PROPOSED REINFORCEMENT TO THE ELECTRICAL DISTRIBUTION SYSTEM

132kV OVERHEAD LINE BETWEEN LEGACY AND OSWESTRY

ENVIRONMENTAL STATEMENT VOLUME 4: APPENDICES 15C – 18E

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ENVIRONMENTAL STATEMENT VOLUME 4: APPENDICES

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Route for proposed 132kV Line
Legacy to Oswestry
Ornithological Assessment
July 2012

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1.0 INTRODUCTION

1.1 This report forms part of an update to baseline Ecological Surveys of land along the route of a proposed wooden pole 132kV overhead line between Legacy and Oswestry. Background context and survey extent are explained in TEP Report ref.: 700.276. This assessment considers the Trident single pole route identified in July 2012.

2.0 METHODS

Ornithology Survey Approach

Desktop survey

2.1 A desktop survey was undertaken which identified designated sites of ornithological interest in the vicinity of the proposed overhead line route. Records of populations of birds acknowledged as susceptible to collision with overhead lines (waders, wildfowl, raptors and some large water bird species) were also identified.

2.2 Individual bird species were considered in relation to their conservation value or level of protection as individuals or populations and also as assemblages cited as part of any site of ornithological interest such as SSSIs.

2.3 Information collected for individual bird species was considered in terms of what it revealed about bird use of the land around the proposed overhead line route (for example for breeding, over-wintering, crossing on migratory routes etc).

2.4 The results of the desktop survey were analysed using GIS spatial mapping to determine the function of land along the route in respect of potential importance for birds and any populations of birds considered sensitive to overhead lines.

Sites of importance for birds

2.5 The desktop study has identified types of protected site designations including SPAs, Ramsar sites, SSSIs, county wildlife sites and LNRs (there are no SPAs or Ramsar sites within 5km of the proposed overhead line route). The survey has also covered Farmland Bird Key Areas (see Appendix A), specified by the RSPB as being areas of particular importance for farmland birds (N.B. information on Farmland Bird Key Areas was only provided for Shropshire). The extent of the survey area was dictated by the importance each site has for birds (see Table 1).

Table 1: Extent of survey area concerning protected sites

Type of site:	Extent of survey area – distance from overhead line:
SPAs and Ramsar sites	5km*
SSSIs	5km
Local wildlife sites and LNRs	2km
Farmland Bird Key Areas	500 metres

*No SPAs and Ramsar sites are within 5km of the proposed overhead line route.

2.6 Where records of bird populations indicated an assemblage related to a designated site, that site was also considered. Citations for protected sites for birds are included in Appendix B.

Biological records

2.7 Biological records for birds identified as being susceptible to collision with overhead lines were collected across a survey area extending 5km from the proposed overhead line route. Biological records for red-list Birds of Conservation Concern (BoCC), UKBAP species and local BAP species were collected across a smaller area extending 500 metres from the proposed overhead line route.

2.8 A range of organisations and voluntary bodies were consulted including:

- Natural England & CCW;
- Royal Society for the Protection of Birds (RSPB) – Wales and England;
- Wrexham and Shropshire Local Authority ecologists;
- North Wales & Shropshire Wildlife Trusts;
- COFNOD North Wales Environmental Information Service;
- BTO – birdtrack on-line records;
- North Wales Breeding Bird Atlas;
- Shropshire Ornithological Society;
- Clwyd Bird Recording Group;
- County bird recorders.

2.9 In 2007, breeding bird surveys were undertaken at two sites which were identified as potentially being important for birds, namely Ifton Meadows LNR and Ebnal Lodge Farm; this was in connection with a superseded route alignment. The proposed route no longer passes through these sites. The findings of these 2007 surveys are referred to within relevant sections of Chapter 3.0 to supplement the desktop records obtained in 2011.

GIS mapping and interpretation

2.10 Plans illustrating the distribution of sites of importance for birds and concentrations of sensitive bird groups were produced using GIS spatial mapping.

The resultant plans were used as a baseline to identify any potential impacts of the proposed overhead line on birds.

Bird habitat assessment

2.11 Experienced ornithologists Mike Walker MIEEM and Richard Castell undertook walkover surveys of selected sites of potential and recorded importance for birds located within 500 metres of the proposed overhead line route, making use of public rights of way (Survey Areas 1 to 3).

2.12 The walkover survey was restricted to sites with potential for waders, wildfowl, raptors or large waterbirds; survey areas are illustrated at Drawings G700.334 and G700.335). Survey areas were determined through examination of desktop results and with reference to the Phase 1 Habitat survey described in TEP report ref. 700.276 Ecological Assessment. The purpose of the survey was to confirm or gain further insight into the function that sites have for bird species potentially sensitive to overhead lines. The bird habitat assessment was completed between 14th and 28th October 2011.

Winter bird survey at Ebnal Hall and the Shropshire Union Canal

2.13 A follow up visit was undertaken on 24th November 2011 to the land around Ebnal Hall and the nearby Shropshire Union Canal. The purpose of the survey visit was to investigate whether these areas were used by flocks of waders and wildfowl during the winter months. Limited desktop records and an anecdotal report from a local resident indicated these areas may be of value to wintering birds.

2.14 The survey visit undertaken on 24th November 2011 failed to record any flocks of waders or wildlfowl; however this may have been due to a lack of rainfall in the autumn and early winter months. Further survey visits were programmed in for spring 2012.

2.15 Winter bird survey visits of the Ebnall Hall and Shropshire Union Canal were undertaken on 29th February and 20th March 2012. The survey approach entailed walking a line transect along a 1.4km section of the Shropshire Union Canal and a shorter transect approximately 200m to the east of Ebnal Hall. The line transect survey included a series of four 30 minute point count surveys during which the flightlines of waders, wildfowl, raptors and large waterbirds were recorded. The locations where point counts were undertaken are illustrated in Drawing G700.349.

Potential effects

2.16 The main effects associated with overhead lines affecting birds are:

Construction effects:

- Potential disturbance to breeding and wintering birds during support construction; and
- Habitat loss occurring during the construction period.

Operational effects

- Collision related impacts resulting from birds flying between feeding and roosting sites;
- Displacement by the visual presence of the overhead line leading to avoidance behaviour and subsequent loss of nesting, feeding and roosting areas; and
- Displacement caused by raptors using overhead line poles as observation perches to prey on other bird species.

3.0 ORNITHOLOGICAL ASSESSMENT RESULTS

Desktop Survey

Protected sites designated for birds

3.1 There are no Special Protection Areas (SPAs) or Ramsar sites located within 5km of the proposed overhead line route. There are no non-statutory local wildlife sites designated for birds within 2km of the proposed overhead line route.

Ruabon Mountains and Minera SSSI

3.2 The Ruabon Mountains and Minera SSSI is located 4km to the west of the north terminal end of the proposed overhead line route. A variety of upland birds breed on the Ruabon Mountains and Minera SSSI. These include red grouse, black grouse, curlew, short-eared owl, whinchat, stonechat, wheatear, ring ouzel, raven, chough, golden plover and buzzard. Upland raptors such as hen harrier, merlin and peregrine have also been known to hunt or nest on these mountains.

3.3 Ruabon mountain has been recognised as being a particularly important site in Wales for black grouse. Areas where heath grades into wet flushes or acid grassland are particularly important as hunting areas for birds of prey.

Ifton Meadows LNR

3.4 Ifton Meadows LNR was designated in 2005. It is located 500m northwest of St Martin's near Oswestry and comprises a restored former coal mining slag storage area. The LNR is just over 500m west of the proposed overhead line route. The LNR provides habitat for the ground nesting bird species skylark, meadow pipit, red-legged partridge and curlew.

Waders records

3.5 Drawings G700.328 and G700.329 illustrate 1km grid squares within 500 metres of the proposed overhead line route where wader birds have been recorded between 2000 and 2011. A concentration of wader records can be identified in two locations. The first location includes land to the East of Gobowen towards the south end of the proposed overhead line (SJ3134, SJ3234, SJ3133, SJ3232). The second location concerns land between Rhosllanerchrugog and Rhostyllen at the north terminal end of the proposed overhead line route (SJ2949, SJ2948, SJ3048, SJ3047).

3.6 The greatest number of wader species was recorded at Ebnal Lodge (SJ3134), immediately west of the proposed overhead line route, where moderate numbers of lapwing and curlew (between 40 and 100 individuals) and smaller numbers of common snipe have been recorded.

Curlew

3.7 Curlew records were obtained for 25 of the 1km grid squares within the desktop survey area. The locations of these grid squares are illustrated in Drawing G700.336.

3.8 17 of the grid squares for which there are curlew records are within the Ruabon Mountains and Minera SSSI or immediately east of this location. These are likely to be curlew breeding records since this species was only recorded between March and July in this part of the 5km survey area. This distinct curlew nesting population associated with the Ruabon Mountains and Minera SSSI is too distant from the proposed overhead line route to experience any collision mortality or displacement effects either during construction or in the long term.

3.9 Curlew have been recorded in eight other grid squares which are widely scattered across the 5km survey area although counts exceeding one curlew have only been recorded in three 1km grid squares. The records for each of these three locations are presented in Table 2.

Table 2: Records for curlew 2000-2011.*

Site name	Distance to OHL	Date/year	Count
Dudleston Heath – SJ3637	2.7km to east of OHL	April 2004	3
Northeast of Chirk – SJ3039	500m to west	June 2003	3
Ebnal Hall – SJ3134	600m to West	February 2008	41

*Excluding counts of less than 3 birds.

Lapwing

3.10 Lapwing records were obtained for 36 of the 1km grid squares within the desktop survey area. The locations of these grid squares are illustrated in Drawing G700.337.

3.11 Approximately 30% of the grid squares for which there are lapwing records, as well as over 50% of the overall lapwing records, are within open countryside located between Ruabon Mountains and Minera SSSI and Ruabon. Lapwing records were obtained for both the breeding and winter periods with counts often exceeding 10 individuals but rarely exceeding 100 individuals. This distinct lapwing nesting population associated with the Ruabon Mountains and Minera SSSI is too distant from the proposed overhead line route to experience any collision mortality or displacement effects either during construction or in the long term.

3.12 Lapwing desktop records for other locations excluding land to the West of Ruabon and TEP 2007 surveys are presented in Table 3.

Table 3: Records for lapwing 2000-2011.*

Site name	Distance to OHL	Date/year	Count
SE of Chirk – SJ3036	2km to west	April 2003	6
Dudleston Heath – SJ3637	2.7km to east	April 2003	10
Pentrebychan – SJ3047	On OHL route (N.B. North terminal end of proposed OHL located on east periphery of SJ3047).	December 2007 February 2010	2,000 80
Rhostyllen – SJ3048	500m to north	February 2007	3
Rhostyllen – SJ3148	500m to north	February 2006	90
Gatewen – SJ3151	3.3km to north	January 2008 February 2008	40 50
Erddig – SJ3348	2km to northeast	December 2009	15
Marchwiel – SJ3547	3.2 km to east	June 2009	6
Marchwiel – SJ3647	4km to east	February 2010 January 2009	240 3
Ebnal Hall – SJ3134	500m to west	March 2005 April 2006 February 2008 April 2008	4 12 4 13
Rhosygadfa – SJ3234	On OHL route	April 2007	8
Oswestry - SJ3029	1.8km to south	July 2006	3

*Excluding counts of less than 3 birds.

3.13 Ten lapwing were recorded during the early survey visit at Ebnal Lodge Farm, northeast of Gobowen, during the 2007 breeding bird survey. Breeding was confirmed within fields to the southeast of Fernhill Farm buildings approximately 200 metres northwest of the proposed overhead line route. It is estimated that there were 5 pairs of lapwing breeding within the Ebnal Lodge Farm area at the time of survey in 2007, all in the same group of fields.

Other wader species

3.14 A small number of records were obtained for common snipe within 1km grid squares within 500 metres of the proposed overhead line route including Ebnal Pool (SJ3134), Gobowen (SJ3133) and west of Hindford (SJ3232). The majority of records were of single birds observed only on one occasion. However common snipe are regularly recorded at most times of year at Erddig Pool, Wrexham (SJ3348), 2km to the east of the proposed overhead line route where up to 14 individuals have been counted. This species is also recorded in the Ruabon Mountains.

3.15 Three records for oystercatcher and one record for common greenshank were also obtained for the survey area although none of these records concerned sightings within 2km of the proposed overhead line route.

3.16 Nine records were obtained for small numbers of woodcock within the Ruabon Mountains area. Of the remaining three woodcock records only one record, for 3 individuals, was within 500 metres of the proposed overhead line route (SJ3342 – Bryn Pen-y-lan).

3.17 Eight records were obtained for common sandpiper, six records falling within the Ruabon Mountains. The other two records concern sightings of single birds at Brynygrog, Wrexham (SJ3448) and Erbistock (SJ3541).

Wildfowl records

3.18 Drawings G700.330 and G700.331 illustrate 1km grid squares within 500 metres of the proposed overhead line route where wildfowl birds have been recorded between 2000 and 2011.

3.19 A concentration of wildfowl records can be identified at Ebnal Lodge (SJ3134), immediately west of the proposed overhead line route, where moderate numbers of teal and wigeon and smaller numbers of mallard, Canada goose, moorhen and single records for individual barnacle goose and graylag goose have been recorded.

Teal

3.20 Teal records were obtained for three of the 1km grid squares within the 5km desktop survey area. Teal records are presented in Table 4.

Table 4: Records for teal 2000-2011.*

Site name	Distance to OHL	Date/year	Count
Ebnal Hall Nr Gobowen (SJ3134)	600m to west	January 2005 March 2005 January 2006 February 2006 April 2006	70 13 140 52 5

*Excluding counts of less than 3 birds.

Wigeon

3.21 Wigeon records were obtained for only one of the 1km grid squares within the 5km desktop survey area. Wigeon records are presented in Table 5.

Table 5: Records for wigeon 2000-2011.

Site name	Distance to OHL	Date/year	Count
Ebnal Hall Nr Gobowen (SJ3134)	600m to west	January 2005 March 2005 January 2006 February 2006 January 2008	55 33 29 40 52

*Excluding counts of less than 3 birds.

Shoveler

3.22 Shoveler records were obtained for two of the 1km grid squares within the 5km desktop survey area. Shoveler records are presented in Table 6.

Table 6: Records for shoveler 2000-2011.*

Site name	Distance to OHL	Date/year	Count
Ebnal Hall Nr Gobowen (SJ3134)	600m to west	January 2006 February 2006 January 2008	4 5 7

*Excluding counts of less than 3 birds.

Other wildfowl

3.23 Small numbers of records were obtained for mute swan, greylag goose, barnacle goose, goosander and mandarin duck. Mallard, coot and moorhen are common and widespread across much of the survey area.

3.24 Tufted duck have been recorded on several occasions in groups of up to 40 individuals at Stryt Las, near Rhosllanerchrugog (SJ2945) 2km to the west of the proposed overhead line route. Smaller groups of tufted duck have also occurred at Erddig (SJ3348).

Herons and egrets records

Grey heron

3.25 A locally important grey heron roost site with between 14 and 25 nests is located at Halston Hall, Whittington (SJ3431) 2.2km to the east of the proposed overhead line route. Small numbers of grey heron are also regularly recorded at Gatewen, Wrexham (SJ3151) nearly 4km to the north of the proposed overhead line route. Grey heron are also occasionally recorded at Erddig (SJ3248) 1.4km to the northeast of the proposed overhead line route.

3.26 Little egrets are occasionally recorded as single birds or in pairs during the winter months. This species has been recorded at Ebnal Hall near Gobowen (SJ3134, SJ3033 and SJ3032) 500 metres or less from the proposed overhead line route.

Raptors records

3.27 Drawings G700.332 and G700.333 illustrate 1km grid squares within 500 metres of the proposed overhead line route where raptor birds have been recorded between 2000 and 2011. A concentration of raptor records can be identified in three locations along the proposed overhead line route.

3.28 The first location includes land to the south of Gobowen at the south terminal end of the proposed overhead line (SJ2931, SJ3031, SJ3032). Three raptor species have been recorded in the vicinity of Old Oswestry Fort (SJ2931), within 200 metres of the south terminal end of the proposed overhead line route, including a record for a single barn owl and several records for kestrel and buzzard.

3.29 The second location concerns land between Rhosllanerchrugog and Rhostyllen to the north of the north terminal end of the proposed overhead line route (SJ2947, SJ2948, SJ2949, SJ3048). The overhead line actually terminates at SJ3047. Sparrowhawk records were particularly numerous for SJ2947. However the majority of suitable woodland habitat in this location is within Llywyneinion Wood 1.8km to the West of the north terminal end of the proposed overhead line route.

3.30 The third location concerns land to the east of Chirk (SJ3039, SJ3239, SJ3137) including land around St Martins (SJ3236). Three raptor species have been recorded in the vicinity of St Martin's (SJ3236), immediately West of the proposed overhead line route, including single records for buzzard, sparrowhawk and tawny owl. Three raptor species have also been recorded over land 2km to the north of St Martin's (SJ3239) including single records for barn owl and tawny owl and three records for little owl.

Barn owl

3.31 Specific barn owl records are presented in Table 7. The Shropshire Barn Owl Group 2010 annual report indicates that breeding barn owls are also monitored near Whittington, northeast of Oswestry.

Table 7: Records for barn owl 2000-2011.

Site name	Distance to OHL	Date/year	Count
Oswestry Hill Fort (SJ2931)	Within 500m	January 2011	1
Lodge Farm (SJ2839)	2.3km to west	January 2009	1
Rock Farm, St Martins (SJ3239)	300m to east	July 2005	1

Other Schedule 1 raptor species

3.32 Other schedule 1 raptor species recorded within 1km grid squares within 500 metres of the proposed overhead line route between 2000 and 2011 include hobby and red kite. The only hobby record concerns an individual bird observed 1km north of Rhosllanerchrugog (SJ2948), approximately 800 metres northwest of the north terminal end of the proposed overhead line route.

3.33 Red kite have been observed in one location within 500 metres of the proposed overhead line route since 2000, this being Pentre (SJ3141) 1.5km southeast of Ruabon in April 2010. Red kite have also been observed 1.5km to the east of the proposed overhead line route, near New Martin in February 2009 and 2km to the southeast near Whittington in July 2005.

Other raptor species

3.34 Desktop survey records indicate that buzzard have been recorded in twelve different 1km grid squares within 500 metres of the proposed overhead line route. Buzzard records were most frequent over land immediately south of Gobowen (SJ3032) where ten individual buzzard have been recorded since 2000.

3.35 Buzzard were recorded on both the early and late survey visits during the breeding bird survey at Ifton Meadows LNR in 2007. Kestrel was recorded during the early visit only.

Non-raptor Schedule 1 bird species

3.36 Drawings G700.324 and G700.325 illustrate 1km grid squares within 500 metres of the proposed overhead line route where all Schedule 1 birds have been recorded, including Schedule 1 raptor species as well as other non-raptor Schedule 1 bird species, between 2000 and 2011.

3.37 Non-raptor Schedule 1 bird species recorded since 2000 include brambling, fieldfare, hoopoe, kingfisher and redwing. Some of these species, including brambling, fieldfare, hoopoe and redwing do not breed in this part of the UK. The only non-raptor Schedule 1 bird species which is likely to breed within the desktop survey area is kingfisher. Kingfisher was recorded on one occasion in grid square SJ2937 south of Chirk and at least 1.7km southwest of the proposed overhead line.

Birds of Conservation Concern and UKBAP species records

3.38 Drawings G700.326 and G700.327 illustrate 1km grid squares within 500 metres of the proposed overhead line route where red-list Birds of Conservation Concern (BoCC) have been recorded between 2000 and 2011. Between zero and seven red-listed BoCC were recorded within 1km grid squares within 500 metres of the proposed overhead line route. The majority of grid squares had records for up to two UKBAP species or less.

3.39 Drawings G700.322 and G700.323 illustrate 1km grid squares within 500 metres of the proposed overhead line route where UKBAP bird species have been recorded between 2000 and 2011. Between zero and ten UKBAP bird species were recorded within 1km grid squares within 500 metres of the proposed overhead line route. The majority of grid squares had records for up to two UKBAP bird species or less.

3.40 Seven red-list BoCC (or ten UKBAP bird species) have been recorded on Lower Halton Farm (SJ3039) since 2000 including house sparrow, linnet, marsh tit, skylark, song thrush, starling and willow tit (red-list BoCC and UKBAP) and curlew, bullfinch and dunnock (UKBAP only).

3.41 Four red-list BoCC were recorded at Old Oswestry Fort (SJ2931), St Martin's (SJ3236) and immediately northwest of St Martin's (SJSJ3137).

3.42 The TEP breeding bird survey undertaken at Ifton Meadows LNR (SJ3137) in 2007 indicated that BoCC breeding either within the site or in close proximity to it included at least 4 pairs of song thrush and 5 pairs of both dunnock and skylark. Ifton Meadows LNR is located 520 metres from the proposed overhead line route.

3.43 The TEP breeding bird survey undertaken at Ebnal Lodge Farm in 2007 indicated that red-listed BoCC breeding either within the site or in close proximity to it included 2 pairs of song thrush, 2 pairs of both dunnock, 3 pairs of reed bunting, 3 pairs of yellowhammer. Ebnal Lodge Farm is located approximately 200 metres northwest of the proposed overhead line route. A colony of nesting house sparrows was found within farm buildings on the boundary of the site. The amber-list BoCC species house martin and swallow were also associated with the Fernhill Farm buildings.

3.44 RSPB England provided information on Farmland Bird Key Areas within Shropshire which focus arable assemblage species and grassland assemblage species.

3.45 Grassland assemblage species covered under this conservation initiative include curlew, lapwing, redshank, snipe and yellow wagtail. The majority of the land affected by the proposed overhead line route is classified as supporting 2 grassland assemblage species with remaining areas not supporting any grassland assemblage species.

3.46 Arable assemblage species covered under this conservation initiative include corn bunting, grey partridge, lapwing, turtle dove, tree sparrow and yellow wagtail. All of the land within the proposed overhead line route was classified as not supporting any arable assemblage species.

Bird Habitat Assessment 2011

3.47 The Bird Habitat Assessment was undertaken in October 2011 with a follow up survey to Survey Area 3 in November 2011. The locations of the three survey areas are illustrated in Drawings G700.334 and G700.335.

Survey Area 1 - Land to the north of Rhosllanerchrugog including land surrounding Legacy substation

3.48 This survey area is located directly north of Rhosllanerchrugog, and includes the urban area of Rhostyllen. This survey area was comprised of four 1km OS squares including SJ2948, SJ3047, SJ3048 and SJ3148 (Note that with the exception of SJ3047, these km squares are located over 500m from the proposed overhead line route. The bird habitat assessment findings for each of these squares are discussed in the following section.

3.49 Photographic reference sheet 1 (TEP ref.: 700.279) provides a number of photographic plates illustrating habitat features of interest for birds.

SJ2948

3.50 This area contains Legacy substation within the centre of the grid square, surrounded by thin linear strips of woodland, including tall poplar trees. The land surrounding the substation is dominated by pastoral fields (See Plate 1), and contains many pylons and overhead lines (See Plate 2). Within the far north of the site are located arable fields, one of which consisted of bare earth at the time of survey (see Plate 3). A small field of more rough grassland was also present within the south east corner. There are a number of managed hedgerows containing mature trees.

3.51 No wet flushes or areas of wet grassland were recorded within the site. The only waterbody recorded was located to the south of the substation and consisted of a small water treatment area. This area does not provide suitable habitat for waterfowl. The small area of rough grassland within the south west corner (See Plate 2) provides suitable foraging habitat for barn owl. This area lies approximately 1.4km north west of the proposed overhead line. None of the mature trees observed possessed high potential to support breeding barn owls.

3.52 The ploughed land within the north of the site provides some limited foraging potential for lapwing and snipe. Hobby has been recorded in this location on one occasion since 2000.

SJ3047

3.53 Much of this area is covered by semi-improved, sheep-grazed pasture of low diversity. The Glan-yr-afon Brook flows through the north of the area. This brook is lined by trees and woodland strips for much of its length.

3.54 Some of the areas of sheep-grazed pasture directly adjacent to the Glan-yr-afon Brook, just over 200m north of the proposed overhead line north terminal end, hold some foraging value for lapwing if the brook floods during the winter (this locaton attracted up to 2,000 lapwing in December 2007). The sward structure is not considered suitable to support breeding waders such as curlew or lapwing. A small area of rough grassland is also present in the corner of an arable field which could be used by barn owls for foraging, but is of limited value due to its size (See Plate 4).

3.55 Adjacent to the Pentre Bychan Crematorium in the north of SJ3047 is an area of rough grassland suitable for foraging barn owls (See Plate 5). Within the rough grassland area a building structure, possibly an old windmill, is also present which is suitable for breeding barn owls (see Plate 6). This building is approximately 900m north of the north terminal end of the proposed overhead line.

SJ3048

3.56 This area is characterised by arable fields (see Plate 7), with some pasture land in the centre. Within the south west of the site is Pentrebychan Crematorium. This area contains an area of rough grassland, scattered scrub and young planted trees (See Plate 6). A woodland block is present to the north of the crematorium and there is a woodland strip to the north of the site.

3.57 The only waterbody present was a small pond within the crematorium, which may support occasional mallard. No wet flushes or wet grassland were recorded within the site. The area of rough grassland adjacent to the crematorium provides potential foraging habitat for barn owl. This area is approximately 900m north west of the north terminal end of the proposed overhead line.

3.58 The woodland strip and the mature oak trees in some of the fields provide potential nesting locations for raptor species such as buzzard. This area is located approximately 1.5km north of the proposed overhead line.

SJ3148

3.59 The north western half of this area consists of the residential area of Rhostyllen, bordered by Wrexham Road to the south. To the south of Rhostyllen is an active colliery, and an area of grazed pasture bordered by the Glan-yr-afon Brook to the south (See Plate 8). The land to the south of the Glan-yr-afon Brook consists of cereal fields. The Brook has steep sided banks in places and is bordered by thin woodland strips.

3.60 No water bodies, wet flushes or wet grassland were present in this area. A small area of fairly low-intensity sheep grazed grassland adjacent to the brook provides

potential barn owl foraging habitat, as well as potential foraging habitat for curlew and lapwing (see Plate 9). This area is located approximately 1km north east of the proposed overhead line.

Survey Area 1 - Birds field records

3.61 A list of bird species recorded during the bird habitat assessment of Survey Area 1 is provided in Table 8. 19 bird species were recorded within Survey Area 1 including five UKBAP species (bullfinch, grey partridge, house sparrow, starling and yellowhammer).

Table 8: Bird species recorded within Survey Area 1 during Bird Habitat Assessment.

Species	Status	SJ2948	SJ3047	SJ3048	SJ3148
Blackbird		P	P	P	P
Blue tit		P	P	P	P
Bullfinch	UK A				P
Buzzard		P	P		
Carrion crow		P	P	P	P
Chaffinch					P
Grey partridge	UK R	P			
House sparrow	UK R		P		
Jackdaw					P
Jay		P			
Long-tailed tit		P			
Magpie				P	
Pheasant					P
Red-legged partridge			P		
Robin			P	P	P
Sparrowhawk					P
Starling	UK R	P			
Woodpigeon			P	P	P
Yellowhammer	UK R		P		
TOTAL		**8**	**9**	**6**	**10**

P = present.

Survey Area 2 - Land to the northeast of Chirk including parts of the River Dee, Flannog Wood, Prynela Wood and Moor Wood

3.62 This survey area is located 1km to the northeast of Chirk and approximately 750 metres east of the village of Halton. This survey area was comprised of four 1km OS squares including SJ3140, SJ3240, SJ3139 and SJ3239. The bird habitat assessment findings for each of these squares are discussed in the following section.

3.63 Photographic reference sheet 2 (TEP ref.: 700.280) provides a number of photographic plates illustrating habitat features of interest in the context of birds.

SJ3140

3.64 This area is characterized by wooded steep slopes at the south end of this area and pastoral fields to the north. The wooded slopes are mainly broadleaf with a hazel understorey. Some of the fields are used for arable production. There are a number of managed hedgerows containing mature trees.

3.65 The river valley in this section of the River Dee represents good potential breeding habitat for barn owls (Plate 10). There are many mature trees within this area, some of which have good potential to support barn owls (see Plate 11). Overall it is estimated that 60% of SJ3140 is suitable breeding habitat for barn owls.

3.66 Potential wader and wildfowl habitats such as wet grassland, waterbodies or wet flushes were not recorded within SJ3140.

SJ3240

3.67 The majority of this area is steep-sided woodland. Low lying pasture is present along the banks of the River Dee. The only flatter ground is located in the northwest and southeast parts of SJ3240.

3.68 Extensive wooded areas in this location provide ample opportunity for nesting buzzard and potentially red kite. The area is less suitable for barn owl although there is some suitable foraging habitat associated with Flannog Farm in the southeast corner of SJ3240 (see Plate 12). Some of the mature trees around Flannog Farm were found to contain cavities which could be used by nesting barn owls.

3.69 Potential wader and wildfowl habitats such as wet grassland, waterbodies or wet flushes were not recorded within SJ3240.

SJ3139

3.70 Steep-sided slopes of pasture characterized this area (see Plate 13) although woodland habitat was mostly confined to the northwest corner of the site. There is very little level ground except for the plateau of a slope on the west side of SJ3139. A tributary of the River Dee flows in from the south. There are sand banks in some locations along this stretch of the River Dee (see Plate 14). There are many mature trees within SJ3139.

3.71 The majority of the habitat in this location is assessed as being potential breeding habitat for barn owl, particularly within the southeast and northeast parts of SJ3139.

SJ3239

3.72 A steep-sided wooded valley slope is located on the west side of SJ3239 (See Plates 15 and 16). The remaining land is mostly pasture although some maize is

also being grown (see Plates 17 and 18). Mixed hedgerows containing some mature trees are present on field boundaries.

3.73 Approximately 50% of the land within SJ3239 provides reasonable breeding habitat for barn owls. A number of the mature trees associated with hedgerows were found to contain cavities which could be used by nesting barn owls. Barn owls were recorded in this location in July 2005.

Survey Area 2 - Birds field records

3.74 A list of bird species recorded during the bird habitat assessment of Survey Area 2 is provided in Table 9. A total of 22 bird species were recorded within Survey Area 1 including three Schedule 1 bird species (fieldfare, redwing and kingfisher) and three UKBAP species (dunnock, house sparrow, skylark). The Schedule 1 bird species redwing and fieldfare will only overwinter in this part of Wales since they do not nest in this part of the UK.

Table 9: Bird species recorded within Survey Area 2 during Bird Habitat Assessment.

Species	**Status**	**SJ3140**	**SJ3240**	**SJ3139**	**SJ3239**
Blackbird			P	P	P
Blue tit		P	P	P	P
Buzzard		P			
Carrion crow		P		P	
Chaffinch			P	P	P
Dipper	LBAP			P	
Dunnock	UK R		P	P	
Fieldfare	S1 R	P	P		
Greater-spotted woodpecker					P
Great tit		P	P	P	P
House sparrow	UK R	P	P		
Jackdaw		P	P	P	
Jay		P	P		
Kingfisher	S1 A			P	
Long-tailed tit				P	
Mistle thrush	A	P	P	P	P
Pheasant		P	P	P	P
Redwing	S1 R	P	P		
Robin		P	P	P	P
Skylark	UK R			P	
Woodpigeon			P	P	P
Wren		P	P	P	P
TOTAL		**13**	**15**	**16**	**10**

P = present.

Survey Area 3 - Land between St Martin's and Gobowen

3.75 This survey area includes all areas located between Rhewl village just northeast of Gobowen (south end) and St Martin's (north end). Survey Area 3 also includes land up to 1km southeast of St Martin's. This survey area was comprised of five 1km OS squares including SJ3134, SJ3234, SJ3235, SJ3236 and SJ3336 (Note that all of these km squares are located within 500m of the proposed overhead line route, with the exception of km square SJ3134, which is 600m to the west of the proposed overhead line route). The bird habitat assessment findings for each of these squares are discussed in the following section.

3.76 Photographic reference sheet 3 (TEP ref.: 700.281) provides a number of photographic plates illustrating habitat features of interest in the context of birds.

SJ3134

3.77 This area is characterized by undulating pasture land with some areas arable in the southwest corner of SJ3134. There is a large wet flush and area of marshy grassland in the northeast corner of SJ3134 to the south of a dwelling known as Gornal, approximately 700m to the west of the proposed overhead line route (Note that this area was subject to a winter bird survey in 2011-2012, SJ318346 – also see Plate 19). A smaller area of wet flush and alder carr is located in the southwest quarter of SJ3134 to the west of Ebnal Lodge, approximately 1.4km to the west of the proposed overhead line route (SJ312344 - see Plate 20).

3.78 A locally based birdwatcher advised that both curlew and lapwing breed in the locality. The large wet flush to the south of Gornal attracts flocks of geese and wildfowl including shoveler among others. Common snipe and little egret also occur in this area as well as barn owl, little owl and tawny owl. The large wet flush is located 600 metres to the west of the proposed overhead line route. Although no wildfowl were recorded on the wet flush during the survey it is considered likely that the wet flush will attract wildfowl later into the winter period when water levels are likely to rise. Desktop survey records confirm up to 41 curlew, similar numbers of wigeon and teal and smaller numbers of other wildfowl species.

3.79 A follow up survey visit was undertaken to the large wet flush within SJ3134 on 24th November 2011. Although no waders or wildfowl were recorded during the survey visit, a single kestrel was recorded.

3.80 The arable land within SJ3134 is assessed as being good breeding habitat for lapwing. The entirety of SJ3134 is assessed as being suitable breeding habitat for barn owl. Parts of SJ3134 have good potential to support nesting waders and wildfowl.

SJ3234

3.81 This area is comprised of mostly fields of pasture although there four locations where barns and other farm buildings are present on the west half of SJ3234 including Top House Farm and Bronygadfa Farm. A view of typical habitat within SJ3234 looking west from New Marton Bridge is illustrated in Plate 21.

3.82 There is a small area of wet grassland in the southwest and southeast quarters of SJ3234 which could provide potential nesting habitat for waders. There are additional areas of wet pasture to the east and southeast of SJ3234 which provide suitable nesting habitat for waders.

3.83 There is a stretch of canal and four ponds which provide potential habitat for wildfowl.

3.84 The entire area within SJ3234 is assessed as being suitable nesting habitat for barn owls.

SJ3235

3.85 An area of undulating pastoral land with well developed hedgerows containing mature trees. There are three large farm complexes with outbuildings and barns including Wigginton Farm, Pen-y-bryn and Glan-y-wern. Some of the fields are grazed by horses or cattle. There are some areas of arable where maize is grown. Some of the large mature trees in this area contain cavities suitable for nesting barn owls (see Plate 22 – illustrates suitable nest site 500 metres to west of proposed overhead line route).

3.86 A canal separates the southwest corner which is rush-dominated wet grassland with cattle grazing (see Plate 23). A member of the public indicated that curlew, lapwing and barn owl are present in this part of SJ3235 during the breeding season. Desktop survey findings do not support this anecdotal information although habitats recorded on land immediately southwest of the canal during the 2011 bird habitat assessment are suitable for feeding waders.

3.87 It is assessed that up to 20% of SJ3235 provides excellent nesting habitat for curlew and lapwing and good foraging habitat for barn owl. The majority of SJ3235 provides good foraging habitat for barn owl.

3.88 Approximately 100 metres of the proposed overhead line route crosses the rush-dominated pasture.

3.89 The land to the west of SJ3235, which is SJ3135, also has rush-dominated pasture along the canal.

SJ3236

3.90 Approximately 40% of SJ3236 is urban/suburban settlement associated with St Martin's village. The majority of the remaining 60% of this area is pasture with

species rich hedgerows containing mature trees, mostly oak and ash. There is an orchard associated with Crosslanes Farm to the north.

3.91 An outbuilding, 1km to the west of the proposed overhead line route, on the north end of St Martins, was identified as having the potential to support nesting barn owl (see Plate 24). However if barn owls nest in this location they are more likely to forage on land to the west, away from the proposed overhead line route.

3.92 Some of the mature trees in this area provide nesting opportunities for tree hole nesting bird species such as barn owl, little owl, stock dove and jackdaw. One particular group of mature trees with nesting potential were located in the southeast quarter of SJ3236 near Crosslanes Farm, 200 metres to the west of the proposed overhead line route (see Plate 25).

3.93 Pasture fields within this area are illustrated in Plates 26 and 27.

SJ3336

3.94 An area of undulating pasture with some small paddocks and extensive species rich hedgerows with some mature trees. Nine ponds and a large wet flush are located at the centre of SJ33336 just under 200 metres to the east of the proposed overhead line route. A small woodland copse is to the east of the wet flush.

3.95 The wet flush at the centre of SJ3336 may attract waders and wildfowl. This area is approximately one hectare in size. Only mallard was recorded on this area during the survey but this feature is likely to attract other waders and wildfowl. The nine small ponds may also attract some wildfowl.

3.96 Another area of potential curlew nesting habitat is located in the northeast corner of SJ3336, approximately 250 metres east of the proposed overhead line route.

