This will reduce the fuel consumption of plant, resulting in lower CO_2 emissions. Best practice construction techniques would be used to reduce effects from emissions from construction traffic and plant.

14.9.4 Throughout the scheme design, materials will be evaluated and their carbon emissions calculated. This will ensure that materials with lower carbon outputs are considered. For example, for the vehicle restraints system, steel containment barriers have been chosen over concrete, which saves 45kgCO_2e per meter of barrier.

14.9.5 Additional design, mitigation and enhancement measures in relation to materials can be found in section 10.9.

14.9.6 An assessment using Mott MacDonald's Carbon Portal (PAS2080 compliant)[162] and Mott MacDonald's Design for Resource Efficiency (D4RE) tool[163], in conjunction with the Carbon Reduction Hierarchy will be carried out as part of the on-going design work. Mott MacDonald's D4RE Tool assists in navigating between the various guidance, documents, and other internal and external tools available, to enable the project team to consider the concept of designing for resource efficiency.

Operation

14.9.7 Scheme operation would contribute to the production of greenhouse gases. However, further assessment as part of the ES is required to fully understand the difference between the scheme and the existing A303.

Vulnerability to climate change

Construction

14.9.8 A Construction Environmental Management Plan (CEMP) will be prepared by the appointed Contractor and implemented during the construction period. The CEMP would ensure that the construction of the scheme allows for adaptation to impacts of changes in climate, such as ensuring construction materials are covered when stored and pro-active planning to minimise adverse effects.

Operation

14.9.9 Measures to mitigate and adapt to the effects of climate change on the scheme assets and environmental receptors are outlined in Tables 13.3 and 13.4 respectively.

14.10 Assessment of effects

Effects on climate

Construction

14.10.1 The initial carbon assessment using the Carbon Portal has indicated that the scheme would release approximately 19,082 tCO_2e.

14.10.2 The carbon output specifically from the materials required for the scheme would be 16,153 tCO_2e. When compared to the 10% contribution from construction materials to the annual UK emissions, this only contributes 0.04%. (Refer to section 14.5.3 for further detail). Note that the annual UK emissions are in CO_2 and the scheme emissions in CO_2e.

[162] The Carbon Portal is Mott MacDonald's in-house carbon assessment tool. It assesses capital and operational carbon in projects.

[163] The Design for Resource Efficiency (D4RE) is Mott MacDonald's in-house tool is to assist in the navigation between the various guidance documents and other available internal and external tools, in order to enable the user to consider the concept of Designing for Resource Efficiency in their projects. The use of the D4RE Tool brings in the potential for widespread efficiencies in project delivery as well as the more efficient use of natural resources.

14.10.3 Emissions of 2,929 tCO_2e would be produced due to construction plant throughout the construction process. This would be reduced by implementing the early engagement with the Contractor to avoid double handling during earthworks.

14.10.4 The results of the carbon assessment for the construction stage of the scheme can be found in more detail in section 10.10. Chapter 10 Materials has been assessed to DMRB Simple level, so an overall significance of effect has not been in relation to carbon.

14.10.5 In absence of established assessment criteria for the effects on climate it is considered that the construction stage is not predicted to have an impact on climate due to the relatively low quantity of emissions in comparison to overall UK emissions for construction.

Operation

14.10.6 During operation, the scheme is predicted to cause an increase in emissions of 467,314tCO_2e in non-traded carbon over 60-years and 1,637tCO_2e in traded emissions. This has been established through the appraisal of greenhouse gas which has been undertaken in accordance with the Department for Transport's Transport Analysis Guidance (WebTAG) Unit A3, Chapter 4.

14.10.7 This increase in carbon would be caused primarily by an increase in traffic volume and flow along the route. Maintenance work undertaken on the scheme would also increase carbon, but to a much lesser extent compared to the projected road transport emissions.

Vulnerability to climate

14.10.8 This section details an assessment of the combined effects of climate change on scheme assets.

Scheme assets

Construction

14.10.9 It is not expected that climate change would result in a change in the risk of severe weather by the end of the 2.5 year construction period, although the construction site may be vulnerable to extremes of weather, leading to the risk of delay in activities. However, adaptation measures included in the CEMP, such as ensuring construction materials are covered when stored and pro-active planning, would minimise adverse effects.

Operation

14.10.10 A qualitative assessment of the effects of the projected changes in climate on the scheme assets during operation are presented in Table 14.3 below.

Combined effects of climate change on scheme assets

Construction

14.10.11 It is not expected that climate change would result in a change in the risk of severe weather by the end of the 2.5 year construction period. Despite this, extremes of weather may occur during construction however, would have a minimal adverse effect at worst on the environmental receptors. Therefore, changes in climate are not expected to greatly impact on the scheme construction.

Operation

14.10.12 An assessment of the effects of the projected changes in climate on the environmental receptors during scheme operation are presented in Table 14.4 below.

Table 14.3: Assessment of scheme assets

Asset	Life cycle asset aspect	Discussion	Mitigation / adaptation
Pavements	Foundation	Pavements have a typical design life of 40years and would therefore be affected by changes in climate. Increases in winter precipitation could result in increased sub-surface moisture content, decreasing foundation strength.	Consider foundations incorporating hydraulically bound materials or the use of reinforcement such as geotextiles.
		Changes in moisture content as a result of decreases in summer rainfall combined with increases in winter rainfall could cause soil to expand and shrink, causing pavement layers to heave.	Consider pavement structural design methodology. For example, specific non- frost / heave susceptible layers.
		Increased rainfall has the potential to saturate the unbound pavement construction, causing loss of fine material and settlement and subsequent premature pavement failure.	Plan for remedial work after long, wet periods.
	Surface	Increases in summer temperature have the potential to result in increased risk of surface failure, warping of slabs, excessive movement at joints and difficulty in maintaining asphalt surface profile during compaction.	Consider the use of polymer modified binders in surfacings to reduce temperature susceptibility and improve workability. Restrict laying concrete in high temperatures.
		Increases in winter precipitation could result in a build-up of particulates in the road surface, which can compromise the surfaces' skid resistance. In addition, skid resistance decreases in areas that are flooded.	Plan for remedial work after long, dry periods. Consider permeable pavements where appropriate.
Structures	Superstructure	Increases in temperature have the potential to increase the risk of joint and bearing failure.	Use integral structures to avoid the need for joints or use semi-integral details to reduce risk of failure.
		Increases in precipitation would increase deterioration rates for joints and surfacing, requiring more frequent replacement and traffic disruption.	More frequent maintenance and inspections assessing movement requirements for joints and the quality of joints.
		Increased winter precipitation could increase groundwater levels with the potential to cause large ground movements and soil settlement. In addition, increased precipitation could lead to flooding and scouring around foundations.	Ensure the drainage system can facilitate increases in precipitation.
		Increases in temperature and more variable precipitation may increase the frequency of maintenance painting of structural steelwork.	For existing structures, adopt better quality paint systems and specify weathering steel where practicable.
		An increase in wind speed and extreme wind events has the potential to lead to the failure of lighter structures by overturning.	More frequent inspections of lighter structures and foundation strengthening.
	Foundations and substructure	Increased winter precipitation could increase groundwater levels with the potential to cause large ground movements and soil settlement. In addition, increased precipitation could lead to flooding and scouring around foundations	Ensure the drainage system can facilitate increases in precipitation.
Drainage	Drainage system	An increase in winter precipitation would increase flood risk and the need for attenuation ponds. In addition, erosion of embankments, banks and footings.	Ensure the drainage system can facilitate increases in precipitation. Provide measures to protect against scour and undercutting of banks and foundations. Consider the provision of a road edge water collection system.
Geotechnics	Earthworks	Increased precipitation could increase risk to the earthworks stability.	Use of fill material that is less susceptible to moisture such as Pulverised Fuel Ash and aggregate.
		Reductions in summer precipitation and increases in temperature would reduce soil moisture, which demands a greater compactive effort.	Increase the frequency of compaction monitoring.

Asset	Life cycle asset aspect	Discussion	Mitigation / adaptation
Signs and signals	Advance Direction Sign (ADS)	An increase in wind speed and extreme wind events has the potential to affect the stability of ADSs, particularly as they have a design life of 15 years (Highways England, 2011).	Increase the frequency of inspection and maintenance of ADS.
	Road markings	Increases in precipitation and temperature have the potential to weather road markings.	Increase the frequency of inspection and maintenance of road markings.
Soft estate	Landscaping	Refer to Table 14.4	Refer to Table 14.4
Non-motorised User (NMU) Facilities	Underpasses	Increased precipitation has the potential to lead to underpasses flooding, deterring NMUs from their journey.	Ensure NMU diversions are in place in the event of an underpass flooding.
	NMU routes	Increases in temperature and reductions in summer rainfall have the potential to encourage a greater number of NMUs to use NMU facilities.	N/A.
		Increases in winter rainfall and wind events may discourage NMUs from undertaking journeys using NMU facilities.	Ensure that NMU facilities such as footpaths and signs are maintained frequently.
Maintenance	Operational maintenance	More frequent extreme weather and changes in temperature and precipitation would result in an increase in frequency of scheme maintenance as the scheme assets would be more susceptible to deterioration. In addition, extreme weather events have the potential to result in planned maintenance works requiring rescheduling due to unsuitable conditions.	Increase the frequency of inspection and maintenance of the scheme where practicable. Allow the occurrence of maintenance works to be flexible.
Vehicle restraint systems	Safety barriers	Steel safety barriers have a design life of approximately 25years. More frequent extreme weather and changes in temperature and precipitation may result in an increase in rate of deterioration of vehicle restraint systems.	Increase the frequency of inspection and maintenance of vehicle restraint systems.

Table 14.4: Combined effects of climate change on the environmental receptors during operation

Environmental receptor	Discussion	Mitigation/adaptation
Air Quality	Although meteorological conditions can affect ambient pollutant concentrations, for example by affecting cloud cover and therefore the photochemical conversion of NO_x to NO_2, future climate change is not considered to have the potential to change the conclusions of the air quality assessment. This is because predicted results are not sensitive to the likely degree of change in conditions expected.	N/A.
Cultural Heritage	There are no in-combination effects of climate change and the scheme operation on heritage assets.	N/A.
Landscape	An increase in temperature and changing precipitation patterns, particularly in summer months is likely to lead to an increase in long dry periods which may have a detrimental effect upon the establishment and long-term viability of mitigation planting introduced as part of the scheme. New planting will be particularly vulnerable to failure where appropriate watering is not available. Existing, more mature plants with a well-established root network are unlikely to be as vulnerable to change so quickly. However, the transplanting of more mature plants to give instant impact in mitigating a scheme, has the biggest risk to their survival as they require the greatest management intervention to ensure successful establishment. There is also the risk of an increase in disease associated with climate change which may see plant and tree species suffer. An increase in high wind events also puts existing and proposed planting at risk. This is particularly important in areas where existing trees have been removed and opens up the remaining trees to windthrow as their roots will not have developed in the same way as the trees that were once on the edge of the woodland / tree plot.	Selection of plant species which may have greater resilience to the change in climate and associated weather patterns. Selecting plant / tree sizes based on the likely amount of rainfall or water available to sustain them. Be cognisant of latest pests and diseases and likely impacts. Specify resistant cultivars if possible, or avoid using species if needed. Ensure effective woodland management practices are in place as a matter of course for general soft estate management (not just scheme specific). This would include an active management regime across the highways estate to prevent etiolated and vulnerable tree stock. Where tree clearance is required resulting in a newly exposed woodland edge, transitions should be made which will offer visual, biodiversity and stability benefits. This can be achieved through tapering, graduated densities or severance cuts. Further advice can be sought within the Forestry Commission document[164].
Biodiversity	Nitrate leaching from surface and groundwaters is more likely under a changing climate with higher temperatures and increased run-off events having implications for water quality and freshwater ecology. Freshwater ecosystems are very vulnerable to climate change because metabolic rates of organisms and overall rate of productivity of ecosystems are directly regulated by temperature. An increase in temperature may lead to changes in species distribution and abundance. It has already been observed that many warmth-loving species are moving northwards. This is notable in species such as amphibians, mammals, and invertebrates. Increase in temperature and precipitation in winter may cause plants to come into leaf earlier in the year. However, this can negatively affect species who rely on this food source and are no longer synchronised with those species which they depend (e.g. food plants and prey species). Conversely, drier summers may result in a detrimental effect upon the establishment and long-term viability of mitigation planting, which provides replacement habitat for a number of species.	Surface waters: Inclusion of pollution control devices within the scheme's drainage design, in accordance with the Sustainable Drainage Systems (SuDS) hierarchy. Groundwaters: Use of soakaways within the drainage design, if feasible, while ensuring pollution control devices are effective. Mitigation Planting: Selection of plant species which may have a greater tolerance to a changing climate and weather conditions. Mitigation Planting: Inclusion of species which provide a year-round source of food for wildlife.
Geology and Soils	Increases in temperature and windy conditions, may lead to increased erosion of exposed soils and fugitive dust emissions. The extent of exposed soils within the scheme area however would be limited to grass verges and landscaped areas.	Inclusion of pollution control devices within the scheme's drainage design, in accordance with the SuDS hierarchy.

[164] Forestry Commission (1996) Designing Forest Edges to Improve Wind Stability.

Environmental receptor	Discussion	Mitigation/adaptation
	Increases in precipitation may lead to increased volumes of water flowing through soil and potentially contaminated material, increasing the potential for on-site and off-site contaminant migration. Rainfall infiltration within the scheme area however would be limited, with the majority of surface water run-off discharges to the drainage system. Risk of flooding and increased precipitation may cause soluble contaminants that were previously located within the unsaturated zone to be mobilised, which could then migrate towards a sensitive receptor. Increased precipitation has the potential to cause overflowing / overtopping of below ground structures, releasing contaminants that were previously contained. Increased precipitation could cause a rise in the groundwater table, which has the potential to increase the migration of soil gas vapours through the soil profile and risk of accumulation in confined spaces.	
Materials	There are no in-combination effects of climate change and the scheme operation on materials.	N/A.
Noise and Vibration	Climate change may have direct and indirect influences on noise within the study area. For example, increases in ambient temperature would influence sound propagation by reducing attenuation of sound due to air absorption, as well as other factors such as temperature inversions. A warmer climate may also increase the tendency of building occupiers to open windows for ventilation thereby increasing internal noise levels in spaces used for working and sleeping. Increased rainfall would increase the likelihood of moisture on the carriageway surface which would result in an increase in noise from road traffic.	Surface water run-off would be attenuated within the scheme drainage design to ensure there is no increase in surface water run-off rates from the scheme.
People and Communities	Motorised travellers' driver stress: Frustration or fear from traffic jams or road closures/diversions due to extreme weather events including flooding and windy weather events such as storms. These extreme weather events could lead to standing water on the A303 road surface, affect motorists control of their vehicles and reduce visibility. Non-motorised users and severance: A change in climate could affect pedestrians through direct exposure in open spaces as well as impacts such as spray from passing vehicles. Adverse weather conditions could deter some NMUs from making journeys. This could also affect NMU access to the community facilities identified in section 12.5 of the People and Communities chapter. Agricultural land and individual farm businesses: A change in climate could alter the productivity of land, with yields and growing times potentially altered for different crops, whilst productivity of land used as pasture could also be affected. Extreme weather events such as drought and flooding would also potentially lead to losses in crop and crop disease. This could affect soil quality and agricultural land as a national resource and the viability of individual farm businesses.	Motorised travellers' driver stress: All proposed diversions and road closures would be sign posted clearly. The new drainage system would be designed to allow for flood events with the use of SuDS, with additional capacity for climate change. Safety measures comprising a continuous concrete barrier in the central reserve, a hard strip along the mainline and slip roads, lane markings, cats eyes, road restraint systems and road studs would be installed which would minimise fear of potential accidents for motorists. Non-motorised users and severance: A network of NMU facilities that are segregated from vehicle traffic would be included in the scheme design. Agricultural land and individual farm Businesses: Consultation with landowners to understand potential issues for their land. Measures designed to mitigate flooding would be considered in a Flood Risk Assessment (FRA) as part of the DCO application, but would consider use of SuDS to minimise drainage impacts for individual farms. Landscape/ecology planting measures would help provide ecosystem services, for example providing habitats for pollinating species, woodland for sheltering crops etc. from extreme weather events.
Road Drainage and the Water Environment	Surface waters: An increase in water temperature would reduce the ability of surface water to absorb dissolved oxygen, which could affect aquatic ecology. A decrease in summer rainfall could also affect aquatic ecology and downstream water users (abstractions or recreational users) as low flows and drought conditions may become more common and more severe. This could also limit the	Surface waters: Inclusion of pollution control devices within the scheme's drainage design, in accordance with the SuDS hierarchy. Groundwaters: Use of soakaways within the drainage design, if feasible, while ensuring pollution control devices are effective.

Environmental receptor	Discussion	Mitigation/adaptation
	ability of the watercourses to accommodate discharges from road run-off without further water quality deterioration. Groundwaters: A decrease in summer rainfall could lead to aquifer depletion during the summer, and increased intensity winter rainfall events may not allow effective aquifer recharge, as surface run-off could increase and infiltration could decrease. Flood risk: An increase in winter rainfall and increased intensity rainfall events would increase flooding.	Flood risk: A Flood Risk Assessment (FRA) will be carried out to support the DCO submission and the drainage design for the scheme will include an allowance for climate change, to ensure no increase in flood risk to or from the scheme in the future.

14.11 Monitoring requirements for significant adverse effects

14.11.1 Any requirements for monitoring will be detailed within the ES.

14.12 Conclusions

Effects on climate

14.12.1 At this stage, it is anticipated that due to the quantity of materials required for the scheme, further assessment would be required during construction using the Highways England Carbon Tool[165] and Mott MacDonald's D4RE tool in conjunction with the Carbon Reduction Hierarchy. This assessment will be included within the ES to support the DCO application.

14.12.2 During operation, effects on climate are anticipated to be Neutral. No further assessment for the effects on climate during operation is required due to the limited carbon emissions during scheme operation.

Vulnerability to climate

14.12.3 During construction, Neutral effects are anticipated for the scheme associated with the vulnerability to climate. Due to the temporary nature of construction and limited changes in climate over the 2.5 year construction period, changes in climate are not expected to significantly affect scheme construction therefore further assessment during construction is not required.

14.12.4 During scheme operation, there is the potential for scheme assets and environmental receptors to be affected by changes in climate.

[165] Highways England (2015) Carbon Emissions Calculation Tool [online] available at: https://www.gov.uk/government/publications/carbon-tool (last accessed November 2017).

15 Combined and cumulative effects

15.1 Introduction

15.1.1 This chapter presents the on-going work for the assessment of the potential Combined and Cumulative effects from the respective topic-specific technical chapters of this report (chapters 6 - 14); defines inter-relationships between these assessments and any other developments in the surrounding area; and establishes whether there are any other residual effects on the identified sensitive receptors which may require additional mitigation not previously identified.

15.1.2 Combined and cumulative effects result from multiple actions on receptors over time and are generally additive or interactive (synergistic) in nature. They can also be considered to be effects resulting from incremental changes caused by other past, present or reasonably foreseeable actions, together with the project, identified as:

- Combined effects from a single project (the interrelationship between different environmental factors);
- Cumulative effects from different projects (with the project being assessed)

15.1.3 DMRB Volume 11, Section 2, Part 6 states that, in general, cumulative assessment will be most successful when the assessment of all other environmental effects of the project is complete.

15.2 Legislation and policy context

National Policy Statement for National Networks

15.2.1 The need to consider cumulative effects in planning and decision making is set out in planning policy, in particular the National Policy Statement for National Networks (NPSNN)[166]; paragraph 4.16 states that *"When considering significant cumulative effects, any environmental statement should provide information on how the effects of the applicant's proposal would combine and interact with the effects of other development (including projects for which consent has been granted, as well as those already in existence)."*

15.3 Assessment methodology

15.3.1 Assessment methodology for defining the significance of combined and cumulative effects is contained within 16.11 of the Environmental Impact Assessment Scoping Report submitted to the Planning Inspectorate in November 2017. The Scoping Report can be accessed here:

[166] Department for Transport (2014) National Networks National Policy Statement: Presented to Parliament pursuant to Section 9 (8) and Section 5 (4) of the Planning Act 2008. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387222/NNNPS-print.pdf (Accessed January 2018).

15.3.2 https://infrastructure.planninginspectorate.gov.uk/projects/south-west/a303-sparkford-to-ilchester/?ipcsection=docs.

15.4 Study area

Combined effects

15.4.1 The study area for the assessment of combined effects of the scheme, for both construction and operation, is defined by the study areas identified within the relevant environment topic chapters of this report (Chapters 5 – 14), ranging from 200 metres (for air quality) to 2 kilometres (for nature conservation).

Cumulative effects

15.4.2 The study area for the identification of other developments for inclusion in the assessment of cumulative effects reflects a 2 kilometres Zone of Influence (ZOI) around the boundary of the scheme, for both construction and operation. DMRB Volume 11, Section 2, Part 5, states that the study area for the assessment of cumulative effects should be defined on a case-by-case basis reflecting the scheme in question and the area over which significant effects can reasonably be considered to have the potential to occur from both the scheme and in combination with other developments. On this basis, given the scope and scale of the proposed works, the study area used for the identification of other developments, for the assessment of cumulative effects of the scheme is 2 kilometres.

15.4.3 The study area used for the assessment of cumulative effects during both construction and operation reflects the individual ZOIs of the topic chapters, outlined in Table 15.1 below. Table 15.1 below does not include study areas for air quality, noise and vibration, or climate, as these topics are not being taken forward as part of this cumulative effects assessment (see paragraph 15.8.6 of Section 15.8 Assumptions and Limitations for further details).

15.4.4 As such, the assessment of cumulative effects has been undertaken on a topic-by-topic basis, with the assessment of ‘other developments’ in combination with the scheme only undertaken where the ZOIs for the same topic chapter overlap.

Table 15.1: Environmental topic zones of influence

Environmental topic	Zone of Influence (ZoI)
Cultural Heritage	• **Construction and Operation:** A 1km ZOI which is the maximum ZOI extent used within the Cultural Heritage assessment, allowing a full understanding of the context and setting of the heritage assets. In addition to this, the following study area was also used: ○ 200m ZOI for Listed Buildings and Conservation Areas. • See chapter 6 Cultural Heritage for further information.
Landscape	• **Construction and Operation:** 1km ZOI for landscape and visual impacts. • See chapter 7 Landscape for further information.
Biodiversity	• **Construction and Operation:** A 2km ZOI which is the maximum ZOI extent used within the Biodiversity Assessment. • See chapter 8 Biodiversity, for further information.
Geology and Soils	• **Construction and Operation**: All locations where physical works and ground disturbance would take place, plus a 250m buffer • See chapter 9 Geology and Soils for further information
Materials	• **Construction:** ZOI defined by the influence of the scheme, rather than through a set geographical location – quantity of materials required and generation of waste • Operational phase not assessed • See chapter 10 Materials for further information

People and Communities	• **Construction and Operation:** A 250m ZOI for Non-Motorised Users, Amenity, Severance, and Driver Stress. Other topics are as follows:
	  ○ For agricultural land, the study area encompasses land directly within the scheme footprint; this has therefore not been included as part of the cumulative effects assessment
	  ○ For motorised travellers views from the road, the study area considers views from the proposed route alignments; this has therefore not been included as part of the cumulative effects assessment
	  ○ For demolition of private property and associated land take, the study area encompasses a specific area on and immediately adjacent to the scheme alignment; this has therefore not been included as part of the cumulative effects assessment
	• See Chapter 12 People and Communities for further information

15.5 Existing baseline

Combined effects

15.5.1 The baseline for each environmental topic is described in detail for air quality, cultural heritage, landscape, nature conservation, geology and soils, materials, noise and vibration, people and communities, and climate, all contained in the preceding chapters of this PEI report (chapters 5 - 14).

Cumulative effects

15.5.2 Numerous other developments have been identified using South Somerset District Council's Interactive Planning website[167], South Somerset District Council's Housing and Economic Land Availability Assessment (HELAA)[168], the Traffic Team's Uncertainty Log, and the Planning Inspectorate's Programme of Projects (although no NSIPs are proposed within the 2km study area). These developments are identified in Table 15.2 under 'Stage 1' and represent the Long List of other developments.

15.5.3 The Long List of other developments identified has been reduced to a Short List using the inclusion / exclusion criteria.

15.5.4 Appendix E.1 builds on the information given in Table 15.2, identifying the Long List of other developments, and shows the sifting process undertaken to development a Short List. This table format has been advised within the Advice Note 17[169].

15.5.5 The drawings contained in appendix E.2 shows the locations of these other developments contained within the Short List in relation to the overall study area for cumulative effects. The drawings contained within appendix E.2 show the location of each of the other developments in relation to the scheme, and the respective ZOIs that these other developments fall into.

[167] South Somerset District Council (2017) Planning Interactive Map [online] available at: https://www.southsomerset.gov.uk/your-area/ (last accessed August 2017).
[168] South Somerset District Council (2017) https://www.southsomerset.gov.uk/planning-and-building-control/planning-policy/early-review-of-local-plan-2006-2028/evidence-base/south-somerset-housing-and-employment-land-availability-assessment/ (last accessed August 2017).
[169] The Planning Inspectorate (2015) Advice Note Seventeen: Cumulative Effects Assessment relevant to nationally significant infrastructure projects [online] available at: http://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/Advice-note-17V4.pdf (Last accessed August 2017).

Table 15.2: Other developments identified at Stage 1, and the inclusion of developments in the Short List at Stage 2

Long List of other developments identified at Stage 1		Short List of other developments identified at Stage 2
ID	'Other development' name and reference	
1	Rectory Farm HELAA Site Ref No.: E/QUCA/0001/A	No
2	Rectory Farm HELAA Site Ref No.: E/QUCA/0001/B	No
3	Rectory Farm HELAA Site Ref No.: E/QUCA/0001/C	No
4	Long Hazel Farm (caravan park) HELAA Site Ref No.: E/SPAR/0001	No
5	The Orchard HELAA Site Ref No.: E/SPAR/0003	No
6	Land off Wolverlands HELAA Site Ref No.: E/SPAR/0004	No
7	Haynes Publishing HELAA Site Ref No.: E/SPAR/0005	No
8	Land at Brains Lane HELAA Site Ref No.: E/SPAR/1200	No
9	Land West of Cadbury Business Park HELAA Site Ref No.: E/NOCA/0003	No
10	Outline planning application seeking permission for mixed use redevelopment (residential / commercial) together with associated works and access ways. 16/00725/OUT	Yes
11	Propose 8 Hectares Photovoltaic Park 15/02779/EIASS	No
12	Proposed hotel, events area and exhibition track at land at and opposite Haynes Motor Museum, Sparkford 10/01023/EIASS	No
13	Construction of a new single storey primary school 14/04945/R3C and 15/00788/R3C	No
14	Proposed straw barn, landscape bund and associated ancillary works (revised scheme – 16/01219/FUL) 16/03193/FUL	No
15	Outline application for the erection of up to 150 dwellings, site access, provision of associated landscaping and open spaces / play facilities (GR 352508/123950) 15/00024/OUT	Yes

15.6 Value (sensitivity of resources and receptors)

15.6.1 The value of resources and receptors has been described within each of the environmental discipline chapters (chapters 5 to 14) of this report, and have been brought forward into this assessment of combined and cumulative effects.

15.7 Consultation

15.7.1 To date, there has been no specific consultation relating to the combined and cumulative effects assessment. As part of the ES, South Somerset District Council's Planning Team will be consulted and asked to review the Long List and Short List of other developments to be included within the Combined and Cumulative Effects assessment of the ES.

15.8 Assumptions and limitations

15.8.1 This assessment is made using professional judgement and based on currently available information. It is likely that some of the environmental effects within this chapter would be superseded as detailed design for the other developments included in this assessment continues. Furthermore, it should be highlighted that additional other developments may be proposed following the

submission of this report. These changes will be captured as part of the assessment of combined and cumulative effects within the ES.

15.8.2 Where an assessment has not been undertaken for certain environmental topics for a proposed development, it has been assumed that the environmental topics missing have been previously scoped out because no environmental impacts are predicted, and as such, Neutral effects have been assigned to these environmental disciplines.

15.8.3 It should also be noted that the assessment of likely significant environmental effects will differ slightly across the proposed developments as a result of assessments being undertaken by multiple parties with variations in professional opinion. In addition, some assessments may have taken a balanced approach to the assessment of effects, whilst other assessments may take a worst-case approach.

15.8.4 It is important to note that the overall conclusions have been carried forward from the environmental studies/assessments of the other developments and have not been altered or challenged. Where an environmental assessment or study for 1of the other developments did not provide an overall assessment of effect, this has been assigned based on professional judgement and based on the information provided as part of the planning application.

15.8.5 In all instances, the construction start and finish dates are not available for the other developments, and have not been confirmed with South Somerset District Council at this stage. As such, it has been assumed that either part or all of the construction phase will fall within the scheme's construction phase, reflecting a worst-case scenario approach.

15.8.6 The A303 Stonehenge has submitted a Scoping Report to the Planning Inspectorate and has subsequently received a Scoping Opinion. This proposed scheme will be reviewed and included as 'other developments' for consideration within the Combined and Cumulative Effects assessment for the ES.

15.8.7 The South Somerset Housing and Employment Land Availability Assessment[170] has identified a number of proposed development areas, within the 2kilometres study area for cumulative effects; these are identified in the Long List of other developments contained in appendix E.1. However, these developments have not been taken forward into the Short List.

15.8.8 Due to the nature of the air quality and noise and vibration assessments, which have used traffic data partly generated by the Traffic Team's Uncertainty Log, it has been considered that an adequate cumulative effects assessment for each of the other developments included within the Short List has already been undertaken and captured within chapter 5 Air Quality, and Chapter 11 Noise and Vibration.

[170] South Somerset District Council (2017) Housing and Economic Land Availability Assessment [online] available at: https://www.southsomerset.gov.uk/planning-and-building-control/planning-policy/early-review-of-local-plan-2006-2028/evidence-base/south-somerset-housing-and-employment-land-availability-assessment/ (last accessed July 2017).

15.8.9 In terms of the combined effects of climate, all other receptors have the potential to be affected by climate change. A qualitative assessment of these effects has been included within Table 14.3 of chapter 14 Climate, and as such, have not been included further in this assessment.

15.8.10 The cumulative effects associated with climate have not been assessed as part of this chapter. This will be assessed as part of the ES, following the completion of detailed flood modelling, noise modelling, and a detailed carbon assessment for the preferred option, and will be included as part of the Combined and Cumulative Effects chapter of the ES.

15.9 Design and mitigation measures

15.9.1 At this stage, there are no measures required as part of the scheme design, and no mitigation measures to be included for construction or operation.

15.10 Assessment of effects

Combined effects

Construction

15.10.1 The overall significance of the combined effects during the construction phase has been assessed as being Not Significant Adverse, taking into consideration any proposed mitigation from the preceding chapters of this report. Table E.3.1 in appendix E.3 provides further details of how these effects have been combined as a result of their individual significance on receptors during construction.

15.10.2 In terms of the geology and soils of the local area, on balance a combined Slight Adverse effect is anticipated during construction. Slight Adverse effects have been reported as a result of the permanent removal of soils where excavation works would be carried out during earthworks and foundation construction, as well as the potential for soil deterioration and consolidation due to material storage and vehicle usage on site.

15.10.3 A combined Moderate Adverse effect is anticipated on the landscape of the area during construction, with the local landscape character likely to be adversely affected through the temporary presence of construction traffic, plant and equipment, the introduction / removal of built structures, temporary security fencing, vehicle movements, and the loss of mature tree and vegetation. The historic landscape would also experience Moderate Adverse effects on balance during construction as a result of the preceding factors.

15.10.4 During construction, the combined effects upon heritage features are expected to be Slight to Moderate Adverse, due to the potential disturbances to archaeological remains and heritage assets within the footprint of the scheme. In addition, construction activities associated with the scheme are expected to have significant adverse effects to the setting of designated historic assets for a temporary period, as reported in chapter 6 Cultural Heritage.

