

A303 Amesbury to Berwick Down

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6.3 Environmental Statement Appendices

Appendix 8.3A Phase 1 habitat survey report

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A303 Stonehenge Amesbury to Berwick Down

Phase 1 Habitat Survey Report 2017

Arup Atkins Joint Venture

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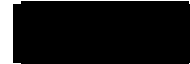

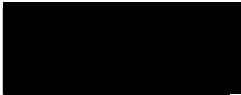
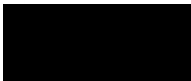
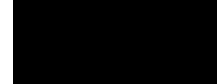
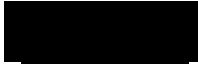

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Foreword

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, 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.

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 World Heritage Site (WHS) and the village of Winterbourne Stoke, to Berwick Down in the west. Proposals include a 1.8 mile (2.9 kilometre) tunnel 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 a Phase 1 habitat survey along these proposed 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 this Phase 1 habitat survey. 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 in 2016 to undertake a Phase 1 habitat survey as part of a programme of ecological surveys to inform the design of the proposed A303 Amesbury to Berwick Down road improvement scheme.

This report presents the baseline survey results recorded during the 2017 Phase 1 habitat survey across each of the three route options proposed at the time. It is intended that the information in this report will be used to identify and assess the potential implications of the scheme and inform mitigation and compensation for the habitats.

A framework of international (European), national and local legislation and planning policy guidance exists to protect and conserve habitats.

The 2017 survey identified 32 habitats within the route options. The habitats recorded were typical of an agricultural landscape with arable farming, improved grassland and a network of hedges and scattered woodlands. Typically, in areas of lower-intensity agriculture, semi-improved grasslands occurred with a composition indicative of its managed history, with calcareous influence originating from the chalk geology of the wider landscape. The River Avon and River Till had associated habitats of aquatic influence with standing and running water and localised marshy grassland.

The three routes had similar habitat composition and are summarised below:

Route option 1Na: Habitats are dominated by arable fields, improved grassland and semi-natural broad-leaved woodland. Small areas of semi-improved calcareous grassland are present. Hedges are abundant across the route option, the majority being species-rich hedges with trees, although species-poor defunct hedges are also common. The River Avon and River Till represent the main waterbodies along the route.

Route option 1Nd: Habitats are dominated by arable fields, improved grassland, semi-improved neutral grassland and semi-natural broad-leaved woodland. Small areas of semi-improved calcareous grassland are present. Hedges are abundant across the route option, the majority being species-poor defunct hedges, although species-rich hedges with trees are common. The River Avon and Till represent the main waterbodies along the route option.

Route option 1SA: Habitats are dominated by arable fields, improved grassland and semi-natural broad-leaved woodland. Hedges are abundant across the route option the majority being species-poor defunct hedges. The River Avon and River Till represent the main waterbodies along the route. This route option has the only example in the survey area of marshy grassland, present around the River Till.

This survey fulfilled its objectives in identifying and mapping the habitats in the survey area. A complete assessment of potential impacts to habitats will be undertaken within the Environmental Impact Assessment for the preferred route option, along with details of mitigation and compensation 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 150km 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 HE551506-AA-VES-D_SWI-DR-YE-000021 to HE551506-AA-VES-D_SWI-DR-YE-000027 record 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 recorded during the 2017 Phase 1 habitat survey. It is intended that the information in this report will be used with the results of other ecological surveys to identify and assess the potential implications of the scheme and inform mitigation and compensation for impacts to habitats.
- 1.1.2 This baseline report can be used to accompany any future planning application and associated Environmental Impact Assessment (EIA) for the proposed scheme.

1.2 Survey objectives

- 1.2.1 The objective of the survey was to identify and map the habitats in the survey area (see section 2.1), following the guidelines of the Phase 1 habitat classification¹. This survey approach also allows for the presence of any notable/protected species to be highlighted.

1.3 Legislation

- 1.3.1 A framework of international (European), national and local legislation and planning policy guidance exists to protect and conserve habitats. The following legislation exists to protect habitats of nature conservation importance:
 - The Conservation of Habitats and Species Regulations 2010 (as amended) (the Habitat Regulations) which transposes Council Directive 92/43/EEC on

¹ JNCC, 2010. Handbook for Phase 1 habitat survey: A technique for environmental audit.

the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) into UK law;

- Wildlife and Countryside Act 1981 (as amended) (WCA);
- The Hedgerow Regulations 1997;
- Natural Environment and Rural Communities Act 2006 (NERC); and
- National Planning Policy Framework (NPPF).

1.3.2 These pieces of legislation include a number of offences relating to protected habitats and requirements to allow construction works to proceed. Furthermore, the WCA and NERC Acts provide the legal framework for the designation and protected of nationally designated sites including Sites of Special Scientific Interest. In addition, the Habitats Regulations set out the requirement for the consideration of the potential effects of a project on European designated sites.

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. Figures HE551506-AA-VES-D_SWI-DR-YE-000021, HE551506-AA-VES-D_SWI-DR-YE-000022, HE551506-AA-VES-D_SWI-DR-YE-000023, HE551506-AA-VES-D_SWI-DR-YE-000024, HE551506-AA-VES-D_SWI-DR-YE-000025, HE551506-AA-VES-D_SWI-DR-YE-000026 and HE551506-AA-VES-D_SWI-DR-YE-000027 record the combined survey area across the three route options. The survey area included a buffer of 125m from the centreline of each route option; producing a survey area 250m in total width for each route option.
- 2.1.2 In some instances, areas outside this were also surveyed, due to the presence of notable features of interest and/or the contiguity of habitats.
- 2.1.3 The Phase 1 habitat survey was therefore separated into: the survey area (the route options and 125m buffer) and outside the survey area. Whilst the Phase 1 habitat map records habitats inside and outside the survey area this report will only consider those habitats in the survey area.

2.2 Survey methods

- 2.2.1 The Phase 1 habitat survey followed the standard JNCC methodology¹.
- 2.2.2 Every parcel of land in the survey area was visited by surveyors and the habitats mapped according to the Phase 1 habitat classification. Binoculars were used to record from distance any habitats which weren't easily accessible.
- 2.2.3 Habitat areas greater than 0.1ha were mapped and Target Notes (TN) were used to highlight any features/habitats of interest.
- 2.2.4 Mapping of habitats and target notes were undertaken on A3 basemaps and also using tablet devices. Tablet devices with GPS were used to assist in recording habitats, locations of features of interest and to determine the boundary of the route buffers.
- 2.2.5 Although not exhaustive, where possible surveys looked for invasive plants listed on Schedule 9 of the Wildlife and Countryside Act 1981, such as Japanese knotweed *Fallopia japonica*, Himalayan balsam *Impatiens glandulifera* and giant hogweed *Heracleum mantegazzianum*.
- 2.2.6 All Phase 1 habitat surveys were led by competent ecologists, all of whom were familiar with the Phase 1 habitat survey methodology, and full or associate members of the Chartered Institute of Ecology and Environmental Management (CIEEM).

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 assessment of habitats and features of interest (see Appendix A).

2.4 Limitations and assumptions

- 2.4.1 Although the habitats mapped in this report have been produced with the intention of indicating and classifying the occurrence of semi-natural habitats, it is not to be regarded as a definitive representation of the conservation value or interest of any piece of land. In particular, the absence of any symbol, such as a target note, should not be taken as denoting a lack of conservation value.
- 2.4.2 The absence of recorded habitats outside of the survey area does not infer the absence of any feature of interest.
- 2.4.3 Some areas of the survey area were inaccessible due to dense vegetation and health and safety concerns. All land within the highway boundary (the entirety of the A303, B3083, A360, A345 and Stonehenge Road) was not accessible and will require further survey. It is assumed that a representative assessment of the land was able to be undertaken in order to fulfil this report's objectives.
- 2.4.4 Habitats smaller than the specified minimum area of 0.1ha are not mapped, although where possible any habitat or feature of interest was recorded with a target note.
- 2.4.5 The area of some habitats, e.g. Countess Cutting, are likely to be underestimated given the two-dimensional nature of mapping and the steep aspect of the cutting.
- 2.4.6 In all cases, habitats were mapped as accurately as possible. However, variations in boundary maps and the subjectivity of habitat delimitation will result in a degree of error.
- 2.4.7 No attempt was made to construct complete species lists and rarities may have been overlooked.
- 2.4.8 The classification of land parcels with the same habitat type does not denote equal conservation value.
- 2.4.9 It is important to consider that habitats may change over time and the definition of a land parcel's habitat in one year may be different in the next, e.g. the ploughing of semi-improved grassland for arable use.
- 2.4.10 Although the habitat survey was conducted outside of the optimal period for botanical survey (April to October) the survey still provides an indicative assessment of the habitats on site. Surveying was undertaken during this period in order to accommodate the programme for the Option Selection Stage and to inform the Preferred Route Announcement.
- 2.4.11 Sites were predominantly only visited once. It is possible that some communities may have been missed due to seasonal effects. Where possible however, these habitats were re-visited in order to ascertain the correct habitat, e.g. some semi-improved grassland habitat, which was surveyed over winter, was re-visited in summer to survey for flowering grassland indicator species.
- 2.4.12 It should be stressed that the findings presented in this study represent those at the time of survey and reporting, and data collected from available sources. Ecological surveys are limited by factors which affect the presence of species, such as weather conditions and seasonality of visible presence (growth). Every

effort has been made to ensure that the findings of the study present as accurate an interpretation as possible of the habitats within the survey area.