3.97 It is assessed that 90% of SJ3336 provides suitable breeding habitat for barn owls with several mature trees providing potential nest sites.

Survey Area 3 - Birds field records

3.98 A list of bird species recorded during the bird habitat assessment of Survey Area 3 is provided in Table 10. A total of 33 bird species were recorded within Survey Area 3 including two Schedule 1 bird species (fieldfare and redwing) and three UKBAP/red-listed BoCC species (dunnock, house sparrow, skylark). The Schedule 1 bird species redwing and fieldfare will only overwinter in this part of Wales since they do not nest in this part of the UK. Four amber-listed BoCC were recorded (mallard, meadow pipit, mistle thrush and woodcock).

Table 10: Bird species recorded within Survey Area 3 during Bird Habitat Assessment.

Species	Status	SJ3134	SJ3234	SJ3235	SJ3236	SJ3336
Blackbird		P	P	P	P	P
Blue tit		P	P	P	P	P
Bullfinch		P		P		
Buzzard		P		P		
Carrion crow		P	P	P	P	P
Chaffinch		P	P	P	P	P
Collared dove					P	P
Dunnock	UK R	P	P	P	P	P
Fieldfare	S1 R	P	P	P		P
Goldcrest		P				
Goldfinch				P	P	P
Greater-spotted woodpecker		P	P			
Great tit		P	P	P	P	P
House sparrow	UK R		P	P	P	P
Jackdaw		P	P	P	P	P
Jay					P	
Long-tailed tit		P				
Magpie		P	P	P	P	P
Mallard	A	P				P
Meadow pipit	A		P			
Mistle thrush	A		P		P	
Moorhen						P
Nuthatch		P	P		P	
Pheasant		P	P			P
Pied wagtail				P		
Redwing	S1 R	P	P	P	P	P
Robin		P	P		P	P
Skylark	UK R			P	P	
Starling			P	P		
Woodcock	A	P				
Woodpigeon		P	P		P	P
Wren		P			P	P
Yellowhammer		P	P			
TOTAL		**23**	**20**	**17**	**19**	**10**

P = present.

Winter bird survey at Ebnal Hall and the Shropshire Union Canal 2011-2012

3.99 The results of the winter bird survey are illustrated in Drawing G700.349.

3.100 No waders or wildfowl were recorded within the survey area during the first initial reconnaissance survey visit undertaken on 24th November 2011. A single kestrel was observed flying close to the Shropshire Union Canal.

3.101 During the second visit on 29th February 2012 two buzzards were recorded flying at least 600m to the west of the proposed overhead line route. A pair of mallard was observed flying over fields adjacent to the Shropshire Union Canal immediately west of the proposed overhead line route. The only other wildfowl recorded was a group of four teal recorded in a small field just over 300m to the west of the proposed overhead line route. A single curlew was recorded in a field immediately south of the Shropshire Union Canal, just over 100m from the proposed overhead line route. Other Birds of Conservation Concern recorded during the survey visit included song thrush and mistle thrush.

3.102 Three buzzards were recorded during the third survey visit on 20th march 2012 including one bird flying 350m to the east and another buzzard 350m to the west of the proposed overhead line route. As in the second survey visit small numbers of mallard were recorded in the vicinity of the Shropshire Union Canal although a teal was also recording calling from the wetland to the south of Gornal. There was good evidence of several lapwing two lapwing pairs establishing nesting territories in fields around the Canal immediately west of the proposed overhead line route. Another two pairs of lapwing were recorded in the vicinity of the wetland south of Gornal. Up to three curlew were recorded just east of New Marton Bridge approximately 300m east of the proposed overhead line route. A single grey heron was recorded 500m to the west of the proposed overhead line route. Other Birds of Conservation Concern recorded during the survey visit included redwing, fieldfare, reed bunting, song thrush and mistle thrush.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Bird Assessment

4.1 This assessment has used a detailed literature review undertaken by TEP into the potential effects of overhead lines on birds, which is available upon request. The review allowed some important conclusions to be drawn to help understand how overhead lines can affect birds. These conclusions are presented below to provide context for the preliminary assessment of potential effects of the proposed Legacy-Oswestry trident single wood pole 132kV overhead line upon birds.

4.2 Due to the limited range of studies undertaken in UK and Europe into the effects of overhead lines on birds, it has been necessary to consider studies concerning wind

turbines and other aerial structures as well as overhead line studies. All aerial structures have the potential to cause collision mortality and displacement effects on birds. The TEP literature review came to the following conclusions:

- The potential effects of overhead lines on birds are principally collision mortality and displacement from wintering, breeding or feeding areas.
- A variety of factors can influence the potential for a bird species to be affected by collision mortality, including the overhead line specification, the weather and visibility, ground topography, the orientation of the line relative to bird flight behaviour and, perhaps most important, the location of the line.
- The majority of birds sensitive to overhead line collision have a collision avoidance rate of at least 95%. However there is an increasing body of evidence that collision avoidance rates are often 99% or greater in some cases.
- In some instances it is advisable to avoid having overhead lines within wetlands, river crossings and other areas where large numbers of vulnerable bird population are present.
- Certain types of flight diverters, such as PVC spirals, have been proven to effectively reduce overhead line collisions on a number of sites.
- Several studies have identified displacement distances of between 200 and 450 metres at wind farms for geese. Some waders, notably golden plover and lapwing, have been displaced distances of between 50 and 150 metres by windfarms.
- A review of data from several studies concluded that geese are most prone to displacement caused by wind turbines, followed by waders and then raptors.
- Avoidance distances for birds affected by wind turbines tend to be greater during the non-breeding period compared to the breeding period.

Protected sites

Ruabon Mountains and Minera SSSI

4.3 Ruabon Mountains and Minera SSSI is partly designated for a variety of breeding birds including birds which can be sensitive to collision with overhead lines, such as red grouse, black grouse, curlew, golden plover and buzzard. However the SSSI is 4km from the nearest part of the proposed overhead line. It is very unlikely that breeding birds associated with the SSSI would forage around the proposed overhead line.

Ifton Meadows LNR

4.4 Ifton Meadows LNR is located 500 metres to the West of the proposed overhead line. Over the course of the breeding bird survey in 2007 a total of 40 bird species were recorded at Ifton Meadows LNR. These include 4 Red-listed species, 5 UK Biodiversity Action Plan (UKBAP) Priority species (N.B. including the four red list species and one amber list species), and 6 Amber-listed species. Three of these species of Birds of Conservation Concern (BoCC) have been identified as

probable breeders on the site, i.e. birds which are breeding on site but no actual nests were found (dunnock, skylark and song thrush).

4.5 The site was assessed as being of local importance for birds on account of the diversity of bird species present. The site is particularly important for its breeding populations of skylark and song thrushes. Three of the species recorded on site are listed on the Shropshire Local Biodiversity Action Plan. These are house sparrow, skylark and song thrush.

4.6 It is unlikely that the construction of the proposed overhead line will significantly affect birds associated with Ifton Meadows LNR.

Waders

4.7 Desktop survey and field survey findings indicate that there are relatively few locations within the desktop survey area that are used by wintering waders although there are better opportunities for nesting waders, particularly lapwing, curlew and common snipe.

4.8 The site with the best potential to attract wintering waders is Ebnal Hall (SJ3134) 600 metres to the west of the proposed overhead line; however the winter bird survey undertaken at Ebnal Hall in winter 2011-2012 only recorded small numbers of lapwing. A site at Pentrebychan (SJ3047) at the north terminal end of the proposed overhead line has some potential for waders if Glan-yr-afon Brook floods; the site is generally assessed as of low value for waders and is 200-300m from the proposed route. A third site is located near Rhostyllen (SJ3048) 500 metres to the north of the proposed overhead line. Other potential wintering sites are located between 3km and 5km away at other sites near Gatewen, Erddig and Marchwiel.

4.9 There is limited potential for occasional wader collision mortality to occur with conductors on the proposed route during the winter and breeding periods, principally affecting lapwing but also to a lesser extent curlew. However, the low height of the proposed 132kV overhead lines (16 to 17 metres above ground level) indicates that only birds wintering or breeding close to the line (250 metres or nearer) are likely to fly low enough to be affected by collision mortality. This indicates that the wader wintering sites associated with Ebnal Hall and Rhostyllen, as well as those further afield, will not be affected as a result of collision mortality. There may be limited potential collision mortality affecting wintering waders associated with Pentrebychan at the north terminal end of the proposed overhead line; however, desktop survey information indicates that this site is not used every winter since only two records of wader flocks have been recorded in this location in the last ten years.

4.10 Collision mortality is more likely to affect waders, lapwing and curlew, nesting within 250 metres of the proposed overhead line route. The 2011 bird habitat assessment has identified potential wader nesting habitat within several 1km grid

squares northeast of Gobowen including SJ3234, SJ3235 and SJ3336. Evidence of wader nesting recorded in March 2012 confirms that SJ3234 and SJ3235 are used by small numbers of breeding lapwing (two pairs of lapwing in SJ3234) and curlew (one pair in SJ3235).

4.11 Breeding lapwing usually feed within 200-300m of their nest (*Christensen et al. 1996, in: European Commission Technical Report-2009-033).* One pair of breeding lapwing was observed within 300m of the proposed overhead line in SJ3234. However the potential for collision mortality to occur is assessed as being low.

4.12 Research studies indicate that wind farm displacement distances of between 50 and 150 metres can affect lapwing and golden plover during the non-breeding season (Hokter *et al.*, 2005) and displacement distances during the wintering will be less significant. It is reasonable to assume from this that, at worst, displacement effects of the proposed overhead line will only affect waders nesting or wintering within 150 metres of the proposed overhead line route. Construction of the proposed overhead line may result in a small loss of breeding habitat within land northeast of Gobowen identified as having the potential to support nesting waders.

Wildfowl

4.13 Desktop survey and field survey findings indicate that there are very few locations within the desktop survey area which are used by wintering wildfowl. The only site that consistently attracts moderate numbers (between 40 and 100 individuals) of teal, wigeon and shoveler is Ebnal Hall near Gobowen (SJ3134) 600 metres to the West of the proposed overhead line.

4.14 The number of wildfowl (teal and mallard only) recorded in this area during the 2011-2012 winter bird survey was considerably lower than counts obtained from desktop records. However taking into account the location of the Ebnal Hall site relative to the proposed overhead line route and wildfowl counts recorded since 2000, it is assessed that the collision mortality and displacement effects on wintering wildfowl will be very low.

4.15 The tufted duck groups identified from desktop records at Stryt Las, near Rhosllanerchrugog, is 2km west of the proposed overhead line, too far for tufted duck to be affected.

4.16 The 2011 bird habitat assessment has identified potential wildfowl nesting habitat within several 1km grid squares northeast of Gobowen including SJ3234, SJ3235 and SJ3336. However common and widespread species such as mallard and Canada goose are associated with these locations based on desktop record information. Shoveler and wigeon do not nest in the locality and teal nesting is likely to be at a very low density.

Herons and egrets

4.17 The grey heron nest site at Halston Hall is located 2.2km to the east of the proposed overhead line, too far from the site too be affected by displacement effects. It is possible that some of the herons associated with the nest site will forage within the vicinity of the proposed overhead line route if suitable foraging habitat is present. Several 1km grid squares northeast of Gobowen, including SJ3234, SJ3235 and SJ3336, contain ponds as well as the Shropshire Union Canal where grey heron could feed. There is therefore some low potential for collision mortality to affect foraging grey heron.

4.18 Little egrets are not a common species within the survey area therefore any potential collision or displacement effects on this species are likely to be very low.

Raptors

4.19 Bird habitat assessment findings indicate that the availability of breeding habitat for barn owl is fairly widespread although desktop survey records indicate that barn owl are not very common within the survey area. The only confirmed barn owl sites within 1km of the proposed overhead line route are located at Oswestry Hill Fort and Rock Farm, St Martin's. However mature trees with cavities for barn owl nesting and rough grassland suitable for barn owl foraging was often recorded within Survey Area 2 northeast of Chirk and Survey Area 3 Land between St Martin's and Gobowen during the bird habitat assessment.

4.20 The barn owl is typically a low flying species which could be vulnerable to collision with a 132kV overhead line. Barn owls show high fidelity to their breeding sites and maintain similar home ranges from year to year and through successive generations (Shawyer, 2011). Data collected by Shropshire Barn Owl Group indicates that barn owls are more sensitive to road collisions during October to March when barn owl juveniles disperse from their natal sites. Barn owls tend to be more sedentary during the breeding season foraging within 1km of their nest sites. Therefore one can surmise that barn owls nesting in the vicinity of the proposed overhead line will be more vulnerable to overhead line collision during the winter period when juveniles are dispersing.

4.21 It is considered that the potential for barn owl to be displaced from nest sites is very low since the proposed route does not come within close proximity of buildings and avoids large mature trees where possible. Nevertheless displacement of nesting barn owl could potentially occur during the construction period as some mature trees will be removed.

4.22 There is only one record for hobby within the desktop survey area in a location where there is no risk of displacement of the nest site and a very low risk of collision mortality.

4.23 Red kite has not been recorded within 500 metres of the proposed overhead line route since 2000. The nearest location was near Pentre (SJ3141) in April 2010, at least 600 metres to the west of the proposed overhead line route. This possible red kite nesting site is sufficiently distant from the proposed overhead line route for it not to be sensitive to displacement during the construction period.

4.24 Desktop and field surveys have confirmed that buzzard is widespread within the desktop survey area and there are ample opportunities for buzzard to nest within 500 metres of the proposed overhead line. Therefore there is moderate potential for nesting buzzard displacement during the construction period and a long term low risk of buzzard collision mortality. There is also a long term low potential for kestrel and sparrowhawk collision mortality to occur since these species appear to be fairly common and widespread within the survey area.

Schedule 1 bird species

4.25 The only non-raptor Schedule 1 bird species recorded during the desktop survey was kingfisher, which was recorded at least 1.7km away from the proposed overhead line. Kingfisher was also recorded during the 2011 bird habitat assessment in SJ3139 within 500 metres of the proposed overhead line. There are no predicted long term collision mortality or displacement effects on kingfisher. No displacement effects are predicted during the construction period for kingfisher.

Birds of Conservation Concern and UKBAP species records

4.26 Between zero and seven red-listed Birds of Conservation Concern (BoCC) were recorded within 1km grid squares within 500 metres of the proposed overhead line route. The majority of grid squares had records for up to two UKBAP species or less.

4.27 Between zero and ten UKBAP bird species were recorded within 1km grid squares located within 500 metres of the proposed overhead line route. The majority of grid squares had records for up to two UKBAP bird species.

4.28 Seven red-list BoCC (or ten UKBAP bird species) have been recorded on Lower Halton Farm, within 500 metres of the proposed overhead line (SJ3039) since 2000, including a variety of passerine species and curlew. Four red-list BoCC have been recorded at Old Oswestry Fort (SJ2931), St Martin's (SJ3236) and immediately northwest of St Martin's (SJSJ3137).

4.29 Seven BoCC were recorded in the vicinity of the Shropshire Union Canal (SJ3234 and SJ3235) during the winter bird survey 2011-2012 including redwing, fieldfare, reed bunting, skylark, dunnock, song thrush and mistle thrush.

4.30 Passerine birds are considered to be less vulnerable to collision mortality with overhead lines and long term displacement of nesting passerines is also very

unlikely. However displacement of red-list/UKBAP passerine birds could occur during the construction period.

Recommendations

Further surveys for nest site protection during construction

4.31 It is recommended that raptor nest surveys are undertaken in the spring before construction commences, in order to ascertain the locations of Schedule 1 raptor species nest sites potentially located within 250 metres of either the proposed overhead line route or associated access roads. This survey should be undertaken within the period April to July to overlap with Schedule 1 raptor species known to be present in the locality, i.e. barn owl and red kite. Survey findings would inform protective measures to avoid the disturbance of Schedule 1 raptor species barn owl and red kite during the construction period.

4.32 Where appropriate, pre-construction nesting bird surveys should be undertaken at proposed wood pole locations and along access tracks prior to construction to ensure that farmland bird nests are not damaged during construction activities.

4.33 Pre-construction nesting bird surveys are not required for construction activities undertaken outside of the breeding bird season. The breeding bird season may loosely be considered to be mid-March to mid-September although the nesting season for different bird species can vary significantly.

5.0 REFERENCES

European Commission Technical Report 2009-033 (2009). *European Union Management Plan 2009-2011. Lapwing Vanellus vanellus.*

Shawyer, C.R.; *Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting,* IEEM, Winchester.

Shropshire Barn Owl Group 2010 annual report.

APPENDIX A
Desktop Survey Responses

Species	Grid ref	Date	Abund.	RedList	Sch1	UKBAP	LBAP	Waders	Wildfowl	Raptors	Herons & Egrets	Source
Barn Owl	SJ2931	15/01/2011	1		Yes		Yes			Y		Shropshire BRG
Barn Owl	SJ3239	14/07/2005	1		Yes		Yes			Y		Shropshire BRG
Barnacle Goose	SJ3134	27/05/2005	1						Y			Shropshire BRG
Buzzard	SJ3039	2004	1							Y		RSPB
Buzzard	SJ3039	2004	2							Y		RSPB
Buzzard	SJ3039	2003	1							Y		RSPB
Buzzard	SJ2947	18/01/2009	1							Y		ClwydBRG
Buzzard	SJ2947	29/08/2010	1							Y		ClwydBRG
Buzzard	SJ2947	05/09/2010	1							Y		ClwydBRG
Buzzard	SJ2948	04/07/2009	1							Y		ClwydBRG
Buzzard	SJ3146	14/09/2007	1							Y		ClwydBRG
Buzzard	SJ3146	28/05/2006	1							Y		ClwydBRG
Buzzard	SJ3147	27/06/2009	1							Y		ClwydBRG
Buzzard	SJ3146	14/09/2007	1							Y		COFNOD
Buzzard	SJ3048	16/01/2009	1							Y		COFNOD
Buzzard	SJ2949	22/04/2009	1							Y		COFNOD
Buzzard	SJ2949	11/06/2009	1							Y		COFNOD
Buzzard	SJ2931	11/05/2005	2							Y		Shropshire BRG
Buzzard	SJ3031	22/06/2006	1							Y		Shropshire BRG
Buzzard	SJ3031	20/05/2005	3							Y		Shropshire BRG
Buzzard	SJ3236	30/05/2005	1							Y		Shropshire BRG
Buzzard	SJ3031	14/08/2008	1							Y		Shropshire BRG
Buzzard	SJ3032	27/08/2010	10							Y		Shropshire BRG
Buzzard	SJ3137	03/03/2007	3							Y		Shropshire BRG
Buzzard	SJ3137	09/07/2006	3							Y		Shropshire BRG
Buzzard	SJ3137	11/11/2007	0							Y		Shropshire BRG
Buzzard	SJ3137	02/04/2006	1							Y		Shropshire BRG
Kestrel	SJ3048	14/02/2009	1							Y		COFNOD
Kestrel	SJ2931	10/05/2005	2							Y		Shropshire BRG
Kestrel	SJ2931	11/05/2005	1							Y		Shropshire BRG
Common Moorhen	SJ3134	15/02/2006	3						Y			Shropshire BRG
Common Moorhen	SJ3134	26/02/2008	1						Y			Shropshire BRG
Common Snipe	SJ3133	28/04/2011	1					Y				Shropshire BRG
Common Snipe	SJ3134	26/02/2008	3					Y				Shropshire BRG
Curlew	SJ3039	2003	3			Yes	Yes	Y				RSPB
Curlew	SJ266486	29/05/2011	2			Yes	Yes	Y				RSPB Wales
Curlew	SJ268489	29/05/2011	1			Yes	Yes	Y				RSPB Wales

Species	Grid ref	Date	Abund.	RedList	Sch1	UKBAP	LBAP	Waders	Wildfowl	Raptors	Herons & Egrets	Source
Curlew	SJ257453	29/05/2011	2			Yes	Yes	Y				RSPB Wales
Curlew	SJ262472	05/06/2011	2			Yes	Yes	Y				RSPB Wales
Curlew	SJ265477	05/06/2011	2			Yes	Yes	Y				RSPB Wales
Curlew	SJ268488	29/05/2011	1			Yes	Yes	Y				RSPB Wales
Curlew	SJ266487	15/06/2011	1			Yes	Yes	Y				RSPB Wales
Curlew	SJ253508	01/04/2009	1			Yes	Yes	Y				RSPB Wales
Curlew	SJ3236	30/05/2005	1			Yes	Yes	Y				Shropshire BRG
Curlew	SJ3134	26/02/2008	41			Yes	Yes	Y				Shropshire BRG
Eurasian Hobby	SJ2948	09/08/2010	1		Yes					Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	13/01/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	02/03/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	23/03/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	27/04/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	01/06/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	13/07/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	24/08/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	14/09/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	05/10/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	26/10/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	09/11/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	23/11/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	10/08/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	07/09/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	02/11/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	04/05/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	16/03/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	30/03/2008	2							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	03/02/2008	2							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	20/01/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	06/01/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	27/01/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	10/02/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	22/02/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	05/07/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	23/08/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	27/09/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	04/10/2009	1							Y		ClwydBRG

Species	Grid ref	Date	Abund.	RedList	Sch1	UKBAP	LBAP	Waders	Wildfowl	Raptors	Herons & Egrets	Source
Eurasian Sparrowhawk	SJ2947	11/10/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	18/10/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	25/10/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	01/11/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	10/01/2010	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	17/01/2010	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	21/03/2010	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	04/04/2010	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	11/04/2010	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	18/04/2010	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	25/04/2010	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	28/12/2008	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	04/01/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	11/01/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	18/01/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	01/02/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2947	08/02/2009	1							Y		ClwydBRG
Eurasian Sparrowhawk	SJ2949	22/04/2009	1							Y		COFNOD
Eurasian Sparrowhawk	SJ3137	02/04/2006	1							Y		Shropshire BRG
Eurasian Sparrowhawk	SJ3236	28/06/2008	1							Y		Shropshire BRG
Eurasian Teal	SJ3134	03/01/2006	140						Y			Shropshire BRG
Eurasian Teal	SJ3134	14/04/2006	5						Y			Shropshire BRG
Eurasian Teal	SJ3134	15/02/2006	52						Y			Shropshire BRG
Eurasian Teal	SJ3134	24/03/2005	13						Y			Shropshire BRG
Eurasian Teal	SJ3134	28/01/2005	70						Y			Shropshire BRG
Eurasian Teal	SJ3134	26/02/2008	8						Y			Shropshire BRG
Eurasian Wigeon	SJ3134	03/01/2006	29						Y			Shropshire BRG
Eurasian Wigeon	SJ3134	15/02/2006	40						Y			Shropshire BRG
Eurasian Wigeon	SJ3134	24/03/2005	33						Y			Shropshire BRG
Eurasian Wigeon	SJ3134	28/01/2005	55						Y			Shropshire BRG
Eurasian Wigeon	SJ3134	20/01/2008	52						Y			Shropshire BRG
Goosander	SJ2937	04/05/2010	4						Y			Shropshire BRG
Goosander	SJ3137	28/03/2005	2						Y			Shropshire BRG
Greater Canada Goose	SJ3134	26/02/2008	40						Y			Shropshire BRG
Greylag Goose	SJ3134	26/02/2008	1						Y			Shropshire BRG
Lapwing	SJ3232	2002	1	Yes		Yes	Yes	Y				RSPB
Lapwing	SJ3232	2002	1	Yes		Yes	Yes	Y				RSPB

Species	Grid ref	Date	Abund.	RedList	Sch1	UKBAP	LBAP	Waders	Wildfowl	Raptors	Herons & Egrets	Source
Lapwing	SJ3232	2002	1	Yes		Yes	Yes	Y				RSPB
Lapwing	SJ3232	2002	1	Yes		Yes	Yes	Y				RSPB
Lapwing	SJ3232	2002	2	Yes		Yes	Yes	Y				RSPB
Lapwing	SJ3232	2002	1	Yes		Yes	Yes	Y				RSPB
Lapwing	SJ3232	2002	1	Yes		Yes	Yes	Y				RSPB
Lapwing	SJ3232	2002	1	Yes		Yes	Yes	Y				RSPB
Lapwing	SJ251446	29/05/2011	2	Yes		Yes	Yes	Y				RSPB Wales
Little Egret	SJ3033	27/01/2011	1								Y	Shropshire BRG
Little Egret	SJ3134	27/05/2005	1								Y	Shropshire BRG
Little Egret	SJ3133	13/12/2010	2								Y	Shropshire BRG
Little Egret	SJ3332	25/02/2010	1								Y	Shropshire BRG
Little Egret	SJ3032	23/02/2010	0								Y	Shropshire BRG
Little Owl	SJ3239	13/07/2005	3							Y		Shropshire BRG
Mallard	SJ3031	20/05/2005	10						Y			Shropshire BRG
Mallard	SJ3134	15/02/2006	6						Y			Shropshire BRG
Mallard	SJ3231	01/01/2007	4						Y			Shropshire BRG
Mallard	SJ3134	26/02/2008	12						Y			Shropshire BRG
Mute Swan	SJ3031	20/05/2005	6						Y			Shropshire BRG
Mute Swan	SJ3431	16/03/2007	18						Y			Shropshire BRG
Lapwing	SJ2948	28/04/2005	1	Yes		Yes	Yes	Y				ClwydBRG
Lapwing	SJ2948	28/04/2005	1	Yes		Yes	Yes	Y				ClwydBRG
Lapwing	SJ3047	23/02/2010	80	Yes		Yes	Yes	Y				ClwydBRG
Lapwing	SJ3047	29/12/2007	2000	Yes		Yes	Yes	Y				ClwydBRG
Lapwing	SJ3246	12/06/2005	2	Yes		Yes	Yes	Y				ClwydBRG
Lapwing	SJ3048	08/02/2007	3	Yes		Yes	Yes	Y				COFNOD
Lapwing	SJ3048	08/02/2007	3	Yes		Yes	Yes	Y				COFNOD
Lapwing	SJ2949	22/04/2009	2	Yes		Yes	Yes	Y				COFNOD
Lapwing	SJ3134	14/04/2006	12	Yes		Yes	Yes	Y				Shropshire BRG
Lapwing	SJ3134	15/02/2006	2	Yes		Yes	Yes	Y				Shropshire BRG
Lapwing	SJ3134	24/03/2005	4	Yes		Yes	Yes	Y				Shropshire BRG
Lapwing	SJ3134	04/04/2008	13	Yes		Yes	Yes	Y				Shropshire BRG
Lapwing	SJ3134	26/02/2008	4	Yes		Yes	Yes	Y				Shropshire BRG
Lapwing	SJ3234	01/05/2005	2	Yes		Yes	Yes	Y				Shropshire BRG
Lapwing	SJ3234	05/04/2007	8	Yes		Yes	Yes	Y				Shropshire BRG
Lapwing	SJ3239	21/05/2008	2	Yes		Yes	Yes	Y				Shropshire BRG
Lapwing	SJ3234	01/05/2005	2	Yes		Yes	Yes	Y				Shropshire Wildlife Trust
Lapwing	SJ3234	05/04/2007	8	Yes		Yes	Yes	Y				Shropshire Wildlife Trust

Species	Grid ref	Date	Abund.	RedList	Sch1	UKBAP	LBAP	Waders	Wildfowl	Raptors	Herons & Egrets	Source
Lapwing	SJ3134	03/01/2006	4					Y				Shropshire BRG
Lapwing	SJ3134	14/04/2006	2					Y				Shropshire BRG
Lapwing	SJ3134	15/02/2006	5					Y				Shropshire BRG
Lapwing	SJ3134	20/01/2008	7					Y				Shropshire BRG
Lapwing	SJ3134	26/02/2008	1					Y				Shropshire BRG
Red Kite	SJ3141	28/04/2010	1		Yes					Y		ClwydBRG
Red Kite	SJ3231	06/07/2005	1		Yes					Y		Shropshire BRG
Red Kite	SJ3435	22/02/2009	1		Yes					Y		Shropshire BRG
Tawny Owl	SJ3236	30/05/2005	1							Y		Shropshire BRG
Tawny Owl	SJ3239	15/07/2005	1							Y		Shropshire BRG

BIRD CONSERVATION TARGETING PROJECT 2011

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The RSPB is a registered charity: England and Wales no. 207076, Scotland no. SC037654. The BTO is a registered charity: England and Wales no. 216652, Scotland no. SC039193

BTO looking out for birds

NATURAL ENGLAND

RSPB

Scottish Natural Heritage
All of nature for all of Scotland

GRASSLAND ASSEMBLAGE in the WEST MIDLANDS

Distribution of curlew, lapwing, redshank, snipe and yellow wagtail

Species present, 2005-2009*

- 5 species
- 4 species
- 3 species
- 2 species

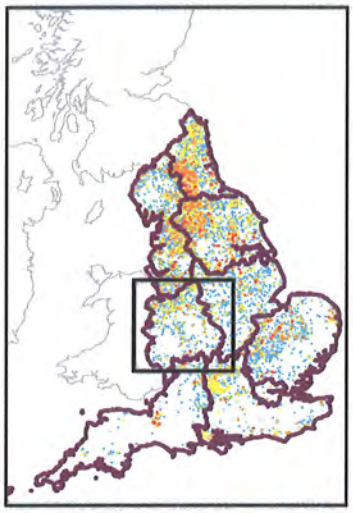
* plus any 2010 data available

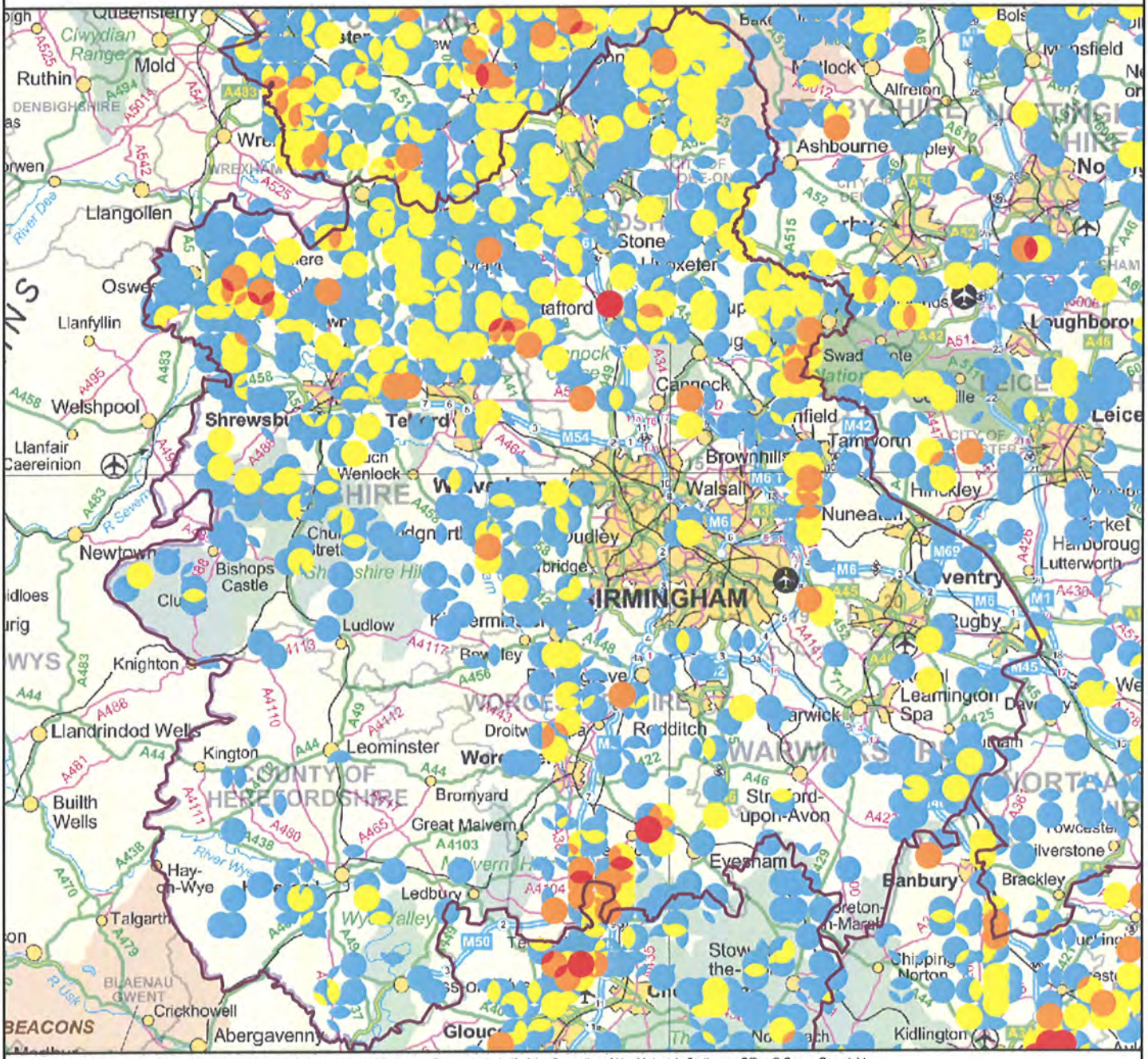
Boundaries

Government office regions

0 5 10 20 30
km

N





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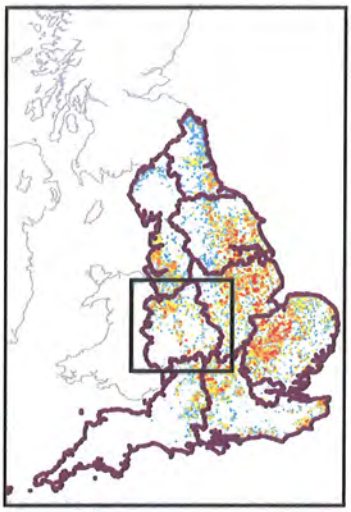


ARABLE ASSEMBLAGE in the WEST MIDLANDS

Distribution of corn bunting, grey partridge, lapwing, turtle dove, tree sparrow & yellow wagtail

Species present, 2005-2009*

- 6 species
- 5 species
- 4 species
- 3 species

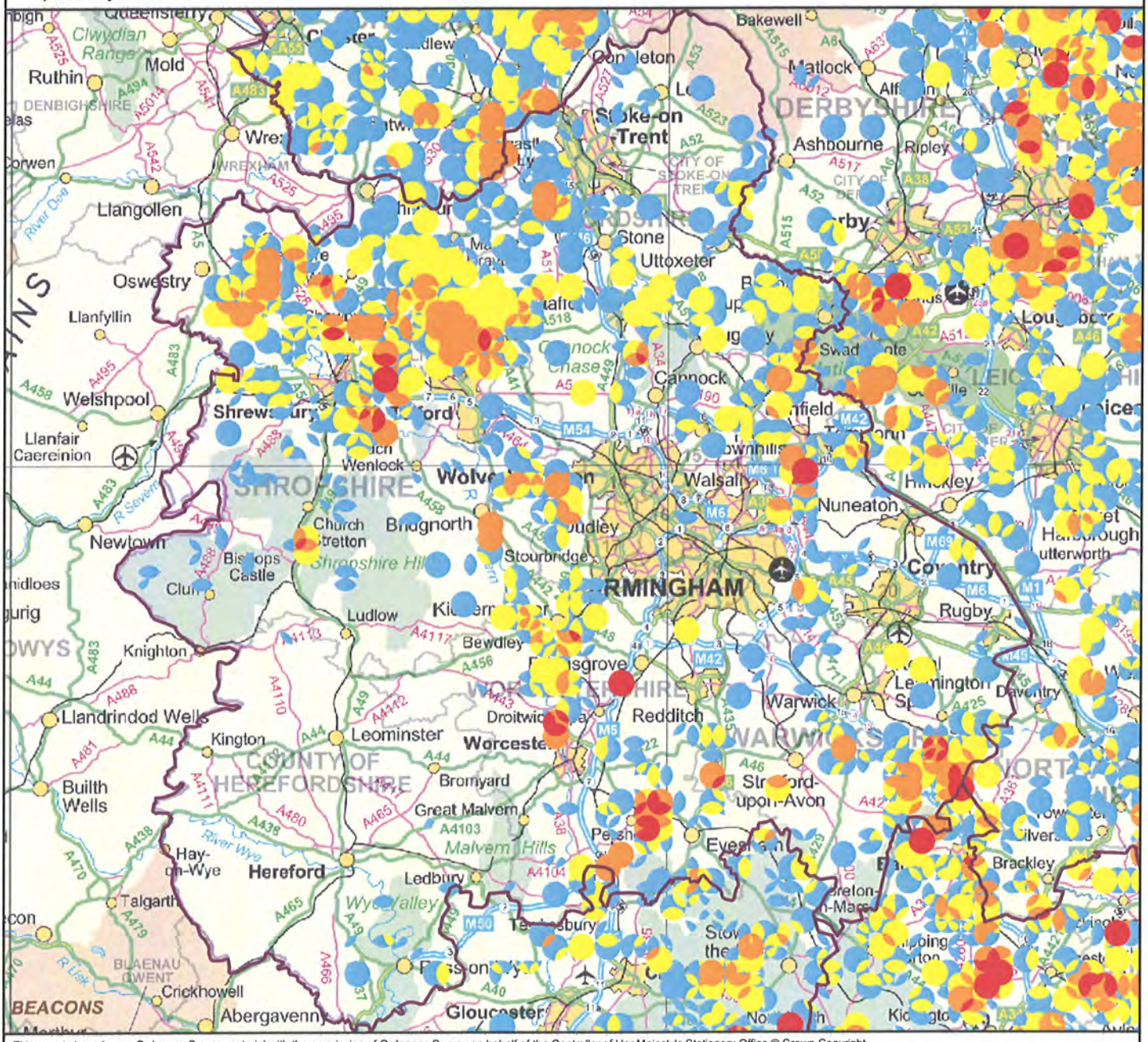
* plus any 2010 data available

Boundaries

Government office regions

0 5 10 20 30
km

N



Shropshire Ornithological Society
Bird Records From 01/01/2002 - Legacy/Oswestry Overhead Line

