

# A303 Amesbury to Berwick Down

TR010025

## 6.3 Environmental Statement Appendices

Appendix 8.5 Hedgerow survey report

APFP Regulation 5(2)(a)

Planning Act 2008

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

October 2018



**A303 Stonehenge  
Amesbury to Berwick Down**

**Hedgerow Survey Report 2017**

**Arup Atkins Joint Venture**

**HE551506-AA-EBD-SWI-SU-YE-000018**

**P01**

**January 31 2018**

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## Document Control

<b>Document Title</b>	A303 Hedgerow Survey Report 2017
<b>Document Reference</b>	HE551506-AA-EBD-SWI-SU-YE-000018
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<b>Document Status</b>	Final - Issued for HE acceptance

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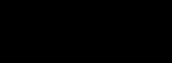
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## Revision History

Revision	Date	Status	Description	Author
P01	14/12/2017	S0	Final Draft	Victoria Sloan
0	14/12/2017	S0	Draft shared with AmW	Victoria Sloan

## Arup Atkins Joint Venture Approvals

Revision	Role	Name	Signature	Date
P01	Author	Victoria Sloan		14/12/2017
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	Technical Reviewer	Paul Clack		04/01/2018
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0	Author	Victoria Sloan		14/12/2017
	Technical Checker	Duncan McLaughlin		15/12/2017
	Technical Reviewer	Paul Clack		04/01/2018

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### Highways England Approval

Revision	Title	Name	Signature	Date
P01	Environment Workstream Lead	Andrew Clark		27/02/18

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## Foreword

The A303/A358 corridor is a vital connection between the South West and London and the South East. While the majority of the road has been dualled, there are still over 35 miles of single carriageway. These sections act as bottlenecks for users of the route resulting in congestion, particularly in the summer months and at weekends, delays to traffic travelling between the M3 and the South West and an increased risk of accidents. The A303 passes through the Stonehenge, Avebury and Associated Sites World Heritage Site (hereafter referred to as Stonehenge WHS), separating the stones from other scheduled monuments and severely limiting the enjoyment of the wider site.

The A303 Stonehenge (Amesbury to Berwick Down) Scheme is part of the wider package of proposals for the A303/A358 corridor designed to transform the connectivity to and from the South West by creating an expressway. This would comprise of consistently good dual carriageway roads with grade-separated junctions, giving most users a motorway-quality journey. The A303/A358 package was identified in the 2014 National Infrastructure Plan as one of the country's Top 40 priority infrastructure investments.

The proposals by Highways England to upgrade the A303 past Stonehenge consist of an eight mile (13 kilometre) stretch from Amesbury in the east, through the Stonehenge WHS and the village of Winterbourne Stoke, to Berwick Down in the west. Proposals include a tunnel of at least 1.8 miles (2.9 kilometres) with approach roads inside the WHS, a new bypass for Winterbourne Stoke (passing either north or south of the village) and improvements to existing junctions with the A345 and A360.

Highways England (HE) commissioned the Arup-Atkins Joint Venture (AAJV) to undertake the Options Phase for the Scheme, starting in January 2016. The AAJV was also commissioned by HE to undertake hedgerow surveys along route options in order to de-risk the next stages of the project, due to the fast-tracked nature of the Scheme. This report presents the findings of these hedgerow surveys. The AAJV would like to thank all the landowners for their considerable help and consideration during the course of the surveys.

## Executive Summary

The AAJV were commissioned by Highways England to undertake hedgerow surveys as part of a programme of ecological surveys to inform the design of the proposed A303 Stonehenge (Amesbury to Berwick Down) Scheme.

This report presents the baseline survey results recorded during the 2017 hedgerow surveys relevant to each of the three route options proposed at the time (1Na, 1Sa and 1Nd). It is intended that the information in this report will be used to identify and assess the potential implications of the Scheme on ecologically 'important' hedgerows and inform mitigation and compensation where applicable.

Hedgerows qualifying as 'important' under the Hedgerow Regulations 1997 criteria are protected from removal by a system of notification. Criteria for determining hedgerow importance are listed in Schedule 1, part II of the Regulations and include archaeology and history (paragraphs 1-5), and wildlife and landscape (paragraphs 6-8). The surveys reported here were undertaken to enable assessment of hedgerow importance under paragraphs 7 and 8 of the wildlife and landscape criteria.

