

A30 Chiverton to Carland Cross Environmental Statement

**Volume 6 Document Ref 6.4 ES Appendix 8.12
Breeding Birds Survey Report**

HA551502-ARP-EBD-SW-RP-LE-000024

August 2018

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure)
Regulations 2009 (as amended)
APFP Regulation 5(2)(a)

REPORT N° HA551502-WSP-EBD-0000-RE-EN-00007-P03

A30 CHIVERTON TO CARLAND CROSS

BREEDING BIRD REPORT

CONFIDENTIAL

JANUARY 2018

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Highways England

Type of document (version)
Confidential

Project no: 70004582

Date: January 2018

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1 INTRODUCTION

1.1 OVERVIEW

- 1.1.1 WSP was commissioned by Highways England to undertake ecological surveys in respect of the proposed A30 Chiverton to Carland Cross Improvement Scheme (hereafter referred to as 'the proposed Scheme'). The proposed Scheme involves a new dual carriageway to run alongside the existing single carriageway road to relieve traffic pressures within the area. Surveys are required in order to inform an Ecological Impact Assessment (EiA) forming part of an Environmental Statement (ES) supporting a Development Consent Order (DCO) Application for the proposed Scheme.
- 1.1.2 The presence of habitat suitable for breeding birds within the proposed Scheme footprint was established during a Phase 1 Habitat Verification Survey¹ undertaken in August 2015. In addition, desk records confirmed the historic presence of breeding bird species within the 5 km area surrounding the proposed Scheme. Accordingly, a breeding bird survey was recommended.
- 1.1.3 The objective of the survey was to identify the presence of breeding bird species within suitable habitats to be affected by the proposed Scheme. If breeding bird presence was confirmed, the results would enable the potential effects of the proposed Scheme to be established and measures required to mitigate or compensate for adverse effects to be described.

1.2 SITE CONTEXT

- 1.2.1 The A30 is a major trunk road running through the centre of Cornwall from West to East. The A30 forms an important route through the county of Cornwall and is under pressure during the summer months due to the high volume of tourism-related traffic. The section of road between Chiverton Cross and Carland Cross is a traffic pinch point, where the dual carriageway narrows to single carriageway in both directions between two roundabouts. The single carriageway sits between grid references SW 84665 53957 at the eastern end and SW 74759 46978 at the western end.
- 1.2.2 The area assessed for its suitability to support breeding birds consisted of the 100 m area either side of the 12.7 km length of the proposed Scheme to cover all areas of potential loss and disturbance as a result of construction and operational phases. Within this footprint, six transects were identified for the survey (hereafter referred to as the 'survey area') see Figure 1. It should be noted that at the early stage of the survey design, the preferred Scheme option had not been finalised. As such, the survey area incorporated additional Scheme options and variations that have been subsequently removed.
- 1.2.3 The proposed Scheme area covers a variety of habitats; predominately arable farmland, but also including areas of heathland, woodland, wetland and grassland. The existing soft estate along this section of road contains hedgerows in some areas but also includes wide grass verges in others. The road at times is raised up offering panoramic views, at others it is cut into the bed rock with steep banks above.

¹ WSP|PB (2015). A30 Carland Cross to Chiverton Cross Phase 1 Habitat Verification Survey. A Report to Highways England

1.3 BREEDING BIRD ECOLOGY

1.3.1 Birds typically breed between March and August inclusive. However, subject to species and regional variations some species can commence breeding in late February (or earlier in the case of raven *Corvus corax* and crossbill *Loxia curvirostra* and others can breed through the end of the summer period until October. Other species such as barn owl *Tyto alba* may nest throughout the year. The diverse number of bird species results in the potential for breeding birds to be found in almost all habitats.

1.3.2 Suitable habitats for breeding birds to nest in include scrub and woodland, hedgerows and open ground such as within heathland and grasslands. A pair of breeding birds may be territorial and defend the territory around their chosen nest site before nest building, during nest building, incubation, and whilst they have young in the nest. This may be displayed by singing, aggressive encounters or aerial displays, dependent upon the species in question. The length of time hatchlings take to mature to fledging will vary between species and some species such as house sparrow *Passer domesticus* may have multiple broods through the breeding season.

1.4 LEGISLATION

1.4.1 All birds, their nests and eggs are protected by the Wildlife and Countryside Act (WCA) (1981, as amended). It is an offence to intentionally kill, injure, or take any wild bird, or take or destroy an egg of any wild bird. It is also an offence to damage or destroy the nest of any wild bird (whilst being built, or in use). Birds listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are afforded additional protection with regard to intentional or reckless disturbance while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

1.4.2 Clearance of vegetation within the site boundary, or immediately adjacent to the site during the nesting season could result in an offence occurring under the WCA. This also applies if any Schedule 1 species are breeding within their relevant range of disturbance. The bird breeding season can generally be taken to occur between March and August inclusive, although is subject to variations based on species, geographical and seasonal factors.

2 METHODOLOGY

2.1 DESK STUDY

2.1.1 A desk study was completed in 2015 as part of the Phase 1 Habitat Verification Survey. A search for any statutory or non-statutory designated sites where birds are the interest feature within 2 km of the proposed Scheme was undertaken, hereafter referred to as the 'study area'.

2.1.2 Records of birds were requested from the Environmental Records Centre for Cornwall and the Isles of Scilly (ERCCIS) within 5 km of the proposed Scheme.

2.1.3 The ecological desk study provides background information on the biodiversity interest of the survey area, which complements data collected in the field by providing additional context for the survey area and its surroundings. It should be noted that an absence of desk study records for particular species or habitats does not necessarily convey an absence of such species or habitats in that area, but may be indicative of under-recording.

2.1.4 SCOPING

2.1.5 During scoping, the survey area was assessed for the types of habitat present within 100 m of the

proposed alignments. This was based upon the Phase 1 verification¹ report and aerial imagery. At the stage of scoping, four options were still present and as such the habitats were assessed across all of these options. A number of habitats were present across the survey area, examples of these were:

- Arable farmland;
- Pastoral farmland;
- Woodland (belts and copses);
- Scrub;
- Heathland;
- Hedgerows;
- Waterbodies; and
- Buildings.

2.1.6 The length of the proposed Scheme was divided into six transects and covered all of the habitats present within the survey area (see Figure 1), with focus upon those that were likely to be directly affected by the proposals. Land access was considered and transects were designed to make use of gateways and side roads as well as the habitats described above.

2.2 FIELD SURVEY

2.2.1 The field survey was carried out along the length of the proposed Scheme through the breeding bird season. The surveys were carried out over four sessions between April and June 2016. The initial survey was across three consecutive mornings with the following three visits across two days. In this way an afternoon and evening session was completed on three occasions to take into account variations based on timing and to help identify crepuscular species.

2.2.2 The surveys were designed and carried out in conjunction with the Common Bird Census and Breeding Bird Survey methodology². The methodology of these two monitoring methods was adapted to provide a proportional sample for linear schemes. They were designed for purpose to accommodate the information required for DCO. The routes were circular or linear to take into account all areas potentially affected by the proposed Scheme.

2.2.3 The surveys were carried out in suitable weather conditions and within peak song activity time for breeding birds, they lasted approximately three hours in length. Surveys commenced at sunrise in the morning sessions, or three hours before sunset in the evening sessions, to be completed at sunset. Timings and weather conditions of the surveys is shown in Appendix A. The routes were reversed during each visit in order to reduce the potential for time bias. Surveys were completed by experienced ornithologists capable of identifying a wide range of European bird species by sight and sound.

2.2.4 The surveys were carried out on the following dates:

- 5/6/7 April 2016
- 26/27 April 2016
- 12/13 May 2016

² Gilbert, G., Gibbons, D. W., & Evans, J. (1998). *Bird Monitoring Methods*. RSPB, Bedfordshire.

→ 9/8 June 2016

2.2.5 During each survey, the bird species and behaviour were recorded using the standard British Trust for Ornithology (BTO) codes. The following signs were identified as potential signs of breeding:

- Territorial alarm;
- Song;
- Aggressive encounter;
- Occupied nest, nest box, or sitting on nest;
- Carrying nest material; or
- Carrying food.

2.3 DATA EVALUATION

2.3.1 The field data was mapped into GIS, and a basic analysis was completed to identify the approximate numbers of breeding pairs of each species. The following definitions have been used to identify the numbers of pairs of each species recorded:

- Confirmed Breeding: Includes species for which the number of registrations (in this case three) recorded within a 50 m buffer of each other, the location of an active nest, the carrying of food or nesting material or the presence of recently fledged young or downy young;
- Likely Breeding: Includes a pair observed in suitable nesting habitat in breeding season, agitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby, two registrations of a male singing or calling within a 50 m buffer of each other. Behaviour was observed on insufficient occasions to confirm the presence of a territory;
- Possible Breeding: Includes species observed in breeding season in suitable nesting habitat, a single registration of a singing male present (or breeding calls heard) in breeding season in suitable breeding habitat; and
- Non-breeding: Fly-over species observed but suspected to be still on migration. Species observed but suspected to be summering non-breeder.

2.3.2 The 50 m buffer was used with the above parameters in order to assess all of the species within the survey area across all transects together, this covered the wide variety of species found within the survey area.

2.3.3 A summary of each transect was carried out, identifying the number of species, those of conservation concern and the primary habitats that were considered to be being used by these species.

2.3.4 Species of conservation concern were separately assessed for their distribution across the site and breeding status. Species were identified as being of concern based on the following criteria:

- Listed on Annex 1 of the EU Birds Directive (Directive 79/409/EEC);
- Listed on Schedule 1 of the Wildlife and Countryside Act (1981 as amended);
- Listed in Schedule 41 of the Natural Environment and Rural Communities (NERC) Act, 2006;

- Included in Birds of Conservation Concern (BoCC4) Red List³; and
- Included in Birds of Conservation Concern (BoCC4) Amber List³

2.3.5 Birds that are listed within BoCC4 are assessed using the following criteria:

- Red list (high conservation concern) species are those that are Globally Threatened according to IUCN criteria; those whose population has declined rapidly (50% or more) in recent years; and those that have declined historically and not shown a substantial recent recovery.
- Amber list (medium conservation concern) species are those with an unfavourable conservation status in Europe; those population or range has declined moderately (between 25% and 49%) in recent years; those whose population has declined historically but made a substantial recent recovery; rare breeders; and those with internationally important or localised populations.
- Green list (low conservation concern) species fulfil none of the above criteria.

2.4 LIMITATIONS

2.4.1 The breeding bird surveys were carried out within one season across four dates. It was also not possible to survey all of the transects within one day. Therefore, there is potential for some species to have been missed or potentially recorded in duplicate on consecutive days. As such the results presented within this report represent a sample of the species present within the survey area and are indicative of the diversity and abundance of breeding birds within the survey area.

3 RESULTS

3.1 DESK STUDY

3.1.1 The desk study results returned 2,751 records of birds within the survey area within the last 10 years (2006 – 2015). This included 103 species of which 84 were considered to be resident or breeding species. These species are listed in Table 1 below.

Table 1: Breeding species identified within the desk study from the last 10 years.

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Accipiter nisus</i>	Sparrowhawk	<i>Garrulus glandarius</i>	Jay
<i>Acrocephalus schoenobaenus</i>	Sedge Warbler	<i>Haematopus ostralegus</i>	Oystercatcher
<i>Aegithalos caudatus</i>	Long-tailed Tit	<i>Larus argentatus</i>	Herring Gull
<i>Alauda arvensis</i>	Skylark	<i>Larus canus</i>	Common Gull
<i>Alcedo atthis</i>	Kingfisher	<i>Larus melanocephalus</i>	Mediterranean Gull
<i>Alectoris rufa</i>	Red-Legged Partridge	<i>Locustella naevia</i>	Grasshopper Warbler

³ Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Anas platyrhynchos</i>	Mallard	<i>Mergus serrator</i>	Red-Breasted Merganser
<i>Anthus petrosus</i>	Rock Pipit	<i>Milvus milvus</i>	Red Kite
<i>Anthus pratensis</i>	Meadow Pipit	<i>Motacilla alba</i>	Pied Wagtail
<i>Anthus trivialis</i>	Tree Pipit	<i>Motacilla cinerea</i>	Grey Wagtail
<i>Apus apus</i>	Swift	<i>Muscicapa striata</i>	Spotted Flycatcher
<i>Ardea cinerea</i>	Grey Heron	<i>Oenanthe oenanthe</i>	Wheatear
<i>Branta canadensis</i>	Canada Goose	<i>Parus major</i>	Great Tit
<i>Bubulcus ibis</i>	Cattle Egret	<i>Passer domesticus</i>	House Sparrow
<i>Buteo buteo</i>	Buzzard	<i>Periparus ater</i>	Coal Tit
<i>Carduelis carduelis</i>	Goldfinch	<i>Phalacrocorax carbo</i>	Cormorant
<i>Chloris chloris</i>	Greenfinch	<i>Phasianus colchicus</i>	Pheasant
<i>Cinclus cinclus</i>	Dipper	<i>Phoenicurus phoenicurus</i>	Redstart
<i>Columba livia</i>	Rock Pigeon	<i>Phylloscopus collybita</i>	Chiffchaff
<i>Columba oenas</i>	Stock Dove	<i>Phylloscopus trochilus</i>	Willow Warbler
<i>Columba palumbus</i>	Woodpigeon	<i>Pica pica</i>	Magpie
<i>Corvus corax</i>	Raven	<i>Picus viridis</i>	Green Woodpecker
<i>Corvus corone</i>	Carrion Crow	<i>Podiceps cristatus</i>	Great Crested Grebe
<i>Corvus frugilegus</i>	Rook	<i>Poecile palustris</i>	Marsh Tit
<i>Corvus monedula</i>	Jackdaw	<i>Prunella modularis</i>	Dunnock
<i>Cuculus canorus</i>	Cuckoo	<i>Pyrrhula pyrrhula</i>	Bullfinch
<i>Cyanistes caeruleus</i>	Blue Tit	<i>Rallus aquaticus</i>	Water Rail
<i>Dendrocopos major</i>	Great Spotted Woodpecker	<i>Regulus regulus</i>	Goldcrest
<i>Egretta garzetta</i>	Little Egret	<i>Scolopax rusticola</i>	Woodcock
<i>Emberiza citrinella</i>	Yellowhammer	<i>Sitta europaea</i>	Nuthatch
<i>Emberiza schoeniclus</i>	Reed Bunting	<i>Streptopelia decaocto</i>	Collared Dove
<i>Erithacus rubecula</i>	Robin	<i>Streptopelia turtur</i>	Turtle Dove
<i>Falco columbarius</i>	Merlin	<i>Strix aluco</i>	Tawny Owl
<i>Falco peregrinus</i>	Peregrine Falcon	<i>Sturnus vulgaris</i>	Starling
<i>Falco subbuteo</i>	Hobby	<i>Sylvia atricapilla</i>	Blackcap
<i>Falco tinnunculus</i>	Kestrel	<i>Sylvia borin</i>	Garden Warbler
<i>Ficedula hypoleuca</i>	Pied Flycatcher	<i>Sylvia communis</i>	Whitethroat
<i>Fringilla coelebs</i>	Chaffinch	<i>Troglodytes troglodytes</i>	Wren
<i>Fulica atra</i>	Coot	<i>Turdus merula</i>	Blackbird
<i>Fulmarus glacialis</i>	Northern Fulmar	<i>Turdus philomelos</i>	Song Thrush
<i>Gallinago gallinago</i>	Snipe	<i>Turdus viscivorus</i>	Mistle Thrush
<i>Gallinula chloropus</i>	Moorhen	<i>Tyto alba</i>	Barn Owl

3.1.2

This set of desk study results identifies the diversity of the area for breeding birds. Some of those recorded were sea birds such as the fulmar, and are unlikely to be seen within the survey area. However, the majority of the birds identified could be found within the habitats within the proposed Scheme.

