National Audit Office

Report
by the Comptroller
and Auditor General

Department for Transport and Highways England

Improving the A303 between Amesbury and Berwick Down

HC 2104 SESSION 2017–2019 20 MAY 2019

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National Audit Office

Department for Transport and Highways England

Improving the A303 between Amesbury and Berwick Down

Report by the Comptroller and Auditor General

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Sir Amyas Morse KCB
Comptroller and Auditor General
National Audit Office

16 May 2019

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This report makes early observations on the progress and risks in upgrading the A303 between Amesbury and Berwick Down by building a tunnel through the Stonehenge World Heritage Site.

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Key facts

£1.5bn to £2.4bn

estimated cost range (2016 prices) to build Amesbury to Berwick Down project (including a tunnel under Stonehenge)[1]

£524m

estimated maintenance costs (2016 prices) of the Amesbury to Berwick Down project over 60 years

3.3km

current length of proposed tunnel under Stonehenge

73%	the cultural heritage benefits as a percentage of total monetised project benefits
1.15:1	latest benefit–cost ratio for the Amesbury to Berwick Down project
December 2026	estimated date for the Amesbury to Berwick Down project to be open to traffic
8	number of projects needed to complete the A303/A358 road corridor works
2029	intended completion date for all eight projects along the A303/A358 road corridor

Note

1 These figures are subject to funding approval from HM Treasury and the outcome of commercial negotiations with contractors.

Summary

1 In December 2014, as part of the first Road Investment Strategy, the Department for Transport (the Department) committed to building a tunnel of at least 2.9 kilometres (1.8 miles) beneath the World Heritage Site at Stonehenge. This has since increased to 3.3 kilometres following public consultation and discussion with heritage stakeholders. The Department and Highways England expect the project to reduce congestion along the A303 between Amesbury and Berwick Down in Wiltshire, improve the setting of the World Heritage Site and, in combination with other projects along the route, support economic growth in the South West of England.

2 The A303 Amesbury to Berwick Down project forms part of the A303 and A358 road corridor that links the South East and South West of England. This corridor has more than 35 miles of single carriageway. There is more traffic on the road than the single carriageway sections are designed for, which results in high levels of traffic and slow and unreliable journeys. Local authorities and businesses along the route consider poor road connectivity as a major barrier to economic growth in the region.

3 In the Road Investment Strategy, the Department said it aimed to upgrade the entire A303/A358 road corridor to dual carriageway standard over the next 14 years through eight individual projects.[1] It committed £2 billion to starting three of these projects, including the A303 between Amesbury and Berwick Down, by March 2020.

4 The Department's objectives for the Amesbury to Berwick Down project are:

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

5 The Amesbury to Berwick Down project is still at an early stage. The expected range of costs is £1.5 billion to £2.4 billion, and the Department and Highways England expect the upgraded road section to be open to traffic by December 2026.[2]

1 Subsequent Highways England publications reference a date of 2029.
2 These figures are subject to funding approval from HM Treasury and the outcome of commercial negotiations with contractors.

Scope of the report

6 This report follows on from our 2017 report, *Progress with the Road Investment Strategy*. It makes early observations on the progress and risks of constructing a tunnel through the World Heritage Site at Stonehenge, including:

- the background to the Amesbury to Berwick Down project (Part One);
- the case for the project (Part Two);
- progress on the project (Part Three).

The report does not look at other routes in the South West. Given the project is at an early stage, we do not seek to conclude on value for money. Instead, we highlight factors that will be relevant in the future to the overall value for money of the tunnel at Stonehenge and wider investment along the road corridor.

Key findings

7 **There is a good strategic reason for the Amesbury to Berwick Down project.** It aims to improve the speed and reliability of journey times on the section of road between Amesbury and Berwick Down, which suffers from high levels of seasonal congestion. It also aims to protect and improve the World Heritage Site by removing most of the road from the site. By upgrading this section of the A303, the Department and Highways England intend to remove a key constraint that has prevented them upgrading the A303/A358 corridor and unlocking growth in the South West (paragraphs 1.4 to 1.6, 1.8 to 1.10).

8 **Previous attempts to construct a tunnel at Stonehenge have been cancelled due to escalating costs and disagreements between stakeholders.** Disagreements included the length of tunnel and the design of the project. For the current project, Highways England and the Department have gained agreement from the National Trust, English Heritage, Wiltshire Council and Historic England on a solution. Together they have agreed a minimum acceptable tunnel length that ensures an appropriate position for the tunnel entrances and road layout in order to protect the Outstanding Universal Value of the World Heritage Site. Highways England and the Department rejected longer and more expensive options as unaffordable. However, other bodies, including the UNESCO World Heritage Committee, have voiced concerns about the current proposed project (paragraphs 1.11, 1.12, 1.17 and 3.12 to 3.14).

9 **The economic case relies on heritage benefits that are uncertain.** The high cost of building a tunnel, compared with widening or moving the road, means that under the standard method for appraising transport projects, the project would only deliver 31p of benefit for every £1 spent. Highways England therefore expanded its appraisal to include a monetary value for cultural heritage, to reflect the project's wider objectives. At £955 million (2010 prices and discounted) these make up 73% of total monetised benefits. With these included, Highways England expects the project to deliver £1.15 of benefit for every £1 spent, which the Department considers low value for money. While Highways England used approved methodologies to do this, calculating benefits in this way is inherently uncertain and the Department advises decision-makers to treat them cautiously (paragraphs 2.5 to 2.7).

10 The project can only fully deliver its strategic objectives as part of a completed A303/A358 corridor. On its own, the Amesbury to Berwick Down project delivers some localised transport and economic benefits such as reduced congestion in the local area. It will also improve the setting of the Stonehenge monument by removing much of the road from the World Heritage Site. However, the project can only create a high-quality route to the South West and unlock the full growth potential in the region in combination with the seven other projects identified by Highways England as necessary to upgrade the A303/A358 (paragraphs 1.2, 2.3, 2.4, 2.6, 2.9 to 2.11 and Figures 6 and 7).

11 Highways England's approach to upgrading the A303/A358 corridor allows flexibility for future investment. The Department and Highways England have chosen not to produce an overarching programme-level business case for the A303/A358 despite initial plans to create one. Instead, they will approve the eight projects individually. This approach reduces the risk of committing to projects that no longer offer best value for money relative to other priorities and allows Highways England greater flexibility to reassess needs and prioritise future investment. Our previous report said that the Road Investment Strategy was an important step towards longer-term planning, and that the Department and Highways England needed a realistic and affordable plan to ensure they focused resources on those projects that offered best value for money (paragraphs 1.1, 2.12, 2.13 and 2.19).

12 The strategic cases for all eight projects, including Amesbury to Berwick Down, rely on the A303/A358 corridor. Using the Department's appraisal process, Highways England currently considers the five uncommitted projects along the corridor as low to poor value for money. This may mean the Department and Highways England choose to prioritise other projects with better economic cases. If it does not complete all eight projects, the Department will struggle to deliver all of the strategic objectives for the Amesbury to Berwick Down project. In addition, there are risks that without clear, measurable objectives, the benefits for the A303/A358 corridor upgrade may not be identified, monitored or delivered (paragraphs 2.14 to 2.19 and Figure 8).

13 The Amesbury to Berwick Down project has been delayed because of decisions on how the project will be funded. Up to February 2019, Highways England had spent £53 million on the Amesbury to Berwick Down project. At first, it was to be publicly financed, subject to approval of the business case. In October 2016, HM Treasury instructed the Department to use private finance, which delayed the planned start of works by 21 months from March 2020 to December 2021. In October 2018, the Chancellor of the Exchequer cancelled future PF2 deals, including for the Amesbury to Berwick Down project. The Department had expected the project to be privately financed when the government set the £25.3 billion draft funding package for the second Road Investment Strategy (covering 2020–2025). In order to fund the project, it may need to reconsider its priorities for the second Road Investment Strategy or it will need additional funding from HM Treasury. The government has said it remains committed to the project and has released £21.5 million of enabling works funding in advance of its business case approval to support the project in keeping to its 2026 target opening date. However, HM Treasury will make its decision on whether to provide additional funding for the A303 alongside all other capital projects as part of the Spending Review 2019 (paragraphs 3.3 and 3.4).

14 There are risks for Highways England and the Department to manage to ensure the project has a realistic chance of being value for money. Costs of major infrastructure projects, especially those with complex engineering solutions, typically increase over time. At the time the project was selected for the first Road Investment Strategy in 2014, the Department and Highways England had an estimated cost range of £0.9 billion to £1.3 billion (2010 prices). Like other cost estimates in the first road strategy, it was immature. The current range of capital costs of the project including VAT, is £1.5 billion to £2.4 billion (2016 prices) with the most likely cost expected at £1.9 billion. Excluding non-recoverable VAT, the expected most likely capital cost is £1.7 billion (2016 prices). These figures are subject to funding approval from HM Treasury and the outcome of commercial negotiations with contractors. The current 'open to traffic' date has not changed, despite delays to approvals. Highways England will also need to make sure that it has the capability and capacity to deliver this project throughout the project's life and will need to continue to mitigate geological and archaeological risks. It has made early progress on understanding benefits. However, there remains further work to do for it to ensure it can demonstrate and measure project benefits in future (paragraphs 3.6, 3.8 and 3.11).

Concluding remarks

15 In pure economic terms, because of the high cost of building a tunnel, the Amesbury to Berwick Down project, at £1.15 of quantified benefit for every £1 spent, has a significantly lower benefit–cost ratio than is usual in road schemes. Given our experience of cost increases on projects of this kind, this ratio could move to an even lower or negative value. It will be even more important therefore that the Department and Highways England ensure that the project meets its strategic and heritage objectives, and that Highways England manages the project well. Currently, there are risks to Highways England's approach that it will need to manage to ensure future value for money for the Amesbury to Berwick Down project, and its other investments along the A303/A358 corridor.