The surveys identified the following:

- one hedgerow qualifying as important under the wildlife and landscape criteria listed in Schedule I, part II paragraph 7 of the Hedgerow Regulations 1997, located where route options 1Na, 1Nd and 1Sa follow a similar route;
- one hedgerow with the potential to qualify as important under these criteria should additional woodland ground flora species be present, also located where route options 1Na, 1Nd and 1Sa follow a similar route; and
- one further hedgerow with the potential to qualify as important under Schedule 1, part II paragraph 8 should additional woodland ground flora species be present, located on route options 1Na and 1Nd.

These surveys fulfilled their objectives in identifying the distribution and location of ecologically important hedgerows across the proposed route options. A complete assessment of the impact on hedgerows will be undertaken within the Environmental Impact Assessment (EIA) for the preferred option, along with details of mitigation measures as appropriate.

# 1 Introduction

## 1.1 Project Background

- 1.1.1 The A303 Stonehenge (Amesbury to Berwick Down) Scheme forms part of the A303/A30 trunk route, which provides vital east-west connectivity between London and the South West and is also part of the Trans-European Network-Transport (TEN-T). The A303, which runs for approximately 150 kilometres from Junction 8 of the M3 near Basingstoke towards Taunton and Exeter, serves not only long distance traffic but also intermediate regional destinations via connecting major north-south route options as well as local small and medium sized settlements along the route.
- 1.1.2 Recognising the importance of the A303/A358 Corridor and the problems along it, the Government has committed in its Road Investment Strategy (RIS) to create an 'Expressway' to the South West via the A303/A358 route by 2029. The A303 Stonehenge scheme, involving dualling the A303 between Amesbury and Berwick Down, including the construction of a tunnel at least 1.8 miles (2.9 kilometres) long as the road passes Stonehenge, has been prioritised within the first RIS period (2015/16 to 2019/20).
- 1.1.3 Following public consultation in January 2017, three routes were recommended for detailed assessment during 2017, Route Options 1Na, 1Sa and 1Nd. Figures 1a and 1b2 show the combined survey area across the three route options.

## 1.1 Scope of the document

- 1.1.1 This report presents the baseline survey results of hedgerow surveys undertaken in 2017. It is intended that the information in this report will be used to identify and assess the potential implications of the Scheme on ecologically 'important' hedgerows and inform any necessary mitigation and/or compensation measures.
- 1.1.2 The report does not assess the hedgerows according to historical or archaeological importance criteria (Schedule 1, part II, paragraphs 1-5), or undertake a full assessment of whether the hedgerows contain protected species (Schedule 1, part II, paragraph 6).
- 1.1.3 This baseline report will be used to inform an Environmental Impact Assessment (EIA) which would accompany a Development Consent Order (DCO) application for the proposed Scheme.

## 1.2 Survey Objective

- 1.2.1 The objective of the survey was to record hedgerow characteristics to enable an assessment of whether hedgerows would be considered important under the wildlife and landscape criteria in Schedule 1, part II paragraphs 7 and 8 of the Hedgerow Regulations 1997.

## 1.3 Legislation

The Hedgerow Regulations 1997 control the removal of 'important' hedgerows through a system of notification. The Regulations set out criteria for determining whether a hedgerow should be considered 'important'. The Regulations do not apply once planning permission has been granted, but the Hedgerow Regulations criteria can be used to assess hedgerows to give an indication of their ecological value.

To be classified as 'important' under the wildlife and landscape criteria a hedgerow must fulfil one of the criteria in Schedule 1 of the Hedgerow Regulations. The hedge must be over 30 years old and satisfy one of the following:

- Contains certain categories of species of birds, animals or plants listed in the Wildlife and Countryside Act or Joint Nature Conservation Committee (JNCC) publications (paragraph 6);
- Have an average of seven or more woody species listed in Schedule 3 of the Regulations in the surveyed section (paragraph 7);
- Have an average of six woody species in the surveyed section and at least three features listed in paragraph 4 of the Regulations (paragraph 7);
- Have an average of six woody species including one of the following rare native trees – native black poplar, large leaved lime, small leaved lime and wild service tree (paragraph 7);
- Have an average of five woody species in the surveyed section and have four or more of the features listed in paragraph 4 of the Regulation (paragraph 7);
- Have four woody species in the surveyed section, is adjacent to a footpath, bridleway or BOAT (byway open to all traffic) and have two or more features listed in paragraph 4 of the Regulation (paragraph 8).