- 2.4.13 The results of this survey are considered valid for two years, after which it is advised the surveys are updated.
- 2.4.14 The weather is not considered to be a limitation, as all surveys were undertaken during suitable weather conditions.

3 Results

3.1 Habitat area

- 3.1.1 Thirty-two habitats were recorded across the survey area over 14 visits from January to July 2017 (Appendix A).
- 3.1.2 Table 3.1 records the 32 habitats and their area or length found within each route option. The total area and length is also reported for each route option (Table 3.1). All habitats are mapped in Figures HE551506-AA-VES-D_SWI-DR-YE-000021, HE551506-AA-VES-D_SWI-DR-YE-000022, HE551506-AA-VES-D_SWI-DR-YE-000023, HE551506-AA-VES-D_SWI-DR-YE-000024, HE551506-AA-VES-D_SWI-DR-YE-000025, HE551506-AA-VES-D_SWI-DR-YE-000026 and HE551506-AA-VES-D_SWI-DR-YE-000027.
- 3.1.3 Four habitats were recorded outside of the route options but are not reported in the following tables. The habitats outside of the route options are: spoil (I2.2), amenity grassland (J1.2), species-poor hedges and trees (J2.3.2) and wall (J2.5).
- 3.1.4 In order to standardise the habitat area or length within each route option Table 3.2 records the percentage area or percentage length in relation to the total area or length within each route option.

Table 3-1 The habitat and respective area (ha) or length (km) within each route option.

Habitat Type	JNCC Habitat Code	Option 1Na		Option 1Sa		Option 1Nd	
		ha	km	ha	Km	ha	km
Semi-natural broadleaved woodland	A1.1.1	21.42	-	25.37	-	12.68	-
Broad-leaved plantation	A1.1.2	2.49	-	3.48	-	2.49	-
Coniferous plantation	A1.2.2	1.08	-	1.11	-	1.08	-
Mixed semi-natural woodland	A1.3.1	2.46	-	1.54	-	0.37	-
Mixed plantation	A1.3.2	0.24	-	2.34	-	0.30	-
Dense scrub	A2.1	0.09	-	0.06	-	0.06	-
Scattered scrub	A2.2	0.12	-	-	-	0.12	-
Scattered broadleaved trees	A3.1	0.66	1.78	0.75	1.96	0.89	1.14
Scattered mixed trees	A3.3	0.80	-	0.83	-	0.81	-
Felled broadleaved woodland	A4.1	-	-	0.79	-	-	-
Semi-improved neutral grassland	B2.2	3.00	-	2.85	-	15.25	-

Habitat Type	JNCC Habitat Code	Option 1Na		Option 1Sa		Option 1Nd	
		ha	km	ha	Km	ha	km
Unimproved calcareous grassland	B3.1	1.63	-	-	-	1.53	-
Semi-improved calcareous grassland	B3.2	4.99	-	8.01	-	2.38	
Improved grassland	B4	34.68	-	44.96	-	42.83	-
Marshy grassland	B5	-	-	1.68	-	-	-
Poor semi-improved grassland	B6	9.89	-	3.10	-	8.77	-
Tall ruderal	C3.1	0.96	-	0.70	-	0.96	-
Marginal vegetation	F2.1	-	1.40	-	1.40	-	1.38
Standing water	G1	0.04	0.23	0.73	0.23	0.04	0.23
Running water	G2	1.50	-	1.27	-	1.33	-
Arable	J1.1	283.50	-	256.92	-	242.91	-
Species-rich intact hedge	J2.1.1	-	0.75	-	-	-	0.50
Species-poor intact hedge	J2.1.2	-	1.34	-	0.68	-	1.73
Species-rich defunct hedge	J2.2.1	-	1.01	-	1.01	-	1.01
Species-poor defunct hedge	J2.2.2	-	3.08	-	3.72	-	3.08
Species-rich hedge with trees	J2.3.1	-	3.91	-	0.08	-	2.55
Species-poor hedge with trees	J2.3.2	-	0.08	-	0.08	-	0.07
Fence	J2.4	-	0.26	-	2.74	-	0.44
Dry ditch	J2.6	-	1.17	-	1.17	-	1.15
Earth bank	J2.8	-	1.35	-	1.35	-	1.35
Buildings	J3.6	-	-	0.11	-	-	-
Bare ground	J4	9.94	-	6.21	-	8.15	-
Total		379.48	16.35	362.79	14.42	342.93	14.63

Table 3-2 The habitat and respective percentage area (ha) or length (km) within each route option.

Habitat Type	Habitat Code	Option 1Na		Option 1Sa		Option 1Nd	
		% of total area	% of total length	% of total area	% of total length	% of total area	% of total length
Semi-natural broadleaved woodland	A1.1.1	5.64	-	6.99	-	3.70	-
Broad-leaved plantation	A1.1.2	0.66	-	0.96	-	0.73	-
Coniferous plantation	A1.2.2	0.29	-	0.31	-	0.31	-
Mixed semi-natural woodland	A1.3.1	0.65	-	0.42	-	0.11	-
Mixed plantation	A1.3.2	0.06	-	0.65	-	0.09	-
Dense scrub	A2.1	0.02	-	0.02	-	0.02	-
Scattered scrub	A2.2	0.03	-	-	-	0.04	-
Scattered broadleaved trees	A3.1	0.17	10.87	0.21	13.59	0.26	7.79
Scattered mixed trees	A3.3	0.21	-	0.23	-	0.24	-
Felled broadleaved woodland	A4.1	-	-	0.22	-	-	-
Semi-improved neutral grassland	B2.2	0.79	-	0.78	-	4.45	-
Unimproved calcareous grassland	B3.1	0.43	-	-	-	0.45	-
Semi-improved calcareous grassland	B3.2	1.32	-	2.21	-	0.69	-
Improved grassland	B4	9.14	-	12.39	-	12.49	-
Marshy grassland	B5	-	-	0.46	-	-	-
Poor semi-improved grassland	B6	2.61	-	0.85	-	2.56	-
Tall ruderal	C3.1	0.25	-	0.19	-	0.28	-
Marginal vegetation	F2.1	-	8.56	-	9.70	-	9.46
Standing water	G1	0.01	1.43	0.20	1.62	0.01	1.60
Running water	G2	0.40	-	0.35	-	0.39	-
Arable	J1.1	74.71	-	70.82	-	70.83	-

Habitat Type	Habitat Code	Option 1Na		Option 1Sa		Option 1Nd	
		% of total area	% of total length	% of total area	% of total length	% of total area	% of total length
Species-rich intact hedge	J2.1.1	-	4.60	-	-	-	3.39
Species-poor intact hedge	J2.1.2	-	8.17	-	4.71	-	11.83
Species-rich defunct hedge	J2.2.1	-	6.19	-	7.02	-	6.92
Species-poor defunct hedge	J2.2.2	-	18.82	-	25.82	-	21.07
Species-rich hedge with trees	J2.3.1	-	23.88	-	0.58	-	17.41
Species-poor hedge with trees	J2.3.2	-	0.49	-	0.53	-	0.48
Fence	J2.4	-	1.59	-	18.99	-	3.00
Dry ditch	J2.6	-	7.16	-	8.10	-	7.86
Earth bank	J2.8	-	8.23	-	9.34	-	9.21
Buildings	J3.6	-	-	0.03	-	-	-
Bare ground	J4	2.62	-	1.71	-	2.38	-

3.2 Habitat descriptions

3.2.1 The habitats recorded were typical of an agricultural landscape with arable farmland, improved grassland and a network of hedges and scattered woodlands, both semi-natural and plantation. Typically, in areas of lower-intensity agriculture semi-improved grasslands occurred with a composition indicative of its managed history, with calcareous influence originating from the chalk geology of the wider landscape. This is also noted in arable field set-aside areas, where floral species diversity was notably higher than surrounding grasslands, as such attracting numerous invertebrate species. The River Avon and River Till had associated habitats of aquatic influence with standing and running water and localised marshy grassland.