Recommendations

a Regarding the Amesbury to Berwick Down project, Highways England and the Department should review carefully the planned 'open to traffic' date to ensure it is achievable.

b The Department and Highways England should consider how it will reflect the following areas, which will be important to demonstrate future value for money of investments along the A303/A358:

- clear, measurable objectives for delivering the whole road corridor;
- clarity about the most appropriate sequencing of upgrades;
- methodologies to analyse and capture the benefits, including those related to heritage benefits. Highways England has started work to develop programme-level benefits;
- demonstrate need for investment in subsequent projects along the corridor; and
- be transparent about the basis on which it approves projects that contribute to a wider strategic approach.

It could include these in a programme-level business case.

c Highways England and the Department should ensure that the lessons learned from their engagement with stakeholders on the Amesbury to Berwick Down project are captured and can be applied for future projects across government needing similar levels of stakeholder engagement.

d When considering projects that have implications beyond those usually associated with transport projects, such as those that deliver benefits normally delivered by other government departments or those that have ambitions to support economic growth, the Department and Highways England should work with other government departments to ensure that there are means for identifying, delivering and monitoring progress on delivering benefits which are jointly owned.

e When announcing the second Road Investment Strategy, the Department should ensure that it has documented its decision-making process for deciding which projects are included.

Part One

Background to the Amesbury to Berwick Down project

1.1 In 2013, the government announced a programme of roads reforms designed to improve the management and performance of England's motorways and A-roads. The reforms introduced Road Investment Strategies and provided approved funding for five-year road periods. In December 2014, the Department for Transport (the Department) published its first Road Investment Strategy, which covered the period from 2015 to 2020. It pledged £15.2 billion between 2015-16 and 2019-20 to enhance and maintain the strategic road network.[3] In our 2017 report, *Progress with the Road Investment Strategy*, we said that the Road Investment Strategy was an important step towards longer-term planning.[4]

1.2 In the Road Investment Strategy, the Department announced that it intended to improve connectivity to the South West of England by upgrading the entire A303/A358 road corridor between the M3 and Taunton to dual carriageway standard over the next 14 years.[5] As part of this, the Department announced it would upgrade the A303 between Amesbury and Berwick Down in Wiltshire. The project would include a tunnel of at least 2.9 kilometres (1.8 miles) to remove much of the current surface road where it passes through the Stonehenge World Heritage Site.[6] Highways England, as the body responsible for enhancing and maintaining the strategic road network, would deliver the project.

1.3 Part One looks at why the Department and Highways England decided to invest in the Amesbury to Berwick Down project. We examine:

- the problem with road connectivity to the South West;
- the road between Amesbury and Berwick Down; and
- the current Amesbury to Berwick Down project.

3 The strategic road network consists of more than 4,400 miles of motorways and major A-roads throughout England. It carries one-third of all traffic and two-thirds of all freight traffic and is essential for connecting different parts of the country and supporting economic growth.
4 Comptroller and Auditor General, *Progress with the Road Investment Strategy*, Session 2016-17, HC 1056, National Audit Office, March 2017.
5 Subsequent Highways England publications reference a date of 2029.
6 The Stonehenge, Avebury and Associated Sites World Heritage Site covers two large areas in Wiltshire separated by approximately 30 miles. The Stonehenge World Heritage Site refers to the southern section containing the Stonehenge monument.

The problem with road connectivity to the South West

1.4 There are two main road corridors between the South West and the South East of England.[7] These are:

- the M4 and M5 motorways between London and Exeter; and
- the A303 and A358, between the junction with the M3 motorway and the M5 motorway near Taunton.

The A30 allows further travel from Exeter through Cornwall and towards Land's End (**Figure 1** overleaf).

1.5 The Department and Highways England have identified a clear transport problem in the South West of England that they want to address. The A303/A358 road corridor has more than 35 miles of single lane carriageway and numerous at-grade junctions.[8] These cause traffic bottlenecks and congestion along the route. Therefore, the A303/A358 corridor does not offer a reliable alternative to the M4/M5. This makes it difficult for the road network to recover quickly from unforeseen events such as collisions or severe weather. Congestion on the A303/A358 corridor is most acute during weekends and summer holidays when journey times between London and Exeter can increase from two hours 30 minutes during weekdays to three hours 50 minutes at peak times. The Department and Highways England have analysed traffic flows along the corridor, and found that parts often operate at almost double their intended capacity.

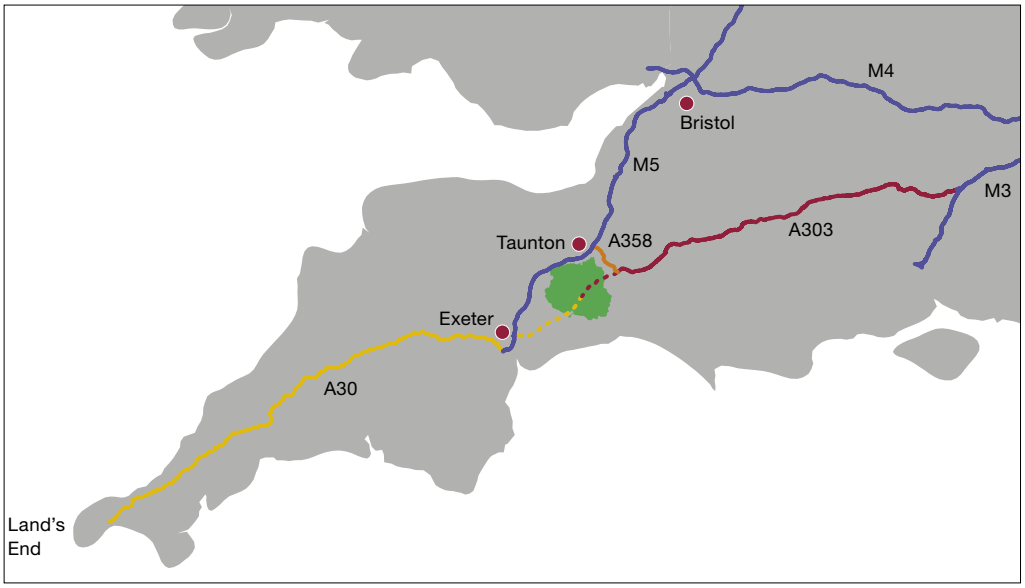
1.6 The government believes that improving road connectivity to the South West will help to stimulate economic growth in the region. The economy of the South West is underperforming compared with the rest of the country. Data from the Office for National Statistics show that, in 2017, the South West's gross domestic product (GDP) per capita was lower than average. The region accounted for 7.2% of total UK economic output but had 8.4% of the population. Tourism is important to the South West's economy. It accounted for more than £5.5 billion in 2013, with most of this coming from UK-based visitors and the majority travelling by road. In 2013, local stakeholders commissioned a study that estimated that upgrading the A303/A358 corridor and parts of the A30 to dual carriageway standard would generate 21,400 jobs and £41.6 billion of gross value added (GVA) over 60 years.[9]

7 A transport corridor is a long, narrow area defined by the type of transport, for example, road or rail.
8 At-grade junctions are at road level, meaning that traffic must slow as vehicles leave or join the road.
9 The local stakeholders included the Heart of the South West Local Enterprise Partnership, Somerset County Council, Wiltshire Council and Devon County Council. Available at: www.somerset.gov.uk/EasySiteWeb/GatewayLink.aspx?alId=42315

Figure 1

Map showing key roads linking the South West and South East of England

The M4/M5 and A303/A358 are the two strategic road corridors in the South West. The A30 allows further journeys towards Land's End



- A303
- A358
- A30
- A303 (section not considered part of road corridor)
- A30 (section not considered part of road corridor)
- M3, M4 and M5
- Blackdown Hills area of outstanding natural beauty
- Towns/Cities

Notes

1 The A303 joins the A30 as it passes through the Blackdown Hills area of outstanding natural beauty (AONB), eventually joining the M5 at junction 29. This section of the A303/A30 is difficult to upgrade due to steep inclines, poor existing road alignment and the need to protect the AONB. The Department for Transport and Highways England assessed the feasibility of upgrading this section to dual carriageway; however, they decided to upgrade the A358 instead, thus allowing traffic to join the M5 earlier at Junction 25 at Taunton.

2 Map only shows relevant sectors of each road.

Source: National Audit Office

1.7 The Road Investment Strategy identified eight projects to upgrade the A303/A358 road corridor (**Figure 2** overleaf). The Department committed to start building three of these projects by March 2020 at an overall cost of £2 billion, subject to each one achieving business case approval. The three projects selected were:

- A303 Amesbury to Berwick Down;
- A303 Sparkford to Ilchester; and
- A358 Taunton to Southfields.

The Amesbury to Berwick Down project was the most expensive and complex project in the Road Investment Strategy.

The A303 between Amesbury and Berwick Down

1.8 Congestion on the A303 between Amesbury and Berwick Down is particularly acute. It includes the longest remaining section of single carriageway on the A303/A358 corridor. Highways England's recommended traffic flow for single carriageway roads is 13,000 vehicles a day, but this section of the A303 carries more than 28,000 vehicles a day, increasing to 30,000 at peak times. The single carriageway causes severe congestion, queuing and long delays, especially during the summer. The accident rate is 54% higher on this section than the national average for this type of road. Local communities also experience heavy traffic on nearby minor roads as drivers try to avoid congestion on the A303, causing noise and air pollution.

1.9 The existing road creates a barrier between the north and south sections of the Stonehenge World Heritage Site, which limits visitors' access to archaeological sites to the south of the road (**Figure 3** on page 15). At its closest point, the A303 passes within 165 metres of the Stonehenge monument, which causes the intrusive sight and sounds of traffic. Wiltshire Council considers that the road prevents easy pedestrian access to the World Heritage Site from Amesbury and the surrounding area, so residents there see little economic benefit from visitors to Stonehenge.

