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A303 Stonehenge Improvement

The "Parker Route" Assessment Report
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1 Introduction

1.1 Background

1.1.1.1 Draft Orders and an Environmental Statement were published for the A303 Stonehenge Improvement scheme in June 2003. In response to the Published Scheme, a number of alternative routes were submitted to the Highways Agency. One alternative is a long southern route and has been submitted as "The A303 Realignment Plan". In order to prevent confusion with other alternative routes which also involve the realignment of the A303, this route has been named the "Parker Route" after its originator, Colonel Parker.

1.1.1.2 The Parker Route is being promoted by an organisation called "The Association of Council Taxpayers – South Wiltshire" (ACT(SW)) and aims to provide the following benefits:

- Provide a dual carriageway for A303 traffic
- Remove completely the A303 and A344 from the Stonehenge World Heritage Site
- Provide traffic relief and environmental benefits to villages along the A36 Wylye Valley
- Provide traffic relief and environmental benefits to villages along the A338 Bourne Valley
- Provide Salisbury with a northern bypass with associated traffic and environmental benefits

1.2 Scope

1.2.1.1 In July 2003 the Highways Agency agreed to carry out a full assessment of this alternative route prior to the Public Inquiry due to be held in February 2004. This report presents the results of that assessment. The assessment is based on engineering, environmental and economic criteria, following the established methodology for a Stage 2 assessment as contained in the Design Manual for Roads and Bridges (DMRB). This assessment compares the Parker Route with the Do-Minimum situation.

1.2.1.2 **Chapter 2** describes the existing conditions of the study area and **Chapter 3** contains a textual description of the route and treatment of any existing roads. **Chapter 4** contains an engineering assessment of the route. **Chapter 5** reports the environmental assessment carried out for the route split into twelve environmental disciples. **Chapter 6** contains a summary of the traffic modelling methodology and forecast flows along with an economic analysis of the route. **Chapter 7** briefly describes alternative options that have been proposed by the promoters to improve the performance of the route.

1.2.1.3 The Parker Route has three elements. The first is the construction of a 25km section of offline dual carriageway to carry the A303 traffic between Berwick Down to the west and Beacon Hill to the east in a loop to the south passing close to the city of Salisbury. The second element is the construction of a new eastern bypass for Salisbury linking the A36 to the south-east and the new realigned A303 to the north of the city. The third element is the effective closure of the A303 between Longbarrow Junction and Countess Roundabout and the A344 between Airman's Corner Junction and its junction with the A303. This element includes other works to the existing road network that is required for these closures to take place. Refer to **Figure 1.1** for a plan showing the proposed road network.

1.2.1.4 The following definitions will be used in this report:

Published Scheme:	A303 Stonehenge Improvement scheme as described in the published draft Orders and Environmental Statement
Parker Route or route:	The complete alternative scheme proposed
A303 Realignment:	The realigned A303 section of the Parker Route
Eastern Link:	The Salisbury eastern bypass section of the Parker Route

1.2.1.5 Distances along the route are referred to as "chainage" (Ch.), which is the distance in metres from a notional start point (Ch. 0).

1.3 Highways Agency / Wiltshire County Council Responsibility and Roles

1.3.1.1 In 'A New Deal for Trunk Roads in England' published by the Government in July 1998, the A36 between Southampton and Bath was identified as a route to be de-trunked. Negotiations on de-trunking between the Highway Agency and the local highway authorities along the A36 route commenced early in 2001. However, the South West Regional Assembly placed a holding objection to de-trunking, pending the outcome of a further study into the management of the route and the specific traffic problems in Bath. This study, entitled the 'Bristol / Bath to South Coast Study' (BB2SC) commenced last year and is due to report later this year. This study is being managed by the Government Office for the South West. De-trunking negotiations are on hold until the outcome of BB2SC.

1.3.1.2 Until such time as de-trunking takes place the Highways Agency on behalf of the Secretary Of State remains the highway authority for the A36 and is responsible for safety and maintenance. However, the responsibility for promoting non-safety improvements and controlling development that does not have safety implications sits with the inheriting local authority. This is Wiltshire County Council in the study area.

1.3.1.3 The construction of the Eastern Link would be considered a non-safety improvement since its main function would be to provide relief to congestion in Salisbury. For this reason, it would generally be the responsibility of Wiltshire County Council to promote and fund this section of the route rather than the Highways Agency. However, it is clear that much of the benefit of the Eastern Link would not be realised unless the A303 Realignment was in place. Similarly, the A303 Realignment would not provide much benefit to Salisbury without the Eastern Link in place. For these reasons, it has been assumed that for the Parker Route to be adopted, a partnership between Wiltshire County Council and the Highways Agency would need to be set up to jointly fund and promote the two routes as a single scheme.

2 Existing Conditions

2.1 Highway Network

2.1.1.1 The route would have a significant impact on two trunk roads and numerous A, B and unclassified roads in the study area. A summary of the roads that would experience significant changes in traffic with the route in place is included in **Table 2.1**. **Figure 1.1** shows the existing highway network in the region.

2.2 Traffic Flows

2.2.1.1 The modelled Do-Minimum traffic flows for the opening year (2008) and design year (2023) under both low and high economic growth conditions are included in **Figure 1.3**. Traffic flows are displayed as 2-way Annual Average Daily Traffic (AADT).

2.2.1.2 A traffic model was developed specifically for the route from a combination of two existing traffic models, the A303 Stonehenge Improvement model and the Salisbury Transport Study model. The modelling methodology, forecasting, effect of the route and economic analysis are described in **Chapter 6**. As explained in that chapter, the combined model was derived from and validated against forecast year traffic flows. These flows have not been factored back to 2003 base year flows.

2.2.1.3 From **Figure 1.3** it can be seen that in the Do-Minimum situation in the opening year (2008) under low economic growth conditions, modelled traffic flow on the A303 varies from 20,900 between Winterbourne Stoke and Longbarrow Cross Roads to 35,300 east of Amesbury. Modelled flow on the A36 varies from 10,800 west of Stapleford to 53,100 on Churchill Way in Salisbury. Modelled flow on the A338 varies from 5,200 between the A303 and the A30 and 26,200 between the A30 junction and Churchill Way in Salisbury.

2.3 Environmental Conditions

2.3.1.1 A description of the existing baseline environmental conditions in the area of the Parker Route has been included in each of the environmental assessment chapters below. **Figure 1.2** shows the principal environmental constraints.

Table 2.1: Summary of the existing highway network

Road	Between	Residential areas	Traffic Flow[1]	Speed restrictions	Road standard	Junctions
A303	Berwick Down – Beacon Hill	Amesbury, Winterbourne Stoke	24,000 – 40,000	40mph in Winterbourne Stoke	Rural dual 2 lane and single c'way	At grade roundabouts and major/minor junctions
A36 (Includes Churchill Way)	Wylye Interchange – Wilton Roundabout	Steeple Langford, Stapleford, Stoford, South Newton, Chilhampton	11,000	40 mph in Stapleford and South Newton	Single c'way rural	Mainly major/minor junctions
	Wilton Roundabout – Petersfinger Farm	Wilton, Quidhampton, Salisbury	34,000 – 55,000	30 and 40 mph	Urban 2 lane and Single c'way	Major/minor junctions, roundabouts and signal controlled roundabouts
A338	St Thomas Bridge - Cholderton	The Winterbournes, Gomeldon Porton, Idminston, Boscombe, Allington, Cholderton	5,000 – 6,000	Numerous 40 mph restrictions	Rural single c'way	Mainly major/minor junctions
A30	A36 – St Thomas's Bridge	Salisbury	27,000	30 and 40 mph restrictions	Urban single c'way	Mainly roundabouts
A345 (Includes Countess Road North)	Durrington - Salisbury	Durrington, Amesbury, Salisbury	12,000 – 19,000 (in Salisbury)	40 mph restriction along Countess Road North, 30 mph restrictions through Amesbury and Salisbury	Rural single c'way (urban sections in Amesbury and Salisbury)	Mainly major/minor junctions with some roundabouts and signal controlled junctions in Amesbury and Salisbury
B3086	Shrewton – Rollestone Crossroads	Shrewton	2,500	30 mph in Shrewton	Rural/urban single c'way	Numerous minor junctions and accesses
B3086/ A360	Rollestone Crossroads - Salisbury	Salisbury	1,000 – 9,000	40mph in Salisbury	Rural single c'way (urban section in Salisbury)	Generally major/minor junctions, but some roundabouts
The Packway	Shrewton - Durrington	Shrewton, Larkhill	2,000 – 8,000	40mph through Larkhill	Rural single c'way	Major/minor junctions
A3028	Durrington – A303	Durrington, Bulford	4,000 – 10,000	30 mph through Durrington and Bulford	Residential single c'way	Numerous major/minor junctions

1 - Traffic flows are 2-way Annual Average Daily Traffic (AADT) flows for 2008 assuming High Growth taken from the Parker Route model

3 Description of the Route

3.1 Introduction

3.1.1.1 The layout of the Parker Route is based on plans submitted by the promoters in their alternative route proposal document. This is included in **Appendix A**. The engineering design has been developed after close consultation with the promoters. Refer to **Figures 2.1 – 2.8** for engineering plan and profile drawings. Additional alternative options have been identified by the promoters as the design and traffic model has been developed. These are discussed in **Chapter 7** of this report but do not at this stage form part of the scheme being assessed.

3.2 A303 Realignment

3.2.1 Western Tie-in Junction

3.2.1.1 The scheme would tie in to the line and level of the existing dual carriageway at Berwick Down at Ch. 300 at an elevation of approximately 140m AOD. The route would diverge from the existing road to the south.

3.2.1.2 A new grade separated full movement junction would be provided at Ch. 700 to allow access to and from Winterbourne Stoke from both directions. This compact junction would include a single overbridge (bridge 1) and an access to the farm track to the south. It would be located in a similar place to the junction included as part of the Published Scheme. The land around this junction would be raised to improve the setting of the link roads in the landscape.

3.2.2 Western Tie-in to A360 Junction (Ch. 0 – 10,000)

3.2.2.1 East of the Winterbourne Stoke Junction the route would continue to the south of the existing A303 following the line of a dry valley on a shallow embankment between 0 and 2m above the existing ground. There would be some re-profiling of the ground either side of the route to improve the setting of the road in this dry valley.

3.2.2.2 The route would drop steadily towards the River Till heading into a cutting up to 7m deep as it passes between Winterbourne Stoke to the north and Berwick St James to the south. At this point the B3083 Berwick Road would pass over the proposed route (bridge 2). Between this bridge and the River Till there would be a new drainage treatment area (DTA 1) to the south, accessed from the realigned B3083.

3.2.2.3 The route would cross the River Till flood plain on a 200m long viaduct (bridge 3) approximately 6m above the valley floor. There would be extensive re-profiling of the land to the north of the western abutment to hide the view of the B3083 overbridge from Winterbourne Stoke as far as possible.

3.2.2.4 DTA 2 would be located on the south side of the route immediately east of the viaduct. The route would rise steeply east of the River Till at a maximum gradient of 6% crossing an Esso oil pipeline at Ch. 3,600 on a 5m embankment, before heading into a 2-3m cutting. Byway 10 would cross the scheme on a skewed overbridge (bridge 4) at Ch. 4,150 as the route turns south to head along the ridge of high ground parallel to the A3600 towards Salisbury.

3.2.2.5 The route would pass west of a pair of possible iron-age enclosures and would cross the Esso pipeline a second time on a 2m embankment at Ch. 4,750. York Road would cross above the route (bridge 5) where the route would be at ground level. The route would then drop to a low point at Ch. 6,300 where it would cross two minor dry valleys. The ground around these valleys would be remodelled to reduce the visual impact of two high embankments at this location. DTA 3 would be located at this low point to the east of the route, accessed from the road linking the small cluster of cottages to the A360.

3.2.2.6 The route would continue south rising through a cutting up to 6m deep. Monarch's Way would cross the route on its present vertical alignment (bridge 6) at Ch. 7,100. The route would then continue to rise on a 2m embankment and would be crossed by an overbridge carrying the access road at Church Bottom (bridge 7) at Ch. 7,650. Footpath 14 at Ch. 8,100 would be diverted to run parallel to and on the south side of the route for 600m before crossing on this bridge.

3.2.2.7 The route would reach a high point at Ch. 8,700 where it would pass in a 6m cutting between Newton Barrow and some radio masts. The existing access track to the masts would be stopped up and access provided from the west.

3.2.2.8 The route would then curve gently to the east towards the A360 remaining in cutting as it is crossed by Footpath 9 on an overbridge (bridge 8). The route would be on an embankment up to 7m high as it approaches the A360 junction.

3.2.3 A360 Junction

3.2.3.1 The proposed A360 junction would act as the access to and from Salisbury from the west and north west. It would be a full movement compact grade separated junction with slip roads in each direction and two roundabouts in a "dumb-bell" arrangement. The link road between the two roundabouts would pass beneath the route (bridge 9) approximately at ground level. There would be extensive earthworks mitigation to the west of the junction to help assimilate it into the landform, and DTA 4 would be located between the A360 south and the toe of the main route embankment.

3.2.4 A360 Junction to A345 Junction (Ch. 10,000 – 13,800)

3.2.4.1 South of the A360 junction, the route would descend into a cutting up to 13m deep and 1km long reaching a maximum gradient of 6%. It would pass beneath The Avenue (bridge 10) at Ch. 10,700 and between a line of High Voltage overhead cables before curving round to the east. The route would pass close to a Site of Special Scientific Interest (SSSI) to the north. The route would then follow the line of a secondary valley as it approaches the River Avon main valley.

3.2.4.2 The route would cross the River Avon valley on a 400m long viaduct between 13m and 18m above the valley floor (bridge 11). The viaduct would completely span the flood plain and the two roads that run along either side of it. It would be supported on columns at approximately 50m centres. DTA 5 would be located outside the flood plain on the west side of the valley accessed from the local road.

3.2.4.3 East of the viaduct the route would run into a deep cutting as it passes through North Hill Down. This cutting would reach a maximum depth of 16m at the western end and would gradually decrease in depth over the next kilometre heading east. Bridleway 97 would cross this section at ground level (bridge 12). A track at Ch. 13,300 would be diverted 400m along the route to cross at this new bridge.

3.2.4.4 The route would pass approximately 1km north of Old Sarum on a low embankment 2m high for approximately 600m up to a new junction with the A345. A large area of land between the route and Old Sarum would be raised to minimise the views of the road and traffic to help assimilate it into the landform. DTA 6 would be located at the low point at Ch. 13,400 and accessed from the new road. This would be the lowest point of the route at an elevation of 65m AOD.

3.2.5 A345 Junction

3.2.5.1 The A345 junction would be the largest junction on the route and would act as the access to and from Salisbury from the east and north-east. It would be a full movement grade separated interchange with slip roads in each direction and a large roundabout carried above the route on two bridges (bridge 13a and 13b). DTA 7 would be the largest of its kind and located behind the Beehive Park and Ride site (as viewed from Old Sarum).

3.2.6 A345 Junction to the Eastern Tie-in (Ch. 13,800 – 25,700)

3.2.6.1 From the A345 junction, the route would rise gently for 3.5 km as it heads north-east on the high ridge of land between the Bourne and Avon valleys. The route would generally be at ground level alternating between shallow cuttings and embankments less than 4m deep. Where the route would be on embankment, there would be areas of land adjacent and to the east that would be remodelled to improve the setting of the road in the landscape.

3.2.6.2 Monarch's Way would cross the route at Ch. 15,250m on an overbridge (bridge 14). At Ch. 15,600 the access track to Hurdcott Farm would be stopped up. Access to this farm would be provided from the A345 to the west. An unclassified road would cross the route at Ch. 16,750 on an overbridge (bridge 15).

3.2.6.3 The route would reach a high point at Ch. 17,200 running into a cutting up to 6m deep passing between an archaeological enclosure to the west and Downbarn West farm to the east. An unclassified road would cross the scheme on an overbridge (bridge 16) at Ch. 17,500 remaining at ground level. The route would cross a dry valley on a 10m high embankment crossing over Bridleway 5 (bridge 17) which follows the line of the valley bottom. DTA 8 would be located alongside this bridleway, which would be improved, and act as access to it. There would be extensive remodelling of the land around this embankment to minimise its visual impact.

3.2.6.4 The route would then rise gently closely following the existing ground level as closely as possible. It would then turn east to follow the spur of high ground before dropping towards the low-lying area of land at the end of the Boscombe Down Airfield secondary runway. An unclassified road would cross the route on a skewed overbridge (bridge 18) at Ch. 19,300.

3.2.6.5 The topography along section of the route that would pass between the end of Boscombe Down Airfield secondary runway and the settlements of Idminston and Porton is particularly undulating and a good highway alignment would be difficult to achieve here. There would be two cuttings of up to 10m either side of an 8m embankment situated at the end of the runway at Ch. 20,700, also the local low point. Two semi-detached properties would be acquired and demolished in order to achieve a suitable alignment through this section. An unclassified road that acts as an emergency link to Boscombe Down Airfield would be crossed via an underbidge (Bridge 19). This road would also serve as access to DTA 9.

3.2.6.6 The route would run parallel to and approximately 100m from the perimeter of the airfield. There would be a local low point at Ch. 21,800. DTA 10 would be located here and accessed

from the main carriageway. The route would then generally follow ground level before rising on a 6m embankment to cross above Allington Track at Ch. 22,900 (bridge 20). DTA 11 would be located here, accessed from Allington Track.

3.2.6.7 The route would rise gradually through a cutting up to 6m deep crossing below an unclassified road close to Arundel Farm (bridge 21). Byway 34 would be diverted 300m along the eastern side of the route to cross on this bridge. The route would cross the low-lying area east of Beacon Hill Farm on an embankment up to 6m high. Large areas of land either side of the route would be re-modelled to improve the setting of the road in the landscape. The route would curve around to the east to tie into the existing A303 where it is on sidelong ground at Beacon Hill.

3.2.7 Eastern Tie-in Junction

3.2.7.1 The Eastern Tie-in Junction would be a full movement grade separated junction with slip roads in each direction and a modified dumb-bell arrangement (bridge 22). Access to and from Amesbury would be provided from a third roundabout to the west which would tie into the existing section of dual carriageway between this point and Amesbury. The junction would afford access to and from the unclassified road to the south.

3.2.7.2 The overall length of the A303 Realignment section would be 25.7 km and it would be 2-lane dual carriageway standards throughout.

3.3 Eastern Link

3.3.1 A303 Junction to A30 Junction (Ch. 0 – 3,500)

3.3.1.1 From the new A345 Junction described above, the Eastern Link would head south for approximately 400m rising gradually. The new junction with the Beehive Park and Ride site would be an at grade roundabout oval in shape. It would be located on the site of the existing junction but would extend over a larger footprint. The Park and Ride site would have an access directly from this roundabout as would the Roman Road heading towards the north east and the A345 continuing into Salisbury. The unclassified road signposted to Stratford Sub Castle would be realigned to tie into the A345 as a simple T-junction.

3.3.1.2 The route would continue south and curve to the east clipping the corner of a small airfield. An unclassified Roman Road would cross above the route on a skew (bridge 23). The route would run close to the existing development at south of Pearce Way dropping into cutting up to 7m deep as it approaches the River Bourne. Public Path 17 at Ch. 2,200 would be stopped up and rerouted to cross over the route with Green Lane at Ch. 2,350 (bridge 24).

3.3.1.3 The River Bourne would be crossed on a curved 250m long viaduct between 4m and 7m high (bridge 25). DTAs 12 and 13 would be located either side of the flood plain to the south of the route, accessed by local roads. The route would then climb out of the valley on a 3m high embankment crossing over the London to Penzance railway line where it runs in cutting (bridge 26).

3.3.2 A30 Junction to A36 Junction (Ch. 3,500 – 7,200)

3.3.2.1 The A30 junction would be an at grade roundabout with five arms incorporating the A338 as well as the A30. The existing A30/A338 junction would be remodelled to reduce it from four

arms to three. The route would then run southwards from the new A30 junction on a 4m high embankment dropping in level and passing close to Cockey Down SSSI to the east. DTA 14 would be located at the low point at Ch. 4,600 accessed from a track to the west.

3.3.2.2 The route would rise towards Burrough's Hill passing through the high point in a cutting up to 10m. Bridleway 16 would be carried over the route at Ch. 5,550 (bridge 27). The route would then follow existing topography at a 6% gradient passing under Queen Manor Road (bridge 28).

3.3.2.3 The route would pass beneath the Southampton to Bristol railway line at Ch. 6,800 (bridge 29) at the location of an existing structure.

3.3.2.4 The route would terminate at a new junction with the realigned A36. This would be an at grade roundabout with 5 arms providing access to and from the A36, the properties north-east of the junction and to the water treatment works to the south.

3.3.2.5 The A36 would be realigned over a length of 800m from the existing junction near Kennel Farm to the new junction with the Eastern Link. The existing junction would be closed and the local road would be taken beneath the A36 (bridge 30) to provide access to the properties to the north east of the new roundabout and to the roundabout itself. New retaining walls would be required to support the railway and A36 in this vicinity.

3.4 Treatment of the existing road network

3.4.1.1 On completion of the route the existing A303 between Longbarrow Roundabout and Countess Roundabout and a section of the A344 between Airman's Corner and the existing A303 would be closed to motorised traffic. In order to carry this out, works would be required in several locations on the existing road network.

3.4.1.2 The section of closed A303 would be converted to a byway with a restriction on motorised vehicles. This would be necessary to provide non-motorised transport such as pedestrians, cyclists and equestrians with a link between Countess Roundabout and Longbarrow Crossroads that would not entail a lengthy diversion. The existing "blacktop" surfacing would be removed and replaced with a narrower track with a type of surfacing designed to minimise intrusion in the World Heritage Site (WHS). This is consistent with the Published Scheme.

3.4.1.3 The A344 would be converted to a footpath between Airman's Corner and the existing A303. This would allow pedestrian access to the stones. Again, the surfacing would be chosen to minimise the impact on the WHS.

3.4.1.4 Airman's Corner currently takes the form of a staggered crossroads. This would be remodelled into a roundabout with three arms. Traffic from Shrewton would be signposted south along the A360 for London and the A303.

3.4.1.5 Longbarrow Junction presently takes the form of an at-grade roundabout four arms leading to single carriageway roads. This would remain in place as a three-arm roundabout with the section of A303 heading into the WHS closed and converted into a byway as described above.

3.4.1.6 Countess Roundabout currently takes the form of an at-grade roundabout with four arms. The east and west arms currently take the A303 in the form of a 2-lane dual carriageway. The roundabout would remain in place as a three-arm roundabout with the west arms closed and converted into a byway as described above.

3.4.1.7 Stonehenge Road currently serves as an access for properties along this road to and from Amesbury. It also acts as a one-way link onto the A303 for traffic heading out of Amesbury towards the west. This road would be retained and lengthened approximately 200m along the line of the existing A303 but would become a cul-de-sac. This would be to provide access to three properties located close to the barrows on King Barrow Ridge called Stonehenge Cottages.

4 Engineering Assessment

4.1 Highways

4.1.1 Engineering Standards

4.1.1.1 All roads have been designed in accordance for the Design Manual for Roads and Bridges (DMRB). Both the A303 Realignment and the Eastern Link sections would be all-purpose dual 2-lane carriageway roads. The A303 Realignment section has a design speed of 120 km/hr and the Eastern Link section has a design speed of 85 km/hr.

4.1.1.2 It is possible that a climbing lane would be required in the following locations:

A303 Realignment

- Westbound: Ch. 800 – 1,800
- Eastbound: Ch. 3,500 – Ch. 4,500
- Westbound: Ch. 11,000 – Ch. 11,800

Eastern Link

- Northbound: Ch. 5,800 – 6,600

An assessment would be carried out to examine whether a climbing lane would be justified at these locations at a later stage in the design process. This would take into account traffic flows and composition, vertical profile and environmental impact. The addition of climbing lanes in some or all of these locations is feasible with the current design and could be included at a later stage if justified.

4.1.1.3 In some cases there would be a need to widen verges and/or central reserves in order to achieve the required minimum stopping sight distances. The design shown on **Figures 2.1 to 2.7** allows ample land for this widening to be carried out. With widening in place, it is not expected that there would be the need for any departures in standard for stopping sight distances, or horizontal or vertical curvature for the route.

4.1.2 Geology and Geotechnics

4.1.2.1 The bulk of the route would be confined to the chalk plateau to the north-east and north-west of Salisbury and would hence traverse terrain that will be generally favourable to road construction, with shallow soils and relatively competent bedrock being present at shallow levels (<5m); however, evidence exists to suggest that isolated stretches of the route would be characterised by the occurrence of deep weathering and/or increased thicknesses of superficial geology.

4.1.2.2 The area around Camp Hill, where the A303 Realignment would traverse the existing A360, may be problematic. The desk studies indicate that this area contains back-filled chalk pits, Head deposits and (possibly) dissolution features. The works associated with the construction of this junction would be many and varied and it is possible that areas of buried waste may be disturbed. Piles associated with the bridges in this area may be adversely affected by the occurrence of dissolution features and compressible soils, as may the road pavements and

approach embankments. Consequently, a comprehensive programme of ground investigation would be instigated in this area at an early stage.

4.1.2.3 It is likely that thick sequences of alluvium and structureless and degraded chalk would be encountered in the valleys of the Rivers Avon, Till and Bourne and the piling works associated with the bridges for these areas would be dependant on the depth to the competent chalks at these locations. Settlement may be a problem with regards the bridge approach embankments and load transfer measures, reinforcement, engineered drainage and staged construction may need to be considered in these areas. Isolated areas of potentially contaminated ground may also cause problems at this extreme south-eastern end of the route corridor.

4.1.2.4 A brief review of the engineering characteristics of the chalk lithologies sampled during the A36 Salisbury Bypass investigations suggests that, on the whole, the chalks are broadly similar to those associated with the Published Scheme.

4.1.3 Earthworks

4.1.3.1 The route has been designed so that there would be a balance of cut and fill along its length. It would require the movement of approximately 3.5 million cubic metres of material. Most of the cut material would be used as engineering fill to construct the embankments and the remainder used in the landscape areas to blend the road into the surrounding landform. It is not anticipated that there would be the need to export any excavated material from site.

4.1.3.2 The earthworks cutting slopes have been designed at a slope of 26.5 degrees (1:2) throughout the length of the scheme. As with the Published Scheme, it is likely that in the deeper cuttings, cut slopes could be made steeper at depth thus reducing the overall land take of the route. This would be dependent on the results of a detailed ground investigation.

4.1.3.3 Embankments would be constructed out of the excavated chalk and would have a slope of up to 26.5 degrees (1:2). However, in most cases this slope would be much shallower as the earth would be used to blend the route into the existing landscape levels, enabling the land to be returned to agriculture wherever possible.

4.1.4 Surfacing

4.1.4.1 The type of surfacing proposed for the main carriageway and slip roads would be a thin bituminous material, known as a ‘Thin Surface Course’ (TSC), that has been developed to provide benefits such as low noise, reduced spray and improved skid resistance. In some locations where the risk of accidents is considered to be higher, such as the circulatory carriageway of roundabouts and their approaches, special high-skidding resistant surfacing would be provided. On side roads, where vehicles speeds would be lower and the noise reduction benefits of TSC would be less evident, a conventional bituminous wearing course would be used.

4.1.5 Drainage

4.1.5.1 Surface water run-off from the carriageway would be collected by channels, gullies or filter drains and carried by a positive system to one of 15 drainage treatment areas (DTAs).

4.1.5.2 The DTAs would be similar in design to those proposed for the Published Scheme. They include vegetative water treatment systems to protect the sensitive groundwater and river

systems from possible pollutants contained in run-off from the trunk road. All DTAs would incorporate discharges into the ground via infiltration basins or soakaways. Some of the treatment areas would have overflow features for the discharge of treated road run-off into adjacent watercourses when there is a high water table during the winter.

4.1.6 Other Highway Features

4.1.6.1 The cross section of the road has been designed in accordance with DMRB and would have verge and central reserve widths to allow sufficient room where applicable for sightlines, signs, safety barriers, street lighting and other furniture.

4.1.6.2 Following an initial assessment of the street lighting requirement, it has been assumed that in general the main line of both the A303 Realignment and Eastern Link sections of the Parker Route would not be lit. However, there would be lighting in the following locations:

- Western Tie-in Junction Underbridge only
- A360 Junction - Bridge, slip roads, roundabout and approaches
- A345 Junction - Slip roads, roundabout and approaches
- Eastern Tie-in Junction Bridge, slip roads, roundabout and approaches
- A345 Junction - Roundabout and approaches and link to A360/A303 junction
- A30 Junction - Roundabout and approaches
- A36 junction - Roundabout and approaches

Proposals for lighting would be finalised after consultation and agreement with Wiltshire County Council

4.1.6.3 Nineteen new laybys would be provided as part of the Parker Route. The approximate locations of these are shown on **Figures 2.1 – 2.8**.

4.1.7 Public Utilities

4.1.7.1 The following organisations were contacted to gather information on the existing services:

- Global Crossing UK
- Easynet Ltd
- NTL Group
- British Telecom
- Wessex Water
- Scottish and Southern Energy plc
- Traffic Master plc
- Transco
- Esso

Records indicate that a number of diversions would be required in order to build the route.

4.1.7.2 The most significant utility is the Esso oil pipeline. This pipeline carries oil between the Fawley refinery and Avonmouth port. It crosses the route of the A303 Realignment at Ch. 3,650 and Ch. 4,750 close to the River Till crossing and at Ch. 13,700 at the location of the proposed A345 junction. It runs along the line of the Eastern Link for approximately 500m between Ch. 1,000 and Ch. 1,500 and crosses again at Ch. 4,600. The alignment has been designed so that the road is on embankment at the pipeline crossings where possible. This would mean that the pipeline could possibly remain in situ with protection in these locations, but this would be subject to confirmation by the pipeline owners. There would, however, be the need to carry out two diversions, at the A345 junction and between Ch.1,000 and Ch. 1,500 on the Eastern Link.

4.2 Structures

4.2.1 General

4.2.1.1 The Parker Route would require the provision of 31 new bridges consisting of:

- 22 overbridges
- 6 underbridges
- 3 viaducts

4.2.1.2 The appearance of these new structures would be such that a consistency of form and finish would be achieved, giving the appearance of a "family" of structures throughout the route. The Commission for Architecture in the Built Environment (CABE) would most likely be consulted on some of the structures and their advice considered as the designs developed.

4.2.1.3 All three viaducts cross rivers that form part of the River Avon system candidate Special Area of Conservation (cSAC). The sensitivity of these areas would mean that careful consideration would be given to the design and construction of these viaducts. The largest of the viaducts is the River Avon crossing. A plan and profile drawing of the road at this location is included in **Figure 3.1**.

4.2.2 Railway Bridges

4.2.2.1 The construction of a new railway bridge just north of the new A36 Junction on Southampton road would require particular attention. This railway is the main Southampton to Bristol line and carries two tracks. At present there is an existing underbridge over a minor local road. The rail line would be closed for a period during the construction and replaced with a bus service. The construction time would be kept to a minimum by maximising the use of prefabricated components and possibly by sliding in a structure constructed alongside. Nevertheless, the impact on the rail operator would be significant.

4.2.2.2 The construction of the railway bridge west of the A30 would be less problematic. This railway is the main London to Penzance line and carries two tracks. The crossing has been sited where the railway is in deep cutting and the road could cross at existing ground level. It would be possible to ensure that the impact on the railway is minimised but there would be some disruption.

5 Environmental Assessment

5.1 Introduction

5.1.1.1 This assessment compares the impact of the Parker Route with the Do-Minimum situation. Benefits derived from the removal of traffic from the core of the World Heritage Site are not described in detail where they are common to both the Parker Route and the Published Scheme.

5.2 Methodology

5.2.1.1 The following environmental assessments have been carried out in accordance with the Design Manual for Roads and Bridges (DMRB) Volume 11, Environmental Assessment. The significance of the likely effects of the scheme have been assessed using a system and criteria consistent with those applied in the Environmental Statement for the Published Scheme.

5.2.1.2 The assessment has been carried out to a Stage 2 level which is usually used for comparing alternative routes of road schemes prior to announcement of a Preferred Route. A Stage 2 assessment is based on a preliminary design and desk study with site work limited to viewing the scheme from public rights of way. Assessments will not, therefore, carry the same degree of certainty as those carried out for the Published Scheme but will give a reasonably accurate overall picture.

5.3 Cultural Heritage

5.3.1 Sources of Information

5.3.1.1 Baseline archaeological conditions have been established within a study area up to 500m either side of the centreline of the route. Data from the following sources, including documentary information, air photographs and historic and modern mapping, has been reviewed:

- Wiltshire Sites and Monuments Record, Trowbridge (SMR data – records and mapping)
- Wiltshire and Swindon Record Office, Trowbridge (historic mapping)
- National Monuments Record Centre, Swindon (monument entries and activities index, Listed Buildings index, Scheduled Monuments index, aerial photograph index)
- English Heritage, London (Scheduled Monument mapping)
- Salisbury District Council Forward Planning (Local Plan policies and constraints)
- Salisbury District Council Conservation Section (Listed Buildings mapping)
- Published and unpublished sources.

5.3.1.2 For each section of the route, the principal cultural heritage constraints and baseline conditions are summarised below. **Figures 4.1 – 4.4** show the location of the archaeological features described below in relation to the route**.** The route sections have been subdivided here for ease of description according to topography or heritage character. Baseline conditions within the World Heritage Site (WHS), which would be affected by the closure of the A303 and A344, are described in the Environmental Statement.

5.3.2 Baseline Conditions

5.3.2.1 The known archaeological resource across much of the study corridor is characterised by extensive cropmark systems on the higher downland. These are mostly undated and comprise a multi-period palimpsest, within which components of probable prehistoric, Romano-British and medieval elements can be identified on the basis of their form. Other archaeological evidence along the route corridor comes from isolated chance finds and, in a few cases, from documented archaeological investigations.

5.3.2.2 The use of cropmark evidence to identify areas of archaeological activity is dependent on a number of factors, notably landuse, survey coverage and purpose, and the level of plotting. North of OS Northing 138000, the mapping of cropmark systems has been comprehensively reviewed and updated by English Heritage; this has produced an unevenness in the level and detail of plotting between route sections north of this and those to the south.

5.3.2.3 The entire route lies within an area designated in the Local Plan as an Area of Special Archaeological Interest. Although the Eastern Link has been subject to archaeological assessment and field evaluation previously in connection with the A36 Salisbury Bypass proposals, the vast majority of the route has not been subject to any form of systematic field investigation. Recent investigations along the Old Sarum trunk water main resulted in the discovery of several previously unknown archaeological sites, including settlement activity of Neolithic and Bronze Age date, and a medieval cemetery. This demonstrates the potential for further discoveries of as yet unknown archaeological sites in a landscape that has clearly been extensively settled since the prehistoric period.

5.3.2.4 The historic land use pattern across the route was typical of the Wiltshire chalklands, with meadows, watermeadows and settlements along the valley bottoms, arable cultivation on the shallower valley sides and arable mixed with pasture or pasture only on the high down. The survival of specific aspects of historic landscape character is commented on within each sub-section below.

PR1 Western Tie-in to A360 Junction

PR1a Berwick Down (Ch. 0 – 2,750)

5.3.2.5 There are no Scheduled Monuments, Listed Buildings or Conservation Areas in this sub-section of the route.

5.3.2.6 Extensive cropmark systems in this part of the route include a number of ring ditches on Berwick Down overlooking the Till Valley (**019, 020, 021, 024**), which are likely to be ploughed-down round barrows of Bronze Age date. Three oval cropmark enclosures may be settlement sites of likely Early Iron Age to Roman date (**008, 017, 018**). A complex of three contiguous rectangular enclosures (**015**) and a further rectangular enclosure (**023**) may indicate Late Iron Age or Roman settlements.

5.3.2.7 By far the most widespread features are cropmark field systems. An extensive multi-period field system on Parsonage Down (**013**) seems to contain earlier prehistoric and Roman elements, as well as medieval ridge and furrow cultivation. Curvilinear fields (**014, 022**) in the east of Berwick Down may be traces of the medieval common fields of Berwick St James. The condition of these cropmark field systems is variable, with evidence of extensive modern plough damage. Field evaluation as part of the assessment of the published scheme found that many cropmark features observed on earlier aerial photographs in the north-east of **PR1a** could not now be identified as archaeological features.

5.3.2.8 Historic land-use was typical of the Wiltshire chalklands, with open fields on the downland slopes and rough pasture on the highest ground at the western end of this sub-section. The present landscape preserves something of its former character, although most field boundaries are 20th century in origin.

PR1b Till Valley (Ch. 2,750-3,500)

5.3.2.9 There are no Scheduled Monuments or Listed Buildings within this sub-section. The southern edge of the study corridor clips the northern boundary of the Berwick St James Conservation Area.

5.3.2.10 The known archaeological evidence is dominated by the medieval and later periods, although this may be because earlier activity is masked by colluvium and/or alluvium in the valley bottom, and overlain or destroyed by later settlements and agricultural features.

5.3.2.11 The villages of Berwick St James, Asserton and Winterbourne Stoke are all of medieval origin, all have shrunk from their greatest medieval extent or shifted over time. A series of lynchets west of Asserton Farm (**030**) are likely to be medieval in date and a series of linear features on Horse Down (**031**), are thought to be remains of medieval ridge and furrow cultivation. A settlement site and field system on the south-west slopes of Oatlands Hill (**032**) may date from the prehistoric to medieval periods.

5.3.2.12 The historic land-use pattern comprised open fields and grazing on the higher valley sides and down, with watermeadows (**029**) and settlements along the valley bottom. The present landscape preserves something of its former character, but has been much altered with the

construction of Asserton Farm in the mid- to late 19th century and modern farm buildings in various locations. Although no longer in active use, the surviving watermeadows are a significant feature of the historic landscape.

PR1c Druid's Head to Stapleford Down (Ch. 3,500 – 7,500)

5.3.2.13 There are four Scheduled Monuments in this route sub-section, all barrows of likely Bronze Age date (**052-4, 059**). There is a Grade II listed milestone (**038**) on the western side of the A360 Devizes Road.

5.3.2.14 The site of a Neolithic long barrow (**033**) to the north-west of Camp Plantation is now ploughed flat. A Neolithic flint scraper and core (**034**) may suggest a settlement or working site on Stapleford Down. In addition to the three Scheduled Monuments (**052–4**), several non-scheduled sites (**044, 046**, **049**) may also be the remains of Bronze Age barrows.

5.3.2.15 Cropmark evidence is dominant on Stapleford Down. A pair of oval enclosures on the high ground north-east of Druid's Head Farm (**041, 045**), apparently linked by a trackway, are almost certainly settlements of later prehistoric date, with associated further stretches of trackway (**047**) and a field system (**040**).

5.3.2.16 South of Druid's Head Farm, the large polygonal ditched and banked earthwork known as the South Kite Enclosure (**052**) is undated. Within it, in addition to the three scheduled round barrows, a rectangular feature (**056**) and a small square enclosure (**057**) might be Iron Age features or post-medieval sheepfolds; a small square enclosure (**050**) to the east may also be related.

5.3.2.17 Two extensive undated cropmark field systems on Stapleford Down **(060, 396)** consist of a rectilinear grid of small fields, typical of the Romano-British period. Areas of late medieval or later ridge and furrow associated with the common fields of Stapleford, Little Wishford and Stoford extend to the south and east of Druid's Head Farm (**036**) and across Stapleford Down (**037**).

5.3.2.18 The present landscape preserves something of its former character but is considerably altered, particularly with the extension of arable cultivation across nearly all of the down, the planting of several wooded areas, and the development of agricultural buildings.

PR1d Stoford Hill to Smithen Down (Ch. 7,500 – 10,000)

5.3.2.19 There are two Scheduled Monuments in this route sub-section, the Bronze Age Newton Barrow (**064**) and an undated enclosure on Smithen Down (**083**). There are two Grade II Listed milestones (**072-3**) alongside the A360.

5.3.2.20 This sub-section is again dominated by cropmark evidence, including funerary monuments, possible settlement sites and extensive field systems. The scheduled Newton Barrow (**064**) stands on the crest of the highest hill in this sub-section; two bowl barrows west of this (**084-5**), and two further possible barrows (**090**) close to the proposed new junction with the A360, may survive as sub-surface features. To the east of the A360, a bowl barrow and associated flat cemetery were excavated in 1955; a bell barrow lies close by (**061-3**).

5.3.2.21 Flint finds south of Stoford Hill (**080**) and close to the proposed junction with the A360 (**089**) may be evidence of prehistoric settlement activity. A number of undated cropmark enclosures on Smithen Down (**083**), west of Stoford Hill Buildings (**078**) and on the eastern side of the A360 (**081**) may also indicate settlement sites; the enclosure on Smithen Down is scheduled.

Romano-British and late medieval cropmark field systems extend south from **PR1c** (**037**, **060, 396**). A rectilinear field system on Camp Hill (**087**, **088**) may also be of Roman date; Iron Age and Roman pottery suggests settlement here (**066, 068**).

5.3.2.22 Although much of the higher down is likely to have been used as pasture in the medieval period, ridge and furrow strip fields typical of the period have been identified south of west of Boreland Hill (**070**). An undated trackway (**082**) cutting across the scarp slope of Mount Pleasant may be a medieval route from Stoford to the downs and the Woodford valley beyond. A Second World War airfield decoy (**074**) is visible as cropmarks amongst the underlying medieval field system on the down east of Stoford.

5.3.2.23 The present land-use – almost entirely arable cultivation – marks the culmination of processes that have been underway since enclosure, and the large open fields preserve something of the sense of the ancient downland. The strongest element of the historic landscape that remains is the line of the Devizes road and the parish boundary between South Newton and Woodford, now marked by the A360.

PR2 A360 Junction to A345 Junction

PR2a Camp Down (Ch. 10,000 – 11,750)

5.3.2.24 There are no Scheduled Monuments in this route sub-section. There is one Listed Building, a Grade II listed milestone (**100**) on the west side of the A360 Devizes Road.

5.3.2.25 This sub-section is dominated by possible settlement sites on Camp Hill and Camp Down. On Camp Down, a settlement of probable Late Bronze Age to Roman date (**092, 095, 099**) is of unknown extent; an urned cremation burial (**093**) to the south-east may be part of a cemetery associated with the settlement. Drainage ditches (**096**) of possible Iron Age date may also be related. At Camp Hill Reservoir, an enclosed Iron Age settlement remained occupied into the Roman period (**094, 097, 098, 104**). Other possible settlement sites include rectangular and sub-circular enclosures on Camp Hill (**105**, **107**) and south-east of Hilltop Business Park (**114**).