The Hedgerow Regulations do not apply to any hedgerow within the curtilage of, or marking a boundary of the curtilage of a dwelling-house.

All hedgerows (regardless of importance under the Hedgerow Regulations 1997) are also included in the list of species and habitats of principal importance for the conservation of biodiversity under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. The NERC Act requires public authorities to have regard to the purpose of conserving biodiversity in relation to these species and habitats.

## 2 Methodology

### 2.1 Survey Area

- 2.1.1 The survey area included the three proposed route options being considered during 2017: Option 1Na, Option 1Sa and Option 1Nd. Hedgerows potentially impacted by each of these route options were identified using the survey area for the Phase 1 Habitat survey<sup>1</sup>, which comprised a 250m wide strip centred on the line of each route (routes are shown on **Figures 1a and 1b** with a 150m wide strip). Only hedgerows partially or entirely within the Phase 1 habitat survey area were considered for further survey.
- 2.1.2 Of a total of 27 hedgerows within the Phase 1 habitat survey area, 15 hedgerows were mapped as species-rich (9 intact species-rich hedgerows with trees, four intact species-rich hedgerows without trees, and two species-rich defunct hedgerows). All hedgerows mapped as species-rich were considered to have potential to qualify as important and were included in the survey reported here. One further location, where an ecologically important hedgerow had been identified in 2003<sup>2</sup> but no hedgerow mapped in the 2017 Phase 1 habitat survey was also included, making a total of 16 hedgerows surveyed.
- 2.1.3 All 16 hedgerows were surveyed along their entire length, as shown on **Figures 1a and 1b**.

### 2.2 Survey Methods

- 2.2.1 Hedgerow surveys were undertaken on 8<sup>th</sup> August and 11<sup>th</sup> – 13<sup>th</sup> September 2017.
- 2.2.2 The survey methodology followed the guidelines in the *Hedgerow Survey Handbook*<sup>3</sup> (Defra, 2007), including taking the definition of a hedgerow to be:  
*‘any boundary line of trees or shrubs over 20m long and less than 5m wide at the base, provided that at one time the trees or shrubs were more or less continuous’.*
- 2.2.3 During the surveys, the following features were recorded:
- General height and width of hedgerow;
  - Number and length of any gaps;
  - Presence of banks, walls and ditches;

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<sup>1</sup> Arup Atkins Joint Venture (2017) A303 Stonehenge Amesbury to Berwick Down. Phase 1 Habitat Survey Report 2017.

<sup>2</sup> Nicholas Pearson Associates (2003) A303 Stonehenge Improvement Environmental Statement Volume 2, Part 3: Nature Conservation and Biodiversity, Appendix 5: Hedgerow Regulations Baseline Survey Results.

<sup>3</sup> Defra (2007) *Hedgerow Survey Handbook*. 2<sup>nd</sup> Edition. Department of Food and Rural Affairs, London

- Presence, number and spacing of standard trees<sup>4</sup>;
- Adjacent land use and proximity of ecological features such as ponds, woodlands or parallel hedgerows, and any connections to other hedgerows not evident on existing maps;
- The presence and abundance<sup>5</sup> of woody species listed on Schedule 3 of the Hedgerow Regulations within representative 30 m sections;
- The presence and abundance (as above) of species listed on Schedule 2 within ground flora to distance of 1m from the hedgerow base.
- Evidence of past or recent management; and
- Evidence of use by animal species, in particular protected species;

2.2.4 Following the survey, the results were assessed against the wildlife and landscape criteria for determining 'important' hedgerows set out in Schedule 1, Part 2 of the Hedgerow Regulations 1997.