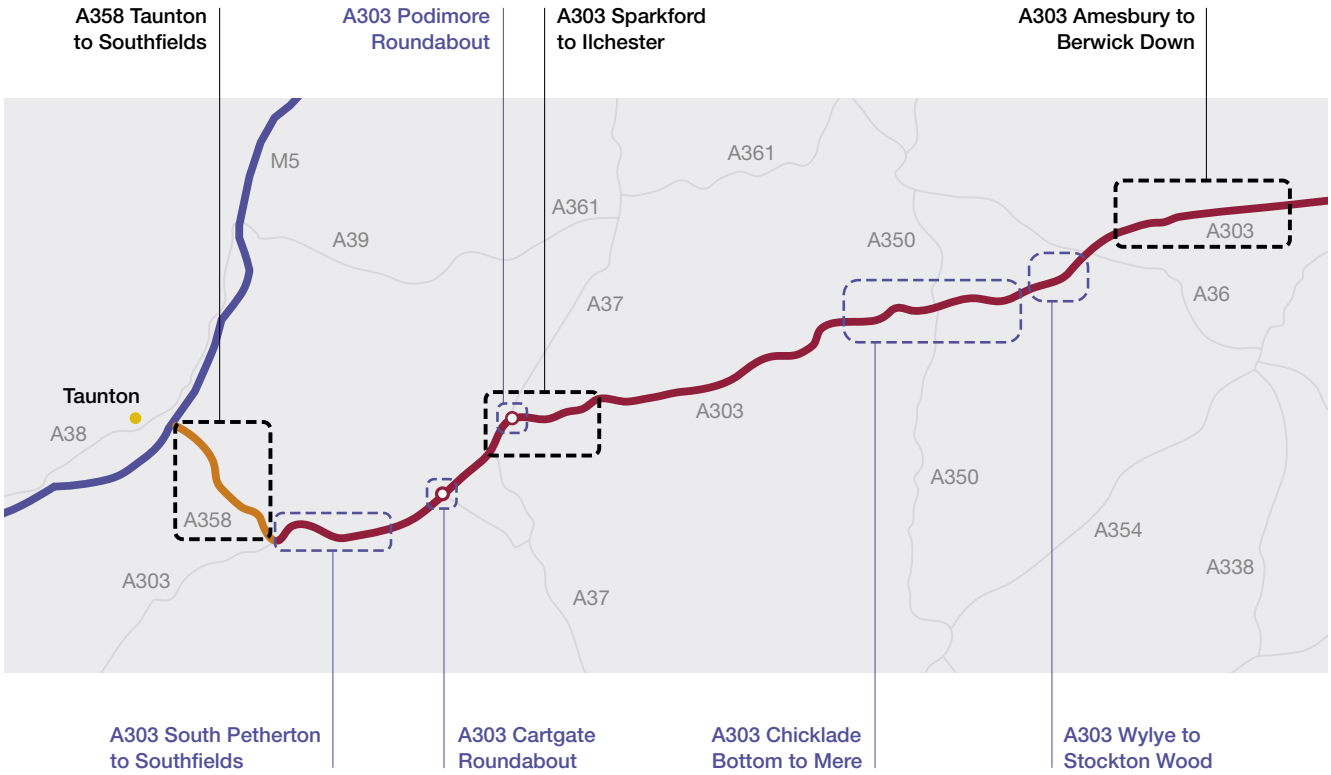
1.10 The road's location through the Stonehenge World Heritage Site limits the options available to Highways England to address the congestion. Under the terms of the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage, the UK government has an obligation to "protect, conserve, present and transmit to future generations" the Outstanding Universal Value of the Stonehenge World Heritage Site. The government's National Policy Statement for National Networks[10] and the National Planning Policy Framework[11] both recognise that World Heritage Sites are assets of the highest significance and that greater weight should be given to their conservation than to that of other historic sites. In considering the upgrade, the Department and Highways England have a duty to protect and conserve the Stonehenge site. They therefore cannot just widen the existing surface road to create a dual carriageway.

10 The National Policy Statement for National Networks sets out the need and government policies for nationally significant transport infrastructure projects for England.
11 The National Planning Policy Framework sets out the government's planning policies for England.

Figure 2

The eight projects required to upgrade the A303/A358 corridor

The Department for Transport has prioritised three projects for the first Road Investment Strategy (RIS)

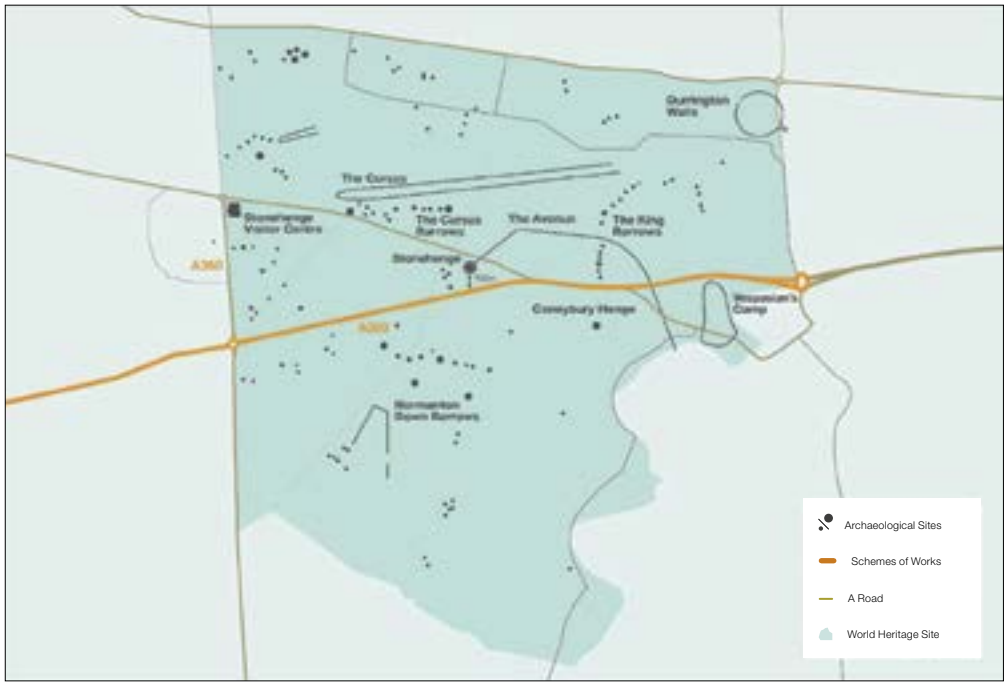


- Project committed in the first Road Investment Strategy
- Project expected in future Road Investment Strategies
- A303
- A358
- A-Road
- M5
- Roundabout
- Town

Source: National Audit Office

Figure 3
The Stonehenge World Heritage Site

The A303 currently divides the World Heritage Site in half



Stonehenge itself is the most recognised monument within the Stonehenge World Heritage Site; however, it also contains other important features, such as:

- the Avenue – a 3-kilometre ceremonial linkage from the River Avon to the Stonehenge monument (currently bisected by the A303);
- Woodhenge – a complex oval arrangement of postholes and the henge enclosure of Durrington Walls; and
- the Cursus – a 3-kilometre ceremonial earthwork.

There are also hundreds of other archaeological sites considered nationally important.

Source: Highways England

1.11 Previous governments have attempted to resolve the issue of congestion through the World Heritage Site (**Figure 4**). Successive governments abandoned these past attempts because of increasing construction costs and disagreement with stakeholders over the route and tunnel length.

Figure 4

Previous attempts to construct a tunnel through the Stonehenge World Heritage Site

Plans for a tunnel have been cancelled several times due to increased construction costs and disagreements with stakeholders over route and tunnel length

Date	Event	Description
1991–1995	Initial routes considered	More than 50 possible routes were assessed. Public consultation took place on four routes but with no consensus on a preferred option. A road to the north was rejected because of the impact on the landscape, but a 4-kilometre bored tunnel under the Stonehenge World Heritage Site was favoured.
1996	Project cancelled	The then government considered a 4-kilometre tunnel unaffordable.
1998	Scheme re-introduced to the roads programme	A 2-kilometre tunnel was proposed and accepted in principle by National Trust and English Heritage. In 1999, the then government announced a preferred route. Between 2000 and 2002, the government carried out further reviews of tunnel options.
December 2002	Preferred route announced	The then government announced a 2.1-kilometre tunnel. English Heritage supported the proposal; however, National Trust and others favoured a longer tunnel. Further consultation took place between 2003 and 2005. In July 2005, the Planning Inspector's report agreed that the government's proposals were adequate.
Early 2006	Review of options	Expected costs of the project started to increase. The then government commissioned a review to determine whether the proposed option provided value for money and was the best option for improving both the A303 and the Stonehenge site. The review concluded that there was no ready solution that satisfied all criteria of being affordable, acceptable and achievable.
December 2007	Project cancelled	Estimated costs of the project had doubled from £183 million in 2002 to £470 million in 2005, in part because of building problems that had not been identified in the initial surveys. These included phosphatic chalk, which can be difficult to tunnel through.
2013–2014	Feasibility study conducted on options	The then government conducted a series of feasibility studies to look at options for upgrading the A303, including options for a tunnel through the Stonehenge World Heritage Site. Results of these studies were published in March 2015.
December 2014	Road Investment Strategy announcement	The Department for Transport announced a bored tunnel of at least 2.9 kilometres.

Source: National Audit Office analysis of Highways England data

The current project

1.12 In 2014, the Department announced that it would build a twin-bore tunnel of at least 2.9 kilometres to remove much of the A303 surface road between Amesbury and Berwick Down as it passes through the Stonehenge World Heritage Site. The Department based its decision on information from feasibility studies, learning from previous attempts to address the congestion problem at Stonehenge and discussions with National Trust, English Heritage, Wiltshire Council and Historic England. These discussions with the heritage stakeholders helped to identify a minimum acceptable length of tunnel.