5.3.2.26 Cropmark field systems include probable Iron Age or Roman elements (**109-10**), as well as undated contour field systems (**113, 115**). A ring ditch containing an internal burnt area on the high ground just south of Camp Hill Reservoir is thought to be a post-medieval beacon site (**101**).

5.3.2.27 The extent of the cropmark field systems makes it clear that these areas were under plough at least from the Iron Age, if not earlier. The cultivation of woodland on the steepest slopes of the Avon Valley is a development since Enclosure. The strongest element of the historic landscape is the line of the A360.

PR2b Avon Valley (Ch. 11,750 – 12,250)

5.3.2.28 There are no Scheduled Monuments in this route sub-section. However, this sub-section, and particularly the Avon Crossing itself, are dominated by and fall within the setting of the scheduled Iron Age and later site of Old Sarum (**131**, see **PR2c**). There are four Grade II listed buildings; the model farm buildings at Avon Farm, Avon Farm Cottage, Avon Farmhouse and The Manor House (**119-22**). Parts of the southern edge of this sub-section lie within the Salisbury Conservation Area.

5.3.2.29 There are few known archaeological sites and find spots recorded in this sub-section, and none at all that date to the prehistoric or Roman periods. This is probably due to the masking effects

of colluvium, gravel and alluvium in the valley bottom, and to the intensive use of the area in the more recent historic and modern periods.

5.3.2.30 Avon Farm (**116**) is believed to mark the site of a settlement with Saxon origins, on place name and charter evidence; a series of earthworks to the east of the farm buildings may be of early medieval or Saxon date. Avon was a recognisable township in the 13th century, but has since all but disappeared.

5.3.2.31 The existing road network and settlement pattern clearly preserve the outline of that established at the time of the 1840 Stratford-sub-Castle Tithe Map, which is likely to be of far greater antiquity. The standing buildings generally preserve something of the late 18th and 19th century character of the area, while traces of watermeadows to the north of Avon Farm are a significant feature of the historic landscape.

PR2c North Hill Down to Rockshill Plantation (Ch. 12,250 – 13,800)

5.3.2.32 There is one Scheduled Monument in this route sub-section, a group of Bronze Age barrows on North Hill Down (**125-6, 141-2**). There is a single Grade II Listed Building, Longhedge Farmhouse on the A345 (**133**). The extreme south-eastern corner of the study corridor here lies within the Salisbury Conservation Area.

5.3.2.33 This sub-section passes within 800m of the scheduled Iron Age and later site of Old Sarum (**131**). The settlement here was first established as a hillfort in the Early Iron Age, but remained a focus of activity in the Roman and late Saxon periods. It was the site of a castle from soon after the Norman Conquest, and the location of the first cathedral and the focus of the town of Salisbury until the cathedral was removed to its present site *c.*1220.

5.3.2.34 The sub-section contains several prehistoric settlement sites and groups of funerary monuments. A long barrow of probable Neolithic date, with ditches and a possible mortuary enclosure, is visible on aerial photographs west of the park and ride site (**124**). On North Hill Down, two extant barrow groups and associated outliers of likely Bronze Age date may have formed a single cemetery (**125-7, 134**, **136–9, 140-2**); a series of linear banks (**135**) appears to respect this cemetery. Further barrows lie to the south of North Hill Down (**144**) and in two clusters, north of Old Sarum (**152–156**) and on Rockshill (**158–164**) around the Neolithic long barrow (**124**).

5.3.2.35 Neolithic, Bronze Age and Iron Age settlement is known South of Middle Barn Farm (**123, 128**, **130**). Several cropmark enclosures may belong to the Late Bronze Age, Early Iron Age or later, including a possible settlement/farmstead and its associated fields and droveways (**145**, **149**), and smaller enclosures or stockpens (**146–7**). A number of linear features (**143, 148, 150, 157**) may be fragments of Bronze Age land divisions. Traces of a multi-period field system (**167**) extend across most of this sub-section and into **PR3a**. Parts may suggest fragments of a co-axial system of Iron Age or Roman date, but individual elements could be earlier or later. The line of the Roman road from Old Sarum to Mildenhall (**132**) is marked by the present A345.

5.3.2.36 Most of this sub-section formerly lay within the common fields of the parish of Stratford-sub-Castle. The area was mostly under arable cultivation at the time of enclosure, a pattern that is continued with greater intensity today. The dominant elements of the historic landscape are Old Sarum and the line of the former Roman road, the A345.

PR3 A345 Junction to Eastern Tie-in

PR3a Rockshill Plantation to Down Barn (Ch. 13,800 – 18,000)

5.3.2.37 There are two Scheduled Monuments in this route sub-section, a round barrow north-east of Down Barn West (**217**), and an Iron Age settlement enclosure north of Down Barn West (**174**). In addition, a damaged Neolithic long barrow (the Ende Burgh; **170**) just beyond the study corridor is also Scheduled. There are two Grade II Listed Buildings, Beehive Cottage (**179**) and the Down Barn complex of agricultural buildings (**180**).

5.3.2.38 This sub-section is dominated by groups of funerary monuments and probable settlement sites. There are several Bronze Age barrow cemeteries; to the west of the Neolithic long barrow, the Ende Burgh (**186–190, 193–96, 198–99**), with evidence for an associated flat cemetery (**171**); on the site of the former Laverstock Isolation Hospital (**183, 185**); south-east of Hurdcott Field Barn (**202–5, 207**); and near Down Barn West (**221–2**). Isolated barrows include the scheduled bowl barrow east of Down Barn West (**217**). Two large penannular ditches (**207, 209**) near to the Hurdcott Field Barn group could be earlier, Neolithic enclosures.

5.3.2.39 Possible settlement sites are also widespread. An isolated pit and flint implements found near the Bee Hive (**168**) may indicate Neolithic settlement activity. Iron Age features in the vicinity of Hurdcott Field Barn (**172-3**) may indicate a settlement sited on a natural spur overlooking the Bourne Valley. Further north, the Iron Age settlement enclosure to the north of Down Barn West (**174**) is a Scheduled Monument. Undated enclosures are common, indicating the past popularity of the downs overlooking the Bourne Valley for settlement. A large kidney-shaped enclosure (**197**) appears to respect the Ende Burgh long barrow. Two irregularly shaped enclosures south-west of Hurdcott Field Barn are of possible Iron Age or Roman date (**206, 210**). Two small, square enclosures close to the settlement at Down Barn West (**215, 219**) could mark the site of Iron Age or Roman barrows. Extensive undated settlement complexes visible as cropmarks at Hurdcott Field Barn (**211**) and north-east of Down Barn (**224–5**) appear typical of the Early Iron Age, although perhaps with occupation continuing into the Roman period.

5.3.2.40 Undated linear features are also common. Some (**184, 191–2, 212-3, 218**) may represent droveways or trackways of prehistoric or more recent date, or be the remnants of significant prehistoric territorial divisions.

5.3.2.41 Traces of multi-period field systems cover much of the northern half of the sub-section (**220**). Although ploughed, some banks survive up to 0.4m high. Although the field system may include some prehistoric and Roman elements relating to the known enclosures, the arrangement of the features suggests that most relate to medieval and later cultivation strips and lynchets within the common fields of the Winterbourne villages.

5.3.2.42 The Bee Hive park and ride site is situated at the junction of the Roman roads to Mildenhall, now marked by the A345, and Silchester, now marked by the Portway (**176**). A scatter of Roman finds (**175**) probably indicates activity in the vicinity of this junction, as do late medieval coins and a brooch (**178**).

5.3.2.43 The historic land-use pattern along the Bourne valley reflects the division of the landscape into a series of long, narrow parishes, aligned north-west to south-east, in the late medieval period or earlier. Each parish included a settlement beside the river, meadow and watermeadow in the valley, arable fields on the lower slopes of the downs and common pasture on the high down. Strip cultivation in common fields survived within the study corridor in the parishes of Winterbourne Dauntsey and Winterbourne Gunner until the mid 19th century.

5.3.2.44 Almost all of the sub-section was under arable cultivation at the time of enclosure, and it is clear that only the higher down beyond the study area to the north-west was reserved as pasture. Present land-use preserves the long-established arable cultivation and the outlines of the 19th century road and settlement pattern.

PR3b Birdlime Farm to Little Boscombe Down (Ch. 18000 – 22000)

5.3.2.45 There are no Scheduled Monuments in this route sub-section. There are a total of eight Grade II Listed Buildings, five in Idmiston village (**230-4**), one in Little Boscombe village (**235**) and two in West Boscombe (**236-7**). The north-eastern corner of this sub-section lies within the Boscombe Conservation Area.

5.3.2.46 A number of undated cropmark sites suggest extensive prehistoric settlement and funerary activity across this sub-section. Several ring ditches south of Birdlime Farm probably mark the site of plough damaged Bronze Age round barrows (**238-9, 241**). A group of oval enclosures (**246–8**) and possibly associated trackways and boundaries to the north (**245, 250**) appear to represent a cluster of small enclosed settlements, which could be of Bronze Age or Iron Age date. A linear earthwork up to 8m wide and 1.1m deep to the west of Boscombe (**254**) probably represents a prehistoric land boundary.

5.3.2.47 Roman settlement activity is suggested by enclosures north of Porton village (**240**), inhumation burials north-west of Church Farm (**226**) and finds and enclosures around Little Boscombe (**227, 252**).

5.3.2.48 Idmiston and west Boscombe are both thought to have Saxon origins; a series of earthworks along the western side of Idmiston (**228**) probably represent house sites and plot boundaries and may be of early medieval (Saxon) date, or relate to the late medieval village. Disused post-medieval watermeadows (**229**) survive as earthworks on both sides of the Bourne between Idmiston and Porton villages.

5.3.2.49 Multi-period field systems extend across the downs. Some combine prehistoric and medieval elements (**253, 255**), while others are probably the result of medieval and post-medieval cultivation (**249, 251**).

5.3.2.50 Almost all of the sub-section was under arable cultivation at the time of enclosure, and the present field system has seen only minor development since the late 19th century. Present land-use preserves the long-established dominance of arable cultivation, the outlines of the 19th century road network and a little of the settlement pattern. The greatest change in the character of the landscape in the past century has been the development of Boscombe Down airfield, although that is itself now part of the fabric of the historic landscape.

PR3c Boscombe Down to Beacon Hill (Ch. 22000 – 25,700)

5.3.2.51 There is one Scheduled Monument in this route sub-section, an earthwork representing a major linear ditch of probable Bronze Age date (**257**, **290**), which runs east-west across the south facing flank of Beacon Hill, adjacent to the existing A303. There are no Listed Buildings or Conservation Areas in this sub-section of the route.

5.3.2.52 This sub-section is dominated by Boscombe Down airfield. Archaeological discoveries associated with this development have demonstrated that Boscombe Down was the focus for intensive settlement activity in the Iron Age and Roman periods. Iron Age settlement evidence (258) includes a bivallate enclosure (259), groups of pits (260-1) and a possible 'antenna' enclosure (272); a group of undated pits (270) on the eastern perimeter of Boscombe Down

Airfield is probably related. Roman settlement evidence (266) includes a cemetery (263) and finds of pottery and coins (264-5, 267). The extent of the Iron Age and Roman settlement activity is unknown; a group of five unaccompanied burials from Boscombe Down West (275) could be related.

5.3.2.53 Evidence elsewhere within this sub-section is derived largely from cropmarks. Groups of ring ditches north-west of Arundel Farm (**278–80**) and around Beaconhill Gorse (**286, 288-9**) are likely to indicate the sites of plough-damaged Bronze Age round barrows. The scheduled Bronze Age linear ditch on Beacon Hill (**257**) has been levelled by ploughing in places, but survives as an earthwork elsewhere. This would originally have been a major landscape feature, and its long-standing influence in the landscape is reflected in the alignment of the Amesbury to Andover turnpike (the present A303). A series of east-west and north-south aligned linear ditches (**273, 276, 281, 284-5**), plotted from aerial photographs, may represent further landscape divisions dating back to the Bronze Age, although others appear to be related to field systems likely to be of Iron Age or Roman date.

5.3.2.54 Cropmark field systems include a series of lynchets (**255**) of probable late medieval date. Sub-rectangular coaxial systems of probable Late Iron Age or Roman date extend south of Arundel Farm (**274**), across Beacon Hill West (**282**) and Beacon Hill Gorse (**283**); these appear to be aligned on possible earlier linear boundaries. Less regular fields in the north-east of the sub-section, with lynchets following the natural contours (**287, 292-3**), could be of prehistoric or even medieval date. A series of trackways crossing the area north of Beacon Hill Farm (**291**) are undated.

5.3.2.55 Military training is documented in the area since at least 1898, with trench systems on Beacon Hill (**268**), in the vicinity of Scotland Lodge. Stretches of embankment (**267**) relating to the dismantled military railway which formerly linked the camps in the Salisbury Plain area survive to the south of Arundel Farm; the railway closed in 1963.

5.3.2.56 Most of the sub-section consists of rolling downland with a general fall to the south away from Beacon Hill, and would have supported the standard mixed sheep/corn economy. In Allington, Amesbury and Bulford, enclosure took place at an early date and subsequent consolidation of landholdings was comprehensive. The basic outline of the historic landscape remains, namely the parish boundaries, the Amesbury-Andover turnpike (now the A303), and many of the field boundaries. The greatest changes have been in the decline of pasturage and the dominance of arable cultivation, and the gradual establishment and expansion of Boscombe Down Airfield between 1917 and the 1950s.

Eastern Link: A303 Junction to A30 Junction (WA ref. EL2)

5.3.2.57 There is one Scheduled Monument in route section **EL2**, the Iron Age and later site of Old Sarum (**131**). There are four Grade II listed buildings; a granary and barn at Bishopdown Farm (**388–9**), the Old Castle Inn (**390**) and Bee Hive Cottage (**179**). The north-western part of section **EL2** falls within the Stratford-sub-Castle Conservation Area. The study corridor crosses the western end of Old Sarum airfield (**181**), which dates to the First World War and includes important groups of airfield buildings. English Heritage have assessed the airfield as of particular importance and it has been proposed for protection as a Conservation Area.

5.3.2.58 Archaeological evidence in this section includes the results of fieldwork undertaken for the A36 Salisbury Bypass and connected with the development of the Bishopdown housing estates, as well as the typical cropmark evidence.

5.3.2.59 Evidence of Neolithic settlement is known in the form of two groups of pits (**342**) east of Old Sarum and a dense scatter of flint implements (**340**) on a spur of high ground north of Bishopdown. An apparent concentration of Bronze Age finds on the ridge of high ground known as Castle Hill and the former downland north of Bishopdown Farm may indicate extensive settlement and funerary activity (**345-353**). A bowl barrow, partially excavated in the 19th century, survives on the north-west facing flank of Castle Hill (**354**). A settlement site identified from aerial photographs on the north-east facing flank of Castle Hill (**393**) is undated archaeologically but, given the known activity in the area, could be Bronze Age or Iron Age.

5.3.2.60 Iron Age settlement extended south-east from the scheduled hillfort of Old Sarum, on the south-west facing flank of Castle Hill (**355–61**). The Roman settlement of *Sorviodunum* (Old Sarum) lay at an important junction in the Roman road network. The Roman road from Winchester (**362, 366**) extends across the route corridor; part of this road to the east of the study corridor is a Scheduled Monument. The road from Silchester (**367**) passes across the northern end of the study area, and is partly followed by the modern Portway. Scatters of Roman pottery at Bishopdown (**363–4**) and to the south of Old Sarum Airfield (**365**) are evidence of general Roman activity within the study corridor.

5.3.2.61 Although there is documentary and numismatic evidence for a settlement at or near Old Sarum from at least the early 11th century, there is little archaeological trace of Saxon activity. Old Sarum was developed as a castle and ecclesiastical centre after the Norman Conquest. The castle became the focus for considerable activity in the late medieval period and an eastern suburb occupied the high ground in the western part of this route section (**381-7**). A chapel, graveyard and ditched enclosure (**378**) has been provisionally identified as part of St John's Chapel and leper hospital, documented from 1195.

5.3.2.62 On the north-eastern edge of the study corridor, the village of Ford probably originated in the medieval period; earthworks (**379**) survive to the west and south of the village. An extensive series of undated linear soil marks and corresponding geophysical anomalies between Bishopdown and Ford (**391**) are probably relicts of medieval and post-medieval cultivation strips.

5.3.2.63 The historic land-use pattern in this route section was typical of the Wiltshire chalklands. The eastern suburb of Old Sarum declined rapidly after the establishment of Salisbury on its new site in the early 13th century and the land subsequently reverted to largely agricultural use. The historic landscape is dominated by Old Sarum itself, together with the Listed Buildings and the outline of the road network, including some roads that mark the course of Roman predecessors. That substantial areas of land remain in arable or pastoral use preserves something of the area's former character, despite the impacts of housing development and the replacement of sheep with pig husbandry.

Eastern Link: A30 junction to A36 junction (WA Ref. EL1)

5.3.2.64 There are two Scheduled Monuments in route section **EL1**, the Laverstock pottery kilns (**317**) and Milford Bridge (**318**), both of late medieval date. There are three Listed Buildings; the Scheduled Monument of Milford Bridge is listed Grade I (**323**), while Milford House (**322**) and St Thomas Bridge (**324**) are both listed Grade II. The extreme south-western end of the study corridor clips the Salisbury Conservation Area.

5.3.2.65 Archaeological evidence from this section of the route includes the results of fieldwalking and limited trial trenching work completed as part of the assessment of the Salisbury Bypass proposals. Other evidence comprises chance finds during development in the Avon and Bourne

floodplains and cropmark evidence, including possible settlement sites and field systems, on the higher ground to the east.

5.3.2.66 To the west of the route corridor, *in situ* Palaeolithic deposits are known at Milford Hill, situated on a relict river terrace. Recent investigations south of the study corridor along the route of the Harnham relief road have also identified *in situ* Late Upper Palaeolithic remains, again on a former river terrace location. Although these sites are close by, the study corridor does not intersect similar topographic situations; *in situ* Palaeolithic sites are not, therefore, anticipated here.

5.3.2.67 Two Mesolithic find spots (**294-5**) on the flood plain of the River Avon close to its confluence with the Bourne may suggest some potential for contemporary activity in the area. Neolithic finds associated with geophysical anomalies are likely to indicate activity north of Laverstock (**296**). Bronze Age finds at Milford Farm (**297**), south of Burroughs Hill (**298**) and Laverstock Down (**299**), and a probable round barrow on Laverstock Down (**336**) could potentially reflect settlement activity.

5.3.2.68 An Early Iron Age enclosed settlement and Roman farmstead has been identified on the summit of Burroughs Hill (**335, 304**); Iron Age finds on Cockey Down (**300**) may also indicate settlement. An inhumation cemetery on Laverstock Down (**337**) may be of Late Bronze Age–Early Iron Age or Roman date. An undated cropmark enclosure north of Hughenden Manor (**329**) may also be a settlement site. Although few Roman sites have been excavated, the distribution of Roman find spots across both the valley and down areas of this section (**302-3, 305-7**) suggests a considerable upsurge in activity in the Roman period, although this impression may well result from a more visible and recognisable material culture.

5.3.2.69 Extensive cropmark field systems survive across the Laverstock Downs, including a coaxial system of possible Roman date south of Burroughs Hill (**330**) and an extensive area of probable prehistoric lynchets to the east of this (**331**). West of Burrough's Hill, a series of lynchets (**332**) could be of prehistoric or medieval date. Another probable prehistoric field system (**338**) occupies the steep west facing slopes of Cockey Down. A series of trackways (**339**) in the north-east of the route section close to the present A30 may be of Roman or later date.

5.3.2.70 Substantial Saxon settlement at Petersfinger is attested by a 6th century inhumation cemetery (**310**); at least 70 burials are known in total, and it is possible that further burials remain undisturbed nearby. Petersfinger is shrunken from its medieval extent; late medieval earthworks survive to the north-east (**312**). Milford also has medieval origins; medieval pottery (**315**) has been found between Milford and Petersfinger. The medieval village of Laverstock (**319**) lay at the extreme west of the study area, and a deserted medieval village or hamlet called 'Mummeworth' lay to the south of Southampton Road, just beyond the western limit of the study corridor. The national significance of two late medieval sites within the study corridor, the production centre of the important 12th to 14th century Laverstock pottery industry (**317**) and the late 14th century Milford Bridge (**318**), is recognised by their designation as Scheduled Monuments.

5.3.2.71 A large ditch (**321**) formed part of the pale, or enclosure, of Clarendon Park, a royal deer park established in 1223; it was the largest in Wiltshire and is of national importance. A post-medieval church path (**326**) linked Clarendon Park with Laverstock.

5.3.2.72 Two pillow mounds on Burroughs Hill (**333–4**) are artificial late medieval or post-medieval rabbit warrens ('Burrows').

5.3.2.73 The early maps make clear that most of the study area was in arable cultivation during the 19th century, with only narrow strips of down remaining against the boundary of Clarendon Park. The presence of the Park may have been one of the greatest restraints on modern development in this area. The greatest changes to take place during the 19th and 20th centuries have been the sub-urban development of Laverstock and Milford, the development of the railway and the expansion of industrial and commercial development in the floodplain of the Avon. Noteworthy elements of the historic landscape that remain include the medieval bridges and surviving village earthworks, the outline of the road network, Clarendon Park, and the open fields across Laverstock and Cockey Downs.

5.3.3 Assessment of Impacts and Effects

5.3.3.1 The environmental effects of the route on the known cultural heritage resource are summarised below in **Table 5.1**.

5.3.3.2 Where an effect on a findspot is described, it has been assumed that other finds of similar type and date remain to be discovered, although the actual find recorded will have been removed from the site previously.

5.3.3.3 Although effects on the setting of specific components, such as Scheduled Monuments and Listed Buildings, are described below, effects on the wider historic landscape have been excluded from this assessment.

5.3.3.4 The effects of the A303 Realignment and the Eastern Link on the known cultural heritage resource would be adverse; no beneficial effects have been identified within the new road corridor. However, the closure of the A303 between Longbarrow Crossroads and Countess Roundabout and the A344 between Airman's Corner and Stonehenge Bottom would have a beneficial effect on upstanding sites within the WHS, as a result of the removal of the sight and sound of traffic on the existing roads. Buried sites are considered to have no amenity value and, therefore, would not experience any such beneficial effects. Some of these beneficial effects would be the same as those provided by the Published Scheme; a summary of those effects that differ from those of the Published Scheme is included in **Table 5.1**, using the site numbers and assessments of importance as presented in the Environmental Statement.

5.3.3.5 It should be noted that, although the existing A303 would be removed where it crosses The Avenue (Site 70), this has not been assessed as having any beneficial effect on the monument. The Avenue was largely destroyed by the construction of the existing road and removal of the A303 would not restore the monument or its integrity, although it might facilitate access from one part to another in the future. The Avenue is not visible east of King Barrow Ridge and hence the removal of the road would also not improve its setting.

Table 5.1: Assessment of Cultural Heritage Impacts and Effects

WA No [1].	Sub-Sect.	Site Name	Description	Importance	Magnitude Of Impact	Significance Of Effect
013	PR1a	Parsonage Down	Undated field system. ?Prehistoric overlain by ridge and furrow	Moderately Important	Low Adverse	Minor Adverse
024	PR1a	SW of Winterbourne Stoke	Undated, roughly circular feature revealed as a cropmark	Moderately Important	Low	Minor Adverse
046	PR1c	North-west of Druid's Lodge	An undated ring ditch	Minor Important	Very High Adverse	Moderate Adverse
047	PR1c	W of Druids Lodge	Undated ditched trackway	Moderately Important	Medium Adverse	Moderate Adverse
052	PR1c	Stapleford Down	Univallate enclosure of possible Romano-British date	Moderately Important	Low Adverse	Minor Adverse
059	PR1c	W of the A360	An undated bowl barrow AM 149	Very Important	Low Adverse	Minor Adverse
064	PR1d	Newton Barrow	A Bronze Age bowl barrow excavated by Hoare AM 148	Very Important	Medium Adverse	Moderate Adverse
067	PR1d	N of Newton Barrow	Ten Romano-British pottery fragments	Minor Important	Medium Adverse	Minor Adverse
075	PR1d	W of Heale Hill	An undated ditch	Minor Important	High Adverse	Minor Adverse
080	PR1d	N of Newton Barrow	Undated worked and burnt flint	Minor Important	Medium Adverse	Minor Adverse
083	PR1d	W of Woodford Clump	An undated enclosure AM 382	Very Important	Low Adverse	Minor Adverse
090	PR1d	Devizes Road	Site of two possible barrows	Minor Important	Medium Adverse	Minor Adverse
092	PR2a	Camp Down	Possible Bronze Age settlement site found in 1972 excavation	Moderately Important	High Adverse	Moderate Adverse
093	PR2a	Hill Farm	Middle Bronze Age urn, Old Sarum Trunk Main Excavation	Moderately Important	High Adverse	Moderate Adverse
095	PR2a	Camp Down	Possible Early Iron Age features in 1972 excavation	Moderately Important	High Adverse	Moderate Adverse
096	PR2a	Hill Farm	Sinuous ?drainage ditches, 'provisionally dated' as Iron Age	Minor Important	High Adverse	Moderate Adverse
099	PR2a	Camp Down	Scatter of Romano-British pottery found during 1972 fieldwork	Minor Important	High Adverse	Minor Adverse
119	PR2b	Avon Farm	Grade II Listed model farm buildings at Avon Farm, Stratford	Important	Medium Adverse	Moderate
120	PR2b	Avon farm Cottage	Grade II Listed Avon Farm Cottage, Stratford sub Castle	Important	Medium Adverse	Moderate

WA No [1].	Sub-Sect.	Site Name	Description	Importance	Magnitude Of Impact	Significance Of Effect
122	PR2b	The Manor House	Grade II Listed The Manor House, Phillips Lane, Stratford	Important	Medium Adverse	Moderate
124	PR2c	Rocks Hill	A long barrow with ?mortuary enclosures on aerial photos	Moderately Important	Medium Adverse	Moderate Adverse
125	PR2c	North Hill Down South Group	A bowl barrow excavated by Duke in the 19th century AM 218	Very Important	Medium Adverse	Moderate Adverse
126	PR2c	North Hill Down South Group	A bowl barrow excavated by Duke in the 19th century AM 218	Very Important	Medium Adverse	Moderate Adverse
127	PR2c	North Hill Down South Group	A bowl barrow excavated by Duke in the 19th century	Moderately Important	Medium Adverse	Minor Adverse
131	PR2c, EL2	Old Sarum	Hillfort established as Iron Age through excavation SM 26715	Very Important	Large Adverse	Major Adverse
132	PR2c	Roman road	Roman road from Old Sarum to Mildenhall	Moderately Important	Low Adverse	Minor Adverse
134	PR2c	North Hill Down North Group	A round barrow	Moderately Important	Medium Adverse	Moderate Adverse
135	PR2c	North Hill Down	Linear banks arranged around two barrow cemeteries	Minor Important	Medium Adverse	Minor Adverse
136	PR2c	North Hill Down North Group	A round barrow	Moderately Important	Medium Adverse	Moderate Adverse
137	PR2c	North Hill Down North Group	A round barrow	Moderately Important	Medium Adverse	Moderate Adverse
138	PR2c	North Hill Down North Group	A round barrow	Moderately Important	Medium Adverse	Moderate Adverse
139	PR2c	North Hill Down South Group	A bowl barrow	Moderately Important	Medium Adverse	Moderate Adverse
140	PR2c	North Hill	An undated ring ditch	Moderately Important	Medium Adverse	Moderate Adverse
141	PR2c	North Hill Down South Group	A bowl barrow excavated by Duke in the 19th century	Moderately Important	Medium Adverse	Moderate Adverse
142	PR2c	North Hill Down South Group	A bowl barrow excavated by Duke in the 19th century AM 218	Very Important	Medium Adverse	Moderate Adverse
147	PR2c	N of New Farm	An oval enclosure with a possible antenna	Minor Important	Medium Adverse	Minor Adverse
152	PR2c	North of Old Sarum	An undated circular feature, probably a barrow	Moderately	Medium Adverse	Moderate Adverse

WA No [1].	Sub-Sect.	Site Name	Description	Importance	Magnitude Of Impact	Significance Of Effect
				Important		
153	PR2c	North of Old Sarum	An undated circular feature, probably a barrow	Moderately Important	Medium Adverse	Moderate Adverse
154	PR2c	North of Old Sarum	An undated circular feature, probably a barrow	Moderately Important	Medium Adverse	Moderate Adverse
155	PR2c	North of Old Sarum	An undated circular feature, probably a barrow	Moderately Important	Medium Adverse	Moderate Adverse
156	PR2c	North of Old Sarum	An undated circular feature, probably a barrow	Moderately Important	Medium Adverse	Moderate Adverse
157	PR2c	North of Old Sarum	Undated linear ditch	Minor Important	Medium Adverse	Minor Adverse
158	PR2c	Rocks Hill	A penannular ring ditch.	Moderately Important	Medium Adverse	Moderate Adverse
159	PR2c	Rockshill	A ring ditch abutting a ditch. Part of levelled barrow cemetery	Moderately Important	Medium Adverse	Moderate Adverse
160	PR2c	Rockshill	A ring ditch which is part of a levelled barrow cemetery	Moderately Important	Medium Adverse	Moderate Adverse
161	PR2c	Rockshill	A ring ditch which is part of a levelled barrow cemetery	Moderately Important	Medium Adverse	Moderate Adverse
162	PR2c	Rockshill	A small ?square enclosure, ?part of barrow cemetery	Moderately Important	Medium Adverse	Moderate Adverse
163	PR2c	Rockshill	A double concentric ring ditch, part of a barrow cemetery	Moderately Important	Medium Adverse	Moderate Adverse
164	PR2c	Rockshill	A ring ditch which is part of a levelled barrow cemetery	Moderately Important	Medium Adverse	Moderate Adverse
174	PR3a	Downbarn West	An Iron Age rectangular enclosure excavated in 1957 AM 839	Very Important	Medium Adverse	Moderate Adverse
176	PR3a	The Port Way	Roman road from Salisbury to Silchester	Moderately Important	Low Adverse	Minor Adverse
179	PR3a	Beehive	Grade II Listed Beehive Cottage	Important	Low Adverse	Minor Adverse
180	PR3a	Down Barn	Grade II Listed farm buildings	Important	Low Adverse	Minor Adverse

WA No [1].	Sub-Sect.	Site Name	Description	Importance	Magnitude Of Impact	Significance Of Effect
214	PR3a	Downbarn West	An undated linear feature	Minor Important	Medium Adverse	Minor Adverse
218	PR3a	Downbarn West	An undated linear feature	Minor Important	Medium Adverse	Minor Adverse
220	PR3a	SE of High Post to Field Farm	An extensive, undated field system. Banks up to 0.4m high	Minor Important	High Adverse	Minor Adverse
221	PR3a	Downbarn West	An undated ring ditch	Minor Important	High Adverse	Minor Adverse
222	PR3a	Downbarn West	An undated ring ditch	Minor Important	High Adverse	Minor Adverse
226	PR3b	North-east of Targetts Copse	Three Romano-British graves were excavated by SMARG	Minor Important	Medium Adverse	Minor Adverse
243	PR3b	NE of Bird Lime Farm	An undated D-shaped enclosure	Minor Important	Medium Adverse	Minor Adverse
245	PR3b	N of Birdlime Farm	An undated linear ditch	Moderately Important	Medium Adverse	Minor Adverse
254	PR3b	Little Boscombe Down	Undated linear ditch, probably a boundary	Minor Important	Very High Adverse	Moderate Adverse
255	PR3b, PR3c	E of Field Farm	Undated field system	Minor Important	High Adverse	Minor Adverse
257	PR3c	Parallel to Andover Road	Undated ditch extending over a considerable distance SM 10256	Very Important	High Adverse	Major Adverse
273	PR3c	Boscombe Down	Undated linear ditch	Minor Important	High Adverse	Minor Adverse
278	PR3c	South of Beacon Hill Gorse	Undated ring ditch visible as a soilmark on aerial photographs	Minor Important	Medium Adverse	Minor Adverse
279	PR3c	South of Beacon Hill Gorse	Undated ring ditch visible as soilmark on aerial photographs	Minor Important	Medium Adverse	Minor Adverse
280	PR3c	South of Beaconhill Gorse	A possible undated ring ditch	Minor Important	Medium Adverse	Minor Adverse
290	PR3c	Margarets Wood to Milborough Wood	An undated ditch SM 10256	Very Important	High Adverse	Major Adverse
296	EL1	Cockey Down	A Neolithic arrowhead, and other implements excav in 1992	Minor Important	Medium Adverse	Minor Adverse
304	EL1	Burroughs Hill	Romano-British pottery and a corn drier found in 1989	Moderately Important	Medium Adverse	Moderate Adverse
321	EL1	Cockey Down-Pinecrest then SE Again	A large Medieval deep park pale, 7 miles round	Moderately Important	Low Adverse	Minor Adverse
322	EL1	Milford	Grade II Listed Milford House and flats A, B and C	Important	Low Adverse	Minor Adverse
323	EL1	Milford	Grade I Listed Milford Mill Bridge	Very Important	Low Adverse	Minor Adverse

WA No [1].	Sub-Sect.	Site Name	Description	Importance	Magnitude Of Impact	Significance Of Effect
326	EL1	Queen Manor Rd - Laverstock	A Post-Medieval church path associated with the Royal park	Minor Important	Medium Adverse	Minor Adverse
330	EL1	N & NW of Rangers Lodge	Undated field system.	Minor Important	Medium Adverse	Minor Adverse
362/ 366	EL2	Roman Road	Roman road from Old Sarum to Winchester AM 347	Moderately Important	Low Adverse	Minor Adverse
378	EL2	East of the A345	Probable site of St John's leper hospital, chapel and cemetery	Very Important	Medium	Moderate Adverse
379	EL2	Ford	Settlement with Medieval origins, earthworks survive	Moderately Important	Medium Adverse	Moderate Adverse
391	EL2	S & W of Green Acres	An undated field system, confirmed by geophysics	Minor Important	Medium Adverse	Minor Adverse
ES 25	WHS	N of Longbarrow Crossroads	Winterbourne Stoke Group outliers; Scheduled Monuments	Very Important	Negligible	Neutral
ES 26	WHS	Longbarrow Crossroads	Winterbourne Stoke Group; Scheduled Monuments	Very Important	Low Beneficial	Minor Beneficial
ES 32	WHS	S of A303 at Ch. 6780	Neolithic long barrow	Very Important	Medium Beneficial	Moderate Beneficial
ES 39	WHS	S of A303 at Ch. 7900	Bronze Age round barrow	Very Important	High Beneficial	Major Beneficial
ES 41	WHS	Long barrow at Ch. 7950	Neolithic long barrow	Very Important	High Beneficial	Major Beneficial
ES 42	WHS	N side of A303, Ch. 7975	Three round barrows – Scheduled Monuments	Very Important	High Beneficial	Major Beneficial
ES 43	WHS	S of A303 at Ch. 7695	Multi-period site	Very Important	Low Beneficial	Minor Beneficial
ES 59	WHS	King Barrow Ridge	The New King Barrows – scheduled monuments	Very Important	High Beneficial	Major Beneficial
ES 60	WHS	King Barrow Ridge	The Old King Barrows – scheduled monuments	Very Important	High Beneficial	Major Beneficial
ES 47	WHS	Alongside A303, Ch. 7060	Grade II Listed Milestone	Important	Low Beneficial	Minor Beneficial
ES 71	WHS	Vespasian's Camp	Iron Age hillfort. Scheduled Monument	Very Important	Medium Beneficial	Moderate Beneficial
ES76	WHS	Countess Farm	Grade II Listed Buildings	Important	Negligible	Neutral

1. See **Figures 4.1 – 4.4** for location of sites

5.3.4 Mitigation

5.3.4.1 The assessment of baseline conditions above has demonstrated that extensive archaeological remains, including settlement sites, farmed landscapes and funerary monuments dating from the prehistoric to medieval periods, are known to exist within the study corridor. It must be anticipated that field evaluation surveys, which would normally be undertaken as part of a Stage 3 assessment, would reveal many additional archaeological sites.

5.3.4.2 Further archaeological work would be required to fully establish the baseline conditions, and to mitigate probable damage to the archaeological resource. Detailed mitigation measures can only be identified following field evaluation of the route to further investigate the nature, date, extent and importance of sites for which there is insufficient information at present.

5.3.4.3 Mitigation of the identified impacts can be achieved through detailed design of the route, and/or through a programme of investigation and recording leading to dissemination of the results.

5.3.4.4 Potential mitigation measures could include:

- Avoidance – minor amendments to road alignment and/or proposed landscape mitigation during detailed design to avoid or minimise impact. Avoidance of the principal cultural heritage restraints has been achieved in the initial design stage.
- Preservation *in situ* – minor amendments to road design and/or proposed landscape mitigation during detailed design to allow preservation of archaeological remains within the scheme boundaries e.g. alterations to vertical alignment to allow burial of remains if practicable.
- Preservation by record – where sites of archaeological importance are identified but avoidance or preservation *in situ* is unachievable, an archaeological investigation will be required to ensure that remains are appropriately recorded before they are destroyed. This may take the form of open area excavation or a 'strip/map/sample' (SMS) exercise.
- Archaeological monitoring – archaeological watching brief during construction. This may be preferred in the event that no further definition of areas of archaeological interest is possible, but where the potential for archaeological discoveries cannot be ruled out.

5.3.4.5 The route would cross areas where further archaeological work would be required to fully establish the baseline conditions, and to mitigate probable damage to the archaeological resource. Detailed mitigation measures can only be identified following detailed field evaluation of the route to further investigate the nature, date, extent and importance of sites for which there is insufficient information. It is probable that adjustment of the landscape mitigation could be made in a number of places to avoid remains, but this would need to recognise the balance drawn between avoiding archaeological impact and providing the necessary landscape and visual mitigation.

5.3.5 Summary

5.3.5.1 When compared to the Do-minimum option, the route would result in a substantial indirect beneficial effect on the settings of 25 upstanding sites within the WHS, through the closure of the A303 and A344 to motorised traffic. The result of these benefits would be to substantially reduce the severance of the WHS that has been caused by the presence of the A303. However, construction of the A303 Realignment and the Eastern Link would result in a direct adverse effect on 56 known sites and an indirect adverse effect on 24 known sites, with loss of remains at one Scheduled Monument, and negative effects on the settings of 7 Scheduled Monuments and 6 Listed Buildings. These known impacts could be reduced through changes to landscape mitigation at detailed design stage.

5.3.5.2 The study area contains extensive evidence of settlement and funerary activity; as no systematic field survey has been undertaken over the great majority of the route, there is a very high potential for as yet undiscovered archaeological remains to be affected. The value of the rich archaeological evidence both within and beyond the WHS boundary is recognised in the local plan designation of the entire study area as an Area of Special Archaeological Interest. The WHS is a landscape of international importance by virtue of its remarkable concentration of well-preserved prehistoric monuments. Nevertheless, although the scheme would bring significant indirect benefits to the settings of monuments within the WHS, the physical loss of archaeological remains elsewhere on the route could be substantial and, therefore, the overall effect of the route is considered to be **Major Adverse**.

5.4 Landscape

5.4.1 Sources of Information

5.4.1.1 The route was assessed on site by from existing roads and Rights of Way.

5.4.2 Baseline conditions

5.4.2.1 The study area for the route extends south to Salisbury and east just beyond the crest of Beacon Hill. The entire area lies within the Salisbury Plain and West Wiltshire Downs landscape character area. Salisbury is the focal point of a number of rivers which converge there. The Bourne, Avon, and Nadder flow through the city, the Nadder includes the Wylye which flows into it at Wilton and the Wylye in its turn includes the Till which enters it at Stapleford. The area around Salisbury is designated by Wiltshire County Council as the Landscape Setting of Salisbury.

5.4.2.2 The landscape through which the route would run contains the same broad landscape character types as the Published Scheme, although there is more variation than for the Published Scheme as detailed below. Refer to Section 6.3 of Volume 1 of the Environmental Statement for further descriptions of the landscape character types. Landscape character types have not been mapped and described in as much detail as for the Published Scheme, for example Large-Scale and Small-Scale Dry River Valleys have been mapped as one. Figure 5.1 shows landscape character types.

5.4.2.3 The majority of the route would run through the downland landscape character types, Agricultural Downland and Dry River Valleys for the majority of its length. The exceptions to this are where it would cross the valleys of the River Till and Avon and the Downland Ridgelines near Newton Barrow all of which are very high quality landscapes. A variation in the quality of the character types has been distinguished in that the area east of the A345 is of lower quality than the same landscape character types west of the A345. This is because the landform is slightly less pronounced, there are few copses and clumps of trees but a far higher number of hedges which are atypical of the downland character and divide the landscape, preventing long views from roads and lanes which cross the area. The River Bourne valley is more densely populated than the Avon or Till valleys, settlements have tended to spread in the 20th century and road and rail links disturb the tranquillity of the valley.

5.4.2.4 East of the route and the River Bourne valley a further two landscape character areas have been identified: Estate Downland and Forest Downland. The former includes a much higher proportion of tree belts which run into each other and form a complex web. The latter includes large mixed woodlands of typically ancient outline and small copses and is transitional with the New Forest Character Area which lies to the south of the Study Area. Settlements are found on high ground away from the river valleys and their form changes to dispersed or roadside linear development. No part of the route extends into these areas apart from a very short section around its eastern junction with the A303 which would clip the corner of one of the outer belts of the Estate Downland.

Western Tie-in to A360 Junction

5.4.2.5 Visual effects are shown on Figure 5.2. The route would branch off from the existing A303 in the same location as the Published Scheme, swinging south-eastwards down a dry chalk valley before cutting into a spur of higher ground separating this valley from the village of Berwick St James. The B3083 would pass over the route at close to its existing vertical alignment. Earthworks would be included to cut off views of this section of road from the two storey properties on Berwick Road just north of the route; this would remove views of the road and traffic but would also cut short their existing views of downland, causing a **Slight Adverse** visual effect.

5.4.2.6 The route would cross the River Till on a maximum 6m high viaduct. The floodplain at this point contains areas of willow carr and individual trees, and together with the spur south of the route, these would screen the viaduct from the villages of Berwick St James and Winterbourne Stoke almost entirely with only the Listed church in Winterbourne Stoke and a single property in each village having a **Moderate Adverse** visual effect from views of it in winter. Views from the White Lodge would be more open, ranked as **Substantial Adverse**. Although the visual effects would not be widespread this part of the route would be entirely out of scale and character with the enclosed intimate River Avon valley landscape of **Very High** quality.