3.2.2 The following information provides a broad description of the location of each habitat found across the survey area (please refer to the habitat maps and associated target notes for further information):

1. **Semi-natural broadleaved woodland:** a large but fragmented habitat across the survey area. This woodland habitat is found in part associated loosely with the River Till and Avon, e.g. Amesbury Abbey, but also as scattered copses across the route options. This woodland is also found on the periphery of fields. Beech *Fagus sylvatica* is often the dominant species within the canopy.
2. **Broad-leaved plantation woodland:** this plantation woodland is relatively localised and associated with recent planting on farms as likely cover, e.g.

- beech and birch *Betula* spp., and also on highways boundaries, such as around Countess Roundabout.
3. **Coniferous plantation woodland:** a localised habitat found in small areas often likely planted for cover, either for game cover or as screening next to highways boundaries, e.g. cypress trees *Cupressus* spp. or Scot's pine *Pinus sylvestris*.
 4. **Mixed semi-natural woodland:** a relatively common habitat found as isolated woodland copses and along field margins as localised woodland habitat. A variety of species such as beech, hazel *Corylus avellana*, Scot's pine and larch *Larix decidua*.
 5. **Mixed plantation woodland:** a relatively common woodland habitat, found predominantly in the south of the survey area.
 6. **Dense scrub:** a localised habitat found in a single area along a highway boundary, comprised of hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa*.
 7. **Scattered scrub:** a localised habitat found in a small area fringing field margins, within the northern route options.
 8. **Scattered broad-leaved trees:** a common habitat found across the survey area typically along field margins and highways boundaries. Scattered trees also found within fields. Beech is the dominant tree species.
 9. **Scattered mixed trees:** a localised habitat found in small areas with a mosaic of coniferous and broad-leaved trees, primarily to the east of the survey area.
 10. **Felled broad-leaved woodland:** a localised habitat found in a single area along the southern River Till.
 11. **Semi-improved neutral grassland:** a large, relatively common habitat, primarily found north of the A303. Common species present including the grasses Cock's-foot *Dactylis glomerata*, Fescues *Festuca* spp. and Yorkshire fog *Holcus lanatus*. This habitat shows signs of calcareous nature, e.g. lady's bedstraw *Galium verum*, but not of sufficient diversity or abundance to indicate calcareous grassland.
 12. **Unimproved calcareous grassland:** an area of land representing Parsonage Down. This area was not surveyed during the Phase 1 habitat survey due to access limitations but is reported to be in predominantly favourable condition (as of 2012) and designated in part for its chalk downland habitat².
 13. **Semi-improved calcareous grassland:** an area of semi-improved grassland with significant calcareous influence. These areas are located towards the south of the survey area but also towards the east and west with Yarnbury Castle.
 14. **Improved grassland:** one of the largest habitats in area found across the survey area with perennial rye grass *Lolium perenne* and clover *Trifolium* spp. present. Limited forbs observed e.g. *Rumex* spp., and *Cirsium* spp.
 15. **Marshy grassland:** a localised habitat found around the intersection of route option 1Sa across the River Till, which is used in part for grazing by sheep. Species comprise in part rushes *Juncus* spp. and sedges *Carex* spp. with flushes of aquatic macrophytes. A monkey-flower *Mimulus* sp. was found present in abundance in this area of the Till valley.
 16. **Poor semi-improved grassland:** a small, scattered habitat found across the survey area and typified by unmanaged grassland, which is likely of improved

- nature originally but developing increased species richness, e.g. false-oat grass *Arrhenatherum elatius*.
17. **Tall ruderal:** a localised habitat found on the edge of a roundabout containing common nettle *Urtica dioica*.
 18. **Marginal vegetation:** a common habitat found on the edge of the River Avon including stands of common reed *Phragmites australis*, bulrush *Typha* spp., and reed sweet-grass *Glyceria maxima*. A stand of Himalayan balsam *Impatiens glandulifera* is present along the upper River Avon.
 19. **Standing water:** localised ponds found in limited locations across the survey area.
 20. **Running water:** this habitat represents the River Avon and River Till.
 21. **Arable:** the largest habitat across the survey area, representing the significant agricultural influence on the landscape.
 22. **Species-rich intact hedge:** linear features along field margins with limited distribution across the area.
 23. **Species-poor intact hedge:** a relatively common field margin habitat distributed widely across the area.
 24. **Species-rich defunct hedge:** a limited field margin habitat found to the east of the site and representative of a mixture of hedge species, which has not formed an intact feature.
 25. **Species-poor defunct hedge:** a relatively common field margin habitat distributed widely across the area.
 26. **Species-rich hedge with trees:** a relatively common field margin habitat distributed widely across the area.
 27. **Species-poor hedge with trees:** a relatively uncommon field margin habitat distributed across the survey area.
 28. **Fence:** linear structure found commonly across the area.
 29. **Dry ditch:** a limited linear feature representing drainage ditches.
 30. **Earth bank:** a limited linear feature representing Countess Cutting.
 31. **Buildings:** a small number of agricultural-associated buildings were located within the survey area.
 32. **Bare ground:** areas of this habitat were found across the survey area and were formed for a range of purposes, e.g. pig farming or equestrian activities.

3.3 Weather conditions

- 3.3.1 Assessment of habitats was not adversely affected by weather during surveys. Weather conditions are reported in Appendix A.