1.13 During 2016 Highways England prepared a business case for the project alongside a more detailed assessment of 60 potential route options to reduce congestion between Amesbury and Berwick Down. It considered all previous options as well as new ones, including surface routes around the Stonehenge World Heritage Site and tunnels of different lengths. It concluded that a tunnel was the only viable option. We would normally expect departments to conduct an options appraisal before announcing a decision on the design of a project.[12]

1.14 The main alternatives Highways England considered and rejected were:

- **a shorter, 2.5-kilometre tunnel** – rejected because of the visual impact on the World Heritage Site from the western tunnel entrance, which would be visible from the Stonehenge monument;
- **surface bypass to the north** – rejected because the road would still pass through part of the World Heritage Site and because Highways England expected it to increase traffic on local roads; and
- **surface bypass to the south** – Highways England considered this the best-performing alternative to a tunnel. It estimated that it would cost approximately £400 million less than a tunnel and would be less risky to build. At the time, it anticipated a similar benefit–cost ratio to a tunnel. However, Highways England rejected this option because it expected it to worsen traffic through local villages, have a greater impact on protected landscapes and create a new 22-kilometre route through valuable countryside. Highways England later concluded that the current A303 surface road would also need to be retained for local traffic meaning the two halves of the World Heritage Site would still be divided in half.

1.15 In December 2016, two years after the Department's announcement in the Road Investment Strategy, HM Treasury agreed that enough work had been done to assess alternative options and agreed a tunnel of at least 2.9 kilometres was the only viable option.

12 Comptroller and Auditor General, *Option Appraisal: Making informed decisions in government,* National Audit Office, May 2011.

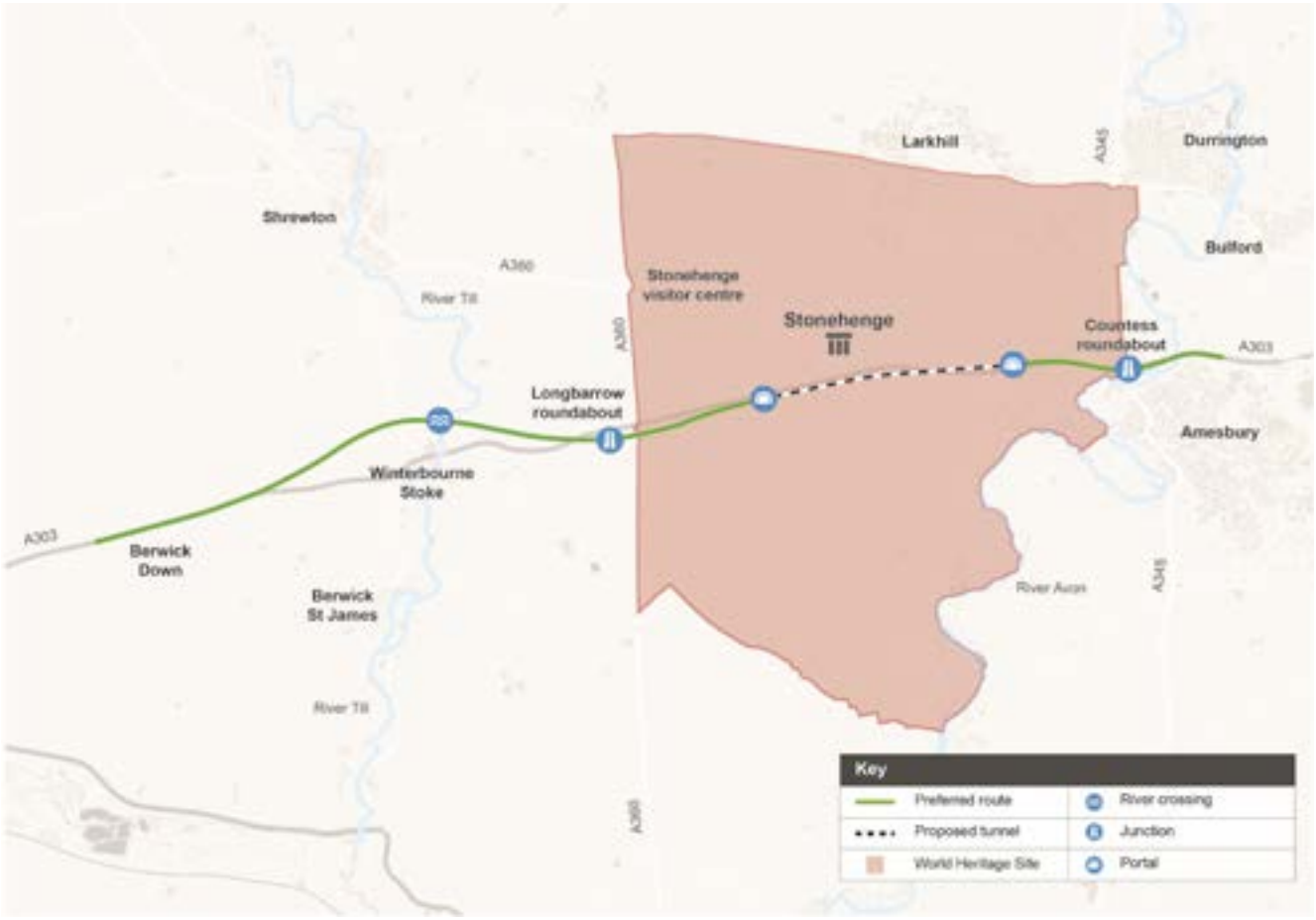
1.16 Highways England has since amended its plans for this project after public consultation and further discussions with heritage stakeholders. These included changes to the tunnel entrances and a road layout that protects the Outstanding Universal Value of the World Heritage Site. The current Amesbury to Berwick Down project consists of:

- a twin-bore tunnel 3.3 kilometres in length past Stonehenge;
- a bypass to the north of Winterbourne Stoke with a viaduct over the River Till valley;
- a new junction between the A303 and A360 to the west of (and outside) the World Heritage Site, replacing the existing Longbarrow roundabout; and
- a new flyover at the Countess roundabout (**Figure 5**).

Figure 5

The preferred route for the Amesbury to Berwick Down project

The project includes a 3.3 kilometre twin-bored tunnel beneath part of the World Heritage Site



Source: Highways England

1.17 In response to recommendations made by the UNESCO World Heritage Committee, Highways England also assessed the costs of a longer tunnel, with the entrance and exits placed outside the Stonehenge World Heritage Site. Highways England concluded that a technically feasible extension would increase the tunnel length by 4 kilometres and increase costs by approximately £1.2 billion, which it considered unaffordable. It also thought that a longer tunnel would not bring any further significant benefits to the World Heritage Site and would be less effective in meeting other project objectives such as reducing traffic on local roads.

1.18 The anticipated range of costs of the project is £1.5 billion to £2.4 billion, and Highways England expects it to open to traffic in 2026.[13] We discuss progress of the project in Part Three. Information on the progress of the other two projects under-way, A303 Sparkford to Ilchester and A358 Taunton to Southfields, is in Appendix Three.

1.19 In Part Two we examine Highways England's case for a tunnel at the Stonehenge World Heritage Site, and how this project contributes to the A303/A358 road corridor.

13 These figures are subject to funding approval from HM Treasury and the outcome of commercial negotiations with contractors.

Part Two

The case for the Amesbury to Berwick Down project

2.1 In Part Two we examine the Department for Transport (the Department) and Highways England's case for investing in the Amesbury to Berwick Down project. We have used Highways England's outline business case which the Department's Board Investment and Commercial Committee (BICC) approved in April 2019. HM Treasury and Cabinet Office Ministers are considering whether to approve it in summer 2019.

The objectives of the project

2.2 Highways England and the Department expect the Amesbury to Berwick Down project to reduce congestion, improve safety, and protect and enhance the World Heritage Site. It is one of eight projects identified to upgrade the A303/A358 corridor, to improve connectivity to the South West and stimulate economic growth in the region. These aims are reflected in the project's objectives, which address the problems we outlined in Part One.

2.3 The project has four stated objectives:

- **Economic growth**

  To enable growth in jobs and housing by providing a free-flowing and reliable connection between the South East and the South West of England.

- **Transport**

  To create a high-quality and reliable route between the South East and the South West that meets the future needs of traffic.

- **Cultural heritage**

  To help conserve and enhance the World Heritage Site and make it easier to reach and explore.

- **Environment and community**

  To improve biodiversity and provide a positive legacy for nearby communities.

The project can only meet these objectives in full alongside other projects to upgrade the A303/A358 corridor (**Figure 6**).

Figure 6

The four objectives of the Amesbury to Berwick Down project

The project cannot fully meet all these objectives on its own

Objective	Contribution to local area	Contribution to South West
Economic growth To enable growth in jobs and housing by providing a free-flowing and reliable connection between the South East and the South West	Accommodate increased traffic from growth in housing and employment. Reduce transport cost to users from freer-flowing journeys. Increased productivity from freer-flowing traffic. Stimulate/support local economic activity through more reliable journeys.	Objective requires contribution of other projects along the A303/ A358 corridor
Transport To create a high-quality and reliable route between the South East and the South West that meets the future needs of traffic	Reduce congestion and delays and improve journey times, especially at weekends and in summer. Reduce traffic through local roads. Reduce number of people killed or seriously injured to at least the national average for this road type. Increased ability to cope with incidents. Improve the resilience of the road network.	Objective requires contribution of other projects along the A303/ A358 corridor
Cultural heritage To help conserve and enhance the World Heritage Site and make it easier to reach and explore	Remove traffic from the World Heritage Site to improve setting and visitor experience. Address constraints that prevent road widening in the World Heritage Site. Improved access to and within the World Heritage Site.	N/A Objective does not contribute to wider A303/ A358 corridor
Environment and community To improve biodiversity and provide a positive legacy for nearby communities	Increase biodiversity and restore habitat by reconnecting the landscape in the World Heritage Site. Improve air quality from reduced traffic through local roads. Reduce community severance and traffic levels in Winterbourne Stoke by building a bypass. Protect and enhance the countryside and improve biodiversity. Share learning (for example, from archaeology) with local schools/communities.	N/A Objective does not contribute to wider A303/ A358 corridor

Source: National Audit Office analysis of Highways England data

Economic case

2.4 Highways England expects the project to deliver local transport benefits, such as journey time savings, and placed a monetary value on them in the business case (**Figure 7**). This appraisal process also monetises several negative impacts such as increased greenhouse gas emissions. Highways England has been clear about the traffic and heritage issues the project will address. However, it has set few clear quantitative measures with which it can assess the future success of the project. In our view, this makes it difficult to determine what measurable impact it expects the Amesbury to Berwick Down project, in isolation, to deliver to road users.