5.4.2.7 East of the River Till the route would climb the valley slopes initially following a dry chalk valley before swinging southwards. Mitigation earthworks are proposed to bring surrounding levels up to the road where it would otherwise be on embankment in the bottom of the dry valley and, as with the route west of the Till, it could be integrated into the landform reasonably well. The woodland belt leading off Hanging Wood would be bisected, leaving a 60m wide gap, but additional planting on the sideslopes would soften the effect as it developed. A pair of farm semi's are gable end on to the route here at Asserton Farm and two bungalows further north are sheltered behind tall hedges. These four properties would suffer **Slight Adverse** visual effects.

5.4.2.8 Between Asserton Farm and the proposed A360 junction the route would be visible over a wide area, but would be reasonably well aligned with the landform and capable of effective mitigation using material excavated from cuttings. This is an open rolling landscape and the route would follow close to the high point of a north-south ridge. The land use is almost entirely arable and long views are broken by rectilinear plantations. The route would avoid most of these landscape features and there would be **Slight Adverse** visual effects for 9 distant properties and a Scheduled group of barrows east of Camp Cottages. There would also be **Moderate Adverse** visual effects at the Scheduled Monument of Newton Barrow which is intervisible with Stonehenge. Although the route would pass close to this barrow it would be in cutting uphill from the barrow and therefore visual intrusion would arise more from the long views of it to north and south than from closer views which would be screened by the landform

5.4.2.9 South of Monarch's Way the route would come close to the existing A360 corridor, but north of this point it would cross a remote and tranquil landscape (in periods when military aircraft are not flying) adversely affecting users of rights of way. The A360 junction would result in the loss of a number of mature beech trees along the A360, but would be well hidden in a dry valley and capable of effective mitigation.

5.4.2.10 East of the Till valley this section of the route would be well integrated with the landform, causing **Moderate** or **Minor Adverse** landscape character effects generally on this High quality landscape, and capable of reasonably effective mitigation. Its main disbenefit would be its effect on unspoilt and tranquil countryside.

A360 Junction to A345 Junction

5.4.2.11 In contrast to the majority of the previous section this part of the route would cut across the contours, crossing the River Avon valley on a viaduct 13 to18m high and 400m long visible from the edge of Salisbury. The viaduct and its approach cuttings would be impossible to screen effectively and the only possible form of mitigation would be to design it as a landmark structure. In spite of this it would remain entirely out of scale with the high quality enclosed landscape of the Avon valley, causing a **Substantial Adverse** effect on the Very High quality landscape. There would be **Substantial Adverse** visual effects for about 5 properties, including the Grade II Listed Avon Farm and barns (undergoing conversion to residential use), **Moderate Adverse** for a further 6 in the valley including the Grade II Listed Manor House and **Slight Adverse** for approximately 30 on the high ground along the A360 on the edge of Salisbury. Immediately east of the Avon valley there would be a **Substantial Adverse** visual effect for a group of barrows on North Hill Down.

5.4.2.12 Emerging from cutting east of the Avon the route would run obliquely along a shallow valley below Old Sarum, open to view from the northern ramparts of the monument, within the Landscape Setting of Salisbury. At the eastern end of this open valley the route would have a junction with the A345 close to the top of a local ridgeline. The majority of Rockshill Plantation would be lost but new planting could be provided around the junction. This is the only direction in which relatively rural views still exist from Old Sarum and the visual effects would be **Substantial Adverse.** It would not be possible to screen it in the short term. Although planting could be provided on the earthworks proposed to blend the route into the landform it would be out of character with the open chalk downland here and many years would pass before it screened traffic from the elevated viewpoints on Old Sarum. The effect on the landscape character would be **Major Adverse**, resulting from its effect on the pattern, landcover and tranquillity of the valley. Although this monument is less well known than Stonehenge it is still a very impressive and famous site attracting large numbers of visitors. Constable painted it viewed from the north, and the route would lie within that view. A pair of farm cottages would also suffer **Substantial Adverse** visual effects.

A345 Junction to Eastern Tie-in

5.4.2.13 Between the A345 Junction and Porton the route would again run close to the contours, affecting few important landscape features, a **Minor Adverse** landscape character effect on this landscape of **Moderate Value**. The section immediately east of the A345 runs close to the urban fringe, an area of barracks, industrial buildings, a small airfield, and a football stadium. About 10 properties and 25 flats in the Royal Wessex Yeomanry barracks would suffer **Slight Adverse** visual effects, but additional planting could be provided and would fit into existing copses and tree belts here. A further 7 isolated properties including Listed buildings at Down Barn would suffer **Slight Adverse** visual effects, and two properties on Down Barn Road and one at Church Farm **Moderate Adverse** over this length.

5.4.2.14 Near Idmiston the route would skirt the end of the runway at Boscombe Down and this would push it closer to a group of 6 outlying properties in a steep sided valley. The route would cross the valley on a 5m high embankment with little opportunity for mitigation, demolishing two of these properties and causing **Substantial Adverse** visual effects to the remainder. It would be possible to avoid demolition of property at this point but there would be no space for any mitigation. By selecting a line which would take these two properties it becomes possible to put in a shallow false cutting on the south side of the route at this point which would screen the traffic although views northwards would be lost. These steep sided small valleys are more frequent on this section of the route which would pass through several in a sequence of cuttings and embankments at odds with the landform but generally out of sight of properties apart from

those mentioned above. There would be a **Moderate Adverse** effect on this landscape character type of High value.

5.4.2.15 Beyond Allington Track the topography becomes larger in scale and the route could achieve a better fit in the landform, causing only **Slight Adverse** effects on this High value landscape. Again, it would damage few landscape features and excavated material could be used to mitigate adverse effects. Four properties would suffer **Moderate Adverse** visual effects over this section of the route. An old double-hedged ancient byway which is also a Scheduled Monument would be severed and diverted to run alongside the route, causing **Substantial Adverse** visual effects for users.

5.4.2.16 The new junction with the A303 would be on elevated sidelong ground and would be visible over a wide area. Planting around the junction could fit into the tree belts, which are locally characteristic.

Eastern Link from A303 Junction to A30 Junction

5.4.2.17 The Eastern Link would initially follow the line of the A345 as far as the roundabout which gives access to the park and ride site. Roadside hedges and trees would be lost but new planting could tie into that provided around the newly created park and ride facility. From this roundabout the route would swing eastwards across a gently rolling agricultural landscape near the edge of the commercial area, barracks and airfield in a series of shallow cuttings and embankments. This section of the route would again be openly visible from Old Sarum, although the landscape at this point is reduced in quality to Low by the developments described above, the park and ride and its associated roads and lighting and a pig farm. The route would be well screened from properties on the edge of Salisbury by the ridge on which Old Sarum is built, and **Slight Adverse** visual effects would only be experienced by 3 properties south of the route. The listed Beehive Cottage, an old toll house which lies just south of the Park and Ride site would be further affected by the new roundabout but its setting has already been substantially damaged by other developments, and the effect on it would therefore be no worse than that existing at present.

5.4.2.18 Continuing eastwards the route would pass through a series of pastures between Ford and Hampton Park. Properties on the edge of a 20th century development outlying the hamlet of Ford are relatively well screened to the south by a poplar windbreak, and about 19 residential properties would have filtered views towards the route resulting in **Slight Adverse** visual effects. Hampton Park is a new residential estate which was clearly built with a future upgrading of the road along its northern edge at some point in the future in mind. An earth bund with some planting on it runs between the houses and the road. The Parker route would run parallel to the road along the edge of the development. This would allow a strip of screen planting which would screen about 50 properties which would have views of the route, resulting in **Slight Adverse** visual effects, over the mound in the early years. This section of the route passes through an urban fringe landscape of lower value than those elsewhere on the route and its effect on landscape character would therefore be **Minor Adverse**.

5.4.2.19 The route would cross the River Bourne on a viaduct 250m long and a maximum of 7m above ground level. There would be a **Major Adverse** effect on the landscape character of this intimate small-scale chalk stream river valley of High Value. About 7 houses in Ford would have views of the viaduct crossing this attractive valley resulting in **Substantial Adverse** visual effects for three properties and **Moderate Adverse** for the other four. East of the minor road through Ford it would be possible to blend the route into the landform and screen it partly by earth mounding returned to agricultural use on completion. Fifteen other properties along the Roman Road would also either have views of the route or would lose their existing views of

Cockey Down to the section of the route on embankment over the railway. All these properties would suffer **Moderate Adverse** visual effects.

Eastern Link from A30 Junction to A36 Junction

5.4.2.20 The new A30 junction would be in open arable land, lying slightly above existing levels but with space for effective mitigation. Turning south the route would run along the base of a dramatic escarpment of High landscape value, part of which is also the Cockey Down SSSI. About 25 properties on Church Road would have views of the route which would interrupt their views of the Down. The 5 properties on the east side of Church Road would be worst affected resulting in **Moderate Adverse** visual effects; the remaining properties on the west side would generally only have views from upper floors resulting in **Slight Adverse** visual effects.

5.4.2.21 Continuing south the route would pass behind St Joseph's School, St Edward's School St Andrew's School and Wyvern College, taking part of the playing fields. South of the schools the route would be in arable land behind the residential areas at Laverstock, cutting across a popular right of way between the houses and Cockey Down. There would be **Moderate Adverse** visual effects from the schools. Approximately 30 properties on the eastern edge of Laverstock would suffer **Slight Adverse** visual effects. The route would then pass into cutting through Laverstock Down, and the point at which the cutting begins would be visible from two large areas of residential property in Bishopdown and Wyndham Park.

5.4.2.22 The route would emerge from cutting on the far side of a ridge from Salisbury, although it would cause **Moderate Adverse** visual effects to two outlying properties to the east and three to the west. The route would pass under Queen Manor Road and the railway to join the A36 at a new junction south of Southampton Road. A number of sections of new road would link this roundabout to the other roads locally. This is an area of mixed uses, some residential, some commercial/industrial, a sewage works and some small pastures and arable fields. One property would be demolished, and about 11 others would have **Slight Adverse** visual effects, including the Grade II listed Milford House, a retirement home. There would also be **Slight Adverse** visual effects from Milford Mill Bridge, a Grade I Listed Building and Scheduled Monument. Petersfinger Road and Southampton Road would be stopped up and a further 9 properties might find their immediate environment improved by the removal of traffic from the road outside their gates. Since the balance of the assessment cannot be clear for these 9 at present they have not been added to either the adverse or beneficial category.

Effects arising from Changes to other Parts of the Road System

5.4.2.23 The route would also provide traffic relief on the A36 in the Wylye valley (15-20%) and the A338 in the Bourne valley (15% approx). While there is a benefit in visual terms in this level of visual effect it does not produce a reduction which would give a road free from traffic for other than very short periods of time. A traffic flow of 3500 in a 12 hour period still equates to an average of 5 vehicles per minute, compared with 6 vehicles per minute for the Do-Minimum on the A338 (in 2008 assuming high growth). Neither would it allow any downgrading of highway standards for environmental reasons. The benefit is not therefore considered sufficient to produce a significant change in visual or landscape terms.

5.4.2.24 A similar argument applies to traffic reductions on Churchill Way in Salisbury. However, residents of about 17 properties in Southampton Road would benefit from a 40% reduction in traffic from 15900 to 9800 vehicles in a 12 hour period (in 2008 assuming high growth). This equates to 22 vehicles per minute, average reduced to 13 vehicles per minute, or from a pretty much constant flow to one with gaps. This has been assessed as a **Slight Beneficial** visual effect.

5.4.2.25 Traffic increases on the A360 north of Longbarrow Crossroads would partly offset the benefits felt at the Longbarrow (Site 26) itself from removal of the A303. Similarly, increases in the traffic on Countess Road North would offset benefits south of Countess Farm. These effects have been taken into account in the assessments given. Traffic on the A3028 at Durrington and Bulford would also increase, a **Slight Adverse** visual effect for about 150 residential properties, two public houses, a school, a church, two chapels and other community facilities. The centre of Bulford is also a Conservation Area containing a number of Listed Buildings.

5.4.2.26 Residents of about 100 properties on Countess Road would suffer **Slight Adverse** visual effects from the increased traffic flows. Adverse visual effects at Lord's Walk and for residents of Ratfyn Road arising from the grade separation of Countess Roundabout with the Published Scheme would not occur with the Parker Route, (**Neutral**) and although there would be slight benefits for the same reason for residents of Countess Road North these are taken into account in the overall assessment made above.

5.4.2.27 The greatest change in traffic flows would most likely be on the Packway. The character of this road is a lightly trafficked semi rural settlement. The flows with the route operational would increase substantially, turning it from a place where for most of the time there are no cars in view to somewhere where for large parts of the day a more or less continuous stream of vehicles would be passing. The extent of visual and townscape effects would be dependent on the engineering changes needed to permit this level of traffic, but has been assessed as **Moderate Adverse** on the information available at present. About 60 residential properties and community facilities including a public house, shops, sports pitches, officer's mess and a church would be affected. The townscape quality of the Military Settlement / Development has been assessed as being Very Low so the changes to the townscape would have a less significant effect than would be the case in a higher quality landscape or townscape.

5.4.3 Mitigation

5.4.3.1 The mitigation strategy is as that described in Section 6.4 of the Environmental Statement for the Published Scheme. This can be summarised as:

- Detail design to avoid or reduce the direct impacts on important features
- Remodelling the ground near the route to blend it into the landform
- Strategic planting design
- Compensation in the form of new areas of woodlands

5.4.3.2 In general what is shown in **Figure 2.1 – 2.7** in terms of landscape mitigation, is an outline scheme only based on a preliminary review of the landscape and without the benefit of full visual impact assessment. Areas shown on these drawings could be subject to amendment locally, but they are intended to give a general idea of the scale of work that would be required.

5.4.4 Summary

5.4.4.1 To conclude, the Parker Route would have exactly the same effects as the Published Scheme in the Stonehenge Monument Immediate Landscape Setting. In addition, it would have significant landscape and visual benefits for the outer areas of the WHS, removing the road and traffic from Longbarrow Crossroads to Countess Roundabout. It would also have benefits for properties and sites north of Winterbourne Stoke. Against this must be set its adverse visual effect on a much higher number of residential properties, on tranquil high quality landscape, and on sites and monuments outside the World Heritage Site, in particular on Old Sarum, resulting from both its

greater length and substantial increases in traffic on a number of local roads. The Eastern Link, in particular, would be close to residential areas and schools and difficult to mitigate adequately. Because of the international sensitivity of the WHS, the advantages there weigh more heavily than the disadvantages elsewhere, but even with that weighting taken into account the judgement is that the route does not offer an overall benefit in landscape and visual terms. In addition it does not offer a significant reduction in traffic on the A36 in the Wylye Valley and the A338 in the Bourne Valley for this to give a benefit in landscape and visual terms. Overall this impact is assessed as **minor adverse**. A summary of the visual effects on residential property and Sites and Monuments is included **Tables 5.2 and 5.3.**

Table 5.2: Visual Effects on Residential Property

	Substantial Adverse	Moderate Adverse	Slight Adverse	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Residential Property Main Line	12	15	87	0	0	0
Residential Property Link	3	59	98	0	0	0
Residential Property Other Roads	0	60	250	19	13	0
Residential Property Unchanged from Published Scheme	0	0	0	26	10	0
Total	15	134	435	45	23	0

Table 5.3: Visual Effects on Sites and Monuments

Substantial Adverse	Moderate Adverse	Slight Adverse	No Change	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Avon Farm Avon Farm Barn North Hill Down barrows Old Sarum Scheduled byway	Winterbourne Stoke Church Newton Barrow Manor House Stratford sub Castle	Barrows east of Camp Cottages Down Barn Milford House Milford Bridge Bulford Conservation Area Countess Road Tollhouse	Site 26 Longbarrow Parsonage Down The Coniger Foredown Enclosure Countess Farm Lord's Walk	Amesbury Abbey Park	Site 26 northern barrows Site 32 long barrow	Vespasian's Camp Nile Clumps Sites 39, 41 42 Normanton Down Group western end

This table omits all sites and monuments where the effect is the same as the Published Scheme such as at Stonehenge

5.5 Nature Conservation and Biodiversity

5.5.1 Sources of Information

5.5.1.1 An ecological study of the route was carried out by means of an extensive desk study supplemented by a one-day site visit. Ecologists carried out a walkover survey of the site on September 25th, 2003. This was conducted from public rights of way. An area of 500m either side of the route alignment was scan-surveyed during the site visit.

5.5.1.2 Statutory and non-statutory bodies, in addition to local ecological interest groups, were contacted in order to obtain information on ecological resources in the study area. Site designations within a search area of 2km either side of the route were identified. A larger search area was adopted for mobile organisms, such as birds. A summary of the organisations contacted, the information requested and the size of the various search areas is shown in **Appendix B**.

5.5.1.3 The primary source of information on the parts of the proposals relating to the treatment of the existing A303 and A344 was the published Environmental Statement for the Stonehenge A303 Improvement Published Scheme and all associated documentation.

5.5.2 Baseline Conditions

General

5.5.2.1 Ecological constraints are presented in **Figure 6.1.** The main site designations present within 2km of the proposed scheme are the River Avon candidate Special Area of Conservation (cSAC) and Salisbury Plain cSAC. A total of fifteen Sites of Special Scientific Interest (SSSI) and over 20 Sites of Nature Conservation Importance (SNCI), some of which form components of the cSACs, are also found within the study area. A number of areas of unimproved chalk grassland (**Medium** value) and broad-leaved woodland (**Lower** value) also occur within the route corridor. There are no registered areas of Ancient Woodland.

5.5.2.2 The route passes through a predominantly agricultural landscape, with a succession of villages. This landscape has a number of features of interest for wildlife, such as a network of hedgerows which provide linear habitats (**Lower** value), bare ground for ground nesting birds (including Stone Curlews), buildings for roosting bats and nesting birds. Barn Owls occur throughout the search area. Road verges and field boundaries offer foraging habitat, and mature trees and farm buildings provide potential nesting sites.

5.5.2.3 Salisbury Plain is a cSAC comprised of three component SSSIs: Parsonage Down, Porton Down and Salisbury Plain. Two of these, Parsonage Down and Salisbury Plain, lie within the study area. Salisbury Plain cSAC represents the largest expanse of unimproved chalk downland in northwest Europe. It supports a diverse and important range of flora and fauna and is of international importance (**Very High** value).

5.5.2.4 The River Avon cSAC is the most diverse chalk river in Britain and includes the SSSIs of the River Till, Lower Woodford Water Meadows, Janes' Mill, Porton Meadows and River Avon system. It is designated for the importance of its component habitats in European terms and for the following species; Sea Lamprey, Brook Lamprey, Atlantic Salmon, Bullhead and Desmoulin's Whorl Snail. Otters are also known to use the River Avon.

5.5.2.5 Stone Curlews are deterred by vehicle lights at distances of up to 2 km of a road. It should be noted that approximately 50% of the route lies more than 500 m from an existing major road.

5.5.2.6 In addition to the River Avon, the route would cross the Rivers Till and Bourne. These are winterbournes in the upper reaches where the flow is ephemeral, although the crossing points would be downstream of the average position of the perennial heads.

A303 Re-alignment - Western Tie-in to A360 Junction

5.5.2.7 The following SSSIs occur along this section of the route: Parsonage Down (species-rich calcareous grassland), Yarnbury Castle (species-rich calcareous grassland), Steeple Langford Down (species-rich calcareous grassland) and the River Till (with records of Bullhead, Desmoulin's Whorl Snail, Atlantic Salmon and Otter). The River Till also supports Water Vole in localised areas and supports invertebrate assemblages of **High** value in its upper reaches.

5.5.2.8 This part of the route crosses a number of well-established hedgelines connecting patches of woodland, providing good bat habitat and linear commuting routes with a number of mature trees providing roost potential. Several bat records exist along the River Till corridor, just to the south of the study area, confirming its status as a useful corridor for bat feeding and commuting. Some of these crossings may well be of **High** value. There are substantial colonies of Pipistrelles (*Pipistrellus* spp.) in village buildings, together with Brown Long-eared (*Plecotus auritus*) and Serotine (*Eptesicus serotinus*) bats. These should be valued as regionally important assemblages but with some potential for substitution (**Medium value**). Breeding Stone Curlews are known to occur within the 500m corridor of the route in this section. This section of the route is also likely to be at least of **Lower** value to other birds. Some 50% of breeding habitat is more than 500m from the nearest major road (A360) so may well be of higher value.

5.5.2.9 No non-statutory sites (Sites of Nature Conservation Importance) are directly impacted. One area of deciduous/mixed woodland would be traversed by the proposed route.

A303 Re-alignment – A360 Junction to A345 Junction

5.5.2.10 The River Avon System SSSI would be crossed by the route on a viaduct just north-west of old Sarum, spanning major and minor channels. This section of the Avon valley is wide and also contains important breeding areas for Snipe, Redshank and Lapwing. Such areas are probably of at least County (**Medium**) value. The River Avon and Woodford valley provides habitats for a number of bat species. Lower Woodford Water Meadows SSSIs lies more than 600 m from this section of the route.

5.5.2.11 Historic records suggest the presence of UK priority BAP (Biodiversity Action Plan) species, in scattered sites within 2 km of the route, including Marsh Fritillary (*Eurodryas aurinia*), Silver-spotted Skipper (*Hesperia comma*) and Adonis Blue (*Lysandra bellargus*) butterflies. These are mobile species and some rely on small pockets of breeding adults throughout the wider area (known as meta-populations).

5.5.2.12 There are four sites within 500 m of the route with non-statutory designation for nature conservation as well as several areas of woodland. One area of unimproved chalk grassland would be immediately adjacent to the route, east of the River Avon.

A303 Re-alignment – A345 Junction to Eastern Tie-in

5.5.2.13 Porton Meadows SSSI (botanically rich, unimproved grassland) and the River Bourne component of the River Avon System SSSI (both part of the River Avon cSAC) occur within 2km of the route. The route lies within 1 km or so of Porton Meadows at its closest point. At the northern end of the section, part of Salisbury Plain SSSI (component of Salisbury Plain cSAC) lies within 1 km of the route. No SNCIs would be directly affected, although several occur within 500m.

5.5.2.14 A number of birds of high conservation concern have been reported from Boscombe Down airfield. These include Linnet, Yellowhammer and Grey Partridge. Bat records exist for Boscombe Down airfield (Pipistrelle and Brown Long-eared) and where the route would run closest to the River Bourne.

5.5.2.15 A number of good linear features, which could provide suitable feeding and commuting habitat for bats, are present, most notably in the central and north-eastern areas of this section. Some of these form linkages between small patches of woodland. A number of diverse road verges also occur in this section. Stone Curlews are known to be breeding near this section of the route.

Eastern link – A303 Junction to A30 Junction

5.5.2.16 The River Bourne component of the River Avon System SSSI would be crossed by a viaduct just north of Salisbury in this section of the route. Bracknall Croft SSSI and Figsbury Ring SSSI (species rich calcareous grasslands) lie north-east of the proposed new A30 junction but too far from the route to be of particular relevance.

Eastern link – A30 Junction to A36 Junction

5.5.2.17 Cockey Down SSSI (species rich calcareous grassland) and associated SNCI lies almost adjacent to the route, which would also transect an area of unimproved chalk grassland. The route runs parallel to and between 300 m and 800 m east of the River Bourne component of the River Avon SSSI.

5.5.2.18 There are also several small patches of woodland and a number of well-established hedgerows within 500 m of the route in this section.

5.5.3 Assessment of Impacts and Effects

Assessment Methods

5.5.3.1 The terms used to assign values to ecological resources has followed the modified Methodology for Multi-Modal Studies (GOMMMS) as in the case of the Published Scheme.

5.5.3.2 Information on individual species along most of the route is limited in light of the fact that baseline surveys for individual species or groups of species (e.g. Badgers, bats, birds etc) have not been carried out.

5.5.3.3 Impacts on species can and have been assessed in relation to the parts of the scheme that lie within the area surveyed for the A303 Stonehenge Improvement Published Scheme.

5.5.3.4 *Overall net* effects of the route proposals on species have *only been assessed* when reasonable estimates of likely resource distribution can be attempted.

5.5.3.5 The assessment of the significance of impacts has been carried out assuming that appropriate mitigation would be successfully implemented. Where mitigation to achieve negligible residual effect could be very extensive and costly, this has been indicated.

Effects of reclassifying sections of the existing A303 and A344

5.5.3.6 The adverse effects of the existing A303 would be removed through Stonehenge World Heritage Site. Similarly, adverse effects of the A344 past Stonehenge would also be removed. These enhancements would affect the same receptors as in the case of the Published Scheme, and in similar ways to those predicted to result from the proposed 2.1km tunnel in that scheme. Enhancements would, therefore, in all cases be more extensive but not necessarily sufficiently so as to change the resulting category of beneficial significance.

5.5.3.7 Substantial reductions in traffic volume would occur between the western tie-in and the Longbarrow Roundabout and between the Countess Roundabout and the Eastern tie-in (see Section 6.3.1.5). These traffic reductions would result in improvements in the quality of surrounding habitat for several hundred metres from the road for breeding birds through reduced noise levels. These traffic reductions would also result in some reduction of risk of pollution and reduced traffic emissions to the River Till SSSI at Winterbourne Stoke and the River Avon System SSSI at Amesbury. Any benefit would be difficult to quantify. Benefits in terms of noise reduction to riverine birds and changed collision risk would also be marginal.

5.5.3.8 Between Amesbury and Beacon Hill, benefit would result to the far south-eastern arm of Salisbury Plain cSAC (and Salisbury Plain SSSI) in terms of reduced noise and local pollution.

5.5.3.9 The overall effects on ecological resources along the existing A303 are estimated below in **Table 5.4a** (note that for parts of the distance (west of Amesbury) detailed information on these resources has not been obtained for the present assessment).

Table 5.4a: Predicted Effects on Ecological Resources Along the Existing A303

RESOURCE	SIGNIFICANCE OF PREDICTED PERMANENT EFFECT
River Avon cSAC	**Neutral**
River Till SSSI	Some benefit but broadly **Neutral**
River Avon System SSSI	Some benefit but broadly **Neutral**
River habitats, riverine vegetation, aquatic macroinvertebrates and fish locally	Broadly **Neutral**
Desmoulin's Whorl Snail	**Neutral**
Riverine birds	**Slight Beneficial**
SNCIs	**Slight Beneficial**
Lichens on Stonehenge	**Neutral** to **Slight Beneficial**
Bats	**Slight** to **Moderate Beneficial**
Badgers	**Slight Beneficial**
Stone Curlews	**Neutral** but with significant scope for **Large Beneficial** (assuming appropriate management within the WHS)
Quails	**Slight** to **Moderate Beneficial**
Barn Owls	**Slight** to **Moderate Beneficial**
Other Birds	**Moderate Beneficial**
Amphibians including Great Crested Newt	**Neutral**
Reptiles	**Slight Beneficial**
Native Species-Rich Hedgerows	**Slight Beneficial**
Brown Hares	**Slight Beneficial**
Deer	**Slight Beneficial**
Terrestrial Macroinvertebrates	**Slight** to **Moderate Beneficial**
Valued Grasslands	**Slight Beneficial**
Uncommon Arable Weeds	**Neutral**

Effects of the route

5.5.3.10 Due to lack of detailed information a notable degree of uncertainty attaches to predictions of the specific predicted (mitigated) effects of the new roads in the proposals. Two new crossings of the River Avon SSSI would bring permanent local adverse effects due to shading, road spray and disturbance to riverine birds. There would also be increased risk of a pollution incident (though full interception would be provided and hence this disbenefit cannot be readily quantified).

5.5.3.11 Two SNCIs would receive direct impact within the River Avon valley, but no data on the nature of these sites has been collated for the present report.

5.5.3.12 Over the route there would appear to be notable potential for adverse effects on Stone Curlews (or the potential of earmarked land to be enhanced for them) in several locations. Effects on this **High** value resource might be of Intermediate Adverse magnitude and hence the effect could be of **Large Adverse** significance

5.5.3.13 **Table 5.4b** (below) provides initial and provisional predictions of the significance of effects of the new roads on these and other ecological resources discounting any benefits set out in relation to the existing A303 (above).

Table 5.4b: Predicted Effects of the route - Fully Mitigated (but excluding consideration of proposals for Existing A303 component of scheme)

RESOURCE	SIGNIFICANCE OF PREDICTED PERMANENT EFFECT
River Avon cSAC	**Neutral**
River Till SSSI	Some disbenefit but broadly **Neutral**
River Avon System SSSI (two new crossings)	Some disbenefit but broadly **Neutral**
River habitats, riverine vegetation, aquatic macroinvertebrates and fish locally	**Slight Adverse**
Desmoulin's Whorl Snail	Unknown risk
Riverine birds	**Slight** to **Moderate Adverse**
Otters and Water Voles	**Neutral**
Lower Woodford Water Meadows SSSI	**Neutral**
Cockley Down SSSI	**Neutral**
Harnham Meadows SSSI	**Neutral**
Camp Down SSSI	**Neutral**
SNCIs	**Slight** to **Moderate Adverse**
Bats	**Neutral to Slight Adverse** (probably at high financial cost)
Badgers	**Slight Adverse** (probably at high financial cost)
Stone Curlews	**Large Adverse**
Quails	**Unknown** but almost certainly adverse
Barn Owls within 2km	**Moderate Adverse**
Other Birds	**Moderate Adverse**
Amphibians including Great Crested Newts	Unknown
Reptiles	**Slight Beneficial**
Native Species-Rich Hedgerows	Unknown
Brown Hares	**Slight Adverse**
Deer	**Slight Adverse**
Terrestrial Macroinvertebrates	Unknown (as adverse effects not known)
Valued Grasslands	**Slight** to **Moderate Beneficial**
Uncommon Arable Weeds	Unknown but likely to be possible to mitigate to **Neutral**

Overall Summary of Key Effects

5.5.3.14 The overall net results of the assessment are summarised in **Table 5.4c** (below).

Table 5.4c: Assessment of Biodiversity and Nature Conservation – Impacts and Effects of Fully Mitigated Scheme

Site Name	Description of resource	Value	Description of Impact	Magnitude of Net Impact	Significance of Net Effect
River Avon cSAC	A chalk river system of international importance as it supports habitat types and species which are rare or threatened in a European context.	Very High	Effects of three new crossings; on the Rivers Till, Avon (the main river channel and an adjoining limb) and Bourne. Local effects from shading of the river and introduction of new (but not readily quantifiable) risk of pollution from accident related spillage. Not significant in the context of population dynamics in the wider area. Some notable reduction in traffic on existing A303 crossings of Till and Avon - but benefits difficult to quantify.	Neutral	Neutral
River Till SSSI (component of River Avon cSAC)	A winterbourne chalk stream, supporting internationally and nationally important species of flora and fauna	High	Shading of riverine vegetation from viaducts and localised effects of road spray and new (unquantified) pollution risk at new crossings. Also greater disturbance to birds. Some reduction in such disturbance at crossing along existing A303.	Neutral	Neutral
River Avon SSSI (component of River Avon cSAC)	A rich and varied chalk stream with over 180 species of aquatic plant recorded, the most diverse fish faunas in Britain and a wide range of aquatic invertebrates	High	Two crossings proposed, north of Old Sarum (River Avon) and north–east Salisbury (River Bourne). Shading of riverine vegetation from viaduct and localised effects of road spray. Adverse effect on riverine birds would be locally of significance but probably not measurable in terms of the overall population dynamics in the wider SSSI. Some benefit due to reduced traffic load at existing crossing of River Avon, north of Amesbury.	Neutral	Neutral
River Habitats, riverine vegetation, aquatic macroinvertebrates and fish	Valued communities and species within designated rivers	Various, up to Very High	River Till and Avon System and for SSSIs but on a more locally assessed resource	Minor Negative	Slight Adverse
Desmoulin's Whorl Snail	Populations along river valleys	Up to Very High	Unknown	Unknown	Unknown
Riverine Birds	General assemblages on all rivers and in wider floodplain especially north of Old Sarum.	Lower to Medium	Riverine birds can be affected by roads at distances of several hundred metres. The proposed route will result in three new river crossings with associated habitat severance, visual disturbance and noise pollution. Traffic on the existing A303 though Winterbourne Stoke and over the Avon at Amesbury would be reduced.	Intermediate Adverse	Slight to Moderate Adverse
Lower Woodford Water Meadows SSSI (component of River Avon cSAC)	Includes an actively managed water meadow system, thus retaining the grassland community characteristic of this long established form of management (from around 1660). Important for breeding wetland passerines and waders.	High	Over 600m from the route. It is probably therefore too far away for significant effects on most species, including birds.	Neutral	Neutral

Site Name	Description of resource	Value	Description of Impact	Magnitude of Net Impact	Significance of Net Effect
Cockey Down SSSI	An area of botanically rich chalk grassland on a scarp of Upper Chalk, supporting rare invertebrates.	High	Lies very close to the route but probably too far to be affected notably by road spray.	Neutral	Neutral
Camp Down SSSI	Unimproved calcareous grassland	High	Nearest parts are some 200m from the scheme and hence adverse effects on the sward are highly unlikely.	Neutral	Neutral
East Harnham Meadows SSSI	An area of botanically rich, neutral grassland lying within the floodplain of the River Avon, formerly under water meadow management.	High	Lies already just south of the conurbation of Salisbury and over 500m from the nearest proposed road alterations in the proposal.	Neutral	Neutral
SNCIs	Several along route. Descriptions not obtained.	Medium	Direct impact on two SNCIs and very close approach to a third by new route. Reduction in impact on Stonehenge Down SNCI	Minor to Intermediate Adverse	Slight to Moderate Adverse
Lichens on Stonehenge	Extremely diverse and unusual community	Very High	Improved environment	Neutral to Minor Beneficial	Neutral to Slight Beneficial
Bats	The river valleys are valuable commuting and feeding habitats, with buildings in the villages providing roost sites. Many hedgerows along the scheme are known or potential commuting and feeding corridors.	Lower to High	Severance of flight lines and increase in risk of vehicle collision mortalities along route. Mitigation could be potentially achieved but probably at high cost. Reconnection of land through World Heritage Site could permit formation of new flight paths and reduced risk of road casualties.	Neutral (at high cost)	Neutral (at high cost)
Badgers	Distributed across the landscape	Lower?	Habitat severance, direct impact on setts and foraging areas, changed risk of road mortality	Neutral (at high cost)	Neutral (at high cost)
Stone Curlew	Known breeding sites of a nationally important ground nesting bird species within 2 km of proposed new route. Targetted management areas occur in the relevant vicinity of the route and existing A303.	High	Sensitive to light pollution from roads up to distances of 2 km. The closure of the existing A303 section within the World Heritage Site (and the proposed management) would have a positive impact that may out-weigh the negative impact of the proposed route which passes through less suitable Stone Curlew habitat, but the negative impact is much more assured.	Neutral	Neutral
Quail	Not near existing A303 but probably scattered throughout landscape	Medium	Disturbance, habitat severance and road mortality	Unknown	Unknown
Barn Owls within 2 km	A nationally important species for which suitable habitat noted throughout the area and a population of at least County value is likely to exist within 2km of the existing A303.	Medium	Barn Owls are particularly vulnerable to road-related mortality. The removal of the existing A303 would be a positive impact but an overall increase in new road bearing high-speed traffic is likely to result in more Barn Owl road mortality 'black-spots'. From work done on existing A303 data Parker Route could lead to a net introduction of around 30 potential 'black spots' for Barn Owls. With off-site enhancement, however, this effect could be	Intermediate Adverse (within 1 km) or Neutral to Minor to Intermediate Positive with	Moderate Adverse or Neutral to Slight/Moderate Beneficial with off-site

Site Name	Description of resource	Value	Description of Impact	Magnitude of Net Impact	Significance of Net Effect
			neutralised or reversed.	off-site enhancement.	enhancement.
Other Birds	An assemblage of species along the entire route, including birds of scrub and woodland edges, some of which are in decline. Over two thirds of the route, densities and breeding habitat quality currently unaffected by road noise.	Medium	Adverse impacts up to several hundred metres from the proposed route from increased noise and light pollution. Additional impacts from habitat severance, vehicle collision mortalities and direct loss of habitat. Reconnection of habitat through c. 6 km of World Heritage Site would permit enhancements of significant benefit in the longer term. However, the adverse effects are predicted to be more significant, because, for c. 50% of the 35 km new road, no major road currently exists within 500 m.	Minor to Intermediate Adverse	Slight to Moderate Adverse
Amphibians including Great Crested Newts	Population found in Till Valley, north of existing A303, but presence along new route unknown.	Unknown	Potential severance, direct habitat loss, direct mortality	Unknown	Unknown
Reptiles	Valued assemblages can occur on road verges	Lower	Habitat creation on wide verges in compensation for any loss	Minor Beneficial	Slight Beneficial
Species-rich Hedges	A number are likely to occur along proposed new route	Lower	Severance and direct loss. Replanting could mitigate in time except in the case of ancient hedges.	Unknown	Unknown
Brown Hares	Distributed widely through the landscape especially on arable land.	Lower	Severance, direct habitat loss and road mortality	Neutral	Neutral
Deer	Distributed through landscape	Lower	Severance, direct habitat loss and road mortality	Neutral	Neutral
Terrestrial Macroinvertebrates	Patchy distribution throughout landscape	Up to Medium	Unknown direct impacts on valued sites. Habitat creation on verges and in highway land in compensation for any loss	Unknown	Unknown
Valued Grasslands	Patchy distribution of small areas of species-rich grasslands over landscape	Up to Medium	Some direct impacts but habitat creation opportunities much greater	Minor to Intermediate Beneficial	Slight to Moderate Beneficial
Uncommon Arable Weeds	Patchy distribution of small areas along suitable field margins	Up to Medium	Can be direct loss, though new field margins should be similarly along new route and off-site agreements favourable to encourage arable communities	Neutral	Neutral

5.5.4 Mitigation

5.5.4.1 Mitigation measures for impacts and effects during construction and in the long term would be similar to those described in the documentation published in support of the Published A303 Stonehenge Improvement Scheme. A very detailed account of the types of construction methods and environmental controls that may be implemented at river crossings has been provided in the document entitled *Construction Methods Including Environmental Considerations* for those proposals.

5.5.4.2 It is likely that a notable number of artificial crossings for wildlife would need to be constructed (culverts, green bridges etc) at significant cost (e.g. several hundred thousand pounds for a narrow green bridge).

5.5.5 Summary

5.5.5.1 The route would introduce some 35km of new road into the Wiltshire landscape. At the same time it would remove traffic from some 6 km of the A303 within the Stonehenge World Heritage Site where the National Trust is undertaking significant habitat enhancements over time. Accordingly the proposals would have a variety of notable positive and negative effects on ecological resources, the overall balance of which has been subject to initial estimate here.

5.5.5.2 Although three crossings of European sites (River Avon cSAC) and SSSIs would be required, these could be achieved with fairly low adverse effects, if at considerable cost. Overall any net impacts on sites would probably be of **Neutral** significance in the longer term, though effects of **Slight Adverse** significance would result on some riverine resources locally. Net effects on local assemblages of riverine and wetland birds of up to **Slight to Moderate Adverse** significance would probably also occur.

5.5.5.3 Two SNCIs would suffer direct impact for the scheme as shown. These effects would be at least of permanent **Slight Adverse** significance.

5.5.5.4 Barn Owls could suffer net effects of **Moderate Adverse** significance without substantial off-site enhancements for this species (such enhancements could easily be possible resulting in residual effects of **Slight to Moderate Beneficial** significance).

5.5.5.5 The net effect on other birds due to increased noise levels over such a long route would probably outweigh the benefits due to traffic removal/reduction along the existing A303 and result in net effects of **Slight to Moderate Adverse** significance.

5.5.5.6 Habitat creation along wide new road verges could well result in effects of **Slight Beneficial** significance for reptiles and **Slight to Moderate Beneficial** significance for valued grasslands, though the potential for adverse effects on existing grasslands would need to be better quantified. At least one known substantial area of **Medium** value grassland would suffer direct impact.

5.5.5.7 Other net effects of significance could also occur, but further studies would be required to characterise them.

5.5.5.8 Overall, expensive mitigation would almost certainly be required to prevent residual adverse effects of notable significance on bats, Badgers and Barn Owls (and lesser significance for other fauna).

5.5.5.9 Assuming implementation of such high-cost mitigation, the scheme as a whole would probably still result in net slight loss of overall ecological value in the area despite the significant benefits predicted for the World Heritage site and its near surrounds and the habitat creation possibilities in new highway estate. This would be because of the sheer length of new major road in areas of countryside at least 500 m away from the adverse effects of any such highway at present.

5.6 Water

5.6.1 Sources of Information

5.6.1.1 Data for the interpretation of the groundwater and surface water flow regime have been obtained from the following sources:

- EA records (i.e. groundwater levels and abstractions, water quality and river flows)
- Information gathered for the preparation of the Environmental Statement for the Published Scheme which includes EA records
- The Hydrogeological Map of Hampshire and the Isle of Wight, Institute of Geological Sciences, 1979 (which covers most of the Study area).

5.6.2 Baseline Conditions

Geology

5.6.2.1 The geology of the study area is dominated by the chalk which forms a major escarpment feature in the region. The scarp slope (some 12 –13 km to the north of the Study area) faces northwards above the Vale of Pewsey. The dip slope declines gradually in a southerly direction and is crossed by the existing A303 on an east-west alignment. The route also transverses the dip slope of the chalk escarpment to the south of the existing A303.

5.6.2.2 The superficial deposits overlying the chalk are of four types:

- clay-with-flints forming isolated hill cappings, notably between the Avon and Till valleys
- plateau gravels also forming isolated hill cappings in the vicinity of Salisbury
- valley gravels in the Avon, Till and Bourne valleys, and the larger dry valleys
- recent alluvial deposits incised into the valley gravels along the present day courses of the Avon, Till and Bourne

Hydrology and Hydrogeology

5.6.2.3 Groundwater and surface water present in the study area are very closely connected – groundwater issuing from the chalk aquifer is the main component of flow in the three rivers: the Avon, Till and Bourne.

5.6.2.4 Over the outcrop area of the chalk, effective rainfall (rainfall minus evapotranspiration) infiltrates the chalk to provide recharge to the aquifer, with most recharge occurring seasonally in winter months. Due to the permeable nature of the chalk, direct run-off of rainfall is negligible. Groundwater levels respond to recharge with maximum levels usually reached in March/April, receding to a minimum level by September/October.