2.2.5 All hedgerow surveys were led by competent ecologists experienced in botanical survey.

## 2.3 Weather Conditions

2.3.1 Weather conditions (temperature, wind speed, wind direction and general condition) were recorded at the time of survey. Weather conditions were recorded to assess the impact of weather on hedgerow survey (see **Appendix A**).

## 2.4 Limitations and Assumptions

2.4.1 It is assumed that the Phase 1 Habitat survey mapped all hedgerows crossed by the route options, and that exclusion of hedgerows mapped as species-poor from further survey did not result in the omission of assessment of any important hedgerows.

2.4.2 The survey was undertaken at an optimal period for identification of woody species, but at a sub-optimal period for the identification of ground flora (the optimal period for hedgerow survey is June – July, to capture woody species in flower and spring ground flora<sup>6</sup>). In assessing the importance of a hedgerow, the potential under-recording of ground flora becomes relevant only where the hedgerow would require the possession of three or more woodland species in the ground flora to qualify as 'important', or where a protected plant species may be present the ground flora.

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<sup>4</sup> A tree is considered standard if it is >20cm in diameter at 1.3m from ground level if single stemmed, or has least 2 stems of >15cm diameter if multi-stemmed

<sup>5</sup> DAFOR scale: D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare.

<sup>6</sup> Defra (2007) *Hedgerow Survey Handbook*. 2<sup>nd</sup> Edition. Department of Food and Rural Affairs, London

2.4.3 Overall results of this survey work are considered sufficient to inform an ecological impact assessment. The surveys are considered valid for a period of two years, after which it is advisable to update the surveys.

## 3 Results

### 3.1 Hedgerows

- 3.1.1 The full details of the surveyed hedgerows are provided in **Appendix A.2**
- 3.1.2 One hedgerow, Hedgerow 15 (**Figure 1b**), qualifies as 'important' in respect of the wildlife and landscape criteria set out in Schedule 1, part II, paragraph 7 of the Hedgerow Regulations (1997). This hedgerow qualifies as it has an average of five woody species in surveyed sections and four additional features listed in sub-paragraph 4 (listed in **Appendix B**). This hedgerow is located at the eastern extent of the survey area, where route options 1Na, 1Nd and 1Sa follow a similar route.
- 3.1.3 Two additional hedgerows, Hedgerow 2 (**Figure 1a**) and Hedgerow 14 (**Figure 1b**) would qualify as important as above if either was found to contain three woodland species listed in Schedule 2 (see section 2.4.1).
- 3.1.4 Hedgerow 2 would meet the criteria listed in paragraph 8, as it is adjacent to a byway open to all traffic, contains 4 woody species, and one feature from sub-paragraph 4. Hedgerow 2 already has records of two such woodland ground flora species listed on Schedule 2. Hedgerow 2 lies within route options 1Na and 1Nd.
- 3.1.5 Hedgerow 14 would meet the criteria listed in paragraph 7, as it has five woody species and three additional features listed in sub-paragraph 4. No woodland ground flora species were recorded for this hedgerow during the survey. This hedgerow is located adjacent to hedgerow 15, where routes 1Na, 1Nd and 1Sa follow a similar route.
- 3.1.6 The remaining hedgerows lacked either sufficient numbers of woody species or additional features to qualify as important under either paragraph 7 or 8 of the Regulations. This included hedgerow 13, which was previously identified as ecologically important in 2003. Whilst having an average of 5 woody species, hedgerow 13 had only two of the four additional features required to qualify as important.

## 4 Conclusions and Recommendations

### 4.1 Conclusions

- 4.1.1 The majority of hedgerows lacked sufficient numbers of woody species to qualify as 'important' under the Hedgerow Regulations.
- 4.1.2 One hedgerow qualifying as ecologically 'important' under the Hedgerow Regulations 1997 is located where **route options, 1Na, 1Nd and 1Sa** follow a similar corridor. It should be noted that the northernmost 70m this hedgerow is defunct. This hedgerow was previously assessed as ecologically important in 2003<sup>7</sup>.
- 4.1.3 All **route options (1 Na, 1Nd and 1Sa)** encompass one further hedgerow which may qualify as important were three species of woodland ground flora found to be present. This hedgerow was scoped out of surveys reported in 2003 (only hedgerows with five or more woody species were surveyed in 2002).
- 4.1.4 **Route options 1Na and 1Nd** encompass a second hedgerow which may qualify as important were three species of woodland ground flora found to be present. This hedgerow was not assessed in 2003 as it did not lie within the survey area at the time.