15.10.5 A combined Not Significant Adverse effect is anticipated on community receptors during the construction phase of the scheme. There is the potential for Significant Adverse effects to visual receptors during construction, due to the temporary presence of construction traffic, plant and equipment, the introduction / removal of built structures, temporary security fencing, vehicle movements, and the loss of mature trees and vegetation. However, it is unlikely that there would be any significant effects to the local air quality as a result of the construction phase, due to the temporary nature of the works. An on- balance Slight Adverse effect has been reported to the communities receptor as part of chapter 12 People and Communities, and effects associated with noise and vibration as a result of construction activities are anticipated to be Not Significant Adverse, with best practice mitigation measures in place.

15.10.6 A combined Moderate Adverse effect is anticipated for vehicle travellers as a result of the scheme, due to the presence of traffic management and diversions, which could cause driver stress throughout the duration of the works for a temporary period. No other effects combine to exacerbate the potential effects on this receptor.

15.10.7 A combined Slight Adverse effect is anticipated on the water environment during the construction phase of the scheme. There is the potential for contaminated land to result in an effect upon the water environment, as reported within chapter 9 Geology and Soils. In addition, Slight Adverse effects are reported within chapter 8 Biodiversity for aquatic environments.

15.10.8 A combined Not Significant Adverse effect is anticipated on ecological receptors during the construction period for the scheme, with best practice mitigation measures in place. This combined effect takes into consideration the on-balance Slight Adverse effect reported as likely within the Biodiversity chapter and the Not Significant Adverse effects reported on the Site of Special Scientific Importance (SSSI) within chapter 5 Air Quality. A Neutral Slight Adverse effect on flora is also reported within chapter 9 Geology and Soils, included within this category due to the potential for impairment of landscape and grassland redevelopment; however, effects are not considered to be significant.

15.10.9 A combined Significant Adverse effect is anticipated for materials during construction as a result of the scheme, largely due to the potential for significant effects reported within chapter 10 Materials. It is also important to note the Slight Adverse effects to materials reported within chapter 9 Geology and Soils

15.10.10 The overall combined effect on climate is anticipated to be Not Significant Adverse. This takes into consideration just the potential effects to climate change reported within chapter 14 Climate Change, which are anticipated to be Slight Adverse.

15.10.11 A combined Not Significant Adverse effect is anticipated for the Human Health and Wellbeing receptor during construction for the scheme. This is as a result of potential effects anticipated for air quality, noise and vibration, people and communities, as well as for geology and soils (relating to the effects on construction workers).

15.10.12 In summary, the potential temporary combined effects as a result of the scheme are considered to be, on balance, Not Significant Adverse, as shown in Table E.3.1 contained in appendix E.3.

Operation

15.10.13 The overall significance of the combined effects for the scheme during operation has been assessed as Not Significant Adverse, taking into consideration mitigation proposed in the preceding chapters of this report. Table E.3.2 in Appendix .3 provides further details of how these effects have been combined as a result of their individual significance on receptors during operation.

15.10.14 In terms of geology and soils, a combined Neutral effect is anticipated once the scheme is in operation. This on balance combined effect has been reached because chapter 9 Geology and Soils has scoped out the assessment of effects during operation.

15.10.15 Once operational, an on balance Not Significant Adverse effect is anticipated on the local landscape as a result of the scheme. Slight Adverse effects are predicted for landscape character at Year15 due to the loss of vegetation following the completion of construction. In terms of the historic setting of the landscape, again Slight Adverse effects are anticipated largely as a result of Neutral or Slight Adverse effects for heritage assets. In addition, as described in chapter 8 Biodiversity, and with the implementation of mitigation described in chapter 8, the effect of the loss of habitats including vegetative corridors would be Slight Adverse, improving to Neutral following the maturation of planting.

15.10.16 During operation, the combined effects upon cultural features are expected to be on balance Not Significant Adverse, largely as a result of additional visual and noise effects (described in chapter 7 Landscape) affecting the setting of the assets from vehicle movements and street lighting, and the effects to Hazlegrove Registered Park and Garden.

15.10.17 Once operational, the combined effects upon communities are considered to be on balance Not Significant Adverse. The effects to air quality are anticipated to be Not Significant Adverse, and a combined Slight Adverse effect is anticipated as a result of People and Communities, which considers agricultural land, non-motorised users, amenity, severance, individual farm businesses, demolition of private property, land take, and motorised travellers view from the road. At Year 15, Slight Adverse effects are anticipated to visual receptors, as reported within chapter 7 Landscape. Effects to communities as a result of noise are anticipated to have the potential for Significant Adverse effects, but it is important to note that other receptors would benefit from noise reductions.

15.10.18 Once operational, combined effects on vehicle travellers are expected to be Not Significant Beneficial, with Slight Beneficial effects reported for to driver stress for the scheme, with reduced congestion and decreased levels of driver frustration, with vehicle travellers able to drive along the road at a more

consistent speed, giving improved journey time reliability (chapter 12 People and Communities).

15.10.19 In terms of the water environment, an on balance Neutral effect is anticipated during operation of the scheme. Chapter 8 Biodiversity considers the potential changes to water quality and the effects that poses to macroinvertebrates; effects are anticipated to be insignificant, and with the on-balance effect reported for Biodiversity as Slight Adverse reducing to Neutral, the overall combined effect on the water receptor during construction is anticipated to be Neutral.

15.10.20 An on balance Not Significant Adverse effect is anticipated on ecological receptors during the operation of the scheme. It is important to note from both chapter 5 Air Quality and chapter 8 Biodiversity, that there is potential for Significant Adverse effects to at least a proportion, if not all, of the Stockton Wood and Down SSSI, associated with the airborne pollutants and nitrogen deposition. However, operational effects on the other designated areas, habitats and protected species are anticipated to have an on-balance Slight Adverse effect, reducing to Neutral the longer-term, following the proper establishment of vegetation.

15.10.21 There are not anticipated to be any residual adverse effects to materials once the scheme is in operation, and as such, combined effects are reported as Neutral.

15.10.22 There are not anticipated to be any residual combined effects to the climate during operation.

15.10.23 A combined Not Significant Adverse effect is anticipated for the Human Health and Wellbeing receptor during operation for the scheme. This is as a result of the potential effects, none of which are considered to be Significant, anticipated for air quality, noise and vibration, and people and communities.

15.10.24 The potential combined effects as a result of the scheme are considered to be, on balance, Not Significant Adverse, as shown in Table E.3.2 in appendix E.3.

Cumulative Effects

15.10.25 The assessment of cumulative effects for both construction and operation can be found in appendix E.4.

15.10.26 Only those developments that have been included in the Short List (Stage 2) have been brought through to the assessment of cumulative effects, which represents Stages 3 and 4 of the methodology outlined in the Planning Inspectorate's 'Advice Note17: Cumulative Effects'[171] (see paragraph 15.3.6 for a description of the stages of assessment). The assessment has been split by

[171] The Planning Inspectorate (2015) Advice Note Seventeen: Cumulative Effects Assessment relevant to nationally significant infrastructure projects. Available online at: http://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/Advice-note-17V4.pdf (Last accessed August 2017).

environmental topic, and the effects of the other developments have been assessed where the ZOIs for each environmental topic overlaps. Due to the locations of the proposed developments, there are none for which ZOIs overlap for just 1of the proposed developments.

15.10.27 Table 15.3 provides a summary of the residual effects for each of the 'other developments' and the relevant environmental topics during construction, and Table 15.4 summarises the residual cumulative effects during operation.

15.10.28 An overall cumulative effect of Not Significant Adverse is anticipated as a result of all of the other developments during construction. As such, no further mitigation is required as there are no significant cumulative effects predicted.

15.10.29 An overall cumulative residual effect of Not Significant Adverse is anticipated as a result of all of the other developments during operation. As such, no further mitigation is required as there are no significant cumulative effects predicted.

Table 15.3: Summary of the cumulative residual effects for the other developments during construction

ID	Other Development name	Residual Cumulative Effects of 'other development' for each environmental topic during construction				
		Cultural Heritage	**Landscape**	**Biodiversity**	**Geology and Soils**	**People and Communities**
10	Former Haynes Publishing Site 16/00725/OUT	Buried Archaeology: Significant Adverse Heritage Assets: Significant Adverse	Landscape Character: Significant Adverse Visual Effects: Significant Adverse Effects	Slight Adverse	Slight Adverse	Slight Adverse
15	Land North of Troubridge Park 15/00024/OUT					
Overall cumulative effect for each environmental topic during construction		Significant Adverse	Significant Adverse	Not Significant Adverse	Not Significant Adverse	Not Significant Adverse
Overall cumulative effect during construction		**Not Significant Adverse**				

Table 15.4: Summary of the cumulative residual effects for the 'other developments' during operation

ID	Other Development name	Residual cumulative effects of Other Developments for each environmental topic during operation				
		Cultural Heritage	**Landscape**	**Biodiversity**	**Geology and Soils**	**People and Communities**
10	Former Haynes Publishing Site 16/00725/OUT	Heritage Assets: Not Significant Adverse	Landscape Character: Slight Adverse Visual Effects: Slight Adverse	Slight Adverse, reducing to Neutral	Neutral	Slight Adverse
15	Land North of Troubridge Park 15/00024/OUT			Slight Adverse, reducing to Neutral		
Overall cumulative effect for each environmental topic during construction		Not Significant Adverse	Not Significant Adverse	Not Significant Adverse, reducing to Neutral	Neutral	Not Significant Adverse
Overall cumulative effect during construction		**Not Significant Adverse**				

15.11 Monitoring requirements for significant adverse effects

15.11.1 At the time of writing, no significant adverse effects are anticipated and so monitoring requirements are currently not envisaged to be necessary. Monitoring requirements will be updated as part of the ES should significant adverse effects be predicted following an update to the assessment.

15.12 Conclusions

15.12.1 The assessment for combined effects involved the identification of impact interactions associated with the scheme upon separate environmental receptors. The methodology for the assessment of combined effects followed DMRB Volume 11 Section 2 Part 5: Assessment and Management of Environmental Effects.

15.12.2 In summary, the residual combined effect during construction for the scheme is anticipated to be Not Significant Adverse. The residual combined effect during operation for the scheme is anticipated to be Not Significant Adverse and therefore not considered to be significant.

15.12.3 The assessment for cumulative effects has involved the identification of incremental changes likely to be caused by other developments together with the scheme. This assessment has followed the methodology outlined in the Planning Inspectorate's 'Advice Note17: Cumulative Effects Assessment'.

15.12.4 The residual cumulative effects during construction as a result of all of the other developments with the scheme would be anticipated to be Not Significant Adverse. During operation, residual cumulative effects for the scheme would be anticipated to be Not Significant Adverse.

15.12.5 Further detailed assessment of the combined and cumulative effects would be required as part of the ES. The list of proposed developments to be included within the cumulative effects assessment would be developed with South Somerset's Planning Team to ensure that all necessary developments are captured as part of the assessment, and to ensure that construction start dates and lengths are fully understood.

16 Conclusions

16.1.1 Table 16.1 presents the conclusions of each of the specialist topics included within the Preliminary Environmental Information (PEI) report.

Table 16.1: Summary table

Topic	Stage (construction / operation)	Proposed mitigation	Description of potential effect	Likely significance of residual effect after mitigation	Overall likely significance of effect
Air Quality					
Local Air Quality - Human Health and Wellbeing Effects	Construction	Best Practicable Means (BPM), as described in Section 79 (9) of the Environmental Protection Act 1990, will be carried out to reduce emissions which may affect air quality. This will also include a Construction Environmental Management Plan (CEMP).	The potential for local air quality could be affected through the generation and subsequent deposition of construction dust arising from construction activities and vehicle movements.	Not Significant Adverse	Not Significant Adverse
Local Air Quality - Human Health and Wellbeing Effects	Operation	No operational air quality specific mitigation measures are required.	No exceedances of air quality objectives are predicted at human receptors in the Do Minimum and DoSomething scenario, and therefore effects are not expected to be significant.	Not Significant Adverse	Not Significant Adverse
Local Air Quality - Ecological Effects	Operation	No operational air quality specific mitigation measures are required.	The potential for exceedance of the NO_X critical level.	Significant Adverse	Significant Adverse
Regional Air Quality	Operation	No operational air quality specific mitigation measures are required.	The scheme is predicted to cause small changes in regional emissions during operation, although these are small compared to national emissions.	Not Significant Adverse	Not Significant Adverse
Cultural Heritage					
Heritage Assets	Construction	Where impacts to heritage assets are unavoidable, mitigation to be included as part of the design to reduce effects to setting, including planting, screening, noise attenuation and appropriate lighting. Best practice mitigation measures to limit impacts during construction to be included within a CEMP.	Potential for significant adverse effects to the setting of Scheduled Monuments and Listed Buildings within close proximity of the route option, due to noise during construction, and the presence of construction plant. In particular, potential for a moderate / large adverse effect to Hazlegrove House (Grade II Listed) Registered Park and Garden due to the total loss of approximately the southern third of the park.	Significant Adverse	Significant Adverse
Sub-Surface Archaeological Remains	Construction	Preserving archaeological remains in-situ would be explored during the design process. Best practice mitigation measures to limit impacts during construction to be included within a CEMP.	Potential for significant adverse effects associated with the permanent removal of sub-surface archaeological remains.	Significant Adverse	
Heritage Assets	Operation	No mitigation measures have been developed at this stage. Mitigation measures, including placement of bunds, noise attenuation screening, and appropriate lighting, will be explored as part of the Environmental Statement.	Effects are likely to be either Neutral or Slight Adverse for heritage assets once the scheme is in operation. Neutral effects are predicted where there are unlikely to be any operational differences to the current arrangement that would alter the setting of these heritage assets. Slight Adverse effects are generally reported where road noise may be slightly more noticeable.	Slight Adverse	Slight Adverse
Sub-Surface Archaeological Remains	Operation	No mitigation measures required.	There will be no effects to sub-surface archaeological remains from the operation of the scheme. Any potential impacts on these types of heritage assets will have been encountered during the construction phase.	Neutral (no effects anticipated)	
Landscape and Visual Effects					
Landscape Character and Visual Amenity	Construction	Best practice measures to be included within a CEMP.	Introduction of new detracting features to the local landscape and within the view, due to: • Presence of construction traffic, plant and equipment • Introduction / removal of built structures • Storage of topsoil mounds • Movement of excavated earth and change in the landform on site • Temporary security fencing • Presence of a construction compound • Vehicle movements including private vehicles belonging to staff • Removal of mature trees and vegetation • Presence and views of lighting for compounds and floodlighting when night work is required	Significant Adverse	Significant Adverse
Landscape Character and Visual Amenity	Operation	Lowering of vertical alignment of the route including junctions, wherever practicable. Implementation of earth bunds. Appropriate landscape design including native hedgerows, hedgerows and trees, and block of planting. Lighting columns to be kept to a minimum height and be directional. Any new structures to have a low solid to void ratio and consideration given to colour, form and materials.	The scheme would be at odds with the local landscape pattern and scale and be visible from local visual receptors, due to: • Increased road infrastructure • Loss of mature vegetation within and outside the existing highway boundary • Additional slip roads and grade-separated roads and junctions increasing the overall width and perception of the road Direct impact upon the views from the south of the designated Hazlegrove House (Grade II Listed) Registered Park and Garden.	Slight Adverse	Slight Adverse
Biodiversity					
Qualifying species for Natura 2000 sites	Construction	If bat roosts are found, requirements of the European Protected Species (EPS) licence conditions will guide the landscape planting and other mitigation (to avoid disturbing bat roosts). Mitigation for foraging and commuting routes will include habitat enhancement and compensation; green bridge or similar structure to maintain connectivity, off-setting habitat loss. Landscaping design will provide a barrier between active road and wider landscape. Vegetation clearance and earthworks to be supervised by a suitably experienced ecologist. Lighting and noise disturbance will be minimised through implementation of method statement. Operational lighting is not currently in the design, however, if required, follow best practice guidelines regarding light spill, and wave length.	No adverse effects anticipated.	Neutral (construction and operation)	Slight Adverse

Topic	Stage (construction / operation)	Proposed mitigation	Description of potential effect	Likely significance of residual effect after mitigation	Overall likely significance of effect
		At detailed design stage, the requirement for and type / number of bat boxes to be installed will be finalised.			
Nationally Designated Sites	Construction	Replacing lost habitat such as woodland, grassland and hedgerows. In terms of the botanical and invertebrate assemblages present, appropriate mitigation will be informed by the invertebrate and / or habitat surveys. This may include the translocation of plants / invertebrates to newly created habitats.	SSSI is located over 300m from the scheme and outside the ZoI for air quality effects, no mitigation required. Direct effects will be avoided where practicable. However, direct effects may be due to the loss of habitat.	Neutral	
Priority Habitats	Construction	Measures to mitigate the effects of dust on sensitive habitats could include the use of screens and sediment booms. Cutting, grinding or sawing equipment should use suitable dust suppression techniques such as water sprays or local extraction. To minimise adverse effects on watercourses and associated species, measures would be taken to prevent or minimise any sediments entering the freshwater, using control measures as outlined in CIRIA C532 Control of Water Pollution from Construction Sites. It is recommended that where hedgerows are removed to facilitate the works, these be replaced within the same location and any existing gaps planted with appropriate native species, where practicable.	Loss of habitat	Slight Adverse	
Protected and Notable Species	Construction	If the presence of EPS is confirmed and adverse effects are unavoidable, the legal requirements of the EPS licence conditions and the requirement of 'no net loss in biodiversity' in line with Section 40 of the NERC Act 2006 will guide the landscape planting requirements. In addition to habitat enhancement for protected species, mitigation and compensation with regards to offsetting habitat loss will also be required. The loss of any habitat of conservation value would be replaced like-for-like as a minimum requirement. Sensitive working methods will ensure that the risk of killing, injuring or disturbing any EPS is minimised.	Effect on EPS due to sensitive receptors - bats, breeding birds, barn owls, water voles, grey crested newts, hazel dormice, otter, reptile, badgers, and invertebrates.	Slight Adverse	
Nationally Designated Sites	Operation	Covered at construction period.	As the SSSI is located over 300m from the scheme and outside the ZoI for air quality effects, no mitigation required. Part of Hazlegrove Park Local Wildlife Site (LWS) is located within the footprint of the scheme. There will be a partial loss (<1%) of the LWS from its periphery to accommodate the new roundabout and access road	Slight Adverse	Slight Adverse
Priority Habitats	Operation	Covered at construction period.	Small scale direct loss of broadleaved woodland, parkland, hedgerows and ditches.	Slight Adverse	
Protected and Notable Species	Operation	Covered at construction period.	Short-term adverse effect whilst the replacement planting establishes.	Slight Adverse reducing to Neutral	
Geology and Soils					
Geology, soils, surface water, groundwater, human receptors, buildings, structures and utilities, and flora	Construction	Best practice mitigation measures to limit impacts during construction to be included within a Construction Environmental Management Plan. Inclusion of a Site Management Plan within the CEMP. Production of appropriate mass balance calculations, a Materials Management Plan, a Site Waste Management Plan and compliance with CL:AIRE document 'The Definition of Waste: Development Industry Code of Practice Version 2 (2011)'. Works to be monitored by a suitably qualified SEE. Any discharge to ground/surface waters need an appropriate Environmental Permit from the EA or a Discharge Consent. Detail GI and Contamination Land Risk Assessment to be undertaken prior to construction. If areas of contamination are identified a Remediation Strategy should be produced.	• Permanent removal/sterilisation of site soils and superficial deposits • Excess (waste) materials generated requiring off-site disposal / transport • Soil deterioration and consolidation due to poor storage and handling • Effects on controlled waters, such as relating to the discharges of sediment laden groundwaters, entrainment of sediments in surface waters and foundation works increasing turbidity • Encountering contaminated materials within landfills / made ground, mobilisation of contaminants and generation of contaminant transport pathways from site activities • Removal / remediation of any areas of contaminated soils identified (beneficial effect) • Effects on construction workers, relating to contact with, e.g. contaminated materials and landfill gases • Degradation of construction materials such as thaumasite concrete attack • Impairment of landscape and grassland re-development	Slight Adverse	Slight Adverse
Materials					
Material resource use	Construction	Best practice measures for the storage and delivery of materials, minimising the use of virgin materials, the re-use of materials and the use of recycled materials to be included within a CEMP and SWMP. Continue to undertake carbon calculations using the Mott MacDonald Carbon Portal to ensure a low carbon design. Minimise use of virgin materials within the design itself through using the Design for Resource Efficiency tool. Production of an MMP.	Use of large quantities of material resources leading to a depletion of non-renewable resources.	Potentially Significant Adverse	Potentially Significant Adverse
Waste generation	Construction	Best practice measures, such as moving waste as far up the waste hierarchy as possible, storage / handling of waste, to be included within a CEMP. Production of an MMP and SWMP.	Disposal of waste to landfill that cannot be re-used or recycled, which would impact on the remaining landfill capacity of the area.	Not Significant Adverse	
Noise and Vibration					
Noise	Construction	Working hours and level of noise at nearby properties will be agreed by the Contractor in advance, with the Local Authority Environmental Health Officer. Section 61 Application. Best practice measures to be included within a CEMP. Effective communication between the promoter, Contractor and the public, including prior notification of construction works.	Disturbance to dwellings (people) due to noise and vibration from construction activities.	Not Significant Adverse	Not Significant Adverse

Topic	Stage (construction / operation)	Proposed mitigation	Description of potential effect	Likely significance of residual effect after mitigation	Overall likely significance of effect
Noise	Operation	Use of thin surface course.	A greater number of increases than decrease in noise levels at dwellings and sensitive receptors from changes to traffic / flows	Not Significant Adverse	Not Significant Adverse
People and Communities					
Human health and wellbeing effects	Construction	Best practice measures to be included within a CEMP. Clearly signed temporary diversions for NMUs.	• Temporary increase in journey length would benefit health and wellbeing of NMUs • Temporary severance would be detrimental to health and wellbeing	Not Significant Adverse	Slight Adverse
Non-motorised users, amenity, severance, agricultural land, individual farm businesses, demolition of private property, land take, motorised travellers view from the road, driver stress	Construction	Best practice measures to be included within a CEMP. Production of a TMP. Clearly signed temporary diversions for NMUs. Reinstatement measures for impacted agricultural land. Compensation for landowners through the Compulsory Purchase Acquisition mechanism. Management of soils in accordance with Defra's 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' (2009) and a SMP.	• Temporary increase in journey length and time for NMUs • Existing barriers between people and traffic would change which would affect amenity • NMU routes connecting to community facilities would experience adverse effects to journey time and quality • Potential for agricultural land take • Potential for land take of individual farm businesses; Temporary presence of Traffic Management would cause increase in driver frustration and fear of accidents	Slight Adverse	
Human health and wellbeing effects	Operation	Appropriate NMU Strategy.	• Permanent changes to journey length, severance and amenity would impact on health and wellbeing.	Not Significant Adverse	Neutral
Non-motorised users, amenity, severance, agricultural land, individual farm businesses, demolition of private property, land take, motorised travellers view from the road, driver stress	Operation	Appropriate NMU Strategy. Provision of replacement agricultural land. Replacement of access points to farms. Compensation for landowners through the Compulsory Purchase Acquisition mechanism.	• Permanent changes to journey length for NMU • Provision of new NMU facilities or degradation of existing NMU facilities • Amenity would be affected through changes to barriers between people and traffic, changes in flows, and provision of new facilities • NMU routes connecting to community facilities would experience adverse effects to journey time and quality • Land take required of agricultural land of Grade 3 • Land take of individual farm businesses required • Demolition of a small number of assumed derelict buildings required • Land take of areas of parking or private land • New views for vehicle travellers • Vehicle travellers would be able to drive along the road at a more consistent speed and improved journey time reliability	Neutral	
Road Drainage and the Water Environment					
Surface water and groundwater	Construction	• Best practice measures for pollution prevention and water management to be included in a CEMP. • Compliance with CIRIA Guidance. • GI prior to construction and remediation or capping of known contaminated areas. • Consideration of biological and hydromorphological condition of the drainage ditches during the detailed design stage. • Dewatering minimised where practicable through design reducing the requirement for deep excavations. • Below ground structures minimised where practicable during detailed design stage. • Selection of best timing for temporary below ground structure utilisation in relation to the seasonal variation of groundwater level.	• Pollution from suspended sediment/contaminated runoff; • Pollution from chemical spillages/leaks and water runoff; • Disturbance of contaminated ground causing pollution; • Discharge of dewatering; • Physical impact from new/upgraded outfall; • Dewatering affecting groundwater levels; and, • Changes to groundwater level/flow.	Residual effects reported as Neutral within the Environemntal Impact Assessment Scoping Report (November 2017).	Residual effects reported as Neutral within the Environemntal Impact Assessment Scoping Report (November 2017). As such, this chapter has been scoped out of the Environmental Statement.
Surface water, groundwater, and floodplain	Operation	• SuDS and pollution control measures would be incorporated within the design. • Design will be in accordance with Environmental Agency guidance. • Loss of waterbody due to infilling minimised where practicable during detailed design. • Creation of new drainage ditches/ponds. • Consideration of groundwater level/flow during detailed design. • Piling minimised where practicable during detailed design. • Drainage design to ensure no increase in runoff rates in accordance with the NNPF and NPSNN.	• Contaminants within surface water runoff due to traffic. • Physical impact from new/upgraded outfall. • Physical impact to drainage ditches from waterbody infilled due to presence of embankment. • Changes to groundwater level/flow. • Physical impact/creation of preferential pathway from piling to groundwater. • Increased surface water runoff from the scheme.	Residual effects reported as Neutral within the Environemntal Impact Assessment Scoping Report (November 2017).	Residual effects reported as Neutral within the Environemntal Impact Assessment Scoping Report (November 2017). As such, this chapter has been scoped out of the Environmental Statement.
Climate					
Effects on climate	Construction	The scheme design aims to reduce the overall footprint of the scheme by re-using the existing A303 where practicable. The footprint of structures and junctions will be made as compact where practicable, ensuring minimal land use change and materials use. Throughout the scheme design, materials will be evaluated and their carbon emissions calculated.	• The carbon assessment has indicated that the scheme would release approximately 19,082 tCO2e	Further assessment required as part of the ES to determine significance of effect.	Further assessment required as part of the ES to determine significance of effect.
Vulnerability to climate	Construction	Adaptation measures included in the CEMP, such as ensuring construction materials are covered when stored and pro-active planning, would minimise adverse effects. Therefore, changes in climate are not expected to significantly affect scheme construction.	It is not expected that climate change would result in a change in the risk of severe weather by the end of 2.5 year construction period, although the construction site may be vulnerable to extremes of weather, leading to the risk of delay in activities.	Anticipated to be Neutral, with no further assessment required as part of the ES.	Anticipated to be Neutral, with no further assessment required as part of the ES.
Effects on climate	Operation	Not applicable	The scheme would produce emissions due to traffic and through maintenance.	Anticipated to be Neutral, although further assessment required as part of the ES.	Anticipated to be Neutral, although further assessment required as part of the ES.
Vulnerability to climate	Operation	Different mitigation factors are available for each of the potential effects e.g. Consider foundations incorporating hydraulically bound materials or the use of reinforcement such as geotextiles.	There is the potential for various effects to occur. Pavements have a typical design life of 40 years and would therefore be affected by changes in climate. Increases in winter	Further assessment required as part of the ES as potential for scheme	Further assessment required as part of the ES as potential for scheme

Topic	Stage (construction / operation)	Proposed mitigation	Description of potential effect	Likely significance of residual effect after mitigation	Overall likely significance of effect
			precipitation could result in increased sub-surface moisture content, decreasing foundation strength. Increases in summer temperature have the potential to result in increased risk of surface failure, warping of slabs, excessive movement at joints and difficulty in maintaining asphalt surface profile during compaction.	assets and environmental receptors to be affected by changes in climate.	assets and environmental receptors to be affected by changes in climate.
Combined and Cumulative Effects					
Combined	Construction	Not applicable.	Potential for impact interactions associated with the scheme upon separate environmental receptors.	Not Significant Adverse	Not Significant Adverse
Combined	Operation	Not applicable.	Potential for impact interactions associated with the scheme upon separate environmental receptors.	Not Significant Adverse	Not Significant Adverse
Cumulative	Construction	Not applicable.	Potential for incremental changes to be caused by other potential major future developments together with the scheme.	Not Significant Adverse	Not Significant Adverse
	Operation	Not applicable.	Potential for incremental changes to be caused by other potential major future developments together with the scheme.	Not Significant Adverse	Not Significant Adverse

17 Glossary

Glossary Term	Descriptive Definition
Agricultural Land Classification	Agricultural Land Classification provides a means of assessing the quality of farmland. Its assessment is based on physical limitations of the land, such as climate, site characteristics (e.g. gradient) and soil. The assessment gives an indication of the versatility and expected yield of the land. The system classifies agricultural land in 5 grades. The best and most versatile land is classified as 1, 2 and 3a. The Agricultural Land Classification was developed by the former Ministry of Agriculture, Fisheries and Food (MAFF) in 1988 and revised in 1996.
Air Quality Management Area (AQMA)	Any parts of a Local Authority's area where the air quality objectives are not being achieved, or are not likely to be achieved within the relevant period must be identified and declared an AQMA.
Air Quality strategy (AQS)	Establishes the UK framework for air quality improvements. The Environment Agency is required to have regard to the Strategy in exercising its pollution control functions. Local authorities are also required to work towards the Strategy's objectives prescribed in regulations for that purpose.
Air quality objectives	Objectives are policy targets often expressed as a maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedances, within a specified timescale.
Ambient Noise	Ambient noise is the total sound in a given situation at a given time usually composed of sound from many sources, near and far.
Baseline conditions	The environment as it appears (or would appear) immediately prior to the implementation of the project together with any known or foreseeable future changes that will take place before completion of the project.
Birds Directive	EC Directive on the Conservation of Wild Birds (Birds Directive 1979) as amended (79/409/EEC).
Biodiversity	The biological diversity of the earth's living resources. The total range of variability among systems and organisms at the following levels of organisation: bioregional, landscape, ecosystem, habitat, communities, species, populations, individuals, genes and the structural and functional relationships within and between these different levels.
Biodiversity Action Plan (BAP)	It describes the biological resources of the UK and provides detail plans for conservation of these resources.
Conservation Area	An area designated by the Local Planning Authority under the Town and Country Planning (Listed Buildings and Conservation Areas) Act 1990 as possessing special architectural or historical interest. The Local Planning Authority will seek to preserve and enhance the character and appearance of these areas.
Congestion	Traffic experiences periods of excessive breaking and acceleration and is associated with higher vehicle emissions. On motorways this occurs at speeds less than 50mph and / or near complex junctions.
Contamination Land Risk Assessment (CLRA)	It covers the main hazards that might happen during the construction project and the risk management that is required.
Conservation Area	An area designated by the Local Planning Authority under the Town and Country Planning (Listed Buildings and Conservation Areas) Act 1990 as possessing special architectural or historical interest. The Local Planning Authority will seek to preserve and enhance the character and appearance of these areas.
Conservation Management Plan	A conservation management plan is a document that sets out the significance of a heritage asset, and how the significance will be retained in any future use, management, alteration, or repair.
Construction Environmental Management Plan (CEMP)	A CEMP includes the specific measures that will be taken to control and manage the environmental impacts whilst the project is under construction that may otherwise occur for each of the environmental topics, such as noise, air quality, water resources and ecology. In addition, a description of the planned works and the general site arrangements should be included in the CEMP. The Principal Contractor will be responsible for ensuring the measures specified within the CEMP are implemented.
Cultural heritage landscape	The combination of nature and humankind, they express long relationship between people and their natural environment. Certain sites reflect techniques of land use that guarantee and sustain biological diversity.
Cumulative Assessment	An assessment on how the effects of the proposed scheme would combine and interact with the effects of other developments. It considers the accumulation of, and interrelationship between effects which might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place.
Decibel (dB)	The decibel is a logarithmic unit that expresses the ratio of 2 values of a physical quantity, often power or intensity. One of these quantities is often a reference value and in this case the decibel expresses the absolute level of the physical quantity.