5.6.2.5 Based on groundwater level data, the prevailing direction of groundwater flow is predominantly southerly, although this is locally altered at the river valleys by the natural discharge (baseflow) to each of the rivers. Boreholes in the Study area with groundwater level data are listed in **Appendix C1**. Major north-south groundwater divides (coincident with topographic divides) are located:

- between the Till/Wylye and the Avon
- between the Avon and the Bourne, more or less along the course of the A345 Amesbury to Salisbury road

These two divides and general groundwater flow directions are shown on **Figure 7.1**. Groundwater flow is preferentially beneath dry valleys where the permeability of the chalk aquifer is much greater compared to that below topographic divides.

5.6.2.6 The River Avon is perennial and flows on a southerly course. The existing A303 crosses the River Avon just upstream of Amesbury. The average daily flow over the period 1965 to 2001 at Amesbury gauging station is 3.4 m^3/s; the typical seasonal minimum flow is about 1.2 m^3/s, and a typical winter maximum flow is about 11.6 m^3/s.

5.6.2.7 The River Till is a tributary of the River Wylye, which joins the River Nadder at Wilton, which (in turn) joins the Avon at Salisbury. The River Till is a winterbourne. The perennial head is formed by springs issuing just upstream of Berwick St James, although in dry years no-flow conditions can prevail down to the confluence with the Wylye at Stapleford. The source of the Till migrates over the ephemeral section, with groundwater discharge to the river course controlled by the seasonal fluctuations in the water table in the chalk aquifer. Under typical seasonal maximum water table conditions, the source is at Orcheston, just upstream of Shrewton. In very wet winters, the source can migrate as far upstream as Tilshead. There are no permanent gauging stations on the Till.

5.6.2.8 The River Bourne is a winterbourne over most of its length down to Winterbourne Gunner, some 6km upstream of the confluence with the Avon just downstream of Salisbury. There is one permanent gauging station at Laverstock on the perennial reach located about 1.5km upstream of the Avon confluence. The average flow here is about 0.7m^3/s. The seasonal minimum flow is typically 0.2 m^3/s, rising to a seasonal maximum flow in the range 1.2 to 1.7m^3/s.

Water Supply Abstractions

5.6.2.9 There are three categories of groundwater abstraction in the study area:

- Public water supply abstractions licensed by the EA
- Private abstractions licensed by the EA
- License-exempt abstractions, including Ministry of Defence (MoD) abstractions

5.6.2.10 There are five groundwater sources for public water supply, their locations are shown on **Figure 7.1**.

5.6.2.11 The non-statutory guidance provided in the EA's policy for groundwater protection (Policy and Practice for the Protection of Groundwater, National Rivers Authority (NRA, now EA) 1992, revised 1998) provides for the control of activities (including discharge of road drainage) through the designation of groundwater Source Protection Zones (SPZs) around existing groundwater sources. Each source has an inner (Zone I), outer (Zone II) and source (Zone III) protection zone. An additional Zone of Interest (outside the groundwater catchment) may be defined if potentially polluting activities there could impinge upon the aquifer and the source. The policy states that discharge of road drainage is not permitted in Zone I, and there is a presumption against it in Zone II. For Zone III, discharge may be acceptable subject to investigation and provision of precautionary measures in drainage design. The SPZs for the five sources in the study area are shown on **Figure 7.1**. The source closest to the route is Dean Farm at a distance of c.150m.

5.6.2.12 Records of private groundwater abstractions within about 1km of the route have been obtained from the EA; details are given in **Appendix C2** and locations are shown on **Figure 7.1**. The majority are for general agriculture and domestic purposes.

5.6.2.13 The MoD operate groundwater sources at Winterbourne Gunner and Porton Down (just to the east of the River Bourne), and at Boscombe Down just south east of Amesbury. The exact locations are not known.

5.6.2.14 There may be other groundwater sources exempt from licensing due to the low quantities involved. Such sources would need to be identified as part any further assessment of the route by contacting Salisbury District Council (who may have records) and by a 'door-knocking' survey covering properties close to the route alignment.

5.6.2.15 The EA has reported that there are no licensed surface water abstractions between 2km upstream and 5km downstream of any of the three river crossings on the route.

Flood Regimes

5.6.2.16 The route would include viaduct crossings of each of the three rivers in the study area.

5.6.2.17 The River Avon and its floodplain would be crossed by the A303, about 5 km north of Salisbury. The viaduct would be about 400m long and 13-18m high, spanning the entire floodplain.

5.6.2.18 As with the Published Scheme, the route would also cross the River Till, although the crossing would be further south down the valley, approximately 500m north of Berwick St. James. The viaduct would be 200m long and 6m high, ie similar dimensions to the crossing for the Published Scheme.

5.6.2.19 The River Bourne and its floodplain would be crossed by the Eastern Link on a 300m long viaduct, approximately 250m upstream of the existing railway bridge, and 350m upstream of the A30 crossing .

5.6.2.20 Regarding flood regimes in rivers generally, the three main mechanisms are: flooding from storm runoff, flooding from high groundwater levels and snow-melt flooding. There can also be combinations of the three mechanisms. In permeable catchments, such as chalk, a characteristic of all three rivers, groundwater flooding from prolonged and heavy rainfall constitutes the main flood threat.

5.6.2.21 In the case of groundwater flooding, rainfall soaks readily into the ground over much of the catchment, first restoring any soil moisture deficit and any surplus then moving down towards the groundwater table. As the water table is topped up by successive storms and rises, it increasingly intersects the ground surface in the form of springs, which provide the baseflow for streams and rivers. This mechanism buffers the effects of storm events on river systems, and it may take months for storm rainfall to appear as baseflow in rivers. This buffering effect also means that flood peaks for permeable catchments tend to be very much smaller than for relatively impermeable catchments of a similar size, and they tend to last for a longer period, sometimes spanning months.

5.6.2.22 When groundwater levels are exceptionally high, flooding may also occur in what would normally be dry valleys. In many parts of the chalk of Southern England, such conditions occurred in the winter of 2000/2001.

5.6.2.23 The EA publishes maps of the Indicative Floodplain Extent for the 1:100 year event for each of the three rivers. These are included in **Appendix C3.** From these maps, the widths of the 100 year floodplain at the route crossing points are shown on **Table 5.5.** The proposed viaducts would span the full flood plain widths at each location and are likely to satisfy Environment Agency requirements for development in a flood plain.

Table 5.5: 100 year floodplain widths for the rivers crossed by the Parker Route

River	Crossing Location	NGR	Floodplain Width
Avon	N of Stratford Bridge	SU 126 335	280m
Till	N of Berwick St James	SU 076 399	160m
Bourne	E of Bishopdown Farm	SU 161 325	240m

Water Quality

5.6.2.24 Both groundwater quality (in the chalk aquifer) and surface water quality (in the Avon, Till and Bourne) are extremely good.

5.6.2.25 The Avon, Till and Bourne are all high quality rivers with important fisheries and significant diversity of aquatic flora and fauna. The entire River Avon system has candidate Special Area of Conservation (cSAC) status under the European Union Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (EEC, 1992)), as implemented in Great Britain by the Conservation (Natural Habitats) Regulations 1994, ("the Habitats Directive"). The Rivers Avon and Till are also designated Sites of Special Scientific Interest (SSSI) and the Bourne valley is designated an Area of High Ecological Value (AHEV). The cSAC status is based on Qualifying Interests (habitat and fish populations) which are fundamentally dependant on the maintenance of the high quality waters in the rivers system. In addition, each of the rivers are assigned to (and meet) the highest river ecosystem class (RE1) under the EA's River Quality Objective (RQO) classification scheme (see **Appendix C4**, **Table C1**). The RE1 class is described as "a water of very good quality suitable for all fish species."

5.6.2.26 The EA also uses the General Quality Assessment (GQA) scheme to describe river water quality in terms of chemistry, biology, nutrient loading and aesthetic qualities, although classification of this latter quality is not widespread. As with the RQOs, these are applied to particular stretches of river. A summary of the GQA classification for each river is provided in **Appendix C4**, **Table C2**. The EA has also supplied additional water quality data for rivers in the study area as provided in **Appendix C4, Table C3**.

5.6.2.27 Groundwater quality data are available from only two EA monitoring boreholes, although additional groundwater monitoring has been undertaken for the Published Scheme, as presented in the ES. Water Quality Objectives (WQOs) for groundwater have yet to be established in this country, but will be in due course under the EC Water Framework Directive.

Discharge Consents

5.6.2.28 There are numerous consented discharges both to the chalk and rivers in the study area. These are listed in **Appendix C5**

5.6.3 Assessment of Impacts and Effects

General Construction Activities

5.6.3.1 Construction activities associated with the route would have the potential to cause contamination of the Rivers Avon, Till and Bourne, and groundwater in the chalk aquifer. The risks would primarily be from two sources:

- Silt-laden run-off from haul roads, stockpiles and newly landscaped areas entering the three rivers, particularly from works associated with the viaduct crossings
- Accidental spillage or leakage of hazardous materials, oils and fuels into the rivers and/or groundwater

5.6.3.2 Consequently, it would be essential that comprehensive mitigation measures were put in place to minimise any such risks to the water environment.

Control of Groundwater in Cuttings

5.6.3.3 Details of the main cutting along the route (from west to east) are shown in **Table 5.6**:

Table 5.6: Location of main cuttings

Chainage	Location	Length (m)	Maximum Depth (m)
A303 Realignment			
10300 to 11700	West of the River Avon	1400	13.8
12300 to 13200	East of the River Avon	900	16.5
19900 to 20400	South of Dry Valley near Idmiston	500	9.0
21100 to 21500	North of Dry Valley near Idmiston	400	9.0
Eastern Link			
2000 to 2500	West of the River Bourne	500	7.2

5.6.3.4 The vertical profiles of these cuttings have been compared to available groundwater level data to assess whether excavation would intercept the water table in the chalk aquifer, so necessitating some means of groundwater control.

5.6.3.5 The cutting west of the Avon, appears to be well above average water table, ie the minimum differential is about 30m at the eastern end, so no groundwater should be encountered.

5.6.3.6 For the cutting east of the Avon, data from the Long hedge Farm Cottage borehole (see **Figure 7.1**) indicates that groundwater could enter the cutting when levels were particularly high, ie winter 2000/2001. Under such conditions, control measures would be needed, for example

simple drainage trenches, or a pumped dewatering system, depending on the degree of control needed. This cutting, however, is located in SPZ II for the Dean's Farm source (see **Figure 7.2**), indeed the cutting is just 100-200 m from the source. Drainage operations could adversely affect the yield of this source. In addition, such operations could also affect the existing groundwater flow regime to the Avon.

5.6.3.7 Consequently, further investigation would be required to determine whether or not groundwater control is likely to be needed, and if so what the likely effects would be.

5.6.3.8 Both cuttings in the vicinity of the dry valley crossing near Idmiston appear to be well above average water table, ie about 25m, so no groundwater should be encountered.

5.6.3.9 Although the average water table appears to be below the cutting west of the River Bourne, peak levels could rise into the cutting. Again, further investigation would be required.

Groundwater Control at Viaduct Piers

5.6.3.10 It is assumed that viaduct pier construction at all three river crossings would be the same (or similar) to that planned for the Published Scheme.

5.6.3.11 Limited dewatering would only be required during the emplacement of pile caps within cofferdams. This operation is unlikely to have any significant effect on the overall groundwater flow regime to any of the three rivers, if appropriate mitigation was carried out.

Surface Water Control on Floodplains

5.6.3.12 Both haul roads and temporary bridges would be required as part of viaduct construction across each of the three river floodplains. Whilst in place, these structures could adversely affect existing flood flow regimes and so lead to increased flood risk. Similarly, any temporary diversion of river flow to facilitate the works could have an adverse effect on the flow regimes.

5.6.3.13 Consequently, further evaluation is needed to quantify such effects on terms of: (i) any loss of floodplain storage, and (ii) any rise in flood level upstream of a given structure on the floodplain. Analysis would be carried out (as for the Published Scheme) using a river model to predict changes. The results of this modelling work would demonstrate whether or not mitigation would be required.

Viaduct Pier Construction : Effect on Water Quality

5.6.3.14 Viaduct piers would be founded on concrete piles emplaced in the chalk. During the setting process, the concrete mix could migrate and result in groundwater contamination. However, given that the setting process is very rapid, any migration would be extremely localised and it would be very unlikely that groundwater quality (and hence river water quality) would be significantly affected. Nevertheless, this issue would need further consultation with the EA to determine if any mitigation was required.

5.6.3.15 Groundwater would be displaced during the installation of the concrete piles. This groundwater could be contaminated from constituents of the concrete mix and would therefore need careful control and disposal to prevent any adverse effect on the water environment.

Effect of Cuttings on Groundwater Flow

5.6.3.16 As identified in earlier, further investigation is needed to determine whether the two cuttings along the route (east of the Avon and west of the Bourne) would intercept the water table in the chalk aquifer. Assuming that they would for the purposes of this assessment, the drainage system installed within the cuttings would need to be sized in order to deal with groundwater ingress. Such ingress may be permanent but vary in amount with the seasonal fluctuation in groundwater level, or it may be seasonally intermittent, ie only occurring when groundwater levels rise above ground surface in a cutting.

5.6.3.17 The groundwater collected in the drainage system would need to be discharged to soakaway sites, possibly to those identified incorporated into the areas identified for treatment of highway run-off described below. Full account would need to be taken regarding the potential implications of any changes to the existing groundwater flow regime in terms of existing sources – notably Dean's Farm. In addition, the groundwater flow regime to the River Avon could be affected, ie higher river flows in winter and lower flow in summer, or vice versa, depending on the location of discharge sites.

5.6.3.18 The results from further investigation, together with full consultation with EA and English Nature (EN) would help determine what (if any) mitigation was required for safeguarding groundwater sources and/or for preventing any undue change to the groundwater/river flow regime.

Effects of Viaduct Piers on River Flow

5.6.3.19 Viaduct piers located on the three river floodplains could impede flow to the extent that the flood risks upstream of the crossing points were increased. Again, further assessment of this issue would be required. The results of this assessment would be used to determine whether any measures were required to mitigate increased flood risk. As with other water issues, agreement in the EA would be needed on analysis methodology, analysis results and any mitigation.

Effects of Viaduct Piers on Groundwater Flow

5.6.3.20 The piles and foundations for the viaduct piers in each of the three valleys would probably penetrate the saturated zone of the chalk aquifer, and therefore may impede groundwater flow to the rivers.

5.6.3.21 Quantitative assessment can only be carried out knowing the number of piers involved in each case – and this would only be finalised during the design process. Nevertheless, the effect is likely to be negligible – groundwater flow would only be modified slightly, ie minor diversion around the pier structures on its natural path to the rivers. Thus, no mitigation is warranted.

Road Drainage

5.6.3.22 In terms of the existing surface water flow regime, uncontrolled road drainage, notably during flash floods, could exacerbate existing flooding problems in each of the three river valleys. In terms of water quality, uncontrolled road drainage could result in contamination of rivers and groundwater from two main sources:

- routine runoff containing sediments, hydrocarbon and metals
- accidental spillages of hazardous materials

5.6.3.23 As with any road scheme, an adequate system for the control of runoff and spillage would need to be provided as an integral part of the route. The system would need to be designed and agreed in full consultation with EA and EN. With reference to the Published Scheme, EA's and EN's preference is for discharge of drainage to soakaways on the chalk – not directly to rivers due to their high ecological value.

5.6.3.24 Nineteen Drainage Treatment Areas (DTAs) have been designated for the route. Locations of these are shown on **Figure 7.1**.

5.6.3.25 To minimise any adverse effect on the three flow regimes, the DTAs would be sized in accordance with EA's criteria.

5.6.3.26 Analysis has been carried out in accordance with methods given in DMRB Volume 11, Section 3, Part 10, Annex III, to determine the effects of road drainage at these DTAs upon water quality. The analysis covers:

- potential pollution from routine drainage based on an analysis of dissolved copper and total zinc concentrations
- spillage risk assessment

Results of this analysis are summarised in **Appendix C6.**

5.6.3.27 The analysis, was based on high growth traffic figures provided for 2008, although traffic data for a later period would be required to determine longer-term effects.

5.6.3.28 With respect to the effects of routine drainage, the analysis evaluates the potential annual pollutant loading (of dissolved copper and total zinc) based on pollutant build up rates provided in DMRB. This is carried out for each road drainage "catchment" that drains to a DTA. The analysis determines, with the level of dilution available from incident rainfall to the road, the average annual pollutant loading to the aquifer. As no water quality objectives have been set for groundwater in the UK, the pollutant loading is compared with a *de minimus* standard for discharges to groundwater, based on the Water Supply (Water Quality) Regulations. On this basis, the annual pollutant loading of discharges to each of the DTAs are found to be at concentrations below this *de minimus* standard and therefore no further treatment of the drainage would normally be considered necessary. The discharges would also be at concentrations lower than targets for the (more rigorous) River Ecosystem RE1 Classification.

5.6.3.29 The spillage risk analysis has been carried out to determine whether measures are required to contain and control spillage that may arise from the road. Agreement would be needed with the EA regarding the acceptable risk for the occurrence of a pollution incident, although with respect to aquifers in such sensitive locations the acceptable level of risk is likely to be 1 in 100 years (or less frequent). As above, the spillage risk calculation has been carried out for each drainage catchment and was based on traffic volumes, numbers of heavy goods vehicles and potential accident rates for characteristic road stretches, as provided in DMRB. The spillage risk analysis carried out shows that the highest level of risk is 1 in 237 years, although for many DTAs the typical risk is considerably less than this. On this basis, no measures would normally be required for the control and containment of spillage.

5.6.3.30 The EA's groundwater protection policy states that no DTAs can be located in SPZ I, and there is a presumption against location in SPZ II. With reference to **Figure 7.1**, DTA 6 is located in SPZ I for the Dean's Farm source, indeed the distance to the source itself is just 300m. The location of this DTA would need to be reviewed – it is highly unlikely that the EA would agree to this site. The same goes for DTAs 12 and 13 on the Eastern Link (also in SPZ I), but it is

difficult to identify alternative sites without either direct discharge to the Bourne or pumping to soakaways at distance. DTAs 4,5 and 7 are located close to the junction of SPZs I and II; consultation with EA would be needed to determine whether or not they would accept these sites.

5.6.3.31 DTAs located close to rivers (ie Avon: DTA 5, Till : DTAs 1 and 2, Bourne: DTAs 12 and 13) may not function at times when groundwater levels are close to ground surface To deal with such events, there would need to be a facility to allow discharge directly to rivers. This should not be a problem either in terms of flow water quality (as regards the latter, the dilution effects from storm events would tend to negate the contamination potential), however, agreement would be needed from the EA.

Leaching from Viaduct Pier Foundations within Groundwater

5.6.3.32 Where piles beneath viaduct piers are in contact with groundwater (either seasonally or permanently), the potential exists for the leaching out of contaminants contained within concrete used in pile construction. Such a process could affect groundwater quality.

5.6.3.33 However, it is considered that any effect would be very localised and negligible. The dilution offered by natural groundwater flow would rapidly dissipate any effect and, consequently, no change would be detectable in the rivers receiving groundwater flow.

5.6.4 Mitigation

5.6.4.1 There are numerous measures that would be applied to mitigate the adverse impacts of construction activities and long term effects. These measures are described in detail in the Environmental Statement of the Published Scheme and are only summarised here.

Construction

5.6.4.2 Mitigation during construction would be implemented by adherence to a Contractor's Environmental Management Plan (CEMP). This document would be agreed following full consultation with the EA and would include:

- On-site environmental management and training
- Dewatering procedures and discharges including groundwater ingress to cuttings
- Temporary site drainage
- Control of run-off close to the Rivers Avon, Till and Bourne
- Use/storage of hazardous substances
- Control of wash down areas
- Plans to deal with emergencies, e.g. accidental spillage of hazardous materials
- Possible provision of compensation storage for any temporary loss of flood plain

Long Term Mitigation

5.6.4.3 Long term mitigation measures would include:

- Possible provision of compensation storage for any permanent loss of flood plain

- Adequate interception and discharge of long term groundwater ingress to cuttings
- Design of DTAs to allow for:
    - Run-off storage of an appropriate size
    - Spillage containment and control
    - Adequate run-off treatment
- Possible use of a concrete mix with "environmentally friendly" constituents to mitigate against leaching from pier foundations
- Adequate control of groundwater in cuttings

5.6.5 Summary

5.6.5.1 For a number of issues, the potential effects of the route on the water environment are considered to be negligible and do not warrant mitigation. Where appropriate, mitigation for other effects is either identified as a requirement, or is identified as being possibly required subject to further investigation, assessment and consultation. Such mitigation should also result in the route having a **neutral** effect on the water environment.

5.6.5.2 Four DTAs lie within the Source Protection Zone I (SPZ I) and three more close to the border between SPZ I and II. It is unlikely that the EA would agree to these sites and further work would be required to find a more acceptable solution here.

5.6.5.3 Application of the Contractor's Environmental Management Plan (CEMP) during construction would minimise risks to the water environment during construction but the risks cannot be entirely eliminated.

5.7 Geology and Soils

5.7.1 Sources of Information

5.7.1.1 The primary sources of existing information are the 1: 50 000 scale geological maps of the British Geological Survey and the factual and interpretative reports associated with the 1990 and 1992 ground investigations for the A36 (trunk) Salisbury Bypass Scheme. The individual sheets and reports are listed below, along with the other significant sources of geological information consulted:

- Geological Survey of Great Britain (England and Wales) Sheet No. 298, Salisbury. 1:50,000 Solid and Drift edition, 1976 reprint (Geological Survey of Great Britain, 1976).
- Geological Survey of Great Britain (England and Wales) 1:10 560 County Series (Wiltshire), Sheets No.s 53SE, 54SW, 59NE and 60NW. 1895/6 Editions (Geological Survey of Great Britain, 1895/6).
- The Geology of the Country around Salisbury. An explanation of sheet No. 298 (Reid, 1903).
- The Cretaceous Rocks of Britain Volume 3: The Upper Chalk of England (Jukes-Browne and Hill, 1904).
- The Hampshire Basin and adjoining areas, Fourth edition (Institute of Geological Sciences, 1982).
- A36 Salisbury Bypass: Ground Investigation Interpretative Report, Volumes 1 and 2, Rendel, Palmer and Tritton (High-Point Rendel), April 1991.
- A36 Salisbury Bypass: Ground Investigation Factual Report, Volumes 1 and 2, Rendel, Palmer and Tritton (High-Point Rendel), December 1992.
- A36 Salisbury Bypass: Supplementary Ground Investigation Interpretative Report, Volumes 1 and 2, Rendel, Palmer and Tritton (High-Point Rendel), May 1995.
- The available topographic mapping (recent) has been examined for evidence of geomorphological, geological, and archaeological features during the desk study stages of the project (Halcrow, 1992 and 1996). The following sources of topographical data have been utilised:
- 1:50 000 Landranger series, sheet No. 184 (2002).
- 1:25 000 Explorer series, sheet No. 130 (1998).

5.7.1.2 Historical mapping has also been reviewed as part of a study into the location of potentially contaminated sites within the route corridor, by the Environmental Health Department of Salisbury District Council.

5.7.2 Baseline Conditions

5.7.2.1 The greater part of the route is underlain by chalk of the White Chalk Sub-group of the Chalk Group. The exact Chalk formations present are unknown but they will likely consist of the Seaford Chalk Formation, the Newhaven Chalk Formation and the Lewes Nodular Chalk Formation, i.e. those belonging to the old ‘Upper Chalk’ division of the Chalk.

5.7.2.2 Occurrences of non-Chalk related geological materials are likely to be confined to the sinuous valleys of the Rivers Till, Avon, Bourne and Nadder, and be limited to superficial deposits of Alluvium and Valley Gravels. Isolated deposits of Plateau and Valley Gravels will also likely be encountered in the valleys east of Stapleford Down and around Camp Hill Reservoir. **Figure 8.1** shows the probable predominant land quality within the route corridor.

Records of mines and mineral deposits

Chalk pits

5.7.2.3 There are no current, licensed chalk extractions within the assessment corridor and, according to Salisbury District Council, there are unlikely to be in the near future (given the lack of proposals); however, a review of current and historical topographic mapping has highlighted the existence of a number of former chalk pits. These are all small workings and are not likely to have associated underground extensions.

5.7.2.4 Two such pits occur close to the alignment in the area of Camp Hill (NGR SU110 342 and SU113 338). The more northerly one is marked on the current 1:25 000 scale Ordnance Survey mapping and is located immediately adjacent to the existing A360. This pit is located at the site of DTA 4 and at the toe of the Bridge 9 southern approach embankment. The pit to the south was identified on historical mapping and is known to have been back-filled with unnamed wastes in the mid 1960s. This second pit is located close to the crest of the proposed cutting slopes at Ch 10500. A further pit may exist across the road (A360) from here at NGR SU111 338; however, this pit would be outside of the footprint of any earthworks associated with the proposed works, hence it is of reduced significance.

5.7.2.5 A second cluster of former chalk pits occurs to the north of Petersfinger, north of the point where the Salisbury Eastern Link section passes under the Southampton to Bristol Railway (Bridge No. 29). Two of the pits (NGR SU163 293 and SU162 298) are located within 200m of the proposed alignment; however, these are not likely to prove problematic. A third pit is located much further to the east (SU 168 296).

5.7.2.6 Further occurrences of areas of borrowed ground along the proposed alignment are unlikely; however, their existence cannot be ruled out.

Natural cavities

5.7.2.7 A search of the DEFRA Natural Cavities Database has been undertaken (Peter Brett Associates, 2003). This database is currently maintained by Peter Brett Associates (www.pba.co.uk). The search has highlighted a limited number of features of possible significance.

5.7.2.8 Geological mapping sheet No. 298 (Salisbury) indicates the existence of an outlier, i.e. a marooned remnant of rock surrounded by stratigraphically older formations, near the summit of Cockey Down (NGR SU170 314 - the locality is marked by an isolated area of woodland). The outlier comprises lithologies of the Reading Formation and may represent a dissolution subsidence complex. However, given the difference in elevation (60 m) between this subsidence complex and the proposed alignment (Salisbury Eastern Link section of the route), this feature is unlikely to impact on route construction or operation.

5.7.2.9 At the extreme eastern end of the route corridor, Jukes-Brown (1905) highlights the existence of two dissolution pipes in the northeastern slopes of Beacon Hill, above Bulford Camp. No further details of the size and extent of these features is known; however, given the distal

location of the features (relative to the proposed junction at beacon Hill) they are very unlikely to be problematic.

5.7.2.10 In general, the occurrence of dissolution features along the route will be controlled by the geomorphology and surface geology of the chalk plateau. Dissolution features are unlikely to occur in areas where chalk occurs below thin topsoils, as past erosion and general dissolution weathering of the sub-Palaeogene chalk surface will have largely removed such features. Where the proposed route crosses Clay-with-flints and Plateau Gravel, such as in the vicinity of Camp Hill (NGR SU115 337) and Burrough's Hill (SU165 305), dissolution features may be encountered. Dissolution features (in the form of bourne and swallow holes) may also be present in dry valley features, such as the one that occurs to the south of Winterbourne Stoke (NGR SU070 402).

Contaminated land

5.7.2.11 A search of Salisbury District Council's contaminated land database has lead to the identification of a number of possibly contaminated sites within the route assessment corridor. The sites of significance are described in the paragraphs below.

5.7.2.12 On Camp Hill, near to the existing covered reservoir, a waste-filled chalk pit exists. This was backfilled in 1965 with wastes of unknown composition. It is unlikely that any liner was employed and leachates may have tainted the rock mass locally. The boundaries of the pit are poorly defined. This pit is within 100 m of the proposed Camp Hill road cutting.

5.7.2.13 A second back-filled pit may exist across the road (A360), adjacent to the reservoir and a further pit, marked on the current OS mapping may similarly contain contaminated back-fill. The latter is located on the site of DTA 4.

5.7.2.14 In the Petersfinger area, near the southern termination of the Salisbury Eastern Link, a back-filled chalk pit exists. This pit contains inert soils and builders wastes along with fly-tipped domestic refuse; however it is unlikely to be disturbed by the construction of the proposed link road. The nearby Bridge 29 works may encounter contaminated railway ballast associated with the existing Southampton to Bristol Railway alignment.

5.7.2.15 Toward the eastern end of the main alignment the route crosses the line of a dismantled railway near Arundel Farm (NGR SU197 407, Ch. 23500). This railway was originally in cutting to the east, near the village of Newton Tony and a degree of back-filling has been licensed in this area (with fill comprising inert builders waste). In the area of land crossed by the alignment the railway cutting appears to have been back-filled and restored to agriculture. It is not known if the fill utilised in this restoration was entirely inert. Further to the northeast a former scrap yard at Beacon Hill Farm (SU207 430), adjacent to the proposed Beacon Hill Junction, is likely to be contaminated to some extent.

5.7.2.16 Although the above information seeks to outline the location of the significant areas of potentially contaminated land, the assessment has not included all available data sources; consequently unidentified areas of contaminated ground may still be encountered during construction.

5.7.3 Assessment of Impacts and Effects

5.7.3.1 There are not expected to be any permanent effects from normal usage of the road on soils or geology. In the event of an accident, there is the potential for contaminative materials such as fuel or materials being transported, to affect the surrounding ground through spillage into the drainage system. The drainage design for the route would guard against this potential impact and would protect the surrounding ground. In the event of a pollution accident occurring, remedial action would be taken to clean the spillage and dispose of the waste.

5.7.3.2 During construction of the new road, soil and rock along the route would be distributed to attain the designed earthwork levels. It is anticipated that there would be no earthworks materials removed from site because, there would be a balance of cut/fill earthworks volumes.

5.7.3.3 The construction footprint would also include haulage roads and stockpile areas and there would be some effects on soil structure in these areas during the construction phase. Once haulage routes and stockpile areas are no longer required, restoration would be undertaken to restore the original soil condition in accordance with best practice.

5.7.4 Mitigation

5.7.4.1 Mitigation would be as described in the Environmental Statement for the Published Scheme and is summarised below:

- Appropriate Site Investigation before construction
- Watching brief during construction to identify contaminated materials
- Measures to minimise risk of contaminating material during construction set out in the Contractor's Environmental Management Plan (CEMP)
- Appropriate storage and disposal of waste
- Restoration work to reinstate land used temporarily to its original condition

5.7.5 Summary

5.7.5.1 With the implementation of the mitigation strategy proposed there would be no adverse effects due to the construction of the Parker Route on geology and soils.

5.8 Noise and Vibration

5.8.1 Sources of Information

5.8.1.1 The noise assessment draws upon information from the traffic model described in **Chapter 6** of this report. House counts were carried out using 1:25,000 Ordnance Survey maps.

5.8.2 Baseline Conditions

5.8.2.1 The number of residential properties within 300m of the route has been counted and is shown **Table 5.7**.

Table 5.7: Residential Property count within 300m of the route

Scheme section	Distance Bands		
	0 – 100m	100 – 200m	200 – 300m
A303 Realignment only	6	14	26
Eastern Link only	110	257	278
Combined Total	118	271	304

5.8.2.2 The number of non-residential premises within 300m of the proposed alignment in **Table 5.8**

Table 5.8: Non-Residential Property count within 300m of the route

Scheme section	Distance Bands		
	0 – 100m	100 – 200m	200 – 300m
A303 Realignment only	0	2 commercial properties	1 commercial property
Eastern Link only	0	1 residential nursing home	2 commercial properties
Combined Total	0	2 commercial 1 residential nursing home	3 commercial properties

5.8.2.3 No baseline noise measurements were carried out for this assessment. Therefore, to allow some form of assessment to be undertaken, the existing ambient noise levels have been estimated from published data on the general noise climate in rural areas.

5.8.2.4 The Transport and Road Research Laboratory (TRRL) published a report containing typical noise levels outside homes in England. It noted that a typical daytime noise level in rural areas was 45 dB $L_{A10,\ 18\ hours}$.

5.8.2.5 Although this report was published in 1977, it is considered sufficient to give an indication of noise levels at the predominantly rural locations close to the route alignment. If anything, this assumed noise level will be an underestimate, since the majority of environmental noise sources will have got noisier over the intervening 25 years.

5.8.3 Assessment of Impacts and Effects

5.8.3.1 Adopting a generic ambient noise level for the present situation allows the scale of any impacts to be estimated, by comparing it with the predicted noise levels upon opening of the route.

5.8.3.2 Although there are roads that may generate some noise, to a greater or lesser extent, it is likely that much of the noise at the rural receptors would not be generated by road traffic. This makes prediction of existing noise levels difficult since measurement of the existing baseline noise levels was not carried out.

5.8.3.3 The noise levels predicted at each of the receptors considered in this assessment, and the consequent change in noise level over the existing situation, is shown in **Table 5.9**.

Table 5.9: Predicted Noise Levels, dB

5.8.3.4

Receptor	Assumed Existing Noise Level	Predicted Future Noise Level	Change in Noise Level
Little Valley	45	62	+17
Camp Cottages	45	64	+9
Hilltop Business Park	45	57	+12
Shepherds Corner	45	60	+15
Tidworth Road, Porton	45	57	+12

It can be seen from **Table 5.9** that the properties considered would be subject to increases in noise level in the order of 10 dB or more.

5.8.3.5 Although the basis of this assessment is an assumed existing noise level, it is considered realistic since the majority of properties included are remote from existing noise sources and are likely to be subject to a change of this order.

5.8.3.6 In addition to the anticipated change in noise level at properties within 300m of the route alignment, the route would significantly affect a number of roads, and by extension noise-sensitive receptors adjacent to existing roads.

5.8.3.7 The Packway, Countess Road North and the A3028 would be subject to increases in road traffic that would result in a consequent increase in noise levels at those properties adjacent to these roads. The increases would range from 2 to 7 dB for properties along the Packway and approximately 2dB for properties along Countess Road north and the A3028 based on modelled traffic flows.

5.8.3.8 There are also a number of key roads that would benefit from a reduction in traffic with a consequent reduction in road traffic noise. These roads include, the A303, the A338 and the A36(T). The extent to which noise levels would reduce varies from approximately 1 dB to 5 or

6 dB. The major beneficiary would be the World Heritage Site, from which traffic would be removed entirely.

5.8.3.9 DMRB states that for properties within 40m of a proposed route, an estimate of the airborne-vibration nuisance should be made. There is considered to be only one property grouping within 40m of the route at the A36 Junction at the southern end of the Eastern Link. This grouping of properties is represented in this assessment by a single property, Lime Trees.

5.8.3.10 The level of airborne-vibration nuisance can be estimated from the predicted noise level, since annoyance due to airborne-vibration adheres to a similar relationship to that established for noise. The annoyance values are generally 10 percent lower than for noise, where the percentage defines the 'percentage of people likely to be bothered very much or quite a lot'. DMRB states that annoyance due to airborne-vibration is unlikely to occur at noise levels of less than 58 dB $L_{A10,\ 18\ hours}$.

5.8.3.11 The existing and future levels of airborne-vibration nuisance have been calculated for the existing and future situations, and are shown in **Table 5.10**.

Table 5.10: Predicted Levels of Airborne-Vibration Nuisance

Receptor	Percentage of people bothered very much or quite a lot by airborne-vibration		
	Existing Situation	Future Situation	Change
Lime Trees	25%	13%	-12%

5.8.3.12 It can be seen from **Table 5.10** that Lime Trees is predicted to have a small decrease in airborne-vibration nuisance. This finding is consistent with the current settings of the properties, in that Lime Trees is close to the existing A36(T).

5.8.4 Mitigation

5.8.4.1 The information generated by a stage 2 assessment is not sufficiently detailed to specify mitigation measures. However, there are a number of measures available that could be considered as the route design develops. These measures would include: roadside noise barriers, low noise surfacing or speed restrictions.

5.8.4.2 The effectiveness of such measures would depend to a large extent on the final specifications, however, as a general guide, a well-designed noise barrier will reduce road traffic noise by between 5 and 15 dB. Low noise surfacing will result in noise levels 2.5 dB lower than a standard hot rolled asphalt surface, providing it is used on sections that are free-flowing and where traffic speeds are at least 70 km/h. Restricting vehicle speeds is occasionally used to reduce noise and the reduction gained will be dependent on the speed restrictions. Speed restrictions tend to be used on existing roads where a noise problem exists.

5.8.5 Summary

5.8.5.1 The A303 Realignment section would result in significant increases at a small number of isolated properties located within 300m of the route. A greater number of properties lie within 300m of the Eastern Link and are also likely to be subject to an increase in noise as a result.

5.8.5.2 It is likely that other roads away from the route alignment would also be significantly affected by the proposals. These include the Packway and Countess Road North and the A3028, which would all be adversely affected, and the A303, the A338 and the A36(T), which would benefit as a result of the route.

5.9 Air Quality

5.9.1.1 The assessment has focused on human health impacts only, using a screening model, which estimates air quality concentrations at individual sensitive locations ('receptors') chosen to represent larger areas. Results are expressed in a way which can be directly compared to air quality standards for human health

5.9.1.2 In keeping with this level of assessment, results do not include ecology impacts or greenhouse gas effects. A large number of receptors (96) have been included reflecting the very large study area. Results have been provided for the opening year (2008), the design year (2023), and 2010 a year specific to air quality.

5.9.2 Sources of Information

5.9.2.1 The air quality assessment draws upon information from the traffic model described in **Chapter 6** of this report. Traffic data has been manipulated to give annual average daily equivalents of flow, speeds and traffic composition, as required for air quality assessment.

5.9.2.2 Background concentrations of air pollution in the study area have been obtained from default concentration maps produced periodically by the National Environment Technology Centre (NETCEN), on behalf of the Department for the Environment, Food and Rural Affairs (Defra). The maps provide data with a resolution of 1km x 1km. Data was obtained from the Local Air Quality Management (LAQM) section of the NETCEN website at www.airquality.co.uk.

5.9.2.3 To obtain a more realistic assessment of local air quality, the large assessment area has been split into nine separate sections. The background concentration for each section has been taken from the background pollution maps on the NETCEN website and adjusted for the modelled assessment year using scaling factors, also available on the website. These adjusted background concentrations have then been used for assessing local air quality at each appropriate receptor.

5.9.2.4 There is some discrepancy between background concentrations used for central Salisbury in this assessment, compared to those used by Salisbury District Council in the Review and Assessment process. Salisbury District Council have taken background concentrations from the NETCEN source, however they have also adjusted these concentrations with locally monitored data, giving a higher background concentration in central Salisbury compared to the data used for this assessment. This assessment follows the screening method set out in DMRB, which advises that background data should be obtained from NETCEN in the absence of any other data. The Salisbury District Council does not site the source of additional monitoring data used to adjust their background concentrations, and alternative monitored data was not available for this assessment for central Salisbury. The most appropriate source of data has therefore been used.

5.9.2.5 Validation work carried out by the Highways Agency has indicated that the DMRB screening model may noticeably under-predict concentrations of Nitrogen Dioxide along roads classified as 'street canyons'. There are a number of street canyons located within Salisbury (identified in by Salisbury District Council in their Review and Assessment reports). The Government guidance note, Pollutant Specific Guidance LAQM.TG(03)[1], as updated in 2003, advises that the 'road traffic component' of predicted annual mean Nitrogen Dioxide, calculated using the

[1] DEFRA (2003) Local Air Quality Management Technical Guidance TG(03)

DMRB screening model, should be multiplied by a factor of 2 to take account of a reduced level of dispersion experienced within a street canyon environment. The resulting concentrations should then be added to background concentrations for the area. The Highways Agency have not found that the DMRB model under predicts PM_{10} concentrations in similar situation and therefore no adjustment is required for predicted PM_{10} concentrations. Assessment of the Parker Route includes the adjustment for street canyons where relevant.

5.9.2.6 Constraints data, based on declared Air Quality Management Areas (AQMA), is given in LAQM review and assessment reports produced by the local authority districts. This information has been included in the assessment of the route, for the districts of West Wiltshire, Kennet and Salisbury.

5.9.2.7 For baseline conditions, air quality monitoring has been undertaken as part of the Environmental Assessment carried out for the Published Scheme. This data is also referred to in this assessment, with the monitored area expanded to include Salisbury by using data in the LAQM review and assessment report.

5.9.3 Baseline Conditions

5.9.3.1 West Wiltshire District Council has declared two AQMA neither of which would be within the study area. Kennet District Council has not declared any AQMA. Salisbury District Council has declared five AQMA, four of which are specific streets and junctions in central Salisbury with the other lying within the town of Wilton. These streets are Brown Street, Fisherton Street, Milford Street, Minster Street, and King Street, Wilton. All are declared because of a predicted exceedance of the air quality standard for annual mean Nitrogen Dioxide in 2005 (see **Table 5.11)**. This effectively makes changes in air quality at these locations important.

5.9.3.2 Volume 2, Part 6 of the Environmental Statement for the Published Scheme reports the results of diffusion tube monitoring in 2001 to 2003. Locations surveyed are also shown in Figures A1 to A3 in Appendix A of that report. Most of the monitoring sites are at roadside locations (typically within 5m of the road). The results clearly show that none of the monitoring sites exceed the annual mean Nitrogen Dioxide standard of $40\mu g/m^3$. For most sites, results are below the standard by a considerable margin (between 75% to 25% below).

5.9.3.3 Salisbury District Council has monitored Nitrogen Dioxide at three locations, between 2000 and 2002, using continuous monitoring equipment. The three monitoring locations are Brown Street, Salisbury; King Street, Wilton and Churchill Way, Salisbury Ring Road. The data indicates that Nitrogen Dioxide concentrations were below the UK annual mean objective level ($40\mu gm^{-3}$) in Brown Street and Churchill Way, while concentrations along King Street exceeded the objective level by over $13\mu gm^{-3}$. However, the results from King Street is based on only 6 months worth of data, measured during the summer months. Further, only 75% data capture was achieved at the King Street monitor. Thus, the monitored concentrations at King Street should be treated with caution when comparing them against the annual mean objective level.

5.9.3.4 Between 1998 and 2002 Salisbury District Council monitored Nitrogen Dioxide at 28 locations using diffusion tubes. This data, reported in their Stage 4 Review and Assessment report[2], released in September 2002, shows that Minster Street, Fisherton Street, Milford Street and King Street, Wilton currently exceed the annual mean Nitrogen Dioxide standard of $40\mu gm^{-3}$ during this period.