### 4.2 Recommendations

- 4.2.1 It is recommended that further assessment of the two hedgerows which may qualify as 'important' using wildlife and landscape criteria listed in paragraphs 7 and 8 of the Hedgerow Regulations is undertaken at a suitable time to identify woodland ground flora (Spring – early Summer).
- 4.2.2 A complete assessment of the impact on hedgerows across the chosen route option along with mitigation and compensation measures will be provided within the Environmental Impact Assessment (EIA). This should include translocation of existing hedgerows where possible.

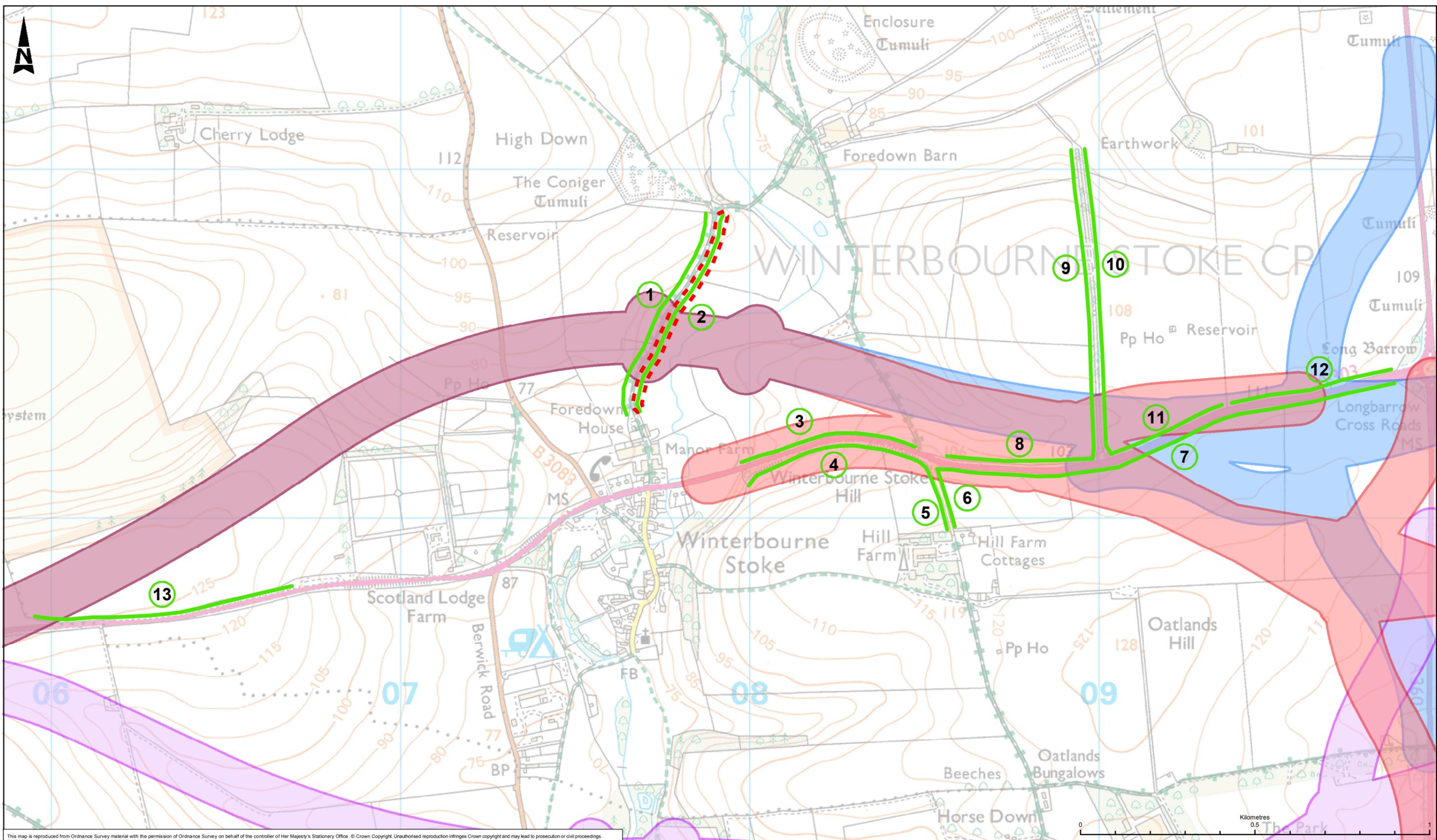
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<sup>7</sup> Nicholas Pearson Associates (2003) A303 Stonehenge Improvement Environmental Statement Volume 2, Part 3: Nature Conservation and Biodiversity, Appendix 5: Hedgerow Regulations Baseline Survey Results.