Sp. Order	Species		Location	Grid Ref.	Date	Count
14	Little Grebe	Tachybaptus ruficollis	Ebnal Pool	SJ3134	04/04/2008	2
82	Little Egret	Egretta garzetta	Ebnal Hall Nr Gobowen	SJ314346	27/05/2005	1
86	Grey Heron	Ardea cinerea	Ebnal Pool	SJ3134	26/02/2008	2
100	Mute Swan	Cygnus olor	Park Hall, Oswesrty	SJ309315	20/05/2005	6
108	Greylag Goose	Anser anser	Ebnal Hall Nr Gobowen	SJ314346	25/12/2002	70
108	Greylag Goose	Anser anser	Ebnal Pool	SJ3134	26/02/2008	1
108	Greylag Goose	Anser anser	St Martins	SJ324366	09/12/2003	82
108	Greylag Goose	Anser anser	St Martins	SJ3235	03/01/2004	70
111	Canada Goose	Branta canadensis	Ebnal Hall Nr Gobowen	SJ314346	25/12/2002	50
111	Canada Goose	Branta canadensis	Ebnal Pool	SJ3134	26/02/2008	40
111	Canada Goose	Branta canadensis	St Martins	SJ3235	03/01/2004	70
112	Barnacle Goose	Branta leucopsis	Ebnal Hall Nr Gobowen	SJ314346	27/05/2005	1
123	Eurasian Wigeon	Anas penelope	Ebnal Hall Nr Gobowen	SJ314346	24/03/2005	33
123	Eurasian Wigeon	Anas penelope	Ebnal Hall Nr Gobowen	SJ314346	03/01/2006	29
123	Eurasian Wigeon	Anas penelope	Ebnal Hall Nr Gobowen	SJ314346	15/02/2006	40
123	Eurasian Wigeon	Anas penelope	Ebnal Hall Nr Gobowen	SJ314346	25/12/2002	125
123	Eurasian Wigeon	Anas penelope	Ebnal Hall Nr Gobowen	SJ314346	28/01/2005	55
123	Eurasian Wigeon	Anas penelope	Ebnal Pool	SJ3134	20/01/2008	52
126	Eurasian Teal	Anas crecca	Ebnal Hall Nr Gobowen	SJ314346	24/03/2005	13
126	Eurasian Teal	Anas crecca	Ebnal Hall Nr Gobowen	SJ314346	28/01/2005	70
126	Eurasian Teal	Anas crecca	Ebnal Hall Nr Gobowen	SJ314346	25/12/2002	40
126	Eurasian Teal	Anas crecca	Ebnal Hall Nr Gobowen	SJ314346	03/01/2006	140
126	Eurasian Teal	Anas crecca	Ebnal Hall Nr Gobowen	SJ314346	15/02/2006	52
126	Eurasian Teal	Anas crecca	Ebnal Hall Nr Gobowen	SJ314346	14/04/2006	5
126	Eurasian Teal	Anas crecca	Ebnal Pool	SJ3134	26/02/2008	8
128	Mallard	Anas platyrhynchos	Ebnal Hall Nr Gobowen	SJ314346	25/12/2002	40
128	Mallard	Anas platyrhynchos	Ebnal Hall Nr Gobowen	SJ314346	15/02/2006	6
128	Mallard	Anas platyrhynchos	Ebnal Pool	SJ3134	26/02/2008	12
128	Mallard	Anas platyrhynchos	Park Hall, Oswesrty	SJ309315	20/05/2005	10
130	Northern Pintail	Anas acuta	Ebnal Hall Nr Gobowen	SJ314346	27/09/2003	1
133	Northern Shoveler	Anas clypeata	Ebnal Hall Nr Gobowen	SJ314346	25/12/2002	3

133	Northern Shoveler	Anas clypeata	Ebnal Hall Nr Gobowen	SJ314346	01/03/2004	4
133	Northern Shoveler	Anas clypeata	Ebnal Hall Nr Gobowen	SJ314346	03/01/2006	4
133	Northern Shoveler	Anas clypeata	Ebnal Hall Nr Gobowen	SJ314346	15/02/2006	5
133	Northern Shoveler	Anas clypeata	Ebnal Hall Nr Gobowen	SJ314346	14/04/2006	2
133	Northern Shoveler	Anas clypeata	Ebnal Pool	SJ3134	20/01/2008	7
133	Northern Shoveler	Anas clypeata	Ebnal Pool	SJ3134	26/02/2008	1
167	Goosander	Mergus merganser	Glyn Morlas Nr.St.Martin's	SJ313377	28/03/2005	2
176	Red Kite	Milvus milvus	Ebnal Hall Nr Gobowen	SJ314346	14/06/2003	1
176	Red Kite	Milvus milvus	St Martins	SJ324366	08/05/2003	1
192	Eurasian Sparrowhawk	Accipiter nisus	St Martins	SJ3137	02/04/2006	1
192	Eurasian Sparrowhawk	Accipiter nisus	St Martins	SJ324366	09/08/2003	1
194	Common Buzzard	Buteo buteo	Ebnal Hall Nr Gobowen	SJ314346	01/03/2004	5
194	Common Buzzard	Buteo buteo	Ifton Farm, St Martins	SJ3137	03/03/2007	3
194	Common Buzzard	Buteo buteo	Ifton Farm, St Martins	SJ3137	09/07/2006	3
194	Common Buzzard	Buteo buteo	Park Hall, Oswesrty	SJ309315	20/05/2005	3
194	Common Buzzard	Buteo buteo	Rhosygadfa	SJ321346	05/08/2002	2
194	Common Buzzard	Buteo buteo	St Martins	SJ324366	27/09/2003	6
194	Common Buzzard	Buteo buteo	St Martins	SJ324366	30/05/2005	1
194	Common Buzzard	Buteo buteo	St Martins	SJ3137	02/04/2006	1
194	Common Buzzard	Buteo buteo	St Martins	SJ324366	19/02/2003	2
206	Common Kestrel	Falco tinnunculus	St Martins	SJ3235	03/01/2004	1
209	Merlin	Falco columbarius	St Martins	SJ324366	23/12/2002	1
210	Eurasian Hobby	Falco subbuteo	Rhosygadfa	SJ321346	02/08/2002	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	22/05/2004	2
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	01/06/2004	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	22/07/2004	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	22/08/2002	4
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	22/08/2003	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	12/06/2004	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	07/08/2002	3
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	30/04/2004	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	04/08/2002	2
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	03/08/2002	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	08/05/2002	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	13/08/2002	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	15/09/2004	3

210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	15/06/2004	2
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	28/07/2004	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	28/06/2002	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	15/08/2003	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	21/08/2002	3
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	19/09/2002	2
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	28/05/2002	2
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	19/08/2002	4
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	19/06/2004	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	18/08/2002	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	26/07/2002	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	30/05/2002	1
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	14/08/2002	3
210	Eurasian Hobby	Falco subbuteo	St Martins	SJ324366	02/09/2002	4
213	Peregrine Falcon	Falco peregrinus	Ebnal Hall Nr Gobowen	SJ314346	22/11/2003	1
213	Peregrine Falcon	Falco peregrinus	St Martins	SJ324366	26/07/2002	1
230	Common Pheasant	Phasianus colchicus	Ifton Farm, St Martins	SJ3137	03/03/2007	1
230	Common Pheasant	Phasianus colchicus	St Martins	SJ3137	02/04/2006	1
246	Common Moorhen	Gallinula chloropus	Ebnal Hall Nr Gobowen	SJ314346	15/02/2006	3
246	Common Moorhen	Gallinula chloropus	Ebnal Pool	SJ3134	26/02/2008	1
302	Northern Lapwing	Vanellus vanellus	Ebnal Hall Nr Gobowen	SJ314346	24/07/2004	18
302	Northern Lapwing	Vanellus vanellus	Ebnal Hall Nr Gobowen	SJ314346	28/07/2002	80
302	Northern Lapwing	Vanellus vanellus	Ebnal Hall Nr Gobowen	SJ314346	14/06/2003	21
302	Northern Lapwing	Vanellus vanellus	Ebnal Hall Nr Gobowen	SJ314346	24/03/2005	4
302	Northern Lapwing	Vanellus vanellus	Ebnal Hall Nr Gobowen	SJ314346	25/05/2004	3
302	Northern Lapwing	Vanellus vanellus	Ebnal Hall Nr Gobowen	SJ314346	16/06/2004	2
302	Northern Lapwing	Vanellus vanellus	Ebnal Hall Nr Gobowen	SJ314346	16/03/2004	2
302	Northern Lapwing	Vanellus vanellus	Ebnal Hall Nr Gobowen	SJ314346	15/02/2006	2
302	Northern Lapwing	Vanellus vanellus	Ebnal Hall Nr Gobowen	SJ314346	14/04/2006	12
302	Northern Lapwing	Vanellus vanellus	Ebnal Hall Nr Gobowen	SJ314346	01/03/2003	2
302	Northern Lapwing	Vanellus vanellus	Ebnal Hall Nr Gobowen	SJ314346	01/07/2004	17
302	Northern Lapwing	Vanellus vanellus	Ebnal Hall Nr Gobowen	SJ312344	12/06/2003	16
302	Northern Lapwing	Vanellus vanellus	Ebnal Pool	SJ3134	26/02/2008	4
302	Northern Lapwing	Vanellus vanellus	Ebnal Pool	SJ3134	04/04/2008	13
302	Northern Lapwing	Vanellus vanellus	Nefod	SJ3036	15/06/2003	6
302	Northern Lapwing	Vanellus vanellus	Rhosygadfa	SJ3234	01/05/2005	2

302	Northern Lapwing	Vanellus vanellus	Rhosygadfa	SJ3234	05/04/2007	8
302	Northern Lapwing	Vanellus vanellus	St Martins	SJ320356	15/06/2003	8
334	Common Snipe	Gallinago gallinago	Ebnal Pool	SJ3134	26/02/2008	3
344	Black-tailed Godwit	Limosa limosa	Ebnal Hall Nr Gobowen	SJ314346	21/08/2003	9
344	Black-tailed Godwit	Limosa limosa	Ebnal Hall Nr Gobowen	SJ314346	14/08/2004	1
344	Black-tailed Godwit	Limosa limosa	Ebnal Hall Nr Gobowen	SJ314346	13/08/2004	1
344	Black-tailed Godwit	Limosa limosa	Ebnal Hall Nr Gobowen	SJ314346	23/08/2003	10
344	Black-tailed Godwit	Limosa limosa	Ebnal Hall Nr Gobowen	SJ314346	12/08/2004	1
344	Black-tailed Godwit	Limosa limosa	Ebnal Hall Nr Gobowen	SJ314346	11/08/2004	1
344	Black-tailed Godwit	Limosa limosa	Ebnal Hall Nr Gobowen	SJ314346	16/08/2004	1
344	Black-tailed Godwit	Limosa limosa	Ebnal Hall Nr Gobowen	SJ314346	25/08/2003	1
352	Eurasian Curlew	Numenius arquata	Ebnal Hall Nr Gobowen	SJ314346	01/07/2003	8
352	Eurasian Curlew	Numenius arquata	Ebnal Hall Nr Gobowen	SJ314346	01/03/2003	36
352	Eurasian Curlew	Numenius arquata	Ebnal Hall Nr Gobowen	SJ314346	01/07/2004	2
352	Eurasian Curlew	Numenius arquata	Ebnal Hall Nr Gobowen	SJ314346	02/07/2004	8
352	Eurasian Curlew	Numenius arquata	Ebnal Hall Nr Gobowen	SJ314346	08/03/2004	5
352	Eurasian Curlew	Numenius arquata	Ebnal Hall Nr Gobowen	SJ314346	17/06/2003	5
352	Eurasian Curlew	Numenius arquata	Ebnal Hall Nr Gobowen	SJ314346	26/06/2002	7
352	Eurasian Curlew	Numenius arquata	Ebnal Hall Nr Gobowen	SJ314346	27/06/2002	7
352	Eurasian Curlew	Numenius arquata	Ebnal Pool	SJ3134	26/02/2008	41
352	Eurasian Curlew	Numenius arquata	St Martins	SJ324366	30/05/2005	1
359	Common Greenshank	Tringa nebularia	Ebnal Hall Nr Gobowen	SJ314346	12/08/2004	1
363	Green Sandpiper	Tringa ochropus	Ebnal Hall Nr Gobowen	SJ314346	09/08/2004	5
456	Common Wood Pigeon	Columba palumbus	Ifton Farm, St Martins	SJ3137	03/03/2007	1
456	Common Wood Pigeon	Columba palumbus	Ifton Farm, St Martins	SJ3137	09/07/2006	1
456	Common Wood Pigeon	Columba palumbus	St Martins	SJ3236	29/01/2005	1
456	Common Wood Pigeon	Columba palumbus	St Martins	SJ3137	02/04/2006	1
458	Eurasian Collared Dove	Streptopelia decaocto	St Martins	SJ3236	22/01/2005	2
458	Eurasian Collared Dove	Streptopelia decaocto	St Martins	SJ3236	29/01/2005	2
458	Eurasian Collared Dove	Streptopelia decaocto	St Martins	SJ3236	08/01/2005	2
472	Common Cuckoo	Cuculus canorus	Rhosygadfa	SJ3234	28/04/2007	1
472	Common Cuckoo	Cuculus canorus	Rhosygadfa	SJ3234	27/04/2005	1
472	Common Cuckoo	Cuculus canorus	Rhosygadfa	SJ3234	02/05/2004	1
472	Common Cuckoo	Cuculus canorus	Rhosygadfa	SJ321346	02/05/2004	1
479	Barn Owl	Tyto alba	St Martins	SJ329367	15/05/2003	2
488	Tawny Owl	Strix aluco	St Martins	SJ324366	30/05/2005	1

511	Common Swift	Apus apus	Ifton Farm, St Martins	SJ3137	09/07/2006	6
511	Common Swift	Apus apus	St Martins	SJ3236	04/06/2005	6
511	Common Swift	Apus apus	St Martins	SJ3236	11/06/2005	6
511	Common Swift	Apus apus	St Martins	SJ3236	02/05/2006	1
511	Common Swift	Apus apus	St Martins	SJ3236	30/04/2005	5
537	Green Woodpecker	Picus viridis	St Martins	SJ324366	28/03/2005	1
537	Green Woodpecker	Picus viridis	St Martins	SJ324366	30/05/2005	1
541	Great Spotted Woodpecker	Dendrocopos major	St Martins	SJ324366	30/05/2005	1
541	Great Spotted Woodpecker	Dendrocopos major	St Martins	SJ324366	28/03/2005	1
542	Lesser Spotted Woodpecker	Dendrocopos minor	St Martins	SJ324366	13/06/2002	1
542	Lesser Spotted Woodpecker	Dendrocopos minor	St Martins	SJ324366	20/06/2002	2
560	Sky Lark	Alauda arvensis	Ifton Farm, St Martins	SJ3137	09/07/2006	3
560	Sky Lark	Alauda arvensis	Ifton Farm, St Martins	SJ3137	03/03/2007	8
560	Sky Lark	Alauda arvensis	St Martins	SJ3137	02/04/2006	1
560	Sky Lark	Alauda arvensis	St Martins	SJ324366	01/05/2005	4
560	Sky Lark	Alauda arvensis	St Martins	SJ324366	30/05/2005	5
560	Sky Lark	Alauda arvensis	St Martins	SJ324366	28/03/2005	4
571	Barn Swallow	Hirundo rustica	Ifton Farm, St Martins	SJ3137	09/07/2006	1
571	Barn Swallow	Hirundo rustica	Rhosygadfa	SJ3234	09/04/2004	2
571	Barn Swallow	Hirundo rustica	Rhosygadfa	SJ3234	16/04/2003	1
571	Barn Swallow	Hirundo rustica	Rhosygadfa	SJ3234	16/04/2003	1
571	Barn Swallow	Hirundo rustica	Rhosygadfa	SJ3234	17/04/2003	3
571	Barn Swallow	Hirundo rustica	Rhosygadfa	SJ3234	04/04/2007	1
571	Barn Swallow	Hirundo rustica	Rhosygadfa	SJ3234	28/04/2005	1
571	Barn Swallow	Hirundo rustica	St Martins	SJ3236	04/06/2005	1
571	Barn Swallow	Hirundo rustica	St Martins	SJ3236	24/04/2006	1
571	Barn Swallow	Hirundo rustica	St Martins	SJ3236	28/04/2005	3
593.01	Pied Wagtail	Motacilla alba yarellii	St Martins	SJ3137	02/04/2006	1
600	White-throated Dipper	Cinclus cinclus	Ifton Farm, St Martins	SJ3137	03/03/2007	2
603	Winter Wren	Troglodytes troglodytes	Ifton Farm, St Martins	SJ3137	09/07/2006	1
603	Winter Wren	Troglodytes troglodytes	St Martins	SJ3137	02/04/2006	1
603	Winter Wren	Troglodytes troglodytes	St Martins	SJ3236	11/06/2005	1
613	Hedge Accentor	Prunella modularis	Ifton Farm, St Martins	SJ3137	03/03/2007	1
613	Hedge Accentor	Prunella modularis	Ifton Farm, St Martins	SJ3137	09/07/2006	4
613	Hedge Accentor	Prunella modularis	St Martins	SJ3236	26/11/2005	1
613	Hedge Accentor	Prunella modularis	St Martins	SJ3236	22/01/2005	1

619	European Robin	Erithacus rubecula	Ifton Farm, St Martins	SJ3137	09/07/2006	1
619	European Robin	Erithacus rubecula	Ifton Farm, St Martins	SJ3137	03/03/2007	3
619	European Robin	Erithacus rubecula	St Martins	SJ3236	04/06/2005	1
619	European Robin	Erithacus rubecula	St Martins	SJ3236	22/01/2005	1
619	European Robin	Erithacus rubecula	St Martins	SJ3236	08/01/2005	1
619	European Robin	Erithacus rubecula	St Martins	SJ3236	29/01/2005	1
619	European Robin	Erithacus rubecula	St Martins	SJ3137	02/04/2006	1
636	Stonechat	Saxicola torquata	Ebnal Pool	SJ3134	20/01/2008	2
636	Stonechat	Saxicola torquata	Ebnal Pool	SJ3134	26/02/2008	1
660	Common Blackbird	Turdus merula	Ifton Farm, St Martins	SJ3137	09/07/2006	1
660	Common Blackbird	Turdus merula	Ifton Farm, St Martins	SJ3137	03/03/2007	1
660	Common Blackbird	Turdus merula	St Martins	SJ3236	22/01/2005	2
660	Common Blackbird	Turdus merula	St Martins	SJ3236	29/01/2005	2
660	Common Blackbird	Turdus merula	St Martins	SJ3236	04/06/2005	4
660	Common Blackbird	Turdus merula	St Martins	SJ3137	02/04/2006	1
660	Common Blackbird	Turdus merula	St Martins	SJ3236	11/06/2005	4
660	Common Blackbird	Turdus merula	St Martins	SJ3236	26/11/2005	2
660	Common Blackbird	Turdus merula	St Martins	SJ3236	08/01/2005	2
665	Song Thrush	Turdus philomelos	Ifton Farm, St Martins	SJ3137	03/03/2007	1
665	Song Thrush	Turdus philomelos	Park Hall, Oswesrty	SJ309315	20/05/2005	1
665	Song Thrush	Turdus philomelos	St Martins	SJ3236	29/01/2005	1
667	Mistle Thrush	Turdus viscivorus	Park Hall, Oswesrty	SJ309315	20/05/2005	4
667	Mistle Thrush	Turdus viscivorus	St Martins	SJ324366	28/03/2005	1
683	Sedge Warbler	Acrocephalus schoenoba	St Martins	SJ324366	30/04/2002	1
710	Blackcap	Sylvia atricapilla	St Martins	SJ3236	26/11/2005	2
722	Common Chiffchaff	Phylloscopus collybita	Ifton Farm, St Martins	SJ3137	09/07/2006	0
722	Common Chiffchaff	Phylloscopus collybita	St Martins	SJ3137	02/04/2006	1
724	Willow Warbler	Phylloscopus trochilus	Ebnal Pool	SJ3134	04/04/2008	1
726	Goldcrest	Regulus regulus	Ifton Farm, St Martins	SJ3137	03/03/2007	1
740	Long-tailed Tit	Aegithalos caudatus	St Martins	SJ3236	08/01/2005	3
740	Long-tailed Tit	Aegithalos caudatus	St Martins	SJ3137	02/04/2006	1
746	Coal Tit	Parus ater	Ifton Farm, St Martins	SJ3137	03/03/2007	1
747	Blue Tit	Parus caeruleus	Ifton Farm, St Martins	SJ3137	09/07/2006	1
747	Blue Tit	Parus caeruleus	Ifton Farm, St Martins	SJ3137	03/03/2007	1
747	Blue Tit	Parus caeruleus	St Martins	SJ3236	26/11/2005	2
747	Blue Tit	Parus caeruleus	St Martins	SJ3236	29/01/2005	2

747	Blue Tit	Parus caeruleus	St Martins	SJ3137	02/04/2006	1
747	Blue Tit	Parus caeruleus	St Martins	SJ3236	11/06/2005	3
747	Blue Tit	Parus caeruleus	St Martins	SJ3236	04/06/2005	2
747	Blue Tit	Parus caeruleus	St Martins	SJ3236	22/01/2005	1
747	Blue Tit	Parus caeruleus	St Martins	SJ3236	08/01/2005	3
748	Great Tit	Parus major	Ifton Farm, St Martins	SJ3137	03/03/2007	1
748	Great Tit	Parus major	Ifton Farm, St Martins	SJ3137	09/07/2006	1
748	Great Tit	Parus major	St Martins	SJ3236	26/11/2005	1
748	Great Tit	Parus major	St Martins	SJ3137	02/04/2006	1
778	Eurasian Jay	Garrulus glandarius	St Martins	SJ324366	30/05/2005	1
780	Black-billed Magpie	Pica pica	Ifton Farm, St Martins	SJ3137	09/07/2006	1
780	Black-billed Magpie	Pica pica	Ifton Farm, St Martins	SJ3137	03/03/2007	2
786	Eurasian Jackdaw	Corvus monedula	Ifton Farm, St Martins	SJ3137	09/07/2006	100
786	Eurasian Jackdaw	Corvus monedula	St Martins	SJ3137	02/04/2006	1
788	Carrion Crow	Corvus corone	Ifton Farm, St Martins	SJ3137	09/07/2006	15
788	Carrion Crow	Corvus corone	Ifton Farm, St Martins	SJ3137	03/03/2007	25
788	Carrion Crow	Corvus corone	St Martins	SJ3137	02/04/2006	1
790	Common Raven	Corvus corax	Ebnal Hall Nr Gobowen	SJ314346	01/03/2004	2
790	Common Raven	Corvus corax	Ebnal Hall Nr Gobowen	SJ314346	08/03/2004	1
790	Common Raven	Corvus corax	Ebnal Hall Nr Gobowen	SJ314346	25/08/2003	1
790	Common Raven	Corvus corax	Ebnal Hall Nr Gobowen	SJ314346	16/03/2004	1
790	Common Raven	Corvus corax	St Martins	SJ324366	27/09/2003	1
793	Common Starling	Sturnus vulgaris	St Martins	SJ3236	11/06/2005	3
793	Common Starling	Sturnus vulgaris	St Martins	SJ3236	04/06/2005	3
793	Common Starling	Sturnus vulgaris	St Martins	SJ3236	22/01/2005	3
793	Common Starling	Sturnus vulgaris	St Martins	SJ3236	26/11/2005	5
793	Common Starling	Sturnus vulgaris	St Martins	SJ3236	08/01/2005	2
793	Common Starling	Sturnus vulgaris	St Martins	SJ3236	29/01/2005	3
797	House Sparrow	Passer domesticus	Ifton Farm, St Martins	SJ3137	09/07/2006	1
797	House Sparrow	Passer domesticus	Ifton Farm, St Martins	SJ3137	03/03/2007	1
797	House Sparrow	Passer domesticus	St Martins	SJ3236	26/11/2005	6
797	House Sparrow	Passer domesticus	St Martins	SJ3236	04/06/2005	4
797	House Sparrow	Passer domesticus	St Martins	SJ3236	29/01/2005	5
797	House Sparrow	Passer domesticus	St Martins	SJ3236	22/01/2005	4
797	House Sparrow	Passer domesticus	St Martins	SJ3236	08/01/2005	4
797	House Sparrow	Passer domesticus	St Martins	SJ3236	11/06/2005	6

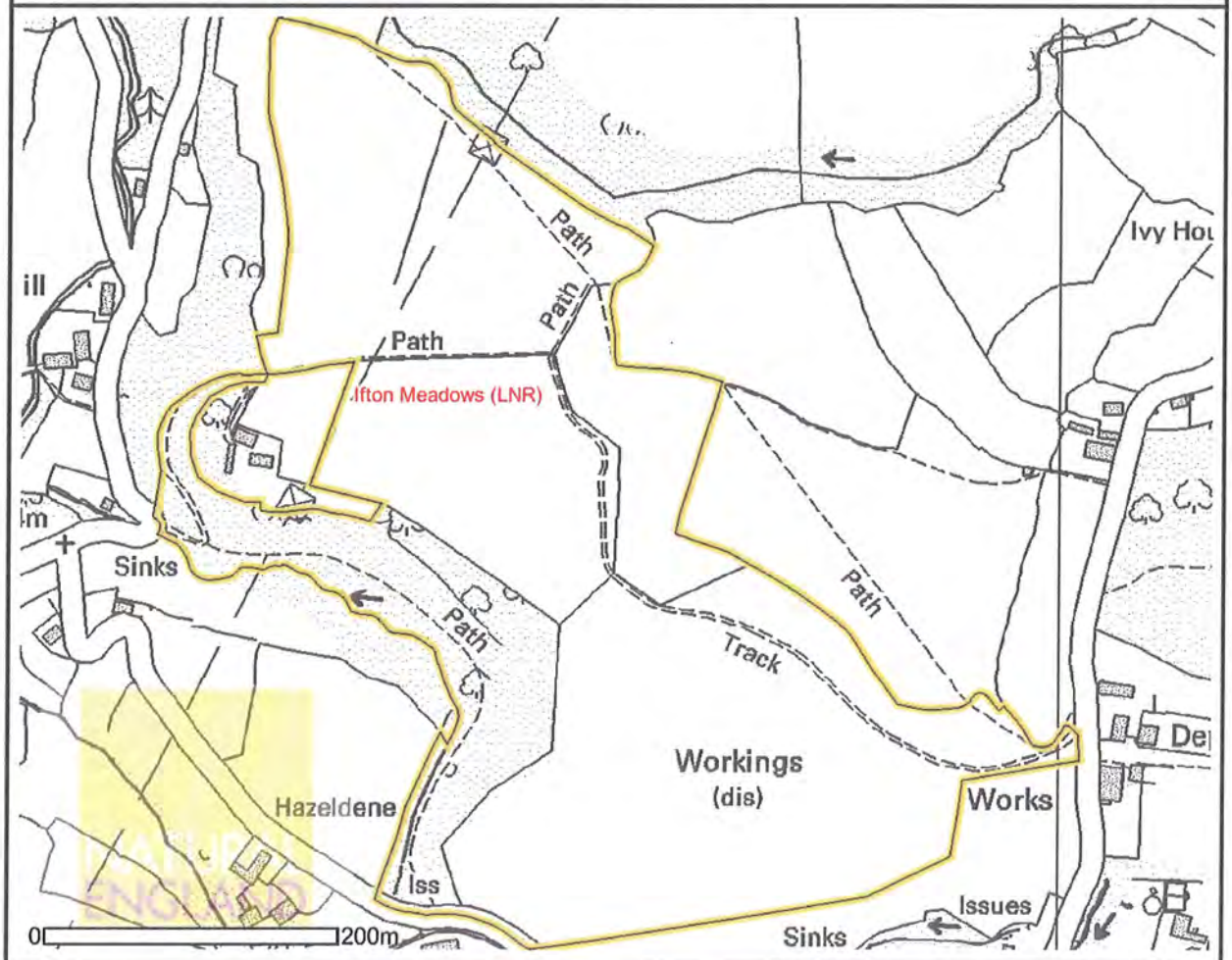
809	Chaffinch	Fringilla coelebs	Ifton Farm, St Martins	SJ3137	03/03/2007	1
809	Chaffinch	Fringilla coelebs	St Martins	SJ3236	29/01/2005	4
809	Chaffinch	Fringilla coelebs	St Martins	SJ3236	11/06/2005	5
809	Chaffinch	Fringilla coelebs	St Martins	SJ3236	04/06/2005	3
809	Chaffinch	Fringilla coelebs	St Martins	SJ3236	08/01/2005	3
809	Chaffinch	Fringilla coelebs	St Martins	SJ3236	26/11/2005	4
809	Chaffinch	Fringilla coelebs	St Martins	SJ3236	22/01/2005	3
814	European Greenfinch	Carduelis chloris	St Martins	SJ3236	04/06/2005	6
814	European Greenfinch	Carduelis chloris	St Martins	SJ3236	29/01/2005	2
814	European Greenfinch	Carduelis chloris	St Martins	SJ3236	26/11/2005	3
814	European Greenfinch	Carduelis chloris	St Martins	SJ3236	22/01/2005	4
814	European Greenfinch	Carduelis chloris	St Martins	SJ3137	02/04/2006	1
814	European Greenfinch	Carduelis chloris	St Martins	SJ3236	08/01/2005	2
814	European Greenfinch	Carduelis chloris	St Martins	SJ3236	11/06/2005	4
815	European Goldfinch	Carduelis carduelis	St Martins	SJ3236	22/01/2005	8
815	European Goldfinch	Carduelis carduelis	St Martins	SJ3236	08/01/2005	4
815	European Goldfinch	Carduelis carduelis	St Martins	SJ3236	29/01/2005	3
815	European Goldfinch	Carduelis carduelis	St Martins	SJ3236	11/06/2005	9
815	European Goldfinch	Carduelis carduelis	St Martins	SJ3236	26/11/2005	4
815	European Goldfinch	Carduelis carduelis	St Martins	SJ3236	04/06/2005	4
816	Eurasian Siskin	Carduelis spinus	St Martins	SJ3236	22/01/2005	2
819	Lesser Redpoll	Carduelis cabaret	St Martins	SJ324366	23/12/2002	5
834	Common Bullfinch	Pyrrhula pyrrhula	Ifton Farm, St Martins	SJ3137	03/03/2007	2
834	Common Bullfinch	Pyrrhula pyrrhula	St Martins	SJ3236	11/06/2005	1
834	Common Bullfinch	Pyrrhula pyrrhula	St Martins	SJ3236	29/01/2005	1
834	Common Bullfinch	Pyrrhula pyrrhula	St Martins	SJ3236	22/01/2005	1
834	Common Bullfinch	Pyrrhula pyrrhula	St Martins	SJ324366	25/01/2003	7
902	Reed Bunting	Emberiza schoeniclus	Ebnal Hall Nr Gobowen	SJ314346	18/05/2004	1

APPENDIX B
Citations for protected sites for birds

NATURAL ENGLAND

Nature on the Map

Ifton Meadows LNR



- Natural England Offices
- National Nature Reserves
- Selected Local Nature Reserves
- Local Nature Reserves
- Country Parks
- Green Flag Country Park
- Non Green Flag Country Park
- Millennium Greens
- Doorstep Greens
- Sites of Special Scientific Interest
- Natural England Regions
- Natural England Area Teams
- Scotland, Wales and Ireland
- Ordnance Survey background mapping
- England

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Ifton Meadows

LNR Type:	Rural
County:	Shropshire
Natural England Regional Team:	West Midlands
Year of Declaration:	2005
Declaring Authority:	Shropshire County Council
Area (Ha):	Click here to open the site map (new window). Once displayed, click on the site to see area and other details.
Grid Reference:	SJ 316 375
Location:	ifton Meadows, St Martins, nr Oswestry, Shropshire
Managed by:	Shropshire County Council and Ifton Meadows Management Committee
Link to site map:	Click here to open the site map from the Nature on the Map web site.
Visitor facilities:	Wheelchair and pushchair access.
What to see:	The site has an interesting and diverse range of habitats from open acid grassland with extensive views, to intimate enclosed wooded dingle. In addition there are mature oaks and ancient hedgerows which provide good homes for a range of invertebrates and birds.
Contacts for further information and how to get involved:	Mr T Morris, Planning Department, Oswestry Borough Council, Castle View, Oswestry, Shropshire, SY11 1JR
Website address and other links:	www.breathingplaces.org/public/place/12075

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CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

DENBIGHSHIRE/ WREXHAM

RUABON/LLANYSILIO MOUNTAINS AND MINERA

Date of Notification: 1955, 1972, 1979, 1983, 1984, 1991

National Grid Reference: SJ215495

O.S. Maps: 1:50,000 Sheet number: 116, 117, 125
1:25,000 Sheet number: SJ14, SJ24, SJ25

Site Area: 4795 ha

Description:

Ruabon/Llantysilio Mountains and Minera SSSI occupies a major upland block stretching north from the Dee Valley between Corwen and Ruabon for a distance of up to 9 kms. It rises to an altitude of around 580 m. The site is notified firstly on biological grounds, for its heather moor, limestone and neutral grassland habitats and for its species interest comprising a range of upland breeding birds, rare and uncommon plants and the use of mines and caves by bats. The site is also notified on geological grounds as it contains three sites of special interest within its boundaries.

The area supports a range of sub-montane vegetation types reflecting its underlying geology, which includes both acidic and base rich rock types. The most characteristic and extensive vegetation is dry dwarf shrub heath usually dominated by heather *Calluna vulgaris* but more locally by bilberry *Vaccinium myrtillus*. The usual range of associated species occur including cowberry *V. vitis-idaea*. This is the second largest block of heather dominated dry dwarf shrub heath in Wales. A range of other acidic vegetation types are present including bracken *Pteridium aquilinum*, acidic grassland and gorse *Ulex spp*. scrub whilst locally wetter vegetation including flushes along watercourses and heather/hare's-tail cotton-grass *Eriophorum vaginatum* blanket bog occurs. Much of the area has recently or is being actively managed as a grouse moor and a good assemblage of upland breeding bird species is present including merlin, short-eared owl, golden plover and ring ouzel. Carboniferous Limestone outcrops over parts of the area particularly on the prominent scarp with its extensive cliffs, screes and grasslands and Mynydd Eglwyseg but also in the north around the Aber Sychnant. A number of nationally rare plant species are associated with the former including species at their southern limit in Britain (e.g. rigid buckler-fern *Dryopteris submontana*. The grassland here is heavily grazed by sheep and is relatively poor in species and contrasts with the species rich neutral/limestone grassland vegetation types around the Aber Sychnant, which additionally support a wide range of uncommon plant species. Parts of the vegetation here have developed on old mineral workings, including disused limestone quarries and waste product tips from lime burning and mine spoil heaps. A number of the disused mines are used by hibernating bats including the nationally uncommon lesser horseshoe bat *Rhinolophus hipposideros*.

Three geological sites are encompassed within the site boundary.

These are:

1. The Minera Caves (Karst/Cave) are a key site for their cave geomorphology and geology. The interest comprises three cave systems, Ogof Llyn Parc, Ogof Dydd Braf and Ogof Llyn Du, that together provide an exceptionally good example of multi-phase karst drainage. The cave system developed in a series of stages as water tables were lowered in direct response to new lower resurgence outlets from the limestone. The new resurgences were the consequence of surface lowering through the later Pleistocene, and specifically the down-cutting of the Minera Valley which progressively exposed the top of the limestone at lower altitudes in a down-dip direction. The shifting patterns of karst drainage can be reconstructed through five phases. The site also provides one of the best examples in Britain of the controls on karst drainage imposed by stratigraphy and structure close to the base of an aquifer. Clastic sediment sequences are thick, extensive, well exposed and of major importance. They constitute an important research resource for studies of Pleistocene history and landform development, and are complemented with fine calcite and gypsum precipitates.

2. The Creigiau Egiwyseg (Mass Movement) site supports the most impressive set of limestone screes in Britain. The Carboniferous Limestone presents a west and southwest facing multiple cliff with an extensive scree accumulation below each cliff. At many locations along the hillside, unusually, there is a steep bedrock slope below the cliffs, across which rock particles detached from the cliffs must roll or bounce before accumulating on the substantial, lower-angled scree slopes below.