[2] Salisbury District Council (2002) Review and Assessment of Air Quality Stage 4

5.9.3.5 Since declaring AQMA, Salisbury District Council has undertaken further assessment carried out for the Stage 4 Review and Assessment. This predicts that for four of the five AQMA (Brown Street, Fisherton Street, Milford Street, Minster Street), Nitrogen Dioxide concentrations would not exceed the UK objective level by 2005. Only the King street, Wilton AQMA would therefore remain. In practice, Salisbury District Council have retained all the declared AQMA, due to uncertainties in the modelling work and the short term nature of available monitoring data.

5.9.3.6 In summary, baseline data suggests potential air quality issues along King Street in Wilton, but nowhere else in the wider route study area. Potential areas of concern in any assessment should include all five AQMA

5.9.4 Assessment of Impacts and Effects

5.9.4.1 **Table 5.11** summarises the relevant air quality standards used to evaluate the route. **Appendix D** contains the local air quality results for human health impacts, for all relevant assessment years of 2008, 2010, and 2023, both with and without the route. Results are provided for 96 receptors in the study area, giving a clear coverage.

Table 5.11 – Relevant air quality standards (all impacts)

Pollutant	Concentration	Measured as	Compliance (UK objectives)	Compliance (EU objectives)
Nitrogen Dioxide	40 micrograms per cubic metre	Annual mean	By the end of 2005 [1]	By beginning of 2010 [2]
Nitrogen	35 to 55 kgN/ha/yr	Annual mean	--- [3]	---
PM_{10}	40 micrograms per cubic metre	Annual mean	By the end of 2004 [1]	By beginning of 2005 [2]
	20 micrograms per cubic metre	Annual mean		By the end of 2010 [4]
	50 micrograms per cubic metre	24-hour mean not to be exceeded more than 35 times a year	By the end of 2004 [1]	---
	50 micrograms per cubic metre	24-hour mean not to be exceeded more than 7 times a year	---	By the end of 2010[4]

Notes: 1 Air Quality (England) Regulations 2000
2 Air Quality Limit Values Regulations 2001
3 Convention on Long-Range Transboundary Air Pollution, UNECE
4 EC Air Quality Framework Directive 96/62/EC Stage 2 as adopted by the UK Government as a target (but not set in Regulations).

5.9.4.2 In addition, the assessment has specifically looked at the local air quality impacts of the route within the AQMA declared by Salisbury District Council. For the Brown Street and Minster Street AQMA the impact on local air quality has not been calculated, as there are no noticeable changes in traffic flows with the route in place. The other three AQMA (Fisherton Street, Milford Street and King Street, Wilton) are included (receptors 27, 97 and 98). They have also been identified as street canyons within Salisbury District Council Stage 3 Review and Assessment report[3] and therefore the correction factor discussed in section 5.9.2.5 has been applied.

5.9.4.3 Overall, results in **Appendix D** indicate that Nitrogen Dioxide and PM_{10} concentrations would be below the 2004 and 2005 annual mean objective levels (**Table 5.11**) for these pollutants in 2008, 2010 and 2023. There would be four locations (Receptors 11, 16, 18 and 28) where the preliminary 2010 objective level ($20\mu gm^{-3}$) would be exceeded under the Do-Minimum scenario, although this objective level has yet to be set in regulations. This would decline to two locations (Receptors 11 and 28) with the proposed scheme in place. There would not be more than 7 exceedances a year for 24hour mean PM_{10} at any location, with or without the scheme.

5.9.4.4 Concentrations do not materially change, at any of the receptor locations assessed, with the scheme in place. Concentrations within the three AQMA assessed are predicted to be below the annual mean Nitrogen Dioxide objective level in all three assessment years. The proposed scheme would not materially change pollution concentrations within the Fisherton Street AQMA. The proposed scheme would cause a decline in Nitrogen Dioxide concentrations of approximately $3\mu gm^{-3}$ (in 2008), in both the Milford Street and Wilton AQMA.

5.9.4.5 As previously discussed, Salisbury District Council have predicted an exceedance of the annual mean Nitrogen Dioxide objective level in 2005 within the Wilton AQMA. The Parker Route assessment indicates that levels in 2008 under the do-minimum and so-something scenarios would be below the annual mean objective level. The difference comes from 3 effects. First, improved vehicle technology between 2005 and 2008 would result in a reduction in emissions. Second, the background pollution concentrations used for this assessment are lower than those used in the LAQM Review and Assessment (local data). Third, there are differences in traffic flows between this assessment and data used in the LAQM Review and Assessment.

5.9.5 Mitigation

5.9.5.1 As no problems with air quality are expected under any of the options as a direct result of the scheme, mitigation is not provided.

[3] Salisbury District Council (2000) Review and Assessment of Air Quality Stage 3

5.9.6 Summary

5.9.6.1 The assessment of the route has demonstrated that the local air quality impacts on human health once it is in operation would be negligible for the opening year 2008, the air quality compliance year 2010, and the design year 2023. Relevant air quality standards are not predicted to be exceeded at any receptor along the route corridor by 2008. The only exception is exceedance of the provisional annual mean standard for PM10 of $20\mu gm^{-3}$, which would be exceeded in 2010 at 4 locations under the do-minimum scenario, and at only 2 locations with the proposed scheme. The scheme would not cause an increase in PM_{10} concentrations at these specified sites.

5.9.6.2 Pollution concentrations have been predicted at receptors points within three AQMA. There would be no material change in pollution concentrations within the Fisherton AQMA due to the proposed scheme. There would be a decline in Nitrogen Dioxide concentrations with the route in place within both the Milford Street and King Street, Wilton AQMA.

5.9.6.3

5.10 Pedestrians, cyclists, equestrians and community effects

5.10.1 Sources of Information

5.10.1.1 The Parker Route was assessed using Rights of Way Ordnance Survey maps and work undertaken in preparation for the Environmental Statement.

5.10.2 Baseline Conditions

Community severance

5.10.2.1 Owing to the rural nature of the route, community severance is only an issue for the more directly affected settlements of Salisbury, Amesbury and Winterbourne Stoke.

Rights of Way and other Routes

5.10.2.2 The Parker Route crosses numerous routes and Rights of Way, including: footpaths; bridleways; byways open to traffic and roads used as public paths.

Businesses

5.10.2.3 Salisbury is the principal retail and service centre in the District. The city plays a key role as the economic, social and leisure focus of the District, being its main employment centre, providing health facilities for a wide area, and offering residents and visitors an extensive range of entertainment and recreational facilities, including popular evening activities.

5.10.2.4 Because much of the rural area to the south of Amesbury uses Salisbury for its main services, facilities in Amesbury serve a limited catchment area. Facilities in Amesbury include schools, churches or chapels, a community centre, a sports centre, a medical centre and surgery, public houses and restaurants, chemists, one supermarket and other shops. Amesbury also contains the local offices of Salisbury District Council, Amesbury Library, a Post Office and a Tourism Information Centre.

5.10.2.5 The facilities in Winterbourne Stoke include: St Peter's church; a petrol filling station with associated shop (fronting onto the A303); The Bell Inn public house (fronting onto the A303); and a children's playground

5.10.3 Assessment of Impacts and Effects

Community Severance

New Severance

5.10.3.1 The route would not create any new severance of communities in Amesbury and Winterbourne Stoke and this aspect of community severance has not been assessed in more detail for these settlements.

5.10.3.2 The Eastern Link would create new severance of communities to the north of that section of the route from Salisbury. In general the current journey pattern is likely to be maintained, but there would be some hindrance to movement and some children and elderly people may be dissuaded from making trips. Bridge 24 would be the only crossing point for these communities. Road Used as a Public Path (RUPP) 13 would be stopped up, increasing the length of some journeys by up to 250 m. The significance of the permanent effects on community severance and community facilities in this area is assessed as being **Moderate** or **Severe**.

5.10.3.3 The implementation of the Parker Route would include the removal of the A303 and part of the A344 between Countess Roundabout and Longbarrow Junction. This would create new severance between communities in Amesbury and Winterbourne Stoke for motorised travellers. There are alternative access routes between the settlements but their use increases the journey length by some 4km. The significance of the permanent effects on community severance and community facilities of this increased journey length is assessed as being **Severe**.

5.10.3.4 The removal of parts of the A303 and A344 in the World Heritage Site would also affect journeys between Shrewton, and Amesbury. The only other local east west road in the vicinity is The Packway and this road would experience a substantial increase in traffic volumes. There would be delays too for emergency vehicles based in Amesbury to reach Winterbourne Stoke and Shrewton. This would also be the case for emergency vehicles from Amesbury responding to a road traffic accident between Longbarrow Junction and Wylye Interchange. The significance of the permanent effects on community severance and community facilities caused by the diversion of traffic along the Packway is assessed as **Severe**.

5.10.3.5 In addition to the Packway, additional traffic flows are predicted for Countess Road North (A345) and the A3028 through Durrington and Bulford. The significance of the permanent effects for these sections are assessed as **Severe.**

Relief from existing Severance

5.10.3.6 There would be insufficient relief of severance to record benefit for traffic reductions in Salisbury. On the A338 there would also be insufficient relief to record benefit. However, on the A36 along the Wylye Valley, flows would reduce significantly (about 30%) to record a S**light Beneficial** effect.

5.10.3.7 The route provides for a major reduction of traffic through the village of Winterbourne Stoke. Thus relief in severance in Winterbourne Stoke is likely to be **Moderate Beneficial**. This reduction would mean that the residents of the village would find it much easier to get to and from the bus stops and facilities alongside the de-trunked A303 although two-way flows of about 4000 vehicle per day (in 2008 under low economic growth conditions) would be maintained. The unity of village would be improved, rather than being divided by the road. The amenity of residents would be similarly enhanced.

5.10.3.8 The route provides for a major reduction of traffic through Amesbury. Traffic flows on Countess Roundabout and the slip roads, with the west arm closed, would be significantly reduced from present levels. Relief in severance as a result of this is likely to be **Slight or Moderate Beneficial**. As described above, traffic flows on Countess Road North (A345) would increase significantly.

5.10.3.9 It is considered that there would be **no significant temporary effects** upon community severance and community facilities in Winterbourne Stoke or Amesbury during construction of the route. During construction, users of facilities in Salisbury arriving from the north would be

affected detrimentally by the stopping up of the Laverstock and Ford, Road Used as a Public Path 13 and because of the construction activity associated with the erection of new bridges 24, 25 and 26.

Rights of Way and other Routes

5.10.3.10 The assessment of the Published Scheme shows a highly beneficial effect on Rights of Way and other routes due to the removal of the severance and noise, poor air quality and visual impact of parts of the A303 and A344 in the immediate vicinity of Stonehenge. This was shown to lead to a greater degree of access to the open countryside and wider archaeological landscape around Stonehenge, thus facilitating the aims and objectives of the Stonehenge WHS Management Plan. The Parker Route would remove completely the existing A303 between Countess Roundabout and Longbarrow Junction and part of the A344 within the World Heritage Site and replace them with byways. This would result in additional benefits over and above those of the Published Scheme. Rights of Way users within the WHS would benefit from improved amenity, as they would not be subjected to impacts from A303 traffic.

5.10.3.11 There would however is an impact on Rights of Way and other routes outside the World Heritage Site. These are summarised in **Table 5.12.** It can be seen that all Rights of Way affected (bar one) would be subject to noise and visual intrusion, therefore affecting the amenity of the routes. Some local diversions would be necessary and one (Road Used as a Public Path 13) would be stopped up. Along the line of the route, the assessment of effect is that of **Slight Adverse**.

Table 5.12: Assessment of impact and effect on Rights of Way and Other Routes

Route/ Location	Effect	Diversion (Length)	Diversion (Time)	Amenity and Safety
Berwick St James Bridleway 3	This bridleway would be extended via Bridge 1 to connect the detrunked A303.	No diversion – extended bridleway created	None	This extended bridleway would prove beneficial because it would allow connection to the detrunked A303 to and from Winterbourne Stoke. Equestrian access to the bridleway system to the south of the route would be improved. There would be visual intrusion, as Bridge 1 would be visible from the bridleway.
Berwick St James Byway10	Bridge 4 would maintain the Byway over the route.	Negligible diversion as bridged over new road	Negligible	Byway users would find the route noisier, because of the proximity of the Parker Route. There would be some visual intrusion.
Stapleford Road Used as a Public Path (RUPP) 4	Bridge 5 would maintain the RUPP over the route.	Negligible diversion as bridged over new road	Negligible	Users of the road would find the route noisier, because of the proximity of the Parker Route. There would be visual intrusion, as Bridge 5 would be clearly visible from various points along the RUPP.
Stapleford Road Used as a Public Path 8	Bridge 6 would maintain the RUPP over the route.	Negligible diversion as bridged over new road	Negligible	Users of the road would find the route noisier, because of the proximity of the Parker Route. There would be visual intrusion, as Bridge 6 would be clearly visible from various points along the RUPP.
South Newton Footpath 8 / Woodford Footpath 14	The footpaths would be stopped-up, reducing pedestrian access to Rights of Way network on both sides of the route.	None	None	Access to the Rights of Way network on both sides of the route would be reduced. Footpath users would find the route noisier, because of the proximity of the Parker Route. There would be some visual intrusion.
South Newton Road Used as a Public Path 9	Bridge 8 would maintain the RUPP over the route.	Negligible diversion as bridged over new road	Negligible	Users of the road would find the route noisier, because of the proximity of the Parker Route. There would be visual intrusion, as Bridge 8 would be clearly visible from various points along the RUPP.
South Newton Road Used as a Public Path 10	Bridge 9 would maintain the RUPP under the route.	None	None	Users of the road would find the route noisier, because of the proximity of the Parker Route. There would be visual intrusion, as Bridge 9 and the new A360 junction would be visible from various points along the RUPP.
Salisbury Bridleway 97	Bridge 12 would maintain the Bridleway over the route.	Negligible diversion as bridged over new road	Negligible	Bridleway users would find the route noisier, because of the proximity of the Parker Route. There would be some visual intrusion.

Route/ Location	Effect	Diversion (Length)	Diversion (Time)	Amenity and Safety
Winterbourne Bridleway 13	Bridge 14 would maintain the Bridleway over the route.	Negligible diversion as bridged over new road	Negligible	Bridleway users would find the route noisier, because of the proximity of the Parker Route. There would be some visual intrusion.
Idmiston Bridleway 5	Bridge 17 would maintain the Bridleway under the route.	None	None	Users of the bridleway would find the route noisier, because of the proximity of the Parker Route. There would be some visual intrusion as Bridge 14 and the new road would be clearly visible from various points along the bridleway.
Idmiston Byway 3	Bridge 19 would maintain the Bridleway under the route.	None	None	Bridleway users would find the route noisier, because of the proximity of the Parker Route. There would be some visual intrusion as Bridge 19 and the new road would be clearly visible from various points along the bridleway.
Allington Byway 3/ Amesbury Byway 34	Allington Byway 3 and Amesbury Byway 34 would be diverted south to Amesbury Road, crossing over the route via Bridge 21.	Minor diversion (around 25 metres).	About half a minute. Crossing the Amesbury Road may cause further delay.	Users of the byways would find the route noisier, because of the proximity of the Parker Route. There would be some visual intrusion.
Laverstock and Ford Road Used as a Public Path 17	The RUPP would be stopped on either side of Bridge 24, reducing Right of Way access in the area	None	None	Users of the road would find the route noisier, because of the proximity of the Parker Route. There would be visual intrusion, as Bridge 24 would be clearly visible from various points along the RUPP.
Laverstock and Ford Footpaths 3, 4 and 6	The footpaths would be diverted to Bridge 27, maintaining pedestrian access over the route	Negligible diversion as bridged over new road	Negligible	Footpath users would find the route noisier, because of the proximity of the Parker Route. There would be some visual intrusion.
Laverstock and Ford Bridleway 16	The bridleway would be stopped-up, reducing equestrian access to the bridleway network east and west of the route.	None	None	Bridleway users would find the route noisier, because of the proximity of the Parker Route. There would be some visual intrusion.

Impact on Businesses

Wider and Strategic Impacts

5.10.3.12 The wider economic impact of the Parker Route outside the study area would be similar to that for the Published Scheme and is described in the Environmental Statement.

5.10.3.13 Any strategic benefit of the route would be localised to two areas: the impact on the nationally important Stonehenge World Heritage Site, and the strategic impact on Salisbury itself. With regards to the former, the route would contribute to the overall enhancement of the area. It would protect the future of the site for years to come, enhance the visitor experience and lead to increased (and better managed) visitor numbers in the future

5.10.3.14 The route would reduce the through traffic along the A338 and A36. It is considered unlikely that the business impacts would be felt on the settlements along these roads.

5.10.3.15 Solstice Park roadside and leisure businesses would become more reliant on visitors to Stonehenge. Any benefits they might have enjoyed from passing trade would be lost. However this is balanced by the benefits provided by an improved strategic road network to non roadside and leisure businesses. The overall impact on Solstice Park is considered to be neutral.

Local Impacts - Temporary

5.10.3.16 The first consideration is the impact works would have on the number of visitors to Stonehenge. This impact is considered to be neutral in that the A303 would remain open during the construction of the route and no significant reduction in traffic on these routes is anticipated.

5.10.3.17 The second consideration is the opportunity for increased trade during construction, including serviced accommodation, public houses and restaurants as a result of the activities of the contractor's workforce being on site for the construction period. This would provide a temporary injection of income to the local economy along the route. The level of construction impact of the route would depend on the level of investment and length of construction time. This is discussed in the "Disruption Due to Construction" Chapter. As level of investment and length of construction does not vary considerably from the Published Scheme, the impact is considered to be the same.

Local Impacts - Permanent

5.10.3.18 The potential permanent impacts on the local economy are categorised in to four key areas. The overall impact would depend on the relative intensity of these impacts; although it is considered that overall, a near neutral impact would be felt locally.

Impact within the Parker Route Corridor

5.10.3.19 The main impact within the route corridor would be neutral. Within the 500 m corridor the site visit identified 307 residential units and 14 commercial businesses. Most businesses identified are located at Hilltop Business Park. It is estimated that 2 residential units and 1 agricultural unit would be lost to make way for the road. Some businesses may experience a positive impact from improved accessibility. The route would lead to significant agricultural land loss.

Impact on Salisbury businesses

5.10.3.20 There would be a positive impact for businesses in Salisbury. The improved accessibility would enable businesses to move goods and services out of the city, making it a more attractive and accessible business location. In addition, the proximity of the A303 to Salisbury would bring one of the region's spinal routes within close proximity to the city enhancing the possibility of passing trade from tourist and business traffic. This would be of benefit to businesses providing accommodation and catering facilities.

Impact on visitor levels at Stonehenge

5.10.3.21 There would clearly be significant benefits for those who visit Stonehenge, and other sites in the WHS. The site would become free from the visual and noise intrusions that arise currently from the A303 and A344. In the long term this could lead to potential increases in visitor numbers to the local area and associated economic benefits in terms of volume and value of visitor trips. However, this might be undermined by poor accessibility from the western approach. Access to Stonehenge from the west via the route would incur an additional 5 km drive, compared to both the current situation and the Published Scheme (assuming the Visitor centre gets relocated to Countess Roundabout in all cases).

5.10.4 Mitigation

5.10.4.1 Mitigation measures for the impacts described above would include the following:

- Maintenance of Rights of Way or provision of suitable diversions at all times
- Provision of a new byway from Longbarrow Junction to Countess Roundabout along the line of the existing A303
- Provision of a new byway along the section of A344 to be removed
- Improvement of existing Rights of Way in the vicinity of the route

5.10.5 Summary

5.10.5.1 The route would not create any new community severance in Salisbury, and would provide insufficient relief from severance to record benefit. In connection with journeys between Amesbury and Winterbourne Stoke and for journeys between Shrewton and Amesbury, new community severance would arise due to the removal of the A303 and part of the A344. The route would however provide relief from existing severance in Amesbury and Winterbourne Stoke through a major reduction in traffic. This would be a **Moderate Beneficial** effect**.** New severance would be introduced along the Packway and Countess Road North (A345) as a result of the increased traffic flows as well as along the A3028 through Durrington and Bulford. The effect of new severance is assessed as **Moderate** or **Severe**.

5.10.5.2 While there would be temporary adverse effects during the construction period, the route would be highly beneficial in terms of impacts on the Rights of Way and other routes in the World Heritage Site. However, it would have an adverse effect on Rights of Way and other routes over the whole length of the new road corridor. The strategic economic benefits of the route would be localised to enhancing the World Heritage Site and improving accessibility to Salisbury, providing associated levels of benefit to businesses. Local impact would be neutral along the new corridor, mixed for the Amesbury/Winterbourne Stoke area and positive for businesses in Salisbury and the World Heritage Site. Reduced accessibility from the west may undermine some of the benefits for the World Heritage Site.

5.11 Vehicle Travellers

5.11.1 Sources of Information

5.11.1.1 This assessment draws upon information gathered from site visits and the traffic flow data from the traffic model described in **Chapter 6.**

5.11.2 Baseline Conditions

View from the Road

5.11.2.1 The existing view from the A303 is described in detail in the Environmental Statement for the Published Scheme.

Driver stress

Frustration

5.11.2.2 Levels of frustration on the existing roads are the result of reductions in standard of road and speed limits and the existence of queuing at junctions.

Fear of Accidents

5.11.2.3 The fear of accidents is related principally to the narrowing of the A303 from dual to single carriageway but is also related to poor layby provision, fear of pedestrians stepping into the road in residential areas and frequency and standard of junctions and accesses applicable to some degree to all the main routes in the study area.

Uncertainty

5.11.2.4 Existing driver uncertainty is caused by the existence of any confusing junction layouts and poor signing.

5.11.3 Assessment of Impacts and Effects

View from the Road

5.11.3.1 The Parker Route would share with the Published Scheme the loss of views of Stonehenge which are valued by many passing motorists.

5.11.3.2 The route would give pleasant views of the Till valley and the Avon valley for travellers in both directions on the main line, with dramatic views from Beacon Hill for westbound travellers. In between there would be a series of views of rolling downland and good views of Old Sarum. As with views of Stonehenge, the ability for motorists to see a monument in passing is the other side of the coin of visual intrusion for visitors to that monument. Within the downland sections the route generally runs relatively close to grade and views would tend to be short to medium distance as a result. There would be few lengths of restricted views.

5.11.3.3 On the Eastern Link there would be views of the Bourne Valley and the Avon valley downstream of Salisbury. Attractive views of Cockey Down and glimpses of Salisbury cathedral spire would contrast with the enclosure of the cutting through Burroughs Hill.

Driver stress

5.11.3.4 The route would overcome the main factor leading to driver frustration on the current A303, by replacing the isolated single carriageway nature of the road and overcoming the 40mph speed limits operating within Winterbourne Stoke. (In contrast the A303 Realignment would have a speed limit of 70mph, while the Eastern Link would have a speed limit of 50 mph). Both of the new routes are expected to be free flowing for the most part.

5.11.3.5 The A303 Realignment section would also have the benefit of alleviating frustration caused by queuing at roundabout junctions at Countess and Longbarrow, and at the junction of the A303 and A343.

5.11.3.6 The A303 Realignment section comprises a considerably longer route (approximately 25 km in total compared to 17 km) than the existing A303 and as such, may be considered to contribute to driver frustration on the part of regular users of the A303 owing to increased journey distance. However it is expected that traffic using the route would encounter only a 1 minute delay over the existing situation (for free flowing traffic), while during periods of congestion, the route would be quicker. Thus it is considered that the route would result in a **slight benefit** in this respect.

5.11.3.7 For drivers accessing the A303 from Salisbury and from the south-east, there would undoubtedly be benefits in terms of reduced frustration, with the Eastern Link providing a direct connection to the A303, avoiding current congestion in Salisbury. Churchill Way traffic would experience a marked improvement in travel time during periods of congestion. Frustration associated with slow journeys on the A36/A338 would be alleviated. This would contribute to reducing stress over the current situation for these users.

5.11.3.8 Travellers between Shrewton and Amesbury would generally use the Packway and would potentially suffer delays of at least 3 minutes when compared to the existing situation. This would be due to the removal of the A344 and A303 in the World Heritage Site. This problem would be compounded by substantial increases in traffic along the Packway and increases in traffic along Countess Road North and through Bulford. This would likely result in increased levels of frustration for these drivers.

Fear of Accidents

5.11.3.9 The route would overcome current problems on the A303 associated with fear of accidents. Fear of accidents relating to the narrowing of the carriageway, the termination of safety barriers between vehicles travelling in opposite directions, poor standard lay by arrangements, distractions from Stonehenge, and fear of pedestrians stepping into the road would be reduced on the route. By including design in accordance with contemporary safety standards (in terms of safety barriers and lay bys) avoiding settled areas, grade separated junctions with footpaths, bridleways and byways, and bypassing Stonehenge, a reduction in driver stress over the current situation would be achieved.

Uncertainty

5.11.3.10 Uncertainty relating to signage is likely to be alleviated by an appropriate signage strategy that would be implemented for the route. This is likely to improve certainty for strategic, regional and local traffic hence reduce driver stress.

Traveller Care

5.11.3.11 The route would overcome problems associated with the existing lay bys on the A303 which do not meet current standards. The proposed new lay bys would meet current standards, and as such would provide comparatively better places to stop and provide better protection from traffic than those on the existing A303, as well as improved sight lines for entry and exit over those on the current route.

5.11.3.12 Current facilities provided for drivers at Countess Service Area, local services in Amesbury and the petrol filling station (with shop) and public house at Amesbury would be less accessible to users of the route, requiring considerable deviation off the route (for example 2.5 km to facilities in Winterbourne Stoke, 4.5 km to Countess Roundabout and 5 km to facilities in Amesbury).

Driver Stress – Temporary Effects

5.11.3.13 It is anticipated that during construction, the existing A303 would remain open with minor impacts expected at the tie in points at the east and west tie-ins as a result of speed restrictions. Similarly impacts would be likely on the A360, the A345 and other locations where side roads cross the route. However, these are anticipated to be short lived and minimal.

5.11.4 Mitigation

5.11.4.1 Temporary driver stress due to construction activities would be mitigated by measures identified in the Contractor's Environmental Management Plan (CEMP). This would include clearly defined traffic management and effective temporary signing. Once the route is open to traffic many of the problems on the existing roads that lead to driver stress would be reduced.

5.11.5 Summary

5.11.5.1 It is considered that mitigation, combined with likely reduced fear of accidents and reductions in uncertainty associated with the route would ultimately result in benefits in terms of reduced driver stress for users of the A303. It is considered that overall the route would result in a reduction in Driver Stress over the baseline situation from **High** to **Low** for the majority of users of the A303, in particular for users accessing the A303 from Salisbury and the south who would benefit from the Eastern Link. This would help to mitigate against the loss of views of Stonehenge for A303 and A344 traffic.

5.12 Land Use

5.12.1 Sources of Information

General land use

5.12.1.1 The assessment was focussed upon carrying out a detailed survey of all land uses within a 1000 metre corridor (500 metres on each side of the centreline of the route). The results of this survey are displayed on **Figures 9.1 – 9.5** and **Figures 10.1 – 10.2**.

5.12.1.2 The land use survey of the A303 Realignment section of the route was undertaken in August/September 2003, to establish the full nature of land uses within its vicinity. An additional site visit, to record the land uses within the vicinity of the Eastern Link, was undertaken in November 2003.

5.12.1.3 In addition, the following documents were reviewed as part of this assessment:

- The Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 6 (DoT 1993, as amended)
- June 2003 Replacement Salisbury District Local Plan
- Wiltshire Structure Plan 2011 – Adopted January 2001
- Stonehenge World Heritage Site Management Plan, June 2000
- Wiltshire Local Transport Plan 2001/2002 – 2005/2006
- Planning Records held by Salisbury District Council
- Waterway Restoration Priorities – A Report by the Inland Waterways Amenity Advisory Council - June 1998 and 2001 update
- Local Environment Agency Plan for the Hampshire Avon - April 2000 to March 2005

Agricultural land

5.12.1.4 In order to carry out an assessment of the predominant quality of agricultural land along the route, a desk study was carried out. This assessment was based on the following documents:

- *Agricultural Land Classification of England & Wales:* Revised guidelines and criteria for grading the quality of agricultural land. Published by MAFF in October 1988 for application from January 1989.
- *Climatological Data for Agricultural Land Classification:* Grid point data sets of climatic variables, at 5km intervals, for England and Wales. Published by the Met. Office in January 1989.
- *MAFF Provisional Agricultural Land Classification:* maps at a scale of 1" to 1 mile: Sheets 167 (Salisbury), incorporated in the 1:250,000 scale South West regional ALC map.
- *Reconnaissance Soil Survey information:* Regional Soil Association Map of South West England (1:250,000 scale) – and accompanying descriptive Bulletin 14 – Soils and their Use in South West England. Published by the Soil Survey of England & Wales in 1984.

- *Semi-detailed Soil Survey information:* Semi-detailed soil map (1:25,000 scale) -Sheet SU03 (Wilton) and accompanying descriptive Record No. 32 - Soils in Wiltshire 1.
- *DEFRA (formally MAFF) ALC information*:
  - Detailed ALC maps - Salisbury: Site 8 (Ditchampton), Site 15 (Bishopsdown Farm), Site 16 (Milford Farm), Site 18 (Fugglestone Road) and Site 19 (Old Sarum Airfield) and accompanying report Salisbury Urban Area Local Plan – Agricultural Land Classification - published in July 1989 (Reference no. 11/89/16).
  - Detailed ALC map of Thorny Down at 1:10,000 scale and accompanying report – Thorny Down, Firsdown, nr Salisbury - Agricultural Land Classification and site physical characteristics - published in March 1995 (Reference no. 8FCs6651).
  - Detailed ALC map of Ford at 1:10,000 scale and accompanying report Salisbury District Local Plan, Roadside Services, A30/Eastern Bypass – Agricultural Land Classification - published in July 1995 (Reference no. 52/95).
  - Detailed ALC map of Little Langford at 1:10,000 scale and accompanying summary report – Little Langford, Steeple Langford – Agricultural Land Classification - published in April 1998 (Reference no. EL/45/00051).

5.12.2 Baseline Conditions

General land use

5.12.2.1 The history of settlement in this area is related to the availability of water, and a string of settlements are in evidence along the River Till, Wylye and Bourne valleys. The second characteristic of the eastern part of the route is the presence of Boscombe Down airfield and MoD Research base at Porton Down. These lie to the east of A345 on the south-eastern side of Amesbury, and are major local employers. A high security fence bounds the airfield and the route would run adjacent and parallel to it for about 3 kilometres.

5.12.2.2 The character and form of farming in the eastern area of this corridor is one of large farm holdings, principally arable in nature, but with some woodland and pasture in the valley bottoms. Blocks of woodland exist, not only on steep sides of valleys, but also in the valley bottoms where they have been planted as windbreaks and game coverts. Areas of scrub, maize and sunflowers are also set aside for game.

5.12.2.3 Farming in the southern and western parts of the corridor is also characterised by large farms dominated by arable fields. However, more and larger areas of woodland exist, especially within the Druid's Lodge Estate. Chicken and egg production is a characteristic of farming towards the western end of the route and is characterised by the existence of large barns and broiler houses.

5.12.2.4 The route would pass to the north of Salisbury close to the Beehive Park and Ride site and Old Sarum. Salisbury is an important urban centre, which is subject to pressures for expansion, and land has been allocated to development east of Old Sarum, and just to the south of the A303 Realignment corridor.

5.12.2.5 The new junction on the Eastern Link at the Beehive Park and Ride site would not result in a loss of land from this facility. Between the Park and Ride site and the new A30 junction, the Eastern Link would run across agricultural land, principally in arable use. The new A30 Junction would provide an improved access to the north-eastern side of Salisbury. This area has recently been the focus of much non-food retail development and leisure facilities.

5.12.2.6 The route would head south across flat agricultural land, mostly set to arable, at the foot of the steep slopes of Cockey Down, prior to cutting across the playing fields of the complex of educational establishments on the eastern side of Church Road. The route would pass the eastern side of Laverstock and across Burrough's Hill before descending towards Queen Manor Road. The typical character of this stretch of the route is undulating arable land with numerous copses and scrub. The southern section of the Eastern Link would cross low level, poor quality pasture land.

5.12.2.7 South of the railway crossing, the route would pass through a field of scrub which has been allocated for a Park and Ride site in the Salisbury District Local Plan before it crosses the alignment of the existing A36, Southampton Road, where it meets a new roundabout just north of the sewage treatment works. There would also be modifications to some 800m of the A36 to accommodate the new route. A new connection across pasture land would provide a link with the present Tesco roundabout to the west. A connection to the north-east across similar poor quality pasture would rejoin the A36 at Kennel Farm.

Waterway restoration Projects

5.12.2.8 Documentation that covers the Rivers Bourne, Till and Avon, which would set out any relevant proposals for these rivers were reviewed. There is no reference to waterway restoration/development projects underway or planned.

Agricultural land – general

5.12.2.9 The six principal soil associations mapped along the route from west to east are: **Andover 1**, **Upton 1**, **Coombe 1**, **Andover 2**, **Carstens** and **Frome**. All are developed on undulating chalkland, apart from Frome association which is developed on floodplain land.

5.12.2.10 **Figure 9.1** shows the likely extent of the three principal categories of agricultural land quality. The categories are:

Agricultural land – Predominantly higher quality agricultural land

5.12.2.11 This category is likely to be predominantly higher quality land mainly in subgrade 3a (80%) and grade 2 (15%) with the remaining land in lower quality subgrade 3b (5%). It covers land mapped as Andover 1, Andover 2 and parts of Upton 1, where gradient is not an extensive limitation. On the dry valley bottoms where Coombe 1 has been mapped there is likely to be a higher proportion of grade 2. Droughtiness and topsoil stoniness are likely to be the main limitations.

Agricultural land – Predominantly lower-quality agricultural land

5.12.2.12 Land in this category is likely to be predominantly lower-quality land mainly in subgrade 3b (80%), grade 4 and grade 5 (10%), although locally land in subgrade 3a (10%) may occur.

5.12.2.13 Where possible the moderately to steeply sloping land within the Andover 1, Upton 1 and Andover 2 associations has been mapped out separately in making this assessment. Gradients of between 7 and 11 ° are limited to subgrade 3b, whilst those between 11 and 18° are limited to grade 4. To the east of Salisbury a small area of steeply sloping land with gradients of more than 18° is limited to grade 5. These areas could be more or less extensive than shown.

5.12.2.14 On the single area of Carstens association to the south, topsoil stoniness (more than 15% v/v stones larger than 20 mm) is likely to be the main limitation, constraining land mainly to subgrade 3b, although subgrade 3a may occur on less stony areas.

5.12.2.15 On the floodplain land of the Rivers Till, Avon and Bourne, Frome association has been mapped. The land is likely to be constrained to subgrade 3b by wetness/workability or droughtiness limitations. Flood risk and topsoil stoniness may also be limitations locally.

Other land

5.12.2.16 Land in this category comprises roads, part of Boscombe Down Airfield, farm buildings, residential properties and gardens and woodland. These areas are shown in grey on **Figure 9.1**.

5.12.3 Assessment of Impacts and Effects

Demolition of Property – general

5.12.3.1 This section of the report provides an estimate of the number of properties/buildings potentially at risk of demolition, and concludes with those that are likely to be demolished and removed if the Parker Route were to be adopted. It includes consideration of:

- Residential properties;
- Commercial/industrial properties;
- Agricultural buildings; and
- Other properties.

5.12.3.2 The assessment presented in this document is based on the current design. It is likely that relatively minor changes in alignment/engineering measures could have a significant impact on the conclusions outlined in the following sections. This concern is particularly apparent along the eastern part of the route in the valley of the River Bourne, where the route would run in a tight gap between the fence of Boscombe Down airfield and the settlements of Allington and Boscombe.

Demolition of Property – residential

5.12.3.3 **Figures 9.1–9.5** show the locations of residential land use.

5.12.3.4 Approximately 313 residential units exist within the 1000m corridor of the A303 Realignment section. Eight of these units are within 100m of the route centreline. Two units, Chestnut Cottages, Idmiston would need to be demolished in order to construct the scheme. The remaining six units, would be potentially affected by the construction/operation of the road but would not suffer direct land take or demolition. These are Avon Farm Cottages (3 units), Springfields, Idmiston (2 units) and The Old Chapel, Idmiston (1 unit).

5.12.3.5 The Eastern Link section would pass closer to established residential areas than the A303 Realignment section. There are over 1,000 dwellings within the 1,000m corridor. The results of the land use survey show that the Eastern Link would not result in the demolition of any residential buildings. However, one property on Petersfinger Road immediately to the east of

the point where the new road would pass under the railway may experience land take from the garden area.

Demolition of Property – commercial and industrial

5.12.3.6 There is a range of existing businesses within the Study area. These are shown on **Figures 10.1 – 10.2**. For the purposes of the land use assessment, shops and public houses were classified as services and are also included in the figure so that it provides a full picture of businesses/employers within the route corridor.

5.12.3.7 The A303 Realignment would have no effect on industrial or commercial premises. All of the premises are located sufficiently far away from the route centreline that there would be no demolition or land take. The Eastern Link would also not result in either demolition or land take from industrial or commercial properties.

Demolition of Property – agricultural

5.12.3.8 There are numerous agricultural buildings within the 1000m corridor. Many of these would be unaffected by either the A303 Realignment or the Eastern Link. It should be noted that, as yet, no information is available as to the agricultural unit/farm holdings within which the buildings are used.

5.12.3.9 The A303 Realignment would not result in the demolition of any agricultural buildings. However, four agricultural buildings are located within close proximity of the route and it is therefore possible that these may be affected by the scheme (in particular by construction activity). These are at Berwick Hill Farm (2 buildings) Church farm (a grain store) and near Chestnut Cottages (1 single agricultural unit/store).

5.12.3.10 There are fewer agricultural buildings within the corridor of the Eastern Link. Most would be unaffected by the scheme. However, the new road between the Eastern Link and the A36 would result in the demolition of one building to the east of Petersfinger Farm. Site surveys show that this is used as a store, probably related to agricultural activity. However, as this is private land, the precise use of this building cannot be established for certain at this stage.

Demolition of Property – other buildings/properties/land at risk

5.12.3.11 The route corridor would avoid the central areas of villages, so that other buildings/properties such as shops, churches, post offices and other facilities, would generally be avoided. However, this section notes other buildings, properties and land that may be affected by the route.

5.12.3.12 The only other properties/buildings worthy of note within the corridor of the A303 Realignment are:

- The Beehive Park and Ride Centre, to the south of the route, near Old Sarum - This facility is well used as part of the traffic management strategy for Salisbury, which seeks to introduce similar facilities on other principal routes to the city. Improvements to the roundabout may affect the site, during construction at least.
- Sarum Park – a Wiltshire County Council facility, which lies to the east of the park and ride site. It is proposed that this use, which might be sensitive to the proximity of a new road, is likely to be moved to another site, as the land on which it stands is allocated in

the Salisbury District Local Plan for mixed employment and housing uses. The land is not physically affected by the route however;

- Properties associated with the MoD establishments at Boscombe Down and Porton Down - The main buildings associated with the MoD are located outside of the 1000m Parker Route corridor and would therefore not be affected by land take.
- Several smaller scale outbuildings of unknown use are present within the 1000m corridor area but these would not be affected by the Parker Route.

5.12.3.13 Within the corridor of the Eastern Link there is only one additional land use type worthy of note. Four schools (St Andrews Church of England Aided Primary School, Wyvern College, St Edmunds Girls School and Sports College and St Josephs School) are located off Church Road in Laverstock. The route centreline passes through the playing fields to the rear of St Edmunds and St Josephs and would be likely to result in the loss the north-east corner of those pitches. At this stage, it is not known to what extent these playing fields are used by the community

Loss of land used by the community

5.12.3.14 The site survey sought to classify land used by the community for the purpose of recreation and leisure. The results show that the following areas exist within the 1000m route corridor of the A303 Realignment. These are also shown on **Figures 9.1 – 9.5.**:

- Berwick St James Cricket Club;
- Salisbury City Football Club ground;
- A public playing field adjacent to Salisbury City Football Club; and
- An area of children's play equipment off Partridge Way, Salisbury.

5.12.3.15 The land use survey that was carried out showed that there are no allotments within the 1000m corridor. However, it has not been possible yet to identify whether the recreation areas listed above have a specific legal status (common land, town/village green, or public open space). Salisbury District Council were contacted but have been unable to provide this information yet. Site visits were also undertaken in an attempt to establish the likely legal status of land on the ground. However, no specific indication of status was found at any of the identified sites (although it is unlikely the areas of children's play equipment would fall into any of these categories).

5.12.3.16 It is very unlikely that the Berwick St. James Cricket Ground would be affected, as it is located some 400m from the route. The ground is isolated from the village and is not frequently used other than for cricket, during the season. Whilst a small area of children's play equipment is provided within the cricket ground its remote location relative to the residential areas means that it unlikely to be particularly well used.

5.12.3.17 Similarly, the area of children's play equipment at Partridge Place, which appears to be well used, is unlikely to be affected as this is around 480 metres from the route.

5.12.3.18 The northern boundary of the Salisbury City Football Club site is approximately 170 metres from the centre line of the Parker Route. It is unlikely that the site would be affected directly by the route.

5.12.3.19 The Football Club site is bounded to the north and west by public playing fields. The northernmost tip of the playing fields is 50 metres from the centre line of the route. It is

therefore possible that the route could result in the loss of some playing fields land possibly during construction. However, this is likely to be minimal and would itself not affect users of the space significantly.

5.12.3.20 It has not been possible to accurately determine the use of the playing fields in this specific area, some of which have been set out as pitches. However no surveys of their use have been undertaken, but site visits do suggest that the degree of use is limited as the pitches showed no evidence of wear and tear and, at the time of the site visit, there were no goals on the pitches.

5.12.3.21 Within the corridor of the Eastern Link, the following areas of land used by the community exist:

- A recreation ground (with associated pavilion building) off Ash Crescent within the Hampton Park estate;
- A small area of children's play equipment off St Peters Road within the Hampton Park estate;
- A small area of children's play equipment off St Judes Close within the Hampton Park estate; and
- Playing fields (including floodlight sports pitch and associated pavilion building) to the east of Church Road, Laverstock at Laverstock Social Club.

5.12.3.22 The route would not affect those spaces that fall within the corridor of the Eastern Link. The spaces within the Hampton Park estate would be unaffected, as they would be shielded from the road by residential development. Similarly the playing fields in Laverstock would be unaffected as these are some 450m from the route centreline and separated from the proposed road by other development.