Glossary Term	Descriptive Definition
Design Manual for Roads and Bridges (DMRB)	Design Manual for Roads and Bridges is a set of documents published by Highways England. The document provides a comprehensive manual system which accommodates all current standards, advice notes and other published documents relating to the design, assessment and operation of trunk roads (including motorways).
Design Year	15years after the Opening Year.
Development Consent Order (DCO)	Development Consent Order is a combination of grant planning permission with a range of other separate consents such as listed buildings. It can also include rights to compulsorily purchase land.
Do-Minimum network scheme	The Do Minimum forecast scenario in the Opening / Design Year is the base road and traffic network against which alternative improvements can be assessed. In many cases, the definition of the Do Minimum is straightforward; it is simply the Do Nothing scenario. However, 1 or more of the following 4 cases may arise, in which the Do Minimum differs from the Do Nothing: i) The case where works will be carried out regardless of whether or not the Do Something scheme is built. ii) The case where the existing network may be improved to form a Do Minimum scheme which can be tested as an alternative to carrying out major Do Something improvements. iii) The case where traffic conditions can be improved without significant capital expenditure. iv) The case where the area covered by the modelled network includes road proposals other than the one under immediate consideration.
Driver Stress	The adverse mental and physiological effects experienced by a driver traversing a road network
Effect	Term used to express the consequence of an impact (expressed as the significance of effect), which is determined by correlating the magnitude of the impact to the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria. For example, land clearing during construction results in habitat loss (impact), the effect of which is the significance of the habitat loss on the ecological resource.
Emissions	Mass of a pollutant per time per vehicle at the point of exhaust and are used as inputs into an air quality model.
Enhancement	A measure that is over and above what is required to mitigate the adverse effects of a project.
Environment Agency	The Environment Agency is responsible for environmental protection and regulation in England and plays a central role in implementing the government's environmental strategy. The Environment Agency is the main body responsible for managing the regulation of major industry and waste, treatment of contaminated land, water quality and resources, fisheries, inland river, estuary and harbour navigations, and conservation and ecology. They are also responsible for managing the risk of flooding from main rivers, reservoirs, estuaries and the sea.
Environmental Management Plan (EMP)	An EMP provides the framework for recording environmental risks, commitments and other environmental constraints and clearly identifies the structures and processes that will be used to manage and control these aspects. The EMP also seeks to ensure compliance with relevant environmental legislation, government policy objectives and scheme specific environmental objectives. It also provides the mechanism for monitoring, reviewing and auditing environmental performance and compliance.
Farm / Individual farm holdings / Farm business	An area of land that consists of 1 or more land parcels or group of fields that are managed by a named person or named business entity as an owner, tenant or in any other commercial agricultural capacity, for the production of food, forage or fibre.
Flood Risk Assessment	An assessment of the likelihood of flooding in a particular area so that development needs and mitigation measures can be carefully considered.
Forecast (Traffic)	A model describing a future set of traffic conditions e.g. Do Minimum, Do Something, etc.
Grade-separated junction	A grade-separated junction is a junction where the conflicting traffic flows are kept apart, usually by means of a bridge or tunnel.
Habitat Directive	EC Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (Habitats Directive 1982) as amended (92/43/EEC).
Heart of the South West (HotSW)	This is a LEP (refer to LEP in the glossary). The purpose of economic growth, job creation and prosperity in the areas of Devon, Plymouth, Somerset and Torbay.
Habitat Suitability Index (HSI)	A numerical index where a score of 0 and 1.0 are recorded for each habitat value which can include: geographic location, water quality and permanence.
Handover Environmental Management Plan (HEMP)	This is the main vehicle for passing essential environmental information to the client and responsible for future maintenance and operation of the asset.
Historic England	The public body that looks after England's historic environment. Championing historic places and helping people understand their value and care for them.

Glossary Term	Descriptive Definition
Historic Environment	All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.
Impact	Change that is caused by an action; for example, land clearing (action) during construction which results in habitat loss (impact).
Highways England Interim Advice Note (IAN)	These contain specific guidance which are only used in connection with works on motorways and trunk roads.
Heavy Goods Vehicle (HGV)	HGVs are vehicles over 3.5 tonnes and includes rigid and articulate lorries.
$L_{Aeq, T}$ Index	The equivalent continuous level $L_{Aeq, T}$ is the level of a notional steady A-weighted sound, which at a given position and over a defined period of time (T) would have the same A-weighted acoustic energy as the fluctuating noise.
L_{Amax} Index	The maximum A-weighted sound pressure level measured during a given time period.
Listed Buildings	A building which is considered by the Secretary of State (for Culture, Media and Sport) to be of special architectural or historic interest in accordance with the regime set out in the Town and Country Planning (Listed Buildings and Conservation Areas) Act 1990.
Local Enterprise Partnership (LEP)	The LEP is a partnership between private sector, local authorities, universities and colleges.
Light Goods Vehicle (LGV)	LGVs are vehicles under 3.5 tonnes and refers to a commercial carrier.
Lidar	It is a remote sensing technique that uses laser light to densely sample the surface of the earth, producing x,y,z measurements.
Materials Management Plan (MMP)	An MMP manages the recovery of material from the waste stream as opposed to producing new materials/it also reduces the amount of waste and recyclables delivered to disposal or resource recovery facilities.
Mitigation	Measures intended to avoid, reduce and, where practicable, remedy significant adverse environmental effects.
National Character Areas (NCAs)	A natural sub division of England based on a combination of landscape, biodiversity, geodiversity and economic activity. The NCAs are defined by Natural England, the UK government's advisors on the natural environment.
Natural Environment and Rural Communities (NERC)	The aim of the NERC is to ensure the natural environment is conserved, enhanced and managed for the present and future generations.
National Planning Policy Framework (NPPF)	The NPPF sets out the Government's planning policies for England.
National Policy Statements	National policy statements are instruments issued under section 52(2) of the Resource Management Act 1991 and state objectives and policies for matters of national significance.
National vegetation classification (NVC)	The NVC assesses the full suite of vascular plant, bryophyte and macro-lichen species with a certain vegetation type.
Natural England	Natural England are responsible for: • Helping land managers and farmers protect wildlife and landscapes • Advising on the protection of the marine environment in inshore waters (0 to 12 nautical miles) • Improving public access to the coastline • Managing 140 National Nature Reserves and supporting National Trails • Providing planning advice and wildlife licences through the planning system • Managing programmes that help restore or recreate wildlife habitats • Conserving and enhancing the landscape • Providing evidence to help make decisions affecting the natural environment
Lowest Observed Adverse Effect Level (LOAEL)	This the level of noise above which adverse effects on health and quality of life can be detected.
NO_x	Oxides of Nitrogen – which encompasses all nitrogen species although mainly NO and NO_2.
NO_2	Nitrogen Dioxide.
Opening Year	The estimated year that the scheme would become operational.
Operation	The functioning of a project on completion of construction.
Outline Construction Environmental Management Plan	A CEMP at outline stage which will later be refined and expanded into a full CEMP as more information becomes available and there is more certainty in terms of the proposed layout, construction methods, programme, and the likely environmental effects.
Peak Particle Velocity (PPV)	Peak particle velocity refers to the maximum speed of a particular particle as it oscillates about a point of equilibrium that is moved by a passing wave. It is a term used to describe vibration, or elastic movement, resulting from excitation by seismic energy as it passes a particular point.

Glossary Term	Descriptive Definition
Planning Inspectorate (PINS)	The Planning Inspectorate deals with planning appeals, national infrastructure planning applications, examinations of local plans and other planning-related and specialist casework in England and Wales.
PM_{10}	Particulate matter with a diameter of 10 microns or less.
Project Control Framework	Project Control Framework supports the implementation of project management within an organisation because: 1. It supports the development and replication of accepted practice 2. Helps communication within the team because of a common language 3. Streamlines the use of tools and techniques for key project management processes 4. Establishes a consistent approach which aid customers understand the project management processes 5. 5. Ensure that focus is maintained on the early stage of the project lifecycle
Receptor	A defined individual environmental feature that has the potential to be affected by a project.
Registered Park and Garden	A park or garden that has been registered under Historic England's 'Register of Historic Parks and Gardens of special historic interest in England' due to its high level of historic interest.
Scheduled Monument	A historic building or site that is included in the schedule of monuments kept by the secretary of state for culture, media, and sport. The National Planning Policy Framework sets out the Government's planning policies for England.
Significant Observed Adverse Effect Level (SOAEL)	This is the level of noise above which significant adverse effects on health and quality of life occur.
Site of Special Scientific Interest (SSSI)	A SSSI is a conservation designation denoting a protected area in the United Kingdom, designated due to special interest in its flora, fauna, geological or physiographical features. They are protected by law to conserve their wildlife or geology.
Strategic Road Networks (SRN)	A strategic road network is made up of motorways and major trunk roads in England and that are managed by Highways England.
Site Waste Management Plan (SWMP)	SWMPs encourage the effective management of materials and ensure waste is considered at all stages of a project - from design through to completion. Although no longer a regulatory requirement in England, SWMPs are still considered to be good practice.
Transport analysis guidance	Transport analysis guidance is a document produced by the government for projects that require government approval. It provides guidance on a range of topics which include: creating a transport model for the appraisal of the alternative solutions.
Transport appraisal process/ WebTAG	WebTAG involves a 3 stage process: Stage 1 – option development, identifying the need for intervention and developing options Stage 2 – further appraisal – the focus of the analysis is on estimating the likely performance and impact of intervention(s) in detail Stage 3 – implementation, monitoring and evaluation
TRICS	An interactive database and data analysis system comprising large number of transport survey records of individual developments across land use categories.
Unexploded ordnance (UXO)	Unexploded ordnance are explosive weapons (bombs, bullets etc) that did not explode when employed and still pose a risk of detonation. When planning a civil engineering project, a UXO assessment is done to determine whether any potential risks may be present.

Appendices

Appendix A: Proposed scheme and environmental constraints plan

Appendix A.1 – Proposed scheme and environmental constraints plan

RIVER CARY - SOURCE TO CONFLUENCE WITH KING SEDGEMOOR DRAIN (KSD)
DYKE BROOK
CELTIC WAY
STEART HILL
MEAD LANE (TRACK)
STEART HILL
CELTIC WAY
A303
SPARKFORD
HIGH STREET
RIVER CAM - UPPER
DOWNHEAD LANE (TRACK)
CAMEL HILL
EASTMEAD LANE (TRACK)
DOWNHEAD
WEST CAMEL HILL
A303
GASON LANE
A359
TRAITS LANE
SPARKFORD HILL
CELTIC WAY
HOWELL HILL
A303
PODIMORE
B3151
RIVER CAM - LOWER
LELAND TRAIL
WEST CAMEL
QUEEN CAMEL
LELAND TRAIL
PARSONAGE ROAD
LELAND TRAIL
ROYAL NAVAL AIR STATION, YEOVILTON

Target Notes:

1. ST PETERS CHURCH
2. THE PODYMORE INN PUBLIC HOUSE
3. MEDIEVAL SETTLEMENT REMAINS 100M AND 250M NORTH OF DOWNHEAD MANOR FARM SCHEDULED MONUMENT
4. MILESTONE ON A303 AT NGR ST57892538 (GRADE II) LISTED BUILDING
5. WEST CAMEL METHODIST CHURCH
6. WEST CAMEL CONSERVATION AREA
7. ROMANO-BRITISH SETTLEMENT IMMEDIATELY SOUTH WEST OF CAMEL HILL FARM SCHEDULED MONUMENT
8. CAMEL HILL TRANSMITTER SITE LWS
9. GASON LANE FIELD LWS
10. CAMEL HILL QUARRY EAST LGS
11. RIDGE COPSE LWS
12. CAMEL HILL QUARRY HISTORIC LANDFILL
13. SPARKFORD HILL COPSE LWS AND LGS
14. QUEEN CAMEL CONSERVATION AREA
15. HAZLEGROVE HOUSE (GRADE II LISTED) REGISTERED PARK AND GARDEN
16. HAZLEGROVE PARK LWS
17. LAND ADJACENT TO HAZLEGROVE PARK HISTORIC LANDFILL
18. SPARKFORD INN PUBLIC HOUSE
19. SPARKFORD CRICKET CLUB
20. SPARKFORD WOOD SSSI

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Scale @ A1: 1:10,000 (0, 500m, 1000m)

Client: highways england

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Key to Symbols:

- DRAFT RED LINE BOUNDARY
- NAMED WALKING ROUTES
- FOOTPATH ALONGSIDE CARRIAGEWAY
- FOOTPATH
- BRIDLEWAY
- RESTRICTED BYWAY
- CYCLE ROUTE
- FOSSE WAY
- REGISTERED PARK ND GARDEN
- HISTORIC LANDFILL
- PONDS, LAKES AND RUNNING WATER
- LISTED BUILDING
- ANCIENT WOODLAND
- NOISE IMPORTANT AREA
- SITES OF SPECIAL SCIENTIFIC INTEREST (SSSI)
- CONSERVATION AREA
- SCHEDULED MONUMENT
- LOCAL GEOLOGICAL SITE (LGS)
- FLOOD ZONE 2
- FLOOD ZONE 3
- LOCAL WILDLIFE SITE (LWS) (SOMERSET ENVIRONMENTAL RECORDS CENTRE, JUNE 2017)
- NATIONAL TRUST LAND
- CANDIDATE LOCAL WILDLIFE SITE (SOMERSET ENVIRONMENTAL RECORDS CENTRE, JUNE 2017)
- REGISTERED COMMON LAND
- ANCIENT WOODLAND IDENTIFIED BY SOMERSET ENVIRONMENTAL RECORDS CENTRE
- PROPOSED DEVELOPMENTS IDENTIFIED IN THE SOMERSET DISTRICT COUNCIL HOUSING AND ECONOMIC LAND AVAILABILITY ASSESSMENT

Project Title:
A303 SPARKFORD TO ILCHESTER DUALLING

Drawing Title:
ENVIRONMENTAL CONSTRAINTS PLAN

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Appendix A.2 – Proposed red line boundary and scheme elements

SPARKFORD

CAMEL HILL

STEART HILL

A303

A359

DOWNHEAD

SPARKFORD HILL

PODIMORE

WEST CAMEL

QUEEN CAMEL

B3151

ROYAL NAVAL AIR STATION, YEOVILTON

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Key to Symbols:

- PROPOSED SIGNAGE
- ROUTE CENTRELINE
- PROVISIONAL RED LINE BOUNDARY
- LAND TO BE PERMANENTLY ACQURED FOR CONSTRUCTION AND OPERATION
- LAND TO BE USED TEMPORARILY DURING CONSTRUCTION AND RIGHTS TO BE ACQUIRED PERMANENTLY FOR MAINTENANCE ACCESS DURING OPERATION
- LAND TO BE USED TEMPORARILY DURING CONSTRUCTION
- PROPOSED ECOLOGICAL MITIGATION AREAS DURING OPERATION
- EXISTING A303 TO BE DETRUNKED DURING OPERATION

Scale @ A1:

1:10,000 — 0 — 500m — 1000m

Project Title:

A303 SPARKFORD TO ILCHESTER DUALLING

Drawing Title:

PROPOSED RED LINE BOUNDARY AND SCHEME ELEMENTS

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Appendix B: Air quality

Appendix B.1 – Methodology

17.1.1 The air quality assessment has been completed in accordance with Local Air Quality Management Technical Guidance (TG16)[172] and Volume 11, Section 3, Part 1 of DMRB HA207/07 and in line with the following IANs:

- IAN 170/12 'Updated air quality advice on the assessment of Future NO_x and NO_2 projections for users of DMRB Volume 11, Section 3, Part 1, Air Quality'
- IAN 174/13 'Updated advice for evaluating significant local air quality effects for users of DMRB Volume 11, Section 3, Part 1 Air Quality';
- IAN 175/13 'Updated advice on risk assessment related to compliance with the EU Directive on ambient air quality and on the production of scheme Air Quality Action Plans for users of DMRB Volume 11, Section 3, Part 1 Air Quality (HA207/07)'
- IAN 185/15 'Updated traffic, air quality and noise advice on the assessment of traffic data into speed-bands for users of DMRB Volume 11, Section 3 Part 1 Air Quality'

17.1.2 Potential construction dust effects were considered in accordance with DMRB HA207/07, which involves identifying sensitive receptors within 200metres of the construction site. The drawing contained within appendix B.3 shows the sensitive receptors identified for the construction phase of the scheme.

17.1.3 Operational air quality effects were considered in accordance with the guidance above as well as Defra's Local Air Quality Management Technical Guidance (TG16). The methodology is outlined in more detail below.

17.1.4 It should be noted that PM_{10} was not considered within the local air quality assessment. Background concentrations provided by Defra show that background PM_{10} concentrations are well below the AQO in the study area. Additionally, South Somerset District Council previously monitored and reviewed concentrations of PM_{10} in the district, which did not result in the declaration of any AQMAs for this pollutant. Therefore, it is expected that PM_{10} concentrations at receptors in the vicinity of the scheme will not exceed the relevant AQOs. Furthermore, vehicles emission factors for PM_{10} are relatively low and at least an order of magnitude lower than for NO_x. It is therefore considered unlikely that the impact of the scheme on PM_{10} would be sufficient to lead to exceedances of PM_{10} AQOs or limit values, and as such PM_{10} impacts were not been considered further within the local assessment, although this will be reviewed and confirmed as part of the Environmental Statement.

Screening method

17.1.5 An operational local and regional air quality assessment has been undertaken using Highways England's DMRB Screening Method Version 5 which incorporates IAN 185/15 speed band emissions from the Emission Factor Toolkit v7.0. The Screening Method uses link traffic inputs, road width and the

[172] Defra (2016) Local Air Quality Management Technical Guidance (TG16) [online] available at: https://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf (last accessed January 2018).

distance between the road and receptor to predict concentrations and total emissions of NO_x, PM_{10} and CO_2 at a local and regional scale.

Assessment scenarios

Local assessment

17.1.6 The following scenarios have been considered in the assessment for local air quality:

- Base Year / Model Verification Year 2016
- Do Minimum (without proposed scheme) 2023 Opening Year
- Do Something (with proposed scheme) 2023 Opening Year

17.1.7 Base year air quality predictions were used to verify the model against air quality monitoring data (as described in appendix B.2). A model verification year of 2016 was used as this is the year that scheme-specific monitoring was undertaken on behalf of Highways England. Following consultation with the scheme's traffic modelling team, it was considered acceptable to directly compare the 2015 base year traffic against 2016 monitored ambient NO_2 concentrations as the traffic flows for 2015 are representative of flows in 2016 (i.e. there is a negligible change in traffic characteristic on the network between 2015 and 2016).

17.1.8 Pollutant concentrations predicted in the Opening Year Do Minimum and Do Something scenario of the scheme were compared to ascertain the effect of the scheme on local air quality. It should be noted that an assessment of Opening Year air quality effects is expected to provide a worst-case assessment, as air quality is expected to improve in future years as a result of improvements in vehicle emissions and background air quality.

Regional assessment

17.1.9 The following scenarios have been considered in the assessment for regional air quality:

- Do Minimum (without scheme) 2023 Opening Year;
- Do Something (with scheme) 2023 Opening Year;
- Do Minimum (without scheme) 2038 Design Year; and,
- Do Something (with scheme) 2038 Design Year.

17.1.10 Emissions were estimated using speed band emission factors and link lengths from the traffic model. It should be noted that speed band emission factors are not available beyond 2030. Emission factors representative of 2030 have therefore been used to represent emissions in 2038 for the design year scenarios.

Traffic data

17.1.11 Outputs from the South West Regional SATURN traffic model (SWRTM) developed to assess the traffic impacts for the scheme were used in the

assessment. Data on vehicle flow, speed and percentage of Heavy Duty Vehicles (HDVs - the sum of Heavy Goods Vehicles and buses) were available for the following periods in the base, Do-Minimum and Do-Something scenarios for the scheme:

- AM peak period (07:00 to 10:00)
- Inter peak period (10:00 to 16:00)
- PM peak period (16:00 to 19:00)
- Off peak period (19:00 to 07:00)

17.1.12 The diurnal traffic flow characteristics, and therefore emissions, were represented in the DMRB Screening Method. The same profile used for weekdays was applied to the weekend.

17.1.13 Speed data has also been derived from the SWRTM and was Speed Banded following application of derived speed pivots in accordance with IAN 185/15.

Background pollutants

17.1.14 Total air pollutant concentrations comprise a background and local component. Background concentrations are determined by regional, national and international emissions, and often represents a significant proportion of the total pollutant concentration. The local component is determined by local pollutant sources such as roads, and in this case, was considered using the DMRB Screening Method.

17.1.15 Background pollutant concentrations are spatially and temporally variable throughout the UK. Annual mean background concentrations of NO_x, NO_2 and PM_{10} were obtained from Defra's Air Information Resource (AIR) website[173]. The Defra maps provide yearly forecasts based on a grid at a resolution of $1km^2$ across the whole of the UK.

17.1.16 The background NO_x and NO_2 concentrations from the Defra maps were compared against Defra's Automatic Urban and Rural Network (AURN) rural background automatic measurements from Charlton Mackrell. This is presented below in Table B.1.

17.1.17 Defra background concentrations are lower than the monitored background concentrations at Charlton Mackrell. Background concentrations are relatively low across the study area and small differences in absolute concentrations between the Defra backgrounds and the monitored data can affect predicted results. Therefore, the Defra NO_x and NO_2 background concentrations applied to the assessment were uplifted by a factor of 1.12 and 1.15 respectively, to improve the agreement with concentrations monitored at the AURN site.

[173] Defra (2018) UK-AIR Information Resource [online] available at: https://uk-air.defra.gov.uk/ (last accessed January 2018)

Table B.1: Comparison of monitored background NO_2 concentrations and Defra background pollutant map data

Data source	2016		
	NO_2 Concentration ($\mu g/m^3$)	NO_x Concentration ($\mu g/m^3$)	Annual Data Capture (%)
Charlton Mackrell (Defra AURN monitoring)[(a)]	7.4	9.4	99%
Defra Background at Charlton Mackrell[(b)]	6.4	8.4	-

Notes: [(a)] – Located at 352196,128768.
[(b)] – Grid square 352500,128500.

17.1.18 It is possible to adjust the Defra background maps to remove sources modelled explicitly, and so avoid double counting. No sources were removed from the Defra maps used in the assessment, as the air quality screening predictions only include road sources within 200 metres of a receptor, and so do not consider the full contribution of these sources included in the Defra 1 by 1 kilometre background concentrations.

17.1.19 The range of Defra backgrounds applied to sensitive receptors have been presented in Table B.2. These background values were uplifted by a factor of 1.12 (NO_x) and 1.15 (NO_2), as discussed above. Further details of the Defra backgrounds used within model verification can be found in appendix B.2.

Table B.2: Adjusted Defra background pollutant map data for the Local Assessment

Location (Easting, Northing)	2015		2023	
	NO_x ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	NO_x ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
357500, 125500	11.0	8.6	7.7	6.1
357500, 125500	11.0	8.6	7.7	6.1
357500, 125500	11.0	8.6	7.7	6.1
358500, 125500	11.1	8.7	7.8	6.1
356500, 125500	9.8	7.7	7.1	5.6
367500, 127500	10.8	8.4	7.6	6.1
383500, 132500	10.9	8.5	7.8	6.1
397500, 135500	11.6	9.0	8.2	6.5
348500, 119500	12.9	10.0	8.7	6.9
346500, 117500	11.3	8.8	7.7	6.1
357500, 125500	11.0	8.6	7.7	6.1
359500, 125500	12.0	9.3	8.3	6.6
358500, 126500	9.5	7.4	6.9	5.5
383500, 132500	10.9	8.5	7.8	6.1
397500, 135500	11.6	9.0	8.2	6.5
381500, 133500	10.2	7.9	7.4	5.9
403500, 140500	11.3	8.7	8.1	6.4
405500, 140500	12.1	9.4	8.4	6.6

Note: Background concentrations have been uplifted by a factor of 1.12 (NOx) and 1.15 (NO_2) and have not been sector removed.

NO_x to NO_2 relationship

17.1.20 Emission rates used within the DMRB Screening Method use NO_x to represent all nitrogen-oxygen species emitted in vehicle exhaust gases. The proportion of NO_2 is needed for comparison with the AQOs presented in Table 5.1.

17.1.21 Research undertaken on behalf of Defra has provided a spreadsheet based method which is available from Defra's AIR website for calculating annual mean NO_x to NO_2 conversions. Modelled road-traffic NO_x was converted to NO_2 using Version 5.1 of the calculator.

Future NO_x to NO_2 projections

17.1.22 The Defra background pollution maps and vehicle emission factors assume that air quality improves in future years, as older vehicles are replaced with modern cleaner vehicles. However, in general, UK monitored roadside NO_2 concentrations have not declined as would be expected in recent years. This trend is thought to be related to the increased use of modern diesel vehicles, which emit more NO_x than expected under urban driving conditions and have higher primary NO_2 emissions than petrol vehicles.

17.1.23 The 2016 Defra air quality tools were used in the assessment. However, it is still considered that future NO_2 concentrations are likely to be underestimated in some areas when using the 2016 tools. A long-term trend (LTT) gap analysis was therefore been carried out for NO_2 in accordance with IAN 170/12.

17.1.24 The LTT provides a method to adjust future air quality predictions in line with the observed LTT in roadside NO_2 in the UK. The baseline air quality data presented in Section 5.5, suggests that NO_2 concentrations in the study area have not declined as would be expected in recent years. A LTT gap analysis was therefore carried out for annual mean NO_2 in this assessment, in accordance with IAN 170/12 as future concentrations predicted using LTT gap analysis will be closer to observed local trends than those predicted using Defra tools.

17.1.25 IAN 170/12 describes three potential approaches to forecast NO_x and NO_2 in future years. Professional judgement is required to determine the most appropriate approach:

- Defra's technical guidance
- Interim LTT_{E6} projections
- LTT projections

17.1.26 For the assessment, the interim LTTE6 gap analysis calculator was used, which accounts for the anticipated emission improvements from Euro 6/VI vehicles (which started entering the UK fleet from 2014). Data is still being gathered on the emission performance of Euro 6/IV vehicles under real world driving conditions, but to date, the information suggests that these vehicles emit less pollution than earlier Euro standards. The air quality effects presented here can therefore be considered as realistic / worst-case, and form a robust approach to considering the risk of any potential significant air quality effects arising during the operation of the scheme.

Predicted 1 Hour NO_2

17.1.27 Annual mean NO_2 concentrations have been presented for identified worst affected receptors. According to Defra guidance, the hourly NO_2 air quality

objective of 200µg/m^3 (not to be exceeded more than 18 times per year) is unlikely to be exceeded at roadside locations where the annual mean concentration is less than 60µg/m^3. Therefore, exceedances of 60µg/m^3 as an annual mean are used as an indicator of potential exceedances of the 1-hour mean NO_2 objective.

Assessment of ecological designated sites

17.1.28 Elevated NO_x concentrations can adversely affect ecosystems, including Special Areas of Conservation (SAC); Special Protection Areas (SPA); Sites of Special Scientific Interest (SSSI) and Ramsar sites (hereafter referred to as 'Designated Sites'). An assessment of scheme effects on Designated Sites was undertaken using the key stages (following the DMRB methodology):

- Identification of all Designated Sites within 200 metres of roads 'affected' by the proposed scheme which have designated features sensitive to air pollutants directly or indirectly; and,
- Calculation of annual average NO_x concentrations at the Designated Sites in the Do-Minimum and Do-Something scenarios.

17.1.29 IAN 174/13 requires that where Designated Sites exceed the annual mean NO_x objective of 30µg/m^3 and changes in NO_x concentrations are greater than 0.4µg/m^3, then nutrient nitrogen deposition should also be calculated and used to determine the overall significance of the scheme effect.

Receptors – human health and wellbeing

17.1.30 Pollutant concentrations were predicted at sensitive receptors, defined according to Defra as:

17.1.31 *'Locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the relevant air quality objective'.*

17.1.32 A selection of 11 sensitive receptors were identified within 200 metres of the affected roads in the study area, as shown in Table B.3 below and the drawing contained in Appendix B.4. Receptors were selected using professional judgement to determine where the highest pollutant concentrations would be likely to arise, and where the greatest effects would be expected to occur due to the proposed scheme.

Table B.3: Sensitive receptors

Receptor ID	Receptor	OS Grid Reference	
		X	Y
1	The Hollies (Plowage Lane/A303)	357084	125028
2	Crusty Cottage (A303)	357668	125298
3	The Firs (Steart Road/A303)	357827	125398
4	Pepperhill Cottage (Camel Hill)	358964	125601
5	Downhead Lane	356541	125788
6	Spring Lodge (A303)	367667	127059
7	Halfway House (A303)	348489	119343
8	Foss Way	346609	117711

Receptor ID	Receptor	OS Grid Reference	
		X	Y
9	Plowage Lane	357118	125247
10	Hill View (A359)	359756	125228
11	Vale Farm (Camel Hill)	358175	126071

Receptors – Ecological

17.1.33 There are 5 Designated Sites within 200 metres of the affected road network for the scheme:

- Charnage Down Chalk Pit SSSI
- Stockton Wood and Down SSSI (E1)
- Whitesheet Hill SSSI (E2)
- Yarnbury Castle SSSI (E3)
- Parsonage Down SSSI (E4)

17.1.34 All the above Designated Sites, except Charnage Down Chalk Pit SSSI, have been designated for the presence of chalk grassland which supports many notable, and in some cases rare, species of flora, some of which may be sensitive to NO_x and nitrogen deposition. In addition, the Stockton Wood and Down SSSI consists of scrub and woodland. Charnage Down Chalk Pit SSSI is designated for geological reasons so is not considered sensitive to air pollution and therefore was not considered further in the assessment.

17.1.35 Concentrations of NO_x were predicted within these four Designated Sites using the DMRB Screening Method along receptor transects at 10m intervals within the Designated Sites, up to 200m away from affected roads.

17.1.36 Table B.4 below and the drawing contained in Appendix B.4 presents the location of the nearest point of the Designated Site and its distance to the adjacent affected road.

Table B.4: Sensitive Receptors

Receptor ID	Receptor	Distance from nearest affected road (m)	OS Grid Reference	
			X	Y
E1	Stockton Wood and Down (SSSI)	10	397144	135528
E2	Whitesheet Hill (SSSI)	152	381823	133031
E3	Yarnbury Castle (SSSI)	83	403640	140153
E4	Parsonage Down (SSSI)	196	405840	140877

Compliance Risk Assessment

17.1.37 IAN 175/13 provides guidance in relation to the assessment of the risk of the proposed scheme being non-compliant with the EU Directive. The compliance risk assessment is undertaken using the results obtained from the local air quality assessment. To undertake the compliance risk assessment the following information is required:

- Local air quality modelled results

- Defra's Pollution Climate Mapping (PCM) model outputs for the compliance road network
- Defra's zones and agglomeration maps

17.1.38 Defra's Pollution Climate Mapping (PCM) model is used to report compliance with the EU limit values and provides NO_2 concentrations for a number of roads across the UK for a selection of future years. For the assessment, the 2015 PCM data was used. The 2015 PCM model provides projections for the years 2013, 2020, 2025 and 2030, with projected NO_2 concentrations declining year on year in response to anticipated improvements in vehicle emissions.

17.1.39 To determine the study area for the compliance risk assessment, the local air quality affected road network (ARN), as defined in paragraph 5.4.2, and the road network from the PCM model is used. A compliance risk road network (CRRN) is then defined where the two networks overlap, which then forms the basis for the assessment of compliance risk. In the scheme Opening Year (2023) there were no PCM links which overlap with the ARN. In addition, there were no PCM links within 10 kilometres of the scheme exceeding 40µg/m^3 for the opening year of 2023. Based on projected roadside NO_2 concentrations in the 2015 version of the PCM model, the PCM link closest to the scheme, (on Ilchester Road) predicts a 2023 annual NO_2 concentration of 15µg/m^3, which is well below the annual mean limit value of 40µg/m^3 for NO_2.

17.1.40 Based on 2015 PCM data and the local air quality results obtained in this assessment, it is considered unlikely that there would be an exceedance of the EU NO_2 limit value in the Opening Year of the scheme (2023).