3. The Eglwyseg Mountain (Dinantian) site exhibits classic sections through the youngest Carboniferous Limestone. The scarp shows stepped topography resulting from the erosion of cyclic limestone repetitions within this Asbian-Brigantian sediment pile. This extensive site yields abundant fossil faunas and a wealth of sedimentological features including sediments associated with emergence as well as more marine carbonates. An outstanding site giving unrivalled exposures of Dinantian rocks.

Remarks:

Most of the site is registered as common land.

RUABON / LLANTYSILIO MOUNTAINS & MINERA

Glyndwr / Wrexham Maelor - CLWYD

Note. A larger scale map showing a detailed boundary is available on request 3001327

CYNGOR CEFN GWLAD CYMRU / **COUNTRYSIDE COUNCIL FOR WALES**

Ffin So.Dd.Ga
S.S.S.I. boundary

Hysbyswyd am y tro cyntaf
First notified 1/1/55

Hysbyswyd yr adolygiad diwethaf
Last revision notified 28/2/91

Arwynebedd /***Area*** 4795.0 ha

Cadarnhad
Confirmation 21/11/91

Graddfa/***Scale*** 1:50,000

G/N

Atgynhyrchwyd o fap Ordnance Survey .....gyda chaniatâd Rheolwr Swyddfa ei Mawrhydi; cedwir hawlfraint y Goron.

NFAIR DYFFRYN CLWYD C

BRYMBO C

MINERA C

LLANDEGLA C

ESCLUSHAM ABOVE C

LLANELIDAN C

BRYNEGLWYS C

GLYNDWR DISTRICT

LLANTYSILIO C

PENYCAE C

RHOSLLANERCHRUGOG

LLANGOLLEN RURAL C

CEFN C

LLANGOLLEN

Vale of Llangollen

Cyrn-y-Brain

Llantysilio Mountain

Maesyrychen Mountain

Eglwyseg Mountain

Ruabon Mountain

Minera Mountain (Mynydd Mwyndy)

Esclusham Mountain

River Dee (Afon Dyfrdwy)

Llyn Tegid

Carrog

Glyndyfrdwy

Rhewl

Llandysilio

Pentrefelin

Llangollen Golf Club

LLANTYSILIO C

DENBIGH CO COUNCIL

GLYNDWR DISTRICT

LLANGOLLEN RURAL C

GLYNTRAIAN C

CHIRK C

RUABON/LLANTYSILIO MOUNTAINS AND MINERA SITE OF SPECIAL SCIENTIFIC INTEREST

YOUR SPECIAL SITE AND ITS FUTURE

Your Special Site and its Future' is part of our commitment to improve the way we work with Sites of Special Scientific Interest (SSSI) owners and occupiers. In it, we explain what is special about the wildlife and geology on your site, and what care is needed to look after its wildlife and geology into the future.

All SSSIs are considered to be of national importance and we recognise the crucial role that owners and occupiers play in their management and protection. We need you to share your views and knowledge of this site with us, to help safeguard it.

We hope that you will find 'Your Special Site and its Future' interesting and helpful. Please contact us if there is anything about the site and its management that you would like to discuss.

What is 'special' about the wildlife and geology at the Ruabon/Llantysilio Mountains and Minera SSSI?

The Llantysilio Mountain range, along with Ruabon Moor, Eglwyseg Escarpment, Minera Caves, and areas of grassland to the north and west of Minera are considered special for nature conservation. Together they are referred to by CCW as the Ruabon/Llantysilio Mountains and Minera SSSI.

The rolling heather moorlands of Llantysilio and Ruabon mountains contrast strongly with the dramatic limestone cliffs, screes and disused quarries of the Eglwyseg Valley. This document discusses the importance of the Ruabon/Llantysilio Mountains and Minera SSSI within the UK

The habitats or species that make up the special nature conservation interest of the site are given below in **bold.**

- **Heather Moor**

Heather moorland is made up of various types of heathland vegetation, including dry heath, wet heath, blanket bog, flushes and springs

Dry Heath – Ruabon and Llantysilio mountains contain the second largest block of dry heathland in Wales. This type of vegetation is mostly a mixture of different types heather with bilberry.

Blanket bog - Blanket bog vegetation is a mixture of heather, cotton grass and mosses and is usually found on deep peat over 0.5m in depth on flatter ridge tops and plateaux. The blanket bog is found on Ruabon mountain on the northern part of the site, between areas of flush near streams or on the broad, uniform slope of the Fron Deg Flat.

Blanket bogs plants depend on having a soil that is continuously saturated with water. Such plants include a variety of peat forming mosses known as Sphagnum, heathers, and cotton grasses. These may be interspersed with such species as sundew and bog asphodel.

The peat beneath the blanket bog vegetation surface has formed over thousands of years. Preserved within it are detailed records of many of the environmental changes that have occurred both locally and more widely since the last Ice Age. These deposits, in the form of plant remains, animal remains and deposited particles from natural and industrial sources, are of enormous value for research.

Also stored within the peat is a large reservoir of natural carbon that has built up over thousands of years. If the peat dries out it will decay, releasing the carbon locked within it into the atmosphere, further contributing to global warming

Flushes and springs - Water draining from the heath forms flushes and springs, these areas are largely vegetated by rushes and mosses, some of which are nationally scarce. These areas also provide good feeding areas for the young of grouse and waders. They are therefore also particularly important as hunting areas for birds of prey.

- **Limestone Grassland**

The areas of limestone grassland are considered special, along with the vegetation growing on and among limestone cliffs, rocks and screes.

The thin soils of the Eglwyseg Escarpment are vegetated by plants typical of the limestone dominated areas of North Wales, such as carline thistle and wild thyme but, due to the upland nature of the site there are also other more typically acid-loving herbs like heath bedstraw and harebell.

The limestone grasslands of lower slopes and the areas in and around the Minera quarries have a greater variety of plants with species such as bird's-foot-trefoil and common rock-rose being more abundant.

- **Neutral Grassland**

Unimproved neutral grassland is found mainly within the enclosed fields surrounding Minera Quarry. There are also some of the species found in limestone grassland such as bird's-foot-trefoil, but the grassland is more lush and diverse, containing clovers, yarrow, fairy flax and ribwort plantain to name but a few.

- **Rare and Uncommon Plants**

Many rare and uncommon plant species are found in Ruabon/Llantysilio Mountains and Minera SSSI.

This is particularly so among the natural rock exposures and screes of the Eglwyseg Escarpment, where rarities range from trees such as the English whitebeam, herbaceous plants such as white horehound and ferns that include rigid buckler -fern. There are also mosses growing on limestone soil, mosses growing in the more acidic conditions of Moel y Faen Quarry, ferns growing in spoil heaps and the only colony in Wales of prickly sedge, growing in lime rich soil near to old mine workings.

- **Range of Upland Breeding Birds**

A great variety of upland birds breed on Llantysilio and Ruabon. These include red grouse, black grouse, curlew, short-eared owl, whinchat, stonechat, wheatear, ring ouzel, raven, chough, golden plover and buzzard. Upland raptors such as hen harrier, merlin and peregrine have also been known to hunt or nest on these mountains.

Ruabon mountain has been recognised as being a particularly important site in Wales for black grouse.

Tall areas of heather are required for nesting merlin, hen harrier, short-eared owl, curlew and grouse, and adjacent wet flushes support the insect prey for the young of grouse and waders to feed. Areas where the heath grades into wet flushes or acid grassland are particularly important as hunting areas for birds of prey.

- **Bats**

Six different species of bat including the endangered lesser-horseshoe bat, brown long-eared bat, whiskered bat, Brandt's bat, Natterer's bat and Daubenton's bat are known to roost within Ruabon/Llantysilio Mountains and Minera SSSI. These roosts are located within a range of structures, some such as the Hoffman Kiln near Minera and the adits within Moel y Faen Quarry are man-made, whilst others are of more natural origin, such as the Minera Caves. These structures are principally used throughout the winter as hibernation sites, though bats can be found using these roosts at any time of the year.

The SSSI has 3 special features of geological interest highlighted in **Bold** below.

- **Lower Carboniferous rocks exposed in disused quarries and natural outcrops.**

The Eglwyseg Escarpment provides the finest inland exposures of Carboniferous limestones in North Wales and enables geologists to reconstruct environmental conditions that existed in this area approximately 330 million years ago.

- **Assemblage of landforms and deposits demonstrating scree forming processes (Mass Movement) along the Eglwyseg Escarpment.**

The site includes one of the most impressive sets of limestone screes in Britain. They form at the foot of the craggy limestone escarpment and consist of millions of angular fragments of limestone loosened from the cliff above by frost-action. Although some of the fragments are accumulating now, the bulk of these deposits formed during the cold, hostile conditions towards the end of the last Ice Age, probably about 11,000 years ago.

- **Natural cave systems at Minera**

The caves at Minera form the most extensive integrated cave system yet explored in N North Wales. They show very clearly the effects of rock type and structure on the development of the caves, and are unusual because the recently active passages have become accessible due to drainage by mine adits.

As well as the features listed above, Ruabon / Llantysilio & Minera SSSI has a variety of other habitats that contribute to the special wildlife interest. These include acid grassland, scrub, semi-natural broadleaved woodland, natural and artificial non-limestone rock exposures of various types and bracken. This mixture of habitats is an important part of the upland ecosystem, adding to its diversity and forming a link between the protected site and the surrounding countryside. Further geological interest can be found in the metalliferous spoil tips which are evidence of past mining.

What do we want the Ruabon/Llantysilio Mountains and Minera grasslands to look like?

Careful management, with the assistance and cooperation of the owners and graziers of the land is essential to protect the nature conservation interest of these mountains.

The following is a description of how CCW would like to see the special features on the Ruabon/ Llantysilio Maountains and Minera SSSI develop in the future:

The areas of dry heathland will be a mosaic of different aged dry heath, with a broad age structure. This will include; areas or patches where the heather is very young; areas where heather is at its more actively growing, building stage; areas where it is mature; and areas where heather plants have been allowed to complete their life cycle by degenerating naturally. These latter areas having more diverse plant communities that include lichens, liverworts and mosses as well as other herbaceous species.

Areas of blanket bog will have high, stable water tables with actively growing layers of sphagnum moss growing over peat. They will be dominated by cotton grasses, cross-leaved heath and heather, and will be left unmanaged except for some light grazing during the summer months.

Except for the rare tree species growing on and among the rocks of the Eglwyseg, scrub and trees will only exist at the fringes of the site and in some of the lower gullies. Some bracken may extend beyond the scrub and trees but will not be found growing widely in the open moorland or grassland.

The neutral and limestone grassland areas will have a large variety of plant communities with the limestone grasslands having those typical of thin, lime rich

soils. Though described as grasslands, more than half of the ground cover will consist of herbaceous species. Grazing will be at levels that allow plants to flower and set seed, while preventing the spread of trees and scrub. Bracken will only be found in isolated patches at the perimeters of the site. There will be very few non-native species.

Many of the cracks and ledges of the limestone rocks and cliffs will provide an ungrazed haven for lime tolerant plants. Some of these, particularly the cracks and fissures will provide shelter for species like the ferns maidenhair spleenwort and green spleenwort, which specialise by living in small crevices in the rock face. On ledges there will be luxuriant vegetation with small scabious, golden rod and harebell adding summer colour. In the larger cracks and ledges on the cliff face the powdery grey-green foliage of whitebeam trees stands out from the neighbouring hawthorns and yews. Introduced species of plant such as cotoneaster and clematis will be few in number.

The locations of rare plant species such as rigid buckler fern, rock whitebeam and prickly sedge will be regularly recorded and their habitats protected

The range of habitats within Ruabon/ Llantysilio Mountains and Minera SSSI will support stable or increasing breeding populations of upland bird species. For many other species the site will provide one of several habitats needed for the successful completion of their life cycle.

The various bat roosts, and the surrounding area, will support stable or increasing numbers of lesser-horseshoe, brown long-eared, whiskered, Brandt's, Natterer's and Daubenton's bats, the roosts of any other bat species found there will be given equal protection.

The geological exposures at Eglwyseg should remain visible and accessible in order to allow further study and research. This will be achieved by avoiding activities which would diminish the large amount and good continuity of exposure so that these rocks can be accessed when required for scientific purposes.

The limestone screes at Eglwyseg will continue to be the best developed examples in Britain. These fragile landforms will be kept in as natural a condition as possible and scree forming processes will be allowed to continue naturally. This will be achieved by minimising any activities that would damage or modify the screes.

The caves will continue to demonstrate how geological structure, rock type and water flow influence passage profile. The range and distribution of sediments deposited in the caves also provides evidence of the solution and stream processes that have occurred over time. A variety of calcite (calcium carbonate) formations occur throughout the caves, providing an insight into the history of the caves and the contemporary environments.

What management is needed on the Ruabon/Llantysilio Mountains and Minera SSSI and why?

Although Ruabon/Llantysilio Mountains and Minera SSSI is an excellent place for wildlife and geology it will only remain so if the necessary management continues. CCW's priority is to work with you to ensure that this management is carried out.

What does this mean in practice?

There are a number of different factors that could damage the special features of the Ruabon/Llantysilio Mountains and Minera SSSI if they are not properly managed. These are the ones we regard as most important:

Grazing

For many of the plant communities within Ruabon/Llantysilio Mountains and Minera SSSI, the amount to which they are grazed is of great importance. Too much and the plant community may become damaged, too little and other plant species e.g trees and scrub will start to take over.

The ideal level of stock grazing and the best time of year for it to take place, varies depending on the plant community concerned. Here are some examples of the effects of inappropriate grazing:

The heavy grazing of heathland can result in the heather being replaced by acid grassland. As autumn progresses the amount of grass and other herbs on the mountains will decrease. High numbers of sheep at this time of year could lead to the heavy grazing of the heather plants and a decrease in the amount of heather.

A lack of grazing of heathland can result in the encroachment of scrub and trees, with the eventual loss of the heathland plants. A lack of grazing of limestone or neutral grassland may result in its important species being shaded or out-competed by scrub or bracken, while heavy grazing may lead to a reduction in important grassland species, increased bare ground and possibly even erosion.

Wherever possible regular shepherding of flocks to ensure even grazing throughout the area of the heft would be advantageous as this would avoiding damaging concentrations of grazing on the lower slopes of the mountain, particularly those with limestone grassland vegetation.

Stock-feeding

The need for stock-feeding on an open mountain with hay, straw, silage or feeding blocks is generally taken as an indication that the level of stocking is too high. Such feeding often results in a loss of the vegetation around the feeding points. This can result in soil poaching and the establishment of non-native grasses and weeds such as docks and nettles. For these reasons it is considered damaging to natural habitats, and wherever possible should be confined to emergency animal welfare situations. Where routine stock-feeding is necessary, stock should be moved so that this can take place on land outside the SSSI.

Heather management: Burning & Mowing

Small patch heather burning or mowing can be a valuable method for managing dry heath habitats when carried out in an appropriate manner. It promotes the regeneration of young heather shoots for grazing by stock and feeding by birds, and creates a diverse vegetation age structure that is ideally suited to game species such as grouse.

However, an uncontrolled fire can result in major long-term damage to vegetation, the loss of peaty soils and an increased risk of injury to people. Because of this, any burning must always be undertaken in accordance with the Heather and Grass Burning Code (MAFF 1992), by adequately trained staff with fire safety machinery and in suitable weather conditions,

In addition, any burning of vegetation within the SSSI should only be undertaken as part of a burning plan agreed with Countryside Council for Wales. For dry heath areas any such plan should follow a minimum 15-year burning cycle. Within burning plans, areas unsuitable for management and those with long, very mature heather, should remain unmanaged. This is because the mature, more open canopy allows the development of a more diverse plant and fungal community, and provides nesting sites for ground nesting birds. This is particularly so in known traditional nest sites.

Areas of blanket bog should not be burnt; nor should areas of dry heath on the high ridges or areas where heather is extremely slow growing and cannot easily recover. Burning in areas known to contain bracken should also be avoided as this is likely to result in an increase in bracken cover and corresponding decline in the heather.

Heather mowing may be used instead of burning in many areas. This is particularly so where the availability of manpower, unsuitable weather or the risk of fire spreading into undesired areas makes burning impractical.

Heather Beetle
Areas of Ruabon/Llantysilio Mountains and Minera SSSI have been attacked by heather beetle in the past. The larvae of this native British species feed upon the sap of heather plants. This leads to the drying out and eventual death of the plant concerned. Outbreaks may become more common as a result of increased nitrogen deposition and because winters may be becoming milder.

Areas damaged by heather beetle should be managed by burning or mowing as part of the normal, small patch management programme. This will allow new heather plants to grow from the underlying seed bank.

Drainage and Moor-gripping
Blanket bog is created in cold, upland conditions in areas of high rainfall. Therefore the continued development and maintenance of the peat layer depends on persistently wet ground conditions for most of the year

No new moor-grips should be cut, and wherever possible existing grips and drains should either be allowed to clog naturally or be actively blocked. This will help to slow the loss of the peat and restore more natural water tables.

Bracken Management
Bracken is found throughout the Ruabon/Llantysilio Mountains and Minera SSSI, particularly on the deeper soils on the edges of the site. Bracken control should be undertaken when it threatens to encroach into areas of dry heath, blanket bog, limestone grassland or other habitats that are important for nature conservation. A programme should be agreed with CCW, with control undertaken by rolling, cutting, spraying or weed-wiping,

Care should be taken to comply with Environment Agency guidance especially when using herbicide near watercourses. Spraying may also be inappropriate in areas where there are populations of rarer fern species.

Control of Alien Species
Any alien species, such as Rhododendron ponticum, or other plants that are not native to the site should be removed.

Encroachment and Regeneration of Trees
The spread of non-native trees is not generally desirable and the spread of any trees or scrub into open heathland or grassland should be prevented where these may lead to the decline of the heathland or grassland habitats.

However, the presence of up to 20% cover of trees such as birch and rowan, up to 200m from forest edges can be of benefit to bird species such as black grouse. Some trees will be allowed where this is known to be of benefit to the local black grouse population.

Areas of “ffridd”, grassland containing acid grassland, hawthorn, blackthorn or rowan trees should be managed to maintain their character and to encourage the regeneration of younger trees of this type.

Game Management and Shooting
The shooting of wild bred game species such as red and black grouse should only occur when doing so would not reduce the viability of wild stocks on the site. Landowners and occupiers have agreed to exercise voluntary restraint in not shooting species such as black grouse where populations are unable to support shooting.

Recreational activities
Much of Ruabon/Llantysilio Mountains and Minera SSSI has been designated as Access Land. It is important for the well-being of its wildlife and of its agricultural community that this right is exercised responsibly, and in accordance with the new Countryside Code.

Walkers should try to avoid areas of wet ground to avoid erosion and damage to the vegetation and peat surfaces. During the bird-nesting season they should also try to avoid activities or routes that might disturb ground nesting birds.

Dogs should be kept under close control on public rights of way, and on a short lead in open access areas to avoid disturbance to stock, or to nesting birds during the breeding season.

The use of vehicles, particularly 4x4 and off-road motorcycles, for recreational purposes does significant damage to the vegetation and landscape of this site. Any such activity should be reported to the police. CCW is working closely with the local authorities and North Wales Police in an attempt to control this problem.

Rock climbers should be aware of, and adhere to, any restrictions put in place to protect cliff-nesting birds. The rock climbing press and local rock climbing organisations should be advised of the locations of any rare or protected plant species so that they can avoid them or avoid damaging them.

Commercial organisations wishing to engage in any out-door activity within the SSSI should not do so without the permission of the owner and/or occupier of the land concerned. In such cases, landowners and/or occupiers intending to permit such activity must first notify CCW and may not proceeded without CCW's consent.

Activities that might affect bats
Bats are very sensitive to changes in their environment, and the particular conditions that lead them to choose one roost in favour of another are not always fully understood. This means that great care has to be taken when making decisions about the activities that can occur near to these sites

When flying to or from a roost, either to hunt or when migrating, bats use continuous features such as hedgerows and dry stone walls to help them find their way. Identifying and protecting these features is therefore an important part of bat conservation.

Bats are very susceptible to disturbance whilst hibernating. Winter monitoring visits should therefore be restricted to two per winter. If bats are disturbed repeatedly during the winter, arousal from hibernation will result in increased use of stored body fat,

which may increase the risk of death before spring. To minimise disturbance, consideration should be given to the installation of grills at the entrances to known roosting sites.

Caves and mines must be protected from alterations to airflow. Airflow regimes within caves and mines should maintain constant humidity and temperatures between 8-12^{o}C. It is therefore important to ensure that entrances are kept unobstructed. Similarly it is important to avoid any unplanned new entrances, which may cause changes to ventilation.

It is important to maintain the accessibility and integrity of the entrances to kilns, caves and mine systems. Vegetation growth close to cave and mine entrances is desirable for the purposes of providing cover for dispersing bats. However, management undertaken to remove excessive vegetation growth around roost entrances may periodically be required. Management works may also be required to maintain the structural integrity and condition of roost entrances.

Activities that may damage the geological and geomorphological interest
Any operations that have an impact on the natural form and development of the screes, for example removal of scree material, quarrying and civil engineering schemes (including road improvements), could result in instability leading to a change in the natural profile of the scree slopes. The impressive escarpment that extends along the Eglwyseg Valley provides important exposures of Lower Carboniferous rocks. Any activities that would decrease the visibility and accessibility to the rock outcrops should be avoided

Minera Caves
The general principle of conservation must be to maintain the cave environment in the condition it was in prior to discovery, consistent, where possible, with maintaining access to legitimate users to permit further exploration, recording and study.

Access and Visitor Pressure to caves
The main factor in the degradation of the cave fabric and environment comes from the wear and tear resulting from the passage of cavers and their activities. Effective access control is in place over important parts of the site, and steps should be taken to arrange agreement to protect the most vulnerable cave sites.

Finally
Our knowledge of wildlife is far from complete. It is possible that new issues may arise in the future, whilst other issues may disappear. This statement is written with the best information we have now, but may have to change in the future as our understanding improves. Any information you can provide on the wildlife of your site and its conservation would be much appreciated.

If you would like to discuss any aspect of your SSSI, or have any concerns about your SSSI, please contact your local CCW office.

Your local office is:
CCW Berwyn and Wrexham Team
56 High Street, Bala, Gwynedd, LL23 7TW June 2006

DRAWINGS

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1. View of sheep grazed pasture field adjacent to substation (SJ2948)
2. Pilons and overhead lines present in area (SJ2948).
3. Field of bare earth, ploughing took place at time of survey (SJ2948).
4. Small rough grassland area north of Brook (SJ3047).
5. Building with potential for barn owl (SJ3047).
6. Area of rough grassland adjacent to crematorium (SJ3047 & SJ 3048).
7. View of arable fields (SJ3048).
8. Area of pasture habitat within SJ3148.
9. View of pasture habitat adjacent to Brook within SJ3148.

Revision	Description	Amended by	Date

TEP
Genesis Centre
Birchwood Science Park
Warrington
WA3 7BH
Tel: 01925 844004
Fax: 01925 844002
e-mail: tep@tep.uk.com

Project

Legacy Bird Habitat Assessment

Title

Photographic Reference sheet 1 - Bird Habitat Assessment Area 1

Drwg No		
700.279		
Scale: N/A	Date: 30/03/2011	
Drawn by: MW	Checked by: TR	Authorised: DSw

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10. View of wooded valley of the River Dee (SJ3140)

11. Mature tree identified as potential barn owl nest site 500 metres to East of proposed OHL.

12. Area of pasture near Flannog Farm in the Southeast corner of SJ3141.

13. Steep-sided slopes of pasture (SJ3139).

14. Area of flat pasture along the River Dee with exposed sand banks showing in the background.

15. View of fields at base of Dee valley (SJ3239).

16. View of fields at base of Dee Valley (SJ3239).

17. Area of pasture habitat within SJ3239.

18. View Area of pasture habitat within SJ3239.

Revision	Description	Amended by	Date

TEP
Genesis Centre
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Project

Legacy Bird Habitat Assessment

Title

Photographic Reference sheet 2 - Bird Habitat Assessment Area 2

Drwg No		
700.280		
Scale: N/A	Date: 30/03/2011	
Drawn by: TR	Checked by: EJS	Authorised: DSw

19.

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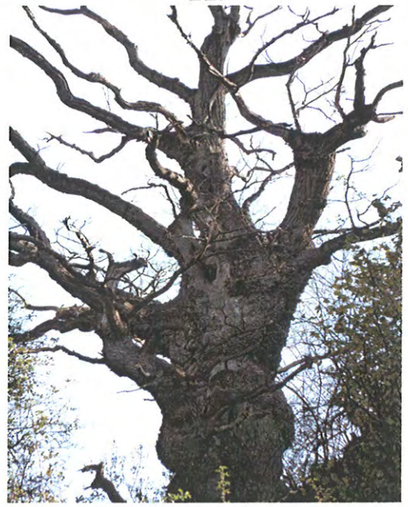
22.



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19. Wet flush and marshy grassland in Northeast quarter of SJ3134.

20. Small wet flush in Southwest quarter of SJ3134.

21. View from New Marton Bridge looking West across typical habitat (SJ3234).

22. Large dead tree with suitable cavities for barn owl (SJ3235).

23. Rush dominated pasture provides prime breeding habitat for waders (SJ3235).

24. Farm building with barn owl nesting potential 1km west of proposed overhead line route (SJ3236).

25. Group of trees suitable for nesting barn owl located 200 metres west of proposed overhead line route (SJ3236).

26. Pasture fields within SJ3236.

27. Pasture fields and typical farm outbuildings within SJ3236.

Revision	Description	Amended by	Date

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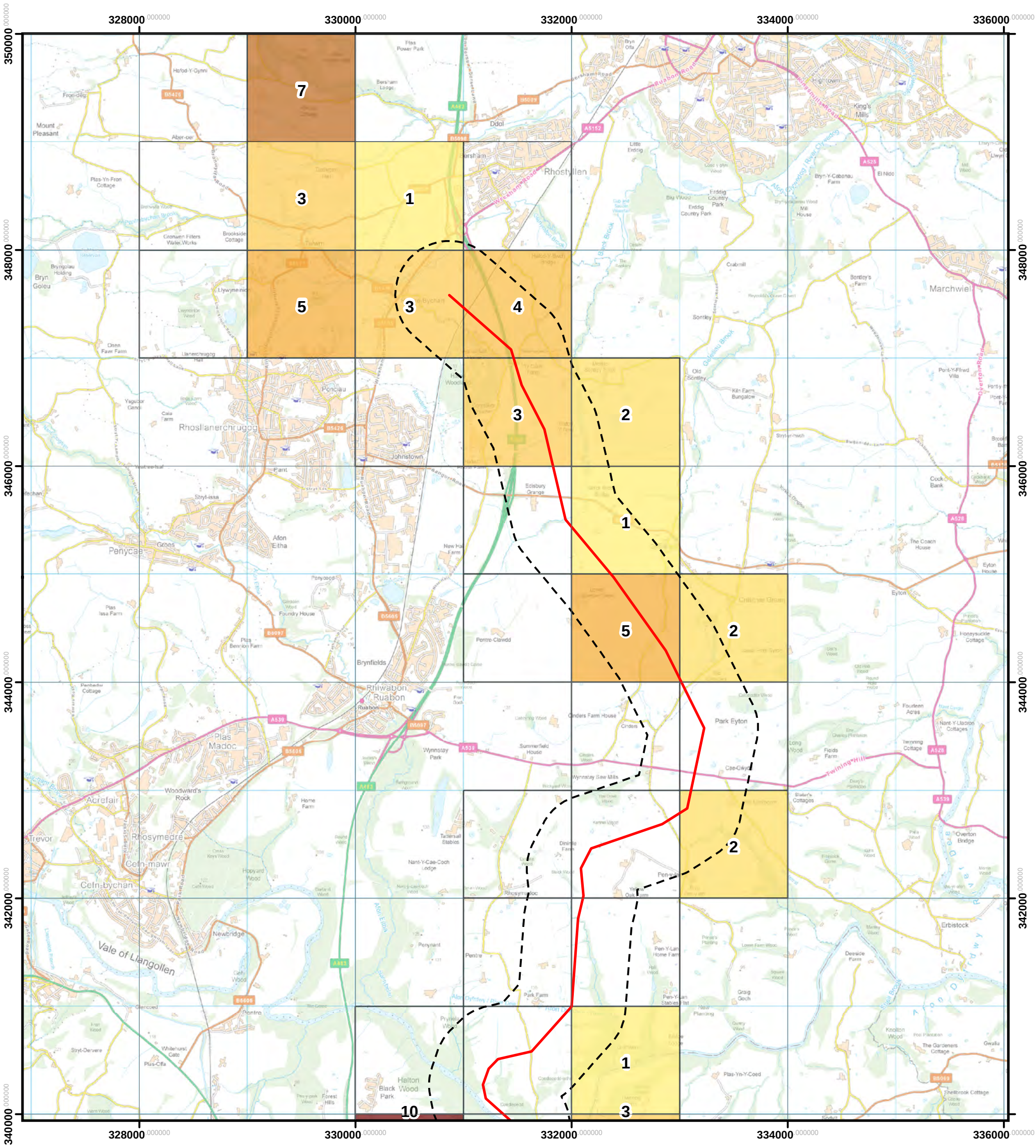
Project

Legacy Bird Habitat Assessment

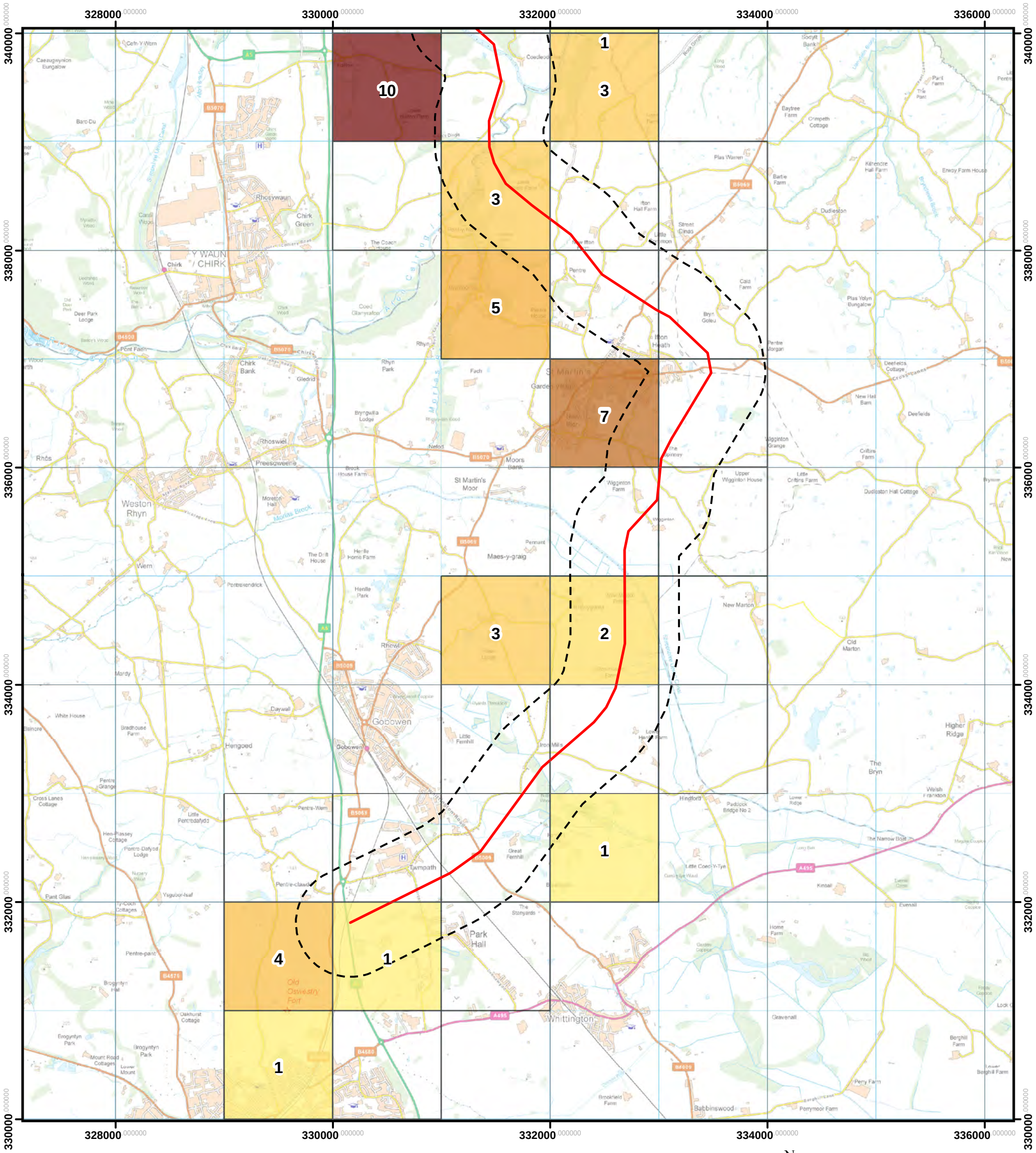
Title

Photographic Reference sheet - Bird Habitat Assessment Area 3

Drwg No		
700.281		
Scale: N/A	Date: 30/03/2011	
Drawn by: TR	Checked by: EJS	Authorised: DSw



Project: Legacy to Oswestry 132kV Overhead Line Environmental Statement		
Map Title: Number of UKBAP Bird Species by 1km grid square within 500m of Proposed Route - North		
Drawing Number: G700.322		
Scale: 1:35,000 @ A3	Date: 25.07.2012	
Drawn: PL	Checked: TR	Approved: TR



Project	Legacy to Oswestry 132kV Overhead Line Environmental Statement
Map Title	Number of UKBAP Bird Species by 1km grid square within 500m of Proposed Route - South
Drawing Number	G700.323
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Date	25.07.2012
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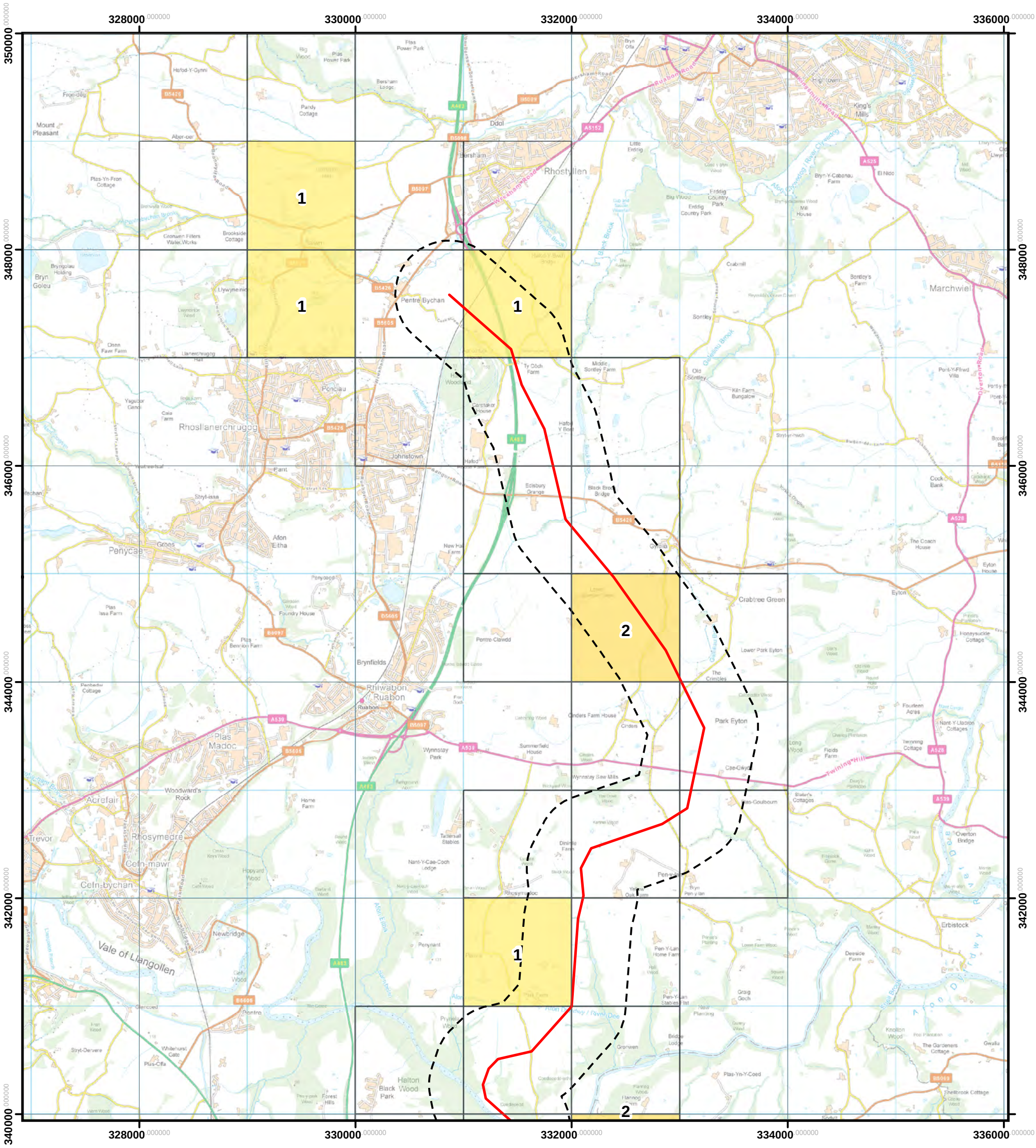