5.12.3.23 As yet, no assessment has been made of the use of sports pitches at the schools or colleges to the east of Church Road, Laverstock by members of the public but there would be some land take from these.

Effects on development land – allocated development sites

5.12.3.24 The adopted Salisbury District Local Plan allocates an area of land to the north of Portway, within the 1000m corridor, for mixed use development. This allocation lies to the east of the Beehive Park and Ride facility on the northern edge of Salisbury. This site (together with an area to the south of Portway and thus outside of the 1000m corridor) is covered by policy H2D of the Local Plan. This states that the land is allocated for "mixed development including housing, employment, retail and education, recreational and community facilities." Policy H2D goes on to say that development of the whole site (to the north and south of Portway) will be "limited to 630 houses and 6 hectares of employment land" during the Local Plan period up to 2011. No planning applications to implement that allocation have, as at September 2003, been submitted.

5.12.3.25 The allocated development area to the north of Portway would therefore be affected by the route. The route runs though the northern tip of the above Local Plan allocation and thus would result in the loss of a small parcel of potential development land. Whilst direct land take would be minor, the proximity of the road to the northern and north eastern boundary of the route might well affect the amenity and use of parts of the remainder of this development area. It is understood that the owners of this development land are also seeking redevelopment of the Salisbury City Football club site, through its relocation to another site in the city.

5.12.3.26 Policy S7 allocates a 3.6 ha area of land between Green Lane and London Road for retailing and employment use. However, the Local Plan notes that the development of this site would be subject to local highway improvements including road lowering to increase the headroom at St. Thomas's Railway Bridge and public transport provision. Planning permission has been granted for non food retail development on this site. However, to date that permission has not been implemented. It is understood that Asda has recently acquired the site with a view to developing it for a food superstore (see next section). The route runs to the north of this site and would not affect it.

5.12.3.27 Policy TR8, deals with potential park and ride sites on the edge of Salisbury. The policy identified five potential locations, one of which (at the Beehive junction on the A345) has already been developed. One of the remaining sites falls at the southern end of the route corridor surrounding the Eastern Links; this is adjacent to the A36 at Petersfinger. A further site, adjacent to the A30 at Bishopdown, falls outside the route corridor.

5.12.3.28 The Local Plan states that development of the park and ride sites identified in Policy TR8 will be undertaken as a rolling programme as resources permit. In respect of the Petersfinger site the Local Plan notes that development would be subject to the provision of a satisfactory junction with the A36 Southampton Road and that this junction would serve not only the proposed park and ride site but also replace the existing Petersfinger Road junction, which is substandard.

5.12.3.29 The Eastern Link passes directly through the site at Petersfinger, as allocated by Policy TR8 ii. It is therefore likely that, should the scheme go ahead, it would not be possible to develop the site for park and ride.

Effects on development land – outstanding planning permission

5.12.3.30 In order to establish whether the road scheme may impact on any planned future development, data related to previous planning applications was obtained. Salisbury District Council provided details of all planning applications within the study area approved within the last 5 years, as this is the maximum "life" of a planning consent. However, their records did not show whether these planning permissions had yet been implemented. In order to identify permissions still outstanding (and therefore potentially jeopardised by the road scheme) site visits were undertaken on 30th September 2003 and on 14th November 2003 (in respect of the Eastern Link) to determine whether the permissions had been implemented.

5.12.3.31 The site survey showed that there are eight outstanding, non-implemented permissions within the 1000m corridor of the route. The location of these is shown on **Figures 10.1 – 10.2**. The nature of these permissions is such that they are unlikely to be affected by the road scheme. The permission relating to non-food retail off London Road is soon to expire. It is known that Asda stores have recently acquired this site, so it is not anticipated that the outstanding permission will be implemented. However, should this site be developed (and it is allocated for development in the Local Plan) as noted above it may be affected by the route as the site abuts the route centreline. A summary of the permissions and the likely impacts of the road scheme upon them are summarised in **Table 5.13**.

5.12.3.32 In addition to these outstanding planning permissions, the following schemes for which planning consent has already been granted are, at the time of writing, currently under construction at Avon Farm:

- Change of use of agricultural building to health and leisure club (including extension and alteration) and associated uses
- Conversion and adaptation of former farm buildings to six residential units.

The impact of the route on both these schemes is considered elsewhere in this report.

5.12.3.33 It is also known that there are planning permissions for various works (additional classrooms and other improvements) at the schools in Laverstock. However, it is not known whether these have yet been implemented. In any event they would not be directly affected by the scheme, although the school would experience a degree of noise and visual intrusion.

Table 5.13 Outstanding planning permissions within the 1,000m of the route

Application No	Description	Approved	Likely impact of road scheme
00/2036	Erection of agricultural building (replacement) at Wisma Poultry Farm	08/01/2001	Unlikely to be affected by the road scheme as around 400m from centre line.
00/2037	Erection of agricultural building (replacement) at Wisma Poultry Farm	08/01/2001	Unlikely to be affected by the road scheme as around 400m from centre line.
01/139	Demolition of redundant pole barn and construction of office suites at Pole Barn, Hilltop Business Park	15/05/2001	Situated around 200m from the route centre line. Unlikely to be affected other than by noise/disruption during construction. Businesses may benefit from being closer to a strategic road.
03/1181	Renewal of outline permission for a bungalow, garage and carport at Downlands, Tidworth Road.	09/07/2003	Unlikely to be affected significantly by the road scheme. Proposal is an infill development.
03/0323	Alteration of access to Birdlymes Farm House. (Note: change of use permitted under this scheme has taken place.)	05/05/2003	Minor works – would not be affected by the road scheme.
99/1634	Change of use from workshop/storage to trade in rural antiques at The Grange	14/12/1999	Unlikely to be affected by the road scheme – situated around 400m from the route centre line.
98/496	London Road - Non food retail park	-	The route runs to the north of this site. The site would be unaffected by the scheme.
Various	Various planning permissions granted to the schools/colleges in Laverstock.	-	It has not been possible to confirm whether these permission have been implemented (as Salisbury District Council's records do not show this and access to the sites was not possible at the time of survey).

Effect on Agricultural land

5.12.3.34 On the basis of the separations and predicted proportions shown on **Figure 9.1** it is estimated that, overall, higher quality land is likely to be dominant across most of the route with local occurrences of lower quality land.

5.12.3.35 The area of land in each land quality category that would be required for the construction of the Parker Route is summarised in **Table 5.14**.

Table 5.14: Area of land affected

Probable Predominant Land Quality	Area permanently removed (ha)
Predominantly higher quality land (Subgrade 3a and Grade 2)	177.1
Predominantly lower quality land (Subgrade 3b, Grade 4 and Grade 5)	14.4
Other Land	6.2
Total project area	**197.7**

5.12.4 Mitigation

5.12.4.1 During more detailed design, care would be taken to ensure that the effect on land take is minimised where possible. Parts of the exiting A303 and A344 would be returned to agriculture as part of the works to convert these sections of road into byways. Implementation of the Contractor's Environmental Management Plan (CEMP) would ensure that soil movement and storage accord with best agricultural practice and that potentially damaging effects from dust, mud and other products of highway construction are minimised.

5.12.5 Summary

5.12.5.1 The A303 Realignment would result in the demolition of 2 residential properties. The construction of the Eastern Link would result in the demolition of a single agricultural building. The Eastern Link would also be likely to result in the loss of the north-eastern corner of the St Edmunds & St Josephs School playing fields. Given their proximity to the centre line of the route, public playing fields adjacent to the Salisbury Football Club could potentially be affected during construction, although this loss is likely to be minimal and is not considered to significantly impact on users of the space. In addition, it is considered that a small parcel of land north of Portway allocated for mixed use development in the Salisbury Local Plan would be lost as a result of the route. Overall, it is considered that the route would have a **slight adverse** impact on Land Use.

5.13 Disruption Due to Construction

5.13.1 Key Construction activities

5.13.1.1 For the purposes of this assessment, it is assumed that construction for this scheme would start in February 2005 so that it can be compared fairly with the Published Scheme. However, in practice, as the route is being presented as an alternative to the Published Scheme, a substantial delay would occur if it were found to be preferable. The scheme would take 2 ½ years to construct which would be allow 3 full summers for construction activities.

5.13.1.2 The following construction activities would be carried out:

- Advanced works
- Topsoil strip
- Earthworks
- Piling
- Structures
- Road Pavement
- Landscape and planting

These activities are described in the Environmental Statement for the Published Scheme.

5.13.1.3 With the possible exception of the construction of the Southampton to Bristol railway bridge all works would be constructed within the permanent land take for the scheme. This would include a haul road running along the length of route. A temporary causeway and temporary bridge would be required at each of the rivers to provide crossing points. Plant crossing would be put in place on the side roads and other Rights of Way crossed by the route.

5.13.1.4 The contractor would require a number of construction compounds in order to store material and plant and house site offices and accommodation for staff and labour. The impact of these compounds has not been assessed as it is not known at this stage their number or location.

5.13.2 Assessment of Impacts and Effects

5.13.2.1 Assessments are based on a house count taken from Ordnance Survey maps as well as information gathered for the other environmental assessments. There are 118 residential properties within 100m of the road corridor and zero non-residential properties. There are no properties identified as being particularly sensitive to disruption. There are a number of significant archaeological and ecological sites that might be affected by construction activities.

5.13.2.2 The assessment of impacts and effects of disruption due to construction on properties, environmental resources and road users has been carried out and included in the previous chapters.

5.13.3 Mitigation

5.13.3.1 The contractor responsible for constructing the scheme would be required to produce and maintain a Contractor's Environmental Management Plan (CEMP). This would include:

- Register of environmental aspects
- Roles and responsibilities
- Communication and co-ordination
- Training and awareness
- Operational control
- Checking and corrective action
- Environmental control measures

These elements are described in more detail in the Environmental Statement for the Published Scheme.

5.14 Policies and Plans

5.14.1 Sources of Information

5.14.1.1 This section of the assessment deals with plans and policies from Development Plans and general statements of Government policy (e.g. the U.K. Strategy for Sustainable Development). It does not deal with Transport plans and policies, for example from the Highways Agency, except in so far as general statements of Government Planning Policy and Development Plans relate to transport matters.

5.14.2 Baseline Conditions

5.14.2.1 An assessment of the impacts on Plans and Policies requires that sufficient assessment is undertaken to identify those international/national, regional, county and local level plans and policies which may be affected by the route and to assess the likely impact of the route on the achievement of the objectives of the plans and policies identified. Information relating to the relevant plans and policies that apply to the Published Scheme has been used here.

5.14.2.2 A wide range of national, regional and local plans and policies have been reviewed, as set out in the Environmental Statement. The key ones are:

- Wiltshire Structure Plan 2011 – Adopted, January 2001
- Wiltshire Local Transport Plan, 2001/02 – 2005/06
- Replacement Salisbury District Local Plan, June 2003
- Stonehenge World Heritage Site Management Plan, June 2000

5.14.3 Assessment of Impacts and Effects

Sustainable Development

5.14.3.1 The route would provide for, and encourage car usage rather than public transport, but government guidance does recognize that road development is an integral part of an overall integrated transport strategy. Because the route would be less direct than the existing A303, it may encourage a small element of trips to divert from roads to public transport. Overall the route would be consistent with plans and policies for sustainable development.

Plans and Policies for Transport

5.14.3.2 The Parker Route would help support the A303/A30 corridor as a strategic corridor to the South West, albeit on a less direct route. It would therefore be consistent with plans and policies at national, regional and local level to upgrade this strategic route to the south-west.

5.14.3.3 The Parker Route and Eastern Link would effectively provide a bypass to Salisbury for traffic on the A36, where none exists at present. This would provide benefits to the city and would support policy objectives to enhance the city's accessibility and attractiveness as a place in which to live, shop, work and to visit. This would be consistent with the Transportation Strategy for Salisbury, the Local Plan and the Salisbury and Wilton Local Transport Plan and

would support relevant Local Plan policies to encourage conservation of the built environment, encourage tourism and promote the vitality and viability of local communities.

Cultural Heritage

5.14.3.4 The Stonehenge World Heritage Site Management Plan aims to outline a sustainable approach to the conservation of the cultural heritage assets of the Stonehenge World Heritage Site (WHS), ensuring not only *"the physical survival of the archaeological sites and monuments, but also enhancing the visual character of their landscape setting, increasing biodiversity and improving the interpretation and understanding of the whole WHS ...."* (Para. 1.1.1). The Management Plan identifies a negative impact on the WHS at present, caused by traffic and roads.

"*Roads and road traffic have long had a serious impact on the WHS. In particular, the A303 trunk road and the A344 county road, are highly visible routes that cut through the heart of the WHS landscape and adversely impact on the character of the immediate setting and people's enjoyment of the Stones themselves."(*Para. 3.3.25)

5.14.3.5 Objective 9 and Paragraph 4.4.6 address this issue.

"Objective 9: *The appropriate landscape setting for the Stones and immediately related ceremonial monuments in the core should be restored."*

"A tunnel for the A303, and the removal of the A344 and existing visitor centre facilities, are critical elements in any strategy for improving the setting of the core area, and for restoring the Stones to their landscape. In particular, the removal of the A303 from the landscape would reduce the adverse visual and noise impacts currently experienced by visitors to the Stones. Removal of the A303 and the A344 could also restore the integrity of the Avenue – an important ceremonial route currently severed by roads and traffic. Means of enhancing the Avenue could also be considered." (Para. 4.4.6)

Objective 9 deals specifically with the 'core' of the WHS. Objective 10 relates to the wider area of the WHS:

*5.14.3.6 "**Objective 10**: The immediate setting of visible monuments in the wider landscape of the WHS beyond the core zone should be maintained and improved."*

5.14.3.7 Objective 23 and its supporting paragraphs address issues concerned with traffic movements, congestion, safety and enhancement of the historic environment.

"Objective 23:*– Measures should be identified which will provide comprehensive treatment of important road links within the WHS in order to reduce traffic movements and congestion, improve safety and enhance the historic environment"*

"A strategy to achieve the above includes:

placing the A303(T) in a tunnel, closure of the A344 and related landscape restoration schemes within the Stonehenge 'Bowl', including the removal of the A344 in the longer term.

Although tunnelling may inevitably have some detrimental effect on existing archaeology along the route corridor of the A303(T), this should be balanced against the major benefits for the WHS which would result. These include the reunification of the prehistoric landscape, the reduction of visual and noise pollution around the Stones and the provision of increased and safer public access to the Stones and their immediate environs. These measures would

significantly help to recreate a sense of the historic character and atmosphere of Stonehenge…..(Para. 4.6.4)

5.14.3.8 The Parker Route would secure substantial beneficial effects in the World Heritage Site (WHS) by the complete removal of all traffic and evidence of the A303 and A344, in substantial conformity with the aims and objectives of the Stonehenge WHS Management Plan and relevant policies for Cultural Heritage. However, construction of the A303 Realignment and the Eastern Link would result in an adverse effect on 80 known archaeological sites, with loss of remains at one Scheduled Monument and negative effects on the settings of 7 Scheduled Monuments and 6 Listed Buildings. The study area contains extensive evidence of settlement and funerary activity and the whole area should be seen as part of a single archaeological landscape. This is recognised in the local plan designation of the entire area as an Area of Special Archaeological Interest. Although the scheme would bring significant benefits to the settings of monuments within the WHS, the physical loss of archaeological remains elsewhere on the route could be substantial.

Landscape

5.14.3.9 The route would have exactly the same effects as the Published Scheme in the Stonehenge Monument Immediate Landscape Setting as described in the Environmental Statement. In addition, it would have significant landscape and visual benefits for the outer areas of the WHS, removing the A303 and its traffic from Longbarrow Crossroads to Countess Roundabout. It would also have benefits for properties and sites north of Winterbourne Stoke. These benefits must be weighed against its adverse impacts on the tranquil, high quality landscape of the area, which is designated as a Special Landscape Area, and on sites and monuments outside the World Heritage Site, in particular on Old Sarum. The section of the route to the immediate north of Salisbury, particularly the viaduct crossing of the River Avon, is likely to conflict with the Local Plan policy to protect the landscape setting of the city. The route would also have an overall negative visual effect on residential property, resulting from both its greater length and the increases in traffic on a number of densely populated local roads. Because of the international importance of the WHS, the advantages there weigh more heavily than the disadvantages elsewhere, but even with that weighting taken into account the Parker Route does not offer an overall benefit in landscape and visual terms and therefore its impacts on landscape policies are considered neutral.

Nature Conservation and Biodiversity

5.14.3.10 The main site designations present within 2km of the route are the River Avon Special Area of Conservation (SAC) and Salisbury Plain candidate Special Area of Conservation (cSAC). A total of fifteen Sites of Special Scientific Interest (SSSI), some of which formed components of the SAC sites, and at least 20 Sites of Importance to Nature Conservation (SINC) fall within the study area. A number of areas of unimproved chalk grassland, broad-leaved woodland and sites with a lower ecological value also fall within the corridor of the proposed scheme although there were no reported areas of Ancient Woodland.

5.14.3.11 The most significant sites which would be impacted by the route are Salisbury Plain cSAC (including Parsonage Down, Porton Down and Salisbury Plain SSSIs) and the River Avon SAC (including River Till, Lower Woodford Water Meadows, Porton Meadows and the River Avon SSSIs).

5.14.3.12 However, in an area of relatively unspoilt and tranquil countryside, a substantial, new, dual carriageway road is likely to have a potentially negative impact on biodiversity, even with mitigation, in conflict with relevant plans and policies for nature conservation and biodiversity.

Water

5.14.3.13 The water environment of the Parker Route comprises ground water in the chalk aquifer, which also provides the main component of flow to the three rivers: the Avon, Till and Bourne. Both groundwater quality (in the chalk aquifer) and surface water quality (in the Avon, Till and Bourne) are extremely good. The Avon, Till and Bourne are all high quality rivers with important fisheries and significant diversity of aquatic flora and fauna.

5.14.3.14 Construction and use of the Parker Route would have the potential to have negative effects on the water environment from three sources:

- silt-laden run-off from haul roads, stockpiles and newly landscaped areas causing contamination of the three rivers during construction, particularly from works associated with the viaduct crossings
- accidental spillage or leakage of hazardous materials, oils and fuels into the rivers and/or groundwater
- Viaduct piers located on the three river floodplains could impede flow to the extent that the flood risks upstream of the crossing points were increased. Further detailed assessment of this issue are required but in principle this could conflict with plans and policies to manage flood risk

5.14.3.15 It is assumed that normal best practice mitigation will be employed, including provision of a road drainage system to meet stringent pollution and flood related design criteria. On this basis the route is not likely to have any significant effect on relevant plans and policies for the water environment.

Geology and Soils

5.14.3.16 Assuming that implementation of the route would follow established best practice for mitigation, there would be no adverse effects on geology and soils and therefore relevant plans and policies would be complied with. The implications of the relevant Policies and Plans for minerals development in the Adopted Wiltshire and Swindon Minerals Local Plan 2001 have been reviewed. They do not contain any allocations for future mineral extraction sites in the vicinity of the Parker Route.

Noise and Vibration

5.14.3.17 The A303 Realignment section of the route would result in significant increases at a small number of isolated properties located within 300m of the route. A greater number of properties lie within 300m of the Eastern Link and are likely to be subject to an increase in noise as a result. It is likely that other roads away from the route alignment would also be affected by the proposals. These include the Packway, Countess Road North and the A3083, which would all be adversely affected, and the A303, the A338 and the A36(T), which would benefit.

5.14.3.18 The removal of all major roads and traffic from the World Heritage Site would result in substantial beneficial reductions in noise. Properties close to the A303 between Winterbourne Stoke and Amesbury would enjoy similar gains. These benefits would be in substantial conformity with policies and plans for noise and vibration.

Air Quality

5.14.3.19 The assessment of the air quality implications of the route has demonstrated that the local air quality impacts on human health once it is in operation would be negligible. Relevant air quality standards would not be exceeded at any receptor along the route corridor. On this basis the route would be compliant with plans and policies for air quality.

Pedestrians, Cyclists, Equestrians and Community Effects

5.14.3.20 The wider economic impact of the route outside the study area would be similar to that for the Published Scheme and is described in the Environmental Statement. Any strategic benefit of the route would be localised to two areas: the impact on the nationally important Stonehenge World Heritage Site, and the strategic impact on Salisbury itself. With regards to the former, the route would contribute to the overall enhancement of the area. It would protect the future of the site for years to come, enhance the visitor experience and lead to increased (and better managed) visitor numbers in the future. The route is likely to have a positive impact for businesses in Salisbury. The improved accessibility would enable businesses to move goods and services out of the city, making it a more attractive and accessible business location. In addition, the proximity of the A303 to Salisbury would bring one of the region's spinal routes within close proximity to the city enhancing the possibility of passing trade from tourist and business traffic. This would be of benefit to businesses providing accommodation and catering facilities.

5.14.3.21 The route would reduce the through traffic along the A338 and A36. The numerous small villages and settlements along these routes would experience benefits from the removal of through traffic. It is considered unlikely that any negative business impacts would be felt by the settlements along these roads.

5.14.3.22 The removal of traffic and noise within the World Heritage Site would lead to substantially improved opportunities for site access and environment for pedestrians and visitors. The route also provides for a major reduction of traffic through the village of Winterbourne Stoke. This relief in severance in Winterbourne Stoke is likely to be substantial and the amenity of residents would be similarly enhanced. However, it will have **moderate adverse** effects on Rights of Way and other routes outside the World Heritage Site. Some Rights of Way would be stopped-up, reducing access to the network. Users of many routes would find them noisier, because of the route's proximity. The new road, particularly its bridges and underpasses, would cause some visual intrusion, which will detract from the experience of footpath users.

5.14.3.23 The likely substantial benefits for the internationally important WHS, the positive benefits for businesses and communities in Salisbury and the removal of through traffic through Winterbourne Stoke and the settlements along the A338 and A36 would be in conformity with policies and plans to promote the vitality and viability of local communities.

Land Use

5.14.3.24 A review of the Agricultural Land Classification Maps suggests that approximately 89% of the route (177 ha out of a total agricultural land take of 197 ha) is predominantly higher grade land (subgrades 3a and 2). This is considered to be amongst the "best and most versatile" of all agricultural land. Policy objectives seek to ensure that, where it is unavoidable that agricultural land is taken for development, local authorities should seek to ensure that land of a lower quality is taken in preference to that of a higher quality, except where other sustainability considerations suggest otherwise. The Parker Route would involve a substantial land take of higher grade agricultural land, which would not be in accordance with relevant policies.

Construction Effects

5.14.3.25 During the route's construction there would be temporary effects on local residents, travellers generally and wildlife. To protect the relatively unspoilt and tranquil countryside in many parts of the Route, a Contractor's Environmental Management Plan (CEMP) would be required to control construction activity, protect sensitive areas and restrict disturbance to reasonable levels. On this, basis the route is likely to be in conformity with relevant plans and policies to manage waste and dust generation.

5.14.4 Mitigation

5.14.4.1 No mitigation is proposed for plans and policies.

5.14.5 Summary

5.14.5.1 A review of a wide range of plans and policies at the international/national, regional, county and local level, indicates that the route would achieve considerable compliance with policy. The WHS is a cultural heritage resource and landscape of international importance. Removing the existing A303 and part of the A344 within the WHS and returning them to agriculture would improve the amenity of visitors, in conformity with the aims and objectives of the Stonehenge WHS Management and other Cultural Heritage policies and plans.

5.14.5.2 A further main policy objective is to provide a solution to the current congestion and safety problems on this section of the A303. The route will support the A303/A30 corridor as a strategic corridor to the South West, albeit on a longer route. It would effectively replace the A338 and the A36 as the main northerly access to Salisbury, and provide a northern bypass to Salisbury on the A36. These routes are single carriageway and pass through numerous villages and settlements. The route would provide dual carriageway access and bypass these settlements. These benefits would be in substantial conformity with policies and plans to promote the vitality and viability of local communities, and would support Local Plan and transport policy objectives to enhance the city's accessibility and attractiveness as a place in which to live, shop, work and to visit.

5.14.5.3 The principal areas of policy conflict arise from the Parker Route comprising a new road corridor through relatively unspoilt and tranquil countryside. This raises issues with regard to cultural heritage, landscape, visual impact, community effects and agriculture. The Route corridor would have an adverse effect on the high quality landscape in the area, including visual intrusion, and would involve significant agricultural land take. Some Rights of Way outside the WHS would be stopped-up, reducing access to the network and users of many routes would subjected to impacts from the Parker Route traffic.

6 Traffic and Economic Assessment

6.1 Modelling methodology

6.1.1 Sources of Data and Definition of Traffic Model

6.1.1.1 It was not possible, within the time constraints, to collect additional traffic information for this assessment or to devise a traffic model from basic data (i.e. roadside interviews). It was necessary to make use of existing traffic data and traffic models. There are two traffic models in the area that could form the basis of a traffic model for the assessment of the route: the A303 Stonehenge Improvement traffic model, used to assess the Published Scheme for the A303 Stonehenge Improvement; and the Salisbury Traffic Model, developed to assess road schemes in and around Salisbury. Neither model covers completely the area likely to be affected by the route and so a combined model, using information from both models, was developed. The two models were designed to address different issues and their constituent parts were defined differently (see **Table 6.1**).

Table 6.1: Comparison between Stonehenge and Salisbury Models

Topic	A303 Stonehenge Traffic Model	Salisbury Traffic Model
Coverage	A303 corridor from Berwick Down to Bulford, including Shrewton / Larkhill / Durrington / Amesbury / Winterbourne Stoke.	Salisbury urban area, including Wilton, plus initial lengths of main roads feeding into the area.
Time periods	12-hour weekday in June	Morning peak hour, evening peak hour and interpeak hour, average weekday
Vehicle / trip purpose classes	Car – employers business Car – home based work Car – other home based Car – other non-home based Light goods vehicles Heavy goods vehicles	Light vehicles Heavy vehicles
Zone system	Zone system covers whole country. Detailed in A303 corridor, less detailed away from corridor.	Zone system covers study area only (Salisbury and Wilton). Cordon zones for roads crossing study area boundary.
Assignment method	All-or-nothing, based on minimum generalised cost paths.	Congested equilibrium assignment based on minimum time.
Base year	2000	1998
Forecast years	2008 and 2023	2005 and 2020

6.1.1.2 The combined model had to make use of aggregated data at a level where there was comparability between the two models. One factor that did ease the merging of the two models was that they both made use of roadside interview data on a screenline north of Salisbury. It could be assumed, with reasonable certainty, that the estimates from the two traffic models, of traffic flows on the roads crossing this cordon should be comparable. The Salisbury Model trip forecasting methodology included a mode split procedure to take account of the impacts of proposed park and ride sites and congestion. It was not possible to replicate this in the combined model and so the combination is carried out for forecast years rather than for the model base year. Thus, the model 'validation' is also carried out for forecast years and consisted of comparing the assigned flows from the combined model with those derived from the two constituent models.

6.1.1.3 The combined model represents a 12-hour day and has three vehicle classes: cars, light goods vehicles and heavy goods vehicles. There is no disaggregation by trip purpose. An all-or-nothing assignment process is used, based on minimum generalised cost paths. The forecast years are 2008 and 2023.

6.1.2 Development of Traffic Model

6.1.2.1 The combined model produces traffic flow estimates for the A303 corridor between Berwick Down and east of Amesbury and for areas in and around Salisbury. It covers the A303 between Berwick Down and east of Amesbury, the A360 from Shrewton to Salisbury, the A345 from Durrington to Salisbury, the A36 from Petersfinger (south east of Salisbury) to the A303 at Wylie. It does not cover, in any detail, the following areas:

- north of the A303 corridor (i.e. north of Shrewton and Durrington),
- east of Amesbury (more precisely, east of the A303 / A3028 junction at Bulford),
- west of Berwick Down (although it can be extended to the A303 / A36 junction at Wylie because there is no intermediate development or road junction),
- west of Salisbury along the A30,
- south of Salisbury (A354 and A338),
- south east of Salisbury on the A36,
- north east of Salisbury along the A30 or A338.

6.1.2.2 The zone system to the north of the common boundary between the two constituent models (a screenline north of Salisbury) is based on the A303 Stonehenge Improvement model system. To the south of this boundary the zone system is based on an amalgamation of Salisbury Traffic Model zones. All trips that had both ends north of the boundary have been taken from the Stonehenge model. All trips with both ends south of the boundary have been taken from the Salisbury model. Trips that crossed the boundary have been taken from the Salisbury model, with the end north of the boundary re-coded to a 'Stonehenge' zone. However, because the Salisbury model makes use of corridor zones[4] at points where roads crossed the common boundary, it is not possible to allocate trips to/from these zones to 'Stonehenge' zones with complete accuracy. An allocation has been derived by comparing select link analyses of the relevant link flows from the two models. In some cases, it has been necessary to create additional 'overlay' zones where it has not been possible to relate the Salisbury model cordon

4 A corridor zone is a zone that includes all trips to/from areas served by a road that crosses the boundary of the study area – the cordon. It does not include the detail of the remote origin or destination. The trips are all assumed to start from or finish at the point where the road crosses the cordon. For example, the cordon zone for the A36 east contains all trips using the A36 at the point where it crosses the Salisbury Transport Study cordon – west of Alderbury. It is not possible to identify the remote end of the trip, e.g. Romsey, Southampton, and Portsmouth etc.

zone to a Stonehenge model zone (or group of zones). The overlay zones have been loaded into the network at points chosen to ensure that the trips would pass through the boundary screenline at the correct point. The use of these overlay zones results in some loss of trips on the network north of the boundary screenline, because the trips do not appear on the network between their loading point and their ultimate origin / destination (which is unknown). None of the affected trips are expected to be attracted to the route and so these assumptions are not expected to affect the predicted flows on the scheme.

6.1.2.3 The forecast year (2008 and 2023) trip matrices from the A303 Stonehenge study have been modified to remove trips that crossed the boundary screenline. The four car trip matrices, by purpose, have been amalgamated to produce a single car trip matrix. Trips to /from zones south of the boundary screenline have been removed

6.1.2.4 The Salisbury model forecast year (2005 and 2020) trip matrices have been adjusted to represent 2008 and 2023. The factors used are consistent with the growth predicted for the A303 Stonehenge model and are given in **Table 6.2**.

Table 6.2: Growth Factors

	2005 to 2008		**2020 to 2023**	
Vehicle Class	Low	High	Low	High
Cars	1.045	1.096	1.038	1.055
Light Goods Vehicles	1.056	1.113	1.056	1.074
Heavy Goods Vehicles	1.030	1.084	1.044	1.061
Total Traffic	1.046	1.097	1.041	1.058

6.1.2.5 The matrices have been combined to produce 12-hour matrices by applying a factor of 2 to the morning and evening peak hour matrices and a factor of 8 to the interpeak hour matrices and then adding the resulting matrices (the factors were supplied by the consultants for the Salisbury Study). The light vehicle matrices have been split into car and light goods vehicle matrices. The car matrices have been derived by taking 88% of the light vehicle matrices and the light goods vehicle matrices by taking 12% of the light vehicle matrices. The zones within Salisbury / Wilton have been amalgamated to the combined model zoning system. Trips to / from zones north of the boundary have been allocated to the Stonehenge model zones, or to additional 'overlay' zones (see above).

6.1.2.6 The highway network for the combined model has been derived from the network information in the two constituent models. In the area north of the boundary screenline, the network is the same as that used in the A303 Stonehenge model. South of the boundary, the network is a simplification of the network in the Salisbury model. Several minor roads have been removed because their previous role, as local distributors of traffic to model zones, has been superseded by the amalgamation of the Salisbury model zones in the combined model. All the major roads in the Salisbury area are included in the model. Some additional road links have been added to overcome gaps in the coverage of the two constituent models, in particular:

- A36, from Wilton to the A303 at Wylye,
- B3083, from the A36 at Stapleford to Berwick St. James,

- A338, from A338 / A30 junction (St Thomas's Bridge) to the A303 at Cholderton,
- Local roads in the Woodford Valley (in schematic form) to represent better the access from the Woodfords to the surrounding major road network.

6.1.2.7 The Salisbury model highway network is coded as 'simulation' (junction capacities are explicitly coded and delays are calculated for each turning movement), whereas the Stonehenge model is coded, generally, as 'buffer' (no junction simulation) without speed/flow (because it is a 12-hour model). The parts of the network taken from the Salisbury model have been retained in simulation format but as dummy nodes, to turn off the calculation of delays, which is not appropriate for a 12-hour model. Speeds on these links have been derived from an analysis of their position in the road hierarchy, route characteristics (including speed limits) and expected traffic levels.

6.1.3 Traffic Model Validation

6.1.3.1 The validation of the combined traffic model has been achieved by comparing the assigned flows from the combined model with the assigned flows from the constituent models (the A303 Stonehenge Improvement traffic model and the Salisbury Transport Study traffic model). It has been carried out for flows in 2008 with low growth, with the Stonehenge Visitor Centre at its current location. The adjustments that have been made to the network information, to improve the comparison between the combined model flows and the constituent model flows, are of two types: adjustments to link speeds, to achieve better routing of trips, and adjustments to zone loading positions, to reflect more accurately the distribution of traffic to/from the relevant zone. A check validation has been carried out for flows in 2023 with high growth

6.1.3.2 For the flow comparison, the assigned flows from the three peak hour Salisbury models have been combined to produce a 12-hour flow estimate, using the same factors as used in the production of the trip matrices (see paragraph 6.1.2.5). They have been factored to 2008 and 2023 using the factors in **Table 6.2**, above. The assigned flows from the Stonehenge model have been used without adjustment. The flow comparisons for 2008 with low growth are given in **Table 6.3** and for 2023 with high growth in **Table 6.4**.

6.1.3.3 The flows are compared across a series of screenlines:

- Screenline A (A303 West) – this runs north-south from the A360 west of Shrewton to the A36 at Steeple Langford
- Screenline B (A303 Central) – this runs north-south from the Packway at Larkhill to the unclassified road from the A360 to Middle Woodford,
- Screenline C (A303 East) – this runs north-south from the A3028 at Durrington to the A303 east of Folly Bottom,
- Screenline D (A303 East-West, south of A303) – this runs east-west just to the south of the A303, from the A36 at Steeple Langford to the A338 at Winterbourne Dauntsey,
- Screenline E (East-West, north of Salisbury) – this runs east-west around the northern edges of Salisbury, from the A36 at Wilton to the A338 at Winterbourne Dauntsey,
- Selection of links on the A36 and other major roads in Salisbury.

Table 6.3: Link Flow Validation – 2008 Low Growth

	Validation Data from Constituent Models		New (Combined) Model	Difference (New Model – Old Model)	
Road and Location	**Source Model**	**12-hour Flow**	**12-hour Flow**	**Number**	**%**
Screenline A (A303 West)					
A360 North of Shrewton	A303	7,260	7,074	-186	-2.6
B390 West of Shrewton	A303	2,980	2,757	-223	-7.5
A303 West of Winterbourne Stoke	A303	17,890	17,263	-627	-3.5
A36 Steeple Langford	STM	6,690	8,825	2,135	32
Total		34,820	35,919	1,099	3.2
Screenline B (A303 Central)					
The Packway , Larkhill	A303	3,520	3,261	-259	-7.4
A344 at Stonehenge	A303	8,150	7,703	-447	-5.5
A303 at Stonehenge - Eastbound	A303	9,370	8,885	-485	-5.2
A303 at Stonehenge - Westbound	A303	9,440	9,226	-214	-2.3
U/class Road from Middle W'ford to A360	A303	600	635	35	5.8
Total		31,080	29,710	-1,370	-4.4
Screenline C (A303 East)					
A3028 between Bulford and A303	A303	2,820	2,730	-90	-3.2
A303 East of Amesbury Eastbound	A303	14,520	14,326	-194	-1.3
A303 East of Amesbury Westbound	A303	14,210	14,633	423	3.0
Total		31,550	31,689	139	0.4
Screenline D (East-West, south of A303)					
A36 Steeple Langford	STM	7,349	8,825	1,476	20.1
B3083 North of Stapleford	Est. (i)	*400*	201	-199	-49.8
U/class from Stapleford to A360	Est. (i)	*400*	441	41	10.3
A360 South of road to Middle Woodford	STM	7,853	6457	-1,396	-17.8
U/class Lower Woodford	STM	5,820	5799	-21	-0.4
U/class Little Durnford	STM	1,274	1222	-52	-4.1
A345 South of road to Upper Woodford	STM	9,332	10707	1,375	14.7
A338 Winterbourne Dauntsey	STM	6,527	4943	-1,584	-24.3
Total		38,955	38,595	-360	-0.9

	Validation Data from Constituent Models		New (Combined) Model	Difference (New Model – Old Model)	
Road and Location	**Source Model**	**12-hour Flow**	**12-hour Flow**	**Number**	**%**
Screenline E (East-West, north of Salisbury)					
A36 Salisbury Road, Wilton	STM	29,853	28,011	-1,842	-6.2
A360 Devizes Road	STM	8,820	10,774	1,954	22.2
Stratford Road	STM	3,086	5,108	2,022	65.5
A345 Castle Road	STM	16,119	14,936	-1,183	-7.3
Old Castle Road to Ford	STM	2,044	581	-1,463	-71.6
A338 Winterbourne Dauntsey	STM	6,527	4,943	-1,584	-24.3
Total		66,449	64,353	-2,096	-3.2
Main Roads in Salisbury					
A36 East of A360	STM	30,683	32,596	1,913	6.2
A36 West of A30/A345	STM	33,958	36,789	2,831	8.3
Churchill Way, South of A30	STM	34,483	39,144	4,661	13.5
A36 West of Salisbury	STM	16,618	18,555	1,937	11.7
IRR Across river	STM	31,451	37,730	6,279	20.0
A338 South of Salisbury	STM	16,903	17,770	867	5.1
Total		164,096	182,584	18,488	11.3

Notes: (i) This road is not in either constituent model. The validation flow has been estimated

Table 6.4: Link Flow Validation – 2023 High Growth

	Validation Data from Constituent Models		New (Combined) Model	Difference (New Model – Old Model)	
Road and Location	**Source Model**	**12-hour Flow**	**12-hour Flow**	**Number**	**%**
Screenline A (A303 West)					
A360 North of Shrewton	A303	11,628	11,160	-468	-4.0
B390 West of Shrewton	A303	4,591	4,339	-252	-5.5
A303 West of Winterbourne Stoke	A303	27,463	26,660	-803	-2.9
A36 Steeple Langford	STM	9,334	11,448	2,114	22.6
Total		53,016	53,607	591	1.1
Screenline B (A303 Central)					
The Packway , Larkhill	A303	4,023	3,765	-258	-6.4
A344 at Stonehenge	A303	13,676	13,161	-515	-3.8
A303 at Stonehenge - Eastbound	A303	14,620	16,905	2,285	15.6
A303 at Stonehenge - Westbound	A303	14,722	14,050	-672	-4.6
U/class Road from Middle W'ford to A360	A303	717	867	150	20.9
Total		47,758	48,748	990	2.1
Screenline C (A303 East)					
A3028 between Bulford and A303	A303	3,469	3,339	-130	-3.7
A303 East of Amesbury Eastbound	A303	22,255	24,557	2,302	10.3
A303 East of Amesbury Westbound	A303	21,777	21,662	-115	-0.5
Total		47,501	49,558	2,057	4.3
Screenline D (East-West, south of A303)					
A36 Steeple Langford	STM	9,334	11,448	2,114	22.6
B3083 North of Stapleford	Est. (i)	*500*	284	-216	-43.2
U/class from Stapleford to A360	Est. (i)	*500*	541	41	8.2
A360 South of road to Middle Woodford	STM	12,749	11,072	-1,677	-13.2
U/class Lower Woodford	STM	7,241	7,085	-156	-2.2
U/class Little Durnford	STM	2,378	2,204	-174	-7.3
A345 South of road to Upper Woodford	STM	12,084	13,293	1,209	10.0
A338 Winterbourne Dauntsey	STM	8,375	6,196	-2,179	-26.0
Total		53,161	52,123	-1,038	-2.0

	Validation Data from Constituent Models		New (Combined) Model	Difference (New Model – Old Model)	
Road and Location	**Source Model**	**12-hour Flow**	**12-hour Flow**	**Number**	**%**
Screenline E (East-West, north of Salisbury)					
A36 Salisbury Road, Wilton	STM	38,295	40,146	1,851	4.8
A360 Devizes Road	STM	14,550	13,000	-1,550	-10.7
Stratford Road	STM	3,984	7,601	3,617	90.8
A345 Castle Road	STM	20,235	16,300	-3,935	-19.4
Old Castle Road to Ford	STM	6,187	617	-5,570	-90.0
A338 Winterbourne Dauntsey	STM	8,375	6,196	-2,179	-26.0
Total		91,626	83,860	-7,766	-8.5
Main Roads in Salisbury					
A36 East of A360	STM	47,959	43,558	-4,401	-9.2
A36 West of A30/A345	STM	47,386	47,041	-345	-0.7
Churchill Way, South of A30	STM	50,181	50,319	138	0.3
A36 West of Salisbury	STM	23,430	22,377	-1,053	-4.5
IRR Across river	STM	50,278	54,962	4,684	9.3
A338 South of Salisbury	STM	22,546	21,702	-844	-3.7
Total		241,780	239,959	-1,821	-0.8

Notes: (i) This road is not in either constituent model. The validation flow has been estimated.

6.1.3.4 It can be seen from the above tables that the screenline totals for the combined model are generally within 5% of the equivalent total flows from the constituent models. The exceptions are the selected main roads in Salisbury in 2008 with low growth and screenline E in 2023 with high growth. The flows on individual roads do not match so well. Part of the reason for this is related to the difficulty in matching the Salisbury model cordon zones to Stonehenge model zones, so that some trips are probably not loaded into the network in a location that is consistent with that used in the constituent model. There are also routing differences between the peak hour Salisbury models and the 12-hour Stonehenge and combined models, because the peak hour models take account of junction delays but the all-day models do not. Attempts have been made to improve the match between the flows from the models but it has not been possible to achieve a better match without making unreasonable adjustments to network speeds or zone loading positions. From the analyses carried out during the adjustment process, it has been concluded that the majority of the movements in the combined model that are likely to transfer to the route are on the correct route, or on a route from which they are equally likely to transfer. The mismatch between individual link flows on the screenlines is unlikely to result in a significant under, or over, estimate of flows on the route.

6.2 Forecasting

6.2.1.1 Since the combined model was derived from forecast year networks and trip matrices, and was validated against flows for the forecast years, there has been no need to carry out a separate forecasting exercise.