3.2 FIELD SURVEY

3.2.1

The field survey identified a total of 53 species using the length of the survey area across the breeding season. Of these there were two Annex 1 species, one Schedule 1 species, and eight Section 41 species, seven of the species were on the Red list of BoCC, and eight were on the Amber list of BoCC. A full list of the species identified across the site in alphabetical order is presented in Table 2 below, and the locations of the species of conservation concern (Annex 1, Schedule 1, and red list of BoCC) are shown in Figure 2. Table 2 also identifies the approximate number of pairs of each species based upon the analysis methods described.

Table 2: Species list showing the conservation status and transects within which each of the species was identified and their breeding status, indicated by CB – confirmed breeding; PB – probable breeding; LB – likely breeding; and NB – non-breeding

COMMON NAME	LATIN NAME	CONSERVATION STATUS ⁴	T1	T2	T3	T4	T5	T6	APPROX. PAIRS*
Blackbird	<i>Turdus merula</i>		CB	CB	CB	CB	CB	CB	37
Blackcap	<i>Sylvia atricapilla</i>		PB	PB	PB	PB			24
Bullfinch	<i>Pyrrhula pyrrhula</i>	A, S41			LB	PB	LB		3
Blue Tit	<i>Cyanistes caeruleus</i>		PB	CB	CB	PB	CB	PB	48
Buzzard	<i>Buteo buteo</i>		PB	LB	LB	LB	LB	CB	5
Carrion Crow	<i>Corvus corone</i>		CB	LB	LB	NB	LB	NB	10
Chiffchaff	<i>Phylloscopus collybita</i>		CB	PB	PB	PB	PB	PB	37
Collared Dove	<i>Streptopelia decaocto</i>			LB	LB	LB			3
Canada Geese	<i>Branta canadensis</i>					PB			1
Chaffinch	<i>Fringilla coelebs</i>		CB	CB	CB	CB	CB	CB	57
Coal tit	<i>Parus ater</i>							LB	1
Dunnock	<i>Prunella modularis</i>	A	CB	CB	CB	CB	CB	CB	69
Feral Pigeon	<i>Columba livia</i>			LB	LB				2
Goldcrest	<i>Regulus regulus</i>		PB	PB	PB	PB	PB	PB	11
Goldfinch	<i>Carduelis carduelis</i>		PB	PB	PB	PB	PB	PB	57
Golden Plover	<i>Pluvialis apricaria</i>	A1					NB		0
Greenfinch	<i>Carduelis chloris</i>		LB	LB	PB	PB	PB	PB	16
Great Spotted Woodpecker	<i>Dendrocopos major</i>		LB						1
Great Tit	<i>Parus major</i>		PB	PB	PB	PB	PB	LB	25
Herring Gull	<i>Larus argentatus</i>	R, S41	NB	NB	NB	NB	NB	NB	0
House Martin	<i>Delichon urbica</i>	A				CB	PB		2
House Sparrow	<i>Passer domesticus</i>	R, S41	CB	CB	CB	CB	CB	CB	14
Jay	<i>Garrulus glandarius</i>			LB	LB	LB		LB	4
Jackdaw	<i>Corvus monedula</i>		LB	CB	CB	LB	LB	CB	8

⁴ A1: Annex 1 species; S1: Schedule 1 species; S41: Section 41 Priority species; R: Red list species (BoCC4); A: Amber list species (BoCC4)

COMMON NAME	LATIN NAME	CONSERVATION STATUS ⁴	T1	T2	T3	T4	T5	T6	APPROX. PAIRS*
Kestrel	<i>Falco tinnunculus</i>	A				PB		LB	2
Lesser Black-Backed Gull	<i>Larus fuscus</i>	A			NB			NB	0
Linnet	<i>Carduelis cannabina</i>	R, S41	PB	PB		PB	PB	PB	35
Long-tailed Tit	<i>Aegithalos caudatus</i>		CB	LB		PB			11
Mistle Thrush	<i>Turdus viscivorus</i>			LB	PB				2
Mallard	<i>Anas platyrhynchos</i>	A			CB				1
Magpie	<i>Pica pica</i>		CB	LB	LB	LB	LB	LB	13
Moorhen	<i>Gallinula chloropus</i>			LB		LB			2
Peregrine falcon	<i>Falco peregrinus</i>	S1, A1	NB						0
Pheasant	<i>Phasianus colchicus</i>		LB	LB	LB		LB	LB	11
Pied Wagtail	<i>Motacilla alba</i>		LB	LB		LB	LB	CB	10
Robin	<i>Erithacus rubecula</i>		CB	CB	CB	CB	CB	CB	55
Red legged partridge	<i>Alectoris rufa</i>						LB		1
Raven	<i>Corvus corax</i>			NB	NB			CB	1
Rook	<i>Corvus frugilegus</i>		CB	LB	LB	CB	LB	LB	6
Skylark	<i>Alauda arvensis</i>	R, S41	CB	CB	CB	CB	CB	CB	69
Stonechat	<i>Saxicola torquata</i>		LB	LB				CB	3
Stock Dove	<i>Columba oenas</i>	A		NB	NB			NB	0
Starling	<i>Sturnus vulgaris</i>	R, S41		CB			PB		19
Sparrowhawk	<i>Accipiter nisus</i>			LB				LB	2
Swallow	<i>Hirundo rustica</i>		CB	CB	CB	CB	CB	CB	7
Song Thrush	<i>Turdus philomelos</i>	R, S41	CB	CB	CB	CB	CB	CB	19
Treecreeper	<i>Certhia familiaris</i>						LB		1
Wheatear	<i>Oenanthe oenanthe</i>					NB		NB	0
Whitethroat	<i>Sylvia communis</i>		PB	PB		PB	PB		10
Woodpigeon	<i>Columba palumbus</i>		PB	PB	CB	PB	PB	PB	6
Wren	<i>Troglodytes troglodytes</i>		CB	CB	CB	CB	CB	CB	83
Willow warbler	<i>Phylloscopus trochilus</i>	A	PB	PB	PB	PB	PB		10
Yellowhammer	<i>Emberiza citrinella</i>	R, S41	CB	CB		CB	CB	CB	11

*Approximate number of breeding pairs across the survey area from all transects, combined confirmed breeding, likely breeding and possible breeding. Described as the minimum number of pairs based on the survey evidence.

TRANSECT SUMMARIES

3.2.2

The different transects identified different species within their habitats across the majority of the survey area. However, the habitats were largely consistent. Habitats included arable farmland, pasture fields, woodland blocks, hedgerows, and residential and farm areas. A small pocket of heathland was located to the eastern end of the site, and was considered a remnant of the larger Newlyn Downs heathland to the north of Carland Cross. Summaries of the species found within each transect are described below.

Transect 1

- 3.2.3 Transect 1 passed through the eastern end of the proposed Scheme around Carland Cross. The route passed through or adjacent to arable farmland, pastoral farmland, woodland, heathland, hedgerows and gardens. The transect was designed in order to cover open areas as well as field boundaries in order to sample all species types, such as those that avoid field boundaries. During the course of the surveys, 33 species were identified within the associated habitats, nine of those were of conservation concern as detailed in Table 2.
- 3.2.4 Of the species identified, only two were considered to be non-breeding, these were peregrine falcon and herring gull, both of which were seen to be flying over the survey area or using it for foraging. The remaining species were considered to be exhibiting breeding behaviour, with 15 species confirmed as breeding, six likely breeding, and 10 possible breeding. The species confirmed to be breeding were blackbird, carrion crow, chiffchaff, chaffinch, dunnock, house sparrow, long-tailed tit, magpie, robin, rook, skylark, swallow, song thrush, wren and yellowhammer. The likely breeding species were greenfinch, great spotted woodpecker, jackdaw, pheasant, pied wagtail and stonechat. The possible breeding species were blackcap, blue tit, buzzard, goldcrest, goldfinch, great tit, linnet, whitethroat, woodpigeon and willow warbler.
- 3.2.5 The habitats of importance to breeding birds within this transect were the hedgerows and woodland edges. A large rookery with rooks and crows was present in the small woodland copses directly east and west of the Carland cross services. Numerous small passerines were also present in these areas. The open fields offered nesting opportunities to skylark and these were recorded throughout the northern half of this transect.

Transect 2

- 3.2.6 Transect 2 passed through farmland surrounding Ventonteague and Trevalso Farms. The route passed through or adjacent to arable and pastoral farmland, hedgerows, farm buildings and small woodland copses. The transect was designed to cover open areas as well as field boundaries in order to sample all species types, such as those that avoid field boundaries. During the course of the surveys, 40 species were identified within the associated habitats, 10 of those were of conservations concern as detailed in Table 2.
- 3.2.7 Of the species identified, only three were considered to be non-breeding, these species were seen to be flying over the survey area or using it for foraging. The remaining species were considered to be exhibiting breeding behaviour, with 13 species confirmed as breeding, 15 likely breeding and nine possible breeding. The species confirmed as breeding were blackbird, blue tit, chaffinch, dunnock, house sparrow, jackdaw, robin, skylark, starling, swallow, song thrush, wren, and yellowhammer. The species likely to be breeding were buzzard, carrion crow, collared dove, feral pigeon, greenfinch, jay, long-tailed tit, mistle thrush, magpie, moorhen, pheasant, pied wagtail, rook, stonechat, and sparrowhawk. The possible breeding species were blackcap, chiffchaff, goldcrest, goldfinch, great tit, linnet, whitethroat, woodpigeon and willow warbler.
- 3.2.8 The habitats of importance to breeding birds within this transect were hedgerows surrounding farm buildings and dwellings, and along the lane south from Trevalso Farm. These areas provided optimal nesting and foraging areas for breeding birds, and a variety of small passerines were recorded in these areas. The pasture fields around Trevalso Farm provided nesting opportunities for ground nesting birds such as skylark, a minimum of five singing males were recorded within these fields, with a maximum of eight heard during the June survey.

Transect 3

- 3.2.9 Transect 3 passed through farmland and woodland to the west of Zelah around Chyverton Park and Nancarrow Farm. The route passed through arable and pastoral farmland, woodland, residential properties, hedgerows within fields and along quiet lanes and also passed along the current A30 in some stretches. During the course of the surveys 35 species were identified of

which 11 were of conservation concern as detailed in Table 2.

3.2.10 Of the species identified, only four were considered to be non-breeding, these species were seen to be flying over the survey area or using it for foraging. The remaining species were considered to be exhibiting breeding behaviour, with 13 species confirmed as breeding, nine likely breeding and eight possible breeding. The species confirmed as breeding were blackbird, blue tit, chaffinch, dunnoek, house sparrow, jackdaw, mallard, robin, skylark, swallow, song thrush, woodpigeon and wren. The species likely breeding were bullfinch, buzzard, carrion crow, collared dove, feral pigeon, jay, magpie, pheasant and rook. The possible breeding species were blackcap, chiffchaff, goldcrest, goldfinch, greenfinch, great tit, mistle thrush, and willow warbler.

3.2.11 The habitats considered to be of importance to breeding birds within this transect were the woodland edge at Chyverton Park and thick hedgerows linking this area to Zelah; and the thick hedgerows through Nancarrow Farm and along the lane away from the A30 at Marazanvose. These areas recorded high numbers of passerines across the survey period, and, despite these not being of conservation importance, showed a diversity of breeding birds in this area. Other habitats such as grassland within this transect recorded less species diversity and of lower numbers.

Transect 4

3.2.12 Transect 4 passed through farmland from Nanteague Farm, down through Hillview Farm and towards the Chybucca Junction. The route passed through, or adjacent to, arable and pastoral farmland, hedgerows, and farm buildings. The transect was designed to cover open areas as well as field boundaries in order to sample all species types, such as those that avoid field boundaries. During the course of the surveys, 37 species were identified within the associated habitats. 11 of those were of conservation concern as detailed in Table 2.

3.2.13 Of the species identified, only three were considered to be non-breeding. These species were seen to be flying over the survey area or using it for foraging. The remaining species were considered to be exhibiting breeding behaviour, with 12 species confirmed as breeding, seven likely breeding and 15 possible breeding. The confirmed breeding species were blackbird, chaffinch, dunnoek, house martin, house sparrow, robin, rook, skylark, swallow, song thrush, wren and yellowhammer. The species likely to be breeding were buzzard, collared dove, jay, jackdaw, kestrel, magpie, moorhen and pied wagtail. The possible breeding species were blackcap, bullfinch, blue tit, chiffchaff, Canada goose, goldcrest, goldfinch, greenfinch, great tit, linnnet, long-tailed tit, whitethroat, woodpigeon and willow warbler.

3.2.14 The habitats of importance to breeding birds within this transect were the thick hedgerows and woodland edge around Nanteague Farm for passerine species, which despite many of these species not being of conservation importance, it illustrates the diversity of the site. The open arable fields around Hillview Farm were important for skylark with a peak of five singing skylark being recorded.

Transect 5

3.2.15 Transect 5 passed through farmland south of the current A30 from the Chybucca Junction down to Chyverton Cross roundabout. The route passed through or adjacent to arable and pastoral farmland, hedgerows, farm buildings and small woodland copses. The transect was designed to cover open areas as well as field boundaries in order to sample all species types, such as those that avoid field boundaries. During the course of the surveys, 34 species were identified within the associated habitats, 12 of those were of conservation concern as detailed in Table 2.