Project	Legacy to Oswestry 132kV Overhead Line Environmental Statement
Map Title	Number of Schedule 1 Bird Species by 1km grid square within 500m of Proposed Route - North
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Date	25.07.2012
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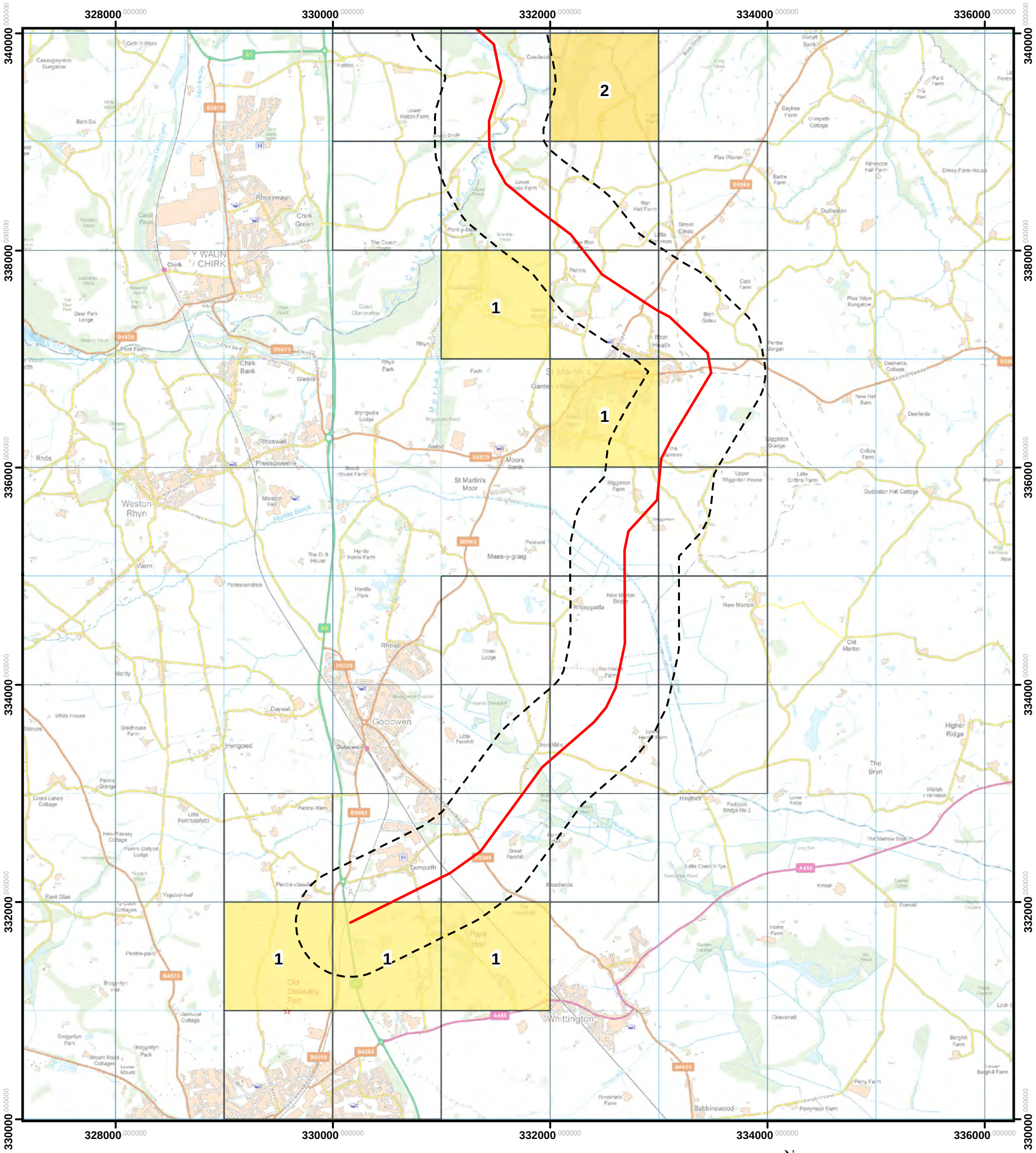
Approved	TR



Project	Legacy to Oswestry 132kV Overhead Line Environmental Statement
Map Title	Number of Schedule 1 Bird Species by 1km grid square within 500m of Proposed Route - South
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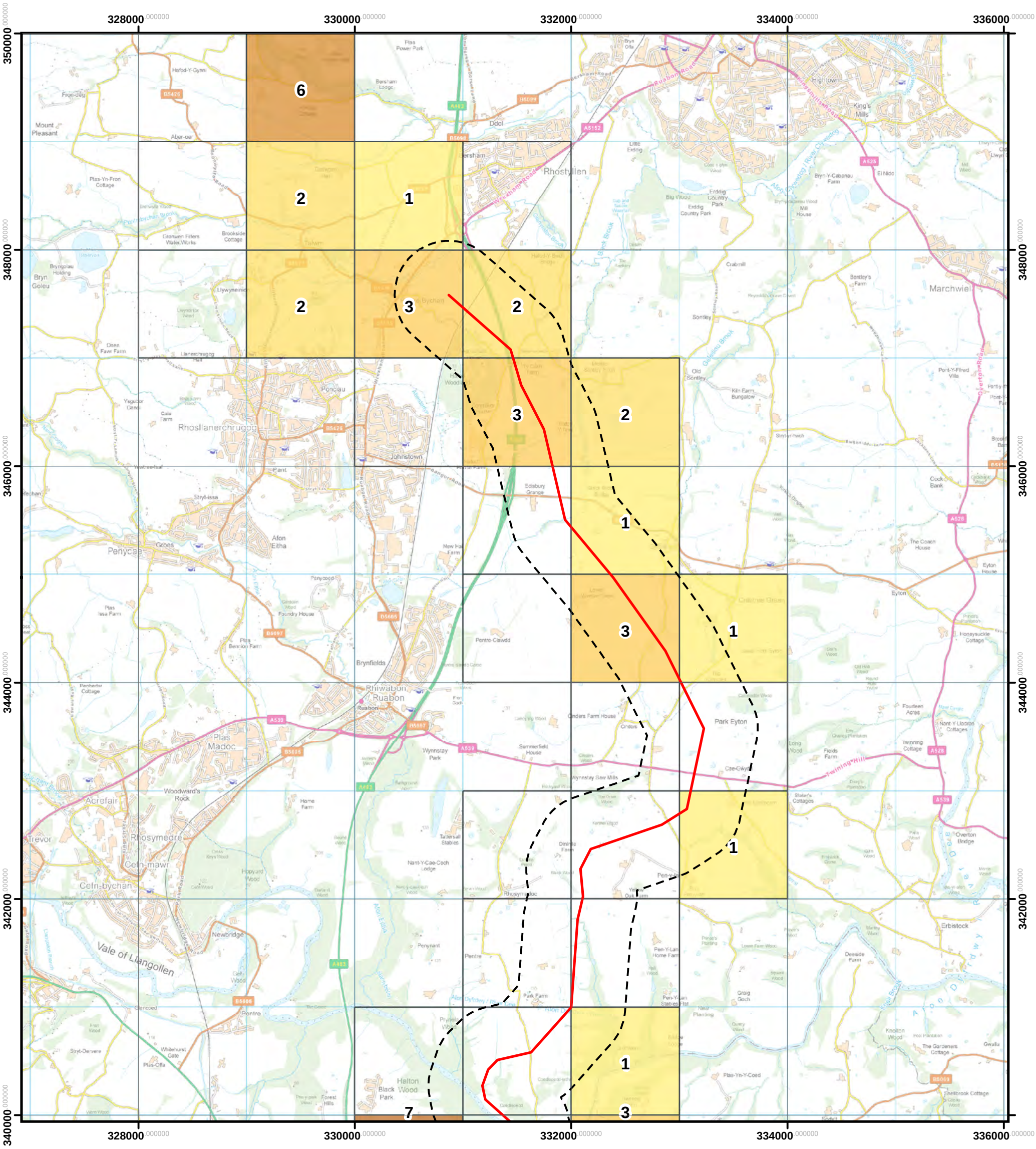

Project	Legacy to Oswestry 132kV Overhead Line Environmental Statement
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Drawing Number	G700.326
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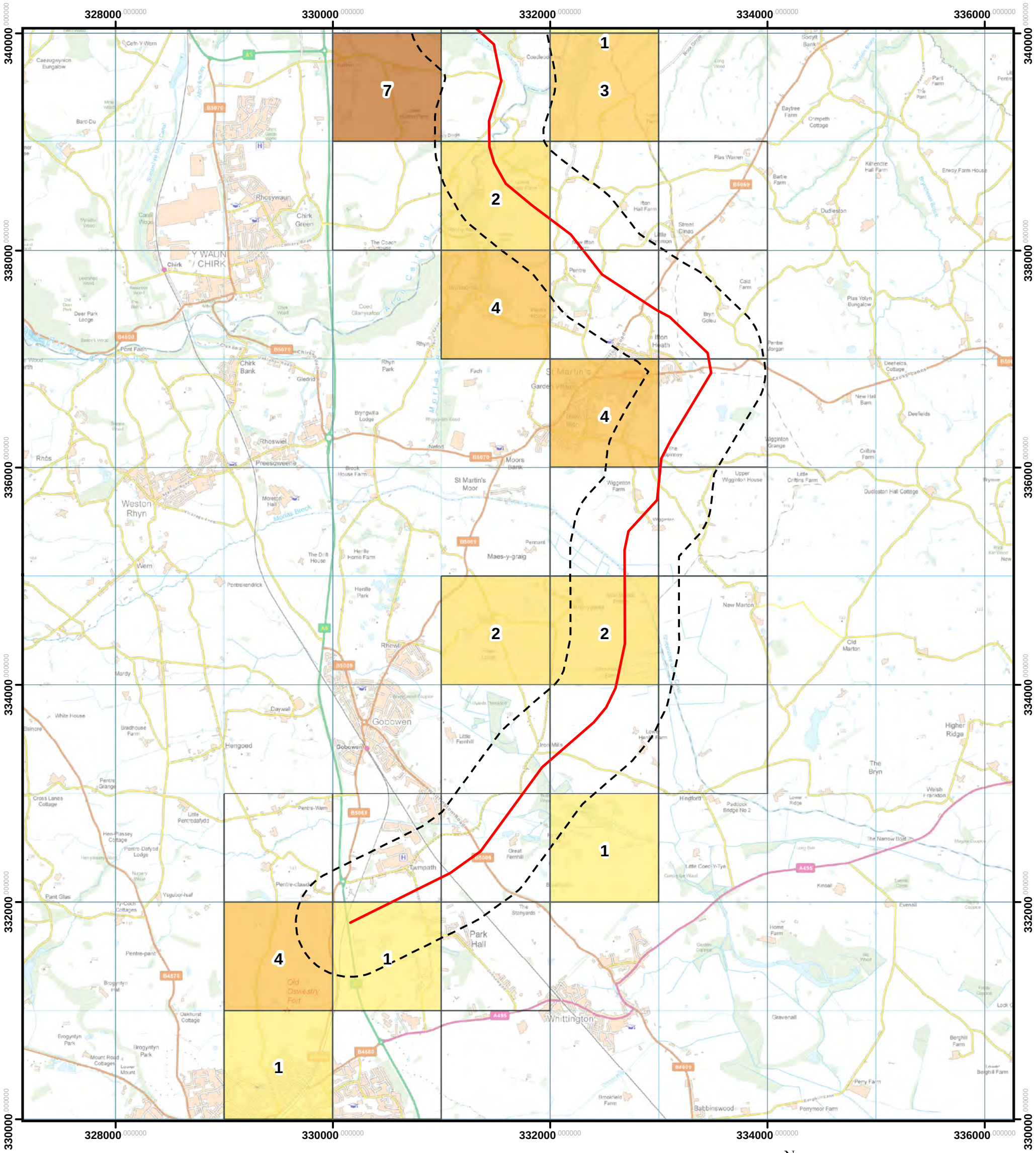

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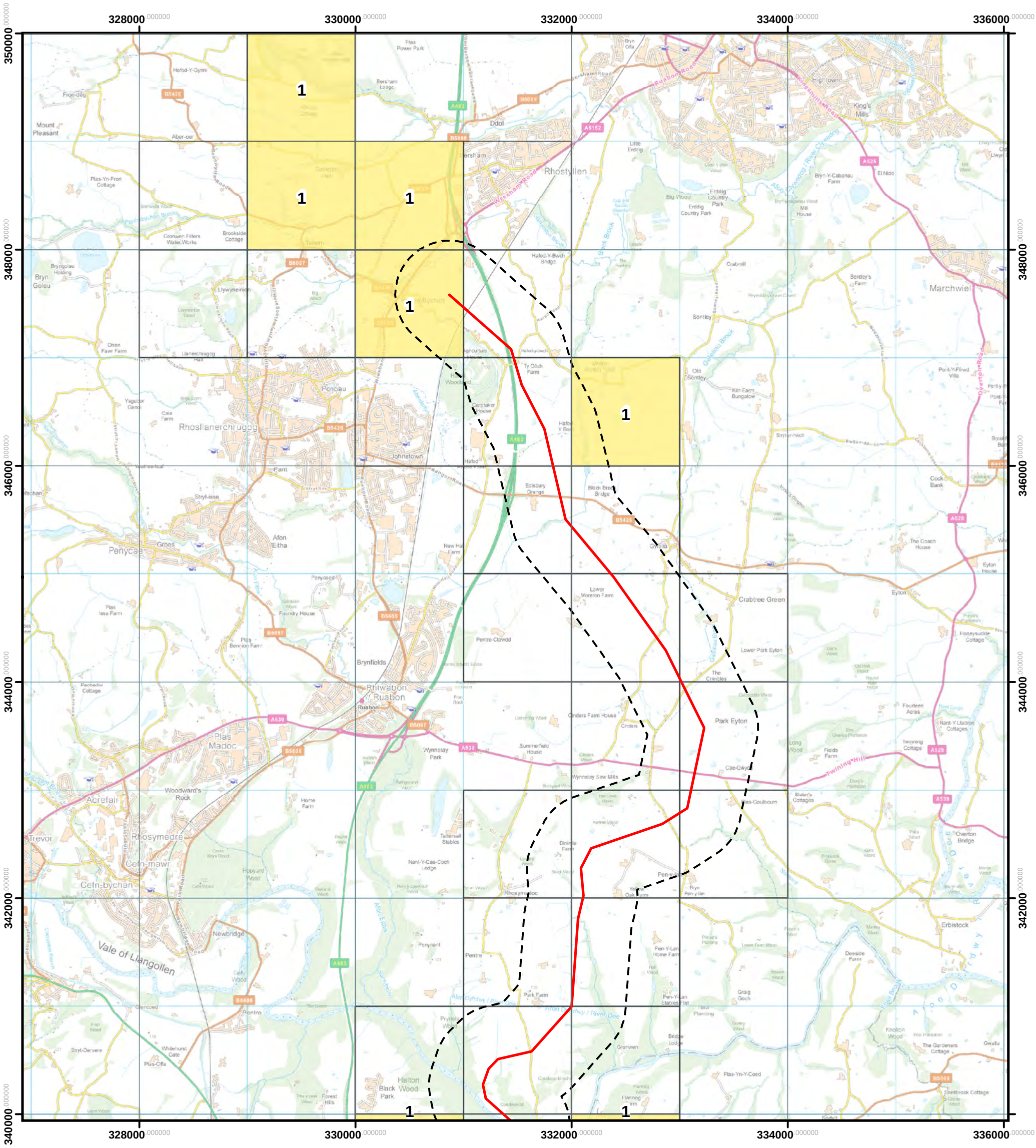

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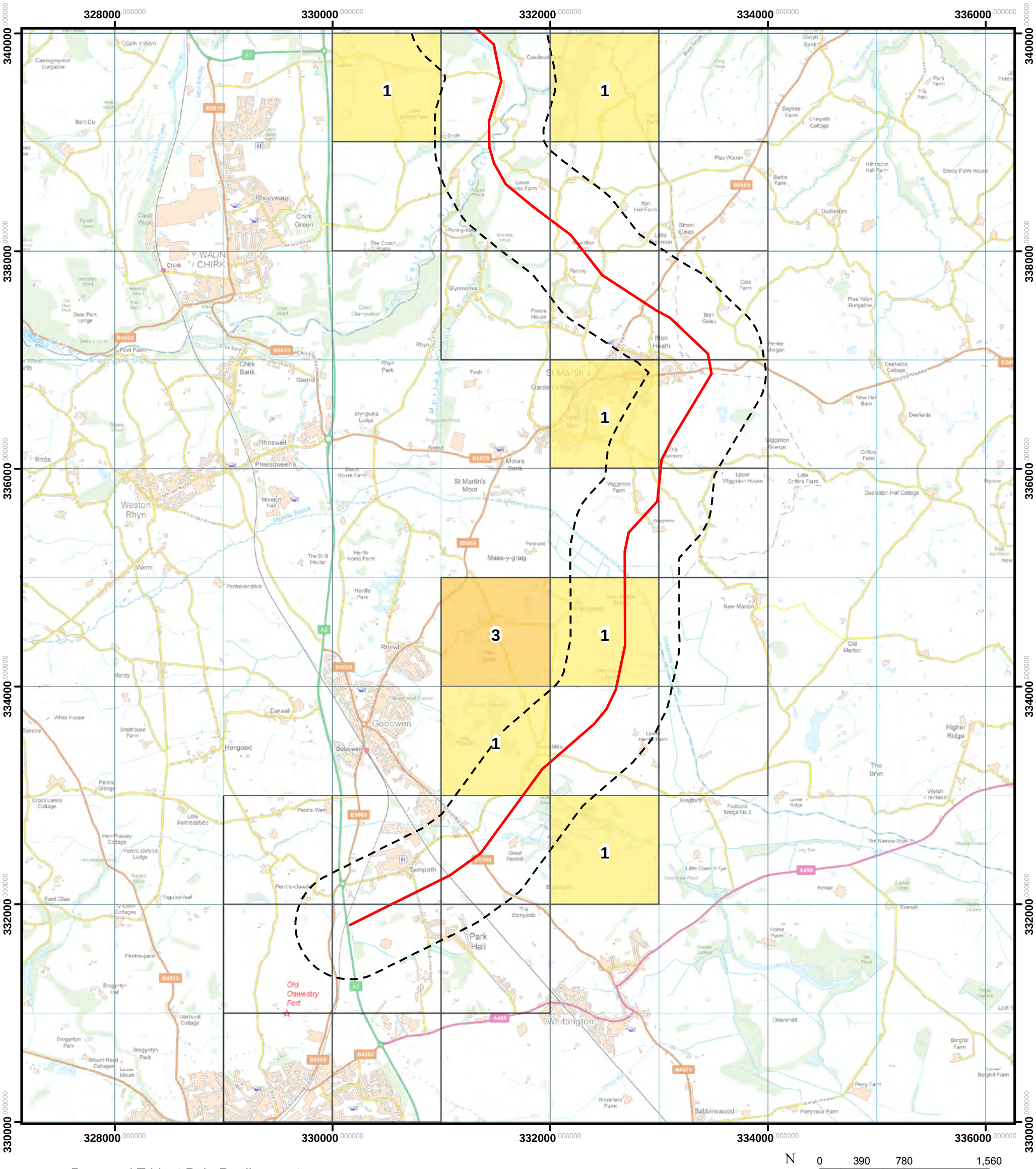

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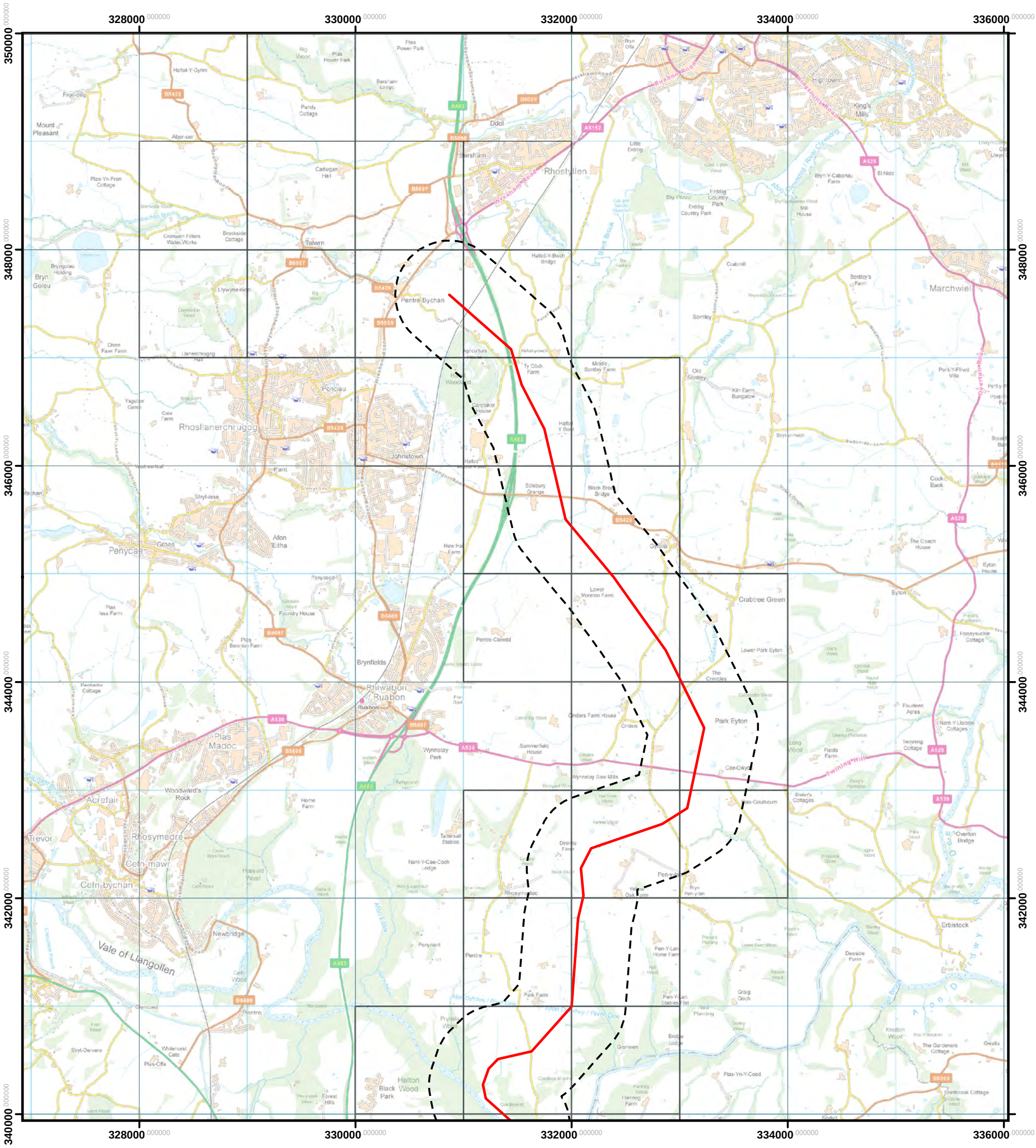

Proposed Trident Pole Realignment

500m buffer of route

Number of species

1
2
3
4
5
6
7
8
9
10

N

0 390 780 1,560

Metres

Project: Legacy to Oswestry 132kV Overhead Line Environmental Statement		
Map Title: Number of Wildfowl Species by 1km grid square within 500m of Proposed Route - North		
Drawing Number: G700.330		
Scale: 1:35,000@ A3	Date: 25.07.2012	
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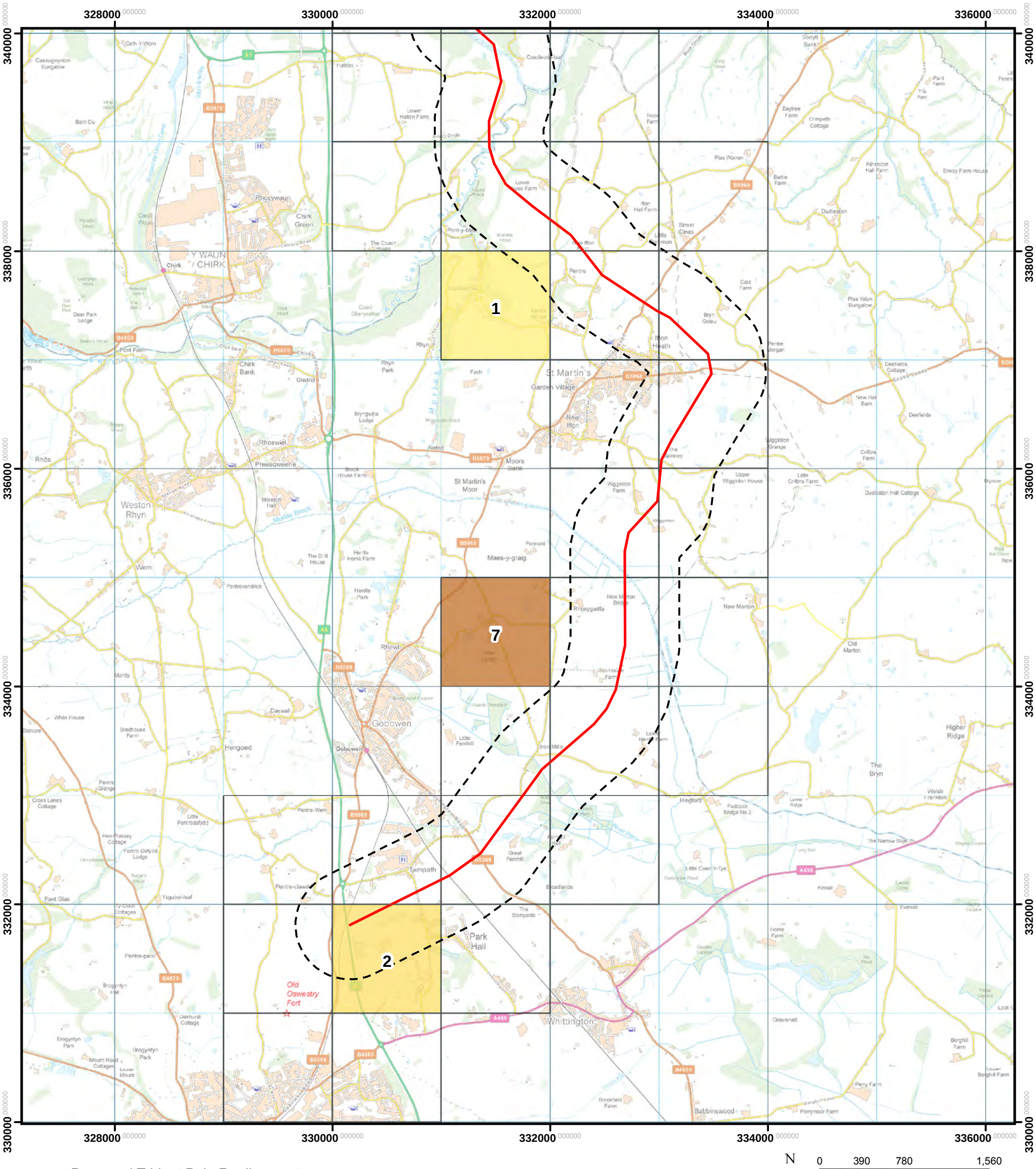

Project	Legacy to Oswestry 132kV Overhead Line Environmental Statement
Map Title	Number of Wildfowl Species by 1km grid squares within 500m of Proposed Route - South
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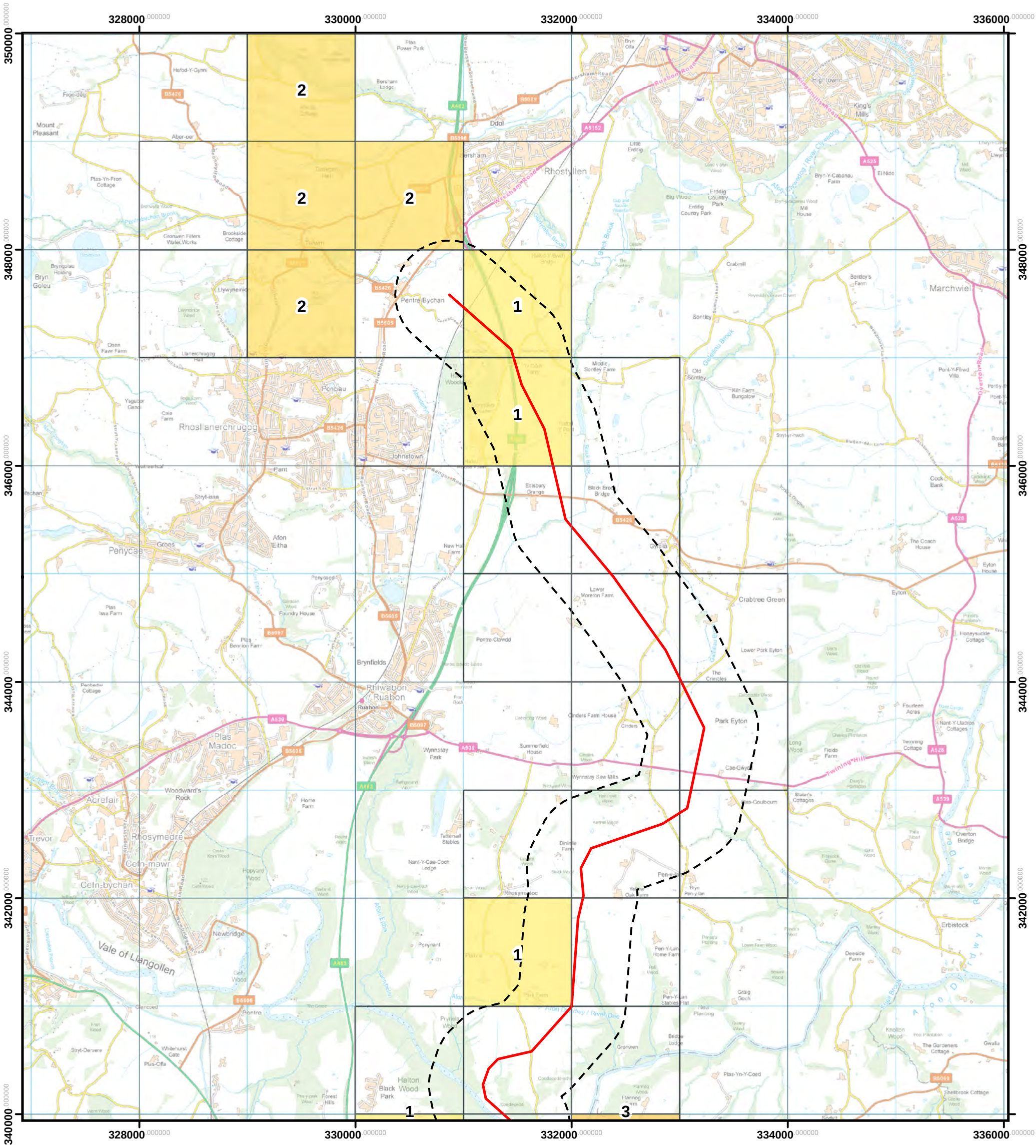

Project	Legacy to Oswestry 132kV Overhead Line Environmental Statement
Map Title	Number of Raptor Species by 1km grid squares within 500m of Proposed Route - North
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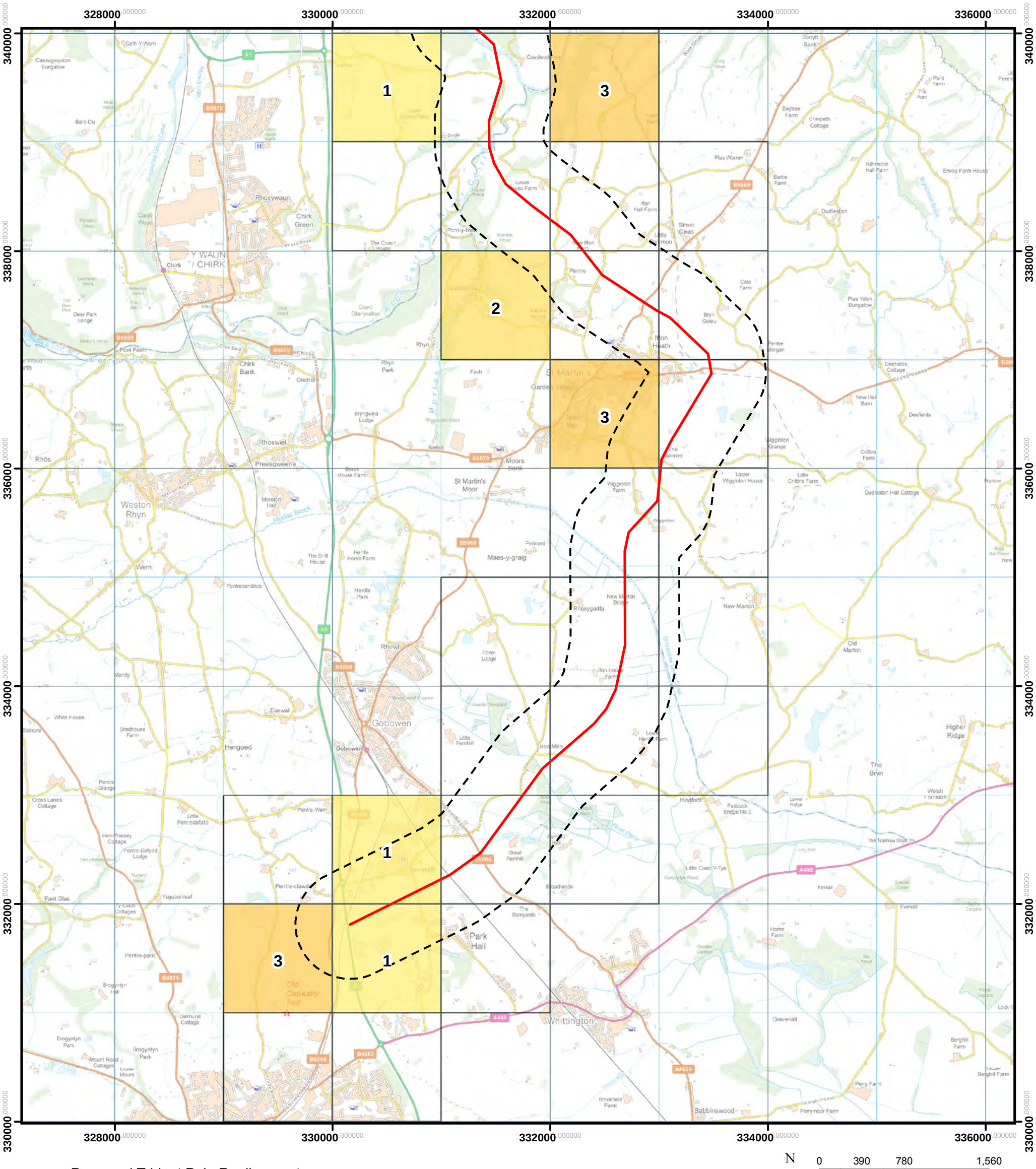
Approved	TR