6.2.1.2 The forecast years are 2008 and 2023. The low and high growth trip matrices have been derived from the relevant forecast year trip matrices from the constituent model. The Salisbury model trip matrices were factored from 2005 to 2008 and from 2020 to 2023, as appropriate, using the factors set out in **Table 6.2** above.

6.2.1.3 The model validation was carried out using trip matrices from the A303 Stonehenge Improvement traffic model that were based on the option with the Stonehenge Visitor Centre remaining at Stonehenge car park. The trip matrices used in the assessment of the route are those based on the option of the Visitor Centre being relocated at Countess East in both the scheme Do-minimum (without route) and scheme Do-something (with route) scenarios. The route Do-something scenario includes both the A303 Realignment and the Eastern Link.

6.3 Effect of the route

6.3.1.1 A selection of the flows assigned to the Do-minimum (without the route) is given in **Figure 1.3** and to the Do-something (with the route) in **Figure 1.4**. These flows are annual average daily traffic (AADT).

6.3.1.2 These flows are from preliminary runs of the traffic model and no attempt has been made to adjust the model inputs to take account of the effects of flow changes (due to the route) on link speeds. The traffic model does not take account of speed/flow effects. In some locations, the flows predicted by these preliminary runs are significantly higher than would normally be acceptable on the affected roads. For example, for traffic passing through Shrewton, it is unlikely that the B3086 could support the volume of traffic indicated in the traffic model. In further traffic analyses, these high flows could be addressed in several ways:

- Adjusting the design of the scheme to discourage use of the affected routes (if this is possible without prejudicing the main aims of the route),

- Assuming the application of some form of traffic management on the affected routes to discourage their use by unwanted traffic (in the traffic model, this could involve banning certain movements or reducing the speeds on affected links to reflect the impact of the traffic management measures),
- Extending the model area to allow the use of alternative routes outside the current study area - strategic re-assignment (this would involve additional data collection), or if none of the above are practicable or desirable,
- Adjusting the speeds in the traffic model to reflect the expected conditions (this should discourage some trips from using the route, but may not discourage all trips if there is no reasonable alternative route in the traffic model).

6.3.1.3 Irrespective of any traffic calming measures that could be introduced (see Section 7.2), the additional distance for vehicles travelling between Shrewton (or traffic passing through it) and Amesbury or further east on the A303 would be in the region of 15km via the A360 and the realigned A303 as opposed to using the B3086 (or the A360), the Packway and Countess Road North (A345). Redistribution is likely between the A360, the B3083 and the B3086 and the Packway, but whatever route is selected local traffic would recognise this extra distance as significant and would most likely use one of the alternative routes described above rather than the realigned A303. Longer distance traffic might follow the signed route, but regular users of the route in the longer term would be more likely to find alternative routes either through the local area or more strategically, by using the A345 and A342 from Devises. This would have other effects around the network that have not been considered here, specifically along the northern part of the Avon Valley and into Andover.

6.3.1.4 It is recognised that some of the traffic passing through Shrewton is using the B390, A360 and A344 as a short cut. It could be expected that some of this traffic would divert to the realigned A303, but there would still be significant time and distance benefits in utilising local roads rather than the realigned A303.

6.3.1.5 The section of the route (A303 Re-alignment) from the A303 at Berwick Down to the A360 would attract flows of between 20,300 vehicles in 2008 with low growth and 29,300 vehicles in 2023 with high growth. The section between the A360 and the A345 would attract between 23,600 vehicles (2008 low) and 37,200 vehicles (2023 high). The eastern section, from the A345 to the A303 east of Amesbury, would attract between 21,500 vehicles (2008 low) and 34,200 vehicles (2023 high). The section of the Eastern Link between the A345 and the A30/A338 would attract between 14,400 vehicles (2008 low) and 17,200 vehicles (2023 high). The section between the A30/A338 and the A36 would attract between 11,600 vehicles (2008 low) and 13,200 vehicles (2023 high).

6.3.1.6 With the route in place, the sections of the existing A303 from Berwick Down to Longbarrow would have significantly lower flows than in the Do-minimum. The flows would range between 4,000 vehicles in 2008 with low growth and 6,900 vehicles in 2023 with high growth. These are reductions of between 16,900 vehicles (2008 low) and 25,600 vehicles (2023 high) compared to the Do-minimum. The flows on the A303 east of Countess would also be reduced, but not to such low levels. Between Countess and Folly Bottom (Solstice Park), the flows would vary between 10,000 vehicles in 2008 with low growth and 17,000 vehicles in 2023 with high growth, reductions of 23,400 vehicles (2008 low) and 39,900 vehicles (2023 high), compared to the Do-minimum. From Folly Bottom to the A3028 junction, the flows would be between 14,700 vehicles (2008 low) and 23,200 vehicles (2023 high), which correspond to reductions of 20,600 vehicles (2008 low) and 33,200 vehicles (2023 high), compared to the Do-minimum.

6.3.1.7 The flows on the A360 between Shrewton and Airman's Corner would be between 4,600 vehicles in 2008 with low growth and 5,700 vehicles in 2023 with high growth, reductions of

7,900 vehicles (2008 low) and 14,000 vehicles (2023 high) compared to the Do-minimum. From Airman's Corner to Longbarrow, the flows would be between 9,000 vehicles (2008 low) and 13,100 vehicles (2023 high), which are increases of between 3,900 vehicles (2008 low) and 6,800 vehicles (2023 low). The increases occur because of the closure of the A303 and A344 between Longbarrow and Amesbury and of the A344 from Airman's Corner to the A303. South of the A303, the flows on the A360 would be between 5,200 vehicles (2008 low) and 7,200 vehicles (2023 high), reductions of between 2,700 vehicles (2008 low) and 7,100 vehicles (2023 high).

6.3.1.8 The flows on the A345 north of Countess (Amesbury) would be between 18,500 vehicles (2008 low) and 26,900 vehicles (2023 high), increases compared to the Do-minimum of between 7,100 vehicles (2008 low) and 11,400 vehicles (2023 high). South of Amesbury, the flows on the A345 would be between 11,400 vehicles (2008 low) and 14,900 vehicles (2023 high), both of which are reductions of 1,600 vehicles (2008 low and 2023 high).

6.3.1.9 As described in Sections 6.3.1.2 and 6.3.1.3 above, the proposed closure of the A303 between Longbarrow and Countess would result in traffic between the A360 at Shrewton and Amesbury / A303 east looking for alternative routes. The route as currently designed, does not provide a sufficiently attractive route for this traffic and so it would make use of the only alternative available to them within the traffic model, which is the Packway through Larkhill and then the A345 to Amesbury or the A3028 to the A303 east (westbound traffic would only use the A345 due to the banned turns at the A303 / A3028 junction or possibly the Folly Bottom junction and northern link to the A3028). This would lead to increased flows on these roads that might be considered unreasonable. As discussed above, in Section 6.3.1.2, further analyses would be necessary to examine whether changes to the scheme design and / or the traffic model coverage would result in more realistic flows, but as stated in Section 6.3.1.3, the result is still likely to be the majority of local traffic using the side roads rather than the new route..

6.3.1.10 The flows on the Packway west of Larkhill are predicted to rise to between 16,300 vehicles (2008 low) and 26,500 vehicles (2023 high), increases of 12,300 vehicles (2008 low) and 21,900 vehicles (2023 high) relative to the Do-minimum. East of Larkhill, the flows would be between 19,700 vehicles (2008 low) and 31,100 vehicles (2023 high), increases of 12,200 vehicles (2008 low) and 21,800 vehicles (2023 high). On the A3028 east of the A345 junction, the flows would be between 12,100 vehicles (2008 low) and 18,400 vehicles (2023 high), increases of 3,200 vehicles (2008 low) and 7,300 vehicles (2023 high). The flows on the A3028 west of the A303 (at Bulford) would be between 3,500 vehicles (2008 low) and 4,200 vehicles (2023 high), both of which are some 100 vehicles higher than the Do-minimum flow.

6.3.1.11 The flows on the A36 west (at Steeple Langford) would be between 7,400 vehicles in 2008 with low growth and 10,300 vehicles in 2023 with high growth, reductions of between 3,400 vehicles (2008 low) and 3,700 vehicles (2023 high). South of Stapleford, the flows would be between 7,500 vehicles (2008 low) and 10,400 vehicles (2023 high), reductions of between 3,300 vehicles (2008 low) and 3,600 vehicles (2023 high). The flows on the A338 at Winterbourne Dauntsey would be between 5,100 vehicles (2008 low) and 6,400 vehicles (2023 high), reductions of between 900 vehicles (2008 low) and 1,200 vehicles (2023 high).

6.3.1.12 The potential impacts of the route in Salisbury can be illustrated by reference to the flows, and flow changes, on the A36 / Inner Relief Road. On the A36 Wilton Road, the flows are predicted to be between 28,600 vehicles in 2008 with low growth and 39,500 vehicles in 2023 with high growth. These are reductions, compared with the Do-minimum, of between 3,800 vehicles (2008 low) and 4,300 vehicles (2023 high). On Churchill Way North (west of A30), the flows would be between 30,000 vehicles (2008 low) and 39,400 vehicles (2023 high), reductions of 14,900 vehicles (2008 low) and 18,000 vehicles (2023 high). On Churchill Way East (north of

A36), the flows would be between 42,400 vehicles (2008 low) and 57,100 vehicles (2023 high), reductions of 10,700 vehicles (2008 low) and 12,200 vehicles (2023 high).

6.4 Economic Analysis

6.4.1 Cost

6.4.1.1 The construction cost of the route has been estimated on a per kilometre basis by examining the nature and cost of the non-tunnel elements of the Published Scheme. The land costs are also calculated on a per kilometre basis based on the Published Scheme land costs. It is expected that the land cost figure shown below is rather low as it is likely that the land closer to Salisbury would have a higher value than that in the vicinity of Stonehenge. The costs are expressed in the base year of 2003, second quarter, and exclude VAT, a full risk allowance and preparation and supervision costs. This is consistent with the Published Scheme so that a comparison between the two can be made. The land and main works costs are displayed below (to the nearest £100,000) and have been used in the economic analysis of the route.

Main Works	£173.6	million
Land	£21.5	million

6.4.2 Analysis

6.4.2.1 The economic impacts of the route have been assessed using COBA. The results are presented in **Table 6.5** for low and high growth. The scheme is at an early stage of development and so it has not been possible to carry out an assessment of the impacts of traffic delays during construction or of the changes in works and user costs during maintenance of the scheme and existing roads.

6.4.2.2 It can be seen that the overall scheme benefits (PVB) are negative with low growth (-£13.3 million) and £14.6 million with high growth. The present value costs (PVC) are £111.8 million with low growth and £99.5 million with high growth. Thus, the NPVs are -£125.1 million with low growth and -£84.9 million with high growth. The scheme is therefore not good value for money.

Table 6.5: Summary Economic Analysis

		Costs and Benefits	
		Low Growth	**High Growth**
User Benefits			
A	User Time Costs	66.88	92.69
B	User Operating Costs	-79.52	-95.02
C	Business Time Costs	51.14	75.29
D	Business Operating Costs	-79.48	-93.36
E	Private Sector Provider	-2.33	-2.60
F	Accidents	30.05	37.63
Public Accounts			
G	Road Operation Costs	-4.56	-4.56
H	Investment Costs	-176.34	-176.34
I	Indirect Tax Revenues	69.06	81.36
Present Value Benefits (PVB) J = A+B+C+D+E+F		-13.26	14.63
Present Value Costs (PVC) K = G+H+I		-111.84	-99.54
Net Present Value (NPV) L = B + C		-125.10	-84.91

(i) Costs are shown as negative values, benefits as positive.
(ii) All costs and benefits are in market prices, in multiples of a thousand pounds and discounted to 1998 using a discount rate of 3.5%.

6.4.2.3 From the COBA results, it is possible to determine, in general terms, where the costs and benefits accruing to the scheme come from. The user time costs (rows A and C in **Table 6.5**) consist of time savings on links and time savings at junctions. A simple analysis of the sources of these time savings shows that the time savings on links are, in fact, negative. This is most likely due to the additional journey length for A303 traffic (the route being considerably longer than the existing road) and the delay costs associated with the high traffic flows through Larkhill etc. The net positive values in **Table 6.5** are due to savings in junction delays, mainly within Salisbury, which outweigh the negative link time savings. The impact of the longer route is also shown by the negative user operating cost savings (rows B and D in **Table 6.5**) – operating costs are heavily dependent on distance travelled. There are savings in accidents, primarily due to the transfer of traffic to new roads designed to modern standards from older, less safe roads. This is counteracted partially by the increased amount of travel on the network, which increases the potential exposure to accidents.

6.4.2.4 In summary, the results indicate that the route would result in higher user costs (i.e. disbenefits) for A303 traffic but would result in noticeable savings in user costs in Salisbury. Further analyses would be required to determine the exact causes of the costs and benefits.

6.4.2.5 The adjustments to the scheme design and / or traffic model discussed earlier (see paragraph 6.3.1.2) would result in changes to the economic performance of the scheme. If the high flows on the Packway, A345 and A3028 could be reduced (either by assuming the introduction of traffic management measures or extending the model to allow strategic re-assignment) the delays through Larkhill would reduce (and so time disbenefits would decrease). However, the

travel costs on the alternative routes used by this traffic would increase, resulting in disbenefits for the traffic on these routes.

6.4.2.6 It is not possible to predict the net impact of these decreases and increases (magnitude nor direction of change), but it is likely that there would be a minor overall positive impact on the economic performance of the scheme (i.e. it is more likely that the scheme benefits would increase than that they would decrease).

7 Alternative Options

7.1 Introduction

7.1.1.1 On completion of the traffic model for this alternative it became apparent that much of the traffic between Shrewton and Amesbury that presently uses the A344 and A303 would reassign to the Packway, Countess Road North (A345) or the A3028 through Durrington. It was the promoter's wish that more options should be considered to reduce the traffic on these links to more acceptable levels. An initial discussion of these options is contained in this chapter. However before any or all of these options can be assessed properly or included as part of the Parker Route, more traffic and environmental analysis would need to be carried out.

7.1.1.2 It should be noted that all these options involve alterations to the county road network. These alterations would require the full support of Wiltshire County Council as local highway authority. There would also be environmental consequences resulting from these additional measures which have not been assessed at present.

7.2 Traffic Calming the Packway

7.2.1.1 One way to reduce the amount of traffic using the Packway would be to make it less attractive to through traffic. The best way to do this would be to increase journey times along this link. The Packway runs between Rollestone Crossroads and Durrington Roundabout. It consists of a 2km section of road running through the settlement of Larkhill with a 40mph speed restriction dividing two rural sections of road approximately 3.5km long in total without speed restriction. A variety of traffic calming measures have been considered.

Speed Restrictions

7.2.1.2 It is current practice to reduce the speed limit of a road only if 85% of the existing traffic is travelling close to or below that speed. It is considered that if existing speeds are any higher the new speed restrictions would become unenforceable. For this reason it would not be advisable to reduce the speed limits of the rural sections of road because current speeds are high. There may be the possibility of reducing the speed restriction in Larkhill to 30mph and extending it slightly away from the village.

Traffic Lights

7.2.1.3 The use of traffic signals was considered as a means of slowing vehicles down. It would not be appropriate to signalise Rollestone Crossroads as it lies in a rural location and traffic flows do not justify such a measure. Construction of such facilities where not essential to improve traffic flows could lead to drivers ignoring red signals and possibly causing accidents as a result. It would be more appropriate for this junction to be enhanced visually to give motorists a greater perception of the junction ahead but this would not significantly reduce speeds.

7.2.1.4 Signal controlling the two minor T-Junctions in Larkhill was also considered. If they were demand controlled then the turning flows would be so small that the through route would generally be on green for most of the time. If the lights were not demand controlled, the junction could be open to abuse as main route traffic observed that the side roads were empty on a green phase with the main route lights turn red. This is a dangerous precedent to set that could lead to accidents in the future.

7.2.1.5 At present there is one pedestrian signal controlled crossing on the Packway in Larkhill and a second one could be put in place. However if the crossing demand were light then this would not increase journey times significantly.

Road Markings

7.2.1.6 The use of different types of surface markings such as hatching, coloured banding, or rumble strips to reduce speed could be considered. These features would not, however, be appropriate for the rural section of road but could be of some benefit for the section through Larkhill and could be used in conjunction with other measures to support the 30 mph speed restriction.

Horizontal Build-outs

7.2.1.7 Options for physical restrictions to the road cross section that could be used to reduce speed limits could be considered. Again, this would only be appropriate to the section through Larkhill. This would reduce speeds to some degree but could also pose a delay to emergency vehicles travelling from Amesbury to Shrewton. There are large numbers of military vehicle movements in this area and the build outs would have to be designed in such a way as to allow free movements to these vehicles. It is likely this factor may reduce their effectiveness further.

Vertical Obstructions

7.2.1.8 The use of different types of speed ramps and tables was considered. This form of traffic calming is only appropriate in residential or town and village locations with significant crossing/pedestrian flows and low speed. They would also cause delays to emergency vehicles. For these reasons it would be difficult to justify these measures for the Packway.

7.3 Western Fast Link

7.3.1.1 The concept of a "Western Fast Link" was introduced by the promoters in an attempt to ease the traffic growth on the Packway that would result from the closure of the A303 and A344 in the World Heritage Site. This would involve several alterations to the existing road network.

7.3.1.2 Airman's Corner would be remodelled such that it would become a major/minor junction with changed priority. Traffic travelling between the A360 Shrewton and Longbarrow Junction would have priority. The B3086 would become the minor road forming a T-Junction. A ghost island and dedicated turning lane would be provided for southeast bound traffic turning left to use the B3086 to access Larkhill. This remodelling would allow the free movement of traffic between Shrewton and Longbarrow Junction and it is the promoters view that this would prevent local traffic turning up the B3086 to use the Packway as a "rat-run". There would be a need to acquire land in this area in order to meet design standards for horizontal curvature and stopping distances both for the A344 and B3086.

7.3.1.3 Longbarrow Junction would be remodelled such that it would also become a major/minor junction. The main through route would be the A360. The de-trunked A303 would become the minor road forming the T-Junction. Again, a ghost island and dedicated turning lane would be provided for south-bound traffic turning right towards Winterbourne Stoke. It is unlikely that land outside the existing highway boundary would be required. In fact the junction would possibly allow an area of land to be returned to agriculture improving the setting of the Longbarrow group of monuments.

7.3.1.4 A new junction would be provided on the realigned A360 south of Druid's Lodge. This would be in the form of a three-arm at-grade roundabout with a dedicated lane bypassing the junction for southbound traffic. A new link would be provided between this junction and the realigned A303. Northbound traffic would be able to exit the A303 and join the A360. A360 traffic would be able to join the A303 and head Southbound. A possible layout of this junction is shown on **Figure 2.2** labelled "Western Fast Link".

7.3.1.5 The new junction would allow the A360 Junction closer to Salisbury to be remodelled as a restricted movement junction. This may improve the layout and reduce delays at this junction.

7.3.1.6 The inclusion of this link would change priorities at junctions and provide a further intermediate access point to the realigned A303, but traffic travelling from Shrewton (or passing through it) and wishing to head to Amesbury or places further east on the A303, would still need to travel a further 13km by the time the eastern tie-in point is reached (or 12km to the centre of Amesbury). For the reasons given in 6.3.1.3 above, local traffic is unlikely to find this addition to the scheme any more attractive than the original scheme layout, the provisions reducing the time of travel only marginally.

7.4 Removal of Western Tie-in Junction

7.4.1.1 There is the possibility of removing the Western Tie-in Junction and replacing it with a new junction in a similar location to that of the western fast link. This would act to reduce further the traffic through Winterbourne Stoke. However, it would also reduce the accessibility of Winterbourne Stoke and Shrewton to the A303 to and from the west.

7.5 Bypass for Shrewton

7.5.1.1 It is understood from correspondence that a bypass to Shrewton is being considered for inclusion in the overall scheme. This western bypass links the A360 (N) with the B390 and B3083 and then finally joins the Western Fast Link via the existing A303.

7.5.1.2 This new section of road (which would need to be at least 5km in length and presumably single carriageway) would make it more difficult for southbound and eastbound traffic to access the B3086 and hence the Packway and would also provide a quicker route to the south to join the realigned A303. The additional distance travelled would not be reduced however, and access for local traffic would need to be provided to and from the new section of road thereby providing the opportunity for "rat-running" in any event.

7.5.1.3 The additional construction costs of such a scheme would not be outweighed by the benefits accrued in cost benefit terms, as the result of incorporation of the bypass would be longer journeys for vehicles, therefore adding to the disbenefit.

7.5.1.4 Discussions with Wiltshire County Council (the Highway Authority) would be needed before such an external link could be considered as part of the scheme.

8 Overall Summary

8.1.1.1 The Parker Route would achieve the key objective of avoiding a new route within the Stonehenge World Heritage Site (WHS) and would potentially allow the closure of the existing A303 and A344 within the WHS, thereby facilitating implementation of the World Heritage Site Management Plan.

8.1.1.2 The Parker Route would achieve considerable compliance with policy. This would largely be in the areas of adhering to the objectives of the WHS Management Plan and plans and policies for transport. The principal areas of policy conflict arise from the route comprising a new road through relatively unspoilt and tranquil countryside. This raises issues of cultural heritage, landscape, visual impact, community effects and agriculture.

8.1.1.3 The route would however introduce a new transport corridor through largely open countryside over a distance of 25km to the north of Salisbury for the A303 Realignment and a further 7km to the east of Salisbury for the Eastern Link.

8.1.1.4 The traffic modelling carried out has revealed that although the A303 through traffic would follow the new route, there are local and possibly regional movements specifically from the north west (traffic passing through Devizes, Chitterne and Shrewton) to the east and south east (Amesbury and the A303 east) and vice versa that would find it advantageous to follow existing roads rather than take the Parker Route. The diversion for traffic wishing to follow the Parker Route would amount to between 12 and 15km depending on the exact modifications to the proposals and the destination. Roads that would be affected by this traffic are the B3086 through Shrewton, the Packway through Larkhill, Countess Road North (A345) and the A3028 through Bulford and Durrington. Reassignment of flows further to the north at Devizes may also occur, which would lead to changes in flows on the A345 through the northern part of the Avon valley and on the A342 to Andover.

8.1.1.5 It is recognised that the modelling probably overstates this traffic and that modifications by the promotors would reduce the traffic flows, but traffic would still divert to these alternative routes to move across the area, as the diversion to follow the Parker Route is much longer. Local and regional traffic would soon understand the alternatives and take the shortest and/or quickest route.

8.1.1.6 Allowing for the accuracies of traffic modelling, in Salisbury there would be benefits for the Inner Relief Road eg; Churchill Way North (33% reduction) and Churchill Way East (20% reduction) and there would be more minor benefits for the A36 Wilton Road (12% reduction). There would be relief (about 30%) on the A36 through the Wylye valley but less (about half as much) on the A338.

8.1.1.7 In environmental terms, the key effects are those on landscape, cultural heritage and noise. Other areas of assessment are of less significance, but this would all be subject to detailed surveys which might reveal other environmental constraints.

8.1.1.8 In landscape and visual impact terms the assessment of effects is **slight adverse**, although the visual effects would apply to a relatively large number of properties both adjacent to the A303 Realignment and more particularly the Eastern Link, as well as properties on other routes affected by diverting traffic (584 properties with adverse effects in total). There would be some who would benefit eg; Southampton Road in Salisbury and near the A303 around Countess, but this would number much fewer (68 in total).

8.1.1.9 Archaeological features and remains are numerous within the route corridor and significant numbers of known sites would be affected. It is recognised that amendment of the landscaping proposals could reduce this impact but there is a strong likelihood of undiscovered archaeology being encountered if detailed surveys were to be undertaken. This would perhaps prevent changes to the landscaping proposals or increase the impact of the route itself. Overall the assessment is one of **major adverse** for cultural heritage.

8.1.1.10 Noise increases would be an issue for properties in the new route corridor and along other routes which traffic may divert to, particularly through Larkhill. There would however be benefit to some extent for properties along the A36 Wylye valley, to a smaller extent along the A338, and near the A303 at Amesbury.

8.1.1.11 In terms of economic benefits, the costs of construction of over 32km of new dual carriageway road with 31 bridge structures (without the addition of the western fast link or the bypass for Shrewton – probably another 5km), combined with the disbenefits for A303 traffic following a long diversion to the south, would not be outweighed by the benefits accrued. Inspection of the cost benefit analysis reveals that in general terms there are significant benefits accrued for Salisbury traffic with disbenefits for traffic on the A303 and further north. The scheme therefore does not represent good value for money.

Appendix A The Parker Route Submission

Appendix B Biodiversity and Nature Conservation – Organisations Contacted

Organisation	Subject	*Search Area (KM)
BSBI South Wiltshire Vice-Country Recorder	Botanical records	1
	Protected/endangered species	4
	Botanical value of habitats	1
British Trust for Ornithology	Red list, Amber list and local BAP bird species	1
	Protected bird species - stone curlew - quail - barn owl - riverine birds	10 4 3 2
Environment Agency	Protected /notable aquatic flora and fauna	
	River habitat, river corridor surveys	1
	Water quality	2
	Phase 1 survey, notable fauna	1
English Nature (Wiltshire Team)	Designated Sites (and associated flora and fauna)	4
	Sites Proposed for designation	4
	Protected species	
Royal Society for the Protection of Birds	Protected birds and species of conservation concern	
	- stone curlew - quail - barn owl - riverine birds	10 4 3 2
Beatrice Gilam	Botanical records	1
	Protected/endangered species	4
	Comments on botanical habitats	1
Salisbury and District Natural History Society	Botanical records	1
	Protected/endangered species	4
	Comments on botanical habitats	1
Wiltshire Amphibian and Reptile Recorder	Herpetofauna	1
	Great Crested Newts	1
	Comments on herpetofauna habitat	1
Wiltshire Bat Group Recorder	Roosts, foraging areas, flight lines	4
	Comments on habitat severance	
Wiltshire Badger Group	Setts	2
	Valuable foraging areas, dung pits, latrines	1
	Casualties on existing roads	
Wiltshire Bird Recorder	Protected birds and species of conservation concern	
	- stone curlew - quail - barn owl	10 4 3

Organisation	Subject	*Search Area (KM)
	- riverine birds	2
Wiltshire Invertebrate Recorder (Invertebrate Sites Register?)	Species of conservation concern	4
	Areas of valuable invertebrate	
	Historical records	4
Wiltshire Ornithological Society	Protected birds and species of conservation concern	
	- stone curlew - quail - barn owl - riverine birds	10 4 3 2
Wiltshire and Swindon Biological Records Centre	Protected species	
	Badgers and riverine birds	1
	Bats, quail, barn owl, aquatic species	4
	Designated sites and wildlife reserves	4
	Comments on valuable, undesignated habitats	

1 Search Area – width of corridor centred around the proposed route alignment

Appendix C1 Water – Observation boreholes

EA Borehole Ref No	Station Name	National Grid Reference (SU)	Record Start	Record Finish	Current
93	Berwick House Farm	072 391	03/01/91	20/07/02	y
94	Scotland Lodge	072 409	14/01/92	01/02/94	n
97	Beehive Cottage	077 373	07/02/92	22/04/96	n
98	Manor Farm, Winterbourne Stoke	077 412	05/03/91	20/07/02	y
100	Druids Lodge	086 392	07/02/92	18/05/92	n
102	Camp Cottages	098 373	17/03/69	17/02/93	n
107	Chine Farm	113 374	11/03/92	14/09/94	n
118	Amesbury (shallow)	154 420			y
119	Amesbury (deep)	154 420			y
90104412	Berwick Down	053 404	28/11/02	20/06/03	y
90113303	Gomeldon (Lewes Formation)	183 360	27/11/02	26/06/03	y
90113302	Gomeldon (Seaford Formation)	183 360	27/11/02	26/06/03	y
90113204	Highpost	147 365	27/11/02	26/06/03	y
90113409	Hurdcott STW	168 337	27/11/02	26/06/03	y
90113102	Longhedge Farm Cottage	145 341	07/02/92	26/05/03	y
90103313	Serrington	059 370	28/11/02	26/06/03	y
90113206	Stoford Cross	102 365	28/11/02	26/06/03	y

For borehole locations, please refer to **Figure 7.1**.

Appendix C2 Water – Private licensed groundwater abstractions

Licence No	Licence Holder	NGR (SU)	Map Ref	Use	Quantity	
					m^3/a	m^3/d
13/43/023/G/236	K Armfelt	071 408	1	Private Water Supply	1830	5
13/43/023/G/246	K Andrews	074 404	2a	General Agriculture (2°)	6000	32
		074 404	2b	General Agriculture (2°)	1700	5
13/43/023/G/065	Druids Lodge Partnership	087 406	3	General Farming & Domestic	14547	40.3
13/43/023/G/245	Druids Lodge Partnership	087 406	4	General Farming & Domestic	29700	82
13/43/023/G/080	Berwick Down Ltd	071 396	5	General Agriculture. General Farming and Domestic	227	6.46
13/43/023/G/083	G E Street & Son	071 392	6	General Agriculture. General Farming and Domestic	15929	43.6
13/43/021/G/130	Druids Lodge Partnership	098373	7	General Farming & Domestic		
13/43/021/G/255	Salisbury City Football Club	15013398	8	Spray Irrigation – Direct. Drinking, Cooking, Sanitary, Washing (Small Garden) Commercial/ Industrial/Public Services		
13/43/024/G/035	Chichester	155349	9	General Farming & Domestic		
13/43/024/G/028	R White & Son (Winterbourne) Ltd	169362	10	General Farming & Domestic		
13/43/024/G/041	Joe Dean Farming Co Ltd	169372	11	General Farming & Domestic		
13/43/024/G/017	John Read (Wilts) Ltd	195377	12a	General Farming & Domestic		
13/43/024/G/017	John Read (Wilts) Ltd	199387	12b	General Farming & Domestic		
13/43/024/G/049	Crook	194421	13	General Farming & Domestic		

For borehole locations, please refer to **Figure 7.1**.

Appendix C3 Water – Indicative floodplain extent maps

Appendix C4 Water – Water quality data

Table C1 RQO Targets and Classifications: Rivers Avon, Till and Bourne

River (Stretch)	Target	Compliant
River Avon (Nine Mile River to Amesbury)	RE1	Yes (2001)
River Avon (Amesbury to confluence with the Nadder)	RE1	Yes (2001)
River Till (Orcheston to Berwick St James)	RE1	Yes (2001)
River Bourne Boscombe- confluence with Avon	RE1	Yes (2001)

Table C2 GQA Classifications for River Water Quality

River (Stretch)		Grade	Year	Description
River Avon (Nine Mile River to Amesbury)	Chemistry	A	2002	As above
	Biology	A	2000	As above
	Nutrients (Nitrate)	D	2002	As above
	Nutrients (Phosphate)	E	2002	Very high (upper limit 1.0mg /l P)
	Aesthetics	N/a		Not Defined for this stretch
River Avon (Amesbury to Stratford sub Castle)	Chemistry	A	2002	As above
	Biology	A	2000	As above
	Nutrients (Nitrate)	D	2002	High (upper limit 0.2 mg/l P)
	Nutrients (Phosphate)	E	2002	As above
	Aesthetics	4	2000	Bad (Total Class 13) One bank site assessment
River Till (Orcheston to Berwick St James)	Chemistry	A - Very Good	2002	Suitable for all abstractions. Very good salmonid fisheries. Cyprinid fisheries. Natural ecosystems
	Biology	A - Very Good	2000	Biology similar to that expected for an unpolluted river
	Nutrients (Nitrate)	D	2002	Moderate (upper limit 30mg/l NO_3)
	Nutrients (Phosphate)	B	2002	Low (upper limit 0.06mg /l P)
	Aesthetics	N/a		Not Defined for R. Till
River Bourne Boscombe-confluence	Chemistry	A	2002	As above
	Biology	A	2000	As above

River (Stretch)		Grade	Year	Description
with Avon	Nutrients (Nitrate)	E	2002	As above
	Nutrients (Phosphate)	D	2002	High (upper limit 40m/l P)
	Aesthetics	1	2000	Class1. Good. One bank site assessment

Note: Units mg/l = milligrammes per litre

Additional water quality data for the Study area was requested from the EA:

Table C3 shows the data made available for the period 01/01/1998 and 31/07/2003 for a number of locations on the Avon and the Bourne:

Table C3 Available Water Quality Data 1998 -2003

River	Sampling Point Name	NGR	Available data
Avon	Stratford Sub- Castle	SU 129 329	pH; T; BOD; NH_4-N; NO_2-N; NH_3; Suspended Solids; Hardness; Oils and grease; DO; Cu Filtered; Zn: Phenol
Avon	Upstream Salisbury STW	SU 158 287	pH; T; BOD; NH_4-N; NO_2-N; NH_3; Suspended Solids; Hardness; DO
Avon	Downstream Salisbury STW	SU 168 284	pH; T; BOD; NH_4-N; NO_2-N; NH_3; Suspended Solids; Hardness; DO
Avon	East Harnham	SU 145 291	pH; T; BOD; NH_4-N; NO_2-N; NH_3; Suspended Solids; Hardness; DO
Bourne	Laverstock	SU 155 302	pH; T; BOD; NH_4-N; NO_2-N; NH_3; Suspended Solids; Hardness; DO

Appendix C5 Water – Discharge consents

DS_LNAME	DS_ADD1	DS_ADD2	DS_ADD3	DS_ADD4	DS_PCODE	DS_NGR	EASTING	NORTHING	DS_TYPE
BERWICK ST.JAMES	SEWAGE TREATMENT WORKS					SU0702040800	407020	140800	Sewage Disposal Works - water company
HURDCOTT	SEWAGE TREATMENT WORKS					SU1668033780	416680	133780	Sewage Disposal Works - water company
THE BRIDGE INN	UPPER WOODFORD	SALISBURY	WILTSHIRE			SU1242037180	412420	137180	Domestic Property (Multiple)
BOATHOUSE MEADOW	LOWER ROAD	BEMERTON	SALISBURY	WILTSHIRE		SU1281030250	412810	130250	Undefined or Other
THE COACH HOUSE	THE OLD VICARAGE	BURCOMBE	SALISBURY	WILTSHIRE	SP2 OE6	SU0739031140	407390	131140	Undefined or Other
SITE ADJ. DURNWOOD	CHURCH BOTTOM	MIDDLE WOODFORD	SALISBURY	WILTSHIRE		SU1183036140	411830	136140	Undefined or Other
PORTON STATION SITE	PORTON	SALISBURY	WILTSHIRE			SU1930036370	419300	136370	Undefined or Other
CASTLEMEADS	GREEN LANE	FORD	SALISBURY	WILTSHIRE	SP4 6DJ	SU1582033030	415820	133030	Undefined or Other
OLD SARUM AIRFIELD	SEWAGE PUMPING STATION	SALISBURY	WILTSHIRE			SU1587032780	415870	132780	Sewerage Network - Pumping Station - water company
NO 1 KINGS STABLES	UPPER WOODFORD	SALISBURY	WILTSHIRE			SU1249037510	412490	137510	Undefined or Other
PLOT 2 THE HOME MARKET	UPPER WOODFORD	SALISBURY	WILTSHIRE			SU1251037520	412510	137520	Undefined or Other
THE CLOCK HOUSE	KINGS STABLES	UPPER WOODFORD	SALISBURY	WILTSHIRE		SU1252037530	412520	137530	Domestic Property (Single)
OLD TRINITY	OLD CASTLE ROAD	SALISBURY	WILTSHIRE			SU1413032610	414130	132610	Undefined or Other
ROMANS REST	OLD CASTLE ROAD	SALISBURY	WILTSHIRE			SU1414032620	414140	132620	Undefined or Other
UNIT 1 COURT FARM	LOWER WOODFORD	SALISBURY	WILTSHIRE			SU1249135280	412491	135280	Domestic Property (Single)
UNIT 2 COURT FARM	LOWER WOODFORD	SALISBURY	WILTSHIRE			SU1248035280	412480	135280	Undefined or Other
PLOTS 1-4 WILSFORD-CUM-LAKE	LAKE	SALISBURY	WILTSHIRE			SU1326038980	413260	138980	Domestic Property (Multiple)
FORD MILL	FORD	SALISBURY	WILTSHIRE			SU1648032940	416480	132940	Undefined or Other
THE SHIP INN	BURCOMBE	SALISBURY	WILTSHIRE		SP2 0EJ	SU0697030990	SU0697030991	SU0697030992	SU0697030993
BORELAND FARM	UPPER WOODFORD	SALISBURY	WILTSHIRE		SP4 6PE	SU1246037340	412460	137340	Undefined or Other
WILSFORD MANOR	WILSFORD CUM LAKE	SALISBURY	WILTSHIRE			SU1341039820	413410	139820	Domestic Property (Multiple)
BOATHOUSE MEADOW	LOWER ROAD	BEMERTON	SALISBURY	WILTSHIRE		SU1281030250	412810	130250	Undefined or Other
ALLINGTON						SU2060039300	420600	139300	Undefined or Other
FLOWER LANE PUMPING STATION	FLOWER LANE	AMESBURY	WILTSHIRE			SU1537041260	415370	141260	Sewerage Network - Pumping Station - water company
IDMISTON	CHURCH ROAD					SU1960037600	419600	137600	Undefined or Other
HURDCOTT	REAR OF BLACK HORSE P H					SU1680033700	416800	133700	Undefined or Other
ENDLESS STREET/SCOTTS LANE	SALISBURY					SU1440030300	414400	130300	Sewerage Network - Sewers - water company
BOURNE VILLAS	COLLEGE STREET	SALISBURY				SU1480030600	414800	130600	Sewerage Network - Sewers - water company
WILTON	SALISBURY					SU1080030800	410800	130800	Sewerage Network - Sewers - water company
AMESBURY STW	SEWAGE TREATMENT WORKS					SU1526041020	415260	141020	Sewage Disposal Works - water company
AMESBURY STW	SEWAGE TREATMENT WORKS					SU1526041020	415260	141020	Sewage Disposal Works - water company
KINGFISHER COTTAGE	LAKE	SALISBURY	WILTSHIRE	SP4 7BP	SP4 7BP	SU1328039160	413280	139160	Domestic Property (Single)

DS_LNAME	DS_ADD1	DS_ADD2	DS_ADD3	DS_ADD4	DS_PCODE	DS_NGR	EASTING	NORTHING	DS_TYPE
TENNEX EUROPE LIMITED	HIGH POST	SALISBURY	WILTSHIRE	.	SP4 6AT	SU1500036310	415000	136310	Industrial estates
SALISBURY LEISURE CENTRE	BUTTS FIELD	HULSE ROAD	SALISBURY	WILTSHIRE		SU1407031000	414070	131000	Undefined or Other
PLOT 1	DRUIDS LODGE ESTATE	(HORSE DOWN)	MIDDLE WOODFORD	SALISBURY	SP3 4UN	SU0882040200	408820	140200	Undefined or Other
PLOT 2	DRUIDS LODGE ESTATE	(HORSE DOWN)	MIDDLE WOODFORD	SALISBURY	SP3 4UN	SU0882040210	408820	140210	Undefined or Other
SALISBURY LEISURE CENTRE	BUTTS FIELD	HULSE ROAD	SALISBURY	WILTSHIRE		SU1407031000	414070	131000	Undefined or Other
BURROUGHS HILL COTTAGE	DUCK LANE	LAVERSTOCK				SU1620030470	416200	130470	Domestic Property (Single)
AVON FARM HOUSE	STRATFORD-SUB-CASTLE	SALISBURY	WILTSHIRE			SU1256033200	412560	133200	Undefined or Other
BRACKNELL CROFT ADJACENT TO	OLD MALTHOUSE LANE	FORD	SALISBURY	WILTSHIRE		SU1800033150	418000	133150	Undefined or Other
GREAT WISHFORD	SEWAGE TREATMENT WORKS	GREAT WISHFORD				SU0862033730	408620	133730	Sewage Disposal Works - water company
MEADOW VIEW & ST. PETERS CLOSE	WINTERBOURNE STOKE	SALISBURY	WILTSHIRE			SU0766040760	407660	140760	Domestic Property (Multiple)
BISHOPSDOWN FARM	LONDON ROAD	SALISBURY	WILTSHIRE			SU1592032000	415920	132000	Undefined or Other
WILTSHIRE COUNTY COUNCIL	HIGHWAY DEPOT	THE AVENUE	WILTON	SALISBURY, WILTSHIRE	SP2 0BT	SU1027031600	410270	131600	Undefined or Other
HEALE PLANT CENTRE	HEALE HOUSE	MIDDLE WOODFORD	SALISBURY	WILTSHIRE	SP4 6NT	SU1236036150	412360	136150	Undefined or Other
THE BELL INN	WINTERBOURNE STOKE	SALISBURY	WILTSHIRE			SU0775041100	407750	141100	Public Houses and Bars
LAKE HOUSE AND COTTAGES	LAKE	SALISBURY	WILTSHIRE		SP4 7BP	SU1332039030	413320	139030	Domestic Property (Multiple)
A & AEE BOSCOMBE DOWN	SEWAGE TREATMENT WORKS	(AREA 337) BOSCOMBE DOWN	SALISBURY	WILTSHIRE	SP4 0JF	SU1706040640	417060	140640	Any MOD Establishment
D.T.E.O BOSCOMBE DOWN	BOSCOMBE DOWN	SALISBURY	WILTSHIRE	.	SP4 0JF	SU1706140650	417061	140650	Any MOD Establishment
33 WEST STREET	WILTON	SALISBURY	WILTSHIRE	SP2 0DL	SP2 0DL	SU0947031360	409470	131360	Domestic Property (Single)
DTEO BOSCOMBE DOWN	POL POINT, BUILDING 643	BOSCOMBE DOWN	SALISBURY	WILTSHIRE		SU1706040660	417060	140660	Undefined or Other
SALTERTON FARM	SALTERTON	SALISBURY	WILTSHIRE			SU1292035700	412920	135700	Livestock Prod. Food Prod.
PAINS-WESSEX LTD	HIGH POST	SALISBURY	WILTSHIRE		SP4 6AS	SU1420036900	414200	136900	Undefined or Other
CHINE ROAD STW	WOODFORD	SALISBURY	WILTSHIRE	.		SU1230137200	412301	137200	Domestic Property (Multiple)
TEN COUNCIL HOUSES	BURCOMBE	SALISBURY	WILTSHIRE			SU0692031000	406920	131000	Domestic Property (Single)
CASTLE GARAGE(SALISBURY)	CASTLE STREET	SALISBURY	WILTSHIRE			SU1430030550	414300	130550	Undefined or Other
SPIRE VIEW COUNCIL ESTATE	FORD	SALISBURY	WILTSHIRE			SU1660032950	416600	132950	Domestic Property (Single)
PRIVATE HOUSING SITE	FORD	SALISBURY	WILTSHIRE			SU1550032850	415500	132850	Domestic Property (Single)
WILTON ROYAL CARPET FACTORY LTD.	WILTON	NEAR SALISBURY	WILTSHIRE			SU0995031500	409950	131500	Undefined or Other
AVON MEADOWS CNCL HSES(WOODFORD)	AVON MEADOWS	WOODFORD	WILTSHIRE			SU1225036380	412250	136380	Domestic Property (Single)
COUNCIL HOUSES(GT DURNFORD)	LITTLE DOWN VIEW	GREAT DURNFORD	WILTSHIRE			SU1370037900	413700	137900	Domestic Property (Single)
LAKE HOUSE/COTTAGES(SALISBURY)	LAKE	SALISBURY	WILTSHIRE			SU1330039000	413300	139000	Domestic Property (Multiple)
WHEATSHEAF,THE(WOODFORD)	LOWER WOODFORD	SALISBURY	WILTSHIRE			SU1250035000	412500	135000	Public Houses and Bars
BULBRIDGE FARM	BURCOMBE LANE	WILTON SALISBURY	WILTSHIRE	.	SP2 0ES	SU0855130800	408551	130800	Domestic Property (Single)
HURDCOTT FARM(SALISBURY)	(2 DWELLINGS)	WINTERBOURNE EARLS	SALISBURY	WILTSHIRE		SU1563034950	415630	134950	Undefined or Other