17.1.41 The scheme is therefore considered to have a low compliance risk rating, in accordance with IAN175/13, and no further consideration of scheme effects in relation to compliance with the EU Directive has been undertaken. This will be reassessed in the ES using the new PCM Baseline model, which was released in September 2017. Using this revised PCM data, the ES will consider yearly intervals and will therefore assess the scheme Opening Year.

Appendix B.2 - Model verification

Methodology

17.1.42 Model verification is a process by which checks are carried out to determine the performance of a model at a local level, primarily by the comparison of modelled results with monitoring data. The verification process benefits an assessment by investigating uncertainties and minimising them either through informed refinement of model input parameters or adjustment of the model output if it is deemed necessary.

17.1.43 Guidance produced by Defra (TG16) provides a methodology for model verification including calculation methods and directions on the suitability of monitoring data.

17.1.44 Verification of modelled 2016 annual mean NO_2 concentrations has been undertaken utilising monitoring results from relevant diffusion tube sites within the study area.

17.1.45 Background concentrations used in the model verification have been taken from Defra AIR and, following comparison with background air quality monitoring sites, were uplifted using the factors discussed in paragraph 17.1.17 in Appendix B.1 and are presented in Table B.5 below.

Table B.5: Adjusted Defra background pollutant map data for verification

Grid square	2016	
	NO_x (µg/m^3)	NO_2 (µg/m^3)
349500, 120500	8.6	11.0
352500, 123500	8.4	10.8
354500, 123500	8.0	10.3
354500, 125500	8.4	10.8
356500, 124500	8.5	10.9
357500, 125500	8.2	10.5
358500, 125500	8.3	10.6
360500, 126500	9.3	12.1
363500, 126500	8.4	10.7

Note: Background concentrations have been uplifted by a factor of 1.12 (NOx) and 1.15 (NO_2) and have not been sector removed

17.1.46 Data from South Somerset District Council and the scheme monitoring was then reviewed and only sites that are in areas representative of receptors used within the DMRB simple assessment have been included in the verification process.

17.1.47 No South Somerset District Council sites met this criterion as all the monitoring sites were greater than 7 kilometres from the local ARNs therefore were not considered representative of the assessment receptors.

17.1.48 Twelve scheme specific monitoring sites were used for verification. The exact location of each of the sites was confirmed from street photography taken during commissioning of the monitoring survey. Diffusion tubes 007 and 013

were excluded from verification as they are in locations which are not representative of the receptors used in the DMRB simple assessment. Diffusion tube 012 was excluded as the tube was located on a bridge above the A303 (greater than 5m) and therefore is not considered a roadside location.

17.1.49 The location of the monitoring sites used in model verification are indicated in Appendix B.8. The scheme monitoring sites were annualised and bias adjusted in accordance with Defra guidance. Table B.6 presents the monitoring data used within the model verification.

Table B.6: Monitoring data used within model verification

Site ID	OS Grid reference		2016 Annual Mean (NO_2) µg/m^3
	X	Y	
A303SPAR_001	363096	126330	13.3
A303SPAR_002	360781	126516	11.7
A303SPAR_003	360913	126904	13.3
A303SPAR_004	360471	126423	18.7
A303SPAR_005	358967	125551	19.7
A303SPAR_006	357851	125391	19.8
A303SPAR_008	357724	125321	25.6
A303SPAR_009	357074	125029	28.6
A303SPAR_010	356760	124922	29.7
A303SPAR_011	354621	125071	14.4
A303SPAR_014	352190	123964	20.8
A303SPAR_015	349768	120271	13.7

Results

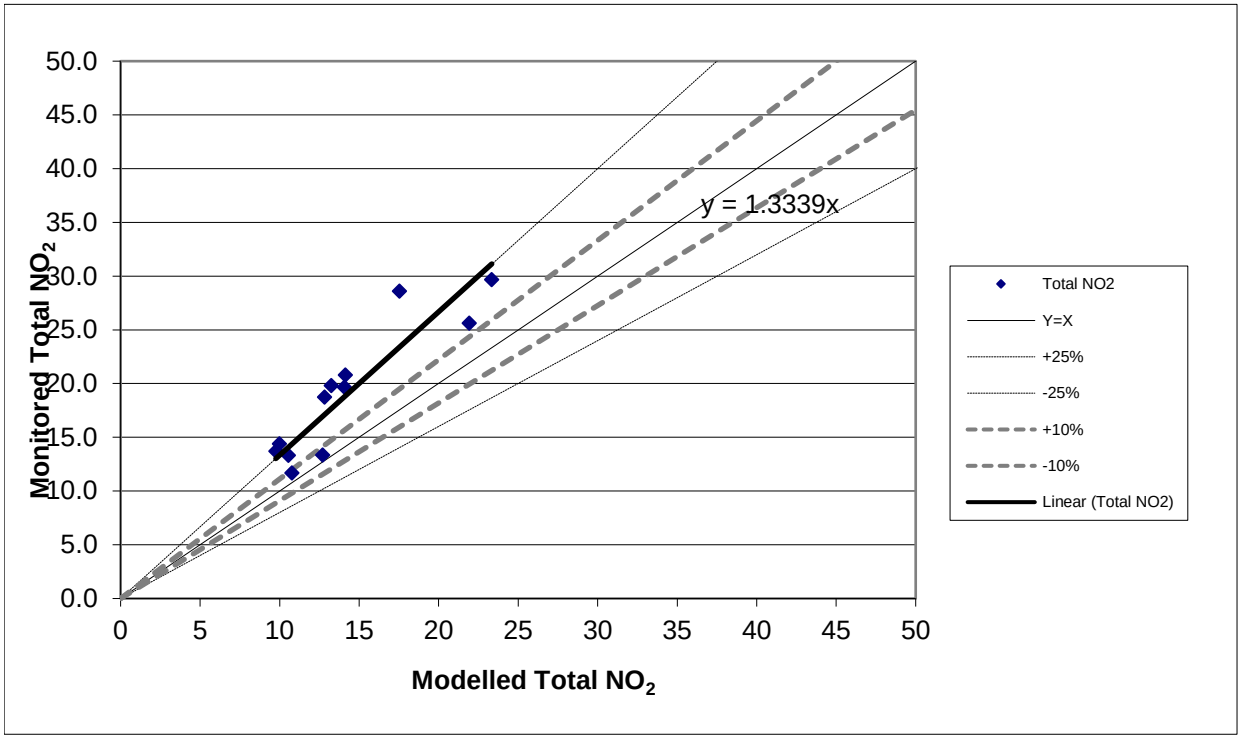
17.1.50 Table B.7 and Figure B.1 presents a comparison of the monitored and modelled concentrations of NOx and NO_2 at the diffusion tube sites for the year 2016. The screening model appears to systematically under predict NO_2 concentrations at all locations; model under prediction ranges from 4.8 to 38.6%.

Table B.7: Unadjusted model verification results

Site ID	Monitored Road NO_x (µg/m^3)	Modelled Road NO_x (µg/m^3)	Monitored Total NO_2 (µg/m^3)	Modelled Total NO_2 (µg/m^3)	Total NO_2 % Difference
A303SPAR_001	9.1	4.0	13.3	10.6	-20.6
A303SPAR_002	4.3	2.6	11.7	10.8	-7.7
A303SPAR_003	7.4	6.2	13.3	12.7	-4.8
A303SPAR_004	17.7	6.4	18.7	12.8	-31.5
A303SPAR_005	21.5	10.7	19.7	14.1	-28.4
A303SPAR_006	22.0	9.4	19.8	13.3	-33.1
A303SPAR_008	33.9	28.5	25.6	21.9	-14.4
A303SPAR_009	40.2	17.6	28.6	17.5	-38.6
A303SPAR_010	42.0	29.2	29.7	23.3	-21.3
A303SPAR_011	11.0	2.8	14.4	10.0	-30.6
A303SPAR_014	23.6	11.3	20.8	14.1	-32.0
A303SPAR_015	9.5	2.5	13.7	9.8	-28.8

17.1.51 Following Defra guidance, modelled and monitored road traffic concentrations have been compared to derive a verification factor of 1.6 which been applied to the modelled NO_x results.

Figure B.1: Unadjusted model verification results (annual mean NO_2, µg/m^3)



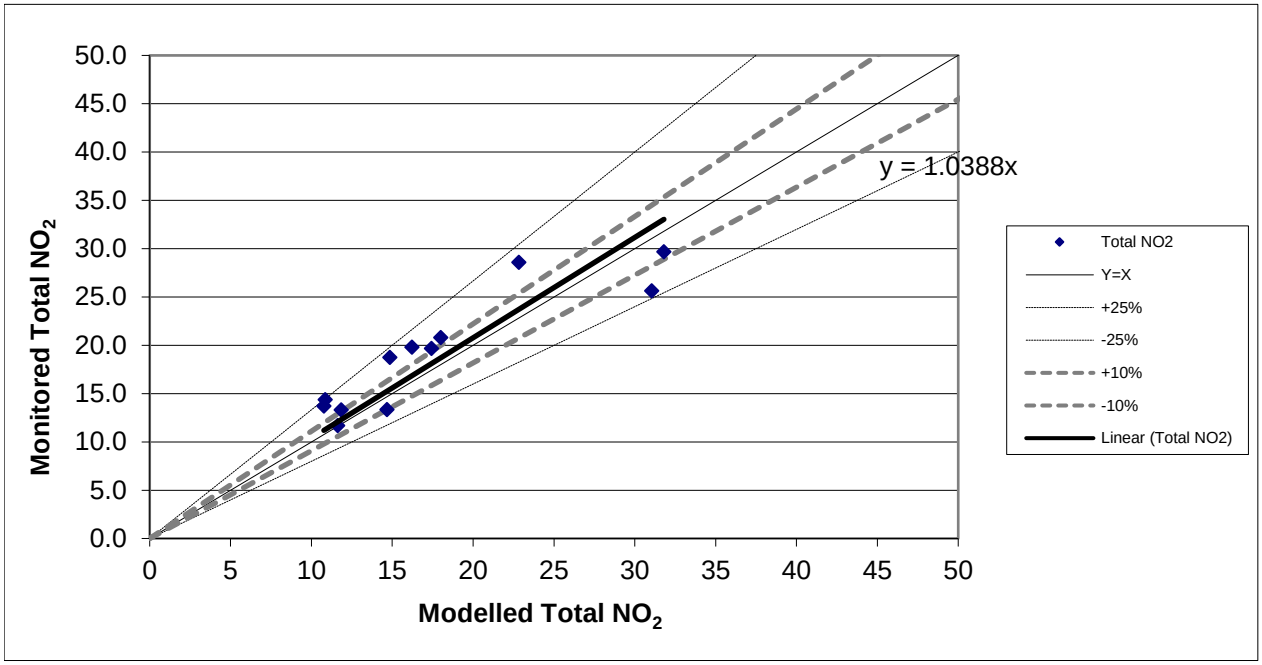
17.1.52 Table B.8 and Figure B.2 present the adjusted modelled NO_2 against monitored NO_2 at the verification sites. Following adjustment, the model predicts annual mean NO_2 concentrations within 25% of the monitored concentrations at all monitoring sites, 3 of which are within 10% of the monitored concentration. The Screening Method therefore performs adequately at these locations following adjustment. The Screening Method under predicts annual mean NO_2 concentrations at locations well below the annual mean NO_2 objective and over predicts at locations with higher monitored annual mean NO_2 (e.g. those above 30µg/m^3). Therefore, there is low risk of the Screening Method under predicting annual mean NO_2 at locations close to the annual mean NO_2 objective and considering the existing concentrations in the study area the results are considered robust.

Table B.8: Adjusted model verification results

Site ID	Monitored Total NO_2 (µg/m^3)	Modelled Total NO_2 (µg/m^3)	% Difference
A303SPAR_001_1215	13.3	11.8	-11.0
A303SPAR_002_1215	11.7	11.6	-0.4
A303SPAR_003_1215	13.3	14.7	10.0
A303SPAR_004_1215	18.7	14.9	-20.6
A303SPAR_005_1215	19.7	17.4	-11.4
A303SPAR_006_1215	19.8	16.2	-18.2
A303SPAR_008_1215	25.6	31.0	21.2
A303SPAR_009_1215	28.6	22.8	-20.1
A303SPAR_010_1215	29.7	31.8	7.2

A303SPAR_011_1215	14.4	10.9	-24.4
A303SPAR_014_1215	20.8	18.0	-13.4
A303SPAR_015_1215	13.7	10.8	-21.5

Figure B.2: Adjusted model verification results (annual mean NO_2, µg/m^3)



17.1.53 Table B.9 presents statistical parameters for describing model uncertainty. The Root Mean Square Error (RMSE) is used to define the average error or uncertainty of the model. The results of the RMSE calculation in this case are concentrations of NO_2 measured in units of micrograms per metre cubed. Table B.9 shows that before adjustment the model uncertainty was plus or minus 5.57µg/m^3 or 13.9% of the annual mean NO_2 objective. After adjustment the model uncertainty is reduced to plus or minus 3.32µg/m^3 or 8.3% of the annual mean NO_2 objective. After adjustment, the model uncertainty is within the desired 10% of the relevant objective, as recommended by Defra guidance.

17.1.54 Fractional Bias (FB) is used to identify if the model shows a tendency to over or under predict and values can vary between +2 and -2 and have an ideal value of 0. Negative values suggest a model over-prediction and positive values suggest a model under-prediction. Table B.9 shows that before adjustment the model is under-predicting annual mean NO2 concentrations. Following adjustment, the model is close to the desired FB value of 0 with a slight tendency to over-predict.

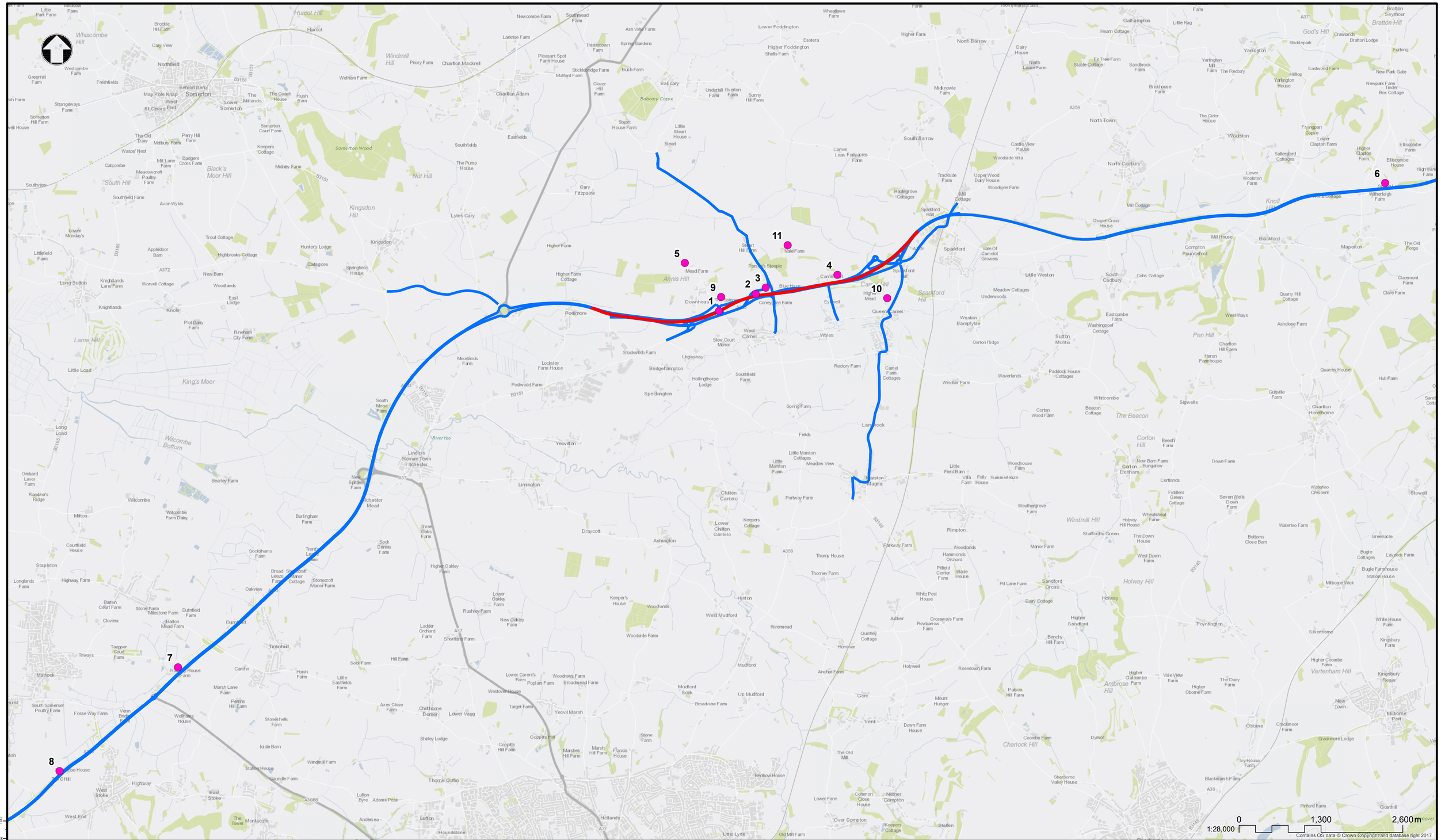
17.1.55 The correlation coefficient (R) is used to measure the linear relationship between modelled and measured data. A value of zero means no relationship and a value of 1 means absolute relationship. The value of R improves from 1.33 to 1.04 following model adjustment.

Table B.9: Description of model uncertainty

Statistical Parameter	Before Adjustment	After Adjustment	Ideal Value
Root Mean Square Error	5.57	3.32	0
Fractional Bias	0.29	0.08	0
Correlation Coefficient	1.33	1.04	1

17.1.56 The statistical analysis above demonstrates that the model performs adequately versus monitoring data, following adjustment. An adjustment factor of 1.6 has therefore been applied to modelled road NOx contributions at all receptors.

Appendix B.3 – Air quality human health receptors



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Legend

- Human health receptors representative for the purposes of the assessment
- Scheme Centreline
- Local Affected Road Network (2023)

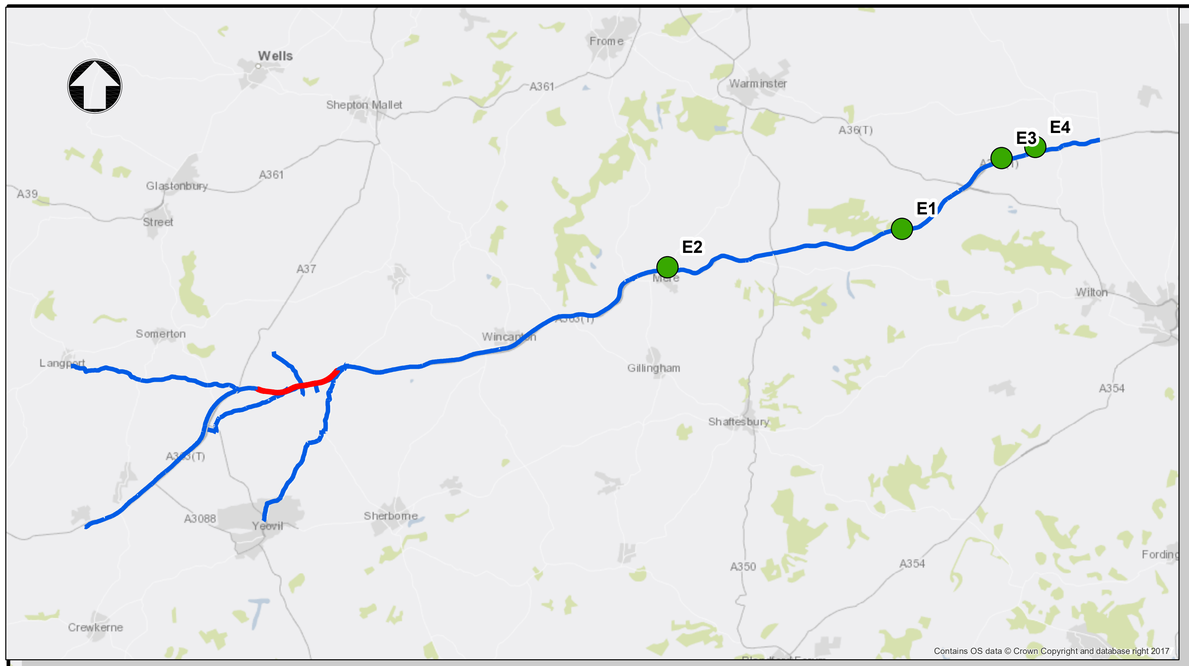
Project Title

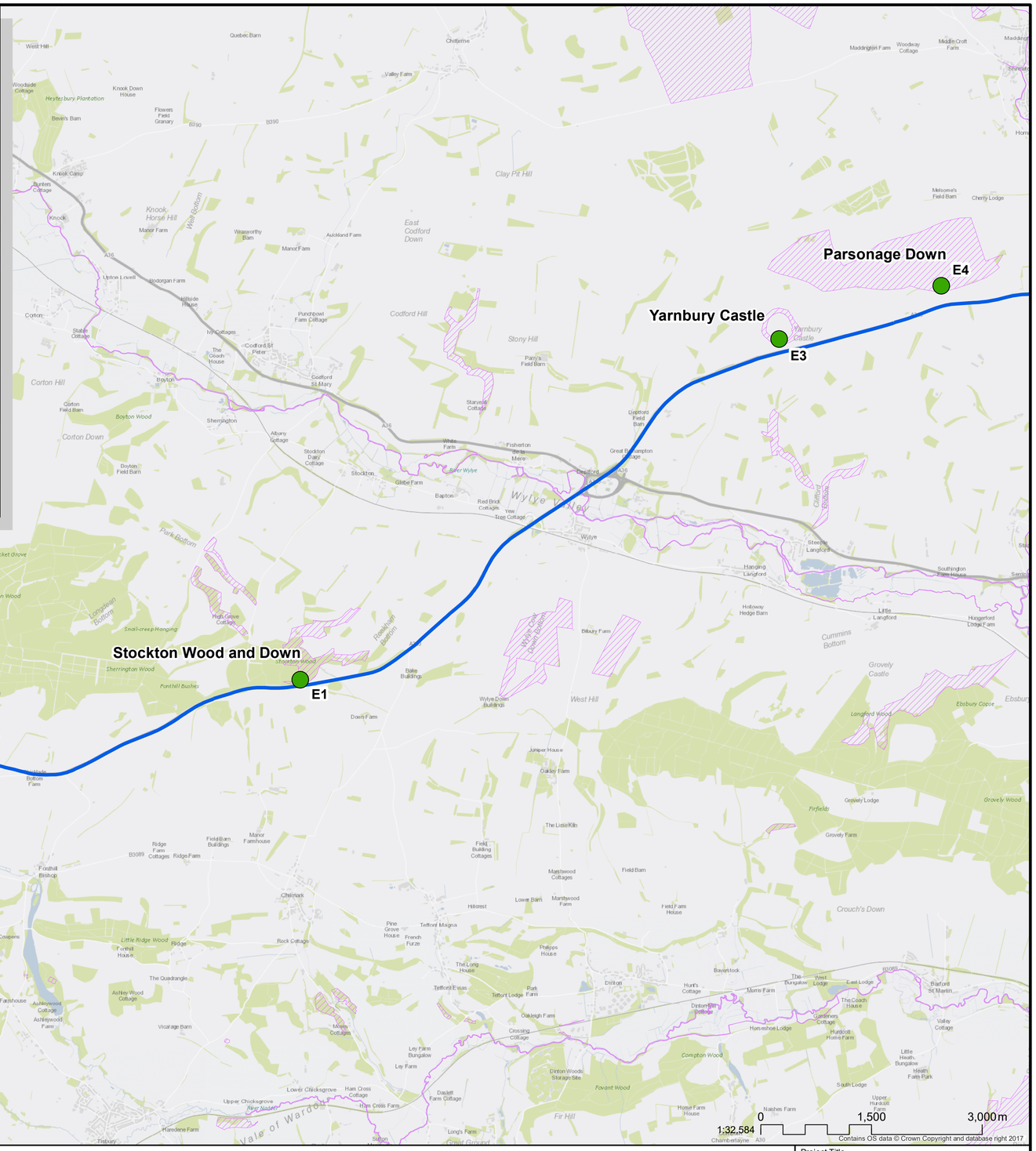
A303 Sparkford to Ilchester Dualling

Drawing Title

Air Quality Human Health Receptors

Appendix B.4 –Air quality ecological receptors





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Legend

- Ecological receptor
- Scheme Centreline
- Local Affected Road Network (2023)
- Site of Special Scientific Interest

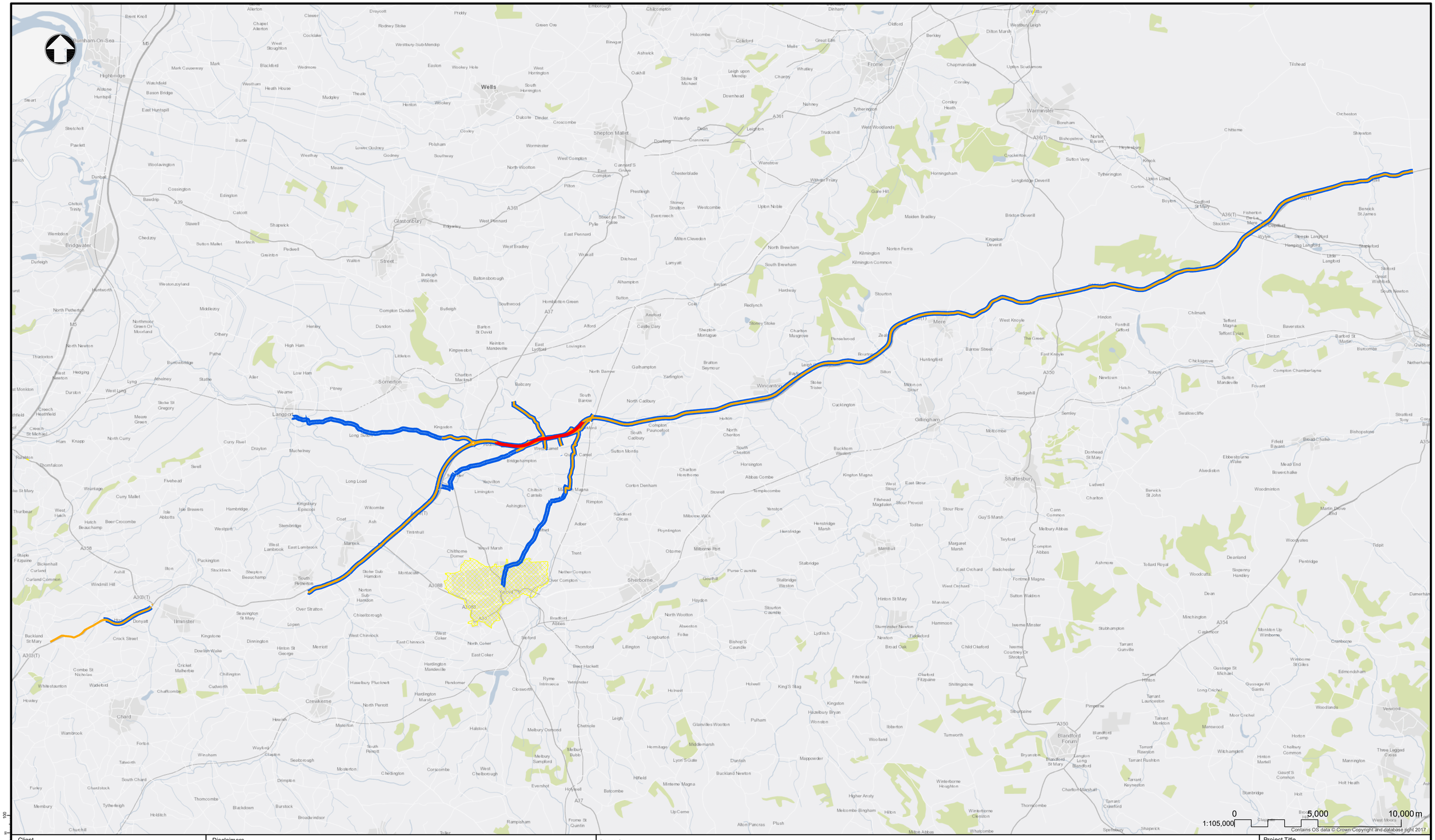
Project Title

A303 Sparkford to Ilchester Dualling

Drawing Title

Air Quality Ecological Receptor Locations

Appendix B.5 – Local Affected Road Network



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Legend

- Scheme Centreline
- 2023 Local Affected Road Network
- 2038 Local Affected Road Network
- Yeovil AQMA

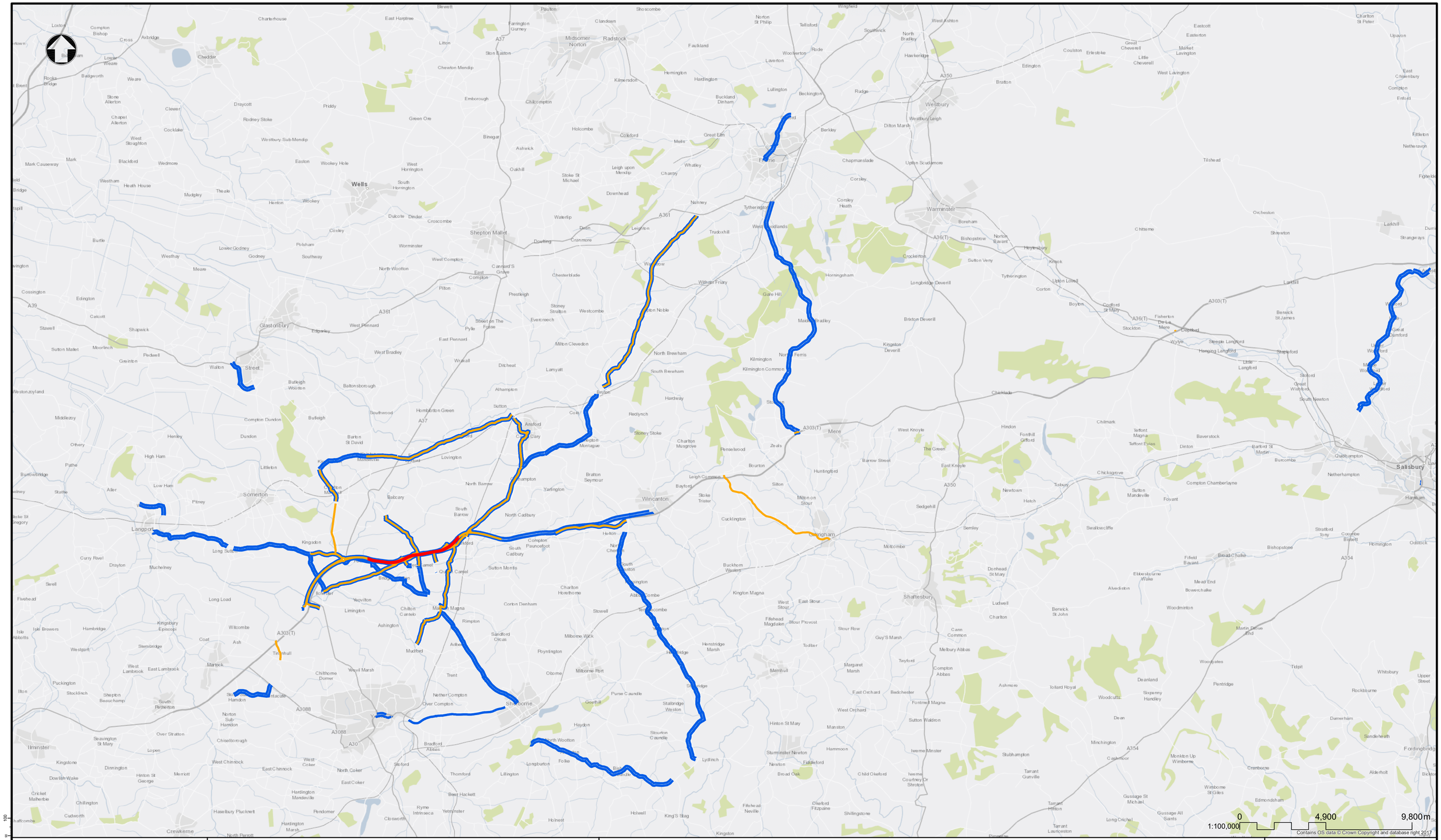
Project Title

A303 Sparkford to Ilchester Dualling

Drawing Title

Local Affected Road Network

Appendix B.6 – Regional affected road network



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Legend

- Scheme Centreline
- 2023 Regional Affected Road Network
- 2038 Regional Affected Road Network

Project Title

A303 Sparkford to Ilchester Dualling

Drawing Title

Regional Affected Road Network

Appendix B.7 – Monitoring survey information

A monitoring survey of NO_2 concentrations at 16 sites in the study area was carried out from January 2016 to June 2016. Monitoring was carried out using diffusion tubes, which are passive method designed to provide information on long-term trends and existing concentrations. The tubes are exposed at each location for approximately one month, then collected, sent back to a laboratory for analysis and replaced with new tubes.