2.5 Using the standard approach for appraising transport projects, Highways England calculated that the Amesbury to Berwick Down project would deliver only 31p for every £1 invested. The Department considers this poor value for money (Figure 7). However, the poor benefit–cost ratio is largely due to the high cost of building a tunnel relative to widening the road, when compared with the transport benefits.

2.6 Highways England sensibly expanded its appraisal to include heritage benefits, given that the project crosses the Stonehenge World Heritage Site. It valued these at £955 million (2010 prices and discounted), representing 73% of total monetised project benefits. It estimated the value of heritage benefits by asking respondents in a survey how much they would be willing to pay to remove the road from the World Heritage Site. While it followed HM Treasury guidance in arriving at this estimate, these benefits are inherently uncertain because they are based on a hypothetical situation and are difficult to measure. The Department recognised this and advised decision-makers to treat the figures cautiously. The Department questioned whether people might have responded with a higher value than they would have done in a real-life decision-making scenario. In October 2018, the Department raised concerns that the value may be overstated. Highways England subsequently undertook sensitivity analysis of the figures to demonstrate the robustness of the methodology. This additional analysis, along with Highways England's valuation of heritage benefits, was included in the latest business case and approved by the Department in April 2019.

2.7 By including heritage benefits, Highways England expects the Amesbury to Berwick Down project to deliver £1.15 of quantified benefit for every £1 spent. The Department considers this low value for money (Figure 7). By comparison, in our 2017 report, *Progress with the Road Investment Strategy*, we reported that the Department's high-level assessment of the costs and benefits of the first Road Investment Strategy portfolio indicated that it could produce benefits of £7 for every £1 spent.[14] Highways England has estimated that if heritage benefits fell, or costs increased, by £239 million (2016 prices), then the cost of the Amesbury to Berwick Down project would outweigh the quantified benefits.[15]

14 Comptroller and Auditor General, *Progress with the Road Investment Strategy*, Session 2016-17, HC 1056, National Audit Office, March 2017.

15 The benefit cost appraisal process does not include all quantified benefits, such as some further economic impacts or positive interactions of upgrading other sections of the A303/A358 corridor. It does not include any benefits which cannot be quantified.

Figure 7
Amesbury to Berwick Down costs and benefits

Cultural heritage benefits account for 73% of total quantified project benefits

Benefit type	Present value (2010 prices, discounted) (£m)	Percentage of total expected benefits (%)	Cumulative benefits	Benefit–cost ratio
Transport benefits				
Journey times	370			
Vehicle operating costs	-82			
Accident benefits	4			
Greenhouse gas[1]	-86			
Noise[2]	-0.3			
Air quality[3]	0.3			
Indirect tax revenues	86			
Construction and maintenance delays	-35			
Journey time reliability	61			
Wider economic impacts[4]	35			
Total transport and economic benefits		**26.9**	**353**	**0.31**
Heritage benefits				
(Based on a contingent valuation methodology, assessing the public's willingness to pay for much of the surface road from the Stonehenge World Heritage Site to be removed).				
Visitors	18			
Road users	37			
General population	900			
Total cultural heritage benefits	**955**	**73.1**	**1,307**	**1.15**
Project costs (2010 prices)			**1,136[5]**	

Notes

1 Highways England expects this to increase carbon dioxide emissions by 2 million tonnes over 60 years.

2 Expects that 134 households will experience a reduction in noise, but 302 will experience an increase.

3 Net improvements in nitrogen emissions and particulates.

4 Includes increases in productivity due to improved accessibility and connectivity within the region, reduced travel costs leading to expansion of businesses; and increased tax revenue due to increased productivity.

5 Project cost include both construction cost and maintenance costs over a 60-year period.

Source: National Audit Office analysis of Highways England data

2.8 Highways England considers that the project could deliver further benefits to the economy that it has not included in its business case assessment. These include those arising from new businesses moving into the area as a result of the road improvement. In 2016, it commissioned analysis that estimated that, delivered in isolation, the Amesbury to Berwick Down project could add £600 million to gross domestic product (GDP) and create 1,800 jobs.

Strategic case

2.9 The Amesbury to Berwick Down project's strategic case relies, to a considerable extent, on an upgraded A303/A358 corridor. By achieving mile-a-minute journey speeds along the route, Highways England aims to create free-flowing traffic and stimulate economic growth in the South West. It says that concerns about damage to Stonehenge have prevented previous attempts to create a strategic corridor to the South West. Highways England views the Amesbury to Berwick Down project as critical to making improvements along the entire corridor.

2.10 Highways England expects the case for the Amesbury to Berwick Down project, and the other projects along the route, to be improved by upgrading the entire A303/A358 corridor. While it has not developed a programme-level business case that clearly articulates this, it has attempted to understand some of these potential benefits. The analysis commissioned by Highways England in 2016 assessed the impact of the Amesbury to Berwick Down project on the case for upgrading the corridor. It found that if the Amesbury to Berwick Down project were the final project along the corridor to be completed, it could contribute £1 billion of GDP and 3,200 jobs compared with £600 million of GDP and 1,800 jobs if it were the only project completed.

2.11 The 2016 analysis also estimated that completing all eight projects could deliver £3.20 in benefits for every £1 spent, and could add £3.3 billion (2010 prices, discounted) to GDP and create 11,500 jobs by 2040. The type of benefit assessed is highly uncertain and will rely on follow-on investment – for example, from local authorities and the private sector – that is beyond the control of the Department and Highways England.

The benefits and risks from the Department and Highways England's approach to upgrading the corridor

2.12 Highways England has chosen not to produce an overarching programme-level business case, despite initial plans to create one. Each project will be assessed on its own merits through individual business cases and managed as separate projects. The Department and Highways England committed to starting three of these projects during the first road period. However, because it cannot make firm commitments beyond the five-year funding period, it cannot be certain when or if the remaining projects will go ahead.

2.13 By approving each project individually, the Department and Highways England have greater flexibility to allocate resources to projects offering the best value for money across the strategic road network, and to avoid being tied into projects offering poor value for money. However, because the strategic justification for doing each project is, in part, predicated on its contribution to improving the whole corridor, there are risks to this approach.

Sequencing projects and identifying interdependencies

2.14 Without a programme-level view that considers the interdependencies between the constituent projects, there is a risk that the Department does not select and complete the projects in the most efficient order.

2.15 The Department chose the three projects in its 2014 Road Investment Strategy based on an assessment of congestion, accident rates and benefit–cost ratios. It considered the Amesbury to Berwick Down project was the most important to the corridor and had the highest level of congestion; and the remaining two projects had the highest benefit–cost ratio at the time. However, it was not clear how the Department weighted each criterion and it could not confirm whether there was a more appropriate order in which to begin the eight upgrade projects or whether the three projects represented the most efficient use of resources. We would have expected the reason for this being the most appropriate ordering to have been documented more clearly at the time.

2.16 At the time of selecting projects along the A303/A358, it was not clear what impact completing each project would have on the remainder of the corridor. For example, the extent to which completing the Amesbury to Berwick Down project would push bottlenecks along the rest of the route, worsening congestion and associated noise and pollution levels in other areas. Highways England has more recently undertaken traffic modelling to understand the impact of completing the Amesbury to Berwick Down project and the other two committed projects, on traffic flows in the South West. However, the impact on traffic flows of upgrading the remaining five uncommitted projects, either individually or in combination, is not clear. Highways England considers it a disproportionate use of resources to undertake this modelling until these projects have been committed to in future road investment strategies.

2.17 There is no programme team to ensure that corridor-level benefits are identified, included in business cases, monitored and achieved. The project team for the Amesbury to Berwick Down project has assumed responsibility for the corridor benefits. However, the team is not formally accountable and will need support from teams on other projects along the A303/A358 corridor, the Department and other government departments as well as local authorities and businesses.

Maximising the return on investment

2.18 The Department and Highways England expect the case for the Amesbury to Berwick Down project to be improved by upgrading the entire corridor (paragraph 2.10). All of the five remaining uncommitted projects have benefit–cost ratios that the Department considers to be low or poor (**Figure 8**). Highways England may struggle to justify investment in these projects in future if they are assessed on an individual basis rather than as a programme of works designed to achieve a clear outcome. In the absence of a programme-level business case setting out how the projects contribute to the corridor, it may be difficult for Highways England to justify approving those projects. If they are not completed, it may not be possible for the Amesbury to Berwick Down project to meet all its wider strategic objectives.

2.19 In our 2017 report, we said that most of the projects in the first Road Investment Strategy were at an early stage of development.[16] We were concerned that cost estimates for those projects were immature and likely to rise, and that there was a significant risk to affordability, deliverability and potential benefits relative to costs. We said that the Department and Highways England needed a realistic and affordable plan to ensure that they focused resources on those projects that offered best value for money.

2.20 Cost estimates for the Amesbury to Berwick Down, Sparkford to Ilchester and A358 Taunton to Southfields projects have increased since the Department announced them (see Appendix Three) and as their scope has become clearer. The total estimated cost for the three projects is now £160 million more than the £2 billion committed to them in the first Road Investment Strategy. The expected lifetime cost has also increased for other projects announced within the first Road Investment Strategy. The expected lifetime cost of the 26 most expensive projects is approximately £900 million higher than originally estimated.[17] Cost overruns may reduce available funds in future road investment periods, meaning that Highways England will need to make a clear and robust case for investment in the remaining corridor projects.