DS_LNAME	DS_ADD1	DS_ADD2	DS_ADD3	DS_ADD4	DS_PCODE	DS_NGR	EASTING	NORTHING	DS_TYPE
QUIDHAMPTON SSO	OFF NETHERHAMPTON ROAD	QUIDHAMPTON	WILTON	WILTSHIRE		SU1068030870	410680	130870	Sewerage Network - Sewers - water company
COUNCIL HOUSES(20)(DURNFORD)	DURNFORD	WILTSHIRE				SU1400037000	414000	137000	Domestic Property (Single)
NO'S 1 & 2 HOME FARM COTTAGES	LITTLE DURNFORD	SALISBURY	WILTSHIRE	.	SP4 6AH	SU1266033930	412660	133930	Domestic Property (Multiple)
KNILL COTTAGE	LITTLE DURNFORD	NEAR SALISBURY	WILTSHIRE	.		SU1273034850	412730	134850	Domestic Property (Single)
D.T.E.O BOSCOMBE DOWN	BOSCOMBE DOWN	SALISBURY	WILTSHIRE	.	SP4 0JF	SU1706140650	417061	140650	Any MOD Establishment
UNIT 1 COURT FARM	LOWER WOODFORD	SALISBURY	WILTSHIRE	.		SU1249135280	412491	135280	Domestic Property (Single)
BULBRIDGE FARM	BURCOMBE LANE	WILTON SALISBURY	WILTSHIRE	.	SP2 0ES	SU0855130800	408551	130800	Domestic Property (Single)
CHINE ROAD STW	WOODFORD	SALISBURY	WILTSHIRE	.		SU1230137200	412301	137200	Domestic Property (Multiple)
REX CAR SALES	RIVERBOURNE	LONDON ROAD	SALISBURY	WILTSHIRE	SP1 3HN	SU1577031780	415770	131780	Business Services
WAITROSE STORE FILLING STATION	OLD CATTLE MARKET	CHURCHILL WAY	SALISBURY	WILTSHIRE	SP2 7TS	SU1409030620	414090	130620	Retail Distribution
WAITROSE STORE FILLING STATION	OLD CATTLE MARKET	CHURCHILL WAY	SALISBURY	WILTSHIRE	SP2 7TS	SU1409030620	414090	130620	Retail Distribution
CRS AMESBURY	OFF FLOWER LANE	SALISBURY STREET	AMESBURY	WILTSHIRE		SU1554041330	415540	141330	Wholesale Dist. Food/Drink/Tobacco
SPRING COTTAGE	WISHFORD ROAD	MIDDLE WOODFORD	NEAR SALISBURY	WILTSHIRE	SP4 6NG	SU1191036050	411910	136050	Domestic Property (Single)
1-10 HILLSIDE & BURCOMBE POST OFF	BURCOMBE	SALISBURY	.	WILTSHIRE	SP2 0EL	SU0691031000	406910	131000	Domestic Property (Multiple)
PAINS-WESSEX LTD	HIGH POST	SALISBURY	.	WILTSHIRE	SP4 6AS	SU1432036790	414320	136790	Domestic Property (Single)
NEW FIRE STATION	D.E.R.A.	BOSCOMBE DOWN	SALISBURY	WILTSHIRE	SP4 0JF	SU1706040650	417060	140650	Any MOD Establishment
HOUSING SITE ADJ.TO BEECH VIEW	LOWER WOODFORD	SALISBURY	WILTSHIRE	.		SU1251035340	412510	135340	Domestic Property (Multiple)
THE CHALET	PORTON ROAD	AMESBURY	WILTSHIRE	.	FP4 7LJ	SU1683041460	416830	141460	Domestic Property (Single)
TENNEX EUROPE LIMITED	HIGH POST	SALISBURY	WILTSHIRE	.	SP4 6AT	SU1500036310	415000	136310	Industrial estates
NEW HOUSE ADJACENT TO FORD	FARMHOUSE	FORD	SALISBURY	WILTSHIRE	SP4 6DJ	SU1623032700	416230	132700	Domestic Property (Single)
LITTLE DOWN VIEW	GREAT DURNFORD	SALISBURY	WILTSHIRE	.		SU1363037960	413630	137960	Domestic Property (Multiple)
MEADOW VIEW	SALISBURY	WILTSHIRE	.	.		SU0758040750	407580	140750	Domestic Property (Multiple)
FORMER MOONRAKER SERVICE STATION	WILTON ROAD	SALISBURY	WILTSHIRE	.		SU1263030650	412630	130650	Retail Filling Stations
FLOWER LANE PUMPING STATION	FLOWER LANE	AMESBURY	WILTSHIRE	.		SU1537041260	415370	141260	Sewerage Network - Pumping Station - water company
THE ANNEXE AND THE HERMITAGE	LITTLE DURNFORD	SALISBURY	WILTSHIRE	.	SP4 6AH	SU1248034380	412480	134380	Domestic Property (Multiple)
FORMER MOONRAKER SERVICE STATION	197-207 WILTON ROAD	SALISBURY	WILTSHIRE	.	SP2 7SY	SU1263030651	412630	130651	Retail Filling Stations
BULBRIDGE FARM OLD BUILDINGS	THE CRESCENT	WILTON	SALISBURY	WILTSHIRE	SP2 0DD	SU0852030730	408520	130730	Domestic Property (Multiple)
LAND ADJ.HEALE FARMYARD	MIDDLE WOODFORD	SALISBURY	WILTSHIRE	.		SU1240036800	412400	136800	Domestic Property (Single)
HEALE PARK FARM	UPPER WOODFORD	NEAR SALISBURY	WILTSHIRE	.	SP4 6NU	SU1269037070	412690	137070	Business Services
IMERYS MINERALS LTD	BROADLANDS HOUSE	QUIDHAMPTON QUARRY, WILTON ROAD	SALISBURY	WILTSHIRE	SP2 9AD	SU1144031240	411440	131240	Vehicle Washing
IMERYS MINERALS LTD	BROADLANDS HOUSE	QUIDHAMPTON QUARRY, WILTON ROAD	SALISBURY	WILTSHIRE	SP2 9AD	SU1144031241	411440	131241	Extraction of Stone, Gravel, etc
WILTON PARK AND RIDE SITE	THE AVENUE	WILTON	SALISBURY	WILTSHIRE		SU1023031800	410230	131800	Recreational and Cultural
WILTON SPORTS PAVILION	THE AVENUE	WILTON	SALISBURY	WILTSHIRE		SU1037031760	410370	131760	Recreational and Cultural

DS_LNAME	DS_ADD1	DS_ADD2	DS_ADD3	DS_ADD4	DS_PCODE	DS_NGR	EASTING	NORTHING	DS_TYPE
BURROUGHS HILL	DUCK LANE	LAVERSTOCK	SALISBURY	WILTSHIRE	SP1 1PU	SU1596030310	415960	130310	Domestic Property (Multiple)

Appendix C6 Water – DMRB analysis spreadsheets

Parameters

Annual rainfall	1000mm/yr	
Hardness level	>100mg/l	
RE1 dis (Cu)	0.112mg/l	River Ecosystem Classification 1
RE1 tot (Zn)	0.5mg/l	River Ecosystem Classification 1
Water reg (Cu)	2mg/l	Water Supply Regulations 2000 SI No. 3184
Water reg (Zn)	5mg/l	Water Supply Regulations 1989 SI No. 1147
Runoff coef	0.5coefficient	

DTA No.	Area	Representative AADT	Rainfall		Build-up Rate		Build-Up		Annual Aquifer Loading		Meets RE1 Standard? without treatment		Meets Water Supply 1989/2000 Regulations? without treatment	
			Total Annual Rainfall	Total Annual Runoff	Copper Soluble	Zinc Total	Copper Soluble	Zinc Total	Copper Soluble	Zinc Total	Copper Soluble	Zinc Total	Copper Soluble	Zinc Total
	ha		m^3	l/a	kg/ha/a	kg/ha/a	kg/a	kg/a	mg/l	mg/l				
1	6.778	23000	67780	33890000	0.4	2.0	2.711	13.556	0.080	0.400	yes	yes	yes	yes
2	2.790	23000	27900	13950000	0.4	2.0	1.116	5.580	0.080	0.400	yes	yes	yes	yes
3	7.440	23000	74400	37200000	0.4	2.0	2.976	14.880	0.080	0.400	yes	yes	yes	yes
4	3.112	23000	31120	15560000	0.4	2.0	1.245	6.224	0.080	0.400	yes	yes	yes	yes
5	3.162	26500	31620	15810000	0.4	2.0	1.265	6.324	0.080	0.400	yes	yes	yes	yes
6	4.278	26500	42780	21390000	0.4	2.0	1.711	8.556	0.080	0.400	yes	yes	yes	yes
7	8.370	24000	83700	41850000	0.4	2.0	3.348	16.740	0.080	0.400	yes	yes	yes	yes
8	5.022	24000	50220	25110000	0.4	2.0	2.009	10.044	0.080	0.400	yes	yes	yes	yes
9	2.790	24000	27900	13950000	0.4	2.0	1.116	5.580	0.080	0.400	yes	yes	yes	yes
10	2.790	24000	27900	13950000	0.4	2.0	1.116	5.580	0.080	0.400	yes	yes	yes	yes
11	5.728	24000	57280	28640000	0.4	2.0	2.291	11.456	0.080	0.400	yes	yes	yes	yes
12	2.790	15000	27900	13950000	0.3	1.0	0.837	2.790	0.060	0.200	yes	yes	yes	yes
13	1.116	15000	11160	5580000	0.3	1.0	0.335	1.116	0.060	0.200	yes	yes	yes	yes
14	4.278	12000	42780	21390000	0.3	1.0	1.283	4.278	0.060	0.200	yes	yes	yes	yes
15	3.590	12000	35900	17950000	0.3	1.0	1.077	3.590	0.060	0.200	yes	yes	yes	yes

Notes overleaf

Notes:

1. With reference to the Groundwater Directive (80/68/EEC), copper and zinc are List II substances. It is required to limit their discharge to avoid pollution. DMRB 11.3.10 2.18 suggests that where clean aquifers are involved, Drinking Water standards may be applied as a "de minimus" by the regional authority (here the EA). The prescribed concentrations for these metals are given in the Water Supply Regulations 1989 SI No. 1147 (for Zinc) and 2000 SI No. 3184 (for Copper).

2. This spreadsheet evaluates pollutant loadings for dissolved copper and total zinc only. It is assumed that insoluble pollutants are removed in by treatment/settlement upstream of the soakaway. In addition, DMRB 11.3.10 3.18 suggests that cadmium and lead are not ecologically significant at the range of concentrations expected in road runoff of this sort.

3. The analysis considers the annual deposition rate and annual runoff (DMRB 11.3.10 Annex III Table 3.1 and Figure 3.2 respectively) in order to determine the the average dilution of the metals. Run-off events will be effectively dispersed in the aquifer.

4. As the aquifer underlying the road is chalk, it is likely to have a high level of hardness, thus reducing the toxicity of the discharged metals (DMRB 11.3.10 Annex III). Consequently the River Ecosystem Clasification limits selected for dissolved copper and total zinc from Table 2 of DMRB 11.3.10, are those for $CaCO_3$ concentrations greater than 100 mg/l.

5. Although all discharges will be to groundwater, comparison with Riover Ecosystem classifications are included as these represent "worst case" scenario of discharge into the rivers with little effect from passing through groundwaters

Appendix D Air Quality – Local Air Quality Results, 2008, 2010, 2023 (Do minimum and Do-Something)

Receptor		Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard		2008		**40**	**40**	**35**
		2010		**40**	**20**	**7**
		2023		**40**	**20**	**7**
1	Stoford Hill Buildings	2008	DM	10.15	15.34	0.2
			DS	11.87	15.81	0.3
		2010	DM	8.84	15.61	0.2
			DS	10.41	16.01	0.3
		2023	DM	8.00	15.56	0.2
			DS	9.21	15.86	0.3
2	Avon Farm Cottages	2008	DM	13.19	15.96	0.3
			DS	15.74	16.79	0.6
		2010	DM	11.53	16.14	0.4
			DS	13.97	16.89	0.7
		2023	DM	10.33	16.01	0.3
			DS	12.04	16.52	0.5
3	Chestnut Cottages	2008	DM	11.44	15.48	0.2
			DS	17.27	17.44	1.0
		2010	DM	9.97	15.73	0.2
			DS	15.30	17.43	1.0
		2023	DM	9.01	15.69	0.2
			DS	13.25	17.07	0.8
4	Dunley Way	2008	DM	13.30	15.79	0.3
			DS	16.70	16.84	0.7
		2010	DM	11.85	16.08	0.3
			DS	14.94	16.97	0.7
		2023	DM	10.72	16.04	0.3
			DS	13.02	16.66	0.6

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
5 Belmont Cottage	2008	DM	13.30	15.79	0.3
		DS	21.45	18.61	1.9
	2010	DM	11.85	16.08	0.3
		DS	19.34	18.50	1.8
	2023	DM	10.72	16.04	0.3
		DS	16.55	17.73	1.2
6 Residential - Marshmead Close	2008	DM	13.30	15.79	0.3
		DS	21.49	18.99	2.3
	2010	DM	11.85	16.08	0.3
		DS	19.40	18.89	2.2
	2023	DM	10.72	16.04	0.3
		DS	16.68	18.22	1.6
7 Petersfinger Farm	2008	DM	13.30	15.79	0.3
		DS	14.17	16.07	0.3
	2010	DM	11.85	16.08	0.3
		DS	12.65	16.32	0.4
	2023	DM	10.72	16.04	0.3
		DS	11.35	16.23	0.4
8 Tollgate Road Residential - western side of road, 25m north of junction with A36	2008	DM	20.94	18.58	1.9
		DS	17.59	17.29	0.9
	2010	DM	18.41	18.26	1.6
		DS	15.79	17.37	1.0
	2023	DM	16.20	17.69	1.2
		DS	13.98	17.05	0.8
9 Churchill Way School	2008	DM	25.33	20.54	4.1
		DS	25.55	20.60	4.2
	2010	DM	22.28	19.81	3.2
		DS	20.30	18.97	2.3
	2023	DM	18.99	18.74	2.0
		DS	19.09	18.86	2.2

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
10 New Barn Cottages	2008	DM	15.12	16.44	0.5
		DS	14.54	16.34	0.4
	2010	DM	13.06	16.55	0.5
		DS	12.71	16.52	0.5
	2023	DM	11.46	16.34	0.4
		DS	11.55	16.46	0.5
11 Salisbury Road - northern side of road, 70m east of junction with Fugglestone	2008	DM	29.30	23.41	8.9
		DS	27.23	22.21	6.7
	2010	DM	25.50	21.90	6.1
		DS	24.31	21.39	5.3
	2023	DM	21.08	20.12	3.5
		DS	19.83	19.69	3.0
12 Plough Cottage	2008	DM	20.10	18.14	1.5
		DS	17.52	17.27	0.9
	2010	DM	17.38	17.80	1.3
		DS	15.49	17.25	0.9
	2023	DM	14.94	17.09	0.8
		DS	13.25	16.73	0.6
13 Erskine Barracks	2008	DM	14.43	16.44	0.5
		DS	14.60	16.51	0.5
	2010	DM	12.60	16.58	0.5
		DS	12.93	16.69	0.6
	2023	DM	11.86	16.67	0.6
		DS	12.00	16.72	0.6
14 Tower Farm Cottages	2008	DM	18.19	17.90	1.3
		DS	17.09	17.46	1.0
	2010	DM	15.78	17.68	1.2
		DS	15.09	17.45	1.0
	2023	DM	13.53	17.17	0.8
		DS	12.93	17.01	0.7

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
15 Not Used	2008	DM	0.00	0.00	0.0
		DS	0.00	0.00	0.0
	2010	DM	0.00	0.00	0.0
		DS	0.00	0.00	0.0
	2023	DM	0.00	0.00	0.0
		DS	0.00	0.00	0.0
16 Hospital - Wilton Road	2008	DM	27.32	21.75	5.9
		DS	24.00	20.08	3.5
	2010	DM	24.01	20.73	4.3
		DS	21.78	19.82	3.2
	2023	DM	20.36	19.56	2.9
		DS	18.70	19.01	2.3
17 George Street - western side of road, 45m north of junction with Churchill Way West	2008	DM	20.65	18.23	1.6
		DS	19.68	17.91	1.3
	2010	DM	18.16	17.98	1.4
		DS	17.48	17.80	1.3
	2023	DM	15.46	17.34	0.9
		DS	14.87	17.22	0.9
18 Wordsworth Road - western side of road, 10m north of Churchill Way North	2008	DM	26.34	20.82	4.5
		DS	23.14	19.40	2.7
	2010	DM	23.16	20.01	3.4
		DS	20.70	19.08	2.4
	2023	DM	19.44	18.76	2.1
		DS	17.45	18.14	1.5
19 Napier Crescent - northern sid eof road, 90m north of junction with Mayfair Road	2008	DM	13.82	15.96	0.3
		DS	13.69	15.92	0.3
	2010	DM	12.31	16.22	0.4
		DS	12.22	16.20	0.4
	2023	DM	11.10	16.15	0.4
		DS	11.01	16.13	0.4

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
20 Duck Lane - western side of road, 240m north of junction with Queen Manor Road	2008	DM	13.91	15.97	0.3
		DS	13.62	15.89	0.3
	2010	DM	12.38	16.23	0.4
		DS	12.14	16.17	0.4
	2023	DM	11.17	16.16	0.4
		DS	10.96	16.11	0.3
21 Marshmead Close - southern side of road, 275m west of junction with Clarendon Road	2008	DM	9.34	14.90	0.0
		DS	13.53	16.30	0.4
	2010	DM	10.20	16.30	0.4
		DS	13.96	17.54	1.1
	2023	DM	9.23	16.26	0.4
		DS	12.16	17.22	0.9
22 Church Road - eastern side of road, 300m south of junction with London Road	2008	DM	13.53	15.86	0.3
		DS	13.61	15.88	0.3
	2010	DM	12.05	16.13	0.4
		DS	12.13	16.16	0.4
	2023	DM	10.89	16.08	0.3
		DS	10.93	16.10	0.3
23 Church Road School	2008	DM	13.56	15.87	0.3
		DS	13.30	15.79	0.3
	2010	DM	12.07	16.14	0.4
		DS	11.85	16.08	0.3
	2023	DM	10.91	16.09	0.3
		DS	10.72	16.04	0.3
24 Church Road - western side of road, 200m south of junction with London Road	2008	DM	13.89	15.97	0.3
		DS	13.54	15.87	0.3
	2010	DM	12.36	16.22	0.4
		DS	12.07	16.14	0.4
	2023	DM	11.15	16.16	0.4
		DS	10.90	16.09	0.3

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
25 Seth Ward Drive - western side of road, 35m north of junction with Blythe Way	2008	DM	24.02	20.22	3.7
		DS	23.16	19.74	3.1
	2010	DM	21.13	19.57	2.9
		DS	20.98	19.50	2.8
	2023	DM	18.45	18.82	2.1
		DS	17.97	18.59	1.9
26 Kelsey Road - southern side of road, 20m east of junction with Elm Grove Road	2008	DM	16.16	16.67	0.6
		DS	15.74	16.53	0.5
	2010	DM	14.29	16.77	0.6
		DS	13.99	16.68	0.6
	2023	DM	12.56	16.53	0.5
		DS	12.30	16.46	0.5
27 Fisherton Street - eastern side of road, corner of Fisherton Street and Wilton Road	2008	DM	26.50	18.22	1.6
		DS	26.30	18.08	1.5
	2010	DM	23.50	18.06	1.4
		DS	23.30	18.13	1.5
	2023	DM	20.30	17.71	1.2
		DS	20.10	17.67	1.2
28 Cherry Orchard Lane - western side of road, 35m south of junction with Wilton Road	2008	DM	28.92	22.57	7.3
		DS	26.78	21.38	5.3
	2010	DM	25.42	21.36	5.3
		DS	24.17	20.82	4.5
	2023	DM	21.54	19.98	3.4
		DS	20.34	19.55	2.9
29 Castle Road - eastern side of road, 100m south of junction with Beatrice Road	2008	DM	19.35	18.01	1.4
		DS	17.00	17.12	0.8
	2010	DM	17.06	17.84	1.3
		DS	15.27	17.23	0.9
	2023	DM	14.90	17.30	0.9
		DS	13.25	16.81	0.6

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
30 Castle Road - eastern side of road, 25m north of junction with Paul's Dene Road	2008	DM	19.41	18.04	1.4
		DS	17.28	17.23	0.9
	2010	DM	17.11	17.86	1.3
		DS	15.53	17.33	0.9
	2023	DM	14.93	17.31	0.9
		DS	13.45	16.87	0.7
31 Not Used	2008	DM	0.00	0.00	0.0
		DS	0.00	0.00	0.0
	2010	DM	0.00	0.00	0.0
		DS	0.00	0.00	0.0
	2023	DM	0.00	0.00	0.0
		DS	0.00	0.00	0.0
32 Portway - northern side of road, 300m north east of junction with Stratford Road	2008	DM	13.53	15.86	0.3
		DS	13.58	15.88	0.3
	2010	DM	12.05	16.14	0.4
		DS	12.11	16.16	0.4
	2023	DM	10.88	16.08	0.3
		DS	10.94	16.10	0.3
33 Stratford Road - western side of road, 250m south of junction with Mill Lane	2008	DM	15.78	16.53	0.5
		DS	15.36	16.39	0.5
	2010	DM	13.99	16.68	0.6
		DS	13.75	16.60	0.5
	2023	DM	12.72	16.60	0.5
		DS	12.41	16.51	0.5
34 Dean's Farm	2008	DM	15.63	16.51	0.5
		DS	15.26	16.40	0.5
	2010	DM	13.87	16.67	0.6
		DS	13.68	16.62	0.5
	2023	DM	12.52	16.55	0.5
		DS	12.27	16.48	0.5

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
35 Devizes Road - southern side of road, 30m south east of junction with Harper Road	2008	DM	23.38	20.05	3.5
		DS	22.09	19.45	2.8
	2010	DM	20.63	19.49	2.8
		DS	20.05	19.29	2.6
	2023	DM	18.01	18.70	2.0
		DS	17.36	18.49	1.8
36 Devizes Road - southern side of road, 75m north west of junction with Bedford Road	2008	DM	20.70	18.72	2.0
		DS	19.50	18.23	1.6
	2010	DM	18.28	18.43	1.8
		DS	17.60	18.20	1.6
	2023	DM	16.26	17.96	1.4
		DS	15.42	17.69	1.2
37 Devizes Road - south western side of road, 45m south east of junction with Queen Alexandra Road	2008	DM	17.73	17.40	1.0
		DS	16.43	16.92	0.7
	2010	DM	15.67	17.37	1.0
		DS	14.74	17.07	0.8
	2023	DM	13.95	17.06	0.8
		DS	13.04	16.79	0.6
38 Devizes Road - western side of road, 75m north of junction with Primrose Road	2008	DM	17.87	17.28	0.9
		DS	16.58	16.86	0.7
	2010	DM	15.80	17.28	0.9
		DS	14.87	17.01	0.7
	2023	DM	14.09	17.01	0.7
		DS	13.17	16.77	0.6
39 Green Lane - western side of road, 50m north of junction with Roman Road	2008	DM	13.36	15.82	0.3
		DS	13.30	15.79	0.3
	2010	DM	11.91	16.10	0.3
		DS	11.85	16.08	0.3
	2023	DM	10.77	16.06	0.3
		DS	10.72	16.04	0.3

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
40 Whitbread Road - northern most edge of close	2008	DM	16.79	16.90	0.7
		DS	15.78	16.58	0.5
	2010	DM	14.86	16.97	0.7
		DS	14.14	16.77	0.6
	2023	DM	13.29	16.76	0.6
		DS	12.58	16.58	0.5
41 Mount Pleasant - most south easterly property, 250m east of junction with A36	2008	DM	10.33	15.40	0.2
		DS	10.29	15.38	0.2
	2010	DM	9.00	15.66	0.2
		DS	8.97	15.65	0.2
	2023	DM	8.20	15.61	0.2
		DS	8.16	15.59	0.2
42 Church Bottom - most westerly property in Middle Woodford, northern side of road	2008	DM	11.36	15.43	0.2
		DS	11.34	15.43	0.2
	2010	DM	9.93	15.71	0.2
		DS	9.95	15.72	0.2
	2023	DM	9.06	15.67	0.2
		DS	9.06	15.68	0.2
43 Little Wishford Farm Cottages	2008	DM	19.53	18.19	1.5
		DS	16.66	17.19	0.9
	2010	DM	16.82	17.75	1.2
		DS	14.73	17.12	0.8
	2023	DM	14.39	16.93	0.7
		DS	12.51	16.51	0.5
44 Upington House	2008	DM	10.21	15.36	0.2
		DS	10.19	15.35	0.2
	2010	DM	8.90	15.63	0.2
		DS	8.88	15.62	0.2
	2023	DM	8.05	15.57	0.2
		DS	8.03	15.57	0.2

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
45 Wisma Poultry Farm	2008	DM	10.57	15.43	0.2
		DS	10.52	15.42	0.2
	2010	DM	9.19	15.74	0.2
		DS	9.15	15.73	0.2
	2023	DM	8.30	15.69	0.2
		DS	8.26	15.68	0.2
46 32 High Street	2008	DM	13.48	15.90	0.3
		DS	13.80	15.99	0.3
	2010	DM	11.73	16.12	0.4
		DS	12.12	16.23	0.4
	2023	DM	10.66	16.05	0.3
		DS	10.99	16.14	0.4
47 28 High Street	2008	DM	12.71	15.71	0.2
		DS	12.99	15.80	0.3
	2010	DM	11.02	15.97	0.3
		DS	11.31	16.05	0.3
	2023	DM	9.98	15.91	0.3
		DS	10.18	15.97	0.3
48 43 Church Street	2008	DM	12.96	15.74	0.2
		DS	12.41	15.57	0.2
	2010	DM	11.22	15.98	0.3
		DS	10.75	15.85	0.3
	2023	DM	10.12	15.91	0.3
		DS	9.71	15.80	0.3
49 Avon House	2008	DM	13.78	16.15	0.4
		DS	13.67	16.12	0.4
	2010	DM	12.04	16.30	0.4
		DS	12.10	16.32	0.4
	2023	DM	10.81	16.14	0.4
		DS	10.76	16.13	0.4

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
50 Boreland Hill Cottages - north of Chine Road, most south eastern cottage	2008	DM	11.41	15.44	0.2
		DS	11.42	15.44	0.2
	2010	DM	9.99	15.72	0.2
		DS	10.02	15.72	0.2
	2023	DM	9.03	15.67	0.2
		DS	9.04	15.67	0.2
51 Colts Corner - Upper Woodford, most northern large property	2008	DM	11.29	15.40	0.2
		DS	11.30	15.41	0.2
	2010	DM	9.89	15.69	0.2
		DS	9.91	15.70	0.2
	2023	DM	8.93	15.64	0.2
		DS	8.95	15.65	0.2
52 Ash Copse	2008	DM	11.20	15.38	0.2
		DS	11.21	15.38	0.2
	2010	DM	9.81	15.67	0.2
		DS	9.82	15.67	0.2
	2023	DM	8.87	15.63	0.2
		DS	8.88	15.63	0.2
53 West Amesbury House	2008	DM	12.42	15.57	0.2
		DS	12.44	15.58	0.2
	2010	DM	10.76	15.84	0.3
		DS	10.79	15.85	0.3
	2023	DM	9.72	15.80	0.3
		DS	9.74	15.80	0.3
54 14 Stonehenge Road	2008	DM	12.88	15.69	0.2
		DS	12.39	15.56	0.2
	2010	DM	11.15	15.94	0.3
		DS	10.74	15.84	0.3
	2023	DM	10.06	15.88	0.3
		DS	9.70	15.79	0.3

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
55 Brownway Cottages	2008	DM	11.19	15.37	0.2
		DS	11.23	15.39	0.2
	2010	DM	9.80	15.66	0.2
		DS	9.84	15.68	0.2
	2023	DM	8.88	15.63	0.2
		DS	8.89	15.63	0.2
56 Longhedge Cottages North	2008	DM	11.12	15.35	0.2
		DS	15.79	16.76	0.6
	2010	DM	9.74	15.65	0.2
		DS	14.01	16.85	0.7
	2023	DM	8.81	15.61	0.2
		DS	12.20	16.49	0.5
57 Longhedge Cottages South	2008	DM	11.12	15.35	0.2
		DS	16.10	16.89	0.7
	2010	DM	9.74	15.65	0.2
		DS	14.30	16.95	0.7
	2023	DM	8.81	15.61	0.2
		DS	12.42	16.56	0.5
58 Scotland Lodge Farm	2008	DM	14.58	16.57	0.5
		DS	11.37	15.63	0.2
	2010	DM	12.60	16.62	0.5
		DS	9.92	15.90	0.3
	2023	DM	11.19	16.37	0.4
		DS	8.99	15.83	0.3
59 Manor House	2008	DM	20.03	18.56	1.9
		DS	12.86	16.04	0.3
	2010	DM	17.31	18.15	1.5
		DS	11.27	16.25	0.4
	2023	DM	15.25	17.57	1.1
		DS	10.24	16.10	0.3

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
60 4 Cleeve View	2008	DM	19.52	18.35	1.7
		DS	12.58	15.96	0.3
	2010	DM	16.87	17.99	1.4
		DS	11.02	16.18	0.4
	2023	DM	14.90	17.46	1.0
		DS	10.04	16.05	0.3
61 Druid's Lodge building	2008	DM	14.37	16.30	0.4
		DS	13.20	15.95	0.3
	2010	DM	12.52	16.41	0.5
		DS	11.65	16.17	0.4
	2023	DM	11.52	16.36	0.4
		DS	10.36	16.01	0.3
62 Kamatan Acres	2008	DM	16.33	16.82	0.6
		DS	18.87	17.77	1.2
	2010	DM	14.17	16.85	0.7
		DS	16.77	17.74	1.2
	2023	DM	12.71	16.61	0.5
		DS	14.80	17.29	0.9
63 36 Larkhill Road	2008	DM	15.52	16.66	0.6
		DS	16.97	17.22	0.9
	2010	DM	13.48	16.72	0.6
		DS	15.03	17.28	0.9
	2023	DM	12.00	16.46	0.5
		DS	13.50	16.99	0.7
64 21 Biddulph Road	2008	DM	13.42	15.87	0.3
		DS	16.68	17.03	0.8
	2010	DM	11.67	16.10	0.3
		DS	14.83	17.18	0.8
	2023	DM	10.48	15.98	0.3
		DS	13.39	16.97	0.7

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
65 2 Alanbrooke Road	2008	DM	13.57	15.99	0.3
		DS	17.83	17.71	1.2
	2010	DM	11.80	16.19	0.4
		DS	15.87	17.75	1.2
	2023	DM	10.57	16.05	0.3
		DS	14.36	17.46	1.0
66 Misc. Barracks building - corner of junction of Ross Road and The Packway	2008	DM	13.40	15.87	0.3
		DS	17.41	17.29	0.9
	2010	DM	11.66	16.09	0.3
		DS	15.48	17.38	1.0
	2023	DM	10.45	15.97	0.3
		DS	14.06	17.19	0.8
67 Misc. building - west of A338, 750m south west of junction with Salisbury Road	2008	DM	14.46	16.17	0.4
		DS	14.12	16.06	0.3
	2010	DM	12.50	16.32	0.4
		DS	12.32	16.27	0.4
	2023	DM	11.23	16.19	0.4
		DS	10.97	16.12	0.4
68 Greenacre	2008	DM	13.72	16.14	0.4
		DS	13.38	16.03	0.3
	2010	DM	11.93	16.26	0.4
		DS	11.74	16.20	0.4
	2023	DM	10.70	16.13	0.4
		DS	10.42	16.05	0.3
69 Farnhurst, Shrewton	2008	DM	16.43	17.15	0.8
		DS	13.31	15.98	0.3
	2010	DM	14.30	17.06	0.8
		DS	11.76	16.17	0.4
	2023	DM	13.14	16.91	0.7
		DS	10.37	15.95	0.3

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
70 Rollestone Manor Farm	2008	DM	15.86	16.86	0.7
		DS	12.63	15.73	0.2
	2010	DM	13.80	16.83	0.7
		DS	11.13	15.96	0.3
	2023	DM	12.71	16.71	0.6
		DS	9.82	15.82	0.3
71 Lily Valley Cottage, Shrewton	2008	DM	11.20	15.33	0.2
		DS	14.08	16.39	0.5
	2010	DM	9.75	15.60	0.2
		DS	12.46	16.53	0.5
	2023	DM	8.76	15.52	0.2
		DS	11.35	16.41	0.5
72 Parkview	2008	DM	11.71	15.48	0.2
		DS	14.87	16.71	0.6
	2010	DM	10.19	15.71	0.2
		DS	13.19	16.80	0.6
	2023	DM	9.08	15.59	0.2
		DS	11.91	16.62	0.6
73 Deptford Field Barn	2008	DM	10.66	15.48	0.2
		DS	12.07	15.65	0.2
	2010	DM	9.28	15.72	0.2
		DS	9.43	15.76	0.2
	2023	DM	8.37	15.65	0.2
		DS	8.42	15.66	0.2
74 Manor House	2008	DM	10.85	15.50	0.2
		DS	11.89	15.58	0.2
	2010	DM	9.43	15.73	0.2
		DS	9.25	15.70	0.2
	2023	DM	8.46	15.64	0.2
		DS	8.30	15.62	0.2

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
75 Southington Farm House	2008	DM	15.48	16.79	0.6
		DS	14.98	16.41	0.5
	2010	DM	13.35	16.70	0.6
		DS	12.08	16.37	0.4
	2023	DM	11.57	16.26	0.4
		DS	10.44	16.04	0.3
76 Hill Farm	2008	DM	10.94	15.52	0.2
		DS	10.51	15.41	0.2
	2010	DM	9.50	15.80	0.3
		DS	9.14	15.72	0.2
	2023	DM	8.56	15.74	0.2
		DS	8.27	15.68	0.2
77 Misc. building	2008	DM	14.36	16.21	0.4
		DS	14.89	16.41	0.5
	2010	DM	12.45	16.38	0.4
		DS	13.09	16.60	0.5
	2023	DM	11.57	16.37	0.4
		DS	12.33	16.63	0.6
78 xx High Street, Bulford	2008	DM	13.48	15.90	0.3
		DS	13.80	15.99	0.3
	2010	DM	11.73	16.12	0.4
		DS	12.12	16.23	0.4
	2023	DM	10.66	16.05	0.3
		DS	10.99	16.14	0.4
79 Greenland Farm	2008	DM	10.57	15.14	0.1
		DS	11.79	15.43	0.2
	2010	DM	9.22	15.45	0.2
		DS	10.34	15.70	0.2
	2023	DM	8.34	15.40	0.2
		DS	9.33	15.60	0.2

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
80 The White House	2008	DM	11.52	15.50	0.2
		DS	11.51	15.50	0.2
	2010	DM	10.04	15.75	0.2
		DS	10.03	15.75	0.2
	2023	DM	9.07	15.71	0.2
		DS	9.07	15.70	0.2
81 Roman Road - Winterbourne Gunner, north western side of Roman Road, most south western of properties	2008	DM	11.44	15.48	0.2
		DS	12.94	15.90	0.3
	2010	DM	9.97	15.73	0.2
		DS	11.35	16.10	0.3
	2023	DM	9.01	15.69	0.2
		DS	10.11	15.97	0.3
82 High Post Hotel	2008	DM	15.39	16.66	0.6
		DS	15.18	16.57	0.5
	2010	DM	13.35	16.67	0.6
		DS	13.39	16.67	0.6
	2023	DM	11.84	16.42	0.5
		DS	11.71	16.38	0.4
83 8 Countess Road, Amesbury	2008	DM	16.32	16.89	0.7
		DS	16.13	16.80	0.6
	2010	DM	14.13	16.91	0.7
		DS	14.20	16.92	0.7
	2023	DM	12.74	16.70	0.6
		DS	12.56	16.62	0.6
84 1 Fairways Court, Amesbury	2008	DM	15.13	16.52	0.5
		DS	14.34	16.24	0.4
	2010	DM	13.09	16.61	0.5
		DS	12.54	16.43	0.5
	2023	DM	11.83	16.44	0.5
		DS	11.23	16.26	0.4

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
85 15 Salisbury Street, Amesbury	2008	DM	13.75	16.06	0.3
		DS	13.49	15.97	0.3
	2010	DM	11.91	16.25	0.4
		DS	11.76	16.20	0.4
	2023	DM	10.75	16.14	0.4
		DS	10.54	16.08	0.3
86 20 Allot Gardens, Amesbury	2008	DM	12.39	15.57	0.2
		DS	12.39	15.57	0.2
	2010	DM	10.73	15.84	0.3
		DS	10.73	15.84	0.3
	2023	DM	9.71	15.80	0.3
		DS	9.71	15.80	0.3
87 42 Boscombe Road, Amesbury	2008	DM	12.31	15.55	0.2
		DS	12.31	15.55	0.2
	2010	DM	10.66	15.82	0.3
		DS	10.66	15.83	0.3
	2023	DM	9.67	15.79	0.3
		DS	9.66	15.79	0.3
88 1 Holders Road, Amesbury	2008	DM	13.07	15.82	0.3
		DS	13.07	15.82	0.3
	2010	DM	11.32	16.05	0.3
		DS	11.39	16.07	0.3
	2023	DM	10.23	15.98	0.3
		DS	10.24	15.98	0.3
89 56 London Road, Amesbury	2008	DM	12.43	15.59	0.2
		DS	12.44	15.59	0.2
	2010	DM	10.77	15.86	0.3
		DS	10.78	15.87	0.3
	2023	DM	9.74	15.81	0.3
		DS	9.74	15.81	0.3

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
90 24 Underwood Drive, Amesbury	2008	DM	12.33	15.55	0.2
		DS	12.27	15.53	0.2
	2010	DM	10.68	15.82	0.3
		DS	10.62	15.81	0.3
	2023	DM	9.65	15.78	0.3
		DS	9.62	15.77	0.2
91 24 Beaumont Way, Amesbury	2008	DM	13.86	16.07	0.3
		DS	13.79	16.06	0.3
	2010	DM	12.01	16.26	0.4
		DS	12.06	16.28	0.4
	2023	DM	12.47	16.80	0.6
		DS	12.45	16.80	0.6
92 2 Canbury Close, Amesbury	2008	DM	13.64	15.98	0.3
		DS	13.60	15.97	0.3
	2010	DM	11.82	16.19	0.4
		DS	11.87	16.21	0.4
	2023	DM	11.67	16.46	0.5
		DS	11.66	16.46	0.5
93 190 Salisbury Road, Amesbury	2008	DM	17.83	17.29	0.9
		DS	17.54	17.16	0.8
	2010	DM	15.41	17.21	0.9
		DS	15.45	17.20	0.9
	2023	DM	13.66	16.88	0.7
		DS	13.47	16.79	0.6
94 46 Salisbury Road, Amesbury	2008	DM	16.52	16.97	0.7
		DS	16.30	16.86	0.7
	2010	DM	14.26	16.94	0.7
		DS	14.30	16.94	0.7
	2023	DM	12.66	16.65	0.6
		DS	12.47	16.50	0.5

Receptor	Year	Scenario	Annual mean Nitrogen Dioxide ($\mu g/m^3$)	Annual mean PM10 ($\mu g/m^3$)	Number of exceedences of PM10 24-hour mean of 50$\mu g/m^3$
Air Quality Standard	2008		**40**	**40**	**35**
	2010		**40**	**20**	**7**
	2023		**40**	**20**	**7**
95 Stockport Road - southern side of road, 220m west of junction with Salisbury Road	2008	DM	12.25	15.52	0.2
		DS	12.25	15.52	0.2
	2010	DM	10.60	15.80	0.3
		DS	10.60	15.80	0.3
	2023	DM	9.59	15.76	0.2
		DS	9.59	15.76	0.2
96 Salisbury Road - eastern side of road, 240m north of junction with Stockport Road	2008	DM	12.25	15.52	0.2
		DS	12.25	15.52	0.2
	2010	DM	10.60	15.80	0.3
		DS	10.60	15.80	0.3
	2023	DM	9.59	15.76	0.2
		DS	9.59	15.76	0.2
97 Wilton AQMA	2008	DM	23.32	19.44	2.8
		DS	20.20	18.29	1.6
	2010	DM	20.18	18.81	2.1
		DS	18.19	18.17	1.5
	2023	DM	17.49	17.95	1.4
		DS	15.67	17.51	1.0
98 Milford AQMA	2008	DM	29.10	18.60	1.9
		DS	26.90	18.11	1.5
	2010	DM	25.90	18.36	1.7
		DS	24.70	18.10	1.5
	2023	DM	21.70	17.64	1.1
		DS	19.70	17.37	1.0