4 Conclusions and Recommendations

4.1 Conclusions

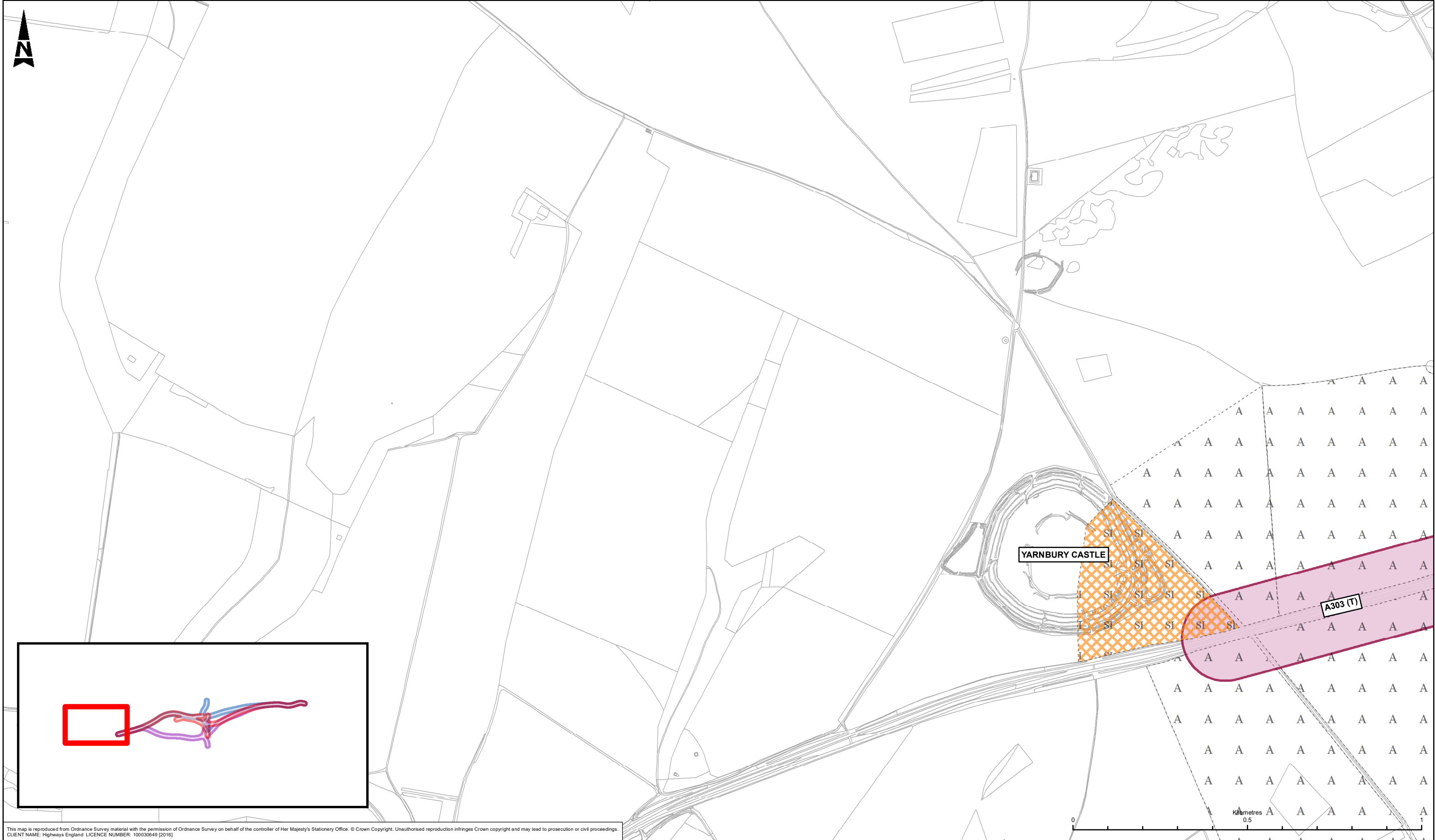
- 4.1.1 A range of habitats across the survey area and outside of the survey area were recorded. The habitats recorded were typical of an agricultural landscape with arable farming, improved grassland and a network of hedges and scattered woodlands, both semi-natural and plantation. Typically, in areas of lower-intensity agriculture semi-improved grasslands occurred with a composition indicative of its managed history, with calcareous influence originating from the chalk geology of the wider landscape. This is also noted in arable field set-aside areas, where floral species diversity was notably higher than surrounding grasslands, as such attracting numerous invertebrate species.
- 4.1.2 The River Avon and River Till had associated habitats of aquatic influence with standing and running water and localised marshy grassland. These riparian areas have the most complex habitat structures across the site, due to the floral species diversity and matrix of habitats existing within the river corridors.
- 4.1.3 A brief description of the habitats in each route are provided below. The information is derived from Tables 3.1 and 3.2, and the Phase 1 habitat map.
- 4.1.4 **Route option 1Na:** Habitats are dominated by arable fields, improved grassland and semi-natural broad-leaved woodland. Hedges are abundant across the route option with the largest habitat being species-rich hedges with trees, although species-poor defunct hedges are common. The River Avon and Till represent the main waterbodies in the route.
- 4.1.5 **Route option 1Nd:** Habitats are dominated by arable fields, improved grassland, semi-improved neutral grassland and semi-natural broad-leaved woodland. Hedges are abundant across the route option with the largest habitat being species-poor defunct hedges, although species-rich hedges with trees are common. The River Avon and Till represent the main waterbodies in the route.
- 4.1.6 **Route option 1SA:** Habitats are dominated by arable fields, improved grassland and semi-natural broad-leaved woodland. Hedges are abundant across the route option with the largest habitat being species-poor defunct hedges. The River Avon and Till represent the main waterbodies in the route. This route option also has the only example in the survey area of marshy grassland, present around the river Till.

4.2 Recommendations

- 4.2.1 Access to verges on the A303 and A360 was not possible and it is advised that these areas are surveyed for habitats.
- 4.2.2 A complete assessment of the impact on habitats across the chosen route option along with mitigation and compensation measures will be provided within the Environmental Statement associated with the Scheme.

5 Figures

Figure 5-1. HE551506-AA-VES-D_SWI-DR-YE-000021



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LEGEND

SEMI-IMPROVED CALCAREOUS GRASSLAND

ARABLE

OPTION 1Na CENTRELINE BUFFER 125M

OPTION 1Nd CENTRELINE BUFFER 125M

OPTION 1Sa CENTRELINE BUFFER 125M

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		

P03	26/10/17	FIRST ISSUE	FG	CD	LB
Rev	Date	Description	By	Chk'd	App'd

Drawing Status

FIT FOR INTERNAL REVIEW AND COMMENT

Client

Designers

Drawing Title

A303 AMESBURY TO BERWICK DOWN

Figure 5.1 PHASE 1 HABITAT SURVEY
MAP WITH 125M ROUTE BUFFER
(VALIDATED AREAS)

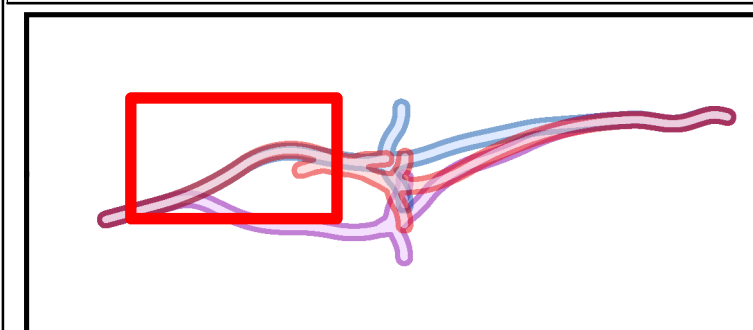
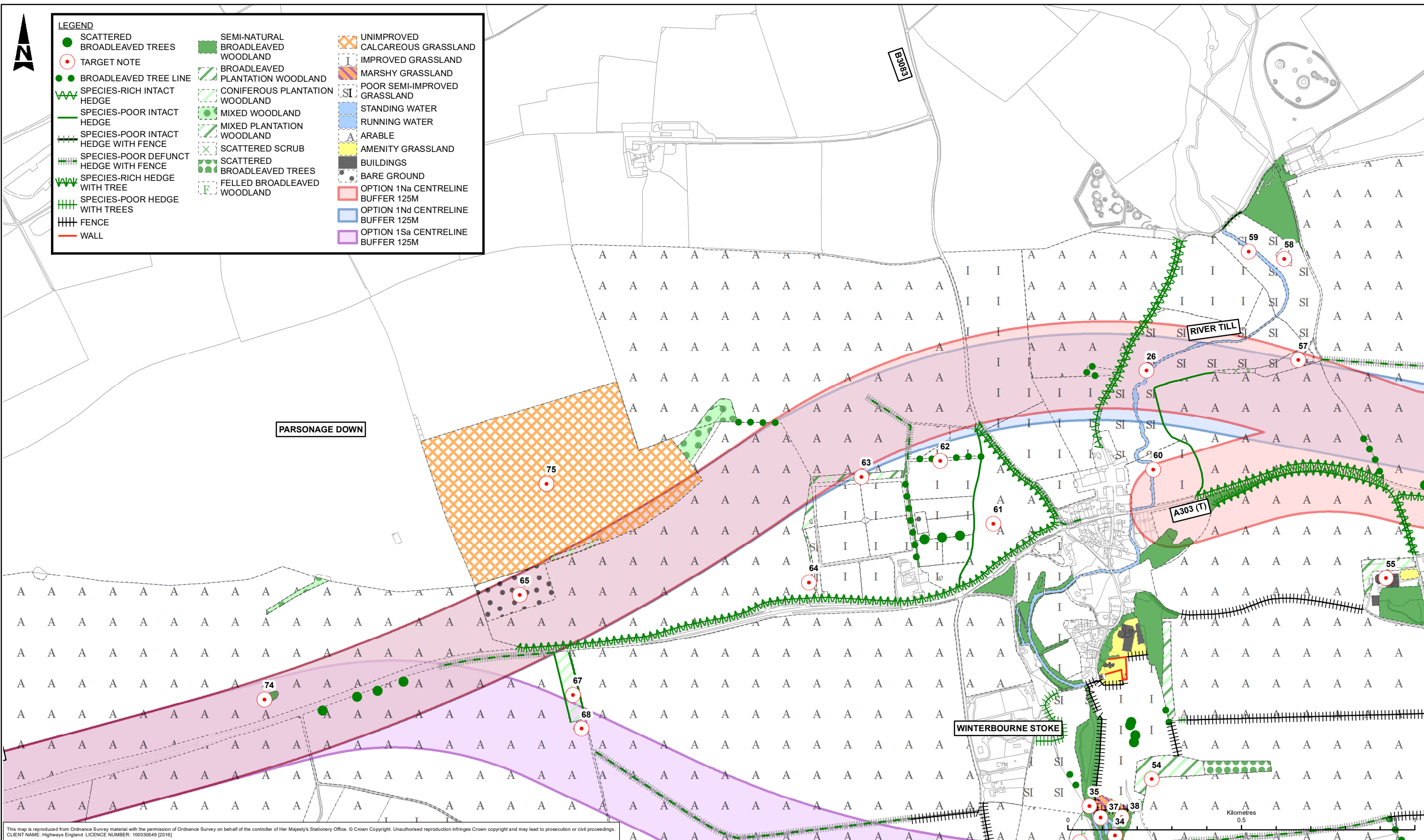
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Original Size	Date	Date	Date	Date
A3	26/10/17	26/10/17	26/10/17	26/10/17