3.2.16 Of the species identified, only two were considered to be non-breeding. These species were seen to be flying over the survey area or using it for foraging. The remaining species were considered to be exhibiting breeding behaviour, with 11 species confirmed as breeding, 10 likely breeding and 11 possible breeding. The species that were confirmed as breeding were blackbird, blue tit,

chaffinch, dunnock, house sparrow, robin, skylark, swallow, song thrush, wren, and yellowhammer. The species likely to be breeding were bullfinch, buzzard, carrion crow, jackdaw, magpie, pheasant, pied wagtail, red legged partridge, rook and treecreeper. The possible breeding species were chiffchaff, goldcrest, goldfinch, greenfinch, great tit, house martin, linnet, starling, whitethroat, woodpigeon, and willow warbler.

- 3.2.17 The habitats of importance to breeding birds within this transect were the woodland and hedgerows around the Four Burrows Windfarm. This area of the transect recorded high numbers of bird species throughout the survey period. A number of species were also recorded around the buildings at Roscarnick Farm, these were house sparrow (maximum count of 3), wren, pied wagtail, linnet, swallow and corvids.

Transect 6

- 3.2.18 Transect 6 passed through farmland north of the current A30 from the Chybucca Junction down to Chyverton Cross roundabout. The route passed primarily through arable farmland and its associated hedgerows. The transect was designed to cover open areas as well as field boundaries in order to sample all species types, such as those that avoid field boundaries. During the course of the surveys, 35 species were identified within the associated habitats, 10 of those were of conservation concern as detailed in Table 2.

- 3.2.19 Of the species identified, only five were considered to be non-breeding. These species were seen to be flying over the survey area or using it for foraging. The remaining species were considered to be exhibiting breeding behaviour, with 15 species confirmed as breeding, eight likely breeding and seven possible breeding. The species confirmed as breeding were blackbird, buzzard, chaffinch, dunnock, house sparrow, jackdaw, pied wagtail, robin, raven, skylark, stonechat, swallow, song thrush, wren, and yellowhammer. The species likely to be breeding were coal tit, great tit, jay, kestrel, magpie, pheasant, rook, and sparrowhawk. The possible breeding species were blue tit, chiffchaff, goldcrest, goldfinch, greenfinch, linnet, and woodpigeon.

- 3.2.20 The habitats of importance to breeding birds within this transect were the hedgerows within the eastern section of the transect, and around the woodland copse at Chiverton Cross roundabout. The houses and buildings, with their associated gardens, within this area also offered nesting and foraging opportunities to breeding birds.

SPECIES OF CONSERVATION CONCERN

- 3.2.21 Species of conservation concern were additionally assessed across the survey area, with a summary below. The number of breeding pairs identified, includes all registrations for confirmed, likely and possible breeding.

Bullfinch

- 3.2.22 Bullfinch are a Section 41 and amber listed species due to a long term moderate decline in their population, since 2000 the species has shown some recovery⁵. They were recorded within T3, T4 and T5. In T3 a pair was seen in suitable habitat and an individual female was also recorded, they were therefore considered to be likely breeding in this transect. One record of an individual male in suitable habitat was made in T4, this was considered to be possibly breeding. In T5 a pair was recorded in suitable habitat and were therefore considered to be likely breeding. It is estimated that there are at least three breeding pairs within the survey area.

⁵ <https://blx1.bto.org/birdtrends/species.jsp?&s=bullf> Accessed 08/11/2017

Dunnoek

- 3.2.23 Dunnoek are an amber listed species due to a long term moderate decline, since the 1990s some recovery has been made. They were recorded throughout the survey area and survey period in all transects. There were numerous records within suitable habitat including repeat singing on subsequent transect visits. It was considered that this species was breeding within the survey area. It is estimated that there were approximately 69 breeding pairs throughout the survey area.

Golden plover

- 3.2.24 Golden plover are an Annex 1 species, which denotes it as a target species for designations of protected sites (Special Protection Areas). A single individual was heard calling in an arable field to the south east of the four barrows tumuli in T5 on April 27th 2016, the bird was noted to fly between two locations in the same field but were not heard again. The individual was considered to be remnant of the wintering population and not classed as breeding within the survey area.

Herring gull

- 3.2.25 Herring gull are a red and Section 41 listed species, and were recorded across the site and throughout the survey period. However, the habitat present largely provides foraging but not breeding opportunities. Breeding would be restricted to residential areas such as Zelah. It was considered that this species although a regular visitor for foraging was not breeding within the footprint of the proposed Scheme. However, they may be breeding nearby.

House martin

- 3.2.26 House martin are an amber listed species, they were recorded within T4 and T5. One active nest sites was recorded at Nanteague Farm, with potential for further nests in areas inaccessible amongst the farm buildings, a total of nine birds were recorded. This species was therefore considered to be breeding within T4. One record of six individuals was noted in T5 nearby to buildings that provided possible nest locations. They were considered to be possibly breeding here. It was estimated that there were at least two breeding pairs within the survey area.

House sparrow

- 3.2.27 House sparrow are a Section 41 and red list species due to rapid continuing declines in breeding and wintering populations and ranges. They were recorded in all transects across the survey period and were present within suitable habitat associated with houses and buildings. Numerous records of repeat calling, with some aggressive encounters and evidence of family groups was noted within all six transects throughout the survey period. It was considered that this species was breeding within the survey area with an estimated 14 breeding pairs. Due to the nature of this species living within close proximity to one another and them nesting in colonies, the number of pairs identified is likely to be more than shown within the analysis.

Kestrel

- 3.2.28 Kestrel are an amber listed species due to constant population fluctuations and overall breeding population declines. A single kestrel was recorded during the breeding bird transects on 8th June 2016 in T6. This bird was hunting and it was considered to be using the site for foraging but no breeding evidence was identified. Evidence of kestrel using suitable roosting site was noted at Trealso Farm within a large hanger type barn. More than 20 pellets were identified within one corner of the barn with associated streaking and a few feathers, there was no evidence of a nest within this barn. Within a barn to the north of Zelah at OS grid reference SW 81007 52586, further evidence of kestrel was recorded. Approximately 68 pellets were counted along with streaking and numerous feathers, the barn offered suitability for nesting in old barn owl boxes and on high ledges. It was considered that this species was possibly breeding in T4 and likely breeding in T6.

Lesser black-backed gull

- 3.2.29 Lesser black-backed gull are an amber listed species due to recent population declines, they were recorded within T3 and T6. However, largely the habitat present provided foraging but not breeding opportunities. Breeding would be restricted to residential areas such as Zelah. It was considered that this species used the site for foraging and was not breeding within the footprint of the proposed Scheme. However, they may be breeding nearby.

Linnet

- 3.2.30 Linnet are a Section 41 and red list species due to a rapid breeding population decline since the late 1960s. They were recorded across the survey area in all transects apart from T3 throughout the survey period in suitable habitat, and with repeat occurrences. Some flocks of up to 33 were seen in April, and considered to be remnant wintering flocks. It was considered that this species was possibly breeding across the survey area apart from T3. It was estimated that there were up to 35 breeding pairs within the survey area.

Mallard

- 3.2.31 Mallard are an amber listed species due to a decline in non-breeding populations, they have plateaued in their breeding population after a steady increase in numbers between 1960 and 2000. One record of mallard was recorded within the survey period in T3. It was noted as flying through the survey area. Anecdotal evidence from the badger survey found a mallard family in a field to the south of the Boxheater junction, this confirmed that they are breeding within the survey area.

Peregrine falcon

- 3.2.32 Peregrine falcon are a Schedule 1 and Annex 1 species. A single peregrine falcon was recorded in T1 in April. It was hunting within the survey area and due to the nature of their breeding sites it was not considered to be breeding within the survey area. Peregrine are known to favour cliffs and buildings that replicate the natural cliff sites⁶, such as cathedrals, the habitat within the survey area did not offer suitable nesting sites.

Skylark

- 3.2.33 Skylark are a Section 41 and red listed species due to rapid and continued population decline since the 1980s. They were recorded throughout the survey area and across all transects throughout the survey period. This species was numerous and prolific in the open pasture fields. High numbers of records, evidence of juveniles and adults carrying food, along with repeat records in the same location concluded that this species was breeding within the survey area. Areas of highest activity were in the fields to the north of four barrows tumuli, within the fields around Hillview Farm, in the fields to the south of Penny-come-quick, the fields to the south and south east of Newlyn Downs also recorded numerous territories. It was estimated that there were 69 breeding pairs within the survey area.

Stock dove

- 3.2.34 Stock dove are an amber listed species, they were recorded through T2, T3 and T6, they were seen flying within the survey area and foraging. However, no nesting or other breeding evidence such as singing males was indicated. It was considered that this species was not breeding within

⁶ <https://www.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/bird-a-z/p/peregrine/nesting.aspx>
accessed 09/11/2017

the survey area.

Starling

- 3.2.35 Starling are a Section 41 and red list species due to rapid and continued breeding decline since the 1980s. They were recorded within T2 and T5, with individuals seen including an adult carrying food within T2. In T5 two flocks of 50 and 10 were recorded within suitable habitat. It was therefore considered to be breeding in T2 and possibly breeding in T5. It was estimated that there were 19 breeding pairs within the survey area.

Song Thrush

- 3.2.36 Song thrush are a Section 41 and red list species. They were recorded throughout the survey area in all transects and across the survey period. Repeat calling and singing in re-occurring locations identified the species was breeding within the survey area. It was estimated that there were 19 breeding pairs within the survey area.

Willow warbler

- 3.2.37 Willow warbler are an amber listed species due to a breeding population decline since the 1980s after a period of population stability. They were identified in all transects except T6 within suitable habitat. Repeat singing within re-occurring locations identified that this species was breeding within the survey area. It was estimated that there were 10 breeding pairs within the survey area.

Yellowhammer

- 3.2.38 Yellowhammer are a Section 41 and red list species due to a significant population decrease. It was recorded within all transects except T3. They were located within suitable nesting habitat and were often recorded as pairs of birds, and singing within the same locations. They were considered to be breeding within the survey area. It was estimated that there were 11 breeding pairs within the survey area.

3.3 SUMMARY

- 3.3.1 The proposed Scheme runs through the centre of Cornwall through largely arable and pastoral farmland, interspersed with woodland copses and bisected by hedgerows, many of them Cornish hedges. The eastern end of the proposed Scheme also provides heathland habitat. These habitats offer a range of foraging and roosting opportunities for breeding birds.
- 3.3.2 This study identified a large number of desk study records, covering 103 different species, many of which were considered to be breeding or resident species. The field survey identified a total of 53 species actively using the survey area within the survey period. Of these a number were of conservation concern including two Annex 1 species and one Schedule 1 species, these were peregrine falcon and golden plover, neither of which were considered to be breeding.
- 3.3.3 Each transect identified between 33 and 40 species, with 9 to 12 species of conservation concern listed.
- 3.3.4 Hedgerows were of particular importance for small passerine birds such as dunnock and linnet, whilst open areas such as pasture fields were of importance to species such as skylark. A number of species are associated with farmland with mixed use such as yellowhammer, linnet and skylark.

Appendix A

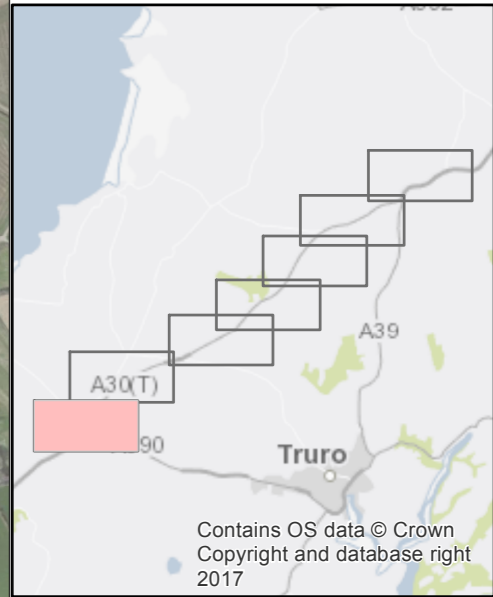
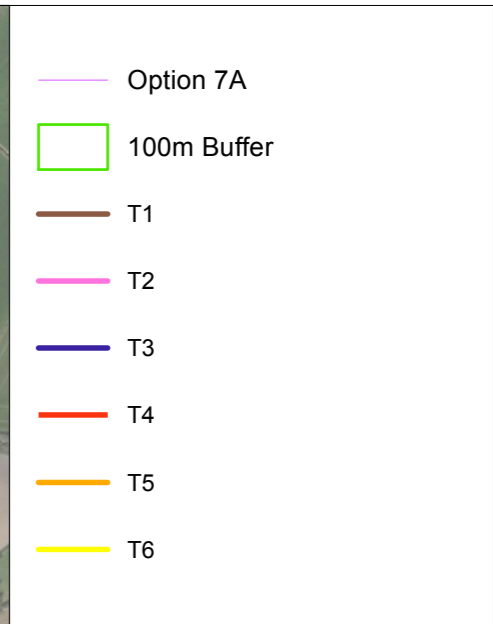
SURVEY INFORMATION