## 5 Figures

**Figure 1a (drawing HE551506-AA-VES-D\_SWI-DR-LS-000014)**

**Figure 1b (drawing HE551506-AA-VES-D\_SWI-DR-LS-000015)**



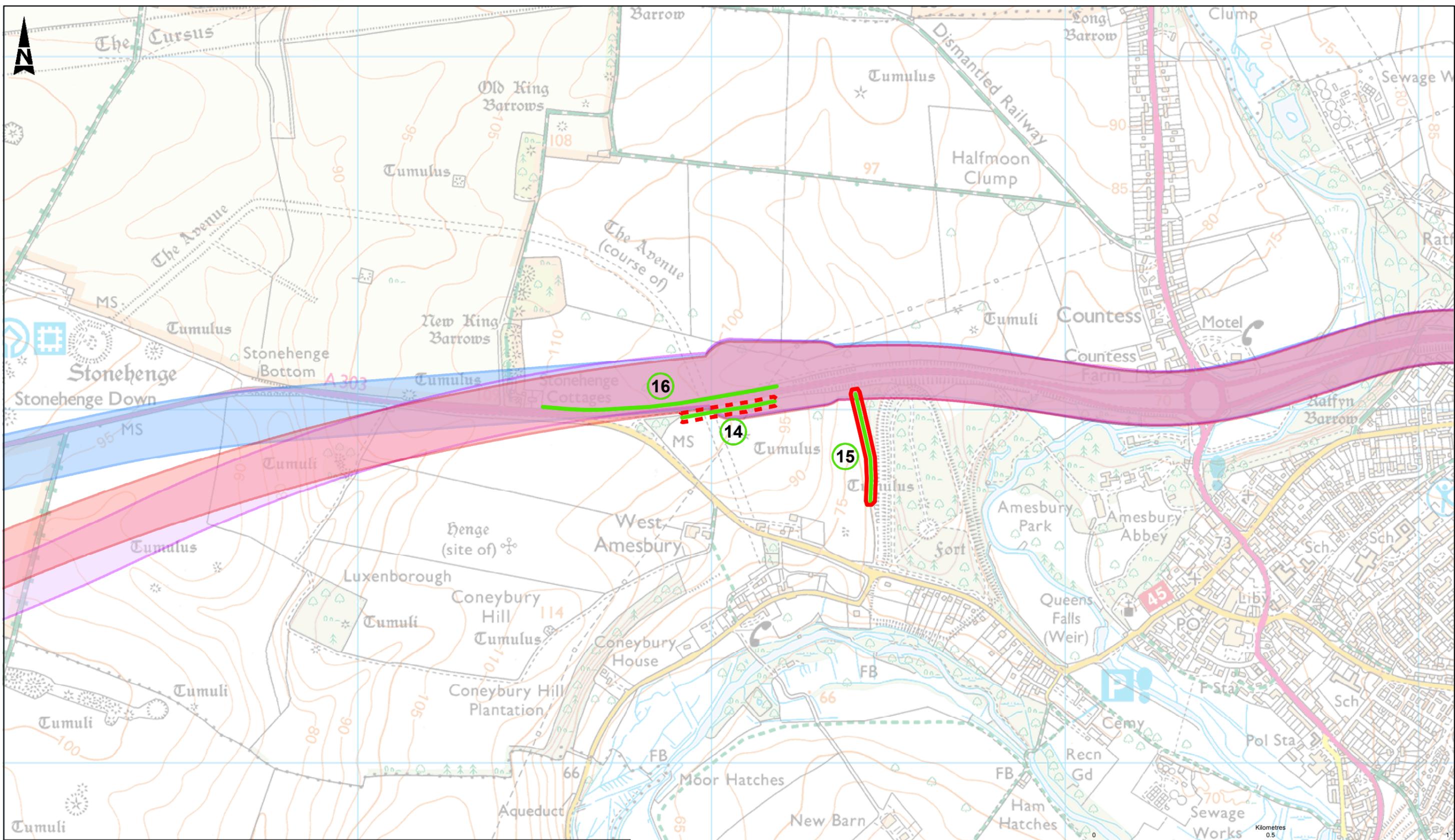
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LEGEND	
	SURVEYED HEDGEROW
	ECOLOGICALLY IMPORTANT HEDGEROW
	POTENTIALLY ECOLOGICALLY IMPORTANT HEDGEROW
	OPTION 1Nd CENTRELINE BUFFER 75M
	OPTION 1Sa CENTRELINE BUFFER 75M
	OPTION 1Na CENTRELINE BUFFER 75M