Drawing Number	Project	Originator	Volume	Revision
HE551506-AA-VES-D_SWI-DR-YE-000021				P03

Location	Type	Role	Number
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Figure 5-2. HE551506-AA-VES-D_SWI-DR-YE-000022



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)	
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Maintenance / Cleaning	None
Use	None
Decommissioning / Demolition	None

P03	26/10/17	FIRST ISSUE	FG	CD	L



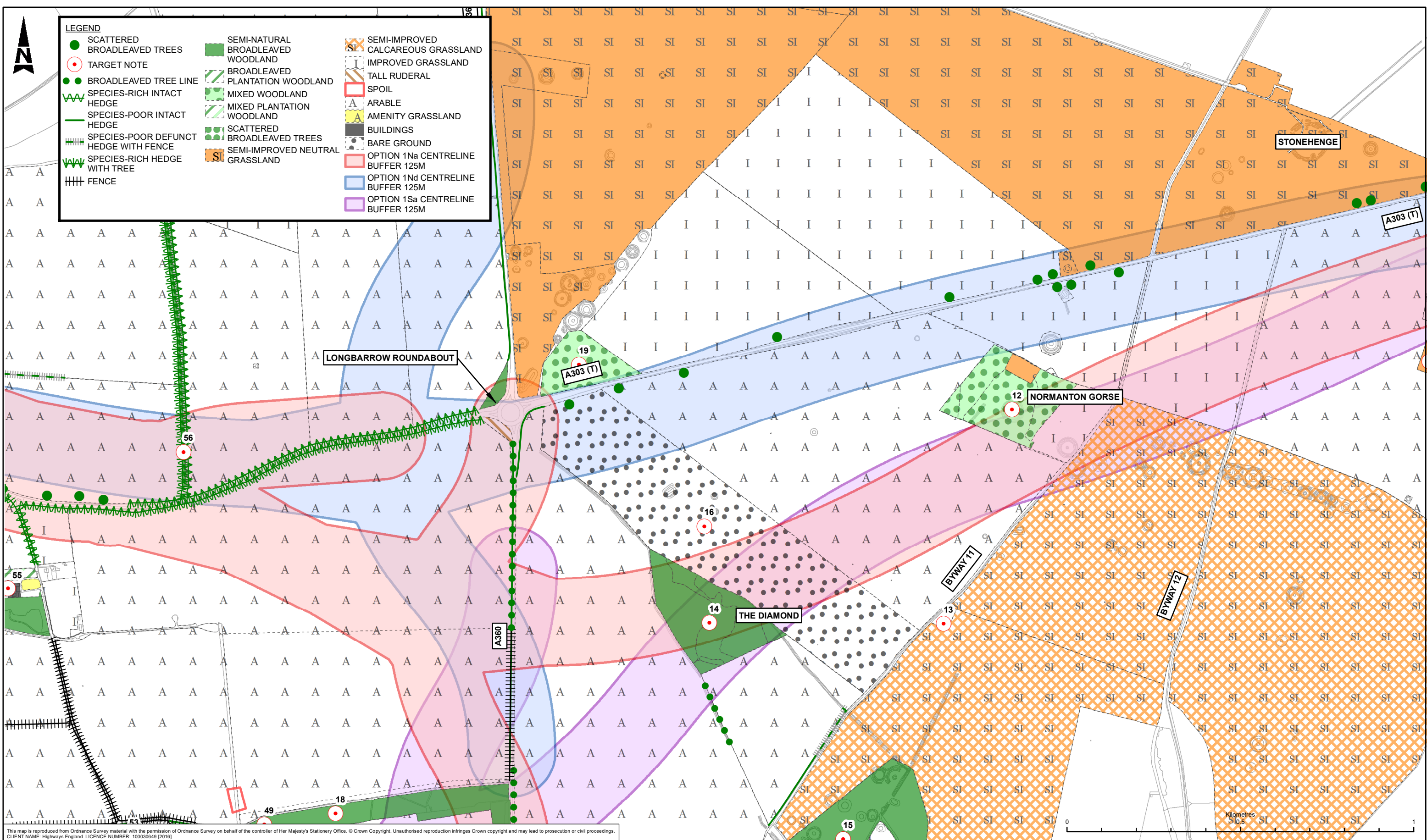
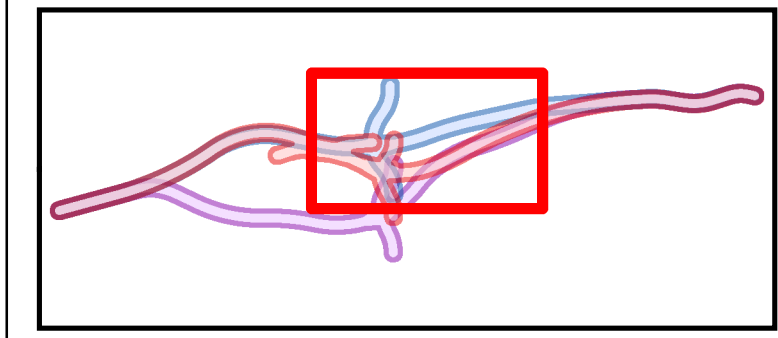
Drawing Status FIT FOR INTERNAL REVIEW AND COMMENT		Suitability S3		Project Title A303 AMESBURY TO BERWICK DOWN				
<div>Client</div> <div></div>				Drawing Title FIGURE 5.2 PHASE 1 HABITAT SURVEY MAP WITH 125M ROUTE BUFFER (VALIDATED AREAS)				
				Scale 1:10,000	Designed / Drawn FG	Checked CD	Approved LB	Authorised SH
<div>Designers</div> <div></div>				Original Size A3	Date 26/10/17	Date 26/10/17	Date 26/10/17	Date 26/10/17
				Drawing Number Project Originator Volume HE551506-AA-VES- D SWI-DR-YE-000022				

Figure 5-3. HE551506-AA-VES-D_SWI-DR-YE-000023

Figure 5-4. HE551506-AA-VES-D_SWI-DR-YE-000024



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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		

P03	26/10/17	FIRST ISSUE	FG	CD	LB
Rev	Date	Description	By	Chk'd	App'd



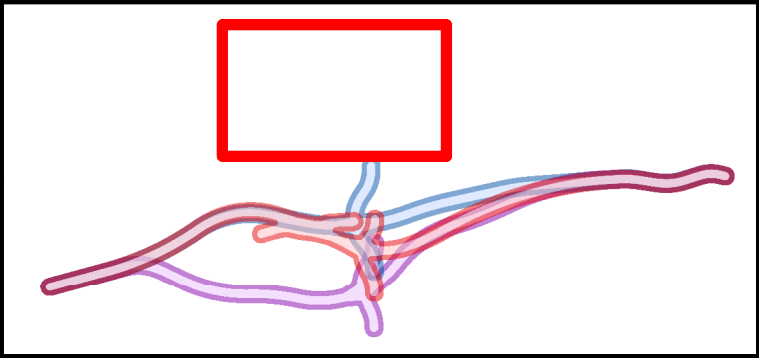
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<div>Client</div> <div></div>						<div>Drawing Title</div> <div>FIGURE 5.4 PHASE 1 HABITAT SURVEY MAP WITH 125M ROUTE BUFFER (VALIDATED AREAS)</div>									
						Scale		Designed / Drawn		Checked		Approved		Authorised	
<div>Designers</div> <div></div>						1:10,000		FG		CD		LB		SH	
						Original Size		Date		Date		Date		Date	
						A3		26/10/17		26/10/17		26/10/17		26/10/17	
						Drawing Number		Project		Originator		Volume		Revision	
										HE551506-AA-VES-				P03	
										D_SWI-DR-YE-000024					
						Location		Type		Role		Number			