Breeding Bird survey information

TRANSECT NUMBER	SURVEY DATE	SURVEY TIME	WEATHER CONDITIONS
1	05/04/2016	0715 – 1030	8-12 degrees, wind 0-1 BF, cloud cover 8/8 – 3/8, dry, good visibility
1	26/04/2016	0701 – 0947	4-8 degrees, wind 2-3 BF, cloud cover 0/8, dry, excellent visibility
1	12/05/2016	0545 – 0830	14.8 degrees, wind 0 BF, cloud cover 8/8, low lying mist, moderate visibility
1	08/06/2016	0535 – 0809	16-18 degrees, wind 1-2 BF, cloud cover 8/8, dry excellent visibility
2	08/04/2016	0515 – 1018	13 degrees, wind 1-2 BF, cloud cover 8/8 – 3/8, dry, excellent visibility
2	26/04/2016	0640 – 0930	4-8 degrees, wind 2-3 BF, cloud cover 5/8, dry, excellent visibility
2	12/05/2016	0546 – 0839	15 degrees, wind 0 BF, cloud cover 8/8, low lying mist, moderate visibility
2	08/06/2016	0530 – 0815	13 degrees, wind 0 BF, cloud cover 8/8, dry, good visibility
3	06/04/2016	0650 – 1004	8-10 degrees, wind 2-3 BF, cloud cover 8/8 – 4/8, dry, good visibility
3	26/04/2016	1817 – 2050	6 degrees, wind 3-4 BF, cloud cover 2/8, dry, good visibility
3	13/05/2016	0535 – 0845	12 degrees, wind 0-1 BF, cloud cover 3/8, dry, hazy to start, good visibility
3	09/06/2016	0530 – 0758	13 degrees, wind 0-1 BF, cloud cover 1/8, dry excellent visibility
4	06/04/2016	0655 – 0920	8-10 degrees, wind 3-4 BF, cloud cover 8/8, dry, good visibility
4	26/04/2016	1815 – 2005	6 degrees, wind 3-4 BF, cloud cover 2/8, dry, good visibility
4	13/05/2016	0550 – 0821	12 degrees, wind 0-1 BF, cloud cover 1/8, dry, excellent visibility
4	09/06/2016	0530 – 0830	13 degrees, wind 0-1 BF, cloud cover 3/8, dry, low lying fog in valleys at start, good visibility
5	07/04/2016	0715 – 1000	6 degrees, wind 1-3 BF, cloud cover 7/8, dry, good visibility
5	27/04/2016	0628 – 0828	4 degrees, wind 1-3 BF, cloud cover 3/8, dry, good visibility
5	12/05/2016	1850 – 2030	15 degrees, wind 1-2 BF, cloud cover 8/8, dry, good visibility
5	08/06/2016	1930 – 2110	Degrees, wind 2 BF, cloud cover 1/8, dry, good visibility
6	07/04/2016	0715 – 0858	6-8 degrees, wind 3 BF with some gusts, cloud cover 7/8, dry, good visibility
6	27/04/2016	0630 – 0800	3 degrees, wind 0-1 BF, cloud cover 5/8, dry, good visibility
6	12/05/2016	1846 – 2025	12 degrees, wind 1-2 BF, cloud cover 8/8, dry, good-poor visibility towards end of survey due to mist
6	08/06/2016	1930 – 2045	18 degrees, wind 0-1 BF cloud cover 1/8, dry, good visibility

Appendix B

FIGURES



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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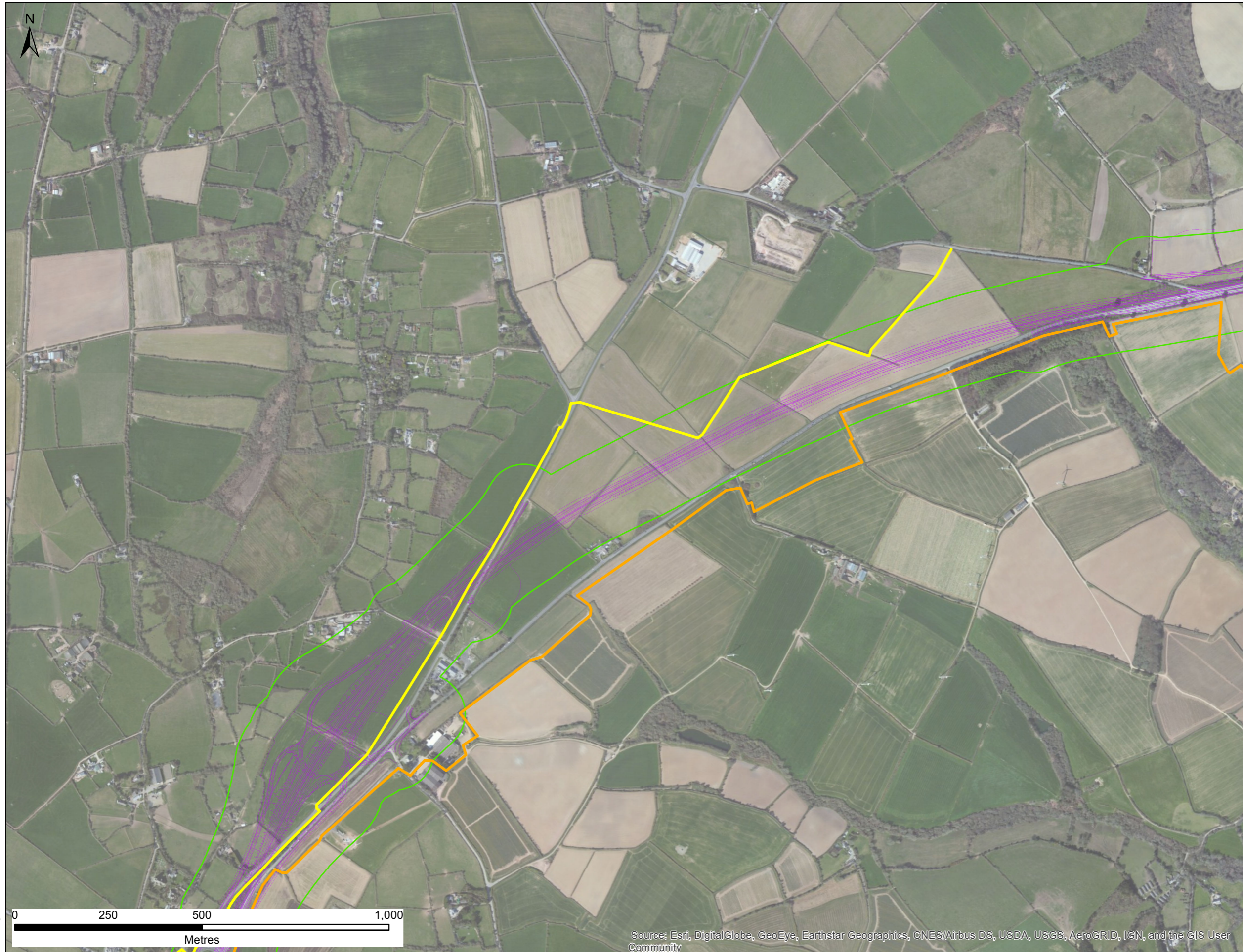
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BS2 0HQ
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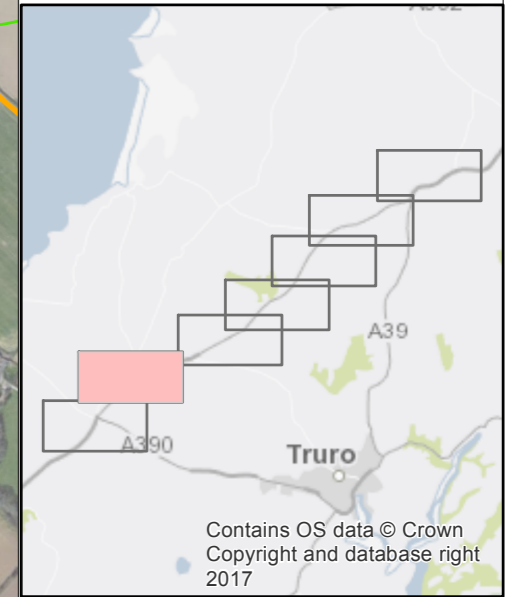
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Title: **BREEDING BIRD SURVEY AREA
PAGE 1 OF 7**

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Date: 29/08/2017	Scale: 1:10,000 A3 Sheet:
Project Number: 70004582	Drawing Number: FIGURE 1
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- Option 7A
- 100m Buffer
- T1
- T2
- T3
- T4
- T5
- T6



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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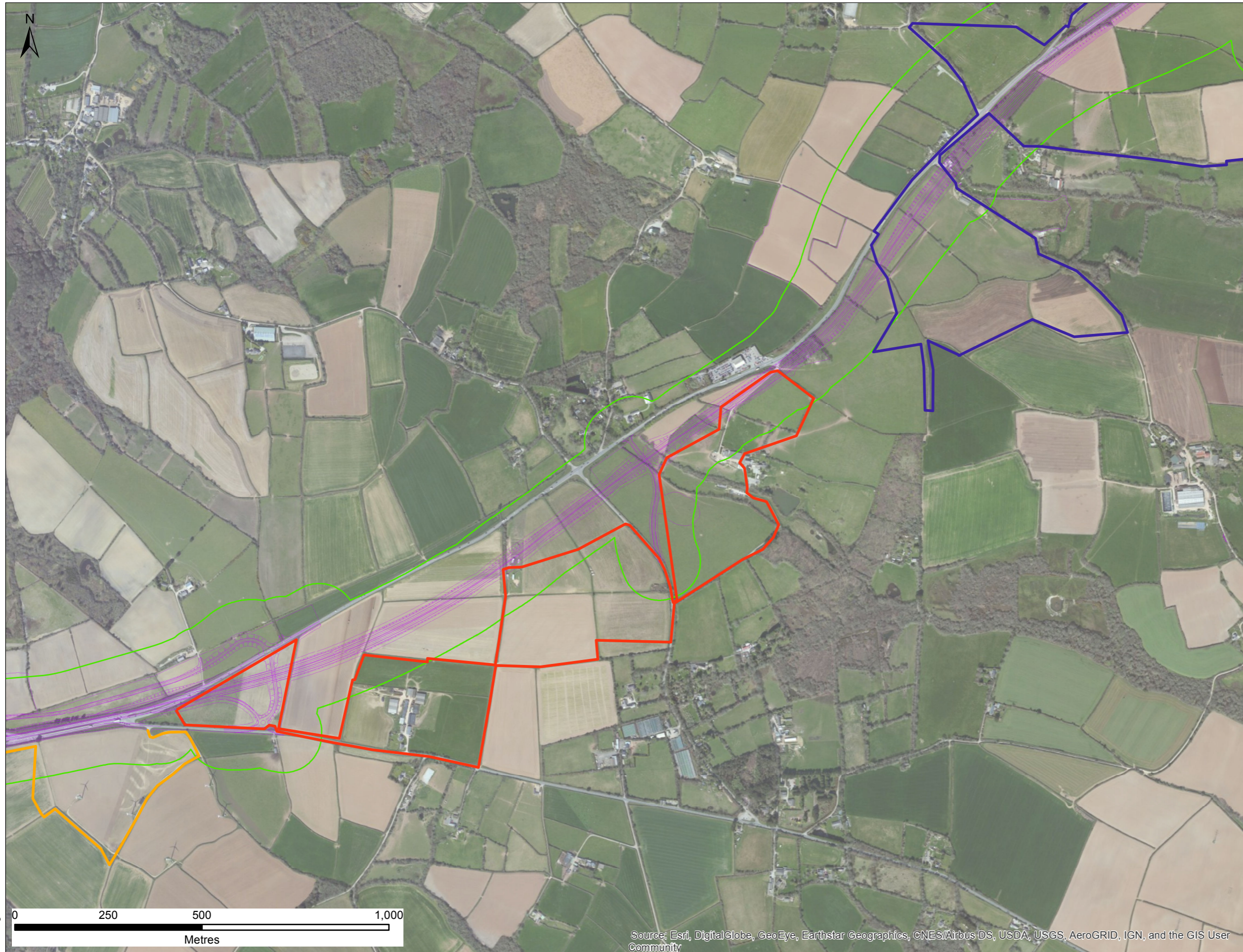
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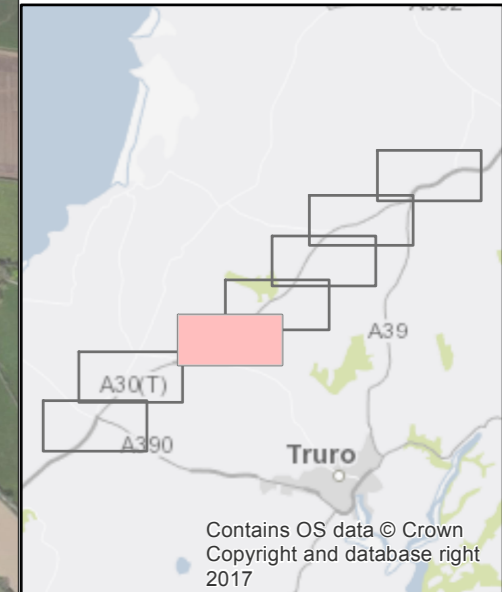
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- Option 7A
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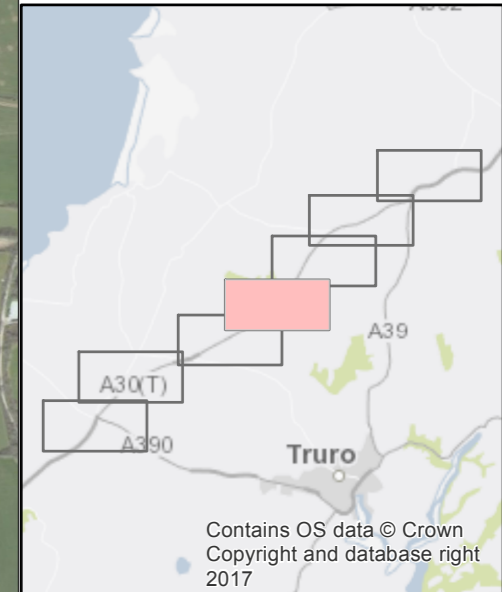
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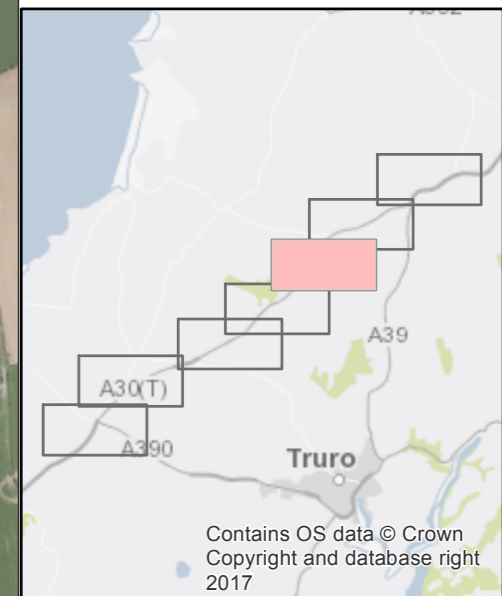
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- Option 7A
- 100m Buffer
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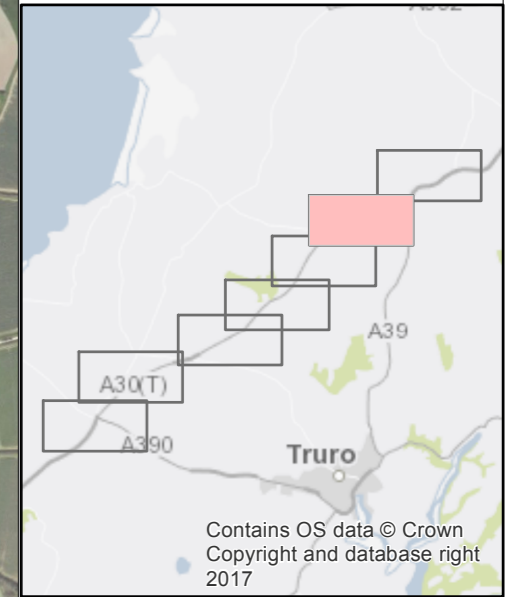
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- Option 7A
- 100m Buffer
- T1
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- T4
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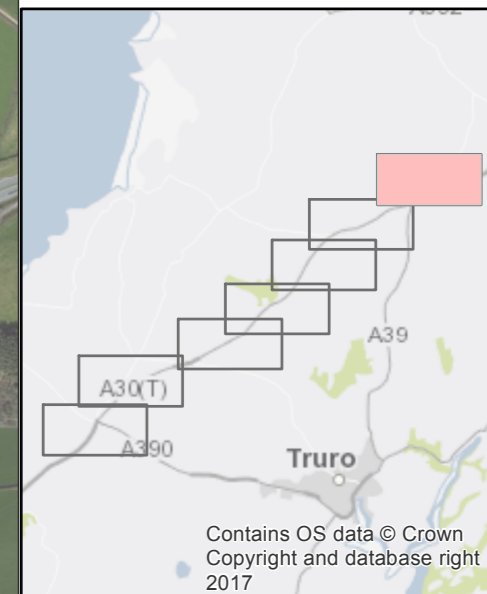
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PAGE 6 OF 7