Project: Legacy to Oswestry 132kV Overhead Line Environmental Statement		
Map Title: Number of Raptor Species by 1km grid square within 500m of Proposed Route - South		
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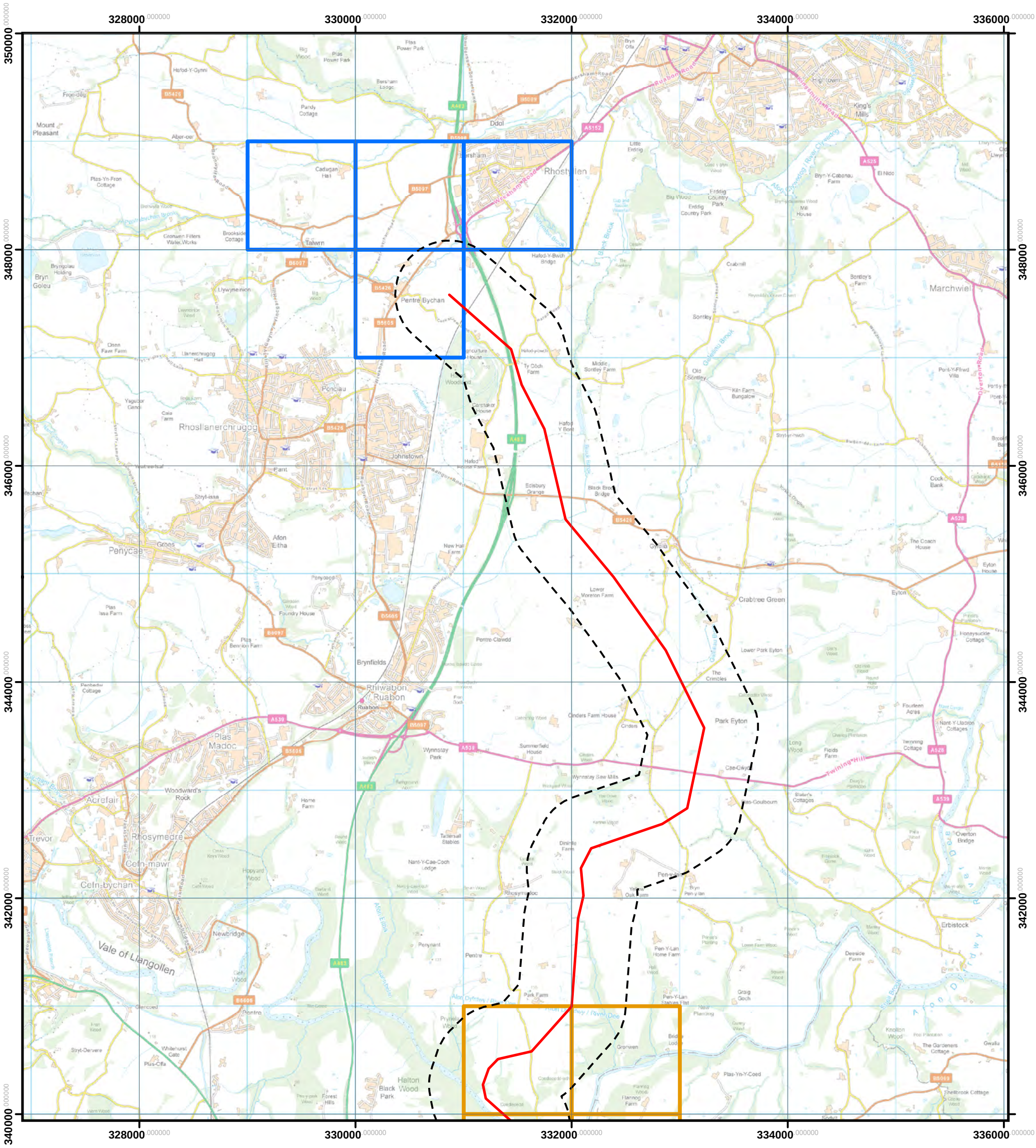


Proposed Trident Pole Realignment

500m buffer of route

Survey Area 1

Survey Area 2

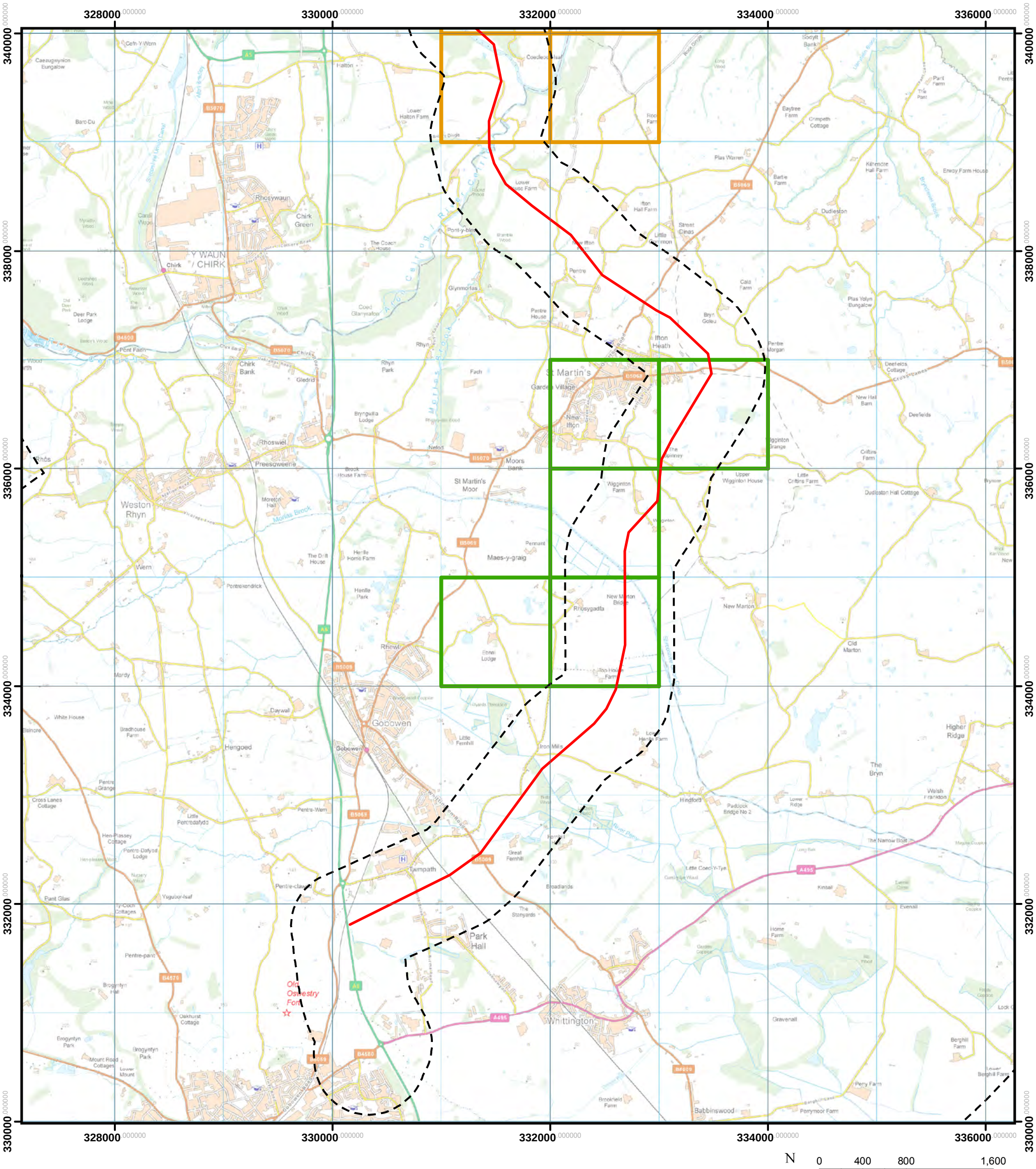
Survey Area 3

N

0 400 800 1,600

Metres

Project: Legacy to Oswestry 132kV Overhead Line Environmental Statement		
Map Title: Bird Habitat Assessment 2011 Survey Areas 1 to 3 - North		
Drawing Number: G700.334		
Scale: 1:35,000@ A3	Date: 25.07.2012	
Drawn: PL	Checked: TR	Approved: TR



- Proposed Trident Pole Realignment
- 500m buffer of route
- Survey Area 1
- Survey Area 2
- Survey Area 3

Project: Legacy to Oswestry 132kV Overhead Line Environmental Statement		
Map Title: Bird Habitat Assessment 2011 Survey Areas 1 to 3 - South		
Drawing Number: G700.335		
Scale: 1:35,000@ A3	Date: 25.07.2012	
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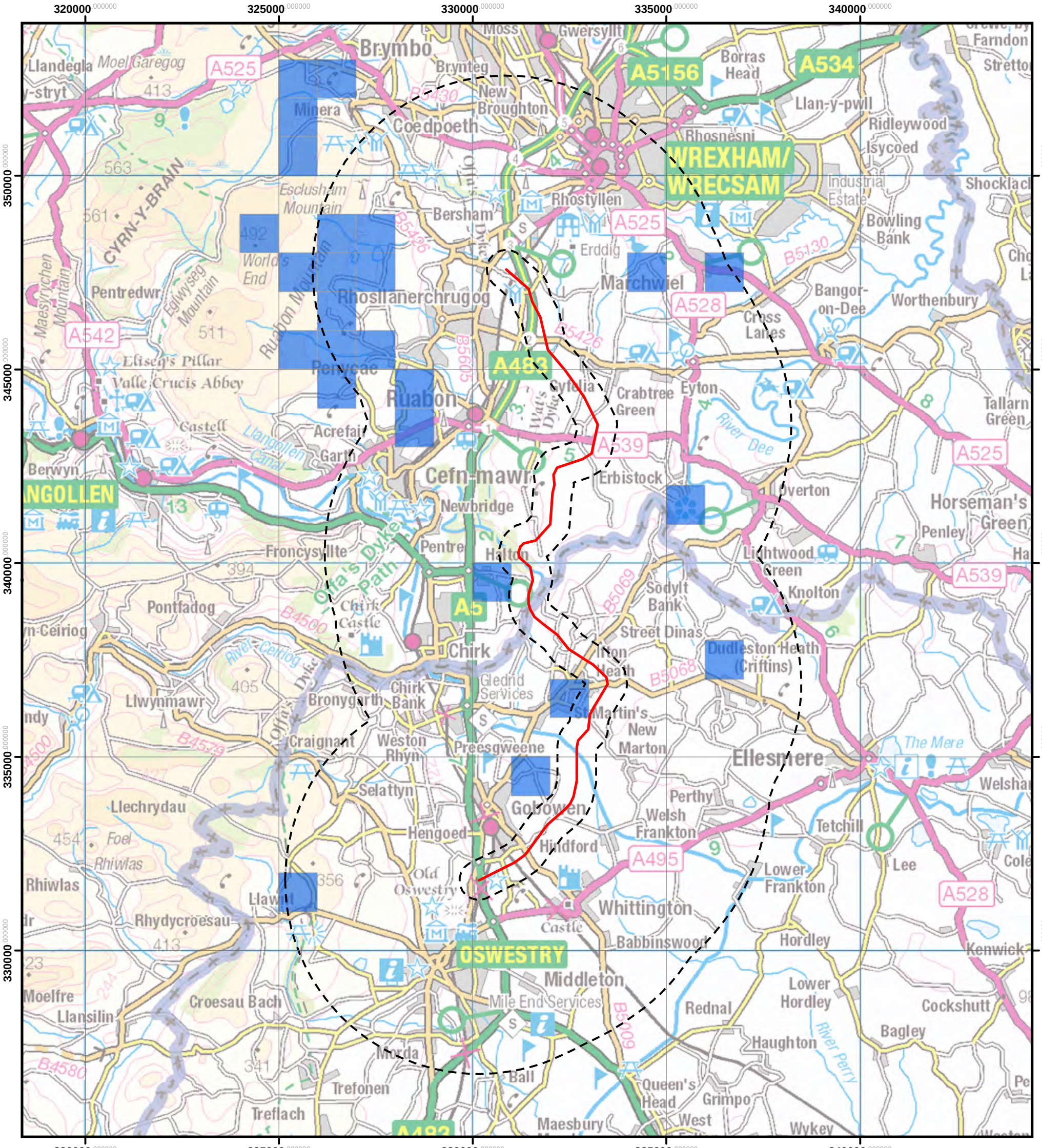


Proposed Trident Pole Realignment

500m and 5km buffer of route

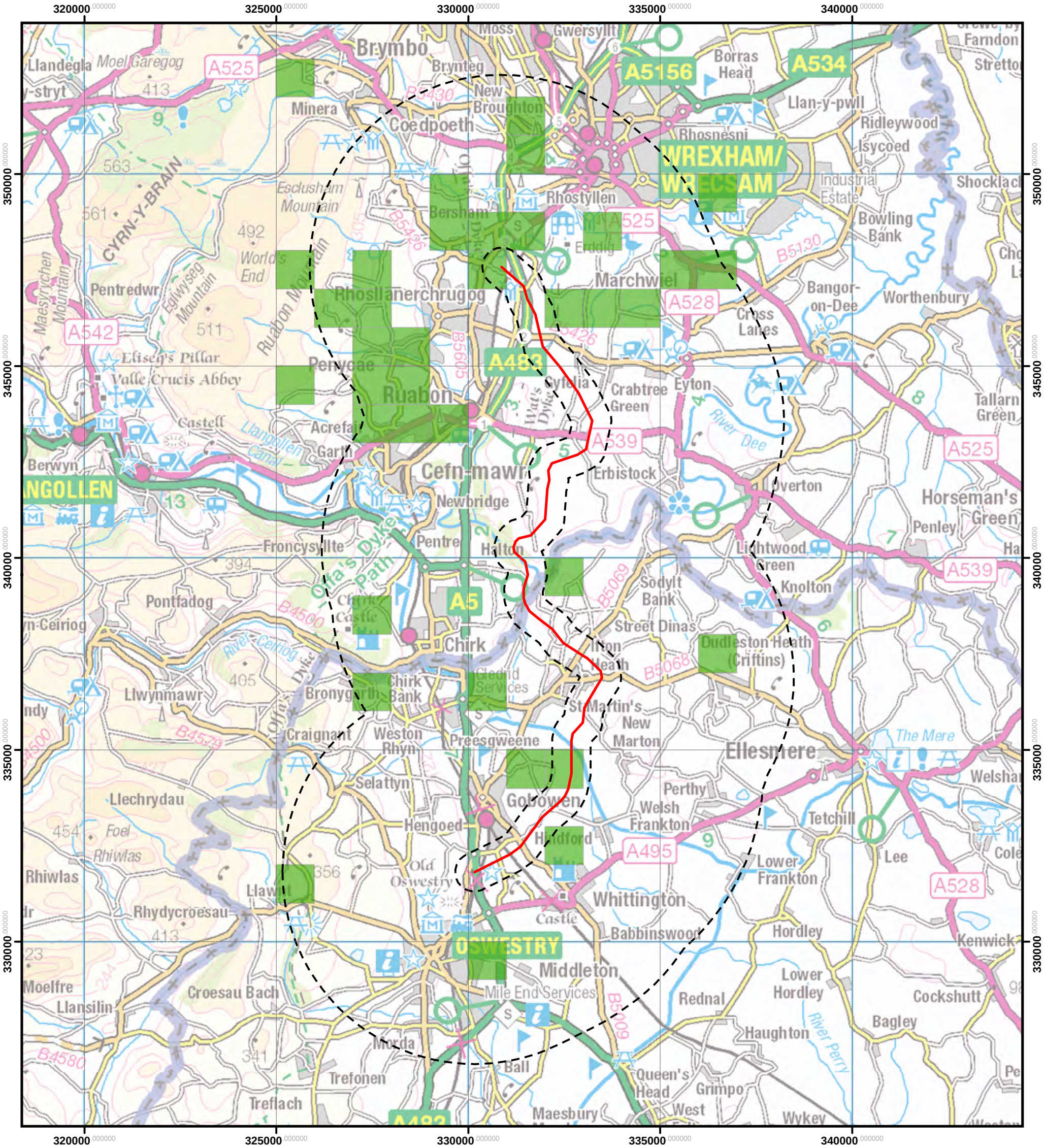
1km grid square with Curlew records between 2000 and 2011

N

0 1,250 2,500 5,000

Metres

Project: Legacy to Oswestry 132kV Overhead Line Environmental Statement		
Map Title: Desktop Records 2000 to 2011 for Curlew within Desktop Survey Area		
Drawing Number: G700.336		
Scale: 1:100,000 @ A3	Date: 25.07.2012	
Drawn: PL	Checked: TR	Approved: TR



Proposed Trident Pole Realignment

500m and 5km buffer of route

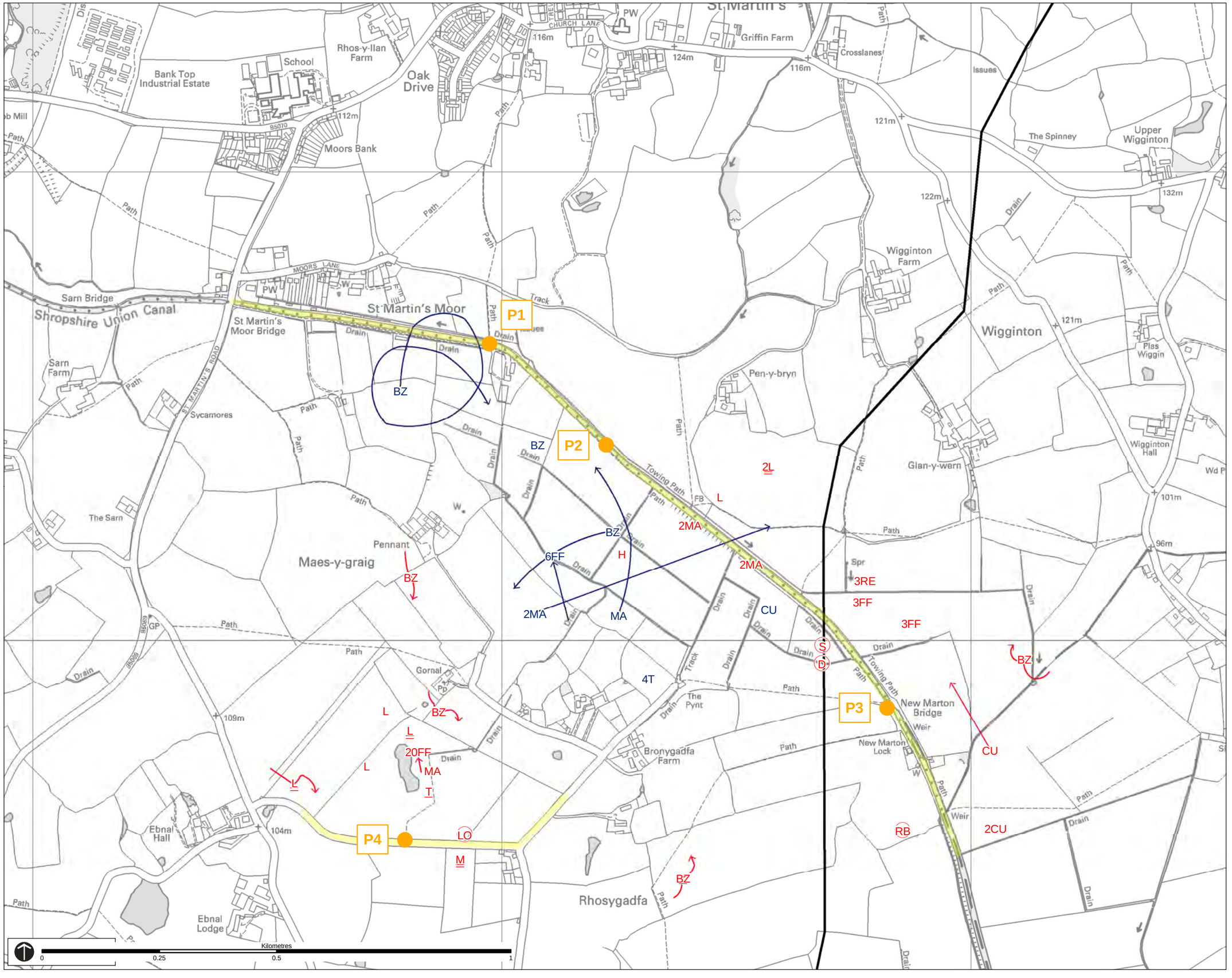
1km grid square with Lapwing records between 2000 and 2011

N

0 1,200 2,400 4,800

Metres

Project: Legacy to Oswestry 132kV Overhead Line Environmental Statement		
Map Title: Desktop Records 2000 to 2011 for Lapwing within Desktop Survey Area		
Drawing Number: G700.337		
Scale: 1:100,000@A3	Date: 25.07.2012	
Drawn: PL	Checked: TR	Approved: TR



Key

Visit 1: 04/05/2011

- Directional flight line

Visit 2: 01/06/2011

- = Bird giving alarm call
- – Bird calling
- ◯ Bird singing
- Directional flight line
- Line Transect Route
- P1 Point count location for flight line survey
- Proposed Trident Single Wood Pole 132kV Overhead Line Route

Species Codes

BZ	Buzzard
CU	Curlew
D	Dunnock
FF	Fieldfare
H	Grey Heron
L	Lapwing
LO	Little Owl
M	Mistle Thrush
MA	Mallard
RB	Reed Bunting
RE	Redwing
S	Skylark

SP MANWEB

Project:	Legacy to Oswestry 132kV Overhead Line
Figure No:	G700.349
Drawing Title:	Ebnal Hall and the Shropshire Union Canal Winter Bird Survey 2011-2012
Date: 25-07-12	Drawing No: G700.349
Drawn: PL	Checked: TR / Approved: DS

APPENDIX 16A Archaeological Desk Based Assessment: Original Route

Proposed Overhead Line Route between Legacy (Wrexham) and Oswestry

Archaeological desk-based assessment for TEP

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LIST OF FIGURES

Proposed Overhead Line Route between Legacy (Wrexham) and Oswestry

Archaeological desk-based assessment for TEP

Summary

In November 2006 TEP commissioned Oxford Archaeology (OA) to undertake an archaeological desk-based assessment examining the potential archaeological implications of the proposed reinforcement of 132kV overhead line between substations at Legacy (centred on NGR SJ 2945 4850) and Oswestry (NGR SJ 3032 3055).

This assessment has demonstrated that the proposed development route contains a number of identified archaeological feature, including Scheduled Ancient Monuments, along with areas of well preserved ridge and furrow earthworks of Medieval and post-Medieval origin.

There are 152 identified archaeological features, including 19 Scheduled Monuments (SMs), 16 Listed Buildings, 25 Historic Landscape Features, 34 earthworks and/or cropmarks and 20 sites of archaeological activity.

This desk-based assessment has demonstrated that the study area has a low potential for the discovery of previously unknown prehistoric sites, a high potential for the discovery of archaeology from the Roman period, and a moderate potential for the discovery of sites of Medieval date.

Overhead Line Route between Legacy (Wrexham) and Oswestry

Archaeological desk-based assessment

1 INTRODUCTION

1.1 Background

1.1.1 In November 2006 TEP commissioned Oxford Archaeology (OA) to undertake an archaeological desk-based assessment examining the archaeological resource of a corridor for the proposed reinforcement of 132kV overhead line between substations at Legacy (centred on NGR SJ 2945 4850) and Oswestry (NGR SJ 3032 3055). The proposed works comprise the reinforcement of existing 132kV overhead line along a 19.6km corridor (overhead cabling) plus 3km underground cabling.

1.1.2 This desk-based assessment forms an initial stage of archaeological investigation. For the purposes of this report the archaeological and cartographic sources, including results from archaeological investigations in close proximity to the proposed development area and a 500m corridor study area around it (henceforth 'Study Area'), were examined. A walkover survey of the line of the proposed works was also conducted in order to examine the potential indirect impacts in more detail.

1.1.3 A distribution map of sites within a 500m buffer zone around the proposed route has been produced (see Figures 1a and 1b). These sites are also shown in a gazetteer, forming Appendix One.

1.2 Site location, topography and geology

1.2.1 The scheme lies in the Borders region between England and Wales, extending south from the built up area of Wrexham, Clwyd (centred on NGR 3380 5120), to the east of Chirk, to the urban area of Oswestry, Shropshire (centred on NGR SP 8450 1460; Figure 1) passes through the parishes of Esclusham, Ruabon, Erbistock, Park Eyton, St. Martin's Selattyn & Gobowen, Whittington and Oswestry, within the administrative areas of Wrexham County Borough Council and Oswestry Borough Council. The proposed development area is hereinafter referred to as the 'Site'.

1.2.2 The scheme corridor crosses generally rural land, avoiding the built up areas of Chirk, Cefn Mawr and Rhosllanerchrugog.

2 PLANNING BACKGROUND

2.1 Policy in England

2.1.1 Planning Policy Guidance: Archaeology and Planning (PPG 16) sets out the Secretary of State's policy on archaeological remains. It acknowledges the potentially fragile and finite or irreplaceable nature of such remains (para. 6), and states that the desirability of preservation of archaeological remains and their setting is a material consideration within the planning process (para. 18). PPG 16 provides that there is a presumption in favour of the physical preservation of nationally important archaeological remains (para. 8), and that where preservation *in situ* is not justified it is reasonable for planning authorities to require the developer to make appropriate and satisfactory provision for excavation and recording of remains (para. 25).

2.1.2 The underlying principle of this guidance is that the cultural heritage resource represents a finite and non-renewable resource and that its conservation should be the primary goal of archaeological resource management.

2.1.3 Paragraph 22 adds: '*Local planning authorities can expect developers to provide the results of such assessments ... as part of their application for sites where there is good reason to believe there are remains of archaeological importance'.*

2.2 Policy in Wales

2.2.1 The document Planning Policy Wales (PPW, March 2002) sets out the Welsh Assembly Government's policies on land use planning. It is supplemented by a series of Technical Advice Notes (TANs), and procedural advice is given in the National Assembly for Wales/Welsh Office Circulars.

2.2.2 PPW, the TANs and circulars together comprise national planning policy which should be taken into account by local planning authorities in Wales in the preparation of Unitary Development Plans (UDPs), including "the protection and enhancement of sites of archaeological interest and their settings" (para. 6.4.2). The principle of these policies is the preservation of sites of archaeological importance *in situ* if possible and practical and, if not, for the satisfactory provision for the archaeological investigation and recording of the remains, and the publication of their results. The latter case should only arise where the preservation of archaeology is not justified in the face of necessary development.

2.2.3 The present Site runs through Wrexham County Borough (Wales) and Oswestry in Shropshire (England). Both Districts possess a local development plan, emphasising the importance of sustainable development balancing the needs of both the historic environment and continuing modern development.

2.3 Hedgerow Regulations

2.3.1 The Hedgerows Regulations 1997 prohibit the removal of protected hedgerows (generally those over 20m in length or connected at both ends to hedges of any length, excluding those bounding domestic gardens). As the Site passes through rural areas, this protection will have to be taken into account.

2.4 Oswestry Borough Council Local Plan

2.4.1 The Oswestry Borough Council's Local Plan (1996-2006) recognises the value of the cultural heritage and seeks to protect it through policies HE 1-16. Policies HE1 to HE16 of the Local Plan relate to the cultural heritage, in particular:

- HE1: Development of the Historic Environment
- HE2 to 6: Listed Buildings
- HE7 to 9: Conservation Areas
- HE13 & 14: Archaeological remains and sites of national and regional or local importance.
- HE16: the assessment of sites of archaeological importance.

2.5 Shropshire and Telford & Wrekin Joint Structure Plan

2.5.1 As part of the Joint Structure Plan (adopted 14th November 2002, covering the period 1996 - 2011), buildings of special architectural or historic interest and scheduled as ancient monuments shall be protected from development which would have a detrimental effect on their fabric, character and setting, especially where this would affect their listed or scheduled status (policy P24). Particular attention shall be paid to conserving listed buildings at risk. Special attention shall be paid to the desirability of preserving or enhancing the character or appearance and setting of conservation areas when development or enhancement schemes are proposed in or adjacent to them.

2.5.2 There will be a presumption against developments that would adversely affect scheduled ancient monuments or other sites of national archaeological importance or their settings. Other sites of known historical or archaeological importance including historic battlefields and their settings shall be protected from development wherever possible. Local planning authorities shall ask for appropriate archaeological investigations to determine the importance of the sites before a planning application is determined (policy P25).

2.5.3 Local plans and development and management proposals shall ensure that registered parks and gardens are protected and that appropriate management is applied, having regard to their special features and historic interest, wildlife habitats, listed buildings, and the character of surrounding countryside. Consideration should also be given to protecting other important parks and gardens (policy P26).

2.6 Wrexham Borough Council Local Development Plan

2.6.1 Wrexham County Borough Council has in place a Local Development Plan (LDP), envisioned to cover the period of 2006 to 2021. It emphasises the importance of sustainable development, in keeping with the character of the area, as well as the finite nature of the archaeological resource. The following policies concern the historic environment:

- EC7: Conservation Areas
- EC8: Buildings within Conservation Areas
- EC9: Listed Buildings
- EC11: Archaeological features, Scheduled Ancient Monuments, archaeological sites of national significance and sites where archaeological evaluation needs to be carried out.
- In addition to this, as the route runs through rural areas, the following policy relates to historic landscapes:
- EC4: Conservation and Management of hedgerows, trees and other natural landscape and water features.

3 METHODOLOGY

3.1.1 The scope of the desk-based assessment and field assessment was agreed in consultation with Mike Watson of Shropshire County Council Archaeology Service and Steve Grenter, archaeological advisor to Wrexham County Borough Council. The assessment was undertaken for a 1km wide corridor along the preferred route in order to establish the baseline environment. The general approach and methodology was to collate and report on archive, bibliographic, cartographic, aerial photographic and background sources pertaining to the cultural heritage, including archaeological sites and monuments, historic buildings and historic landscape features within the study area. The aim of this survey was to determine the likely nature, extent, preservation and significance of any archaeological remains that may be present within the area.

3.1.2 Field assessment was carried out to clarify the character, location and extent of known archaeological sites and identify unknown sites. A 100-m corridor was systematically walked by a professional archaeologist to identify archaeological sites. This comprised an 80-m corridor within which poles may be positioned, plus 10 m either side to allow for stays and access tracks.

3.2 Sources Consulted

3.2.1 The Wrexham Borough Council Sites and Monuments Record and Shropshire Sites and Monuments Records are the primary repositories of archaeological data for the counties through which the proposed route passes. Oxford Archaeology examined the SMR data for all known archaeological sites and finds within the Study Area. In addition the following sources were consulted:

- English Heritage - National Monuments Record and aerial photographs
- Cadw - Scheduled Ancient Monument data
- Royal Commission for Ancient Monuments of Wales - National Monuments Record
- Shropshire Archives - Historic maps
- Denbighshire Record Office - Historic maps

3.3 Assessment of Importance of Receptors

3.3.1 The importance of each cultural heritage feature was assessed through the exercise of professional judgement in relation to the criteria applicable to Scheduled Monuments, namely:

- survival/condition
- period
- group value
- rarity
- situation
- multi-period/single period status
- fragility/vulnerability
- documentation.

Table 1: Criteria used to determine Importance of Receptors

Importance	Examples of receptor
International and National	World Heritage Site, Sites of international importance, Scheduled Monuments (SMs), Grade I and II* Listed Buildings, national importance
Regional/County	Conservation Areas, Registered Parks and Gardens (Statutory Designated Sites), Grade II Listed Buildings, Sites of Regional/County importance Sites and Monuments Record/Historic Environment Record

Importance	Examples of receptor
Local/Borough	Sites with a local or borough interest Sites with a borough value or interest for education or cultural appreciation Sites that are so badly damaged that too little remains to justify inclusion into a higher grade
Low local	Sites with a local or parish interest Sites with a low local value or interest for education or cultural appreciation Sites that are so badly damaged that too little remains to justify inclusion into a higher grade
Negligible	Sites or features with no significant value or interest. Sites which are so badly damaged that too little remains to justify inclusion into a higher grade.

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 Introduction

4.1.1 Shropshire possesses some of the oldest geology in the country, including pre-Cambrian formations around 600,000,000 years old. The Long Mynd, Wrekin and Caer Caradoc features sit upon these sandstone formations, and are central to the development of human activity in the region. They not only provide the location for farming patterns from prehistory onwards, but also show the remains of Iron Age hillforts (Old Oswestry Hillfort - **OA 142**) and Bronze Age barrow cemeteries.

4.1.2 There are fifteen Listed Buildings in the Study Area, all except three of which are Grade II. Of the others, Wynnstay Park Kennels and Esclusham Hall are Grade II* and the Church of St. Martin, which in fact lies just outside the 500m buffer zone, is Grade I.

4.1.3 Several Scheduled Ancient Monuments fall within the Study Area. Wat's Dyke is the most extensive, with several sections either crossing the 500m buffer zone or lying to its west **(OA 25, 51, 85, 94, 100, 107, 114, 158).**

4.2 Previous archaeological work

4.2.1 The most common excavations in the wider area, as well as the Study Area, have come about as the result of rescue excavations along the line of Wat's Dyke, a 40 mile long Medieval bank and ditch running parallel to Offa's Dyke. Activity has taken place at Nefod (**OA 78**) and Dalford (**OA 91**), excavations which simply defined the exact position of the dyke at this point along its course. Work undertaken during the construction of the low water main from Whittington to Oswestry defined the shape of the earthwork at Pen Y Cae (**OA 91**).

4.2.2 Other archaeological observations include that associated with the mound at Pen y Bryn (**OA 55**), and the excavation of the temporary Roman fort at Perry Farm, which lies outside the study corridor at the southern end of the scheme.

4.3 Mesolithic - Neolithic (c.10 000 - 2200 BC)

4.3.1 The earliest evidence of human activity consists of scrapers and other implements made of local pebble flint from the south east of the county. These small tools date to

the Mesolithic (10 000 - 4000 BC). In the wider area of the Welsh Marches, these small flint scatters are the characteristic evidence of Mesolithic activity.

4.3.2 Neolithic activity has been recorded on the Welsh side of the border at Roveries hillfort, and in Shropshire the hilltop sites of Caer Din Ring, Long Mynd, the Wrekin and Caer Caradoc. Before the Iron Age hillfort was constructed, Old Oswestry hillfort (**OA 142**) was the site of Neolithic activity, evidence taking the form of a stone axe and other flint tools.

4.3.3 In Wales there is very little Neolithic settlement evidence, Gwernvale in southern Wales being a rare example of a domestic site from the period. There are several examples of ritual activity from the wider area, such as the Dyffryn Lane henge monument. The only definite Neolithic activity in the Welsh part of the Study Area is the location of a flint scraper (**OA 60**), found near Pen y Bryn, south-west of Lower House Farm, in May 1993.

4.4 Bronze Age (2200 - 700 BC)

4.4.1 Funerary monuments are the most numerous landscape features from the Bronze Age in the wider area. One of the earliest, a bowl barrow at Bedstone in the Clun valley dates from the end of the Neolithic (c 2300 BC). A round barrow in Moreton Say parish, North Shropshire, may come from the Late Neolithic, or possibly the early Bronze Age. Barrows are also found on the Stiperstones, and the Bromfield barrow cemetery contains mounds from this period.

4.4.2 The Study Area itself contains barrows from this period, such as two barrows at Hafod y Bwlch, north-east of Rhosllanerchrugog (**OA 21**). During the Bronze Age these take the form of circular mounds, sometimes with a ditch surrounding it, and are used for burials, both central and around the periphery. In addition, a to the north west of Gobowen (just outside the study area) may be the remains of a Bronze Age barrow.

4.4.3 The Ebnal hoard (**OA 102**), a rich collection of daggers, palstaves, a spearhead, two 'palstaves' and two punches, was discovered in 1848. Although the pieces are now lost, the site (exact location unknown) falls within the study area, and could point to more activity in the vicinity.

4.5 Iron Age (700 BC - AD 43)

4.5.1 The hilltop activity of the Neolithic and Bronze Age develops into typical Iron Age defended hillforts in the first millennium BC, perhaps central sites in a landscape which included lowland defended sites in their 'hinterland'. Examples from the wider region are Breiddin, with evidence for continued occupation from the Bronze Age, along with Moel Hiraddug and Dinorben. Lowland sites take the form of lightly defended farms. These sites have received less attention than hilltop enclosures from this period, but more than fifty are known from Shropshire alone.

4.5.2 The most notable feature of the Study Area is the multi-vallate hillfort of Old Oswestry (**OA 142**), lying just over 0.5km to the west of the overhead powerline. The earliest features are the two inner banks and ditches, dating to the sixth century BC, although continuous occupation can be seen from the Bronze Age onwards. In addition to the banks and ditches are roughly rectangular hollows variously interpreted as storage pits, cisterns, or storage enclosures.

4.5.3 A lowland site of an Iron Age enclosure is known at Great Fernhill, to the south east of Gobowen (**OA 116**), with a trackway leading from it to the north. There are also cropmarks of ditches to the south.

4.6 The Romano-British Period (AD 42 - c.400)

4.6.1 The Roman towns of Wroxeter (Viroconium) and Whitchurch (Mediolanum) constitute the two centres of Roman activity in Shropshire, and Watling Street runs from the east and south of Wroxeter, extending as far as Canterbury and Dover. Other activity from the period includes quarrying, such as at Grinshill, where stone was extracted for building, and lead for its silver content. In Wales, Roman material has been found on sites of prehistoric type, for example the hillforts of Breiddin and Collfryn.

4.6.2 Military sites form the bulk of the area's Roman presence. Rhyn Park (**OA 69**) is a large 1st century 'campaign base' including a legionary or vexilation fortress, and a smaller temporary camp or fort. It is not served by any of the remaining Roman road system, and so may have been superseded by the later legionary base at Chester (Deva). At present is exists only as cropmarks.

4.6.3 An enclosure, a possible temporary Roman camp (**OA 70**) is visible as a set of cropmarks 0.6 km north west of the overhead powerline. The sides of this enclosure are clear, with an additional two parallel to the north-east side. Nothing can be seen on the ground.

4.7 The Medieval Period (c.AD 400 to 1500)

4.7.1 During the early part of this period the Study Area lay within the Anglo-Saxon kingdom of Mercia. The area is characterised by its position on the border between this kingdom and the areas inhabited by the Welsh. Wat's and Offa's Dykes are the most conspicuous evidence of the tensions of the time, and substantial lengths of Wat's Dyke run close to the planned route. At two places the Dyke cuts across the route, near Gyfelia in Wales and also running away north-north-east from Old Oswestry hillfort (**OA 158**). Offa's Dyke is situated further west than Wat's Dyke, and crosses the Study Area to the north of the study corridor at Rhoslanerchrugog..