Figure 5-5. HE551506-AA-VES-D_SWI-DR-YE-000025



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LEGEND

- BROADLEAVED TREE LINE
- SPECIES-POOR INTACT HEDGE
- SI SEMI-IMPROVED NEUTRAL GRASSLAND
- I IMPROVED GRASSLAND
- A ARABLE
- OPTION 1Na CENTRELINE BUFFER 125M
- OPTION 1Nd CENTRELINE BUFFER 125M
- OPTION 1Sa CENTRELINE BUFFER 125M

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				
P03	26/10/17	FIRST ISSUE		FG LB SH
Rev	Date	Description	By	Chk'd App'd

Drawing Status
FIT FOR INTERNAL REVIEW AND COMMENT

Client

Designers

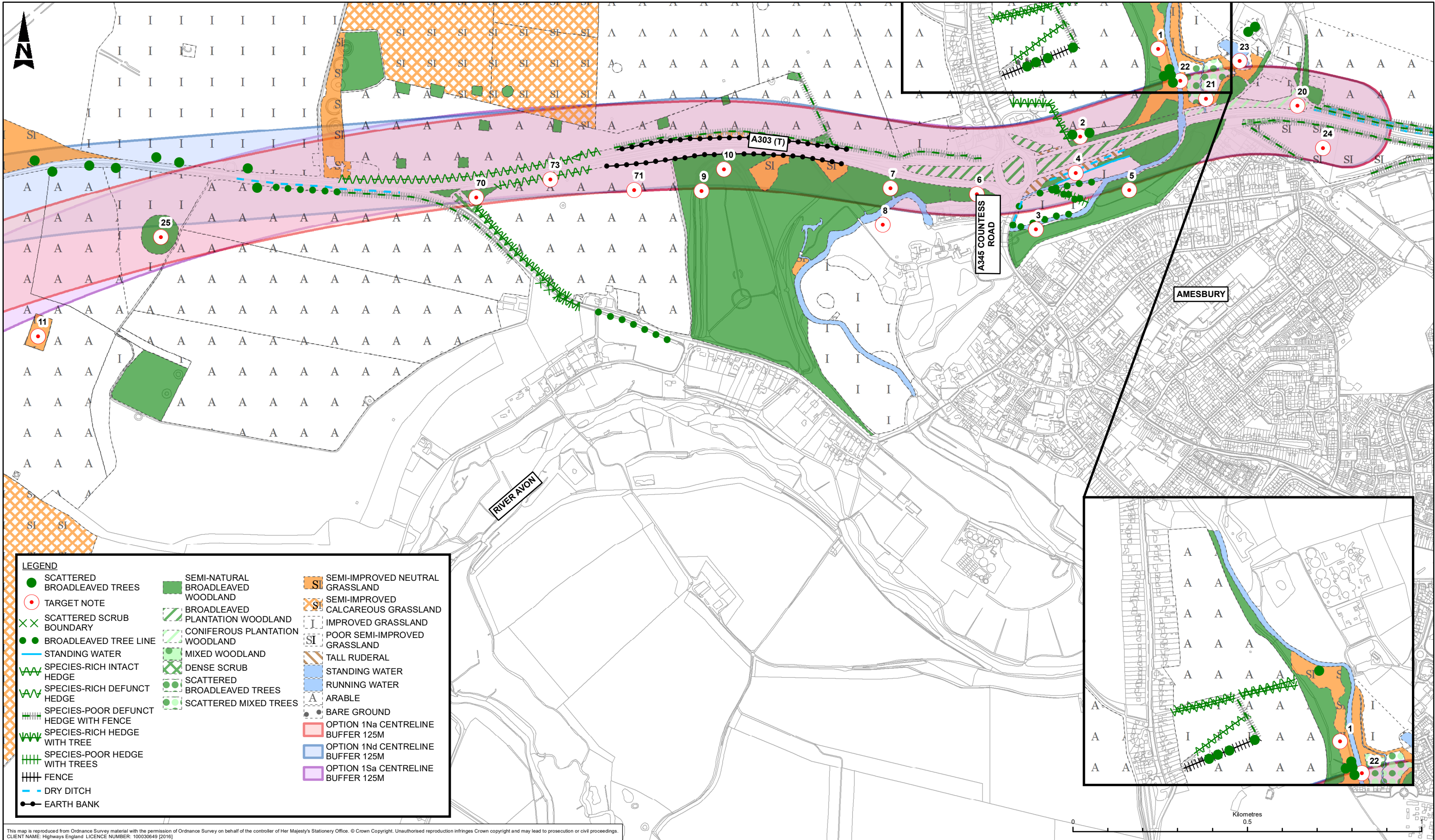
Suitability
S3

Project Title
A303 AMESBURY TO BERWICK DOWN

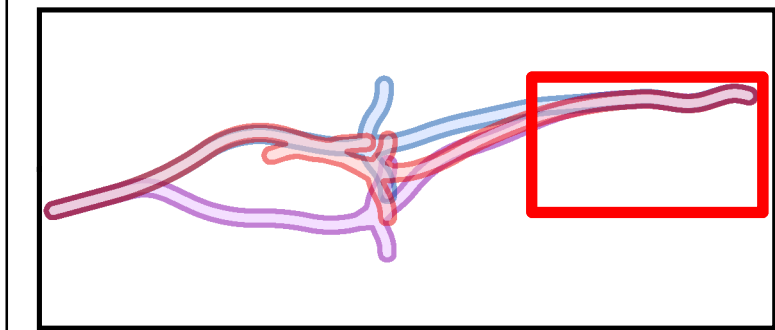
Drawing Title
FIGURE 5.5 PHASE 1 HABITAT SURVEY
MAP WITH 125M ROUTE BUFFER
(VALIDATED AREAS)

Scale 1:10,000	Designed / Drawn FG	Checked CD	Approved LB	Authorised SH
Original Size A3	Date 26/10/17	Date 26/10/17	Date 26/10/17	Date 26/10/17
Drawing Number Project	Originator HE551506-AA-VES-D_SWI-DR-YE-000025	Volume	Revision P03	
Location	Type	Role	Number	