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- Option 7A
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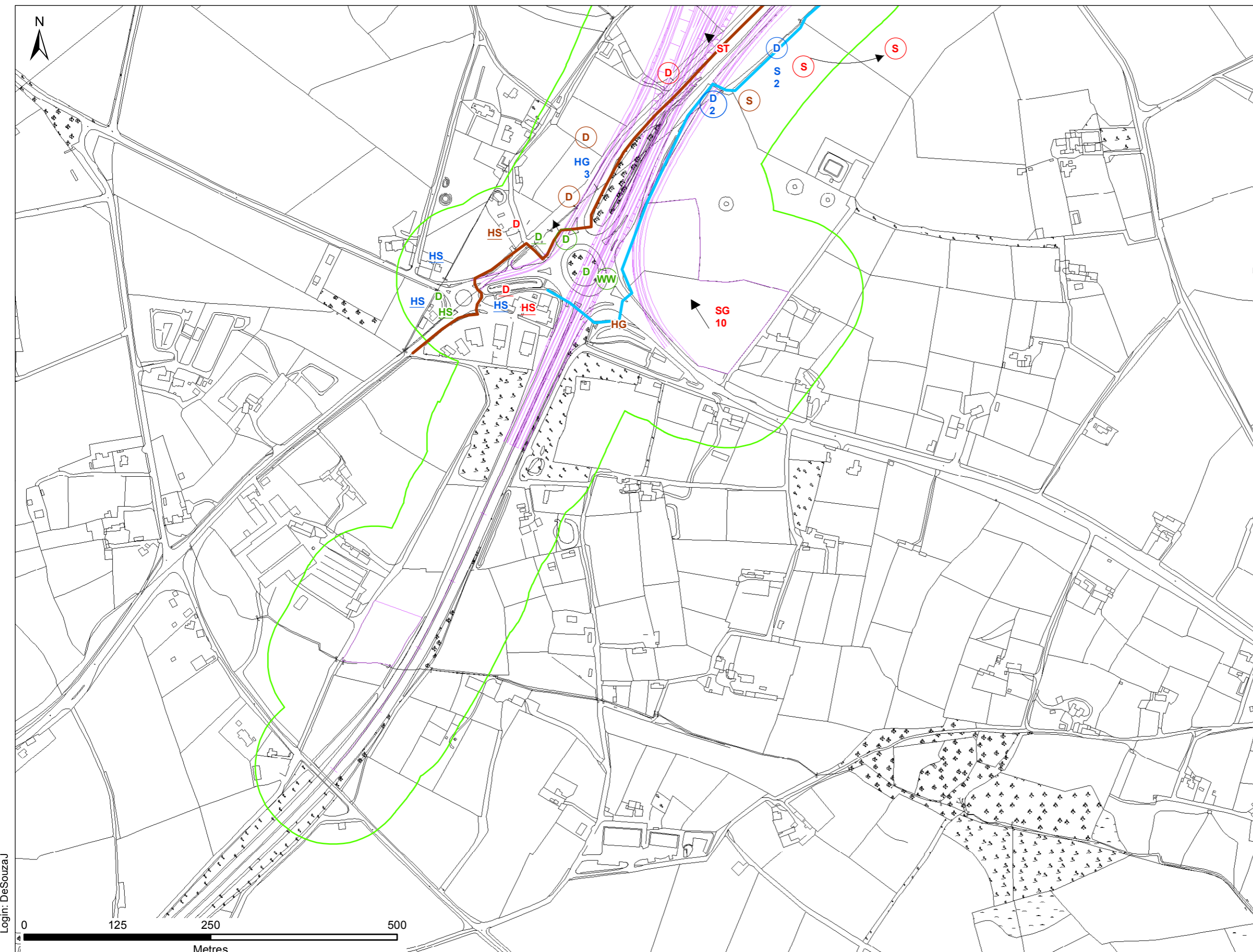
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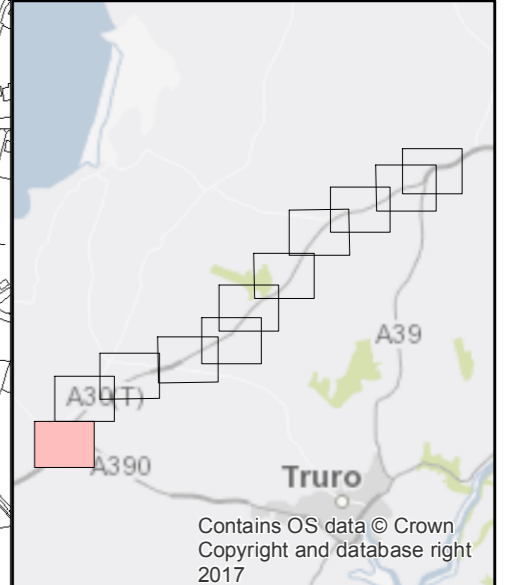


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- Transect 4
- Transect 2
- Transect 5
- Transect 3
- Transect 6
- S Aggressive encounter
- D Calling
- Territorial Alarm
- Sfood Carrying food
- HS mat Carrying nest material
- Y In song
- *HM Nest
- *S on Occupied nest
- Flying over

Species code	Species
BF	Bullfinch
D.	Dunnock
GP	Golden Plover
HG	Herring Gull
HM	House Martin
HS	House Sparrow
K.	Kestrel
LB	Lesser Black-Backed Gull
LI	Linnet
MA	Mallard
PE	Peregrine falcon
S.	Skylark
SD	Stock Dove
SG	Starling
ST	Song Thrush
WW	Willow warbler
Y.	Yellowhammer

Codes coloured by date surveyed:
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12/13 May 2016
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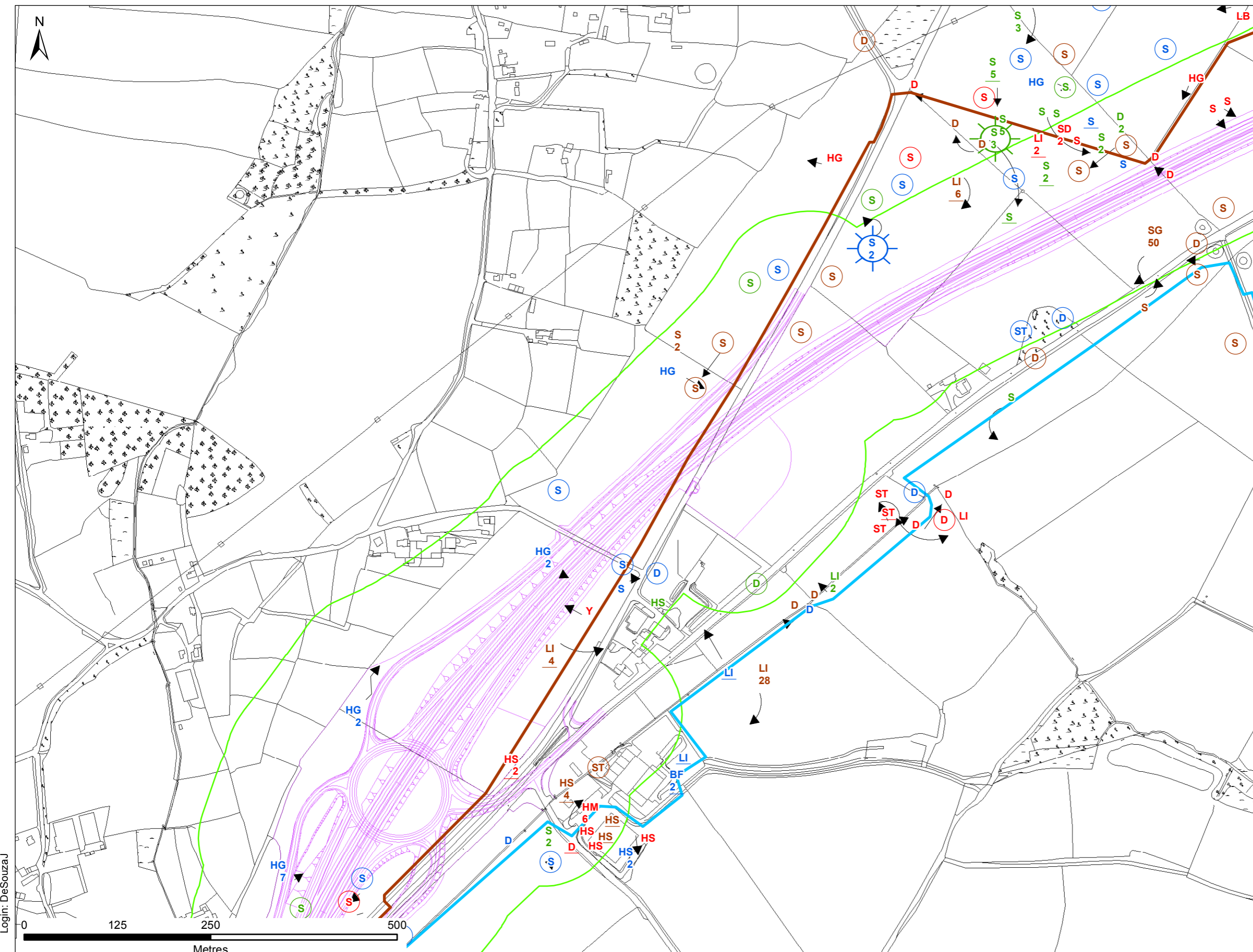
Tel: 44-(0)117-930-6200

Client: **WSP**

Project: **A30 CHIVERTON TO CARLAND CROSS**

Title: **BREEDING BIRD SURVEY RESULTS**
PAGE 1 OF 11

Drawn: BS	Checked: JSdS
Designed: LM	Approved: UD
Date: 16/11/2017	Scale: 1:5,000 A3 Sheet:
Project Number: 70004582	Drawing Number: FIGURE 2
	Revision:

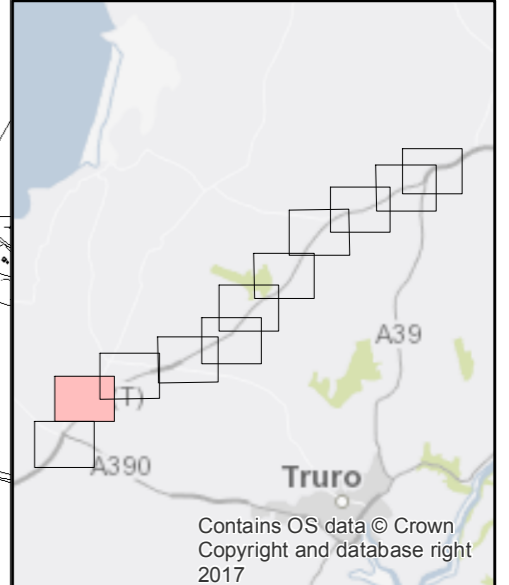


- 100m Buffer
- Option 7A Transect Route
- Transect 1
- Transect 2
- Transect 3
- Transect 4
- Transect 5
- Transect 6
- S Aggressive encounter
- D Calling
- D Territorial Alarm
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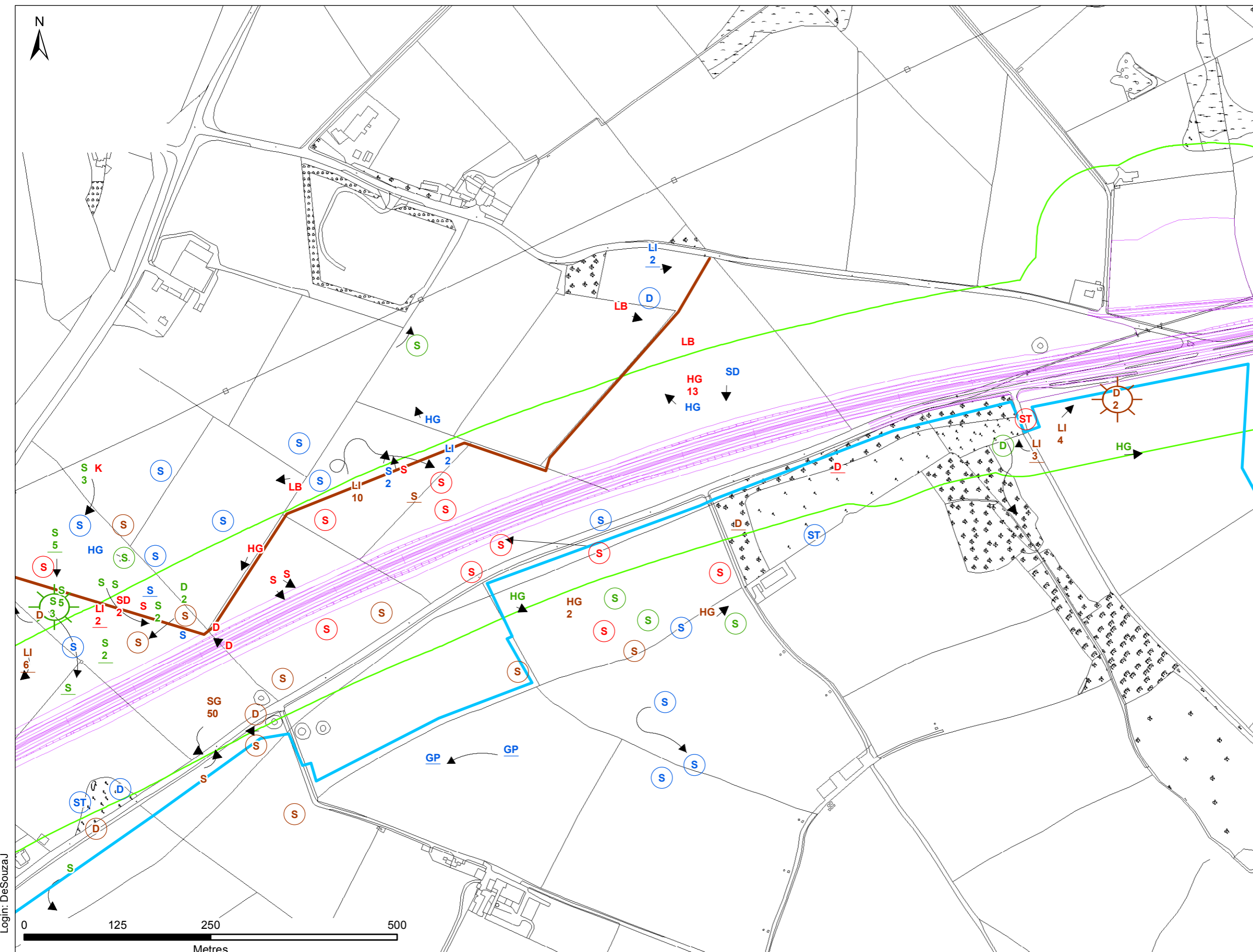
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		Drawn: BS Checked: JSdS Designed: LM Approved: UD Date: 16/11/2017 Scale: 1:5,000 A3 Sheet: Project Number: 70004582 Drawing Number: Revision:
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Kings Orchard, 1 Queen Street, Bristol BS2 0HQ Tel: 44-(0)117-930-6200		<p>Title: BREEDING BIRD SURVEY RESULTS PAGE 2 OF 11</p>
		Drawn: BS Checked: JSdS Designed: LM Approved: UD Date: 16/11/2017 Scale: 1:5,000 A3 Sheet: Project Number: 70004582 Drawing Number: Revision:
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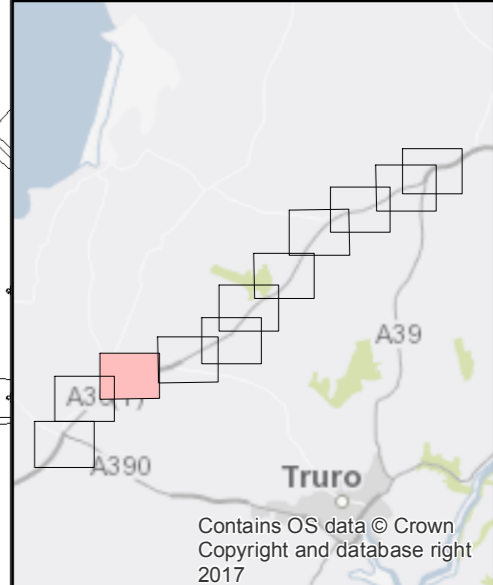


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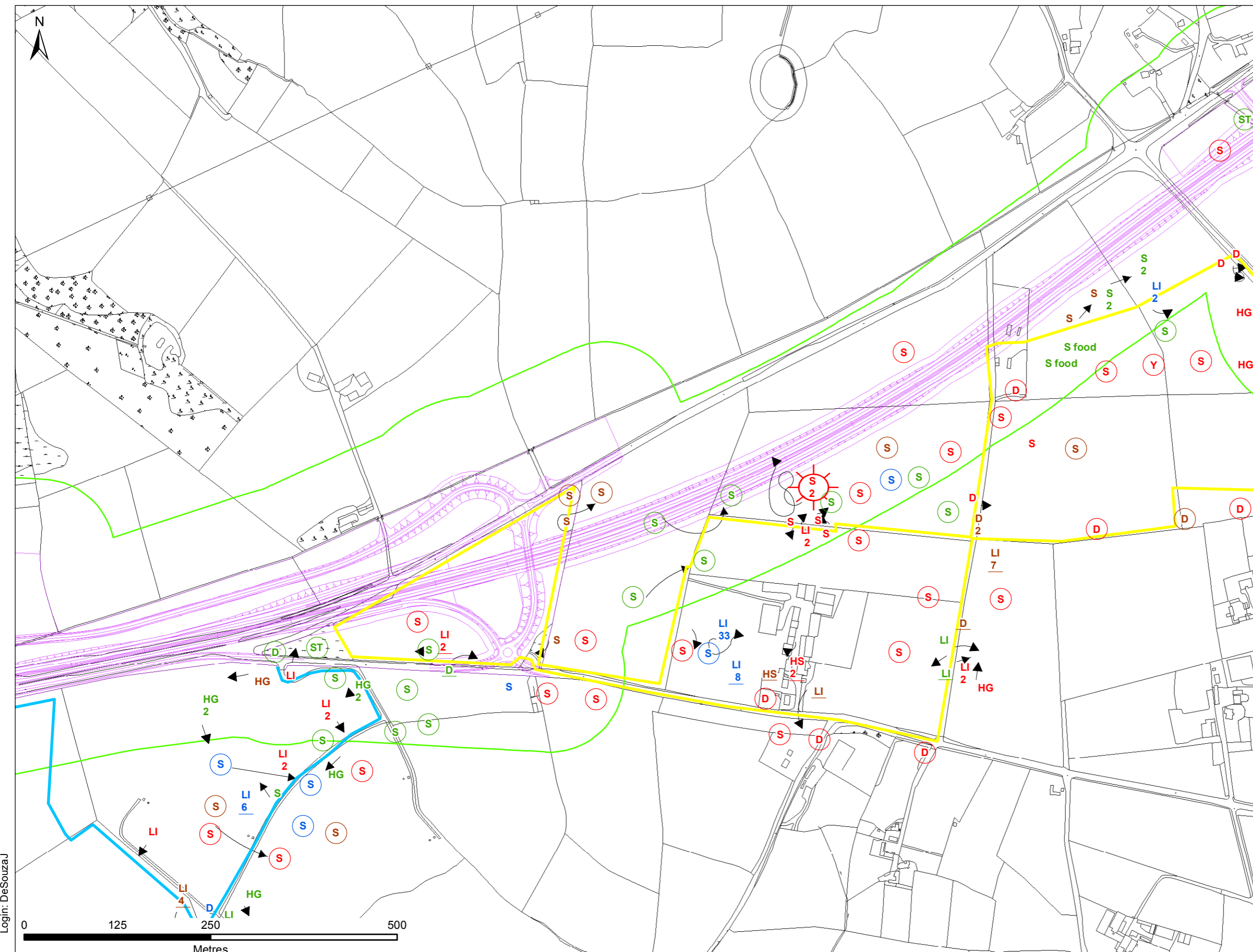
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Title: BREEDING BIRD SURVEY RESULTS PAGE 3 OF 11	Drawn: BS Checked: JSdS Designed: LM Approved: UD Date: 16/11/2017 Scale: 1:5,000 A3 Sheet: Project Number: 70004582 Drawing Number: FIGURE 2 Revision:
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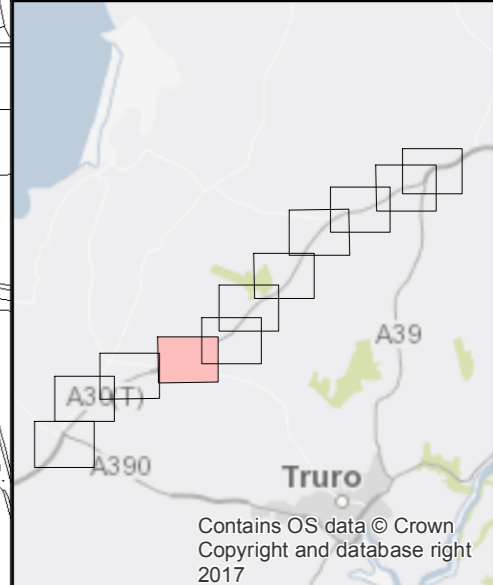


- 100m Buffer
- Option 7A Transect Route
- Transect 1
- Transect 2
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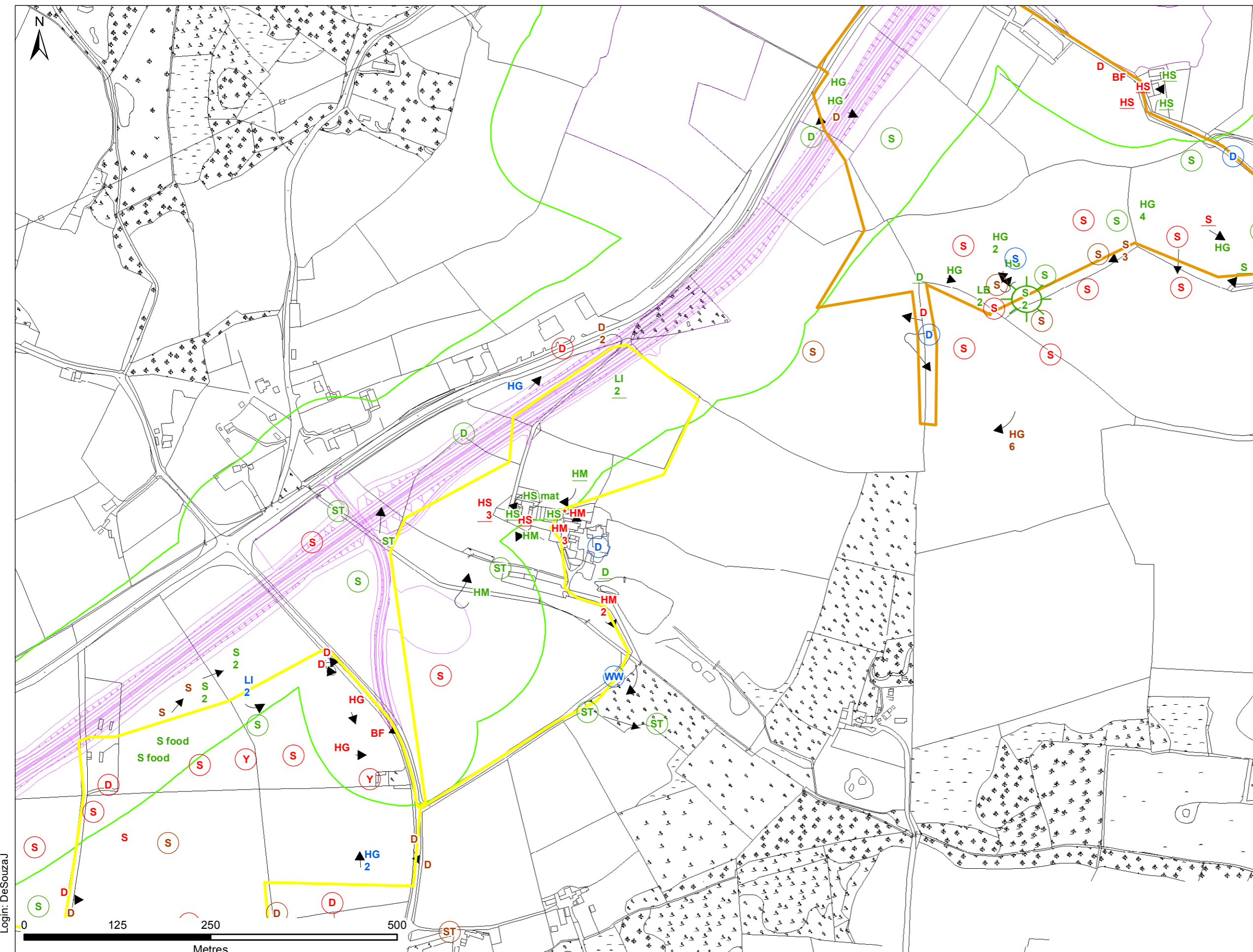
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	<p>Title: BREEDING BIRD SURVEY RESULTS PAGE 4 OF 11</p>	<p>Drawn: BS</p> <p>Designed: LM</p> <p>Date: 16/11/2017</p> <p>Project Number: 70004582</p>
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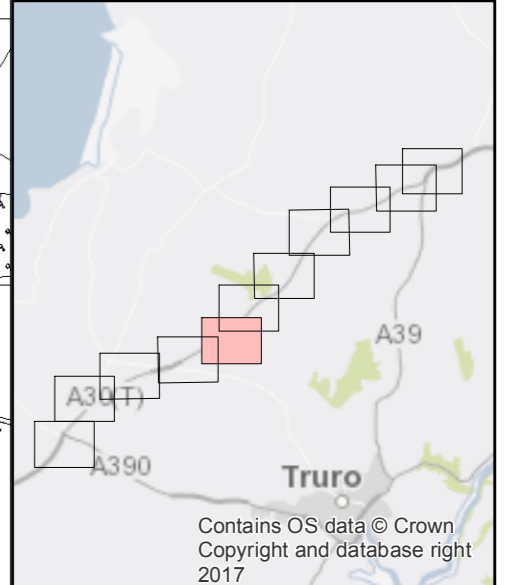