4.7.2 The gazetteer describes the sections which fall within the Study Area, some of which are scheduled individually, such as that running from the parish boundary south of Esgob Mill to the crossroads east of Henlle Hall (**OA 85**). Sections vary in the extent of their survival, with stretches as small as 22m surviving north east of Bryn-y-Castell (**OA 100**). Numerous excavations have taken place, particularly in advance of development, along the Dyke within the Study Area. The Overton to Chirk gas pipeline threatened the earthwork at Lower House Farm, Pen y Bryn and various other rescue excavations (all of which lies outside the study corridor) have been necessary. One excavation, within the study corridor at Dalford (**OA 91**) revealed evidence of bank and ditch, although these had been compromised by a later farm track and opening.

4.7.3 In the Later Medieval period (AD 1100 - 1500) the characteristic feature is the Marches castle. Motte and bailey is the dominant form, with examples just outside the Study area including Cadwgan Hall Mound and Bryn-y-Castell

4.7.4 Smaller sites are represented by moated buildings, such as that at Croes-y-Foel Farm, Rhostyllen (**OA 9**). Two sides of what may be a rectangular ditched enclosure with a raised interior survive 150m west of Casamia (**OA 49**).

4.7.5 Several timber buildings survive in the Study Area from the later Medieval period. Esclusham Hall (**OA 12**) probably dates to the late 15th or early 16th century, but was remodelled in 1677 with the insertion of an upper floor over the hall, and by the partial reconstruction of the external walls. It is listed as Grade II*. A similar case exists at Erw'r Esgob (**OA 76**), a 14th or 15th century farmhouse, remodelled in the 18th century. Protected by Grade II listing, it is a cruck frame building with the original plan of an open hall house of three bays. It's name means Bishop's Meadow, and probably refers to its tenurial history with the Bishops of Asaph. There are also records of several timber barns (e.g. Hafod y Bwlch, **OA 20** Pen y Bryn, **OA 56**). Crab Mill, Ruabon (**OA 44**) was originally a cruck-framed house, now surviving within a 19th century reconstruction. It is Grade II Listed. .

4.7.6 In addition to these buildings, sites from the Medieval period include fields of ridge and furrow, which survive in the modern landscape. Some groups of one or two fields (**OA 50, 132**) show ridge and furrow as either earthworks or in aerial photographs.

4.8 Post Medieval and Modern periods (1500-present)

4.8.1 Surviving early post-Medieval archaeology in Wales is characterised by large houses built in the earlier part of this era. Henlle House (**OA 87**), Moreton Below House (**OA 34**), Wynnstay Park House (outside the study corridor)

4.8.2 There are numerous smaller buildings within the Study Area, including many timber-framed farmhouses. In the village of Pentrebychan is a dovecote associated with the hall of the same name (**OA 16**). There are outbuildings associated with Plas Goulbourn (**OA 39**) and Esclusham (**OA 13**). Farm buildings are located at Plas Goulbourn, Preeshenlle, Ebnal Hall and Rhosyllan, all except Plas Goulbourn being listed (Grade II).

4.8.3 Mining heritage is amongst the most modern archaeology of the area. Two collieries fall within the Study Area: Hafod y Bwch Colliery (**OA 24**), now dismantled; and the earthwork remains of another colliery to the north east of St. Martin's (**OA 65**).

4.8.4 Associated with some of these features are the railways and stations which serviced the mines, in addition to providing transport through the area and beyond. The Shrewsbury and Chester Railway (**OA 152**), opened in 1846, crosses the Study Area around SJ 343 322. It incorporated the North Wales Mineral Railway and had several branches along the route via Ruabon, Wrexham and Gobowen. The Ifton Colliery Railway (**OA 71**) connected the Preesgwyn Colliery south of Pentre. The only post-First World War railway built in the county, it was a mineral line, running from Ifton Colliery near St. Martin's to the GWR Shrewsbury-Chester line near Preesgwyn. It shut down in 1968 after the collieries it served closed down. The Shrewsbury, Oswestry and Chester Junction Railway (**OA 134**) was intended to run from the Shrewsbury-Chester railway at Gobowen through Oswestry to Llanymynech. However, it only reached as far as Oswestry by 1848, by which time the company had been amalgamated with the North Wales Mineral Railway to form the Shrewsbury and Chester Railway (see above).

4.8.5 As well as the railways themselves, the Study Area contains stations, for example the station on the Shrewsbury and Chester Railway at SJ 3040 3340 (, which is Listed Grade II, and a site of a former station on the same line lies at SJ 3020 3210 (**OA 129**).

4.8.6 Canals are also an important aspect of the landscape. The Ellesmere Canal (**OA 47**) was intended to link the Dee and Mersey. The final branch, the Prees branch, never

reached Prees, being halted at Quina Brook. All branches of this canal had closed by 1939.

5 WALKOVER SURVEY

5.1 Methodology

5.1.1 A walkover survey of the line of the proposed powerline was carried out between 23rd April and 27th April 2007. The purpose of this survey was to clarify the character, location and extent of known archaeological sites and identify unknown sites through field assessment. A 100 m wide corridor was systematically walked by a professional archaeologist to identify archaeological sites. This comprised an 80 m corridor within which poles may be positioned, plus 10 m either side to allow for stays and access tracks. Statutorily designated sites within 500 m of the proposed route were also examined to assess any potential visual impact from the development, the results of which are tabulated in Table 2.

5.2 Results

5.2.1 The survey was conducted in good light and good weather, and consequently it is possible to have a high level of confidence in the results. The landscape through which the proposed development passes is entirely rural and consists of pasture and hay fields, with only a small number of arable fields, most of which are located in the vicinity of the village of St. Martins. The topography is for the most part rolling hills, cut by the single steep-sided valley of the River Dee, which the route crosses at it confluence with its tributary the River Ceiriog.

5.2.2 The Legacy Living History Site (**OA 6**) appeared to be abandoned at the time of the walkover survey. No surface remains were visible at the possible former sites of crosses at Cae'r Groes (**OA8**) and Cae Gosper (**OA42**), the possible barrow at Pen-y-Bryn (**OA55**), the cropmark site of an Iron Age/Romano-British enclosure (OA 116) and trackway near Great Fernhill (**OA115**), or the cropmark site of a possible Roman marching camp north-east of Old Oswestry hillfort (**OA138**). No standing buildings were found at the former site of a grange of Valle Crucis Abbey in the Dee Valley (**OA46**), where the only visible remains were a group of low, indistinct mounds and fragments of clay pipe in a mole hill. Similarly, no historic structures survive at the site of the former colliery south-west of Pentre (**OA65**).

5.2.3 Two areas of ridge and furrow cultivation that had not previously been recorded were identified in the course of the walkover survey, located at Hafod-y-Bwch (**OA153**) and Cae-gwydd (**OA154**).

6 CONCLUSION

6.1.1 This assessment has identified that the proposed route runs through an area containing a high number of archaeological sites and monuments, including seven Scheduled Ancient Monuments. Offa's Dyke and Wat's Dyke are the two most conspicuous of these. There is also a high number of cropmarks and earthworks demonstrating a high potential for the discovery of previously unknown archaeology during the construction of the overhead power line.

6.1.2 There has been evidence of hilltop activity in the area form the Neolithic period, but the proposed works avoid these areas. The few findspots from this period have been

isolated individual tools, with the exception of the Ebnal Hoard of Bronze Age metal (**OA 102**). The study has therefore identified a low potential for the discovery of and impact upon previously unknown prehistoric archaeology.

6.1.3 Sites from the Romano-British period have been found in the Study Area in the form of the large fortress at Rhyn Park (**OA 69**) and more ephemeral features (cropmarks and earthworks) of smaller military sites (e.g. **OA 69, 70, 138**). There is some potential for previously unknown Roman archaeology to be impacted upon.

6.1.4 The proposed route crosses three earthwork sites dating from the early medieval period: representing two sections of Wat's Dyke (**OA 25, 51**) and a section of Moor's Bank (**OA 83**), which is likely to be of similar antiquity. The proposed route avoids the main centres of medieval settlement, but there is the possibility of encountering previously unknown archaeology from this period during construction work. In addition, the survival of the ridge and furrow indicates that any potential archaeological remains present within the Site are likely to be in a good state of preservation.

Oxford Archaeology

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Appendix One

Gazetteer of known archaeology within the Study Area

OA = Oxford Archaeology
NMR = National Monuments Record
DE = Cadw Monument Number
MSA = Shropshire County Council Monument ID
ESA = Shropshire County Council Event ID
All other numbers = National Monuments Register Unique Identifier

New OA Ref No	*Feature Type*	*E*	*N*	*Description*	*Label*
5	Scheduled Ancient Monument	32985	34844	Offa's Dyke, Cadwgan Hall section.	304594
6	Historic Landscape Feature	32953	34833	Legacy Living History Site: Pair of reconstructed Iron Age round houses and former colliery tip, re-used as mound with steps for 'story telling', functioning as a living history/interpretation centre for children. Site appeared to be deserted during site walkover.	402313
7	Scheduled Ancient Monument	32987	34832	Offa's Dyke, section extending 120m from Railway to Bronwylfa Road, Legacy. Runs generally NNW-SSE, continuing the alignment N of the disused railway, represented by earthworks & current linear features.	275791
8	Historic Landscape Feature	32940	34823	Cae'r Groes, Talwrn: name suggests the presence of a cross in the area. No cross is known.	400692

12	Listed Building/ Scheduled Ancient Monument	32961	34809	Esclusham Hall: A timber-framed hall house, probably of the late 15th or early 16th century, remodelled in 1677 by the insertion of an upper floor over the hall, and by the partial reconstruction of the external walls, together with the extension of the cross wing to the W. The walls are of painted brick, with rubble in the gable end. Pitched slate roof, with some timber-framing surviving in the rear wall, and ornately gabled dormers to the front of the main range. Listed Grade II*.	27140
13	Listed Building	32960	34800	Post medieval outbuildings attached to Esclusham Hall	31720
14	Scheduled Ancient Monument	32992	34800	Offa's Dyke, section N of Bryn Yr Owen Farm. A c.525m stretch of Offa's Dyke (Nprn306866), running generally NNW-SSE from Bronwylfa Road to Pentrebychan Brook, with several changes in alignment, represented by discontinuous earthworks, current linear features & former parish boundaries.	275782
15	Historic Landscape Feature	32997	34795	Garden associated with: Pentre Bychan House and Crematorium (OA 17). This garden is depicted on the Second Edition Ordnance Survey 25-inch map of Denbighshire XXVIII, sheet 14 (1899). Its main elements on that map include greenhouses, well, weirs, walled garden, orchard, woodland, lodge, contrived antiquity, pond, parkland, pinery, carriage drive, hydraulic pumps and cistern.	266432
16	Listed Building	32995	34794	Pentrebychan Hall Dovecote: Grade II Listed. Pentrebychan Hall was built in 1823-4, replacing an earlier house. The hall was demolished in 1962. . The dovecote built in 1721 was part of the appurtenances of the earlier house.	27640
17	Building	32995	34794	Pentre Bychan Crematorium: Opened in 1966, architects Sanger & Rothwell.	23408
18	Building	32990	34790	Pentre Bychan Crematorium Chapel: Opened in 1966, architects Sanger & Rothwell, the Chapel serves the Crematorium. Present status [2002]: Chapel	97354
19	Listed Building	33104	34786	Barn associated with House (OA 20). Grade II Listed.	302188

20	Building	33101	34786	Hafod y Bwch, Rhostyllen: Grade II Listed. 1612 gabled timber framed farmhouse, red bricked nogged. Early 17th century stair, modern north west wing. The S part of the house, plotted in 1975, is not depicted on OS Landline. Associated with: Outbuildings (NPRN302188, OA 19). A building essentially created in three phases: a late medieval timber framed hall-house which forms the W range; a timber-framed storeyed cross-wing to the S end of the hall, itself extended by 2 short parallel gabled wings to the E in the early 17th-century; and the encasing of the original timber frame of the hall range and cross-wing in stone. The 3-bay hall range retains evidence of an original 2-bay open hall with the survival of a truss with fine cusped braces. The fine 17th-century staircase with heavily moulded string and turned newels was introduced from Five Fords, Marchwiel c1970.	27271
21	Scheduled Ancient Monument	33090	34770	Hafod y Bwch round barrow: A circular mound, 40m in diameter and 2.8m high, crossed by a farm track and otherwise altered on the N.	DE047; 307139, 308764
22	Listed Building	331663	347349	Listed Signpost. Grade II	16566
23	Scheduled Ancient Monument	32999	34723	Offa's Dyke, sections N & S of Bryn Yr Owen Colliery. A c.980m stretch of Offa's Dyke (NPRN306866), comprising three distinct alignments, running S & then rather E of S, from the Pentrebychan Brook, then SSE from given NGR to Aberderfyn stream, represented by discontinuous earthworks, current linear features & former parish boundaries, much disturbed by modern industrial activity.	275780
24	Historic Landscape feature	33118	34656	Hafod y Bwch Colliery, Rhosllanerchrugog: Former colliery, now dismantled. Rail connected to the main line between Wrexham and Shrewsbury, the colliery had a railway spur to serve Hafod Red Brick Works (NPRN 40776). Site visited B.A.Malaws, 21 January 1993.	91679

25	Scheduled Ancient Monument	33225	4633	Wat's Dyke: Section extending from Middle Sontley to Black Brook Bridge. A c.1,230m stretch of Wat's Dyke. A 800m SSW-NNE, somewhat irregular alignment is succeeded by a more regular c.520m N-S alignment (partly in segment recorded under NPRN275773), at given NGR. The most northerly c.134m & southerly 90m of this stretch are lost/missing.	306867
34	Listed Building	33205	34475	Moreton Below House, also known as Lower Moreton House. Listed grade II.	27530
35	Earthwork	33318	34472	Cultivation earthworks NE of Crymbal: Earthworks of relict field boundaries & plough cultivation on both sides of Gefeiliau Brook, NE of Crymbal.	308745
36	Historic Landscape Feature	33278	34335	Park Eyton Farm, Ruabon: The name of farm preserves the memory of a large park once occupying the entire northern portion of the parish, and mentioned as early as the beginning of the 13th century. Depicted on the Second Edition Ordnance Survey 25-inch map of Denbighshire XXXV, sheet 12 (1899).	27618
37	Listed Building	33272	34318	Park Eyton Lodge, Wynnstay Park, Ruabon: Early 19th century lean to and modern addition. Lodge to the Wynnstay Estate, perhaps designed by James Wyatt. Built in the form of a Tetrastyle pedimented Greek Doric temple. Sandstone ashlar with rubble slate roof and chimney to rear. Central entrance in recessed arch. Later extension to right and rear. Listed Grade II.	27617
38	Listed Building	33253	34293	Wynnstay Park Kennels: A 2-storey brick and stone building with a nine-bay front elevation, and a giant rusticated arch under a steep pediment, with a bell cupola. Listed Grade II*.	401870
39	Building	33350	34290	Plas Goulbourn, outbuildings, Ruabon: Two long ranges of 17th-century half timbered outbuildings. One is framed in squares with long braces at alternate bay posts. Trusses have tie-beams, collars and struts. The other has fragments of framing only, rebuilt in brick. Associated with Plas Goulbourne (NPRN 27717).	37219
40	Building	33351	34287	Plas Goulbourn: Three-storey, nineteenth century brick-built farmhouse.	27717
41	Building	33189	34287	Wynnstay Park, Keepers Lodge and Pheasantry: Lodge within Wynnstay Park (NPRN35620); pheasantry to N variously depicted on successive editions of OS County series. A C-plan building with 19th-century details. Rubble walls with ashlar quoins and chimney, and a slate roof. Heavy ovolo-mouldings to window jambs and porch.	26766

42	Historic Landscape Feature	33235	34245	Cae Gosper, Dininlle Isaf, Rhiwabon. This field is thought to be the Capel Kollen mentioned in a 1620 survey and is traditionally the site of a cross and/or chapel. A cross is mentioned y Llwyd, but neither feature is known there today.	400703
43	Building	33186	34236	Dynhunlle and outbuildings, Ruabon: A very fine brick-built U-plan farm complex comprising barns, stables, cow-sheds, byres and granaries, with a pigsty in the central yard.	31715
44	Listed Building	33271	34235	Crab Mill, Ruabon: A 2-storey hall-house, which might have been a long-house; now with a byre to the right-hand end. Originated as a medieval cruck-framed hall house, which survives in part, encapsulated by a 19th century reconstruction. This appears to have been a three-unit rectangular hall house with a central two bay hall, paired inner rooms and a possible outer parlour. In the early 18th century a chimney was inserted into the hall, possibly along with a first floor. Externally appears as 19th century, two-storeyed house with attached cow-houses under the same roof. Largely of brick, of various colours and bonds indicating different phases, with some masonry surviving from medieval structure and with the remains of a pegged slate-work roof. Main doorway alongside central chimney stack.	27076
45	Historic Landscape Feature	35438	34073	Aberystwyth Railway: The Oswestry, Ellesmere and Whitchurch Branch of the Cambrian Railway reached Whitchurch in 1858 as a single line from Crewe to Shrewsbury. The Tattenhall Junction line was opened in 1872.	MSA12992, 05892
46	Building	33163	33954	The remains of a small house, formerly a grange of Valle Crucis Abbey. The Historic Environment Record (undated) describes the site thus: *A well-built gable facing north survives fairly complete, together with the remains of mullioned windows and foundations.* The site survey carried out for this report (in April 2007) suggested that very little above ground evidence of the site survives: the remains now consist of group of low indistinct mounds.	27072

47	Historic Landscape Feature	32800	33900	Ellesmere Canal intended to link Dee and Mersey. The first section was completed in 1795 linking Chester with Whitby Wharf (now Ellesmere Port), with subsequent sections opening to Hurleston (1805), Frankton to Carreghofa and finally the Prees branch (1804) which never reached Prees, being halted at Quina Brook. All branches except the Pontcycyllte-Weston-Hurleston Junction had closed by 1939.	1340907
49	Earthwork	33179	33889	Two sides of what may be rectangular ditched enclosure with a raised interior, approximately 70m square. The third arm of the rectangle coincides with a removed field boundary. The postulated fourth, southern, arm would run through an area of woodland that has been extended north eastwards since the date of the County Series 25in Map. The east side is badly eroded or cut away, leaving a straight edge, which may have led to the rectangular interpretation. The southern side of the enclosure survives as a very slight depression. To the east of the enclosure, near the edge of the field are some slag heaps. The area between these and the straight edge of the enclosure might have been interpreted as a moat arm on the AP. To the west of the enclosure is an old field boundary orientated NW/SE which is still visible at the very bottom and continue into the wood at the top. The condition of the monument is low to medium and there is some threat from cattle tread.	MSA2894, 04413
50	Earthwork	33142	33878	Ridge and furrow and traces of field boundaries seen as visible earthworks during field inspection carried out as part of assessment of Overton to Chirk gas pipeline. The ridges are 3m wide and c0.1m high, making them too narrow and slight to be of medieval date. Interpreted as early 19th century by the surveyors. Most of the ridge and furrow runs north-south, but in the southern part of the area, which was formerly part of the adjacent field, it runs NW-SE.	MSA18006, 08259
51	Earthwork	33160	33865	Part of Wat's Dyke, an early medieval defensive earthwork. It is seriously eroded in stretches, but runs from the edge of the road at SJ 3180 3872 south west to SJ 3156 3852.	08308/-

54	Historic Landscape Feature	33210	33860	This site represents a trackway of post medieval date, a footpath of post medieval date. As part of the assessment of the Overton to Chirk gas pipeline in 2003 aerial photographs were examined and a number of former footpaths and trackways identified. Some of these trackways and paths were still in existence when the OS 2nd edition maps were drawn up.	MSA18007, 08260
55	Earthwork	33200	33850	A small mound Pen Y Bryn at Glyn Morlas, 80 ft in diameter is situated on a raised point of land on the verge of the valley of the Dee. Nothing is visible on CPD 1983 vertical APs. The mound, if it ever existed, may have been a natural glacial feature or an upcast mound from the coalmining which took place along this side of the Ceiriog Valley. The site was inspected during a walk over survey connected with the Overton to Chirk gas pipeline in 2003. Nothing was visible, but the likely location was identified as a slight natural rise c40m south of the pipeline easement. The surveyors suggested that the feature could have been a genuine barrow, now ploughed out. If so, there is the possibility of surviving buried remains including the ditch and cist or urn. October 1991: field observation by Wendy Horton for Shropshire County Council (ESA2705) and a watching brief (ESA2706). Noted in the Shropshire CC Event/Activity Report as an "Undated field observation by Shropshire County Council".	MSA1865, 02859, ESA2075, ESA2076
56	Listed Building	33209	33850	Post-Medieval barn 10m north of Penybryn, Grade II listed. Late C17 extended C18 with later additions and alterations. Original 3-bay barn extended by one bay to left in C18. A building is shown in this location on the tithe map, but nothing is indicated on the 1810 enclosure map. It is therefore unclear whether there was anything on this site before the early 19th century.	MSA10670, 19085
57	Archaeological Event	33200	33850	October 1991 field observation by Wendy Horton for Shropshire County Council, in the parish of St. Martin's, Oswestry, associated with the mound at Pen-y-Bryn (Monument 02859)	ESA2705

58	Historic Landscape Feature	33209	33849	Top House Farm, Pen y Bryn: Although it contains a Listed barn (OA 56) allegedly of 17th century origin, and buildings are shown on the site on the tithe map, none is indicated on an 1810 enclosure map. It is therefore unclear whether there was a farm or cottage on this site before the early 19th century, and it is unlikely that the site has origins before the late 17th century. Whatever its date, the site appears to have been an isolated farmstead, not the focus of a nucleated settlement	MSA18314, 08304
59	Historic Landscape Feature	33227	33840	Former water course (post medieval) SE of Pen Y Bryn. Feature plotted from aerial photographs during an assessment of the Overton to Chirk gas pipeline route. Shows as a stream on the tithe map. On the eastern side of the streamline, at the southern end, earthworks were noted during a field inspection and interpreted as scarps related to the stream. The OS 2nd edition map also shows this feature as a stream channel. A watching brief on the Overton to Chirk gas pipeline picked up a linear feature at this location, which was interpreted as the old streambed.	MSA18008, 08261
60	Findspot	33150	33830	Neolithic (?) scraper found in a recently tilled field on the 22nd of May 1993. Found on the surface of the field. 9.4cms long and max 3.3cms wide, of honey coloured flint.	MSA14693, 04616
61	Archaeological Event	33300	33830	Former field boundaries and areas of former ridge and furrow in St Martin's parish. As part of the assessment of the Overton to Chirk gas pipeline route, aerial photographs were analysed. Several areas of ridge and furrow and former field boundaries could be detected on the 1946 RAF APs, but most of these had been lost by the time the Ordnance Survey APs were taken in 1989. Some of the field boundaries detected can still be seen on the OS 1st edition 6" (c1889) and 2nd edition 25" (c1900) maps, but others had already disappeared by this time. A 2004 watching brief on the Overton to Chirk gas pipeline picked up a number of linear features, which could be agricultural features. One contained a sherd of post medieval pottery and charcoal in its fill, whilst at least one other corresponded with a hedgerow noted from historic maps.	MSA18005, 08258

62	Archaeological Event	33260	33830	A group of three flints and cherts was recovered from the topsoil of the field to the south east of Grandarr during a watching brief on the Overton to Chirk gas pipeline in 2004 [exact location not given, but within the pipeline easement]. The flints consisted of one broken blade (flint), one flake (chert) and one piece of debitage from knapping (chert). None of the flints was diagnostic. The find was made not far from the possible barrow site [PRN 02859].	MSA18328, 08316
64	Historic Landscape Feature	33150	33780	This site represents a coal workings near Glynmorlas, of post medieval date. Old Shaft (SJ 3148 3796) and Air Shaft (SJ 3139 3796)	MSA3231, 06602
65	Historic Landscape Feature	33198	33748	Colliery served by Mineral Railway 6529, which connects this colliery with Preesgwyn Colliery 6524. Map indicates probable survival of historic structure(s).	MSA3170, 06541
69	Scheduled Ancient Monument	33050	33690	Large Roman 1st century "campaign base" at Rhyn Park, including legionary or vexillation fortress, and a smaller temporary camp/fort. The main camp measures 515m by 410m over the double ditches, there being a third ditch on the weak southern side. The four entrances are marked with tituli. The smaller enclosure occupies 14.5 acres, the only clearly defined entrance taking the form of two offset ditches. this fortress is not served by any of the surviving Roman road system, and may have been superseded by the later legionary base at Chester. The north-west corner has been eroded by the river Ceiriog. It was excavated by the Central Excavation unit of Fort Cumberland in Portsmouth, and a watching brief was carried out nearby during pipe laying, activity which observed no archaeological features.	MSA349, 645
70	Earthwork	33080	33690	Possible sub-rectangular enclosure. Date uncertain. Lies within the area of Rhyn Roman temporary camp/fort although the two appear to have differing orientations and their relationship is not clear.	1050202

71	Historic Landscape Feature	33096	33680	Ifton Colliery Mineral Railway connected the Preesgwyn Colliery with the colliery south of Pentre 6541. Eastern (main) section followed much the same course as Tramway 6543. Mineral Railway serving the colliery south of Pentre 6541. Western extension of this railway depicted as earthworks (therefore disused). This was the only post WW1 railway built in the county. It was a mineral line, running from Ifton Colliery near St Martin's to the GWR Shrewsbury-Chester line near Preesgweene. The line opened in 1921. It was operated by the National Coal Board after 1947, but shut down after the collieries it served closed in 1968	MSA3158, 06529
73	Listed Building	33173	33630	Rhosyllan: Post medieval, Grade II listed farmhouse. Farmhouse. Early C17 with later additions and alterations. Interior: timber frame (square panels) exposed throughout to ground floor including to cross-walls. Front ground-floor room of cross-wing has chamfered crossbeam ceiling with ogee stops; several late C17 or C18 panelled doors. Dogleg staircase to rear right-hand corner of hall range has carved splat balusters.	MSA10672, 19087
76	Listed Building	33069	33621	Erw'r Esgob: a farmhouse of medieval to post medieval dates (C14 or C15, remodelled late C18 with later additions and alterations). Grade II Listing protects the site. Cruck frame with front and back walls and right gable end rebuilt in painted and rendered brick; graded slate roof. Original plan apparently an open hall house of 3 framed bays later converted to 3-unit baffle type and eaves raised in late C18.Erw'r Esgob is a timber framed hall house of cruck construction, probably built for the bishops of St Asaph in the early 15th century. It consists of four bays with a central two-bay open hall, a long east end bay and a shorter west end bay. In the early to mid 18th century a narrower single-bay brick addition was constructed at the west end, probably on the site of an earlier structure. Farm buildings adjoining the house include a barn (probably of 17th century origin) incorporating two re-used pairs of crucks, and a late 19th century stable, cart shed and granary. The name means Bishop's Meadow and refers to tenurial history.	MSA9195, 3621
78	Archaeological Event	33090	33620	Rescue excavation of Wat's Dyke at Nefod (site 40), undertaken by Manchester University Extra Mural Department funded by the Leverhulme Trust.	650319
80	Building	33089	33611	Esgob Mill: Water mill of unknown date	MSA17190, 15808

81	Archaeological Event	33090	33610	Rescue excavation of Wat's Dyke at Esgob Mill (site 47), directed by GDB Jones, in 1977	634386
82	Scheduled Ancient Monument	33090	33600	Wat's Dyke, a 38 mile earthwork stretching from Morda Brook, Shropshire northwards towards the Dee estuary at Basingwerk-on-Dee. Wat's Dyke lies to the east of the northern sector of Offa's Dyke, and forming the frontier boundary with Mercia, was constructed by King Aethelbald between 716 and 757.	1038816, SA114, SA115, SA1001
83	Earthwork	33110	33590	Moors Bank: A linear feature about 350m long, and running NW/SE, which may intersect with Wat's Dyke. First observed and photographed from the air in August 1990	MSA2927, 04454
85	Scheduled Ancient Monument	33072	33545	Wat's Dyke, scheduled section of surviving earthwork 560yds long, from parish boundary S of Esgob Mill to crossroads E of Henlle Hall.	1038840, SA110
86	Listed Building	33063	33542	Post medieval stable attached to N side of Henlle Hall, Grade II listed. Late C18 with later additions and alterations. Red brick, painted to sides facing stable yard; graded slate hipped roof. Main rectangular block with short range at right-angles to right. 2 levels with dentilled eaves cornice.	MSA10684, 19099
87	Listed Building	33062	33540	Henlle Hall, a country house, dated 1794, which is protected by Grade II Listing. Dated 1794 on rainwater head to rear with C19 additions and alterations. Painted and rendered brick; slate roofs, hipped to flanking pavilions and service ranges. Main house of 2 storeys with attic to central projecting pedimented break; cellars lit by segmental-headed windows to plinth. Henlle Hall was formerly in Whittington.	MSA7580, 13178
89	Historic Landscape Feature	33055	33526	Burial ground of uncertain date	1056491
90	Archaeological Event	33048	33524	Documentary evidence for the location of a Medieval or later park. No other information.	912488
91	Archaeological Event	33070	33520	Excavation along line of Wat's Dyke at Dalford (site 32), involving a causeway across the ditch, and a 'gateway' through the bank at this point, regarded as a later farm opening.	634834

94	Scheduled Ancient Monument	33070	33490	A section of earthworks and buried remains of the 8th century boundary known as Wat's Dyke. This section runs for 110m beside the road from Pen y Cae to Henlle Hall. It survives as a bank about 1.8m high and 15m wide at the base, with a 6m wide and 0.7m deep ditch to the west.	1038843, 33869
95	Listed Building	33057	33468	Preeshenlle Farmhouse, post medieval in date and Grade II listed. Dated 1736, for John and Martha Maddoks; later additions and alterations. Moulded datestone above has inscription "Maddoks / John-Martha / 1736". Mid-C19 two-storey brick addition set back to left. The course of Wat's Dyke (Scheduled Ancient monument County Nos. 112 and 113) runs through the farmyard on a north-south alignment.	MSA10689, 19105
96	Listed Building	33053	33465	Post medieval Grade II listed farmhouse. Early C16, considerably extended late C17 with later additions and alterations. Red brick (mixed bond) to C17 part, late C18 red brick replacing or encasing timber frame to front of C16 part; slate roofs with plain tiles to front roof slope of C16 part. Late C17 house a T-plan with 2 bays of C16 house attached to right of short range. There is no staircase between the ground and first floor and access to the latter is through a plank door at the junction between the C16 and C17 parts of the house on the first floor.	MSA5377, 10564
97	Listed Building	33144	33457	Ebnal Hall and gardens. This site represents a garden wall of post medieval date, a farmhouse of post medieval date. The site is protected by Grade II Listing. Farmhouse. Circa 1700 with later additions and alterations. Red brick on chamfered rubblestone	MSA11303, 19874
100	Scheduled Ancient Monument	33050	33450	A section of Wat's Dyke, 22m long, appears as a depression about 7m wide, northeast of Bryn-y-Castell, a medieval motte castle.	1038845, MSA 112, 33845
101	Building	33143	33440	Ebnal Lodge: Dated 1738 with later additions and alterations. Dated 1738 with later additions and alterations. Painted brick; slate roof with coped verges on carved stone kneelers; integral red brick end stacks. 2 storeys and attic with dentilled and toothed eaves cornice. 3-window front, segmental-headed glazing bar sashes, those to ground floor replaced by early C20 French windows. 3 late C18 gabled eaves dormers in bottom of roof slope. Central entrance; early C20 four-panel door (top panels now glazed) under wide late C19 gabled trellised porch. Date "1738" incised in brick to right of doorway.	MSA10682, 19097

102	Findspot	33080	33440	Hoard of Bronze Age tools and weapons found in the bank of a ditch near Ebnal, exact site unknown. Most of the objects are now lost. The finds were two daggers, a spearhead, three 'palstaves' and two punches. They have been identified by Miss Chitty as contemporary with Early Bronze Age culture of Wessex.	66889; 1056494
107	Scheduled Ancient Monument	33039	33404	Remains of a motte castle, known as Bryn-y-Castell ('castle on the hill'). Motte is oval in plan, and measures 46m by 60m at its base and 36m by 44m across its top. It is situated on sloping ground and, in order to create a level building site, stands higher on one side than the other. The deep cut into the eastern side of the spur for the construction of Preeshenlle United Reformed Church in the 19th century has partly removed the lower portion of the edge of the motte on this side. The church is not included in the scheduling. A ditch was constructed around the motte, except to the north east where the natural slope is steepest. The ditch, which is visible, as a shallow depression about 6m wide to the west, has become infilled over the years, but will survive as a buried feature.	66885, 33845
108	Earthwork	33160	33350	Remains of twentieth century army practice trenches of zig-zag and 'crenellated' form. To the south of these is a mound, a natural feature (glacial moraine). The site was visited by Wendy Horton in October 1991. The site comprises drainage ditches of probable post medieval or modern date, which run down the east slope of two natural hillocks at different angles and into a larger drain which runs along the base of the hillocks. The latter runs into R Perry c 200 m to the south. It comprises a ditch with a substantial bank behind and a smaller one in front. It doubles up as a field boundary. The ditches may have been dug to drain a tree plantation on top of the hill. A field observation was carried out by Shropshire County Council in October 1991.	66907
111	Cropmarks	33210	33340	Marks of three ring ditches, and south-west and north-west sides of a possible single ditched enclosure. Then northernmost ring ditch (18m diameter) is on level ground on top of a low, natural ridge, within a field of pasture. The other two ring ditches (12m diameter; 50m apart), are situated on a gentle south slope, just below the top of the ridge, within a pasture field. The linear lies down the centre of a hollow falling to the roadway on the south side of the field, and is probably an old drainage ditch. their form suggests the sites of two round barrows, though the situation of the two smaller ones would be unusual. Examination of further photography confirms the existence of a fourth possible enclosure in the same area.	66934, SA2158

112	Historic Landscape Feature	33161	33330	Old tramway. Course partly indicated by embankment, the southerly extent of which is recorded at SJ 3105 3592, leading to the Shropshire Union Canal. The former tramway continued in a northerly and easterly direction, ending at SJ 3235 3741, heading for Iftonrhyn Colliery. A further embankment c.100m long lay near to the terminus of the main line of the tramway, at right angles to it. This short section ends at SJ 3231 3725. The map depiction indicates that the tramway was disused at the time of re-survey. Much of the course of the former tramway reused to carry Mineral Railway 6529 (OA 71). The southern part of the tramway embankment depicted as an earthwork.	MSA3172, 06543
113	Historic Landscape Feature	33176	33323	Iron Mill. Buildings on either side of the road probably represent a post-medieval iron works.	MSA3179, 06550
114	Scheduled Ancient Monument	33020	33310	Continuous section of Wat's Dyke, scheduled in two parts. SJ 301 329 - SJ 302 331: section 200m long, S of Gobowen station. SJ 302 328: section 250m long, E of Pentre-Wen.	1038848, 33865, 33866
115	Historic Landscape Feature	33169	33304	A trackway of probable Iron Age to Roman date, a rectangular enclosure of probable Iron Age to Roman date.	MSA13762, 02156
116	Cropmarks	33166	33300	Rectangular enclosure with a trackway leading to the north, at Great Fernhill. The site lies upon level arable land, gently sloping away at a distance to all but the north. The enclosure measures about 30m north-south, by 25m, is double ditched on the west, the ditches being about 10m apart. The north and south sides extend westwards for 40m, and open outwards. There are short stretches of detached linears to the south. To the north, 40m from the enclosure, a double ditched linear (?trackway) runs north for 140m, the ditches being 20m apart. The marks probably represent a pastoral Iron Age/Romano-British enclosure.	66931, SA2156
119	Building	33124	33274	Water mill system (Flour). Buildings on site - not necessarily former mill related (or Derwen Mill or Fernhill Mill) Corn Mill.	MSA17001, 15586
121	Listed Building	33167	33253	Great Fernhill Farmhouse, post medieval and Grade II listed. Mid-C17, extended late C18 with later additions and alterations. Red brick (mixed bond); hipped graded slate roof. Barrel-vaulted brick cellar.	MSA10729, 19147
122	Building	33077	33246	A demolished toll house of unknown date near Twnpath Cottages, Great Fernhill	MSA17276, 15377

126	Building	33050	33230	Shropshire Orthopaedic Hospital of 1920, replacing the original hospital of 1900 established at Florence House. It occupied the site of a WW1 military camp and hospital and comprised a series of single storey ward blocks with a central spinal corridor.	1063259, 101303
128	Listed Building	32992	33212	Pentreclawdd Farmhouse and attached cowhouse, Grade II listed. Early C19 incorporating 2 cruck trusses of a C15 open-hall house. Red brick (early C18 to left on ground floor); slate roof. 2 storeys with toothed eaves cornice. 3-window front, segmental headed glazing bar sashes. The farm stands within a steep-banked, roughly coursed limestone rubble walled oval-shaped enclosure (not included in this list), ringed by yew trees, suggestive of an early origin for the site. A church or chapel is reputed to have been situated close by (local information).	MSA10688, 19104
129	Historic Landscape Feature	33020	33210	Site of railway station on the Shrewsbury and Chester Railway, opened in 1848, closed in 1966.	500967, 6037
132	Earthwork	32983	33185	Two fields of Medieval or Post Medieval ridge and furrow.	1400476, MU.87.4
133	Building	33030	33160	Park Hall Camp, a military base in the grounds of Park Hall used during the two world wars.	1511543, 268