The tubes were prepared and analysed by Staffordshire Scientific Services using the 20% TEA in water method.

B.2.1 Monitoring Locations

Monitoring sites were selected based on their proximity to major roads and junctions likely to be affected by the proposed scheme and at locations where sensitive receptors are present. The location of each tube is indicated in the drawing contained within B.9.

The raw data obtained from the six-month diffusion tube survey was annualised and bias adjusted to enable comparison with the annual mean NO_2 objective. The methodology behind the adjustment process is outlined below.

B.2.2 Bias Adjustment

Diffusion tubes are less accurate than continuous monitoring methods and typically under or over-read concentrations. In order to correct for this, diffusion tubes are co-located with continuous monitoring stations, and a bias adjustment factor is calculated by comparing results from both techniques. Mouchel included three diffusion tubes within the monitoring survey co-located with Charlton Mackrell AURN site. The results from these tubes was compared to the results from the AURN for the same period which provided a bias adjustment factor of 0.94.

B.2.3 Annual Adjustment

Since the diffusion survey was taken from January 2016 to June 2016, it was necessary to convert the period data to an annual mean concentration for 2016 for comparison with the annual mean NO_2 objective. The bias adjusted diffusion tube data was converted to a representative annual mean for 2016 using the approach outlined in Box 7.9 of Defra TG16.

Automatic monitoring data was obtained from background automatic monitoring stations within 50 miles of the scheme shown in Table B.6 and the period average concentration was compared to the annual mean concentration monitored for the stations in 2016.

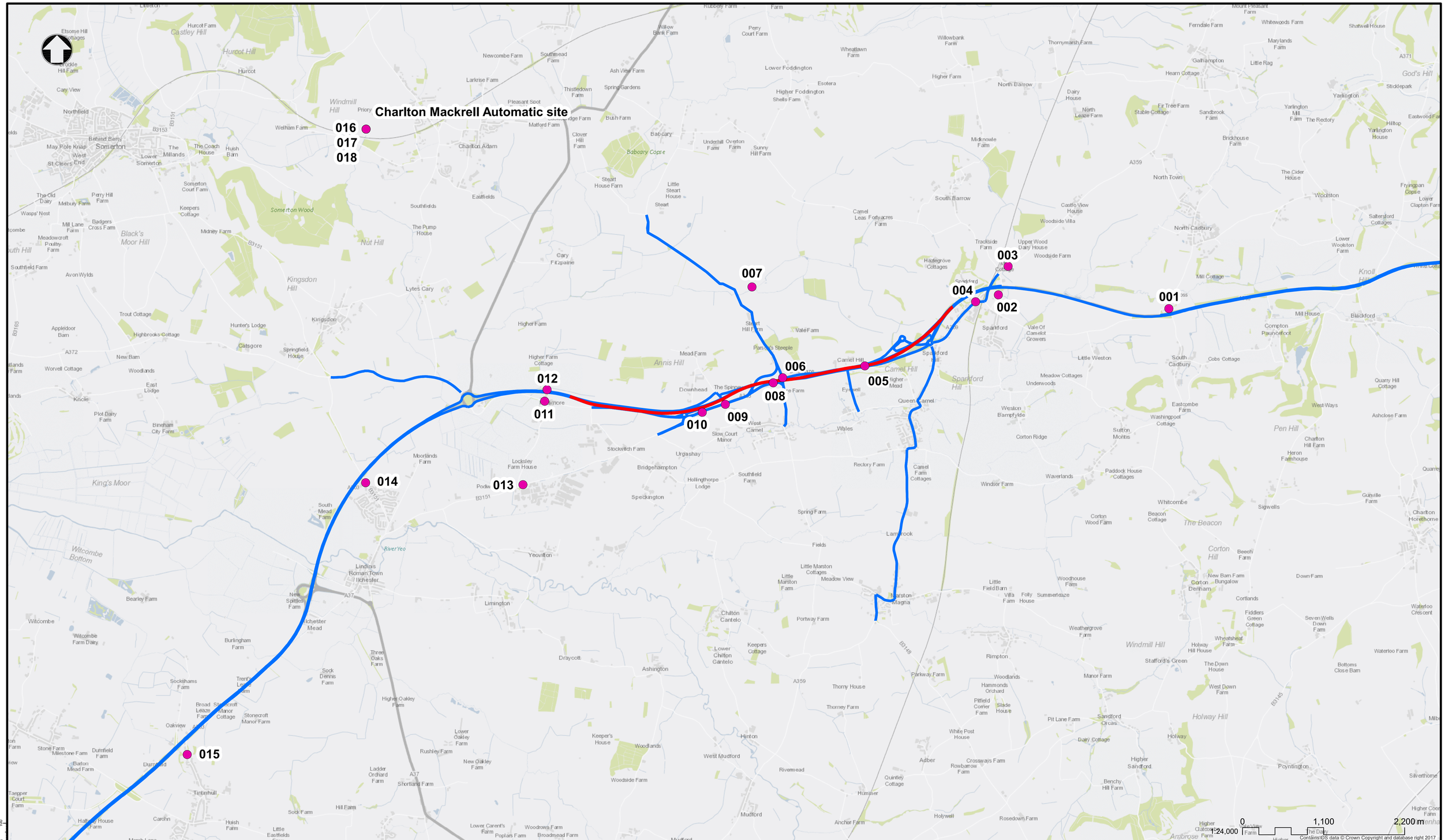
Table B.6 Annualisation Factors

Site ID	Honiton AURN		Charlton Mackrell AURN	
	ug/m^3	% DC*	ug/m^3	% DC*
Period Mean NO_2 ** (µg/m^3)	7.7	99	6.7	99
2016 Mean NO_2 (µg/m^3)	8.1	96	7.4	99
Annualisation factor	1.06		1.10	

*Average for 2016
* DC = Data Capture
**Average for period 14/12/2015 to 17/06/2016

An average annualisation factor of 1.08 was obtained from the Honiton and Charlton Mackrell automatic monitoring stations. The annualisation factor was applied to the bias adjusted diffusion tube results to convert to an annual mean value for 2016.

Appendix B.8 – Air quality monitoring locations



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Legend

- Monitoring sites
- Scheme Centreline
- Local Affected Road Network (2023)

Project Title

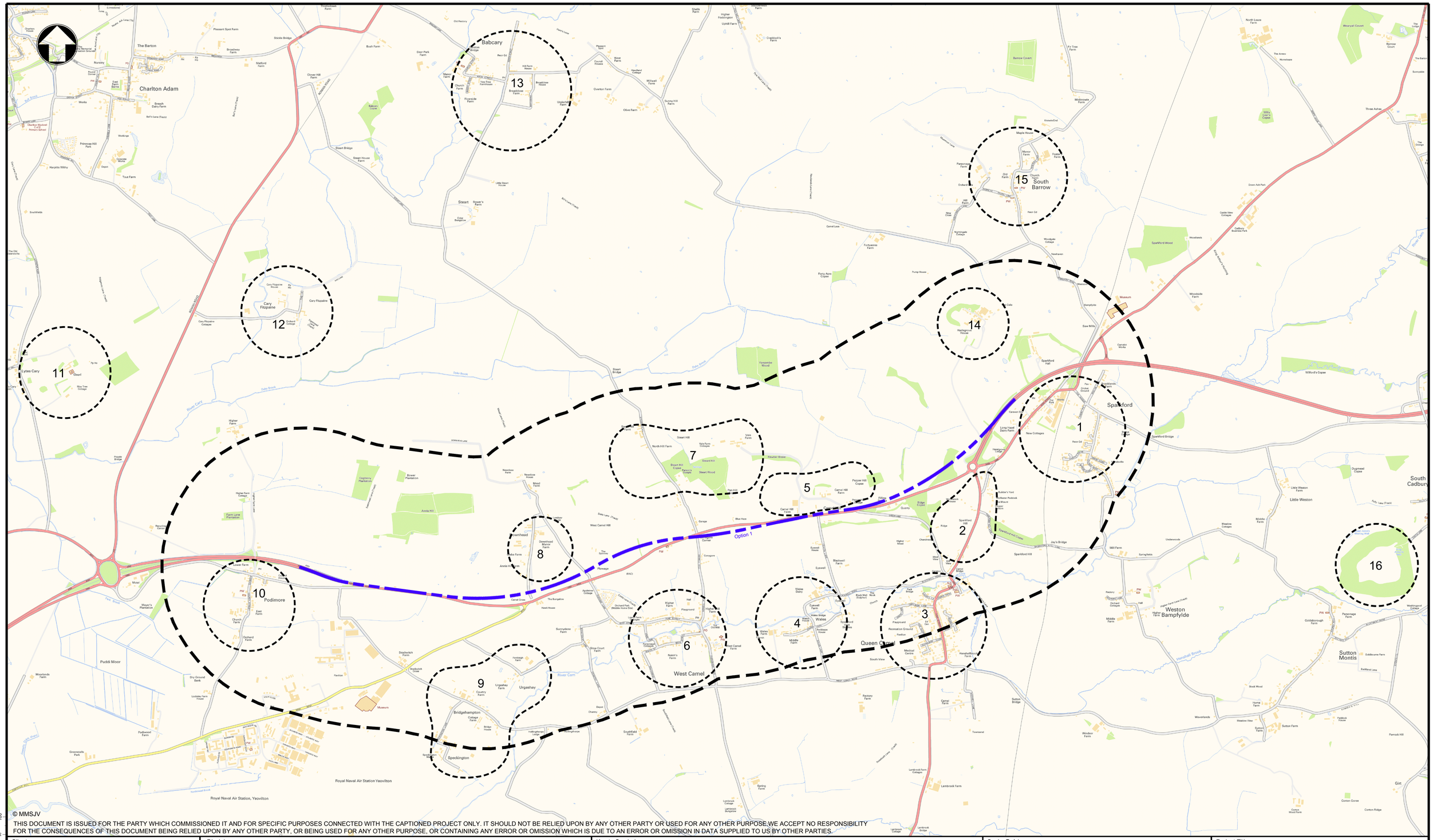
A303 Sparkford to Ilchester Dualling

Drawing Title

Air Quality Monitoring Locations

Appendix C: Landscape

Appendix C.1 – Visual receptor plan


Babcary
13
Broadclose Farm
Cary Fitzpaine
12
Cary Fitzpaine House
Lytes Cary
11
Chapel
Charlton Adam
The Barton
Charlton Mackrell C of E Primary School
Princess Hill Park
Trout Farm
Steart
Steart Bridge
Steart House Farm
Little Steart House
Steart Bower's Farm
Cider Bungalow
Option 1
7
Steart Hill
Steart Wood
North Hill Farm
Vale Farm Cottages
Rawlsbar Brake
5
Carnel Hill Farm
Carnel Hill Copse
Pepper Hill Copse
8
Downhead
Downhead Manor Farm
Yarnhead
Yarnhead Farm
Ansells Hill
Podimore
10
Puddi Moor
Podimore Bridge
Mayer's Plantation
Higher Farm
Higher Farm Cottages
Farm Lane Plantation
Cloghenny Plantation
Bower Plantation
Ansells Hill
9
Urgashay
Urgashay Farm
Country Farm
Bridgehampton
Speckington
Royal Naval Air Station Yeovilton
Royal Naval Air Station, Yeovilton
6
West Camel
Nash's Farm
Higher Farm
Hall
Playground
Village Hall
Church
Primary School
Fenclough Farm
Fenclough Cottages
Lower Farm
Lower Farm Cottages
Wayside
Orchard Park (Mobile Home Site)
Sunnydene Farm
Slow Court Farm
Stockwith Farm
Stockwith Cross
Pavilion
Museum
Depot
Chantry
Hollinghorne Lodge
Hollinghorne
Bridge House
Cottage Farm
Southfield Farm
Spring Farm
Lambrook Cottage
Lambrook Bungalow
Lambrook Farm Cottages
Lambrook Farm
Lambrook Bridge
Wales
4
Wales Farm
Wales Dairy
Wales Bridge
Middle Farm
Eyewell Farm
Eyewell House
Eyewell
Blackwell Farm
Black Wall (Sculpture)
Rock
Church
Queen Camel
3
Park Ridge
Playground
Recreation Ground
Pavilion
Medical Centre
Horsehollow Farm
Queen Camel Cricket Ground
Sparkford
1
Sparkford Hall
Sparkford Bridge
Sparkford Hill
2
Sparkford Hill Copse
Builder's Yard
Milestone Paddock
The Mount
Upper Mount
Jay's Bridge
Chandlers
Higher Mead
Wood View
Lower Mead
Sparkford Hill Farm
Sparkford Hill Cottages
Sparkford Wood
Woodlands
Woodside Farm
Woodgate Cottage
Newhaven
Pump House
Forty Acre Copse
Fortyacres Farm
Carnel Lane
Nightingale Cottage
Hazlegrove House
14
Museum
Sawmills
Pumphrey
Carnelot Works
Long Hazel Dairy Farm
New Cottages
Hazelgrove Cottage
Cricket Ground
Oak Park
Woods
Brookfield
Brookfield Cottage
Ridge
Ridge Copse
Quarry
Lower Quarry
Quarry Cottage
Lower Quarry Cottage
Yeo Lane
Yeo Bridge
Yeo Mill
Yeo Mill Cottage
Yeo Mill Lane (Track)
Yeo Mill Lane (Track)
Yeo Mill Lane (Track)

Appendix D: Biodiversity

Appendix D.1 – Protected species policy and legislation

Species	Legislation
Bats *Chiroptera*	All bat species are protected under the Conservation of Habitat and Species Regulations 2010 and Wildlife and Countryside Act (WCA) 1981. This means it is illegal to: • Deliberately capture, injure or kill a bat • Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats • Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time) • Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat • Intentionally or recklessly obstruct access to a bat roost.
Badgers *Meles meles*	Badgers and their setts are afforded protection under the Protection of Badgers Act 1992. This Act is in regards to welfare legislation for badgers, due to history persecution, rather than their distribution which is widespread and abundant throughout the countryside. Under this act it is an offence to: • Capture, kill, injure and cruelly or ill-treat a badger • Damage, obstruct or destroy a sett • Disturb a badger when within a sett
Dormice *Muscardinus avellanarius*	Dormice are protected under the Conservation of Habitat and Species Regulations 2012 and by the Wildlife and Countryside Act 1981. This makes it illegal to: • Intentionally or deliberately injure, kill, or take any wild dormouse • Intentionally or deliberately damage, destroy or obstruct any access to any structure or place used for shelter, breeding, or protection by a dormouse • Or to intentionally or recklessly disturb a dormouse whilst it is using such a structure or place • Possess or advertise/sell/exchange a dormouse (dead or alive) or any part of a dormouse
Great crested newts (GCN) *Triturus cristatus*	GCN are fully protected by the Conservation of Habitats and Species Regulations 2010 and under the WCA 1981. This makes it illegal to: • Intentionally or deliberately kill, injure or take any GCN; • Possess or control any live or dead specimen, or anything derived from a GCN • Intentionally or deliberately damage, destroy or obstruct any access to any structure or place used for shelter, breeding, or protection by a GCN • Or to intentionally or recklessly disturb a great crested newt whilst it is using such a structure or place
Widespread reptile species (Slow worm *Anguis fragilis,* Grass snake *Natrix natrix,* Common lizard *Zootoca vivipara,* and Adder *Vipera berus).*	All UK reptile species are protected under the WCA 1981 making it illegal to: • Intentionally or deliberately injure, kill, or take any wild reptile; • Possess or advertise/sell/exchange a reptile (dead or alive) or any part of a reptile.
Breeding birds	All wild birds in the UK are protected under the WCA 1981 making it illegal to: Kill, injure or take any wild bird; • Take, damage or destroy the nest of any wild bird while it is being built or in use • Take or destroy the eggs of any wild bird • Possess or control (e.g. for exhibition or sale any wild bird or egg unless obtained legally) In addition to the above, Schedule 1 bird species are also protected from disturbance, both to their nesting areas and wintering habitats.
Watervoles *Arvicola amphibius*	Water voles are protected under the WCA 1981 (as amended by the Countryside and Rights of Way Act 2000). This legislation makes it an offence to: • Intentionally kill, injure, disturb or take a wild water vole • Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by this species • Sell, offer for sale or advertise for live or dead water voles • Possess or control a live or dead water vole, or any part of a water vole
Otters *Lutra lutra*	Otters are afforded protection under Schedule 5 and 6 of the WCA and the Conservation Habitats and Species Regulations 2010. This makes it illegal to: • Intentionally kill, injure, disturb or take an otter • Intentionally or recklessly damage, destroy or obstruct access to any place that an otter uses for shelter or protection

Species	Legislation
White clawed crayfish *Austropotamobius pallipes*	White clawed crayfish are legally protected under the Wildlife and Countryside Act 1981 (as amended) under Schedule 5. It is classified as endangered in the IUCN Red List. This makes it illegal to: • Intentionally, or recklessly, kill or injure a WCC • Sell, or attempt to sell, any part of this species, alive or dead

Appendix D.2 – Natural England meeting minutes (3 May 2017)

Highways England RIS Schemes: A358 Taunton to Southfields and A303 Sparkford to Illchester Dualling

Initial Ecology Consultation Meeting

Date:	Tuesday 2 May 2017	**Time:**	11:00 - 12:30
Location:	Natural England, Horizon House, Bristol		
Attendees:	Julia Barrett (JB), Mott MacDonald Sweco Simon Mason (SM), Mott MacDonald Sweco Vicky Hollands (VH), Mott MacDonald Sweco Andrea Evans (AE), Mott MacDonald Sweco Oliver Lowe (OL), Natural England Simon Stonehouse (SS), Natural England Hannah Nelson (HN) Highways England		
Apologies:	N/A		

No.	Actions/Key Messages	Owner
1.0	**Welcome and Introductions**	
	All attendees introduced themselves.	
2.0	**Safety Moment**	
	VH explained that a Health and Safety issue faced by surveyors onsite during the bat survey season is fatigue. MM compensate for this by using staff on a rota and having accommodation nearby.	
3.0	**Background to the Scheme (s)**	
	JB gave an overview of both schemes, how the options have been chosen, the DCO submission date of May 2018 and expected construction start date of 2020.	
4.0	**Purpose of the Meeting**	
	JB explained that the purpose of the meeting was to discuss survey methodology for bats, general protected species surveys and develop mitigation and NE principles.	
5.0	**Bat Survey Methodology**	
	OL confirmed that NE are happy with the general scope of the surveys outlined in the bat survey methodology memo, however concerns were raised regarding the length of the transect surveys. OL suggested that the transect routes could be shortened. SM explained that although the transects are long, surveys are still in	OL

No.	Actions/Key Messages	Owner
	line with the 2016 Bat Conservation Trust (BCT) guidelines (suggests transect lengths of 3-5km). The number of point counts along each transect has been increased from 8 to 10 to provide more data along the long transects. SM also explained that 3 statics are being used per transect. SS agreed the survey effort sounds sufficient but would check with NE bat advisor. SM explained that lesser horse and barbastelle have been identified within the scheme extents of the A358 and A303. The need for additional radiotracking studies for both schemes was discussed and it was concluded that the need for this should be determined by the results of the initial bat activity and roost surveys. Radio tracking is an intrusive method and should only be used where sufficient data cannot be obtained by non-intrusive survey methods. The proximity of various bat Special Areas of Conservation (SACs) to the schemes was also discussed. Previous radiotracking information on Hestercombe House SAC was shown which illustrates that bats associated with this SAC use a core area to the west of the M5 corridor and were unlikely to use habitats within A358 scheme. SM asked NE to comment on the requirement of radio tracking for both schemes. OE will discuss with the NE bat advisor to get clarification and will provide written advice. OL mentioned that due to the presence of late emerging species such as lesser horseshoe, bat activity surveys should be extended to up to 3 hours after sunset to ensure activity was recorded. SM expressed concern that due to land access issues some areas may not be subject to a survey during all or part of the survey season. OL explained that it should be made clear why access couldn't be obtained and a record of what efforts have been made to obtain access should be kept.	
	The need for landscape-scale bat surveys was discussed. A deviation from the bat memo which was submitted to NE in advance of the meeting was discussed, with SM suggesting that due to the number of surveys being undertaken in the 2017 season MM are looking to delay the Landscape transects until 2018. The other surveys will provide robust data for assessing the impacts and any necessary licence applications in advance of the DCO application. The primary aim of the landscape transects is to provide baseline data for monitoring impacts post construction. Undertaking landscape surveys in 2018 would provide this baseline data in advance of construction. OL to speak to NE bat advisor and will confirm whether undertaking landscape scale transects in 2018	OL

No.	Actions/Key Messages	Owner
	post DCO application would be acceptable and provide written advise on this.	
6.0	**Outline of broad ecological surveys for both schemes**	
	VH and AE gave a broad overview of what surveys are being undertaken for each scheme and what notable species have been found to date for both schemes. VH informed NE that lesser horse shoe bats, water voles, reptiles, great crested newts, a dormouse starter nest and evidence of badges have been identified within the study area of the A303. AE informed NE that dormice, have been identified within 2 of the twenty-three dormouse sites set up across the A358, great crested newts have been identified within one of the 114 ponds, in addition a barbastelle bat was caught whilst mist netting, evidence and badgers, water vole and otters have also been identified within the study area of the A358. SM enquired about the survey effort required for terrestrial invertebrates, SM to put together a survey methodology so NE can comment. SS mentioned that the A358 scheme will have a low risk to birds from the Somerset Level SAC from water run off pollution. SM asked for NE if wintering bird surveys were required for both schemes SS confirmed these were not necessary.	SM and OL
7.0	**New GCN policies and application for RIS Schemes**	
	VH enquired whether the new GCN licencing policy would be relevant to both schemes. OL explained that out of the 4 new policies 3 would be relevant and can assist MM with no additional charge. VH to send memo to NE regarding GCN mitigation for the A303, which NE will provide comments on.	
8.0	**Land Access**	
	JB and SM explained that land access for the A358 is a problem as we have a number of areas with no access and areas where land owners have not responded. SS and OL said it should be made clear why access couldn't be obtained and records of what efforts have been made to gain access should be kept.	
9.0	**Mitigation**	
	NE stated that the usual advice applies, avoid, minimise, mitigate and compensate. HN stated that HE is pushing a drive towards no net loss of habitat.	

No.	Actions/Key Messages	Owner
	SM and AE mentioned that there is a large area of ancient woodland that will be directly impacted by the A358 scheme. OL said there is good standing advice on the loss of ancient woodland but could provide more specialist advice. SS explained that evidence needs to be provided that every effort has to be made to avoid or minimise the impact to ancient woodland. VH explained that an area of ancient woodland on the A303 was going to be directly impacted by the scheme, however the route alignment has been changed to avoid this, but there will still be indirect impacts through air quality.	
10.0	**Future engagement / Environmental Working Group**	
	JB confirmed the NE that face to face engagement for broader environmental issued should be held every 4 months, with more focused engagement for specialist areas.	
11.0	**AOB**	
	SS confirmed that landscape advice would be provided as and when required.	

Appendix D.3 - Habitats and protected species identified within the vicinity of the scheme

Habitats

17.1.57 The scope of the works and the potential significance of effects warrant further assessment as the habitats present onsite are considered of National (High), Regional (Medium) and Local (Low) conservation value.

17.1.58 Priority habitats of conservation value have been identified within this study area and are described within this section.

17.1.59 Habitats of negligible ecological value have not been assessed further for nature conservation. This comprises of the Phase 1 Habitat categories of amenity grassland, arable, bare ground, hard standing. buildings, scrub, ephemeral/short perennial, marginal vegetation, poor semi-improved grassland, improved grassland and tall ruderal. Some of these habitats may be considered within the species assessment, if they are integral habitat to the species under assessment.

17.1.60 No invasive species have been identified within the scheme footprint.

Priority Habitats

17.1.61 Priority habitats within the scheme's Zone of Influence (ZoI) consist of hedgerows, broadleaved semi-natural woodland, ditches, parkland, calcareous grassland and ponds.

Hedgerows

17.1.62 There are approximately 113 species poor hedgerows within the ZoI. These comprise 82 intact species poor hedgerows, 7 defunct and 24 species poor hedgerows with trees. These predominantly consist of elder *Sambucus nigra*, hawthorn C*rataegus monogyna* and blackthorn *Prunus spinosa* and are actively managed field boundaries. Although much less frequent, there are five species rich hedgerows present within the ZoI. These include three species rich intact hedgerows and two species rich with trees. These have the above species but also include dogwood *Cornus sanguinea*, wild privet *Ligustrum vulgare*, hazel, ash *Fraxinus excelsior*, English oak *Quercus robur*, buckthorn (*Rhamnus cathartica)* and wayfaring tree *Viburnum lantana*. Notable ground flora species include dog's mercury *Mercurialis perennis*, ground-ivy *Glechoma hederacea,* lesser celandine *Ranunculus ficaria,* lords-and-ladies *Arum maculatum*, male fern *Dryopteris filix-mas,* pendulous sedge *Carex pendula* and herb robert *Geranium robertianum.* Hedgerows are a key habitat for many species of conservation concern and often act as wildlife corridors for many species, allowing movement between other habitats.

17.1.63 Surveys will be undertaken to determine which of these hedgerows are considered important under the Hedgerow Regulations 1997.

Broadleaved semi-natural woodland

17.1.64 There are 9 areas of broadleaved semi-natural woodland within 250 metres of the scheme. Woodlands of key importance due to their high biodiversity value include Ridge Copse, located to the east of the scheme, which is a Local Wildlife Site (LWS) designated as an area of semi-natural broadleaved woodland and quarry workings. Species include ash*,* cherry laurel *Prunus laurocerasus,* English oak*,* field maple *Acer campestre*, hazel, hornbeam *Carpinus betulus, s*ycamore *Acer pseudoplatanus* and wild privet*.* Ground flora species include cleavers *Galium aparine,* enchanter's nightshade *Circaea lutetiana,* hart's tongue *Phyllitis scolopendrium,* ivy *Hedera helix,* lesser celandine*,* Lords-and-ladies *and* wood avens *Geum urbanum.*

17.1.65 Parsons Steeple and Steart Wood are located towards the centre of the scheme on a ridge, forming a continuous belt of escarpment woodland connecting into a smaller woodland known as Rewber Brake. Both woodlands have ancient status and are also a LWS. The habitat is predominantly ash, beech *Fagus sylvatica,* blackthorn*,* elder, English elm *Ulmus procera,* English oak*,* hornbeam, andhorse chestnut *Aesculus hippocastanum*. This woodland is bisected by a number of open rides, creating glades with a species rich ground flora.

17.1.66 Species include barren strawberry *Potentilla sterilis,* bluebell *Hyacinthoides non-scripta,* cowslip *Primula veris,* creeping cinquefoil *Potentilla reptans,* dog's mercury, lords-and-ladies, wild Garlic *Allium ursinum* and herb robert.

17.1.67 Lindsay House Quarry, located further to the west is a small LWS and contains an area of broadleaved woodland with scrub and calcareous grassland. Dominant species include ash, dog rose, *Rosa canina,* dogwood*,* elder, English elm, field maple*,* hawthorn and hazel. Ground flora species include lesser celandine, lords-and-ladies and rough-stalked feather-moss *Brachythecium rutabulum*

17.1.68 There is also an undesignated area of broadleaved woodland, located directly to the south of the Hazlegrove House (Grade II Listed) Registered Park and Garden. It is a relatively small triangular area, with open rides and is actively managed through coppicing and thinning. It lacks an understorey and has a canopy dominated by ash, elder, English elm and field maple. Ground flora species include bugle Ajuga reptans, curled dock Rumex crispus, dog's mercury, enchanter's nightshade, ivy-leaved speedwell *Veronica hederifolia*, lesser celandine, lords-and-ladies and pendulous sedge *Carex pendula*.

17.1.69 There are 4 other small woodland copses present across the scheme and are approximately between 0.5ha to 0.7ha in size. Adjacent to Sparkford Roundabout, are linear belts of broadleaved woodland plantation, providing screening to the A303. Dominant species include hazel, hawthorn, and ash.

17.1.70 These woodlands collectively are of high biodiversity value for wildlife providing numerous functions such as areas of shelter, foraging and allowing connectivity across a largely arable landscape.

Watercourses

17.1.71 The ditches present within the ZoI of the scheme are predominantly field drains, bordered by hedgerows and poor semi improved grassland. They all appear to have been recently excavated, with limited aquatic and marginal vegetation.

Parkland

17.1.72 Towards the east near Sparkford is an area of Registered Park and Garden associated with the Grade II Listed Hazlegrove House which comprises of veteran English oak, sweet chestnut and ash. The grassland is heavily grazed and appears to be poor semi-improved neutral grassland.

Calcareous grassland

17.1.73 There are 2 areas of semi-improved calcareous grassland. These are characterised by the presence of ant hills and species such as pyramidal orchid *Anacamptis pyramidalis* and common knapweed *Centaurea nigra*. The grasslands are located adjacent to the A303, known as Camel Hill Transmitter Site, which is designated a LWS. The other is located north of the A303 within the mosaic of habitats known as Lindsay House Quarry LWS. National Vegetation Classification (NVC) surveys were carried out in June 2017, and a more comprehensive species list was obtained for use as part of the ongoing assessment work.

Ponds

17.1.74 There are 44 ponds within 500 metres of the scheme. They are present across the scheme footprint, but are predominantly located to the north of the A303 and concentrated within the arable and improved grassland fields.

Breeding birds

17.1.75 The woodland, tree lines, watercourses, arable fields and hedgerow habitats have potential to support breeding birds. There are records of notable and protected bird species within the study area. Of particular importance is WCA Schedule 1 species barn owl *Tyto alba* and several BAP priority bird species including skylark *Alauda arvensis* and hedge accentor *Prunella modularis.*

17.1.76 Breeding bird surveys were completed in June 2017. BAP species recorded include sky lark, tree pipit *Anthus trivialis*, common linnet *Carduelis cannabina*, yellowhammer *Emberiza citrinella*, house sparrow *Passer domesticus,* hedge accentor (dunnock), common starling *Sturnus vulgaris* and song thrush *Turdus philomelos*. Schedule 1 species include barn owl and kingfisher *Alcedo atthis.*

Barn owls

17.1.77 Numerous trees and buildings have the potential to support barn owls. The poor semi-improved grassland fields and margins of the arable fields provide suitable areas for barn owls to forage within. Previous surveys (undertaken by Mott MacDonald, 2004) confirmed the presence of 5 nesting sites and 30 potential nesting sites within 1km of the existing A303. In 2016, 29 of these were

accessible and were subject to further external inspections to assess the suitability of each feature and to check visually for signs. In addition, four potential nesting sites were observed in the form of four barn owl boxes and a tree cavity. Ten of the previously identified sites were deemed no longer viable to support the species. No signs of barns owl (i.e. pellets and droppings) were observed during the external surveys.

17.1.78 In 2017, a thorough habitat appraisal and nest site assessment was undertaken up to 1.5 kilometres from the scheme. This has identified 34 potential breeding localities. Further internal surveys to check for breeding evidence have been carried out in July and August 2017.