16 Comptroller and Auditor General, *Progress with the Road Investment Strategy*, Session 2016-17, HC 1056, National Audit Office, March 2017.
17 Projects more than £200 million.

Figure 8

The ratio between expected benefits and costs for projects along the corridor

All of the remaining five projects are currently considered low or poor value for money by the Department for Transport

Project	Status	Benefit–cost ratio (Dec 2014)	Value for Money rating (based on Department's assessment criteria)	Current benefit–cost ratio	Rating (based on Department's assessment criteria)
A303 Amesbury to Berwick Down	Committed to in the first Road Investment Strategy	0.27:1 to 0.97:1[1]	Poor	1.15:1	Low
A303 Sparkford to Ilchester	Committed to in the first Road Investment Strategy	2.75:1 to 5.24:1	High to very high	1.71:1	Medium
A358 Taunton to Southfields	Committed to in the first Road Investment Strategy	6.96:1 to 10.04:1	Very high	0.97:1	Poor
A303 Chicklade Bottom to Mere	Uncommitted	0.82:1 to 1.24:1	Poor to low	0.91:1	Poor
A303 South Petherton to Southfields	Uncommitted	0.61:1 to 1.1:1	Poor to low	1.06:1 to 1.11:1	Low
A303 Wylye to Stockton Wood	Uncommitted	N/A	N/A	1.19:1	Low
A303 Cartgate roundabout	Uncommitted	N/A	N/A	0.18:1 to 0.62:1	Poor
A303 Podimore roundabout	Uncommitted	N/A	N/A	0.49:1 to 0.60:1	Poor

Notes

1 Benefit–costs ratios shown as a range where several options for the scheme were being considered.

2 The initial assessment of the A303 Amesbury to Berwick Down project was based on transport benefits and did not include the monetised impacts of improving the setting of the Stonehenge World Heritage Site. The later assessment included this.

3 Uncommitted projects have yet to go through a thorough assessment of project costs and expected benefits, meaning the figures are immature and likely to change.

Source: National Audit Office analysis of Highways England data

Part Three

Progress on the Amesbury to Berwick Down project

3.1 In Part Three we examine the Department for Transport (the Department) and Highways England's progress on the Amesbury to Berwick Down project, specifically:

- the current status of the project, including the schedule and costs;
- project risks;
- engagement with stakeholders; and
- the plans to deliver benefits.

Current status of the Amesbury to Berwick Down project

3.2 The Amesbury to Berwick Down project is at an early stage of development. As at April 2019, the Department had approved the outline business case. HM Treasury and Cabinet Office Ministers will consider it this summer and their approval would allow Highways England to begin procuring contractors to build the project. Highways England has undertaken preliminary surveys and expects construction to begin in December 2021 and the project to open to traffic by December 2026. **Figure 9** shows the current project timetable.

Changes to the project's schedule

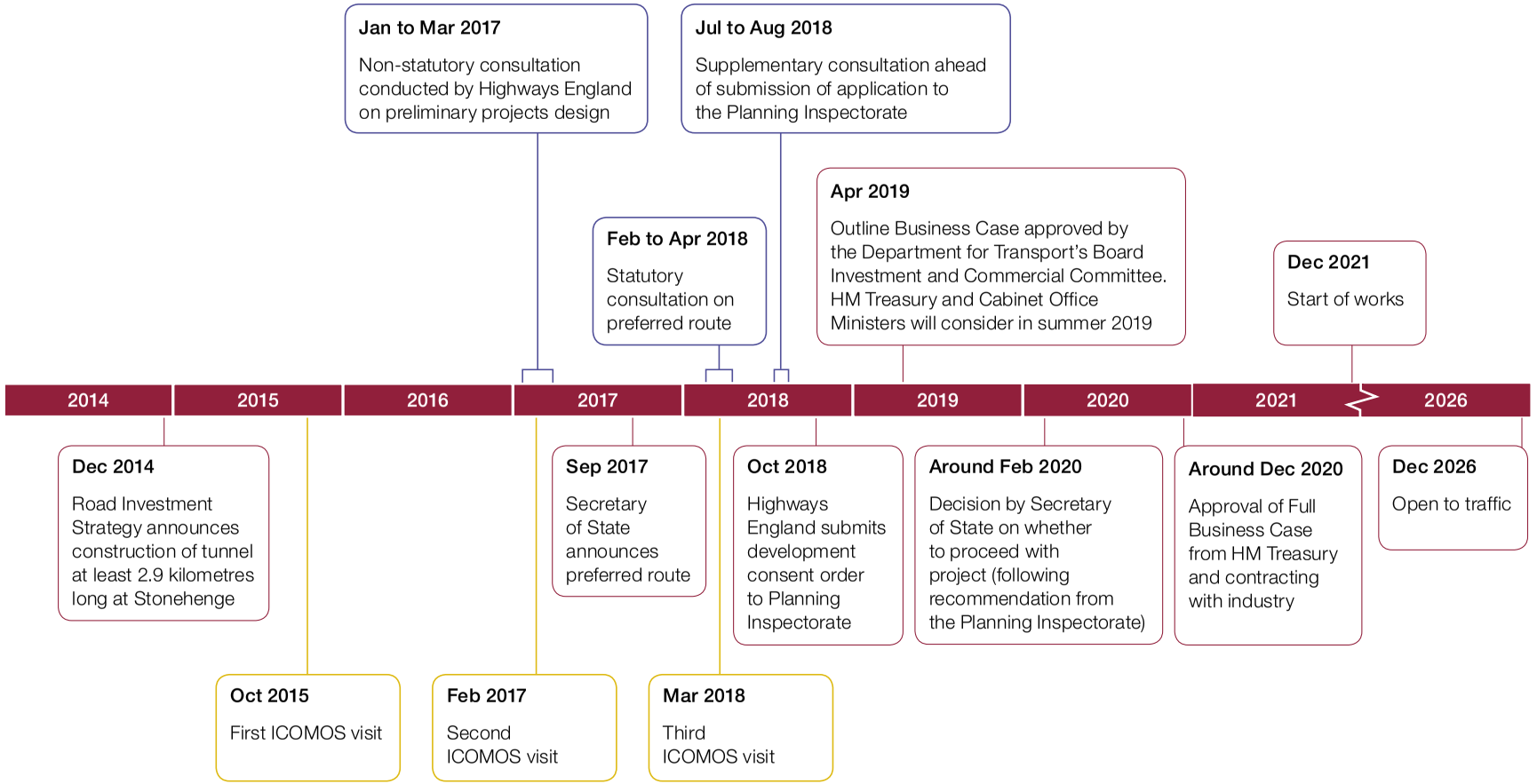
3.3 Decisions on how to finance the Amesbury to Berwick Down project delayed the expected start of works date by 21 months, from March 2020 to December 2021. Highways England had expected to publicly finance the project, with most costs occurring between 2020 and 2025. However, in October 2016, HM Treasury instructed the Department to use private finance. Highways England had estimated that the costs would be similar but that private finance (PF2) would be more affordable over the period 2020 to 2025.[18] It estimated that changing the financing would delay the start of works because of the additional time needed to raise the private finance. The Department expected the 'open to traffic' date of December 2026, set in 2014, to remain unchanged (**Figure 10** on page 30).

18 PF2 is an approach to private finance where a private company raises the money to pay for the construction and maintenance. These costs are then paid back by government over a period of time, often 25 years.

Figure 9

Timeline of key events for the Amesbury to Berwick Down project

The project is at an early stage and has yet to gain approval to begin tendering bids from construction companies



Note

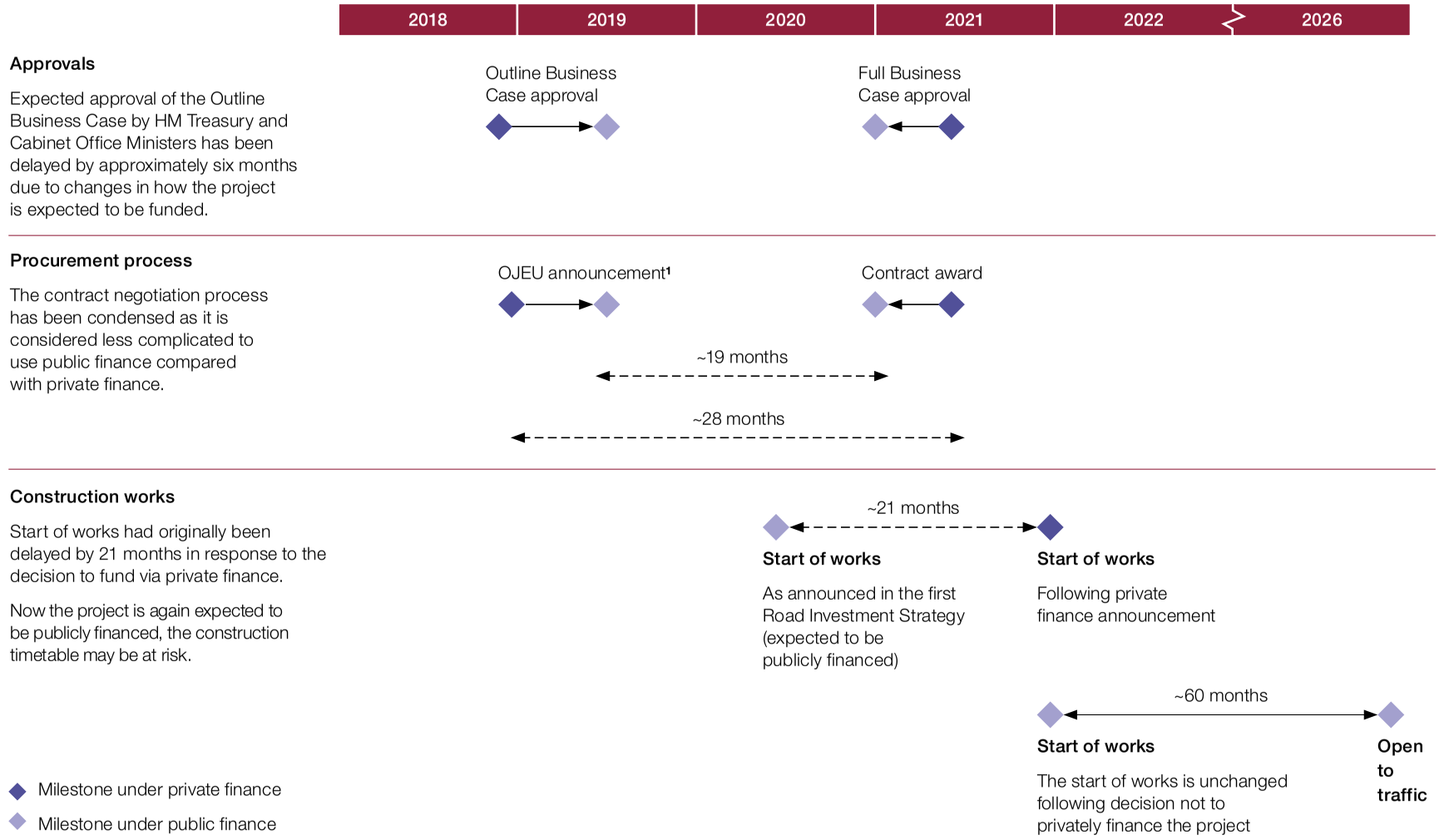
1 The International Council on Monument and Sites (ICOMOS) offer advice to the UNESCO World Heritage Committee on conservation and protection of world heritage sites.