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION							
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made in the design hazard log)							
Construction None							
Maintenance / Cleaning None							
Use None							
Decommission / Demolition None							
P05	06/02/18	FIT FOR INTERNAL REVIEW AND COMMENT			EA	RJS	LB
Rev	Date	Description	By	Chk'd	App'd		

Drawing Status FIT FOR INTERNAL REVIEW AND COMMENT	Suitability S3	Project Title A303 AMESBURY TO BERWICK DOWN			
Client 		Drawing Title FIGURE 1a HEDGEROW SURVEY MAP			
Scale 1:10,000	Designed / Drawn EA	Checked RJS	Approved LB	Authorised AK	
Original Size A3	Date 06/02/18	Date 06/02/18	Date 06/02/18	Date 06/02/18	
Drawing Number HE551506-AA-VES-D_SWI-DR-LS-000014	Project Originator	Volume Volume	Revision P05		
Location	Type	Role	Number		

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LEGEND	
	SURVEYED HEDGEROW
	ECOLOGICALLY IMPORTANT HEDGEROW
	POTENTIALLY ECOLOGICALLY IMPORTANT HEDGEROW
	OPTION 1Nd CENTRELINE BUFFER 75M
	OPTION 1Sa CENTRELINE BUFFER 75M
	OPTION 1Na CENTRELINE BUFFER 75M

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION			
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made in the design hazard log)			
Construction None			
Maintenance / Cleaning None			
Use None			
Decommission / Demolition None			
P05	06/02/18	FIT FOR INTERNAL REVIEW AND COMMENT	
Rev	Date	Description	By Chk'd App'd

Drawing Status FIT FOR INTERNAL REVIEW AND COMMENT	Suitability S3	Project Title A303 AMESBURY TO BERWICK DOWN			
Client 		Drawing Title FIGURE 1b HEDGEROW SURVEY MAP			
Scale 1:10,000	Designed / Drawn EA	Checked RJS	Approved LB	Authorised AK	
Original Size A3	Date 06/02/18	Date 06/02/18	Date 06/02/18	Date 06/02/18	
Drawing Number Project HE551506-AA-VES-D_SWI-DR-LS-000015		Originator Volume	Revision P05		
Location	Type	Role	Number		

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# Appendices

# Appendix A Weather Conditions

## A.1 Weather Conditions

Visit	Date	Temperature (°C)	Wind Speed (Beaufort) and Direction	General Conditions
1	08/08/17	15	3, NNW	Light rain
2	11/09/17	17	4, W	Intermittent showers
3	12/09/17	16	3, W	Dry, cloudy / sunny spells
4	13/09/17	17	5, W	Dry, sunny