Protected and notable species

17.1.79 The following species surveys have been completed, however some such as badger bait marking surveys, dormouse surveys and invertebrate surveys are yet to be completed. All ecological survey findings will be presented during the within the ES.

Badgers

17.1.80 The woodland, scrub and hedgerows provide suitable areas for badgers *Meles meles* to construct setts and forage within. A review of existing data has identified a total 36 setts within 500 metres of the scheme (surveys undertaken by Mott MacDonald, 2004). During 2016 and 2017, 5 main, 2 annex, 3 subsidiary and 13 outlier setts were still active. Main setts with recent activity were observed within Annis Hill Wood, Hazlegrove Park LWS, Steart Wood, Camel Hill Transmitter Site LWS, and along the base of a hedgerow to the east of Downhead.

17.1.81 Bait marking surveys are currently being undertaken at the main setts found at Hazlegrove Park LWS, Camel Hill Transmitter Site LWS, and along the base of a hedgerow to the east of Downhead. Access has currently been denied at Annis Hill Wood and Steart Wood. These will commence in March 2018 once access has been reinstated,

Bats

17.1.82 There are existing records of brown long eared *Plecotus auritus* bats at Ridge Copse and Downhead Manor Farm. Serotine *Eptesicus serotinus* bats have also been recorded at Downhead Manor Farm and common pipistrelle *Pipistrellus pipistrellus* bats were identified southeast of Sparkford Roundabout.

17.1.83 The ground assessments assessed all trees within 250 metres of the scheme footprint, identifying more than 100 trees with moderate or high potential to support roosting bats. Features of trees used by bats as roosts include;

- Natural cavities and woodpecker holes
- Cracks/splits in major limbs
- Loose and lifted bark
- Thick, close formed ivy stems

- Dense epitomic growth

17.1.84 The tree lines, woodland, hedgerows and watercourses provide suitable areas for bats to commute and forage.

17.1.85 The building assessments have identified more than 60 buildings within 250 metres of the scheme footprint with bat roost potential. Features of buildings used by bats as roosts include:

- Soffits, fascias, barge-boards, weather boarding
- Between roof felt / membrane and tiles/slates
- Around window frames, in cavity walls, under hanging tiles and lead flashing,
- Roof voids

17.1.86 Bat roosts were confirmed during the initial assessments and through DNA analysis of droppings at the following locations:

- Barbastelle *Barbastella barbastellus* and lesser horseshoe *Rhinolophus hipposideros* bat within a building adjacent to Parsons Steeple/Steart Wood; and,
- Lesser horseshoe bat and brown long eared within a building located at Downhead.

Great crested newts

17.1.87 Great Crested Newts (GCN) *Triturus cristatus* require water bodies for breeding purposes, although they spend much of their life in terrestrial habitat. Water bodies are therefore important features to consider the likely presence of GCN within the ZoI. Forty four ponds have been identified within 500m of the proposed scheme. Access was gained to all ponds and a Habitat Suitability Index (HSI) assessment was undertaken. This identified that 23 ponds were considered to have potential to support GCN.

17.1.88 Surveys were then undertaken on these 23 ponds and the following results were obtained. GCN have been recorded in numerous ponds to the west of Downhead. These ponds form a meta-population and have a medium GCN population.

17.1.89 One GCN was also recorded in a pond to the south of the A303 at Urgashay, constituting a small population.

17.1.90 GCN have been recorded in 4 ponds at the eastern extent of the scheme, at Hazlegrove Park and north of Sparkford Hall. These ponds form a meta-population and have a medium GCN population.

Common reptiles

17.1.91 The poor semi-improved grassland fields, scrub and coppice piles provide sheltering and foraging opportunities for widespread reptiles such as grass snake *Natrix natrix*, slow worm *Anguis fragilis* and common lizards *Zootoca*

vivipara. Surveys have identified small populations of slow worms, grass snakes and common lizards within and adjacent to the scheme footprint.

Dormouse

17.1.92 The woodland and hedgerows present have the potential to support dormice. The hedgerows are largely sub-optimal with limited species diversity. However, woodlands such as Parsons Steeple LWS and Ridge Copse LWS have a good structure, with a high canopy and continuous shrub layer which consisted of a sufficient variety of woody plants to supply a succession of foods throughout the season. Surveys are currently being undertaken in all suitable woodland and hedgerows within 250m of the scheme footprint. No dormice have been found during the April to October surveys.

17.1.93 In woodlands such as Annis Hill Wood, Steart Wood, Rewber Brake and Yarcombe Wood, access was revoked from September onwards. The tubes will be removed in March 2018 and the tubes checked for any remaining evidence such as disused dormouse nests.

Otters and water voles

17.1.94 There are numerous ditches within 250 metres of the scheme. These are generally newly created adjacent to hedgerow boundaries in the arable fields and are not established with vegetation. There is an unnamed ditch to the west of Podimore, near to Higher Farm Lane. This has steep banks (>45°) and an abundance of riparian vegetation, which would provide foraging and sheltering opportunities for water voles. This ditch was surveyed in April and September 2017, however no evidence of water vole or otter was observed.

17.1.95 To the south and east of Yarcombe Wood is a ditch network, which has shallow banks, vegetated with common grassland species, bordering on agricultural land with a hedge running one side and frequent ledges. Water vole burrows and latrines were observed but no evidence of otter was identified.

17.1.96 Dyke Brook is located to the north of the A303 and outside of the 250m buffer. Both evidence of otter and water vole was observed.

17.1.97 To the south of the A303 and outside of the 250m buffer, is the River Cam. There are existing records for both otter and water vole on this section of the River.

Invertebrates

17.1.98 There are no existing records of red listed or county notable species within 250 metres of the scheme. However, the woodlands and grasslands designated as local wildlife sites do provide suitable habitat for a variety of invertebrate species. Surveys were undertaken in July and September 2017 and the data is currently being analysed. Due to the presence of blackthorn, brown hair streak surveys will be undertaken during winter 2017. A spring survey for invertebrates will commence in April 2018, to ensure a full suite of surveys has been undertaken.

17.1.99 There are two ditches within close proximity to the footprint of the scheme, at the eastern extent of the scheme. Macro invertebrate surveys have been undertaken and the data is currently being analysed.

White Clawed Crayfish

17.1.100 The watercourses such as the ditches in close proximity to the scheme, do not provide suitable habitat for white clawed crayfish. Therefore, no further surveys for this species has been undertaken.

Overwintering birds

17.1.101 The habitats within the scheme footprint and adjacent to it, provide low potential habitat for overwintering bird species. There are also no internationally designated sites within 2 kilometres that include overwintering bird species as qualifying features. Therefore, overwintering birds are not considered further in this assessment.

Other species

17.1.102 The woodland and grassland habitats provide ideal habitat for deer to shelter and forage within. Roe deer have been observed during other protected species surveys and are present across the scheme footprint, north of the A303.

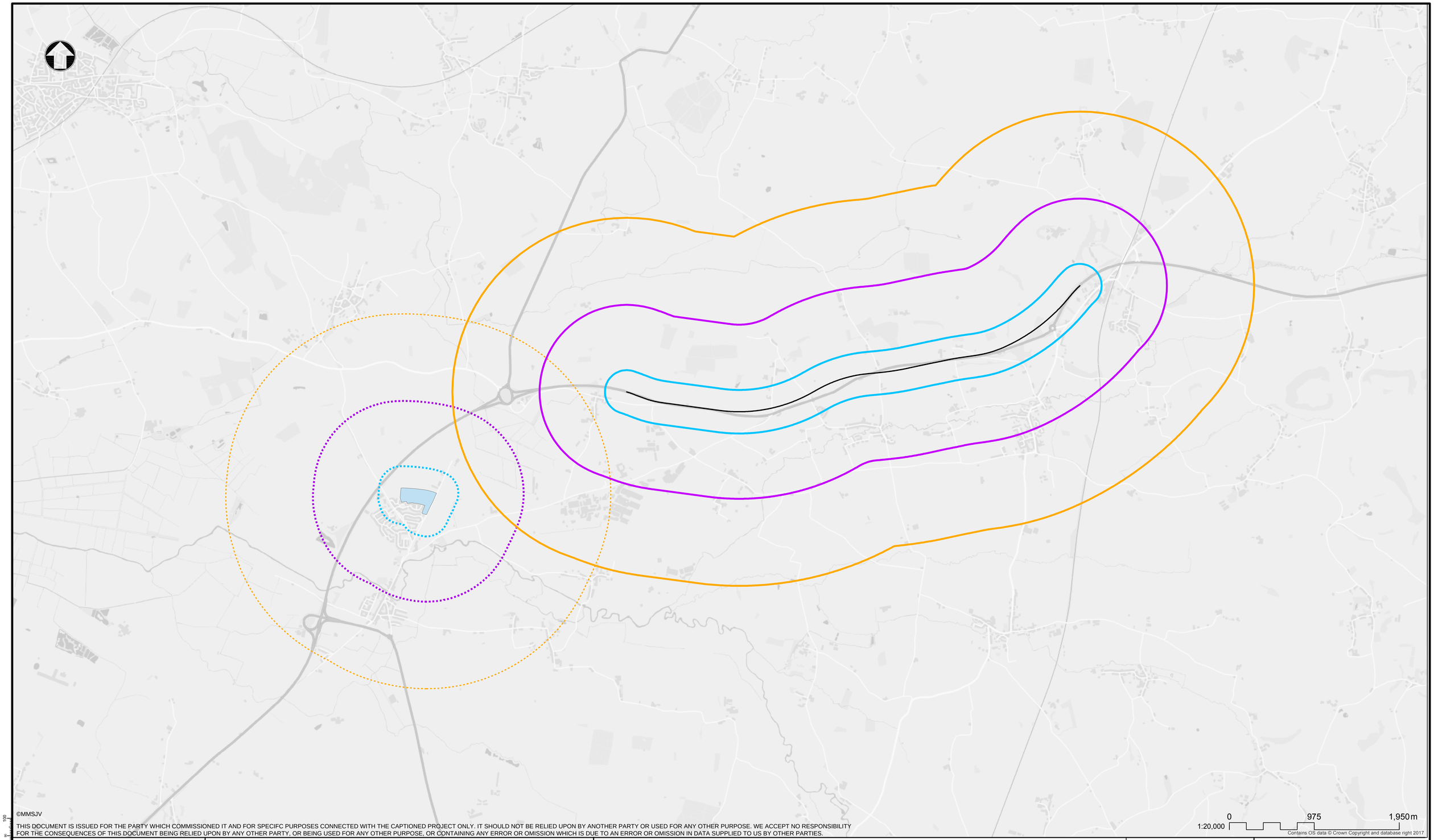
Appendix E: Combined and cumulative effects

Appendix E.1 – List of other developments

Other Development details						Stage 1		Stage 2			
ID	**Application Reference/ Policy Reference**	**Applicant for Other Development and brief description**	**Distance from scheme**	**Status**	**Tier***	**Within ZOI?**	**Progress to Stage 2?**	**Overlap in temporal scale**	**Scale and nature of development likely to have a significant effect**	**Other factors**	**Progress to Stage 3/4?**
Within 2km buffer of scheme											
1	HELAA Site Ref No.: E/QUCA/0001/A	**Other Development:** Rectory Farm **Site Address:** West Camel Road **Applicant:** No applicant associated with development. Development land identified in the HELAA. **Development Description:**1.4 ha land with proposed use of 400 housing/affordable/10,750 sq m B1 (combined with 0001/B & 00001/C)	1.3km	No planning application at present.	3	Yes	No. A planning application with this development has not been accepted.				
2	HELAA Site Ref No.: E/QUCA/0001/B	**Other Development:** Rectory Farm **Site Address:** West Camel Road **Applicant:** No applicant associated with development. Development land identified in the HELAA. **Development Description:** 3.2ha land with proposed use of 400 housing/affordable/10,750 sq m B1 (combined with 0001/A & 00001/C)	1.2km	No planning application at present.	3	Yes	No. A planning application with this development has not been accepted.				
3	HELAA Site Ref No.: E/QUCA/0001/C	**Other Development:** Rectory Farm **Site Address:** West Camel Road **Applicant:** No applicant associated with development. Development land identified in the HELAA. **Development Description:** 8.84ha of land with proposed use of 400 housing/affordable/10,750 sq m B1 (combined with 0001/A & 00001/B)	890m	No planning application at present.	3	Yes	No. A planning application with this development has not been accepted.				
4	HELAA Site Ref No.: E/SPAR/0001	**Other Development:** Long Hazel Farm (caravan park) **Site Address:** High Street **Applicant:** No applicant associated with development. Development land identified in the HELAA. **Development Description:** 2.49 ha of land. Use of land for the siting of 21 permanently occupied residential mobile homes.	Adjacent	No planning application at present.	3	Yes	No. A planning application with this development has not been accepted.				
5	HELAA Site Ref No.: E/SPAR/0003	**Other Development:** The Orchard **Site Address:** Cherry Pie Lane **Applicant:** No applicant associated with development. Development land identified in the HELAA. **Development Description:** 0.75ha of land for housing/care home	350m	No planning application at present.	3	Yes	No. A planning application with this development has not been accepted.				
6	HELAA Site Ref No.: E/SPAR/0004	**Other Development:** Land off Wolverlands **Site Address:** Sparkford **Applicant:** No applicant associated with development. Development land identified in the HELAA. **Development Description:** 1ha of land for the proposed use of housing.	140m	No planning application at present.	3	Yes	No. A planning application with this development has not been accepted.				
7	HELAA Site Ref No.: E/SPAR/0005	**Other Development:** Haynes Publishing **Site Address:** Unknown **Applicant:** No applicant associated with development. Development land identified in the HELAA. **Development Description:** 2.3ha of land for proposed use of housing approximately 38 and B1 approximately 2260 sq m. **See application 16/00725/OUT below**	160m	No planning application at present.	3	Yes	No. A planning application with this development has not been accepted.				
8	HELAA Site Ref No.: E/SPAR/1200	**Other Development:** Land at Brains Lane **Site Address:** Brains Lane, Sparkford **Applicant:** No applicant associated with development. Development land identified in the HELAA. **Development Description:** 2.1ha of land for the proposed use of employment.	450m	No planning application at present.	3	Yes	No. A planning application with this development has not been accepted.				
9	HELAA Site Ref No.: E/NOCA/0003	**Other Development:** Land West of Cadbury Business Park **Site Address:** Land to the west of Cadbury Business Parl. Galhampton. **Applicant:** No applicant associated with development. Development land identified in the HELAA. **Development Description:** 1.75ha of land suitable for economic development with potential scope for approximately 5000 sq. m of floor space for B uses. Other potential sui generis employment uses.	1.7km	No planning application at present.	3	Yes	No. A planning application with this development has not been accepted.				
10	16/00725/OUT	**Other Development:** Outline planning application seeking permission for mixed use redevelopment (residential/commercial) together with associated works and access ways. **Site Address:** Haynes Publishing, High Street, Sparkford, Yeovil, BA22 7JJ **Applicant:** Boon Brown Architects (agent) **Development Description:** It is proposed to develop the site of 2.2ha for a mix of residential and commercial use.	150m	Outline Planning permission granted on 29 March 2017	1	Yes	Yes. Falls within ZOIs for all environmental topic disciplines.	Overlap in temporal scale is unknown at present.	This development was not subject to a statutory EIA. The proposed development lies within close proximity to the eastern tip of the scheme, and therefore the potential for cumulative effects associated with environmental disciplines for which the ZOIs overlap for.	N/A	Yes
11	15/02779/EIASS	**Other Development:** Propose 8 Hectares Photovoltaic Park **Site Address:** Land at OS110, Bindwell Lane, Queen Camel, Yeovil, Somerset **Applicant:** St John Hughes	1.8km	EIA Screening and Scoping Request	2	Yes	No. A full planning application has not been submitted.				

Other Development details						Stage 1		Stage 2			
ID	**Application Reference/ Policy Reference**	**Applicant for Other Development and brief description**	**Distance from scheme**	**Status**	**Tier***	**Within ZOI?**	**Progress to Stage 2?**	**Overlap in temporal scale**	**Scale and nature of development likely to have a significant effect**	**Other factors**	**Progress to Stage 3/4?**
		Development Description: The solar farm is designed to deliver up to 5MW of electricity, and is comprised of photovoltaic panels mounted on fixed metal frames, inverter technology, an on-site "containerised" sub-station, perimeter security fencing, and suitable access for construction and maintenance work.		submitted June 2015. Decision of EIA not required July 2015.							
12	10/01023/EIASS	**Other Development:** Proposed hotel, events area and exhibition track at land at and opposite Haynes Motor Museum, Sparkford **Site Address:** Land OS 1300 and 0183 Part, Cary Road, Sparkford, Yeovil, Somerset, BA22 7LH **Applicant:** Boon Brown Architects **Development Description:** Proposed hotel, events area and exhibition track at land at and opposite Haynes Motor Museum	670m	EIA Screening and Scoping Request submitted March 2010. Decision of EIA required April 2010.	2	Yes	No. A full planning application has not been submitted.				
13	14/04945/R3C	**Other Development:** Construction of a new single storey primary school **Site Address:** Land Opposite the Medical Centre, West Camel Road, Queen Camel, Yeovil, Somerset **Applicant:** Somerset County Council **Development Description:** Construction of a new single storey primary school (359437/124379) (1.4ha)	1.2km f	Construction complete.	1	Yes. Falls within ZOI for ecology, cultural heritage, landscape, geology and soils, noise, and water environment.	No. This development has finished construction.				
	15/00788/R3C	**Other Development:** As above **Site Address:** As above **Applicant:** As above **Development Description:** Section 73 application to change the timing requirements of the submission of further details by varying conditions 6, 7, 8 and 9 of planning permission 14/04945/R3C.									
14	16/03193/FUL	**Other Development:** Proposed straw barn, landscape bund and associated ancillary works (revised scheme – 16/01219/FUL) **Site Address:** Steart Hill Farm, Steart Hill, West Camel, Yeovil, Somerset, BA22 7RF **Applicant:** Hopkins Development Ltd **Development Description:** Erection of a straw barn, landscape bund, and associated ancillary works, at land at Steart Hill, West Camel (2.61ha).	800m	Application refused October 2016. Appeal lodged March 2017. Appeal in process.	1	Yes	No. Application has been refused and is currently going through appeal. Also, due to the nature of the scheme, any environmental effects are likely to be minimal.				
Just outside 2km buffer of the scheme											
15	15/00024/OUT	**Other Development:** Outline application for the erection of up to 150 dwellings, site access, provision of associated landscaping and open spaces/play facilities (GR 352508/123950) **Site Address:** Land North of Troubridge Park, Ilchester, Yeovil, Somerset **Applicant:** Executors of PCH Young Deceased **Development Description:** Erection of up to 150 dwellings, site access, provision of associated landscaping and open spaces/play facilities	2.35	Outline Planning Permission granted on 11 December 2015.	1	Yes. Falls within the ZOI for ecology.	Yes	Overlap in temporal scale is unknown at present.	This development was not subject to a statutory EIA. Potential effects associated with the ecology, although effects are not likely to be significant.	N/A	Yes

Appendix E.2 – Drawings to show the locations of the Other Developments in relation to the scheme



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Key to symbols

SCHEME CENTRELINE

250M ZONE OF INFLUENCE

GEOLOGY AND SOILS, PEOPLE AND COMMUNITIES

1KM ZONE OF INFLUENCE

LANDSCAPE, CULTURAL HERITAGE, ROAD DRAINAGE AND WATER ENVIRONMENT

2KM ZONE OF INFLUENCE

BIODIVERSITY

OTHER DEVELOPMENT

LAND NORTH OF TROUBRIDGE PARK (15.00024.OUT)

250M ZONE OF INFLUENCE

GEOLOGY AND SOILS, PEOPLE AND COMMUNITIES

1KM ZONE OF INFLUENCE

LANDSCAPE, CULTURAL HERITAGE, ROAD DRAINAGE AND WATER ENVIRONMENT

2KM ZONE OF INFLUENCE

BIODIVERSITY

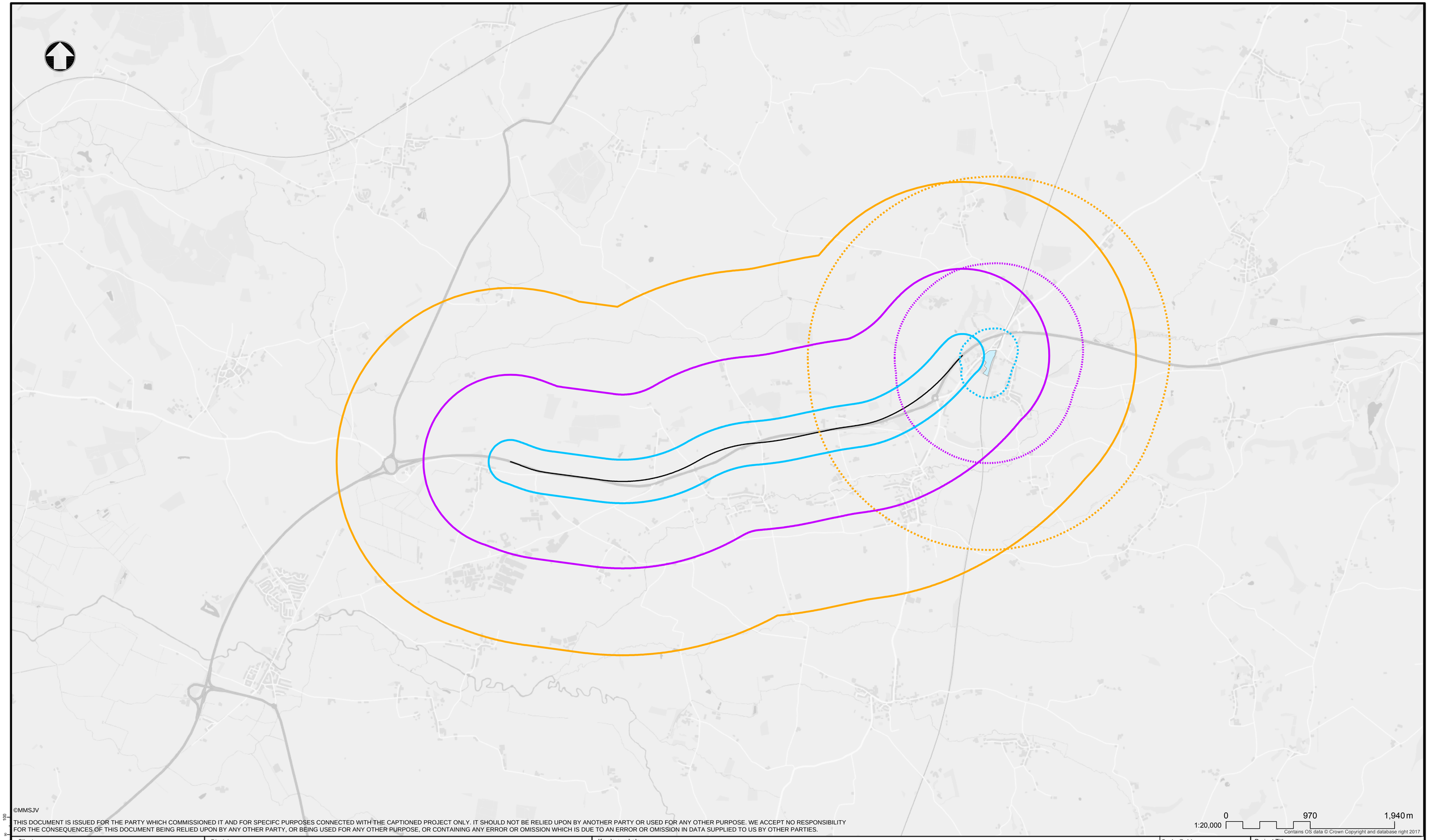
Scale @ A1:

Project Title

A303 SPARKFORD TO ILCHESTER DUALLING

Drawing Title

LOCATION OF PROPOSED DEVELOPMENT LAND NORTH OF TROUBRIDGE PARK (15.00024.OUT) IN RELATION TO THE SCHEME



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Key to symbols

SCHEME CENTRELINE

250M ZONE OF INFLUENCE

GEOLOGY AND SOILS, PEOPLE AND COMMUNITIES

1KM ZONE OF INFLUENCE

LANDSCAPE, CULTURAL HERITAGE, ROAD DRAINAGE AND WATER ENVIRONMENT

2KM ZONE OF INFLUENCE

BIODIVERSITY

FORMER HAYNES PUBLISHING SITE (16.00725.OUT)

250M ZONE OF INFLUENCE

GEOLOGY AND SOILS, PEOPLE AND COMMUNITIES

1KM ZONE OF INFLUENCE

LANDSCAPE, CULTURAL HERITAGE, ROAD DRAINAGE AND WATER ENVIRONMENT

2KM ZONE OF INFLUENCE

BIODIVERSITY

Scale @ A1:

Project Title

A303 SPARKFORD TO ILCHESTER DUALLING

Drawing Title

LOCATION OF PROPOSED DEVELOPMENT FORMER HAYNES PUBLISHING SITE (16.00725.OUT) IN RELATION TO THE SCHEME

Appendix E.3 – Combined effects assessment tables

Table E.3.1: Combined Residual Construction Phase Effects

Receptor	Topic area									
	Air Quality	**Cultural Heritage**	**Landscape**	**Biodiversity**	**Geology and Soils**	**Materials**	**Noise and Vibration**	**People and Communities**	**Climate Change**	**Significance of Combined Effects**
Geology and Soils	-	-	-		Slight Adverse	-	-			Not Significant Adverse
Landscape / Townscape	-	Significant Adverse	Significant Adverse	Slight Adverse	-		-			Significant Adverse
Cultural Features	-	Significant Adverse	Significant Adverse	-	-		-			Significant Adverse
Communities	Not Significant Adverse	-	Significant Adverse	-			Not Significant Adverse	Slight Adverse		Not Significant Adverse
Vehicle Travellers	-	-	-	-	-		-	Moderate Adverse		Significant Adverse
Water Environment	-	-	-	Slight Adverse	Slight Adverse		-			Not Significant Adverse
Ecology	Not Significant Adverse	-	-	Slight Adverse			-			Not Significant Adverse
Material resources	-	-	-		Slight Adverse	Potentially Significant Adverse	-			Significant Adverse
Climate									Slight Adverse**	Not Significant Adverse
Human Health and Wellbeing	Not Significant Adverse				Slight Adverse		Not Significant Adverse	Slight Adverse		Not Significant Adverse
Overall significance of combined effects during construction (on balance)										**Not Significant Adverse**

* For Chapter 12 People and Communities, effects assessed for driver stress are included within the receptor 'vehicle travellers' row, effects assessed for agricultural land are included within the receptor 'geology and soils' row, and effects assessed for Non-Motorised Users, Amenity, Severance, Individual Farm Businesses, Demolition of Private Property, Land Take, and Motorised travellers view from the road are included within the receptor 'communities' row.

** For Chapter 14 Climate Change, effects assessed for the receptor 'climate' only refer to effects on climate, and do not take into consideration the scheme's vulnerability to climate change.

Table E.3.2: Combined Residual Operation Phase Effects

Receptor	Topic Area									
	Air Quality	**Cultural Heritage**	**Landscape**	**Biodiversity**	**Geology and Soils**	**Materials**	**Noise and Vibration**	**People and Communities**	**Climate Change**	**Significance of Combined Effects**
Geology and Soils	-	-	-		Not assessed during operation	Not assessed during operation	-			Neutral
Landscape / Townscape	-	Slight Adverse	Slight Adverse (at Year 15)	Neutral	Not assessed during operation	Not assessed during operation	-			Not Significant Adverse
Cultural Features	-	Slight Adverse	Slight Adverse (at Year 15)	-	Not assessed during operation	Not assessed during operation	-			Not Significant Adverse
Communities	Not Significant Adverse	-	Slight Adverse (at Year 15)	-	Not assessed during operation	Not assessed during operation	Not Significant Adverse	Slight Adverse		Not Significant Adverse
Vehicle Travellers	-	-	-	-	Not assessed during operation	Not assessed during operation	-	Slight Beneficial		Not Significant Adverse
Water Environment	-	-	-	Neutral	Not assessed during operation	Not assessed during operation	-			Neutral
Ecology	Potential for Significant Adverse Effects	-	-	Neutral	Not assessed during operation	Not assessed during operation	-			Not Significant Adverse
Material resources	-	-	-		Not assessed during operation	Not assessed during operation	-			Neutral
Climate									No effects**	Neutral
Human Health and Wellbeing	Not Significant				Not assessed during operation	Not assessed during operation	Potential for Significant Adverse Effects**	Slight Adverse		Not Significant Adverse
Overall significance of combined effects during operation (on balance)										**Not Significant Adverse**

* For Chapter 12 People and Communities, effects assessed for driver stress are included within the receptor 'vehicle travellers' row, effects assessed for agricultural land are included within the receptor 'geology and soils' row, and effects assessed for Non-Motorised Users, Amenity, Severance, Individual Farm Businesses, Demolition of Private Property, Land Take, and Motorised travellers view from the road are included within the receptor 'communities' row.

** For Chapter 14 Climate Change, effects assessed for the receptor 'climate' only refer to effects on climate, and do not take into consideration the scheme's vulnerability to climate change.

Appendix E.4 – Cumulative effects assessment table

ID	Tier	Application Reference	Assessment of Cumulative Effects	Need for Additional Mitigation
Cultural Heritage The effects on Cultural Heritage as a result of the scheme have been assessed in Chapter 6 Cultural Heritage. The residual on-balance effects on cultural heritage are as follows: *Construction: Significant Adverse (buried archaeology and heritage assets)* *Operation: Significant Adverse (buried archaeology and heritage assets)*				
10	1	Former Haynes Publishing Site 16/00725/OUT	<u>Former Haynes Publishing Site Residual Effects</u> No assessment has been undertaken for effects on Cultural Heritage as a result of Former Haynes Publishing Site, and as such, effects are assumed to be Neutral. **Construction** Neutral **Operation** Neutral	**Construction:** No additional mitigation on top of the individual mitigation specified is considered necessary, as no Significant Adverse cumulative effects are predicted. **Operation:** No additional mitigation on top of the individual mitigation specified is considered necessary, as no Significant Adverse cumulative effects are predicted.
			<u>Cumulative Residual Effects for Former Haynes Publishing Site and the scheme</u> Due to the close proximity of the Former Haynes Publishing Site with the scheme, the 1km ZOI for both construction and operation overlap covers the eastern tip of the scheme, as shown in drawing HE551507-MMSJV-EGN-000-DR-LP-0002 (Appendix E.2). As Neutral effects are anticipated on both buried archaeology and heritage assets as a result of this other development, cumulative effects are not anticipated to be any greater with the proposed scheme, during both construction and operation. Due to the existing A303 forming a barrier between this proposed other development and Hazlegrove Registered Park and Garden, which is located within the ZOI overlap, it is not anticipated that construction or operational impacts associated with the development of the Former Haynes Publishing Site would have any additional cumulative effects on top of the scheme. **Construction** Significant Adverse (buried archaeology and heritage assets) **Operation** Not Significant Adverse (heritage assets)	
Landscape The effects on landscape as a result of the scheme have been assessed in Chapter 7 Landscape. The residual effects on landscape are as follows: *Construction: Significant Adverse (Landscape Character), Significant Adverse Effects (Visual Effects)* *Operation: Slight Adverse (Landscape Character), Slight Adverse (Visual Effects)*				
10	1	Former Haynes Publishing Site 16/00725/OUT	<u>Former Haynes Publishing Site Residual Effects</u> No assessment has been undertaken for effects on Landscape and Visual Effects as a result of Former Haynes Publishing Site, and as such, effects are assumed to be Neutral. **Construction** Neutral **Operation** Neutral	**Construction:** No additional mitigation on top of the individual mitigation specified is considered necessary, as no Significant Adverse cumulative effects are predicted. **Operation:** No additional mitigation on top of the individual mitigation specified is considered necessary, as no Significant Adverse cumulative effects are predicted.
			<u>Cumulative Residual Effects for Former Haynes Publishing Site and the scheme</u> Due to the close proximity of the Former Haynes Publishing Site with the scheme, the 1km ZOI for both construction and operation overlap covers the eastern tip of the scheme, as shown in drawing HE551507-MMSJV-EGN-000-DR-LP-0002 (Appendix E.2). As Neutral effects are anticipated on both landscape character and visual effects as a result of this other development, cumulative effects are not anticipated to be any greater with the proposed scheme, during both construction and operation. **Construction** Significant Adverse (Landscape Character), Significant Adverse Effects (Visual Effects) **Operation** Slight Adverse (Landscape Character), Slight Adverse (Visual Effects)	
Biodiversity The effects on biodiversity as a result of the scheme have been assessed in Chapter 8 Biodiversity. The residual effects on biodiversity are as follows: *Construction: Slight Adverse* *Operation: Slight Adverse, reducing to Neutral over time*				
10	1	Former Haynes Publishing Site 16/00725/OUT	<u>Former Haynes Publishing Site Residual Effects</u> An Ecological Appraisal was produced by Crossman Associates (2016) which concluded that habitats within the site are limited, and is considered to have ecological value at a local level. The site is likely to support nesting birds and small numbers of reptiles, and there is a possible bat roost in one of the buildings, however mitigation has been proposed to mitigate any adverse effects. The planting proposals aim to maintain and enhance the site's component value to bats as well as other wildlife. The residual effects as a result of Former Haynes Publishing Site are therefore assumed to be: **Construction**	**Construction:** No additional mitigation on top of the individual mitigation specified is considered necessary, as no Significant Adverse cumulative effects are predicted. **Operation:** No additional mitigation on top of the individual mitigation specified is considered necessary, as no Significant Adverse cumulative effects are predicted.