Figure 5-6. HE551506-AA-VES-D_SWI-DR-YE-000026



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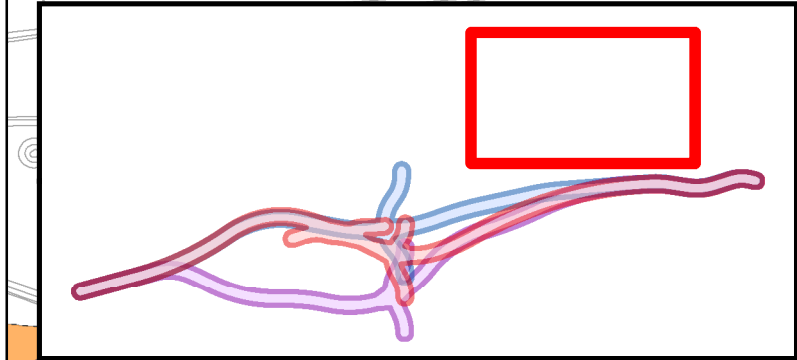
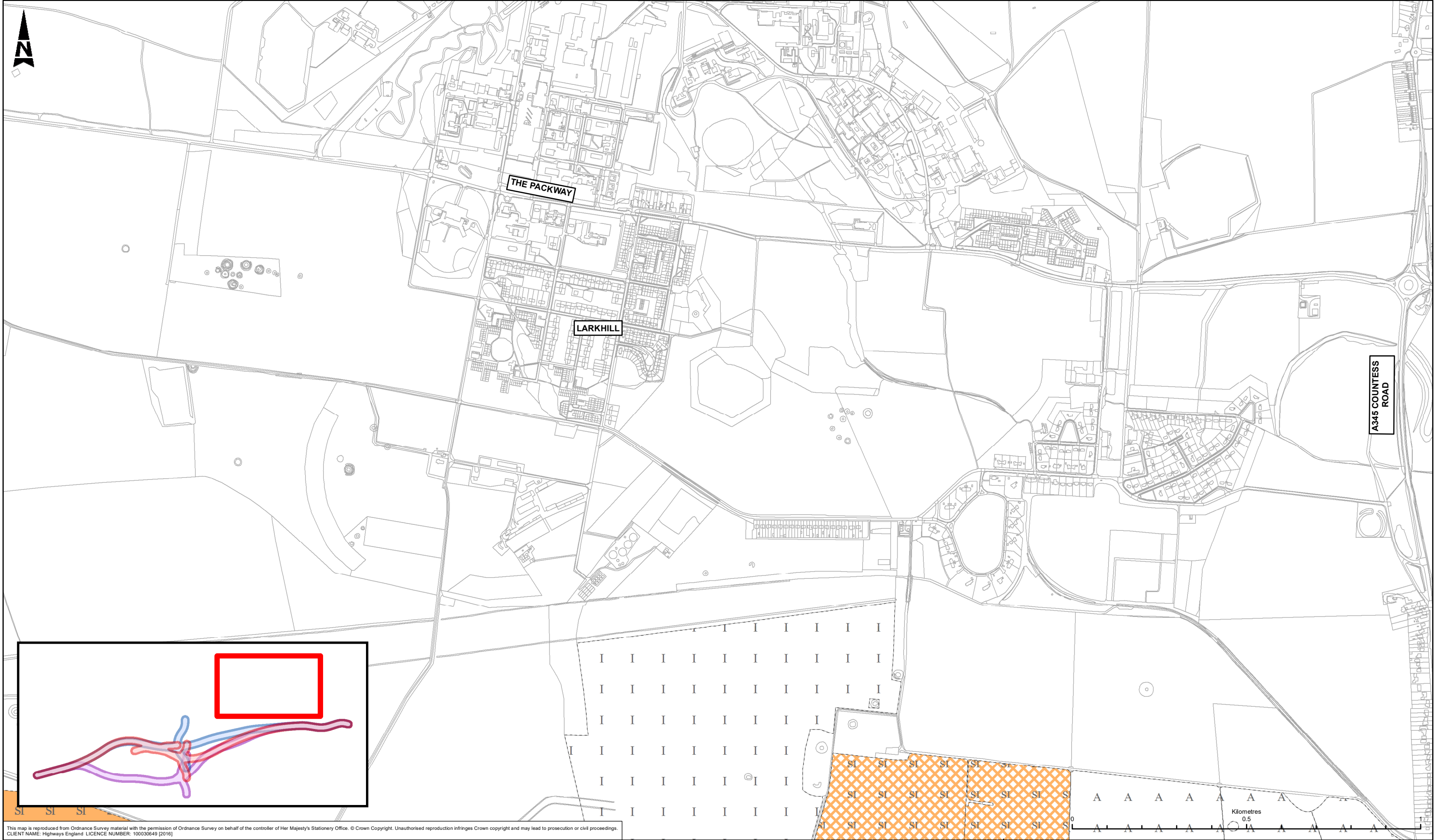








SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION					Drawing Status			Suitability	Project Title						
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made in the design hazard log)					FIT FOR INTERNAL REVIEW AND COMMENT			S3	A303 AMESBURY TO BERWICK DOWN						
					Client 			Drawing Title FIGURE 5.6 PHASE 1 HABITAT SURVEY MAP WITH 125M ROUTE BUFFER (VALIDATED AREAS)							
Construction									Scale 1:10,000						
None									Designed / Drawn FG						
Maintenance / Cleaning									Checked CD						
None									Approved LB						
Use									Authorised SH						
None									Original Size A3						
									Date 26/10/17						
									Date 26/10/17						
									Date 26/10/17						
									Date 26/10/17						
Decommission / Demolition					P03	26/10/17	FIRST ISSUE	FG	CD	LB	Drawing Number Project				
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					Rev	Date	Description	By	Chk'd	App'd	Volume P03				
											Revision				
											Location				
											Type				
											Role				
											Number				

Figure 5-7. HE551506-AA-VES-D_SWI-DR-YE-000027



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LEGEND			SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION			Drawing Status			Suitability			Project Title		
	SEMI-IMPROVED NEUTRAL GRASSLAND		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)			FIT FOR INTERNAL REVIEW AND COMMENT			S3			A303 AMESBURY TO BERWICK DOWN		
	SEMI-IMPROVED CALCAREOUS GRASSLAND					Client						Drawing Title		
	IMPROVED GRASSLAND		Construction			FIGURE 5.7 PHASE 1 HABITAT SURVEY MAP WITH 125M ROUTE BUFFER (VALIDATED AREAS)								
	ARABLE		None											
	OPTION 1Na CENTRELINE BUFFER 125M		Maintenance / Cleaning									Scale		
	OPTION 1Nd CENTRELINE BUFFER 125M		None									1:10,000		
	OPTION 1Sa CENTRELINE BUFFER 125M		Use									Designed / Drawn		
			None									Checked		
			Decommission / Demolition									CD		
			None									Approved		
												LB		
												Authorised		
												SH		

Appendices

Appendix A Weather Conditions

A.1 Weather conditions during Phase 1 habitat survey

Visit	Date	Temperature (°C)	Wind Speed (Beaufort) and Direction	General Conditions
1	31/01/17	8	3, SE	Rain and fog
2	01/02/17	9	3, S	Rain
3	07/02/17	6	3, W	Rain and fog
4	08/02/17	3	3, N	Rain
5	20/02/17	11	3, W	Rain
6	21/02/17	10	4, W	Rain
7	01/03/17	6	3, W	Rain
8	02/03/17	6	5, W	Rain
9	09/03/17	11	3, W	Dry
10	10/03/17	8	3, SE	Dry
11	21/03/17	6	3, W	Rain
12	22/03/17	7	4, S	Rain
13	23/03/17	6	3, NE	Rain
14	06/07/17	20	2, S	Dry

Appendix B Target Notes

B.1 Target Notes

Target Note	Description
1	Broadleaved woodland, predominantly willow <i>Salix</i> spp. Trees taller than 5m, although mosaic of habitat forming in places with willow scrub and improved grassland. The area has been recently managed with woodland/scrub removal. Wetter areas dominated by common reed <i>Phragmites australis</i> and other aquatic macrophytes. A likely ephemeral pool exists in the south of this area, forming an area of wet woodland with water vole and otter potential.
2	Veteran oak trees.
3	Mature broadleaved woodland, found on a steep bank following the course of the River Avon. Woodland grades into wetter habitat with greater proportion of water-tolerant species, e.g. willow and alder <i>Alnus glutinosa</i> , present. Public footpaths present throughout and banksides poached, likely from dogs. Range of tree species e.g. alder, willow, lime <i>Tilia</i> sp., beech <i>Fagus sylvatica</i> and spindle tree <i>Euonymus europaea</i> noted. Badger, otter and bat potential.
4	Ruderal species, e.g. willowherbs <i>Epilobium</i> spp., thistles <i>Cirsium</i> spp., and common reed present. A series of parallel watercourses present, likely ephemeral in part. Some standing water present underneath hawthorn <i>Crataegus monogyna</i> and scrub habitat to east. Water rail observed. Some water vole and otter potential.
5	Wet habitat comprised of broadleaved woodland with more open canopy in relation to bordering mature woodland. Lime present, although dominated by willow. Ground cover predominantly nettle <i>Urtica dioica</i> . Potential for bat roosts in woodland. Otter and water vole habitat suitable alongside water margins, and within wet woodland for otter.
6	A large bank covered in part with scrub, e.g. hawthorn and bramble <i>Rubus</i> spp., and woodland including poplar <i>Populus</i> sp.. Ditch parallel to the A303 contains reed, although water level likely to fluctuate. South of the bank runs a tributary of the A303 with a residential garden to the far south.
7	Broadleaved woodland with a variety of woodland species, including <i>Rhododendron</i> sp. Ditches throughout of varying water levels with limited otter and water vole potential. Areas of wood recently clear-felled. Muntjac deer observed.
8	An area of managed habitat with mature trees and mown, improved grassland. Ornamental shrubs and habitat present. Bankside vegetation managed with little evidence of poaching. Bat roost potential in trees.
9	Mixed semi-natural woodland, although plantation in places. Trees comprise ash <i>Fraxinus excelsior</i> , elder <i>Sambucus nigra</i> , beech, Wilson's honeysuckle <i>Lonicera nitida</i> . Trees to the west densely covered in old man's beard <i>Clematis vitalba</i> . Bat roost potential in woodland.
10	Badger signs on top of prominent hillfort (Vespasian's Camp).