# Appendix B Hedgerow Survey Results

## B.1 Hedgerow survey results

Hedgerow	Length (m)	Width (m)	Height (m)	Number of woody species* per 30m	Number of woodland species**	Gaps (%)	Standard trees per 50m	Ditch, bank, wall, or parallel hedgerow within 15m	Adjacent rights of way	Connections (with points scored)
1	580	1.75	2.5	3	3	3	0	parallel hedgerow	Byway open to all traffic	Woodland - 2
2	560	1.5	2.5	4	2	10	0	parallel hedgerow	Byway open to all traffic	Hedgerows - 2
3	550	1.5	1.75	3	2	5	1.5	none	none	Hedgerow - 1
4	300	1.25	2.5	2	0	0	0	none	none	Hedgerow and woodland - 3
5	180	3	1.75	4	0	0	0	parallel hedgerow	none	Hedgerow and woodland - 3
6	170	1.75	1.75	4	0	0	0	parallel hedgerow	none	Hedgerow - 1
7	1360	3.5	2	3	0	0	<1	none	none	Hedgerows - 2
8	520	2.5	2.5	2	0	1	<1	none	none	Hedgerows - 2
9	890	1.5	4	3	1	<1	<1	parallel hedgerow	none	Hedgerow - 1
10	890	1.5	5	3	1	0	0	parallel hedgerow	none	Hedgerow - 1
11	400	3	2	3	0	0	<1	none	none	Hedgerows - 2
12	500	3	2	2	0	<1	0	none	none	Hedgerows and woodland - 4
13	270	2.5	3.5	5	0	6	2	none	none	Woodland - 2
14	300	2	3	5	0	7	<1	dry ditch	none	Woodlands - 4
15	500	4	3	5	3	15	1.5	on a bank	none	Woodlands - 4
16	570	4	2.5	3	0	5	<1	dry ditch	none	Woodlands - 4

\*Species listed on Schedule 3 of the Hedgerow Regulations 1997.

\*\* Species listed on Schedule 2 of the Hedgerow Regulations 1997.

## B.2 Woody species in hedgerows

Hedgerow	Woody species, including species recorded within 30m and elsewhere in hedgerow (with general DAFOR <sup>8</sup> ), and mature trees
1	hawthorn (abundant), elder (frequent), rose species (rare), privet (rare), elm species (rare).
2	hawthorn (abundant), elder (frequent), blackthorn (occasional), rose species (occasional), privet species (occasional)
3	hawthorn (abundant), elder (occasional), privet (occasional), rose species (occasional), blackthorn (rare), mature trees: beech
4	hawthorn (dominant), privet (occasional)
5	hawthorn (abundant), privet (frequent), elder (occasional), rose species (occasional)
6	hawthorn (abundant), blackthorn (frequent), elder (frequent), rose species (occasional)
7	blackthorn (frequent), hawthorn (frequent), privet (occasional), elder (rare), rose species (rare), mature trees: ash
8	hawthorn (dominant), privet (occasional), elder (rare), rose species (rare), field maple (rare), mature tree: beech
9	hawthorn (dominant), elder (occasional), privet (rare), elm species (rare), apple species (rare), mature tree: ash
10	hawthorn (dominant), blackthorn (occasional), elder (occasional), rose species (occasional)
11	hawthorn (dominant), elm species (frequent), elder (rare), spindle (rare), mature trees: elm
12	hawthorn (abundant), elm species (frequent), elder (occasional), spindle (rare), privet (rare)
13	hawthorn (frequent), spindle (frequent), elm species (frequent), blackthorn (occasional), buckthorn (rare), rose species (rare), mature trees: elm species, spindle, hawthorn
14	dogwood (abundant), spindle (frequent) privet (frequent), blackthorn (occasional), hawthorn (occasional), buckthorn (rare), yew (rare), mature trees: ash, beech, cherry species
15	elm species (frequent), privet (frequent), dogwood (occasional), elder (occasional), spindle (occasional), hawthorn (rare), rose species (rare), mature trees: ash, elm, sycamore
16	hawthorn (frequent), dogwood (frequent), privet (occasional), elder (occasional), rose species (rare), mature trees: beech

<sup>8</sup> DAFOR scale: D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare.

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