- 100m Buffer
- Option 7A
- Transect Route**
- Transect 1
- Transect 2
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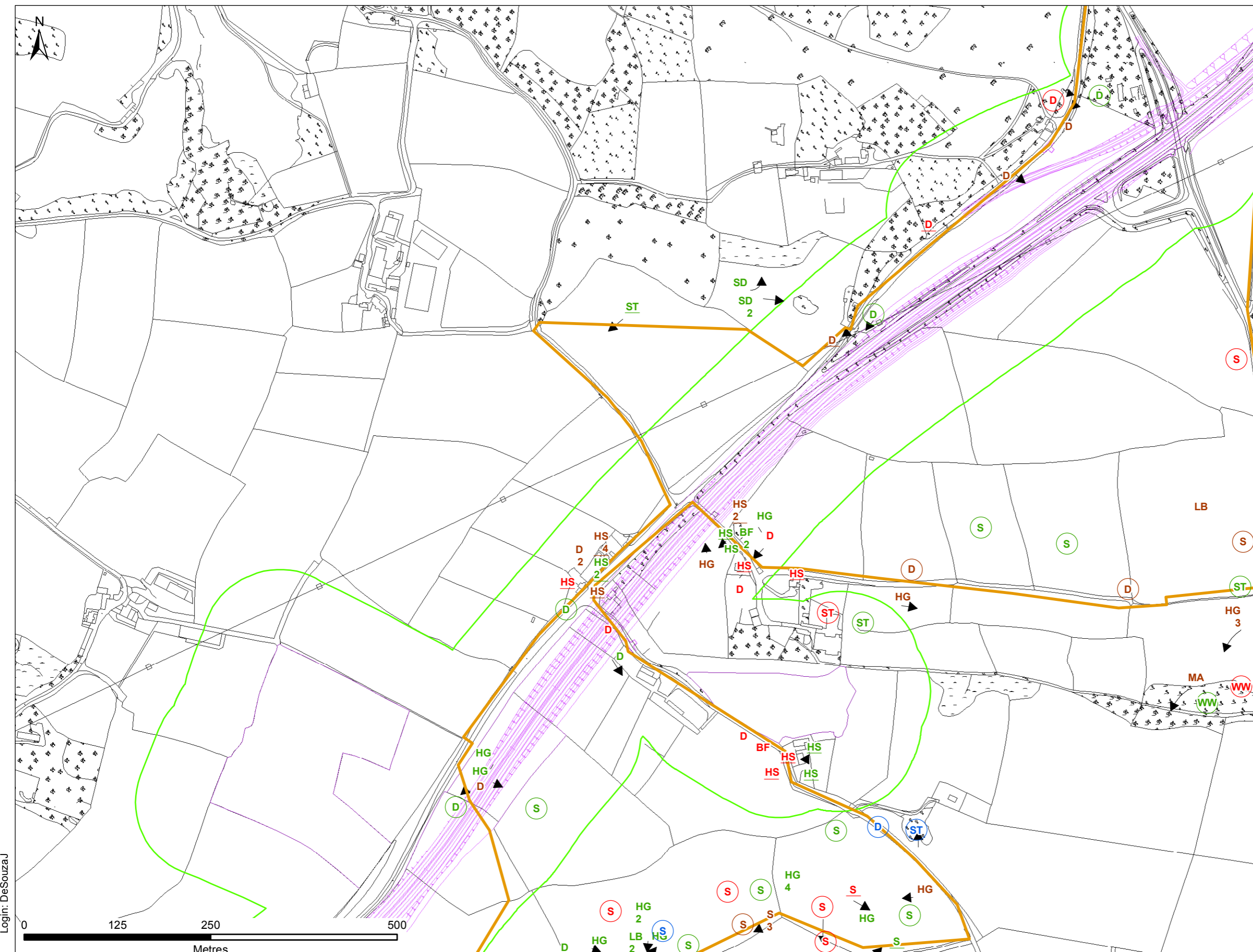
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Title: **BREEDING BIRD SURVEY RESULTS**
PAGE 5 OF 11

Drawn: BS	Checked: JSdS
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Date: 16/11/2017	Scale: 1:5,000 A3 Sheet:
Project Number: 70004582	Drawing Number: FIGURE 2

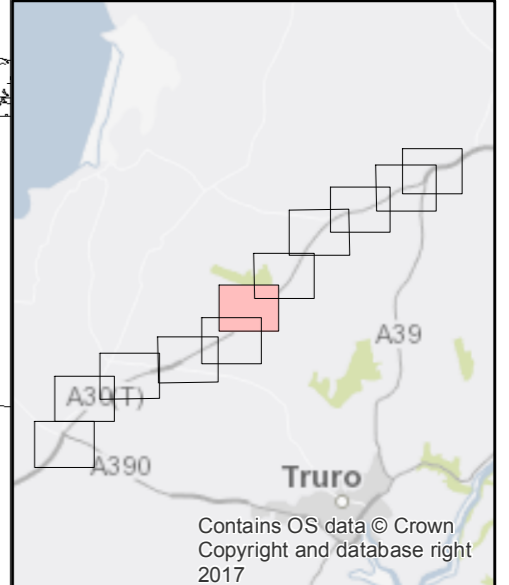


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- Option 7A
Transect Route
- Transect 1
- Transect 2
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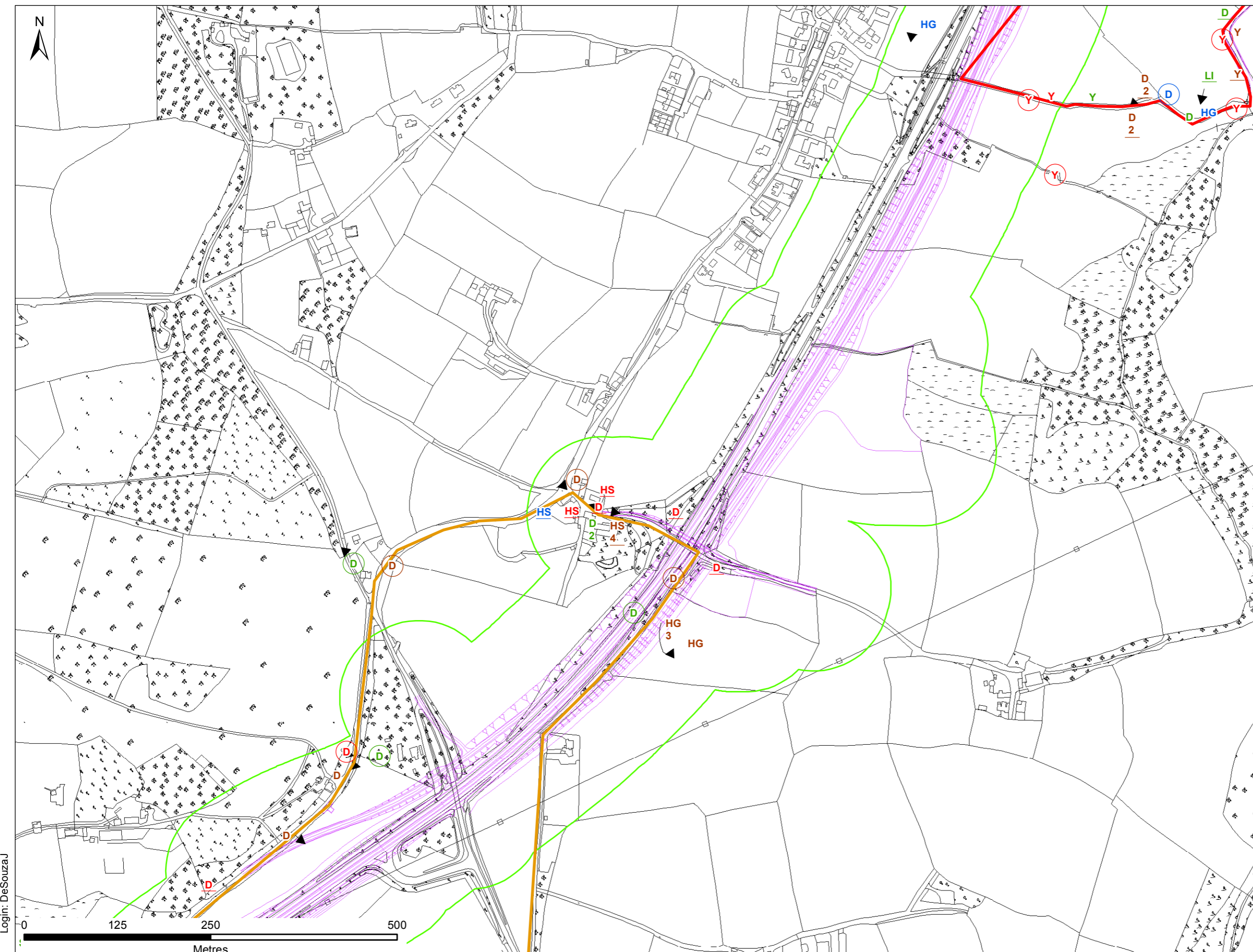
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Title: **BREEDING BIRD SURVEY RESULTS**
PAGE 6 OF 11

Drawn: BS	Checked: JSdS
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Project Number: 70004582	A3 Sheet: FIGURE 2
Drawing Number:	Revision:

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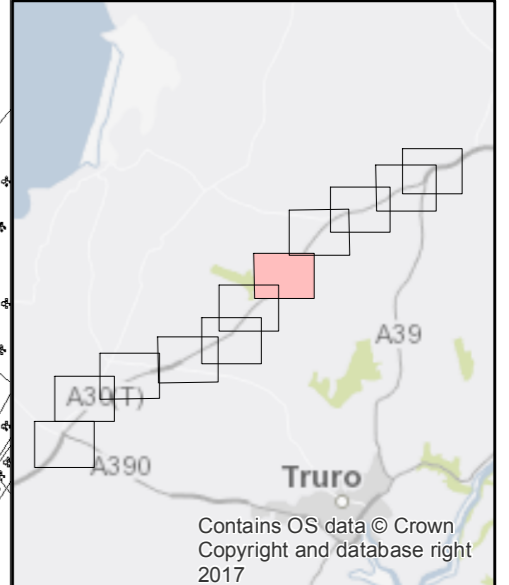


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- Option 7A
- Transect Route**
- Transect 1
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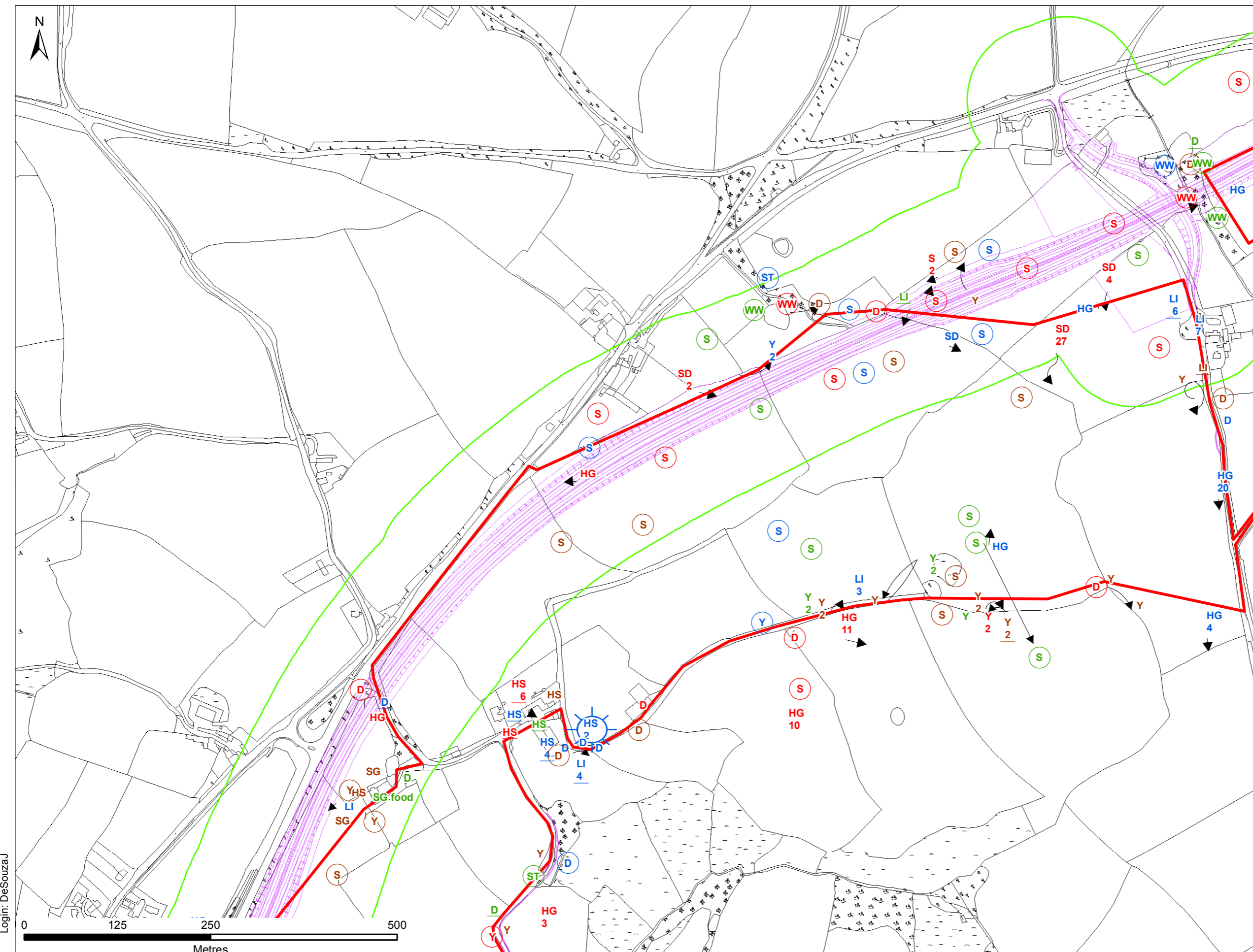
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Title: **BREEDING BIRD SURVEY RESULTS**
PAGE 7 OF 11

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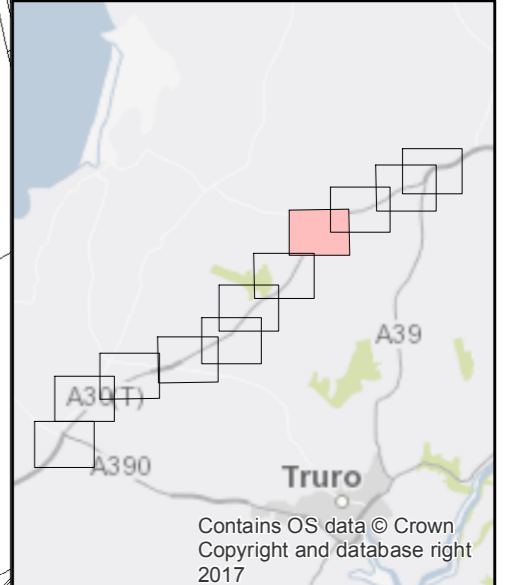