Source: National Audit Office

Figure 10

Timeline of the A303 Amesbury to Berwick Down project

Changes in how the project will be funded has delayed the start of works. The 'open to traffic' date has remained unchanged



Note

1 All tenders from the public sector above a certain financial threshold must be published in the Official Journal of the European Union (OJEU).

Source: National Audit Office

3.4 In October 2018 the government announced that it would not pursue any new PF2 contracts, including for the Amesbury to Berwick Down project.[19] When the government set the draft funding of £25.3 billion for the second Road Investment Strategy (2020–2025) the Department had assumed the project's construction would be privately financed. In order to fund it within the second Road Investment Strategy, either the Department will need to reconsider its existing plans or, it will need additional funding from HM Treasury. The government has said that it remains committed to the project and it has released £21.5 million of enabling works funding in advance of its business case approval to support the project in keeping to its 2026 target opening date. However, HM Treasury and Cabinet Office Ministers will make a decision on whether to provide additional funding for the A303 as part of the Spending Review 2019 where it will consider it alongside all other capital projects. It is not expected to make this decision until later in 2019.

3.5 Highways England has had to rewrite sections of the outline business case following the Chancellor's announcement. It cannot start procurement until Ministers from the Department, HM Treasury and the Cabinet Office give their approval. It has therefore delayed the start of procurement from a planned date of January 2019 until June 2019 at the earliest.

3.6 Highways England is still working to the 'open to traffic' date of December 2026, but the timetable has limited contingency. Unless there is clarity in 2019 around how the project will be funded, the 'open to traffic' date is at risk. In our May 2019 report *Completing Crossrail* we highlighted the risk of attempting to maintain a challenging timetable set at an early stage of a project's lifecycle, which can result in further delays and cost escalation as work is done in parallel to attempt to meet the expected deadline.[20] Our November 2017 report on the Thameslink programme also noted how deadlines fixed early on with limited contingency can result in missed milestones and benefits to the public being delayed.[21]

3.7 Without the release of the £21.5 million to allow essential enabling works to begin in 2019-20, Highways England has said that the project would have slipped by six months and costs increased by approximately £26 million.

19 The Chancellor of the Exchequer presented his Budget to Parliament on Monday 29 October 2018.
20 Comptroller and Auditor General, *Completing Crossrail*, Session 2017–2019, HC 2106, National Audit Office, May 2019.
21 Comptroller and Auditor General, *Update on the Thameslink programme*, Session 2017–2019, HC 413, National Audit Office, November 2017.

Changes to project costs

3.8 The current capital cost of the project, including non-recoverable VAT, is £1.9 billion with an expected cost range of £1.5 billion to £2.4 billion (2016 prices). Excluding non-recoverable VAT, the most likely capital cost estimate is £1.7 billion (2016 prices), however these figures are subject to funding approval from HM Treasury and the outcome of commercial negotiations with contractors. At the time the project was selected for the first Road Investment Strategy in 2014, the Department and Highways England had an estimated cost range of £0.9 billion to £1.3 billion (2010 prices). Estimated costs have since increased due to decisions on how the project will be funded and changes to project design in response to requests from heritage partners. Like other cost estimates in the first Road Investment Strategy, it was immature. We have also reported previously on escalation of the costs major infrastructure projects as the design develops, especially those with complex engineering solutions. Highways England expects the operation, maintenance and renewal costs of the project to be £524 million (2016 prices) over 60 years.

3.9 The decision not to proceed with private finance means the project is now also liable for around £260 million of non-recoverable VAT in addition to the £1.7 billion project costs. However this is not expected to result in additional cost to the taxpayer because the VAT will be returned to HM Treasury.

3.10 Between April 2015 and February 2019, Highways England spent £52.9 million on the project (**Figure 11**). This included costs of initial ground surveys and development of the project design. Highways England estimates that it spent £2.7 million preparing fora private finance deal.

Figure 11

Spend on the Amesbury to Berwick Down project from April 2015 to February 2019

The majority of spend to date has been on the design of the project

Activity	Amount (£000)	Percentage (%)
Options identification and development	14,965	28
Project design	34,405	65
Land utilisation	524	1
Preparation for granting of statutory powers	2,944	6
Construction preparation	13	0
Total	**52,851**	**100**

Source: National Audit Office analysis of Highways England data

Project risks

3.11 There are a number of risks to the project that Highways England and the Department will need to manage.

- **Failure of the development consent order application**

  In October 2018, Highways England applied to the Planning Inspectorate for development consent. An application begins an approximate nine-month review period for the public and other interested parties to comment on the proposals. The Planning Inspectorate will recommend to the Secretary of State for Transport on whether to proceed. The project has support in principle from stakeholders such as the National Trust and English Heritage. However, there remains a risk that certain aspects may still be challenged by those stakeholders or other interested parties during the Planning Inspectorate's review. The Planning Inspectorate might recommend that the project does not go ahead. The Secretary of State's final decision could also be challenged in the High Court through a judicial review.

- **Archaeological risks**

  Highways England has undertaken archaeological surveys while determining the final route in order to avoid disturbing archaeological sites. However, there remains a risk that as yet unidentified sites may be discovered during construction, which may cause delays and increase costs.

- **Construction risks (geology)**

  In 2007, the government cancelled the planned tunnel project at Stonehenge because of unforeseen difficulties in the construction work. These included the presence of phosphatic chalk, which can be difficult to drill through and dispose of, which increased expected costs.[22] Highways England has undertaken preliminary ground investigations on the route and included additional costs to mitigate this risk. However, there may be further phosphatic chalk deposits or unstable cavities, that are not identified before construction begins. Highways England recognises the concerns raised that construction may affect groundwater levels. It has assessed these risks and its intended mitigation strategies, and concluded all groundwater effects to be non-significant for the construction and operational phases of the project.

22 Phosphatic chalk contains a higher level of phosphorous than normal chalk. It is less solid, which means it is more challenging to drill through. The phosphorous can potentially leach from the chalk and enter water courses, contributing to eutrophication. It is unsuitable for re-use (that is for other construction projects) and safe disposal can be difficult.

- **Construction risks (engineering)**

  The twin-bore tunnels will be approximately 200 metres from the Stonehenge monument at the closest point, and will reach a maximum depth of around 40 metres beneath ground level. Highways England's modelling sets out a worst-case scenario that the ground could sink between 20mm and 30mm along the centreline of the tunnel, and that it could sink by up to 1mm to a maximum of 55mm from the centreline. Because of the depth of the tunnel and distance from the stones, Highways England does not anticipate any significant risks or adverse effects from vibration to the Stonehenge monument.

- **Capability and capacity risks**

  Highways England had been training its current staff and commissioning external legal and finance advisers to support the expected private finance procurement. Now that it expects to pursue a public procurement, it is not clear whether it has the necessary capacity and capability to negotiate with industry to ensure that risks are transferred appropriately. It plans to hire additional skills in contracting with industry and to train existing staff with the skills needed to negotiate and manage the future contracts.

Engaging with stakeholders

3.12 Highways England has done well to engage key national stakeholders on its plans for the Amesbury to Berwick Down project. These are:

- National Trust – shares ownership and management of the Stonehenge World Heritage Site, along with English Heritage, Historic England, the Ministry of Defence, Natural England, the RSPB, private landowners, farmers and householders;
- English Heritage – manages the Stonehenge monument on behalf of the state and runs the main visitor operation in the World Heritage Site from the Stonehenge Visitor Centre;
- Historic England – adviser to government on all matters related to the historic environment and is a statutory consultee on Nationally Significant Infrastructure Projects, such as the Amesbury to Berwick Down project; and
- Wiltshire Council – the local unitary authority whose administrative area accommodates the Stonehenge World Heritage Site.

3.13 Highways England chairs or participates in many stakeholder boards and groups that oversee and direct the project. For example, Highways England chairs the Stakeholder Steering Board (SSB), which ensures that key parties work together throughout the life of the project.[23] The SSB reports directly to the A303 project board and is supported by 13 working and advisory groups. These include the Scientific Committee comprising archaeological experts who advise on all elements of the project that relate to the World Heritage Site, and the Communications Working Group, responsible for communicating and promoting the project objectives and benefits.