ID	Tier	Application Reference	Assessment of Cumulative Effects	Need for Additional Mitigation
			Neutral **Operation** Slight Beneficial	
			<u>Cumulative Residual Effects for Former Haynes Publishing Site and the scheme</u> Due to the close proximity of the Former Haynes Publishing Site with the scheme, the 2km ZOI for both construction and operation overlap covers the eastern tip of the scheme, as shown in drawing HE551507-MMSJV-EGN-000-DR-LP-0002 (Appendix E.2). With best practice mitigation measures employed for this proposed development, and that detailed for the scheme, it is anticipated this this proposed development would not result in any additional cumulative effects as a result, for both construction and operational phases. **Construction** Slight Adverse **Operation** Slight Adverse, reducing to Neutral over time	
14	1	Land North of Troubridge Park 15/00024/OUT	<u>Land North of Troubridge Park Residual Effects</u> An Ecological Walkover Survey was undertaken by County Contracts in 2014, which identified the potential presence of suitable habitat to support protected species on-site, however no assessment has been made regarding the effects of the development on biodiversity. The Ecological Walkover Survey made several recommendations for mitigation. Therefore, as no impact assessment has been carried out the residual effects as a result of Land North of Troubridge Park are assumed to be: **Construction** Neutral **Operation** Neutral	**Construction:** No additional mitigation on top of the individual mitigation specified is considered necessary, as no Significant Adverse cumulative effects are predicted. **Operation:** No additional mitigation on top of the individual mitigation specified is considered necessary, as no Significant Adverse cumulative effects are predicted.
			<u>Cumulative Residual Effects for Land North of Troubridge Park and the scheme</u> The 2km ZOI overlap is shown on drawing HE551507-MMSJV-EGN-000-DR-LP-0006 (Appendix E.2). Given the neutral effects anticipated as a result of the proposed development, and with best practice mitigation measures to be employed for both the proposed development and the scheme, there are not anticipated to be any additional cumulative effects to biodiversity. **Construction** Slight Adverse **Operation** Slight Adverse, reducing to Neutral over time	
Geology and Soils The effects on geology and soils as a result of the scheme have been assessed in Chapter 9 Geology and Soils. The residual effects on geology and soils are as follows: *Construction: Slight Adverse* *Operation: Not assessed*				
10	1	Former Haynes Publishing Site 16/00725/OUT	<u>Former Haynes Publishing Site Residual Effects</u> The residual effects during construction and operation on Geology and Soils have been taken from the Preliminary Geo-Environmental and Geotechnical Assessment produced by Tweedie Evans Consulting (2016). The residual effects as a result of Former Haynes Publishing Site are as follows: **Construction** Slight Adverse **Operation** Neutral	**Construction:** No additional mitigation on top of the individual mitigation specified is considered necessary, as no Significant Adverse cumulative effects are predicted. **Operation:** No additional mitigation on top of the individual mitigation specified is considered necessary, as no Significant Adverse cumulative effects are predicted.
			<u>Cumulative Residual Effects for Former Haynes Publishing Site and the scheme</u> The 250km ZOI overlap between the Scheme and this proposed development is shown in drawing HE551507-MMSJV-EGN-000-DR-LP-0002 (Appendix E.2). Given the close proximity of this proposed development with the scheme, and the close proximity of the historic landfill 'Land Adjacent to Hazlegrove Park', there is the potential for cumulative effects during construction. However, with best practice mitigation measures in place, it is not anticipated that cumulative effects would become Significant during construction. **Construction** Slight Adverse **Operation** Neutral	
Materials The effects on materials as a result of the scheme have been assessed in Chapter 10 Materials. The residual effects on materials are as follows:				

ID	Tier	Application Reference	Assessment of Cumulative Effects	Need for Additional Mitigation
Construction: Potentially Significant Adverse (material use), Not Significant (waste) *Operation:* Not Assessed				
Due to the study area for materials assessing the effects purely within the Scheme footprint, no cumulative assessment has been made as the scheme footprint does not overlap with any of the 'other development' footprints.				
People and Communities The effects on people and communities as a result of the scheme have been assessed in Chapter 12 People and Communities. The residual effects on people and communities are as follows: *Construction: Slight Adverse* *Operation: Slight Adverse*				
10	1	Former Haynes Publishing Site 16/00725/OUT	<u>Former Haynes Publishing Site Residual Effects</u> No assessment has been undertaken for effects on People and Communities as a result of Former Haynes Publishing Site, and as such, effects are assumed to be Neutral. Best practice mitigation in the form of appropriate signage and a Traffic Management Plan will be employed for this proposed development. **Construction** Neutral **Operation** Neutral <u>Cumulative Residual Effects for Former Haynes Publishing Site and the scheme</u> The 250km ZOI overlap between the scheme and this proposed development is shown in drawing HE551507-MMSJV-EGN-000-DR-LP-0002 (Appendix E.2). Given the effects on People and Communities as a result of this proposed development are Neutral, and with best practice mitigation measures employed for both this proposed development and the Scheme, it is not anticipated that there would be any cumulative effects associated with this proposed development. **Construction** Slight Adverse **Operation** Slight Adverse	**Construction:** No additional mitigation on top of the individual mitigation specified is considered necessary, as no Significant Adverse cumulative effects are predicted. **Operation:** No additional mitigation on top of the individual mitigation specified is considered necessary, as no Significant Adverse cumulative effects are predicted.

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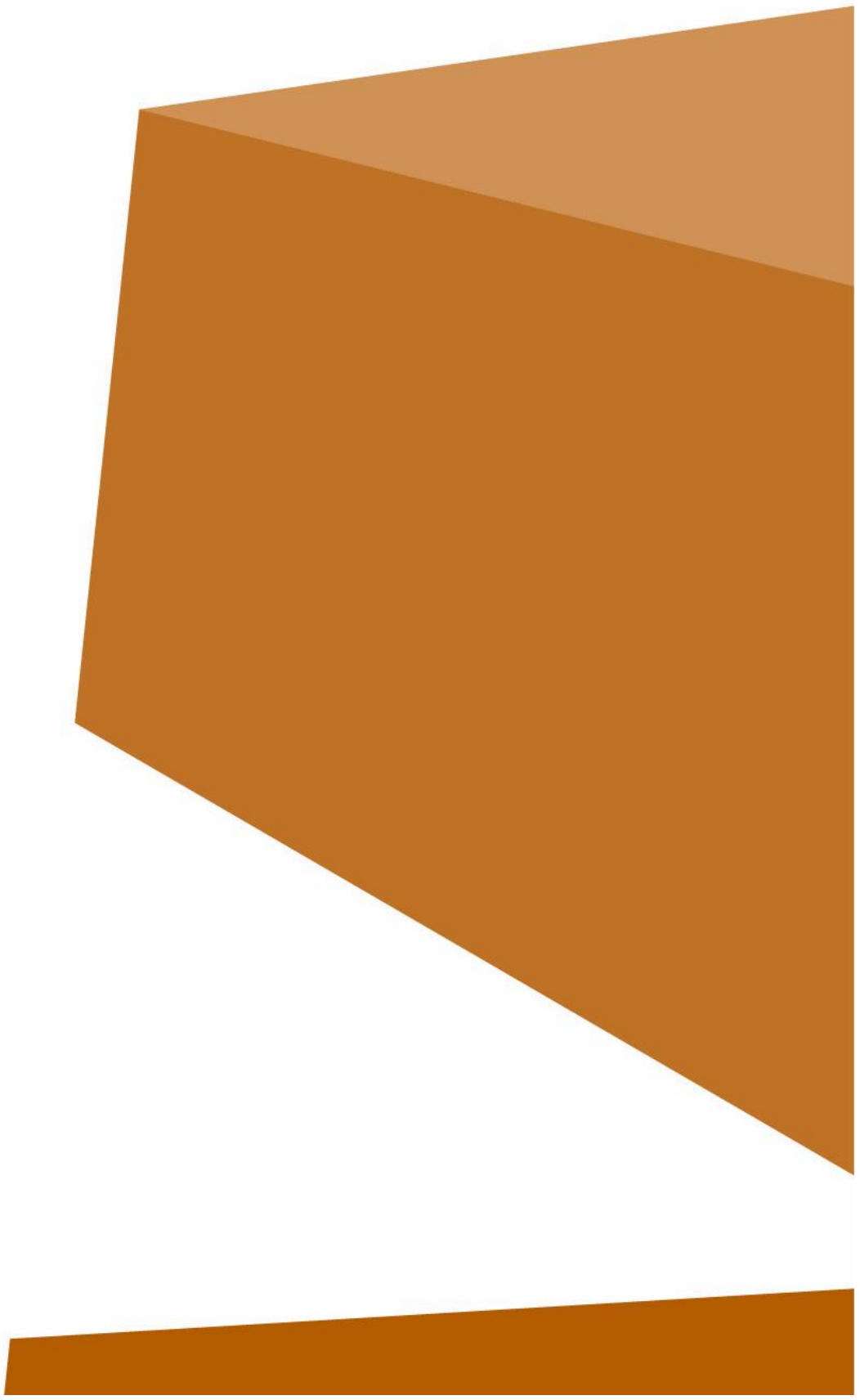

SPARKFORD

CAMEL HILL

STEART HILL

A303

A359

DOWNHEAD

SPARKFORD HILL

PODIMORE

WEST CAMEL

QUEEN CAMEL

B3151

ROYAL NAVAL AIR STATION, YEOVILTON

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Key to Symbols:

- PROPOSED SIGNAGE
- ROUTE CENTRELINE
- PROVISIONAL RED LINE BOUNDARY
- LAND TO BE PERMANENTLY ACQURED FOR CONSTRUCTION AND OPERATION
- LAND TO BE USED TEMPORARILY DURING CONSTRUCTION AND RIGHTS TO BE ACQUIRED PERMANENTLY FOR MAINTENANCE ACCESS DURING OPERATION
- LAND TO BE USED TEMPORARILY DURING CONSTRUCTION
- PROPOSED ECOLOGICAL MITIGATION AREAS DURING OPERATION
- EXISTING A303 TO BE DETRUNKED DURING OPERATION

Scale @ A1:

1:10,000 — 0 — 500m — 1000m

Project Title:

A303 SPARKFORD TO ILCHESTER DUALLING

Drawing Title:

PROPOSED RED LINE BOUNDARY AND SCHEME ELEMENTS

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Provisional Local Traffic Information

The following changes to local traffic flows occur due to the introduction of the scheme (called the Do Something) compared with the situation without the scheme (called the Do Minimum). These are shown for the two forecast years 2023 and 2038 with the base year traffic (2015) shown for comparison.

There is a reassignment of traffic from the B3151 to the A303 between Downhead and Ilchester, and from the A359 south of the Hazlegrove Roundabout to the A303.

There is also some reassignment of traffic using the local roads between the south-east and north-west, with more traffic travelling through West Camel and less through Podimore village, but these changes are relatively low.

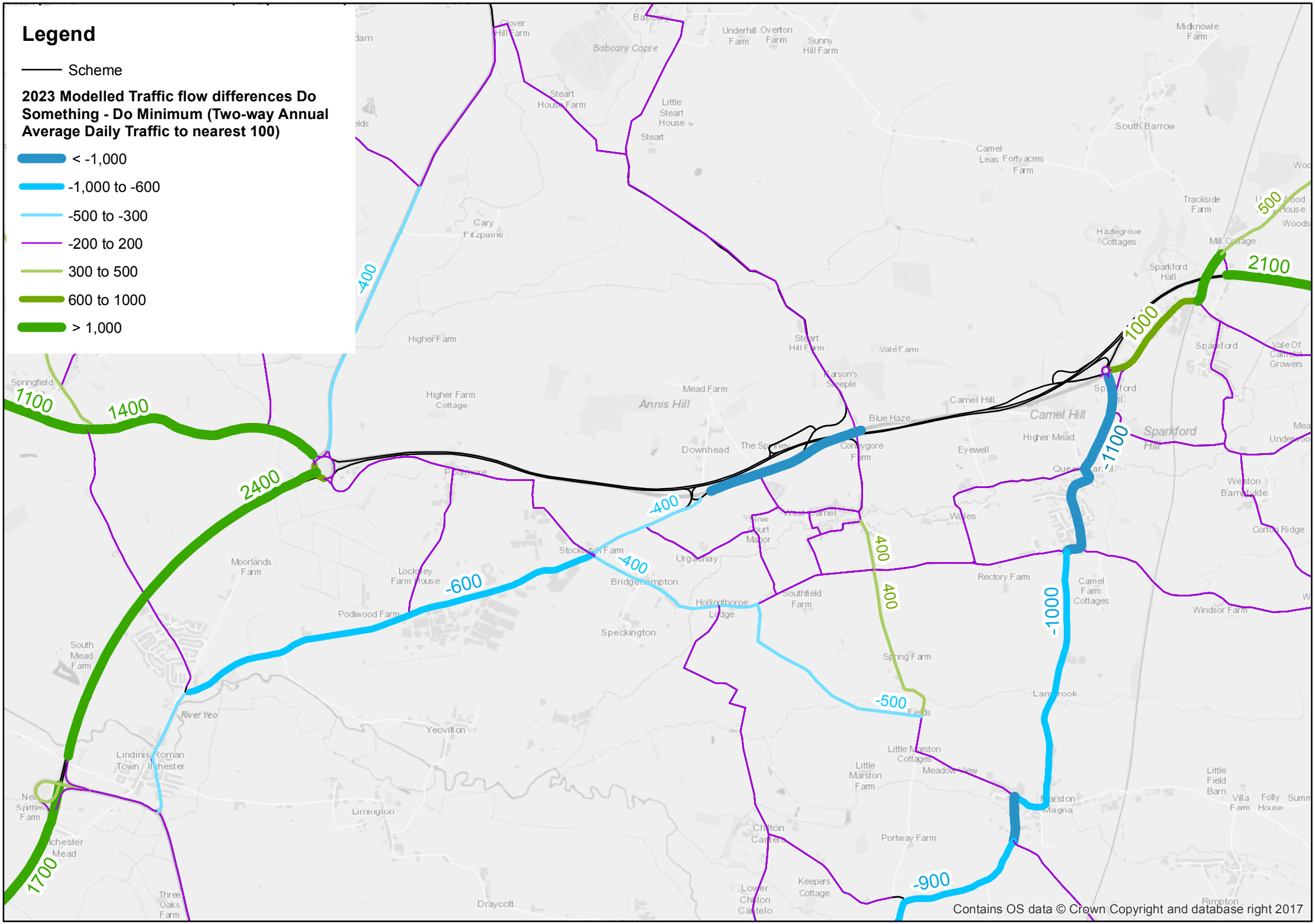
Appendix A shows the change in traffic flow with the scheme in place, compared to no scheme for the year 2023. A decrease in flows are shown in blue and increases are shown in red. The values are Average Daily Traffic.

Appendix B shows the change in traffic flow with the scheme in place, compared to no scheme for the year 2038.

Appendix C shows compares the Base (2015), with the predicted traffic flows with and without the scheme for 2023 and 2038 in the form of histograms.

Appendix D shows the predicted traffic flows to accompany the histogram plots.

Appendix A – 2023 Modelled Traffic Flow Differences


Legend
Scheme
2023 Modelled Traffic flow differences Do Something - Do Minimum (Two-way Annual Average Daily Traffic to nearest 100)
< -1,000
-1,000 to -600
-500 to -300
-200 to 200
300 to 500
600 to 1000
> 1,000
-400
1100
1400
2400
-400
-600
-400
400
400
-1000
1000
1100
2100
500
-500
-900
1700
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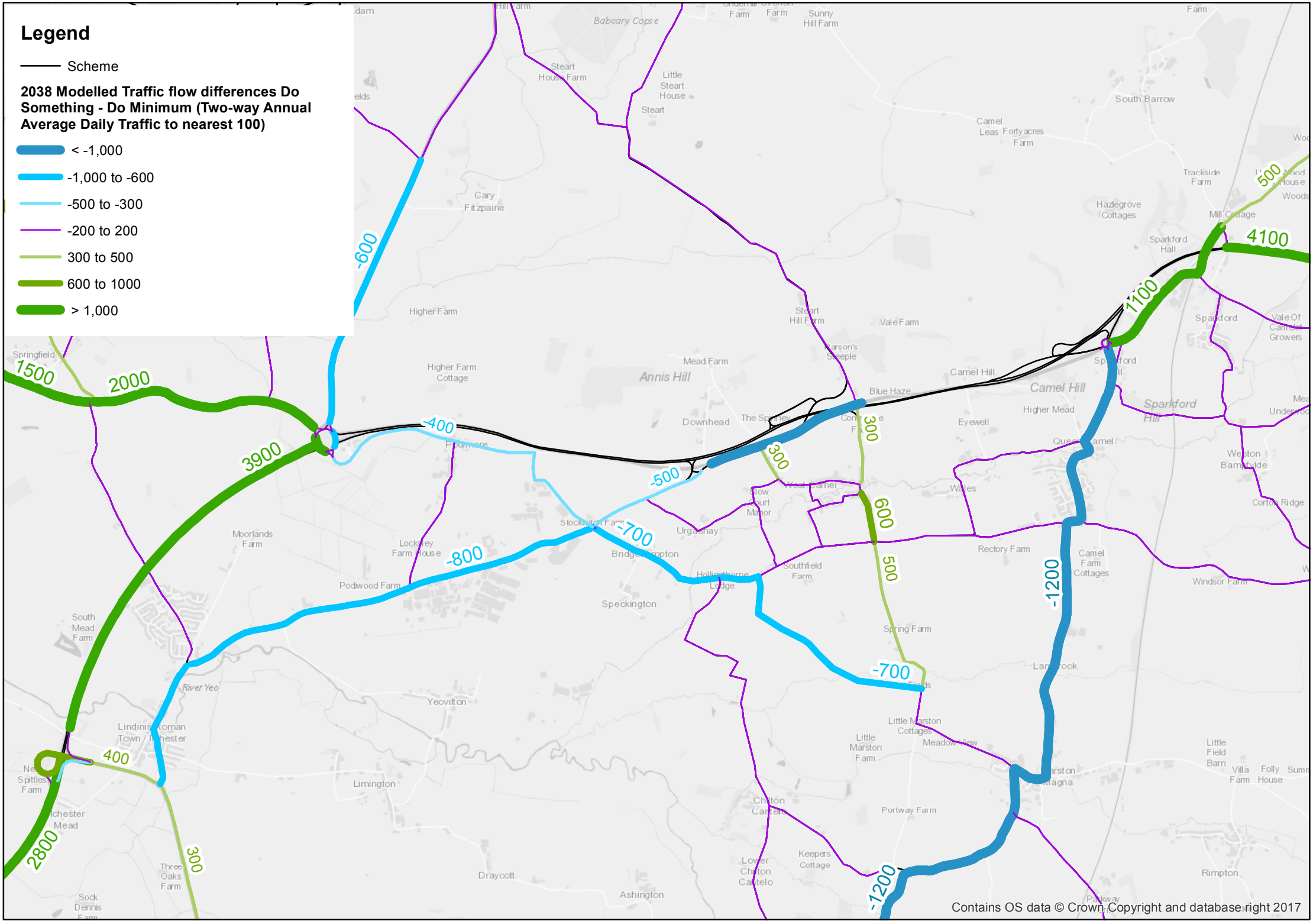
Appendix B – 2038 Modelled Traffic Flow Differences


Legend
Scheme
2038 Modelled Traffic flow differences Do Something - Do Minimum (Two-way Annual Average Daily Traffic to nearest 100)
< -1,000
-1,000 to -600
-500 to -300
-200 to 200
300 to 500
600 to 1000
> 1,000
-600
1500
2000
3900
-400
-500
300
300
600
500
-700
-800
-700
-1200
-1200
4100
1100
500
400
300
2800
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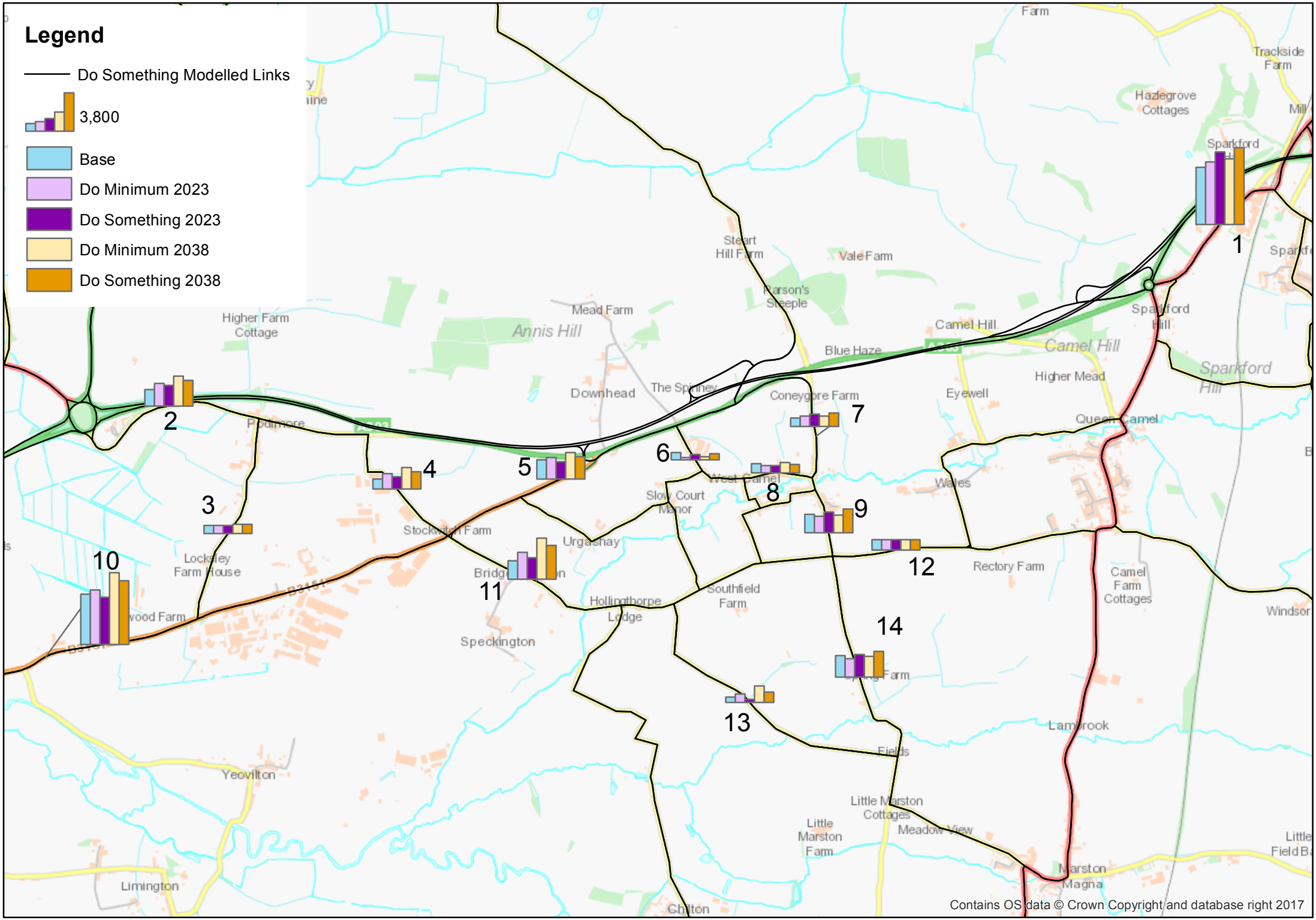
Appendix C – Base (2015) Compare to Predicted 2023 and 2038 Histograms


Legend
Do Something Modelled Links
3,800
Base
Do Minimum 2023
Do Something 2023
Do Minimum 2038
Do Something 2038
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Annis Hill
Camel Hill
Sparkford Hill
Higher Farm Cottage
Mead Farm
Downhead
Blue Haze
Coneygore Farm
Eyewell
Higher Mead
Queen Camel
Wales
Slop Court Manor
Stockwell Farm
Urgashay
Lockley Farm House
Speckington
Hollingthorpe Lodge
Southfield Farm
Rectory Farm
Camel Farm Cottages
Windsor
Lambrook
Little Marston Cottages
Meadow View
Little Marston Farm
Marston Magna
Yeovilton
Limington
Chilton
Hazlegrove Cottages
Trackside Farm
Vale Farm
Parson's Steeple
Contains OS data © Crown Copyright and database right 2017

Appendix D – Histogram Data

Local traffic flow table to accompany histogram plots

		Two-way adjusted Annual Average Daily Traffic to the nearest 100 vehicles				
Site Number	Site Name	Base	Do Minimum 2023	Do Something 2023	Do Minimum 2038	Do Something 2038
1	Sparkford High Street	5600	6100	7100	6400	7500
2	Podimore village West	1600	2200	2000	2900	2500
3	Road South of Podimore	800	800	800	900	900
4	Road from Podimore to Stockwitch Farm	1000	1500	1200	2100	1700
5	B3151 North	1900	2100	1700	2600	2200
6	Plowage Lane West Camel	700	200	500	300	600
7	Howell Hill	800	1000	1200	1000	1300
8	Fore Street, West Camel	900	700	700	1000	800
9	Parsonage Road West Camel	1800	1600	2000	1700	2300
10	B3151 South	4900	5300	4600	7000	6200
11	Road from Stockwitch Farm to Hollingthorpe Lodge	1800	2600	2100	4000	3300
12	West Camel Road	1000	1000	1000	1000	1000
13	Road from Hollingthorpe Farm to Marston Magna	500	800	300	1600	1000
14	Road from West Camel to Marston Magna	2100	1800	2200	2000	2500

A303 Sparkford to Ilchester Dualling Scheme
Publication of Statement of Community Consultation

Highways England is proposing to improve a 3 mile stretch of the existing A303 between Sparkford and Ilchester to high quality dual carriageway. The proposed scheme is an Environmental Impact Assessment development, which means we will produce and consult on a Preliminary Environmental Information Report (PEI report).

We have published a Statement of Community Consultation which sets out how we will be consulting with the local community on our scheme and how they can get involved. This document can be inspected along with the other consultation materials online at www.highways.gov.uk/Sparkford-to-Ilchester or at a range of deposit locations. For further details please see our Section 48 notice in accordance with the Planning Act 2008.

The consultation will be held from Friday 26 January 2018 until Friday 9 March 2018.
During this period, you can view consultation materials (including plans, the consultation brochure and environmental report) as well as speak to a member of the project team and share your views, at the following events:

Queen Camel Memorial Hall, High St, Queen Camel, Yeovil, BA22 7NF
Saturday 3 February 2018 – 10am to 6pm

Fleet Air Arm Museum, RNAS Yeovilton, Ilchester BA22 8HT
Monday 5 February 2018 – 2pm to 8pm

Davis Hall, Howell Hill, West Camel, Yeovil BA22 7QX
Friday 9 February 2018 – 2pm to 8pm

Huish Park Stadium, Lufton Way, Yeovil, BA22 8YF
Thursday 15 February 2018 – 2pm to 8pm

Alternatively, you can view the documents at the deposit locations as detailed in the Planning Act 2008 Section 48 notice or on our scheme website: **www.highways.gov.uk/Sparkford-to-Ilchester**. The materials will be available from the start of the consultation period, not in advance.

For further details please, email **A303SparkfordtoIlchesterDualling@highwaysengland.co.uk** or call **0300 123 5000**.

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

Section 48 - Planning Act 2008

A303 Sparkford to Ilchester Dualling scheme

Notice publicising a proposed application for a Development Consent Order

Regulation 4 Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Notice is hereby given that **Highways England Company Limited** ("Highways England") of Bridge House, Walnut Tree Close, Guildford, GUI 4LZ proposes to make an application ("the Application") to the Secretary of State for Transport under Section 37 of the Planning Act 2008 for a Development Consent Order.

The Application is for the proposed A303 Sparkford to Ilchester Dualling scheme in Somerset.

The scheme's main proposals in summary are:

- Construction of a new dual carriageway that follows the existing A303 from east of Podimore Roundabout to Downhead. At this point the road moves north before reverting to follow the route of the existing A303 in the direction of Hazlegrove.
- Retention of some existing sections of the A303 as a parallel road to provide local travel connectivity
- Provision of a new junction allowing local traffic access to the new dual carriageway in the vicinity of Downhead
- Provision of a new junction allowing local traffic access to the new dual carriageway in the vicinity of Hazlegrove

The scheme is an Environmental Impact Assessment development ("EIA development"), as defined by The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and an Environmental Statement will be submitted as part of the Application. A Preliminary Environmental Information ("PEI") Report forms part of the consultation material.

Consultation on the proposals will take place from **Friday 26 January 2018** to **Friday 9 March 2018**. Copies of the consultation materials - including documents, plans and maps showing the nature and location of the proposed development and the PEI Report - will be available for inspection free of charge from **Friday 26 January 2018** to **Friday 9 March 2018** at the following locations and times:

Location	**Opening hours**
Wincanton Library, 7 Carrington Way, Wincanton, Somerset, BA9 9JS	Monday 9.30am to 1.30pm and 2.30pm to 5pm Tuesday 9.30am to 1.30pm and 2.30pm to 5pm Wednesday 9.30am to 1.30pm and 2.30pm to 5pm Thursday Closed Friday 9.30am to 1.30pm and 2.30pm to 5pm Saturday 9.30am to 12pm Sunday Closed
Yeovil Library, King George Street, Yeovil, Somerset, BA20 1PYZ	Monday 9.30am to 12.30pm and 1.30pm to 5pm Tuesday 9.30am to 12.30pm and 1.30pm to 6pm Wednesday 9.30am to 12.30pm and 1.30pm to 5pm Thursday 9.30am to 1pm Friday 9.30am to 12.30pm and 1.30pm to 5pm

	Saturday 9.30am to 12.30pm and 1.30pm to 4pm Sunday Closed
South Petherton Library, St. James Street, South Petherton, Somerset, TA13 5BS	Monday Closed Tuesday 10am to 2pm Wednesday Closed Thursday 10am to 2pm Friday 10am to 1pm and 2pm to 4pm Saturday 9.30am to 1pm Sunday Closed
Taunton Library, Paul Street, Taunton, Somerset, TA1 3XZ	Monday 9.30am to 5.30pm Tuesday 9.30am to 5.30pm Wednesday 9.30am to 7pm Thursday 9.30am to 5.30pm Friday 9.30am to 5.30pm Saturday 9.30am to 5pm Sunday Closed
Somerset County Council, County Hall, Taunton, Somerset, TA1 4DY	Monday 8am to 5pm Tuesday 8am to 5pm Wednesday 8am to 5pm Thursday 8am to 5pm Friday 8am to 4.30pm Saturday Closed Sunday Closed
Martock Library, The Shopping Centre, Martock, Somerset, TA12 6DL	Monday 9.30am to 5pm Tuesday 9.30am to 5pm Wednesday 9.30am to 5pm Thursday Closed Friday 9.30am to 5pm Saturday 9.30am to 12pm Sunday Closed
South Somerset District Council, Brympton Way, Yeovil, Somerset, BA20 2HT	Monday 8.45am to 5.15pm Tuesday 8.45am to 5.15pm Wednesday 8.45am to 5.15pm Thursday 8.45am to 5.15pm Friday 8.45am to 4.45pm Saturday Closed Sunday Closed
Talltrees Community Centre, 4 Taranto Hill, Ilchester, Yeovil BA22 8JP	Monday 8am to 3pm Tuesday 8am to 3pm

	Wednesday 8.45am to 3pm Thursday 8am to 3pm Friday 8am to 3pm Saturday 12.30pm – 11.59pm Sunday 1pm to 10.30pm

Copies of the consultation materials also will be available online free of charge from Friday 26 January 2018 at **www.highways.gov.uk/Sparkford-to-Ilchester**.