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- Option 7A Transect Route
- Transect 1
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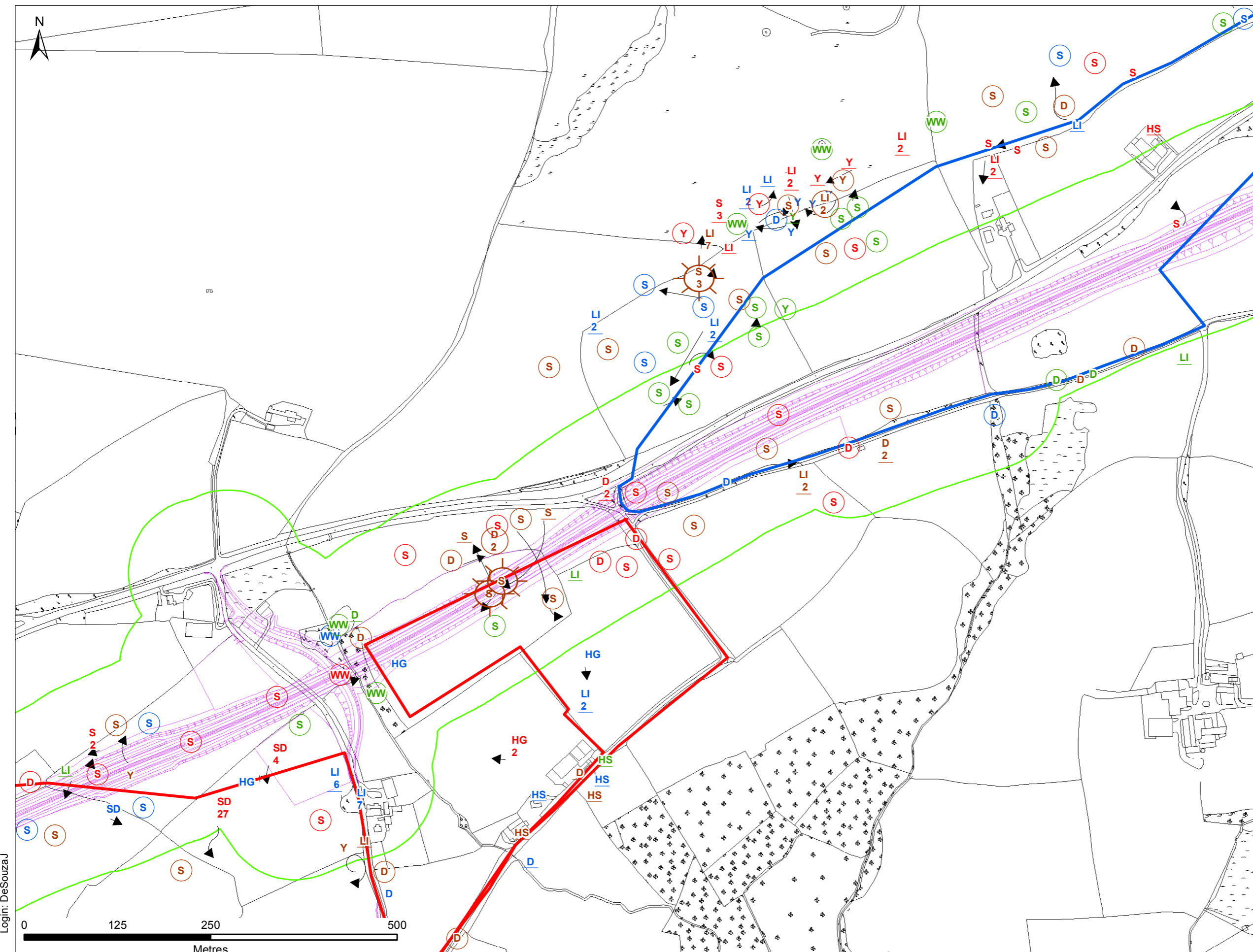
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Title: **BREEDING BIRD SURVEY RESULTS**
PAGE 8 OF 11

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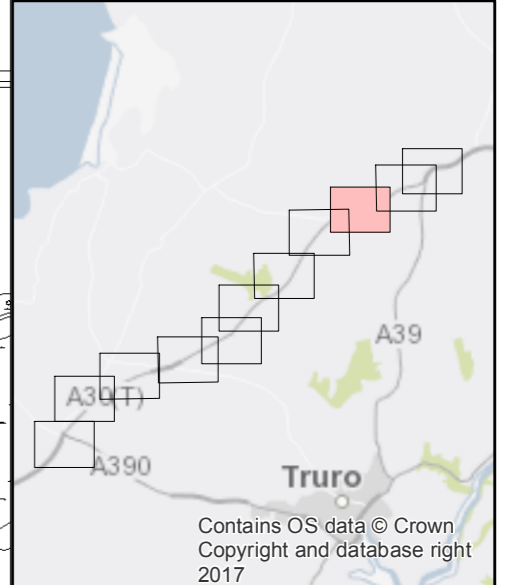


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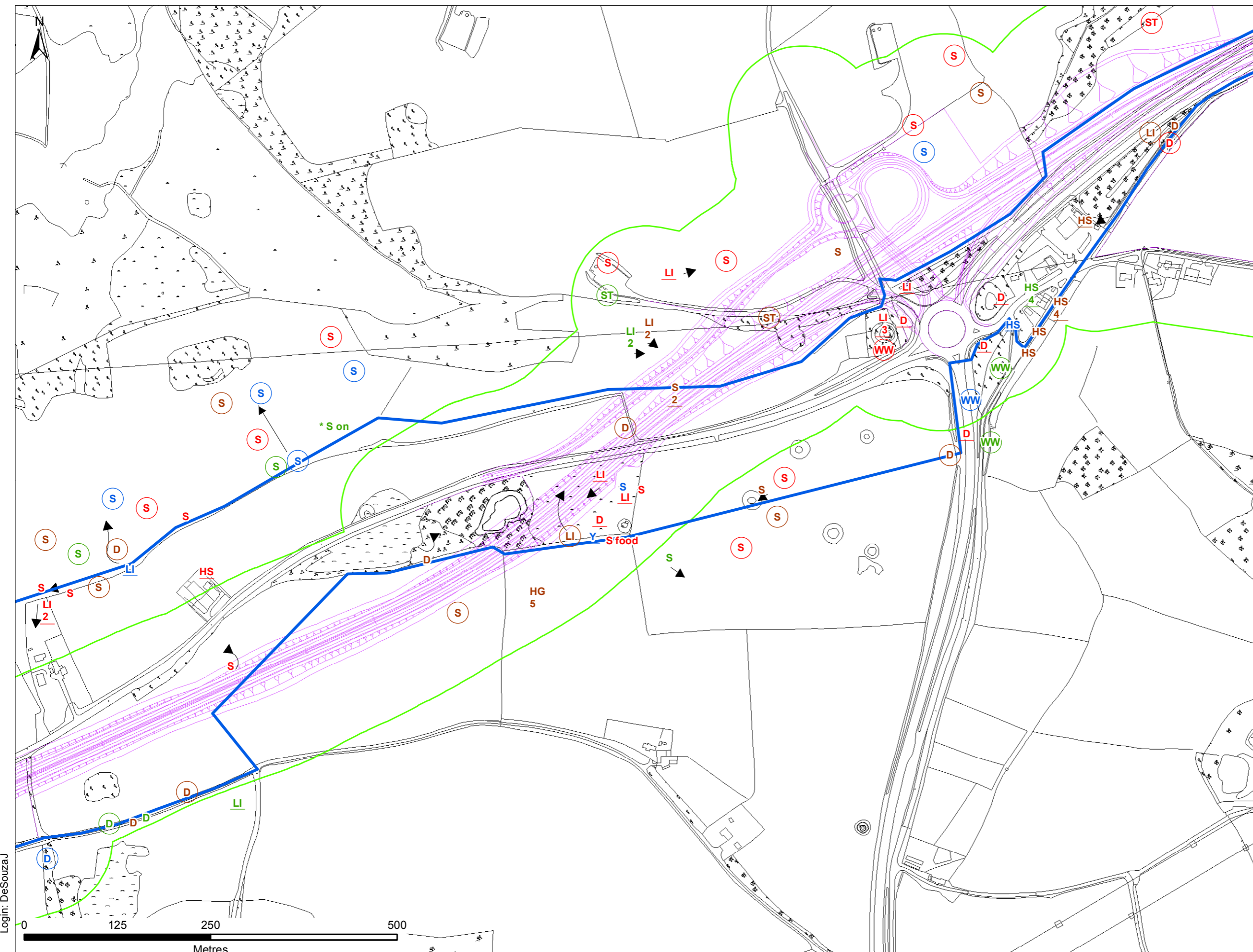
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Project: **A30 CHIVERTON TO CARLAND CROSS**

Title: **BREEDING BIRD SURVEY RESULTS**
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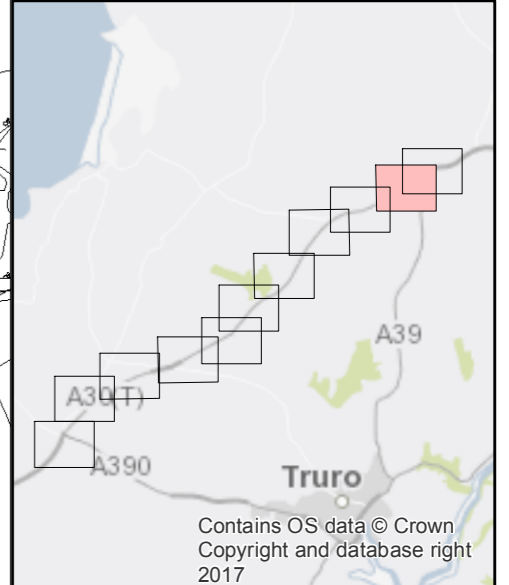


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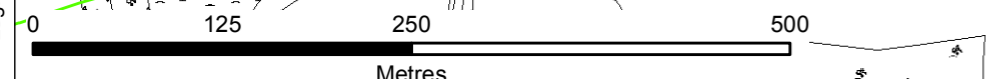
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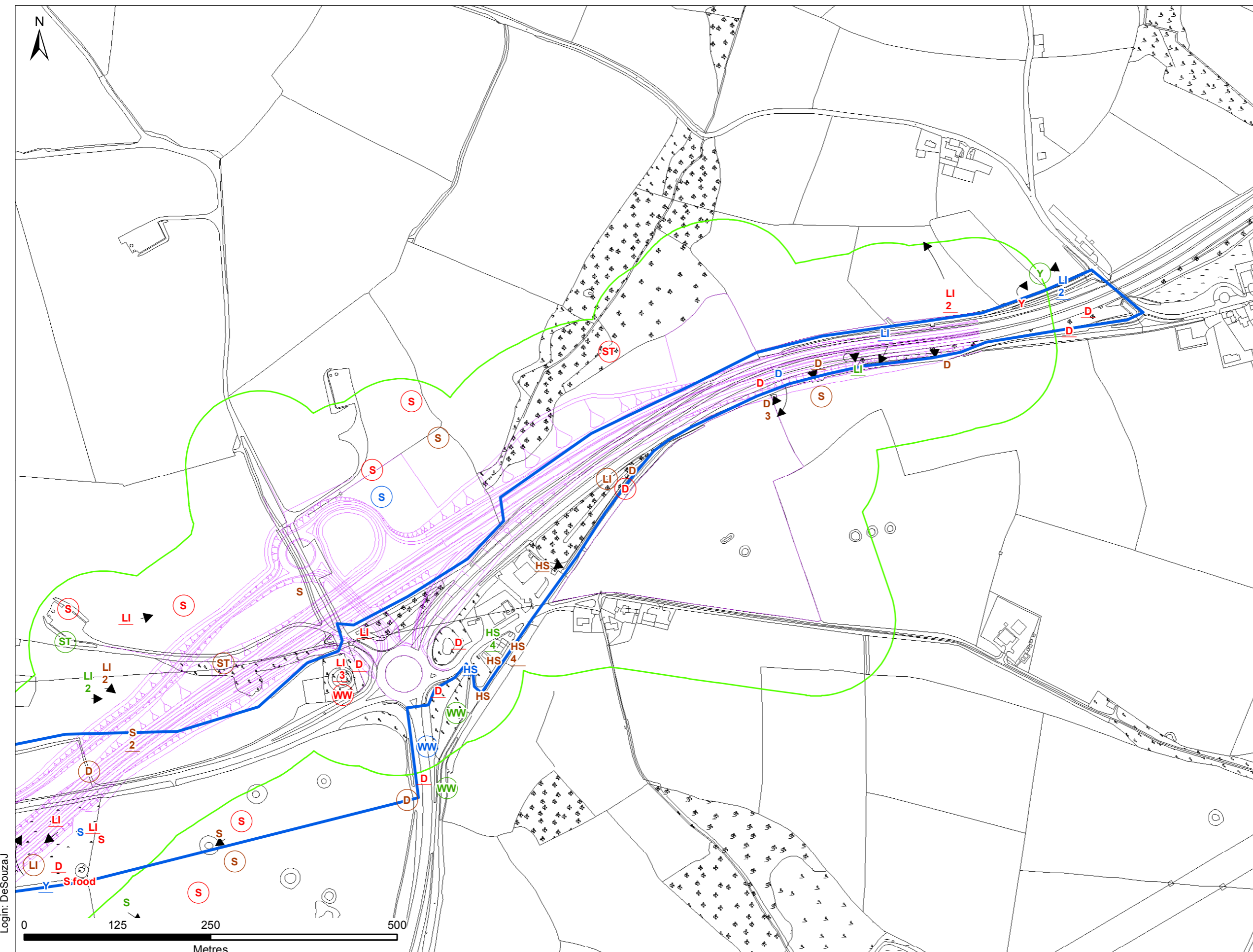
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Title: **BREEDING BIRD SURVEY RESULTS**
PAGE 10 OF 11

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	Revision:

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100m Buffer

Option 7A
Transect Route

Transect 1 Transect 4
Transect 2 Transect 5
Transect 3 Transect 6

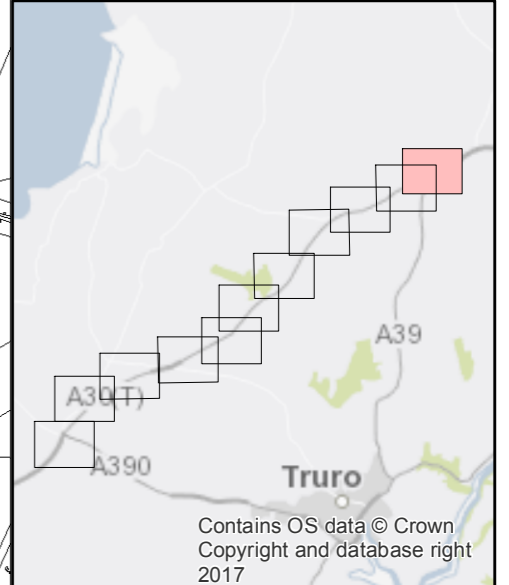
S Aggressive encounter
D Calling
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Sfood Carrying food
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