3.14 As well as the key national stakeholders, Highways England must manage the concerns raised by international organisations, and other national bodies and individuals. The project is within an internationally designated UNESCO World Heritage Site and is subject to consideration by the UNESCO World Heritage Committee. In summer 2018, the UNESCO World Heritage Committee stated that the project could benefit from further design refinement to avoid any impact on the Outstanding Universal Value of the site. This included longer tunnel options that do not require an open dual carriageway cutting within the World Heritage Site and reduce the length of the cut and cover sections at the tunnel entrances. In January 2019, the Government responded to these recommendations, explaining why it considered these suggestions were not feasible. The Government has also confirmed to UNESCO that it considers that the current scheme design would have an overall positive impact on the World Heritage Site, based on a heritage impact assessment undertaken by Highways England.

Progress on achieving benefits

3.15 Highways England recognises the need to proactively involve local communities, the public and road users in communicating and achieving the project's intended outcomes. It has appointed a benefits lead and is in the early stages of preparing a benefits plan that identifies appropriate metrics, baselines and targets for success. Benefits are wider than transport, including access to byways, and benefits relating to wildlife, such as butterflies, in the World Heritage Site. It has also set up a benefits steering group of representatives from the Department and local stakeholders, and has a key role in filtering and prioritising the project's benefits. However, there is further work to do as many of the metrics for the success of the project are not yet clearly articulated in a way that would make it clear what 'good' looks like. In addition, many potential benefits of the project and the A303/A358 corridor, such as growing local businesses or housing, are not within the control of Highways England or the Department to achieve.

23 The SSB consists of Highways England, the Department, Wiltshire Council, Historic England, English Heritage Trust, the National Trust, and the Wiltshire and Swindon Local Enterprise Partnership.

Appendix One

Our audit approach

1 This study makes early observations on the progress and risks in upgrading the A303 between Amesbury and Berwick Down including building a tunnel through the Stonehenge World Heritage Site. It discusses the Department for Transport (the Department) and Highways England's ambition, announced in their first Road Investment Strategy, to upgrade the A303/A358 road corridor between the M3 and Taunton to dual carriageway standard. Our main areas of review were:

- the background to the Amesbury to Berwick Down project;
- the business case for the project; and
- progress on the project.

2 Our audit approach is summarised in **Figure 12**. Our evidence base is described in Appendix Two.

Figure 12
Our audit approach

The objective of government

To ensure the strategic road network is more dependable, durable and safe. This will be achieved by ensuring major roads are free flowing; safe and serviceable; and accessible and integrated. The government also aims to support economic growth with a modern and reliable road network that reduces delays, creates jobs, helps business and opens up new areas for development to ensure a long-term and sustainable benefit to the environment.

How this will be achieved

As part of the first Road Investment Strategy, the Department for Transport (the Department) announced commitments to upgrade the A303 between Amesbury and Berwick Down to dual carriageway. This included a twin-bore tunnel of at least 2.9 kilometres (1.8 miles) through the Stonehenge World Heritage Site. The project formed part of a longer-term ambition to upgrade the remaining single lane sections of the A303 and A358 between the M3 and Taunton to create an Expressway to the South West and support economic growth in the region.

Our study

The report follows on from our 2017 report, *Progress with the Road Investment Strategy*. It makes early observations on the progress and risks of the Amesbury to Berwick Down project, including the construction of a tunnel through the Stonehenge World Heritage Site.

Our approach

Considers why the Department and Highways England decided to invest in the Amesbury to Berwick Down project as well as wider road connectivity issues in the South West.

Examines the Department's and Highways England's case for investing in the Amesbury to Berwick Down project, based on Highways England's 2018 outline business case.

Examines the current status of the Amesbury to Berwick Down project, including the schedule and costs, and project risks.

Our evidence (see Appendix Two for details)

We examined the background to the Amesbury to Berwick Down project:

- reviewing project management documentation;
- interviewing staff from the Department and Highways England; and
- interviewing local, regional and heritage stakeholders.

We examined the case of investing in the Amesbury to Berwick Down project:

- interviewing staff from the Department and Highways England; and
- reviewing project management documentation.

We assessed progress on the Amesbury to Berwick Down scheme:

- reviewing project management documentation;
- interviewing staff from the Department and Highways England; and
- Interviewing local, regional and heritage stakeholders.

Our conclusions

In pure economic terms, because of the high cost of building a tunnel, the Amesbury to Berwick Down project, at £1.15 of quantified benefit for every £1 spent, has a significantly lower benefit–cost ratio than is usual in road schemes. Given our experience of cost increases on projects of this kind, this ratio could move to an even lower or negative value. It will be even more important therefore that the Department and Highways England ensure that the project meets its strategic and heritage objectives, and that Highways England manages the project well. Currently, there are risks to Highways England's approach that it will need to manage to ensure future value for money for the Amesbury to Berwick Down project, and its other investments along the A303/A358 corridor.

Appendix Two

Our evidence base

1 Our conclusions on whether the Department for Transport (the Department) and Highways England are well placed to achieve value for money were reached after our analysis of evidence collected between October 2018 and January 2019, and updated in April 2019.

2 Our audit approach is outlined in Appendix One.

3 We considered the background for improving the A303 between Amesbury and Berwick Down as part of upgrading the entire A303/A358 road corridor between the M3 and Taunton:

- We reviewed documentary evidence of the rationale for upgrading the corridor including the first Road Investment Strategy; Highways England's route strategy for the South West and the Department's feasibility study for the A303/A358 corridor; business cases for individual projects; and benefit management plans. We also reviewed documentation provided by local and regional stakeholders.
- We interviewed staff from the Department and Highways England.
- We interviewed representatives from local authorities and local enterprise partnerships in the South West.

4 We examined the case for investment in the Amesbury to Berwick Down project and how Highways England is planning to implement the remaining projects along the A303/A358 corridor, as stated in the first Road Investment Strategy:

- We interviewed staff from the Department and Highways England.
- We reviewed documentary evidence including the outline business case for the project, project reviews, portfolio management information, and papers and minutes of boards, such as the Department's Board Investment and Commercial Committee.

5 We assessed the current progress of the Amesbury to Berwick Down project:

- We reviewed documentary evidence including the case for the corridor, the outline business case of the project including options development and economic cases, the Department's feasibility study for the A303/A358 corridor, papers and minutes of the Department's Board Investment and Commercial Committee, the risk register and the survey of cultural heritage benefits.
- We interviewed staff from the Department and Highways England.

Appendix Three

Update on the other A303/A358 corridor projects committed to within the first Road Investment Strategy

Sparkford to Ilchester

1 The A303 between Sparkford and Ilchester consists of approximately three miles of single-carriageway road with a short, three-lane section to the west of the A359 junction at Sparkford to allow overtaking. The annual average daily traffic flow between Sparkford and Ilchester is approximately 23,500 vehicles, almost double the recommended traffic flow of 13,000 vehicles for a single-carriageway road. Improvements to this section have been considered since the 1990s but projects to implement these were cancelled in 1994 and 2005.

2 Highways England presented two options for public consultation, consisting of a route close to the current alignment, and a route further to the north. Public feedback was in favour of upgrading the current alignment and Highways England made the announcement in October 2017 that this was the preferred route. In July 2018 it made an application for development consent.

3 The project is expected to start works by March 2020 (**Figure 13**). However, the estimated cost of the project has increased from the original estimate of £120 million to approximately £171 million (**Figure 14** on page 42) as the project requirements have become clearer. Nonetheless, it remains within the current operational planning budget of Highways England.

A358 Taunton to Southfields

4 This project will upgrade the A358 to a dual carriageway between the junction with the A303 at Southfields roundabout and junction 25 of the M5 near Taunton. The planned route follows the existing road but will also include a new dual carriageway link from the M5 to the existing A358.

5 Highways England has delayed construction by at least 12 months because it was unable to gain public support for its plans in an initial public consultation in 2017 and needed to consult again (Figure 13). It planned to start works in March 2020 and budgeted £251 million for the project based on early cost estimates. As it progressed the design, it developed options with estimated costs of between £366 million and £452 million. To keep the costs low, it took only the cheapest option to public consultation. However, respondents wanted to see more options for connecting the A358 to the M5 and it had to consult the public a second time.

6 Highways England undertook its second public consultation in 2018, presenting three of the previous options. The public preference was for the highest cost option at £452 million (Figure 14). This is significantly above Highways England's operational planning budget for this project, meaning it may be required to consider lower cost alternatives which could result in fewer benefits. Early assessments of the lower cost alternatives indicate that it may only generate 97p in benefits for every £1 spent, which the Department for Transport considers poor value for money.

Figure 13
Key milestones of the two projects

The A358 Taunton to Southfields project is currently delayed by over 12 months

Scheme	Planned start of works (as at Dec 2014)	Current expected start of works (as at Feb 2019)	Slippage	Planned 'open to traffic' date (as at Dec 2014)	Current expected 'open to traffic' date (as at Feb 2019)	Slippage
A303 Sparkford to Ilchester	March 2020	March 2020	0 months	February 2023	June 2023	4 months
A358 Taunton to Southfields	March 2020	Summer 2021[1]	> 12 months	March 2023	Summer 2024[1]	> 12 months

Note

1 These dates were based on an assumption that the preferred route announcement would be made in Autumn 2018, however by this date the preferred route had not been agreed.

Source: National Audit Office analysis of Highways England information

Figure 14
Cost changes of the two projects

The projects have experienced cost increases since planning for the first Road Investment Strategy (RIS)[1]

Project	RIS 1 cost estimate[1] (£m)	Current estimate (£m)	Increase (£m)	Stage
A303 Sparkford to Ilchester	120	171	51 (43%)	Funding approved in November 2018
A358 Taunton to Southfields	251	452	201 (80%)	Full project funding not approved

Notes

1 Project costs were immature at the time of the first Road Investment Strategy.

2 The price base of figures are not stated as were not clear from available evidence.

Source: National Audit Office analysis of Highways England data

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