Copies of the consultation materials may be requested during the consultation period from Highways England using the e-mail address, postal address or telephone number provided below:

- A303SparkfordtoIlchesterdualling@highwaysengland.co.uk
- A303 Sparkford to Ilchester Dualling, Highways England, 2/07K Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6HA
- 0300 123 5000 (9am to 5pm, Monday to Friday)

Paper copies of the consultation booklet, response form and Statement of Community Consultation will be supplied free of charge. A CD / DVD of these items together with scheme plans, the Preliminary Environmental Information Report and associated Non-Technical Summary will be supplied free of charge.

Any person may comment on the proposals or otherwise respond to this publicity. Responses must be received between Friday 26 January 2018 and Friday 9 March 2018. A consultation feedback form is available as part of the consultation, and the consultation website will also allow the submission of electronic consultation responses. When providing your response, please include your name and address or, if you would prefer your comments to be anonymous, your postcode only. Please also confirm the nature of your interest in the scheme. Please supply any response to:

- A303SparkfordtoIlchesterdualling@highwaysengland.co.uk
- A303 Sparkford to Ilchester Dualling, Highways England, 2/07K Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6HA
- 0300 123 5000 (9am to 5pm, Monday to Friday)

Responses must be received no later than Friday 9 March 2018 or, if later, 28 days from the date of this notice.

Highways England will consider and have regard to all responses when developing their Application for a Development Consent Order once consultation has closed. Responses will form the basis of a Consultation Report that will be one of the factors taken into consideration by the Secretary of State when deciding whether the Application can be accepted for examination. Therefore, in providing any comment, it should be borne in mind that the substance of it may be communicated to others as part of the Consultation Report.

If you would like further information about this notice, the consultation or the scheme, please contact the project team by using one of the contact methods provided above.

Tom Roberts, Project Manager, Highways England, 11 January 2018

A303
Sparkford to Ilchester
Dualling Scheme

Statement of Community Consultation

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1 A303 Sparkford to Ilchester – Statement of Community Consultation

1.1.1 Highways England is publishing this Statement of Community Consultation (SoCC) in connection with a proposed improvement to the A303 between Sparkford and Ilchester in Somerset. The purpose of this document is to set out how we will consult the local community about our proposal. The document also provides background to the project and how the application to build it will progress.

2 The Application

2.1.1 Highways England is developing this scheme under the Planning Act 2008 and is publishing this statement under Section 47 of that Act. It has consulted Somerset County Council and South Somerset District Council, the local authorities responsible for the area where the project will be built, about plans to consult the local community.

2.1.2 The Planning Act 2008 requires Highways England to make an application to the Secretary of State through the Planning Inspectorate for a Development Consent Order (DCO) to build the scheme. The Secretary of State's role is to consider whether authorisation should be given for major infrastructure projects like this scheme. Highways England anticipates that a DCO application for the scheme will be published in summer 2018. The Planning Inspectorate will examine the DCO application and the Secretary of State will decide on whether the scheme should go ahead.

2.1.3 Government policy relating to the development of the national road network is set out in the National Networks National Policy Statement (NNNPS). This provides the framework for DCO applications to be considered against.

2.1.4 When Highways England submits its DCO application, the Secretary of State must consider whether our consultation has been adequate. This pre-application consultation will be important in relation to the examination process that follows after an application is accepted by the Planning Inspectorate. Therefore, the best time to provide feedback on this scheme is now by taking part in this pre-application consultation.

2.1.5 You can find more information about the Planning Inspectorate and the Planning Act 2008 on the Gov.uk website: http://infrastructure.planninginspectorate.gov.uk or by calling the Planning Inspectorate on 0303 444 5000.

3 The Scheme

3.1.1 The A303/A358 corridor provides vital east-west connectivity between the south west and London and the south east for people, communities and businesses, including the tourism industry which is so important to the south west. However, there are problems along the route including several single carriageway sections where road users can suffer congestion and long delays. The problems are even worse at peak holiday times during the summer months and on weekends.

3.1.2 In recognition of this and the harmful effects this has on the south west's economy, the Government's Road Investment Strategy (RIS) sets out the intention to transform connectivity by upgrading the A303/A358 corridor to a high quality dual carriageway from the M3 motorway to the M5 motorway at Taunton. This includes the A303 between Sparkford and Ilchester.

3.1.3 The scheme proposals are for a dual carriageway that starts east of Podimore Roundabout and follows the alignment of the existing A303 to Downhead.

3.1.4 Travelling eastwards, the route moves north of the existing A303 single carriageway, allowing the existing road to be retained for use as a parallel local road in this section.

3.1.5 The route then rises up West Camel Hill before crossing over the existing A303 at the junction with Steart Hill / Howell Hill. The route then takes a southerly alignment briefly before meeting up with the existing road again to pass between Vale Farm and the MOD signal station at Eyewell / Traits Lane.

3.1.6 Finally, the route then bypasses the existing Hazlegrove Roundabout to the north through the Registered Park and Garden associated with Hazlegrove House, before tying into the existing A303 north of Sparkford Village.

4 Consulting the community

4.1.1 In accordance with section 47 of the Planning Act 2008, Highways England is consulting people living in the vicinity of the proposed scheme.

4.1.2 Highways England has already undertaken 1 stage of the consultation. Stage 1 took place between February and March 2017. Consultees were asked for their views on two route options. More details, including the outcome of this consultation, are available in the stage 1 feedback report, available to download from the scheme website at www.highways.gov.uk/Sparkford-to-Ilchester, on request from Highways England, or to view for the duration of the consultation period at the display locations detailed in this SoCC.

4.1.3 We want to make sure that the local community, the residents, local interest groups, businesses, visitors and road users, have the opportunity to fully understand the scheme and comment on our proposals. To do this we are holding stage 2 of the consultation between January and March 2018. It will start on 26 January 2018 and will end on 9 March 2018, during which we will provide consultation information on various issues including:

- Junction layout and strategy
- Works to the existing road ("de-trunking") and local roads
- Provision for non-motorised users
- Environmental assessments and potential environmental impacts
- Environmental mitigation measures
- Arrangements during construction of the scheme
- An overview of other projects proposed by Highways England along A303 / A30 / A358 corridor.

4.1.4 We have carried out an Environmental Impact Assessment for the scheme. The scheme is an Environmental Impact Assessment development, and therefore we are publishing Preliminary Environmental Information as part of the consultation material. This gives information about the potential environmental effects of the scheme and the measures proposed to reduce those effects, so to assist well-informed responses to the consultation.

4.1.5 Our consultation will involve:

Method	Detail
Public information events	Public information events will be held at locations along the route of the scheme. These will give people an opportunity to view scheme proposals, talk to the project team and provide comments. Details of the location and times of public information events are set out in section 5. The public will be informed of the events through channels including advertisements in appropriate local newspapers, via our website, the media, direct communications and project updates. Questionnaires will be available at the exhibition events for members of the public to record their comments and these can either be left with the project team and/or sent back separately via the address noted below.
Public information points	Information advertising the public information events, and also providing guidance on how interested parties can provide consultation feedback, will be available at specified public information points. Details of public information points are set out in section 5.
Project website	A full summary of the project, copies of the supporting project documents and a questionnaire will be provided on a dedicated project website: www.highways.gov.uk/Sparkford-to-Ilchester
Written communication	We will send residents and businesses inside the consultation zone (see Appendix 1) a letter that invites them to attend the public events, and provides guidance on how consultation feedback can be provided to us. Other key stakeholder organisations and special interest groups will also receive information letters that explain scheme proposals, and the issues being consulted on. These will include: • Parish and town councils and other local groups and forums • Business organisations • Tourism organisations • Road user representative groups • Non-motorised user groups • Hard-to-reach groups The letters will invite recipients to the public information events, and provide guidance on how consultation feedback can be provided to us. Individuals or organisations that have registered to receive further communications on the Highways England scheme website, will be sent information emails that explain the scheme proposals and the issues being consulted on. The emails will invite recipients to the public

	information events, and provide guidance on how consultation feedback can be provided to us.
Project updates	At the launch of the consultation and at the point at which Highways England submits the DCO application, project updates will be produced, providing details on the proposals and reporting on the outcome of the consultation process respectively. These will be distributed to residents and community groups using the written communications described above, by e-mail to road users registering for further communications on our website, and to town and parish councils and community / area forums who wish to receive them. Copies will be made available on our website and provided on request by the project team.
Consultation brochure	We will produce a consultation brochure that will provide information about the scheme proposals, the need for the scheme, and the issues being consulted on. The brochure will be available to view on the Highways England scheme website. The consultation brochure will also be available at public information events, and public information points. Copies of the consultation brochure can be provided free of charge upon request to Highways England. You can obtain copies by: • visiting the scheme website at http://www.highways.gov.uk/roads/road-projects/A303-Sparkford-to-Ilchesterwww.highways.gov.uk/Sparkford-to-Ilchester • emailing the project team at A303SparkfordtoIlchesterDualling@highwaysengland.co.uk • calling the project team on 0300 123 5000 (9am to 5pm, Monday to Friday) • writing to the project team at A303 Sparkford to Ilchester Dualling, 2/07K Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6HA
Use of local authority and parish council communications channels	We will promote the statutory consultation through local authority and parish council communication channels, including their respective websites, newsletters and social media pages.
Elected member preview	We recognise the importance of ensuring that elected members are prepared for questions from their communities. We will invite elected members from host authorities to a preview event, as well as representatives from parish councils, prior to the start of the consultation period.
Representatives at parish councils, local	We welcome contact from local groups and forums. Where it is considered that there is a relevant interest and where a visit by us is determined to be proportionate and appropriate, we will attend a local

groups and forums	event to discuss the statutory consultation. This process will include continuing to meet with parish councils along the route, when appropriate.
Hard to reach groups	An appropriate and proportionate 'hard to reach' engagement plan has been developed with the assistance and agreement of relevant local authority personnel and third sector organisations. Appropriate and proportionate consultation tools for 'hard to reach' groups could include: • Presentations to community groups and organisations • Appropriate direct engagement with, for example, younger people, disabled people and representative groups • Provision of appropriate and accessible materials in local community / 'hard to reach' centres • Provision of appropriate and accessible materials (i.e. in large print, braille and alternative languages if requested) • Venues chosen for public events to be compliant with the Equality Act 2010 • Use of existing channels for 'hard to reach' groups, hosted by third parties such as Somerset County Council
Statutory consultation updates	The local community and other road users will be updated about the progress of the statutory consultation through channels including written communications, the Highways England website, local media, local authority websites, newsletters and social media.
Consultation feedback	Written comments can be made either online at www.highways.gov.uk/Sparkford-to-Ilchester or in writing to the following addresses: • A303SparkfordtoIlchesterDualling@highwaysengland.co.uk • A303 Sparkford to Ilchester Dualling, 2/07K Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6HA
Media	The statutory consultation will be publicised through media channels by means of a Highways England press release detailing the consultation process and explaining how the local community and road users can provide feedback.
Establishing stakeholder groups	Having built a relationship with the local community, we will consider, in consultation with relevant town and parish councils and community / area forums, whether there is benefit in establishing a stakeholder group, to which we would invite local community nominated representatives to discuss our proposals. If a similar stakeholder group is already in existence or established by the relevant local authorities, we will participate when invited.
Social media	The consultation will be advertised using Highways England's Twitter presence.

5 Public information event venues, dates and times

5.1.1 A minimum of 4 public events will be held during the consultation period. These events will be located at strategic locations along the route. The venues will be chosen based on the suitability of the building, ease of access for all members of the local community, and available facilities. Details of the events are:

Date	Location	Time
Saturday 3 February 2018	Queen Camel Memorial Hall, High St, Queen Camel, Yeovil, BA22 7NF	10:00 – 18:00
Monday 5 February 2018	Fleet Air Arm Museum, RNAS Yeovilton, Yeovilton, Ilchester, BA22 8HT	14:00 – 20:00
Friday 9 February 2018	The Davis Hall, Howell Hill, West Camel, Yeovil, A22 7QX	14:00 – 20:00
Thursday 15 February 2018	Huish Park Stadium, Lufton Way, Yeovil BA22 8YF	14:00 – 20:00

5.2 Documents available for inspection

5.2.1 Scheme summary information, this updated SoCC, policy guidance documents and other relevant technical documents listed in Appendix 3 will be available online and will be added to throughout the course of the project at www.highways.gov.uk/Sparkford-to-Ilchester and will be available to view, free of charge during the consultation, at the inspection locations listed below:

Location	Opening hours
Wincanton Library, 7 Carrington Way, Wincanton, Somerset, BA9 9JS	Monday 9.30am to 1.30pm and 2.30pm to 5pm Tuesday 9.30am to 1.30pm and 2.30pm to 5pm Wednesday 9.30am to 1.30pm and 2.30pm to 5pm Thursday Closed Friday 9.30am to 1.30pm and 2.30pm to 5pm Saturday 9.30am to 12pm Sunday Closed
Yeovil Library, King George Street, Yeovil, Somerset, BA20 1PYZ	Monday 9.30am to 12.30pm and 1.30pm to 5pm Tuesday 9.30am to 12.30pm and 1.30pm to 6pm Wednesday 9.30am to 12.30pm and 1.30pm to 5pm Thursday 9.30am to 1pm Friday 9.30am to 12.30pm and 1.30pm to 5pm Saturday 9.30am to 12.30pm and 1.30pm to 4pm

	Sunday Closed
South Petherton Library, St. James Street, South Petherton, Somerset, TA13 5BS	Monday Closed Tuesday 10am to 2pm Wednesday Closed Thursday 10am to 2pm Friday 10am to 1pm and 2pm to 4pm Saturday 9.30am to 1pm Sunday Closed
Taunton Library, Paul Street, Taunton, Somerset, TA1 3XZ	Monday 9.30am to 5.30pm Tuesday 9.30am to 5.30pm Wednesday 9.30am to 7pm Thursday 9.30am to 5.30pm Friday 9.30am to 5.30pm Saturday 9.30am to 5pm Sunday Closed
Somerset County Council, County Hall, Taunton, Somerset, TA1 4DY	Monday 8am to 5pm Tuesday 8am to 5pm Wednesday 8am to 5pm Thursday 8am to 5pm Friday 8am to 4.30pm Saturday Closed Sunday Closed
Martock Library, The Shopping Centre, Martock, Somerset, TA12 6DL	Monday 9.30am to 5pm Tuesday 9.30am to 5pm Wednesday 9.30am to 5pm Thursday Closed Friday 9.30am to 5pm Saturday 9.30am to 12pm Sunday Closed
South Somerset District Council, Brympton Way, Yeovil, Somerset, BA20 2HT	Monday 8.45am to 5.15pm Tuesday 8.45am to 5.15pm Wednesday 8.45am to 5.15pm Thursday 8.45am to 5.15pm Friday 8.45am to 4.45pm Saturday Closed Sunday Closed
Talltrees Community Centre, 4 Taranto Hill, Ilchester, Yeovil BA22 8JP	Monday 8am to 3pm Tuesday 8am to 3pm Wednesday 8.45am to 3pm Thursday 8am to 3pm Friday 8am to 3pm Saturday 12.30pm – 11.59pm Sunday 1pm to 10.30pm

6 Next steps

6.1.1 Comments made during the consultation will be recorded and carefully considered by Highways England and will be taken into account in developing the scheme proposal. An explanation of how comments received have shaped and influenced our proposals, will be reported in a Consultation Report prepared by Highways England which will accompany the DCO application as required by Section 37(3) (c) of the Planning Act 2008. The Planning Inspectorate will decide whether the application meets the required standards to proceed to examination, and will determine whether Highways England's pre-application consultation has been adequate.

6.1.2 Highways England needs to collect and assess all responses to consultation before compiling the DCO application to the Planning Inspectorate. To allow time to do this, it must receive feedback by 9 March 2018.

6.1.3 If you want to contact us or find out more about this scheme, you can:

- visit the scheme website at http://www.highways.gov.uk/roads/road-projects/A303-Sparkford-to-Ilchesterwww.highways.gov.uk/Sparkford-to-Ilchester
- email the project team at A303SparkfordtoIlchesterDualling@highwaysengland.co.uk
- call the project team on **0300 123 5000 (9am to 5pm, Monday to Friday)**
- write to the project team at **A303 Sparkford to Ilchester Dualling, 2/07K Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6HA**

Appendix 1 – Consultation buffer zone map

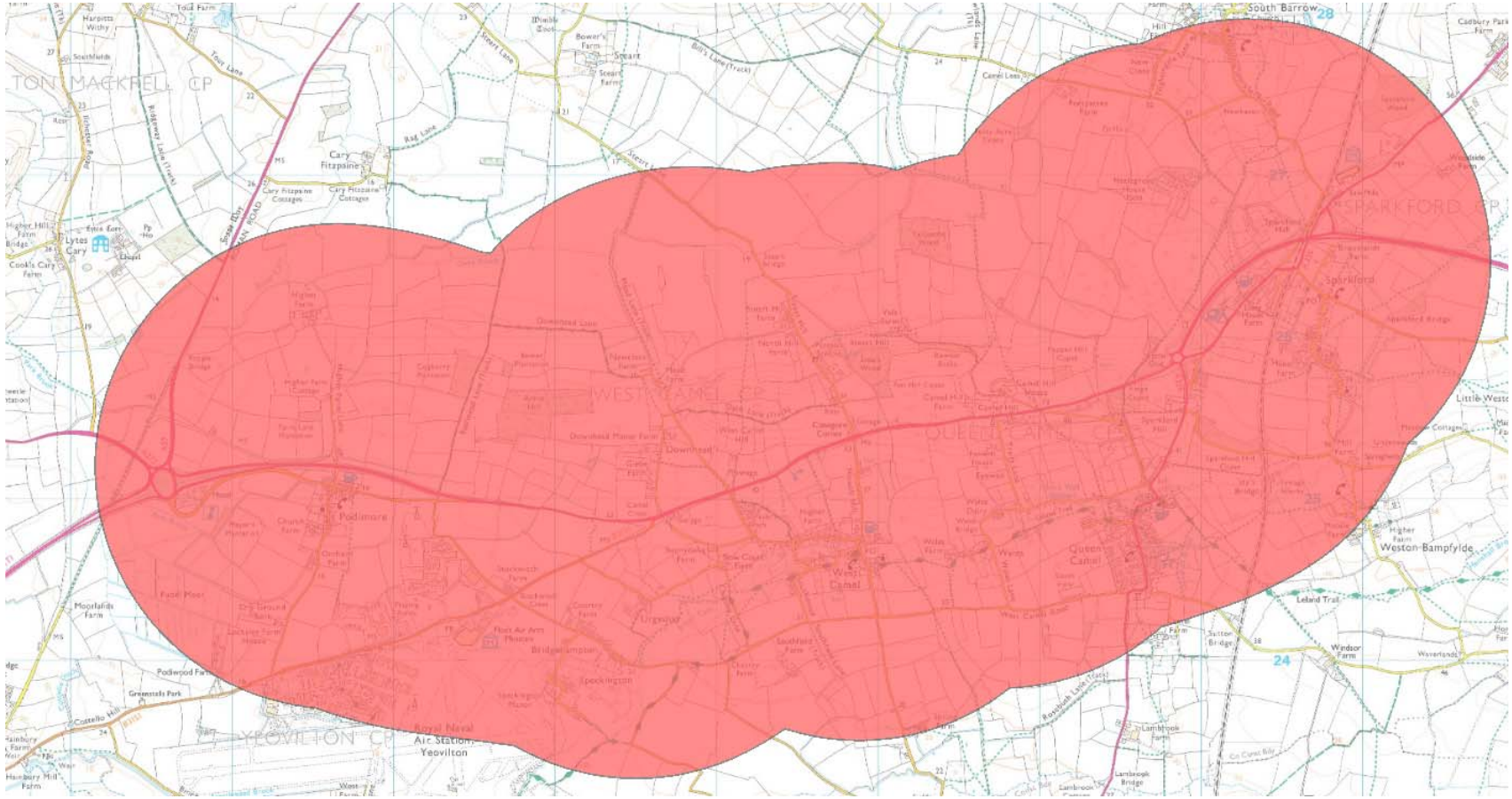


Figure 1: Consultation buffer zone map

The consultation zone covers a geographical area of approximately 1.5 kilometres from any point along the route being consulted on. In certain areas, the 1.5 kilometre zone has been extended to include additional population centres.

Appendix 2 – Local authorities

Local authorities affected by the scheme:

- Somerset County Council
- South Somerset District Council

Adjoining local authorities:

- Bath and North East Somerset Council
- Devon County Council
- Dorset County Council
- East Devon District Council
- Mendip District Council
- North Dorset District Council
- North Somerset Council
- Sedgemoor District Council
- Taunton Deane Borough Council
- West Dorset District Council
- Wiltshire Council

Following consultation with these authorities as set out in 2.1.1, regard has been paid to their responses in the following ways:

Local authority comment	Response
The draft SoCC does not contain any dates or duration of consultation at this point; for the non-statutory consultation we advised that a thirty day consultation period would be insufficient and we recommended extending the consultation period to twelve weeks.	Dates are now included. The consultation period is longer than 30 days. Highways England considers the 6 week period included in this document as appropriate in the context of similar schemes.
We previously suggested that consideration should be given to increasing the number of exhibitions from the proposed number. Whilst the draft SoCC does not contain the details of the proposed exhibitions we would recommend increasing the number from that which were carried out for the non-statutory consultation. A wider range of venues and times would allow more people to attend.	A further exhibition has been included in this document when compared to the non-statutory consultation. This includes a range of venues and times to allow more people to attend.
Whilst the scheme and the works associated with it will have a significant impact on the local communities the consultation should also ensure the views of those who travel along the route are captured.	Provision is made for engaging with road users in the document.

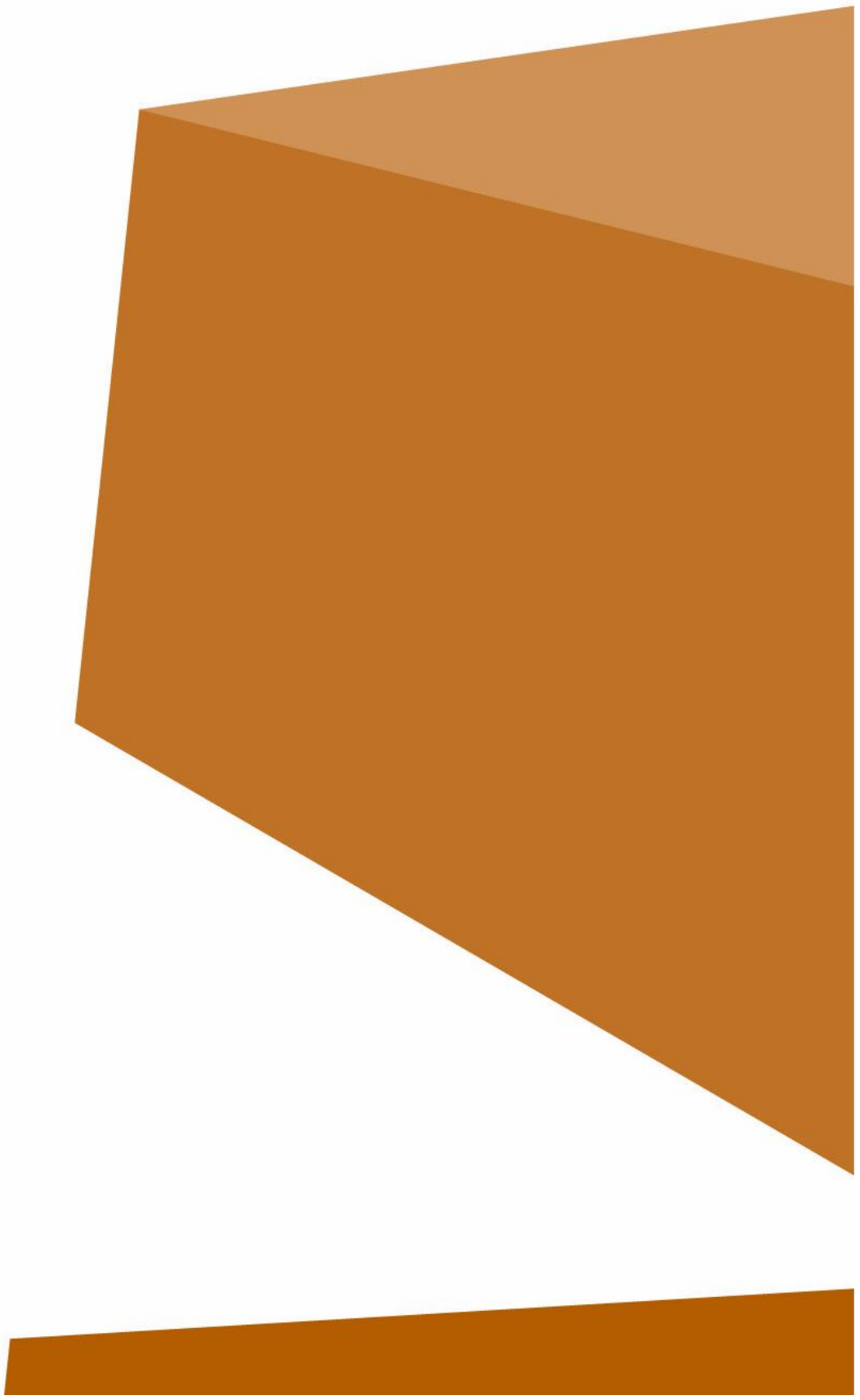
We would suggest that a workshop for elected members of the County Council and the District Councils, to take place prior to the commencement of the public consultation, be included within the list of events so that members are prepared for the questions from their communities.	A preview event for elected members has been added.
The draft SoCC states that the consultation will be promoted through local authority and parish council communication channels. We would recommend working closely with parish councils along the route by attending meetings to explain the process and consultation opportunities.	Where it is considered that there is a relevant interest and where a visit by us is determined to be proportionate and appropriate, we will attend a local event to discuss the statutory consultation. This process will include continuing to meet with parish councils along the route, when appropriate.
It would be helpful if the range of stakeholders were set out within the SoCC; we would recommend actively engaging with businesses and the tourism sector both along the route and further afield.	Details of the range of stakeholders are now included in section 4.
We have contacts within many of the identified hard to reach groups in the county and send them regular newsletter/useful information. We can use these to share information about the consultations.	Information will be sent to the contact provided.
The only comment I have received is why no Public Information Point in Ilchester and / or Podimore village when there is one in Martock (this was from someone who lives in Ilchester)? My reasoning on suggesting Martock originally was because there is a public library but given that Ilchester and Podimore are alongside the route and more affected, it would make sense to address this and I understand there would be possible locations for information.	A public information point has now been added in Ilchester.

Appendix 3 – Documents to be made available for inspection at inspection locations listed at section 5

The following documents will be made available for inspection at inspection locations listed in section 5:

- the consultation brochure
- the consultation questionnaire
- Preliminary Environmental Information the SoCC
- the Preferred Route Announcement leaflet
- the Scheme Assessment Report
- the Report on Non-statutory Consultation
- the Scheme Route map
- notice of application

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



A303 Sparkford to Ilchester stakeholder pack

Introduction
This stakeholder pack is designed to be a resource for you to help share information about the A303 Sparkford to Ilchester consultation that is taking place from 26 January – 9 March 2018.

Below you will find blocks of text that can be cut and pasted into newsletters, onto Facebook pages or similar, along with suggested tweets to use on Twitter, to help raise awareness of what is happening, why, and how you and others can get involved.

You will also find a link to a poster that can be downloaded and printed out, again to raise awareness of the consultation and how people can take part in them. Sharing information about the consultation will help to ensure that those people affected by the proposed road improvement have the opportunity to have their say.

Resources:

Printable posters
It is quick and easy to put up a poster in your workplace, shop window or on a noticeboard. If you would like to help raise awareness of the consultation in this way, please download a poster by clicking on the image below and print one out.

Text block
Please mention the A303 Sparkford to Ilchester consultations in your newsletter, e-bulletin, parish magazine, blog or website. This will help ensure as many people as possible are aware of it, and that everyone has the opportunity to have their say. Here's some suggested text:

A303 Sparkford to Ilchester	Highways England is holding a consultation on their proposal to upgrade the A303 between Sparkford and Ilchester to a high quality dual carriageway. This consultation starts on Friday 26 January and will end on Friday 9 March 2018. If you use this road then make sure you take the opportunity to have your say. To find out more visit www.highways.gov.uk/Sparkford-to-Ilchester
The A303 Sparkford to Ilchester dualling scheme is part of a corridor of schemes that are intended to help transform journeys between London and the south east, and the south west. This block of text is about the corridor.	Highways England is consulting on plans to create a high quality dual carriageway link between London and the south east, and the south west. Once in place, this link will help to make travelling between these regions easier and safer, reducing congestion, making journey times more reliable helping to support wider economic growth. Between January and March 2018 there will be consultations on improvements to the following roads: • A358 between the M5 at Taunton and Southfields Roundabout on the A303. • A303 between Sparkford and Ilchester • A303 between Amesbury and Berwick Down (Stonehenge) If you use these roads then make sure you take the opportunity to have your say. To find out more and take part in the consultations visit: www.highways.gov.uk/A303-A358-Corridor

Facebook posts

A303 Sparkford to Ilchester	Highways England is holding a consultation on their proposal to improve the A303 between Sparkford and Ilchester to a high quality dual carriageway. If you use this road then make sure you take the opportunity to have your say. To find out more visit www.highways.gov.uk/Sparkford-to-Ilchester
A303/A358 Corridor post	In the first part of 2018 Highways England – the Government owned company responsible for operating, maintaining and improving England's major A-roads and motorways – will launch consultations about proposed improvements to the following roads: • A358 between the M5 at Taunton and Southfields Roundabout on the A303 • A303 between Sparkford and Ilchester • A303 between Amesbury and Berwick Down (Stonehenge) If you use these roads then make sure you take the opportunity to have your say while the consultations are running. To find out more and take part in the consultation visit: www.highways.gov.uk/A303-A358-Corridor

Twitter posts

@HighwaysSWEST is Highways England's official south west Twitter feed. We will tweet out various messages during the consultations – usually on the launch date, and at intervals thereafter - if you are able to re-tweet any of our messages that would be great.

If you are tweeting your own messages, please use the following hashtag:
#A303SparkfordImprovement

Some suggested wording for tweets can be found below for your convenience too.

A303 Sparkford to Ilchester	*Highways England is consulting on plans to improve the A303 between Sparkford and Ilchester. Find out more & have your say at:* www.highways.gov.uk/Sparkford-to-Ilchester
A303/A358 Corridor	Highways England is consulting on the A303/A358 corridor. To find out more and take part in the consultation visit: www.highways.gov.uk/A303-A358-Corridor

Consultation Materials

A303 Sparkford to Ilchester	You can find the online consultation brochure and the questionnaire for the A303 Sparkford to Ilchester scheme, along with all the supporting information, at www.highways.gov.uk/Sparkford-to-Ilchester
A303/A358 Corridor	You can find links to all the consultations from this page: www.highways.gov.uk/A303-A358-Corridor