Target Note	Description
11	Scattered elder over semi-improved grassland. Area presumably managed as game cover. A strip of arable set aside for cover running east-west alongside these trees.
12	Mature broadleaved woodland with a variety of species of tree, including beech, hawthorn and hazel <i>Corylus avellana</i> . Evidence of woodland management, e.g. coppicing and some planted trees. Evidence of badgers and potential for bat roosts and dormice.
13	Barn with owl boxes.
14	Mature broadleaved woodland with a variety of species of tree, including beech, Scot's pine <i>Pinus sylvestris</i> and hawthorn. Bat roost potential in woodland. Managed in part for pheasants with understory of Wilson's honeysuckle. Some planted trees.
15	Semi-natural broadleaved woodland, although plantation within places (mainly cherry <i>Prunus</i> spp.). Tree species comprise beech, hawthorn, holly <i>Ilex aquifolium</i> , spindle tree and ash. Areas of Wilson's honeysuckle present. The relatively common spider <i>Anelasma cephalus cambridgei</i> identified here. Evidence of badger present.
16	Strip of bare ground (NW-SE) used for pig farming. Large flocks of lapwing, starling and a single ruddy shelduck observed foraging in this general area.
17	Large reservoir constructed in SW corner of field. Fenced off but plastic angled sides dangerous. Mallards and carp present. No observable macrophytes and water of poor/moderate quality.
18	Semi-natural woodland, predominantly beech. Rookery present. Potential for bat roosts and dormice.
19	Mixed semi-natural woodland, predominantly beech. Potential for bats and dormice. Limited understorey in places.
20	Plantation broadleaved woodland, predominantly beech, elder and cherry <i>Prunus</i> spp. Similar habitat bordering highway. Footpath running through, with evidence of badgers. Low potential for bats.
21	Shallow, slow-flowing stream with good water quality running through newly planted broadleaved woodland, with damp semi-improved grassland underneath. Reeds emerging, as well as aquatic macrophytes, i.e. water mint <i>Mentha citrata</i> and hemlock water dropwort <i>Oenanthe crocata</i> . Water vole burrows observed, potential for otters and great crested newt, including other common amphibians. Large willow trees with bat roosting potential present, including one with an owl box, although a stock dove was observed flying out.
22	River Avon with marginal vegetation, including common reed, reed sweet-grass <i>Glyceria maxima</i> , rushes <i>Juncus</i> spp. and bulrush <i>Typha</i> spp. High potential for water vole and otter.
23	Large artificial pond stocked with captive wildfowl. Low potential for great crested newt, but common amphibians likely present.
24	Poor semi-improved grassland with little management. Introduced shrubs/hedges border the area.
25	Fenced mature beech woodland with evidence of badgers. Bat roost potential in woodland.
26	Semi-improved grassland with winterbourne river meandering through. Limited aquatic vegetation in dry river bed, although standing pools towards the south of the River Till (north of the A303) have greater diversity. The whole stretch is heavily poached. Limited

Target Note	Description
	potential for water vole and otter. Potential for bat roosts in trees and bridges along Till. The winterbourne nature of this river will result in wet conditions of increased quality for a range of aquatic species over winter and early summer when the water is present.
27	Log piles in woodland strip providing suitable hibernacula for reptiles and amphibians. Bat roost potential in woodland strip.
28	River Till crossing location (Option 1Sa) – high quality riparian habitat. Clear clean water with lush macrophytes present. Depth ranges from 10 – 80cm. Sign of higher water levels on river banks in times of spate. Riparian mammal, freshwater fish and crayfish potential.
29	Hanging wood – broadleaved and mixed plantation woodland. Tree species include beech, larch <i>Larix decidua</i> , Scots pine, holly, elder, laurel <i>Laurus</i> sp. and fir <i>Abies</i> sp.. Badger and bat potential.
30	Wet woodland adjacent to River Till with otter potential in mature willow carr. Tree species include crack willow <i>Salix fragilis</i> , grey willow <i>S. cinerea</i> and alder.
31	Pools within wet woodland with macrophytes - amphibian potential. Rat presence recorded. Invasive monkey-flower <i>Mimulus</i> sp. recorded.
32	Notable invertebrate emerging from hibernation including tree and buff tailed bumblebee species.
33	Brown hare droppings and sighting within marshy grassland.
34	Old duck shooting pond adjacent to River Till with macrophyte presence – amphibian breeding potential. Survey recommended. Wet woodland (willow) present.
35	Kingfisher sightings.
36	Wet woodland managed and felled and now dominated by marshy grassland species.
37	Large log pile within wet woodland immediately adjacent to River Till – otter holt potential.
38	Many pools within wet woodland with macrophyte presence and amphibian breeding potential. Survey recommended.
39	Potential for otter in woodland.
40	Potential for otter in wet woodland..
41	Mammal push-through between fencing by wet woodland and River Till – potential otter use.
42	Mammal push-through – fox and brown hare hair recorded.
43	Woodland cover. Maize food stash recorded in linear beech woodland – likely made by badgers. Two spikes of white helleborine <i>Cephalanthera damasonium</i> identified in this woodland strip.
44	Brown hare x 4 recorded in arable field.
45	Mature beech treeline with bat roost potential.
46	Cow sheds with barn owl potential.

Target Note	Description
47	Mature beech treeline with bat roost potential.
48	Lapwing x 6 recorded in arable field – nesting potential.
49	Rookery recorded in woodland.
50	Rookery recorded in woodland.
51	Scattered mature broadleaved trees (oak, ash and beech) with bat potential.
52	Brown hare x 5 recorded in arable field.
53	Oatlands bungalows – buildings with bat potential.
54	3 x roe deer observed in field moving into woodland.
55	Hill Farm buildings with bat and barn owl potential.
56	Two long, parallel mature, relatively unmanaged hedgerows. Roe deer present. Used in part as cover for pheasant. Dormouse potential. Useful feature in landscaping for connectivity for animals, e.g. mammals and birds, and for foraging/commuting bats. Arable grass species present including common wild oat <i>Avena fatua</i> and rye brome <i>Bromus secalinus</i> .
57	Scrub. Area include firepits and also used for storage of brash and chippings.
58	Ephemeral pond. Badger footprints present. Two dead mute swans observed. Potential for great crested newt and riparian mammals if the pond is wet.
59	Gadwall observed, as well as mallard and mute swans.
60	Standing pools with aquatic macrophytes. Kingfisher, little egret and mallard present on water. Corn buntings in the area.
61	Arable field with surrounding managed hedgerows with dormouse potential. Roe deer observed. Plum tree in SE corner of field.
62	Strip of semi-improved grassland and large mature trees.
63	Bordering woodland with range of tree species, including beech tree lines. Bat roost potential in woodland. Evidence of recent management in the form of understorey clearance.
64	Disused barn with some bat roost potential. Potential for barn owl, although no pellets observed. Jackdaws nesting.
65	Area of bare ground with very little vegetation, besides some moss and occasional forb.
66	Semi-natural woodland with elements of plantation. Tree species include cherry, holly and beech. Managed in part for pheasant cover. Wood is relatively young, good corridor for bats to forage but few potential roost features for bats.
67	Plantation conifers (laurel and cypress) with bordering hedgerow of hawthorn. Area used in part as cover for pheasants. Nesting bird potential.
68	Barn, stock dove present. Mixed flock of c.50 yellowhammer, corn bunting and chaffinch. Potential for barn owl.

Target Note	Description
69	Improved grassland used for horse grazing. Polo ground present.
70	Predominantly beech. Ivy <i>Hedera helix</i> over ground. Mammal tracks present, fox and badger likely. Elder and privet <i>Ligustrum</i> spp. present. Adjacent scrub with blackthorn <i>Prunus spinosa</i> , hawthorn and ivy <i>H. helix</i> .
71	Large mature beech and newly planted beech at base. Strip of arable cover present for pheasant.
72	Mature beech woodland.
73	Species rich defunct hedgerow, including blackthorn, hawthorn, elder, privet <i>Ligustrum</i> sp., dogwood <i>Cornus sanguinea</i> , cherry and beech.
74	Small copse of elder and hawthorn.
75	Parsonage Down, an unimproved calcareous grassland, which was not able to be surveyed during the assessment. Recorded by Natural England to be in predominantly favourable condition ² .

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