134	Historic Landscape Feature	33007	33154	The Shrewsbury, Oswestry and Chester Junction Railway was completed in 1848. OS map 1875 shows embankment for railway line N of Oswestry railway station (cf SA5704). In 1845 the Shrewsbury Oswestry and Chester Junction Railway was formed with the intention of constructing a line from the Shrewsbury to Chester railway at Gobowen, through Oswestry to Llanymynech. The line was only completed as far as Oswestry, in December 1848, by which time the company had been amalgamated with the North Wales Mineral Railway to form the Shrewsbury and Chester Railway, itself later absorbed into the Great Western Railway in 1854. In 1845 the Shrewsbury, Oswestry & Chester Railway (which a year later merged with the North Wales Mineral Railway to become the Shrewsbury & Chester Railway, or SCR) was authorised by Parliament to construct not only a railway from Shrewsbury to Chester, but also a branch line leaving it at Gobowen. The original scheme was intended to link up at Crickheath with the proposed Shropshire Union of Railways & Canals (SURC) line from Crewe to Newtown. However, the SURC line did not materialise. Consequently the SCR branch was shortened, and terminated at Oswestry. It opened in late 1848, shortly after the opening of the main Shrewsbury-Chester line. The line operated until 1966, shortly after all Oswestry's other rail links had been severed by Beeching.	MSA12622, 05779
135	Historic Landscape Feature	33065	33147	Ornamental duck pond, once part of Park Hall, now the property of Park Farm. 130m long, 50m wide, and has three islands, two small ones centrally placed in the east half, the third one (32m by 17m) occupying the western end, with a channel 8m wide encircling it on the north, west and south sides giving it a moat like appearance. The island is only around a foot above the water level, ideal for nesting birds, but not buildings. A grassy spoil heap from the construction of the pond extends the length of the north side (20m wide by 1.5m high). Surveyed in 1991 by Wendy Horton for Shropshire County Council (ESA2746).	66910
136	Historic Landscape Feature	33070	33147	In a field NW of Old Park Hall is a small oblong moat. A small moat like feature, not described, is shown on the OS 6ins map of 1873. A sub-rectangular moat is depicted with two oblong ponds on its E side on the Tithe Award map. The site is not a medieval	2986, SA1961

137	Cropmarks	32944	33141	Three sides of a possible rectangular enclosure (southeast side missing) plus linear features. Date and function unknown. Two linear markings parallel with the northeast side. The marks lie upon the top and east facing slopes of a low ridge, within a field under permanent pasture. The area was covered by the RCHME's Marches Uplands Mapping Project, but no enclosure was noted for this location. In 1979 a field observation took place by the Ordnance Survey.	66128
138	Cropmarks	32992	33138	Temporary Roman camp (possible). Rather faint N and E sides with signs of west side of single ditched feature with rounded NE corner. Other linear features inside. Three sides of a possible rectangular enclosure, the SE side wanting, measuring 100m NE/SW by 80m transversely. Two linear markings parallel with the NE side, within the enclosure, measure 75m and 20m respectively. Nothing visible on the ground. A field observation was carried out by the Ordnance Survey in 1979 (OS Record Card SJ23SE15).	MSA13470, 01412
139	Scheduled Ancient Monument	32940	33130	A section of Wat's Dyke, extending north from Old Oswestry Hillfort.	10398873
142	Scheduled Ancient Monument	32957	33109	Old Oswestry hillfort. A fine example of a nationally rare type of Iron Age hillfort (large and with multiple ramparts), Old Oswestry forms part of a significant concentration in the Marches and is of particular interest because of its later reuse as part of Wat's Dyke.	00351/27556
148	Historic Landscape Feature	33080	33080	Site of railway station on the Whitchurch, Ellesmere and Oswestry Railway, opened in 1864 and closed in 1964	500980, 6050
150	Building	32977	33031	St. Edith's chapel, medieval, documented in Leland's Itinerary Pt 6	66118
152	Historic Landscape Feature	33930	32556	Shrewsbury & Chester Railway. The Shrewsbury, Oswestry & Chester Railway (SOCR) was authorised by Parliament in 1845. It had been supported by the North Wales Mineral Railway (NWM), whose traffic around Wrexham and Chester appeared to be under threat from a rival London & Birmingham Railway scheme to link Shrewsbury and Chester, and who had offered the SOCR the use of their line north of Ruabon. In 1846 the SOCR and NWM merged to become the Shrewsbury & Chester Railway (SCR).	MSA18721, 08444

153	Historic Landscape Feature	33050	34775	Area of ridge and furrow cultivation identified during walkover survey	
154	Historic Landscape Feature	33315	34310	Area of ridge and furrow cultivation identified during walkover survey	
155	Historic Landscape Feature	33310	34390	A small stream to the east of the road between Park Eyton Farm and Gyfelia defines the boundary between the historic parishes of Ruabon and Erbistock	
156	Listed building	33280	34280	Bryn House. Listed Grade II. 17th century brick farmhouse, remodelled 1749, with modern alterations	
157	Registered Park or Garden	33000	34200	Wynnstay Park. An outstanding eighteenth century landscape park, one of the largest and most important in Wales. Although now cut in two by the A483 trunk road, the park still retains many of its historic features, some of which are attributed to Richard Woods and Capability Brown	
159	Historic Park	33300	34100	Pen-y-Lan. An early nineteenth century landscape park in the fine, unspoilt scenery of the Dee valley, which survives in its entirety and is still managed as a park	
160	Earthwork	33140	33980	Two ponds with earthwork embankments. Willows and oaks growing on the banks suggest they are of some antiquity	
161	Earthwork	33145	33975	Possible drainage earthworks observed during walkover survey	
163	Historic Landscape Feature	35438	34073	The Oswestry, Ellesmere and Whitchurch Branch of the Cambrian Railway reached Whitchurch in 1858 as a single line from Crewe to Shrewsbury. The Tattenhall Junction line was opened in 1872.	MSA12992, 05892

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Key

- Proposed Route
- Proposed Route (50m Buffer)
- Proposed Route (500m Buffer)
- Archaeological Event
- Building
- Cropmark
- Earthwork
- Findspot
- Historic landscape feature
- Listed building
- SAM and Listed Building
- Scheduled Ancient Monument
- Scheduled Ancient Monument
- Linear Monument
- Registered Parks and Gardens

0 Scale 1:25000 at A3 2 Km

Figure 1a: Archaeological features mapping (North)

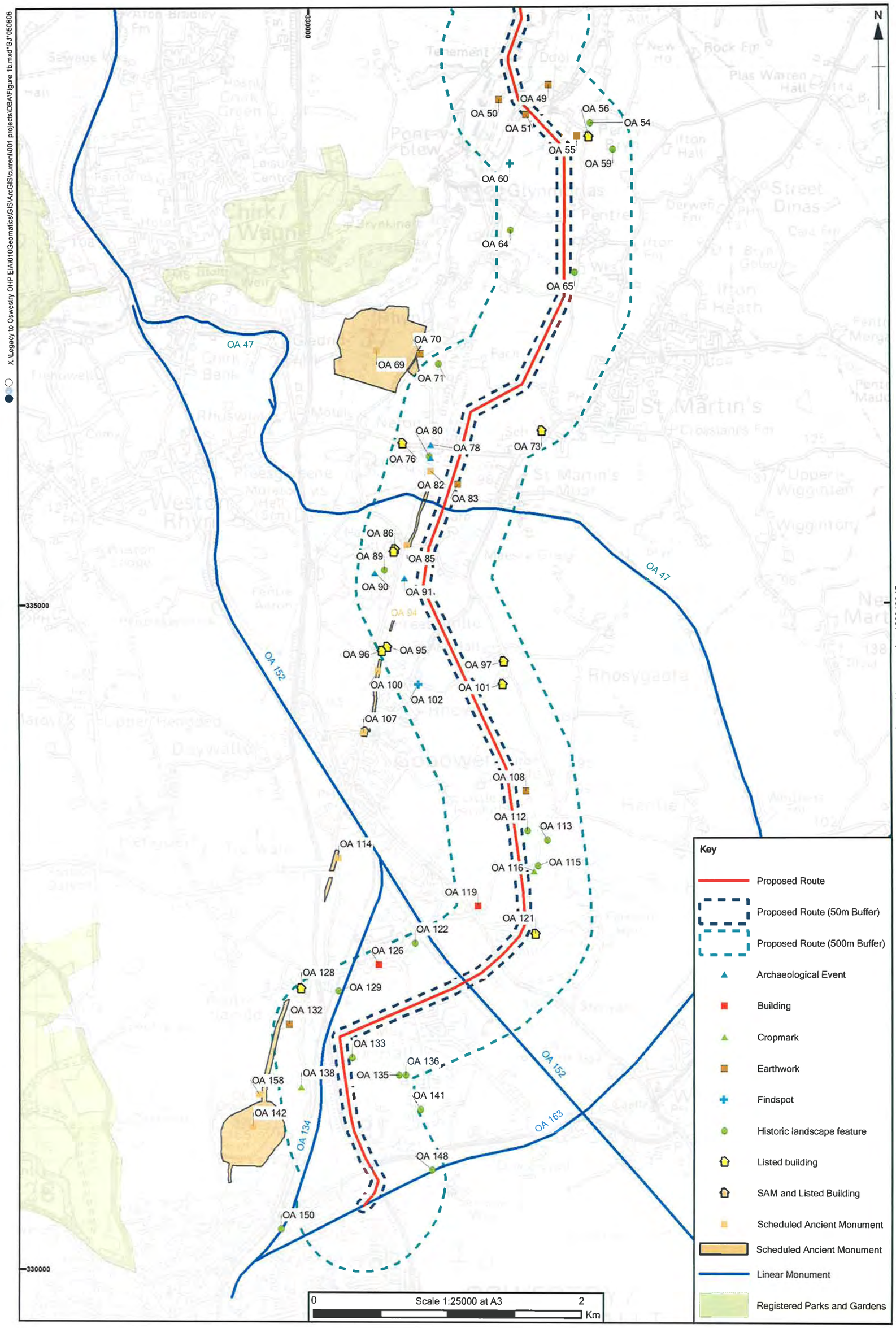

Figure 1b: Archaeological features mapping (South)

APPENDIX 16B Archaeological Desk Based Assessment: Alternative Route

Proposed Overhead Line between Legacy (Wrexham) and Oswestry Alternative Route

Archaeological desk-based assessment

LIST OF CONTENTS

LIST OF FIGURES

Proposed Overhead Line between Legacy (Wrexham) and Oswestry Alternative Route

Archaeological desk-based assessment

SUMMARY

Oxford Archaeology has been commissioned by TEP to undertake a desk-based assessment of the potential archaeological resource of an alternative route for part of the proposed reinforcement of 132kV overhead lines between Legacy (Wrexham) and Oswestry. The proposed alternative route extends from NGR SJ 316 386 to SJ 313 323, by-passing the eastern side of the village of St Martin's, Shropshire.

The assessment has identified a low potential for remains dating from the Mesolithic period, a moderate potential for remains dating from the Neolithic and Bronze Age, and a moderate potential for remains dating from the Iron Age/Roman period. There is little potential for the discovery of unknown archaeological remains of the medieval period.

The nature of the potential impact is likely to be relatively minor in scale and it is suggested that any potential effects could be substantially mitigated through the implementation of a programme of archaeological monitoring (watching brief) during intrusive stages of the construction programme.

Proposed Overhead Line between Legacy (Wrexham) and Oswestry Alternative Route

Archaeological desk-based assessment

1 INTRODUCTION

1.1 Background

1.1.1 Oxford Archaeology has been commissioned by TEP to undertake a desk-based assessment of the potential archaeological resource of part of the proposed reinforcement of 132 kV overhead lines between substations at Legacy, Wrexham (NGR SJ 2945 4850)) and Oswestry, Shropshire (NGR SJ 3032 3055). An assessment was previously undertaken for the entire route in February 2007, based on a route that passed to the west of the village of St Martins. The current assessment is for a proposed alternative route for the central part of the route, extending from NGR SJ 316 386 to SJ 313 323 and by-passing the eastern side of St Martin's (Fig. 2).

1.1.2 This desk-based assessment forms an initial stage of archaeological investigation. For the purposes of this report a Study Area was established, defined by a 500 m corridor along the line of the proposed route. Documentary, cartographic and archaeological sources, including the results from any previous archaeological investigations within the Study Area were examined in order to determine the likely nature, extent, preservation and significance of any archaeological remains that may be present within the proposed areas, and the potential impact of the proposed mitigation on such remains was considered.

1.1.3 All known archaeological sites and findspots within the Study Area have been mapped and entered into a gazetteer, which can be found in Appendix One. Each entry has been allocated an OA number, which is included in the gazetteer, referred to in the text and marked on the Archaeological Features Mapping (Fig. 2). At its northern and southern ends the route inhabits or crosses the original study corridor examined for the original route. Sites located within this corridor maintain their original OA Numbers (i.e OA 37) in this report and on its accompanying mapping. Sites located within the `alternative' route corridor have been allocated A (Alternative) numbers (i.e A18).

1.2 Site location, topography and geology

1.2.1 The proposed alternative route lies in north Shropshire, and extends from the valley of the River Ceiriog just south of its confluence with the River Dee (SJ 316 386) to the B5009 south east of Gobowen (SJ 313 323), passing round the east side of St Martin's. It passes through the parishes of St Martin's and Selattyn and Gobowen in the District of Oswestry.

1.2.2 The scheme corridor crosses rural land, avoiding the built up areas of St Martins and Gobowen.

2 PLANNING BACKGROUND

2.1 National Policy

2.1.1 Planning Policy Guidance: Archaeology and Planning (PPG 16) sets out the Secretary of State's policy on archaeological remains. It acknowledges the potentially fragile and finite or irreplaceable nature of such remains (para. 6), and states that the desirability of preservation of archaeological remains and their setting is a material consideration within the planning process (para. 18). PPG 16 provides that there is a presumption in favour of the physical preservation of nationally important archaeological remains (para. 8), and that where preservation *in situ* is not justified it is reasonable for planning authorities to require the developer to make appropriate and satisfactory provision for excavation and recording of remains (para. 25).

2.1.2 The underlying principle of this guidance is that the cultural heritage resource represents a finite and non-renewable resource and that its conservation should be the primary goal of archaeological resource management.

2.1.3 Paragraph 22 adds: '*Local planning authorities can expect developers to provide the results of such assessments...as part of their application for sites where there is good reason to believe there are remains of archaeological importance'.*

2.2 Hedgerow Regulations

2.2.1 Nationally, the Hedgerows Regulations 1997 prohibit the removal of protected hedgerows (generally those over 20m in length or connected at both ends to hedges of any length, excluding those bounding domestic gardens). As the Site passes through rural areas, this protection will have to be taken into account.

2.3 Oswestry Local Plan

2.3.1 The Oswestry Borough Council's Local Plan (1996-2006) recognises the value of the cultural heritage and seeks to protect it through policies HE 1-16. Policies HE1 to HE16 relate to the cultural heritage, in particular:

- HE1: Development of the Historic Environment
- HE2 to 6: Listed Buildings
- HE7 to 9: Conservation Areas
- HE13 & 14: Archaeological remains and sites of national and regional or local importance.
- HE16: the assessment of sites of archaeological importance.

2.4 Shropshire and Telford & Wrekin Joint Structure Plan

2.4.1 As part of the Joint Structure Plan (adopted 14th November 2002, covering the period 1996 - 2011), buildings of special architectural or historic interest and scheduled as ancient monuments shall be protected from development which would have a detrimental effect on their fabric, character and setting, especially where this would affect their listed or scheduled status (policy P24). Particular attention shall be paid to conserving listed buildings at risk. Special attention shall be paid to the desirability of preserving or enhancing the character or appearance and setting of conservation areas when development or enhancement schemes are proposed in or adjacent to them.

2.4.2 There will be a presumption against developments that would adversely affect scheduled ancient monuments or other sites of national archaeological importance or their settings. Other sites of known historical or archaeological importance including historic battlefields and their settings shall be protected from development wherever possible. Local planning authorities shall ask for appropriate archaeological investigations to determine the importance of the sites before a planning application is determined (policy P25).

2.4.3 Local plans and development and management proposals shall ensure that registered parks and gardens are protected and that appropriate management is applied, having regard to their special features and historic interest, wildlife habitats, listed buildings, and the character of surrounding countryside. Consideration should also be given to protecting other important parks and gardens (policy P26).

3 METHODOLOGY

3.1.1 The desk-based assessment was undertaken for a 1km wide corridor along the preferred route in order to establish the baseline environment. The general approach and methodology was to collate and report on archive, bibliographic, cartographic, aerial photographic and background sources pertaining to the cultural heritage, including archaeological sites and monuments, historic buildings and historic landscape features within the study area. The aim of this survey was to determine the likely nature, extent, preservation and significance of any archaeological remains that may be present within the area.

3.1.2 Field assessment was carried out to clarify the character, location and extent of known archaeological sites and identify unknown sites. A 100 m corridor was systematically walked by a professional archaeologist to identify archaeological sites. This comprised an 80 m corridor within which poles may be positioned, plus 10 m either side to allow for stays and access tracks.

3.2 Sources consulted

3.2.1 The Shropshire Sites and Monuments Record is the primary repository of

information on all known archaeology in the area. Oxford Archaeology obtained a record of all SM. data for all known archaeological sites and finds within the Study Area. In addition the following sources were consulted:

- English Heritage - National Monuments Record and aerial photographs
- Shropshire Archives – Historic maps

3.2.2 All known archaeological sites and findspots within the Study Area have been mapped and entered into a gazetteer, which can be found in Appendix One. Each entry has been allocated an OA number, which is included in the gazetteer, referred to in the text and marked on the Archaeological Features Mapping (Fig. 2). At its northern and southern ends the route inhabits or crosses the original study corridor examined for the original route. Sites located within this corridor maintain their original OA Numbers (i.e OA 37) in this report and on its accompanying mapping. Sites located within the 'alternative' route corridor have been allocated A (Alternative) numbers (i.e A18).

3.3 Assessment of significance

3.3.1 The importance of each cultural heritage feature was assessed through the exercise of professional judgement in relation to the criteria applicable to Scheduled Monuments, namely:

- survival/condition
- period
- group value
- rarity
- situation
- multi-period/single period status
- fragility/vulnerability
- Documentation.

Table 1: Criteria used to determine Importance of Receptors

Importance	Examples of receptor
International and National	World Heritage Site, Sites of International importance Scheduled Monuments (SMs), Grade I and II* Listed Buildings, Sites of National importance
Regional/County	Conservation Areas, Registered Parks and Gardens (Statutory Designated Sites), Grade II Listed Buildings, Sites of Regional/County importance Sites and Monuments Record/Historic Environment Record
Local/Borough	Sites with a local or borough interest Sites with a borough value or interest for education or cultural appreciation Sites that are so badly damaged that too little remains to justify inclusion into a higher grade

Importance	Examples of receptor
Low local	Sites with a local or parish interest Sites with a low local value or interest for education or cultural appreciation Sites that are so badly damaged that too little remains to justify inclusion into a higher grade
Negligible	Sites or features with no significant value or interest. Sites, which are so badly damaged those too little, remains to justify inclusion into a higher grade.

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 Introduction

4.1.1 The assessment has identified a total of 34 archaeological features within the Study Area.

4.1.2 There are 12 Listed Buildings in the Study Area, of which Pentre Morgan farmhouse **(A15)** is listed Grade II* and the remainder Grade II.

4.1.3 There are no Scheduled Ancient Monuments, Registered Battlefields or Registered Parks and Gardens within the Study Area.

4.2 Previous archaeological work

4.2.1 Marches Archaeology carried out a desk-based assessment, walkover survey and watching brief within the northern part of the Study Area in 2003 as part of the installation of the Overton to Chirk gas pipeline. This work included an evaluation and subsequent excavation of an earthwork west of Lower Farm, Pen-y-Bryn, which proved to be part of Wat's Dyke, an early medieval defensive earthwork **(OA 51)**. During the watching brief phase of the project two groups of worked flint were recovered from topsoil **(A10, OA62)**, but neither group contained chronologically diagnostic types.

4.3 Early prehistoric period (*c* 500 000 BC – 700)

4.3.1 The earliest evidence for human activity identified within the Study Area is a flint scraper dating from the Neolithic period (*c* 4000 – 2000 BC) found on the surface of a tilled field south west of Lower Farm, Pen-y-Bryn, *c* 250 m from the proposed route of the power line **(OA60)**

4.3.2 Evidence for funerary monuments dating from the Bronze Age (*c* 2000 – 700 BC) has been identified at three locations within the Study Area. Cropmarks of ring ditches have been identified from aerial photographs south west of the village of Henlle, comprising a group of up to four such features *c* 150 m from the proposed

route **(OA109)** and a further two *c* 400 m from the proposed route **(OA111)**. These ring ditches are likely to represent the remains of burial mounds that have been levelled by ploughing, leaving only the surrounding quarry ditch and possibly the central burial. A small mound recorded at Pen-y-Bryn **(OA55)**, *c* 150 m from the proposed route, may also be the remains of a Bronze Age barrow, although there is some doubt as to its identification: an investigation by Shropshire County Council SMR in 1991 was unable to identify the feature either on aerial photographs or on the ground.

4.3.3 Two small groups of worked flint and chert **(A10, OA62)** were recovered from topsoil during the watching brief on the Overton to Chirk gas pipeline, but contained no diagnostic types and could only be dated broadly to the prehistoric period, although they are most likely attributable to the Neolithic or Bronze Age.

4.4 Late prehistoric/Roman period (*c* 700 BC – AD 410)

4.4.1 A cropmark of a rectangular enclosure and associated trackway *c* 200 m from the proposed route at Great Fernhill **(OA116)** is believed on morphological grounds to be of Iron Age (c 700 BC – AD 43) or Roman (AD 43 – 410) date.

4.5 The medieval period (*c* AD 410 to 1500)

4.5.1 A ditch and bank extending along the east side of the valley of the River Ceiriog between NGR SJ 3180 3872 and SJ 3156 3852 **(OA51)** have been identified as part of Wat's Dyke, a defensive earthwork believed to have been constructed during the early medieval period to define the boundary between the English kingdom of Mercia and its welsh neighbour, Powys.

4.5.2 Little evidence survives for activity dating from the remainder of the medieval period. The only building within the Study Area identified as definitely having medieval origins is Plas Wiggin farmhouse **(A18)**, a Grade II Listed building that has seen considerable later remodelling. The earthwork enclosure near Ddôl **(OA49)** may also be of medieval date, but could be more recent, and the areas of ridge and furrow earthworks within the Study Area all appear to be too narrow and slight to be of medieval date, and are more likely to be post-medieval. This evidence would indicate that the Study Area was only sparsely settled during the medieval period, and that agriculture here may have been pastoral rather than arable at this time.

4.6 Post-medieval and modern periods (*c* 1500 - present)

4.6.1 The landscape changed substantially during the Post-medieval period, when numerous farms were established throughout the Study Area. After Plas Wiggin, the earliest was probably Pen-y-Bryn farmhouse, Wigginton **(A20)**, which may have been built as early as the 16th century. Pentre Morgan farmhouse **(A15)** and Great Fernhill farmhouse **(OA121)** were built during the 17th century, when Plas Wiggin **(A18)** was remodelled and a barn **(A19)** added. Top House farm **(OA58)** and its barn

(OA56) may be of 17th century date but this is uncertain, as a building is shown at this location on the tithe map but none is indicated on the subsequent enclosure map. The farmhouses at Cross Lanes Farm, St Martins **(A17)** and Derwen House, south east of Gobowen **(A29)** are also of Post-medieval date. All these buildings have been Listed at Grade II.

4.6.2 The industrial heritage of the area is represented within the Study Area by the former Iftonrhyn Colliery, *c* 300 m from the proposed route **(A13),** and coal workings near Ifton Hall, *c* 400 m from the proposed route **(OA61)**, and also by the brick works at Ifton Heath **(A14)** (which now survives only as the hollow of the former clay pit) and the iron mill that presumably gave its name to the hamlet near Fernhill **(OA113)**. The exploitation of these resources required a communications infrastructure, represented within the Study Area by the Shrewsbury and Chester Railway **(OA152)**, which was opened in 1846-8 and crosses the southern tip of the Study Area *c* 300 m from the end of the proposed route, and Ellesmere Canal **(A21)**, which will be crossed by the proposed route. The canal also features two listed buildings: an early 19th century lock-keeper's cottage near New Marton bridge **(A22)**, *c* 150 m from the proposed route, and New Marton Bottom Lock, half way between this site and Hindford **(A23)**, *c* 400 m from the proposed route.

4.6.3 A possibly ancient road **(A16)** extending from St Martin's Moor to east of Pentre Madoc and a trackway near Pen-y-Bryn **(OA54)** are likely to be routes of medieval or Post-medieval date.

5 WALKOVER SURVEY

5.1 Methodology

5.1.1 A walkover survey of the proposed development was carried out between 18th and 20th July 2007 and on 9th-10th and 18th October 2007. The purpose of this survey was to clarify the character, location and extent of known archaeological sites and identify unknown sites through field assessment. A 100 m wide corridor was systematically walked by a professional archaeologist to identify archaeological sites. This comprised an 80 m corridor within which poles may be positioned, plus 10 m either side to allow for stays and access tracks. Statutorily designated sites within 500 m of the proposed route were also examined to assess any effect on their settings, which are tabulated in Table 2.

5.2 Results

5.2.1 The survey was conducted in good light and good weather, and consequently it is possible to have a high level of confidence in the results. The landscape through which the proposed development passes is entirely rural and consists of pasture and hay fields. The landscape has a generous amount of tree cover, predominantly

provided by field boundary trees rather than by blocks of woodland. The topography is for the most part gently rolling hills, except for the northern end of the route, where there is a sharp drop into the valley of the River Ceiriog.

5.2.2 A single, non-statutorily designated site was identified during the walkover survey, comprising an earthwork field boundary of probable post-medieval date (A34).

5.3 Archaeological Potential of the route corridor

Early prehistoric period (c 500 000 – 700 BC)

5.3.1 Though there is some evidence of Mesolithic activity on hilltop sites in Shropshire, there is generally very low potential for finding previously unknown evidence for occupation from this time. There is a very low potential for impact on previously unknown sites from this period.

5.3.2 The discovery in the northern part of the Study Area of a flint scraper (**OA60**) dating from the Neolithic period and flint and chert flakes (**A10, OA62**) dating broadly from the Neolithic or Bronze Age indicate that there is a potential for further, as yet undiscovered remains of this date within the area of the development. It is likely that such remains would comprise surface scatters of flint and chert implements representing the former locations of camps or settlements, rather than buried archaeological features.

5.3.3 Two groups of ring ditches likely to represent the remains of Bronze Age barrows (**OA109, OA111**) have been identified as cropmarks within the southern part of the Study Area, between Gobowen and Hindford. It is possible that the known cropmark complexes could represent only the most visible parts of more extensive areas of archaeological remains, as barrow cemeteries such as these can include other, more ephemeral features including inhumation and cremation burials without ring ditches. There is a moderate potential that features associated with these cropmarks at **OA111** could continue into the development corridor.

Iron Age/Roman period (c 700 BC – AD 410)

5.3.4 No major sites of this period, such as hillforts, towns, villas or military installations have been identified within the Study Area, but the presence of a single enclosure (OA116) identified as a cropmark toward the southern end of the Study Area suggests that further such remains could be present in areas where cropmarks are not easily discernible due to the primarily pastoral landuse. The known enclosure is likely to be part of an agricultural settlement, and any further sites are likely to be similarly agricultural in nature. It is also possible that the enclosure is part of a more extensive complex of features that are not visible as cropmarks, which could potentially extend within the development corridor.

5.3.5 The proposed route avoids the main centres of medieval settlement, and there is little potential for the discovery of unknown archaeological remains of this period.

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6 CONCLUSION

6.1.1 This desk-based assessment has indicated that the proposed development will not impact directly on any statutorily designated sites. It may slightly affect the setting of the Grade II Listed farmhouse at Great Fernhill Farm (OA121, but will not affect any of the other designated sites, comprising eleven Listed Buildings, within the corridor.

6.1.2 The proposed route crosses Ellesmere Canal (OA47), but it is assumed that the power line will bridge over the canal and thus not cause any physical impact to the canal. There is a slight possibility that the proposed development could impact on remains associated with two cropmark complexes (OA 109, OA111) identified in the southern part of the Study Area if these complexes are more extensive than the features visible on aerial photographs. Groundworks associated with the development may result in a direct impact on an earthwork field boundary (A34) of probable post-medieval date.

6.1.3 As regards the potential for encountering currently unknown archaeological remains, the assessment has identified a low potential for remains dating from the Mesolithic period within the line of the development. There is a moderate potential for remains dating from the Neolithic and Bronze Age within the line of the development. If present, these are likely to comprise surface scatters of flint and chert artefacts representing the former locations of camps or settlements, or ring ditches representing the remains of plough-levelled barrows. There is a moderate potential for remains dating from the Iron Age/Roman period, most likely representing elements of an agricultural landscape. The proposed route avoids the main centres of medieval settlement, and there is little potential for the discovery of unknown archaeological remains of this period.

6.1.4 Due to the uncertain nature of the potential archaeological resource, the potential effect of the proposed development cannot be established conclusively. However, the nature of the potential impact (as discussed in Section 2) suggests that any impacts will be relatively minor in scale and it is suggested that any potential effects could be substantially mitigated through the implementation of a programme of archaeological monitoring (watching brief) during intrusive stages of the construction programme.

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APPENDIX ONE

Gazetteer of known archaeology within the Study Area

NMR = National Monuments Record
SMR = Shropshire Sites and Monuments Record
wa = Identified during walkover survey

OA no.	*Type*	*Easting*	*Northing*	*Description*	*SMR ref/NMR ref*
50	Earthwork	3142	3878	A field boundary and ridge and furrow NE of Pont-y-Blew farmhouse. The ridges and furrow is too narrow and slight to be medieval and may be of 19th century date.	08259/-
51	Scheduled Monument	3160	3865	Part of Wat's Dyke, an early medieval defensive earthwork. It is seriously eroded in stretches, but runs from the edge of the road at SJ 3180 3872 south west to SJ 3156 3852.	08308/-
49	Earthwork	3179	3889	Two sides of what may be rectangular ditched enclosure with a raised interior, approximately 70m square. The third arm of the rectangle coincides with a removed field boundary. The postulated fourth, southern, arm would run through an area of woodland that has been extended north eastwards since the date of the County Series 25in Map. The east side is badly eroded or cut away, leaving a straight edge, which may have led to the rectangular interpretation. The southern side of the enclosure survives as a very slight depression. To the east of the enclosure, near the edge of the field are some slag heaps. The area between these and the straight edge of the enclosure might have been interpreted as a moat arm on the AP. To the west of the enclosure is an old field boundary orientated NW/SE, which is still visible at the very bottom, and continues into the wood at the top.	04413/-
60	Findspot	3150	3830	Findspot of a flint scraper of probable Neolithic date.	04616/-
54	Historic landscape feature	3210	3860	A trackway of post-medieval date from aerial photographs as part of the	08260/-

OA no.	*Type*	*Easting*	*Northing*	*Description*	*SMR ref/NMR ref*
				Overton to Chirk gas pipeline survey.	
55	Earthwork	3200	33850	The Shropshire SMR records a small mound at Pen Y Bryn, 80 ft in diameter, situated on a raised point of land on the verge of the valley of the Dee. However, nothing is visible on CPD 1983 vertical APs and no such feature could be identified during the walkover survey. The mound, if it ever existed, may have been a natural glacial feature or an upcast mound from the coalmining that took place along this side of the Ceiriog Valley. If a genuine barrow formerly existed here, and has now been levelled by ploughing, there is the possibility of surviving buried remains including the surrounding ring ditch and the cist or urn containing the burial.	02859/66834
56	Listed Building	3209	3850	Post-Medieval barn 10m north of Pen-y-Bryn, Grade II listed. Late C17 extended C18 with later additions and alterations. Original 3-bay barn extended by one bay to left in C18. A building is shown in this location on the tithe map, but nothing is indicated on the 1810 enclosure map. It is therefore unclear whether there was anything on this site before the early 19th century.	19085/-
58	Historic Farmstead	3209	3849	Top House Farm, Pen-y-Bryn. Although the farm contains a Listed barn allegedly of 17th century origin, and buildings are shown on the site on the tithe map, none are indicated on an 1810 enclosure map. It is therefore unclear whether there was a farm or cottage on this site before the early 19th century, and it is unlikely that the site has origins before the late 17th century. Whatever its date, the site appears to have been an isolated farmstead, not the focus of a nucleated settlement	08304/-
59	Historic landscape feature	3227	3840	Former water course SE of Pen Y Bryn plotted from aerial photographs during an assessment for the Overton to Chirk gas pipeline route and shown as a stream on the tithe map. On the eastern side of the stream, at the southern end, earthworks were noted during a field inspection and interpreted as scarps related to the stream. The OS 2nd edition map also shows this feature as a stream channel. A watching brief on the Overton to Chirk gas pipeline picked up a linear feature at this location, which	08261/-

OA no.	*Type*	*Easting*	*Northing*	*Description*	*SMR ref/NMR ref*
				was interpreted as the old streambed.	
A10	Findspot	3256	3826	A group of three worked flints was recovered during a watching brief on the Overton to Chirk gas pipeline trench south west of Ifton Hall Farm. The flints consisted of two broken flakes or blades, and a single piece of debitage (which was actually of chert) from knapping activity	08315/-
62	Findspot	3260	3830	A group of three flints and cherts was recovered from the topsoil of the field to the south east of Grandarr during a watching brief on the Overton to Chirk gas pipeline in 2004. The flints consisted of one broken blade (flint), one flake (chert) and one piece of debitage from knapping (chert).	08316/-
61	Historic landscape feature	3265	3810	Coal workings c 300 m south of Ifton Hall	06546/-
A13	Historic landscape feature	3251	3744	Iftonrhyn Colliery Earthworks. The colliery was in production from the 19th century, and is labelled as disused on the OS 2nd Edition (1902).	06540/-
A14	Historic landscape feature	3333	3698	Brickworks, operational early 19th-early 20th century.	06542/-
A15	Listed Building	3396	3701	Pentre Morgan farmhouse. Listed Grade II*. Constructed c 1668 on site of an earlier building, with later additions and alterations.	- /1056492
A16	Linear monument			Course of an ancient road. Identified from map evidence, there is no trace of it on the ground.	- /66825
A17	Listed Building	3269	3625	Cross Lanes farmhouse. Listed Grade II.	- /255726
A18	Listed Building	3338	3565	Plas Wiggin farmhouse. Listed Grade II. Probably C14 or C15 core, remodelled early C17 with later additions and alterations.	19089/255731
A19	Listed Building	3338	3569	Barn c 50 m north of Plas Wiggin farmhouse. Listed Grade II. Mid-C17 with later alterations.	19090/255732
A20	Listed Building	3247	3553	Pen-y-Bryn farmhouse, Wigginton. Listed Grade II. Probably C16 or C17 with later additions and alterations.	19088/255730
47	Linear monument			Ellesmere canal. Constructed between 1791 and 1805 to link Shrewsbury with the Dee and Mersey.	- /1340907
A22	Listed Building	3286	3476	Cottage. Listed Grade II. Lock keeper's cottage associated with New Marton lock on Ellesmere canal. Built c 1801.	19109/255761
A23	Listed Building	3307	3415	New Marton Bottom Lock on Ellesmere canal. Listed Grade II.	19164/255853

OA no.	*Type*	*Easting*	*Northing*	*Description*	*SMR ref/NMR ref*
108	Earthwork	3160	3360	Remains of twentieth century army practice trenches of zig-zag and 'crenellated' form. The site comprises drainage ditches that run down the east slope of two natural hillocks at different angles and into a larger drain, which runs along the base of the hillocks. The latter runs into R Perry c 200 m to the south and comprises a ditch with a substantial bank behind and a smaller one in front. It doubles up as a field boundary.	02858/66907
109	Cropmark	3212	3342	Cropmarks of up to four circular enclosure ditches, possibly the remains of round barrows of later Prehistoric date.	02158/66934
111	Cropmark	3255	3327	Two possible ring ditches SW of Henlle	02288/66922
113	Site of Building	3176	3323	Iron Mill. Buildings on either side of the road probably represent a post-medieval iron works.	06550/-
116	Cropmark	3169	3304	Cropmark of a rectangular enclosure with a trackway leading to the north, at Great Fernhill. The site lies upon level arable land, gently sloping away at a distance to all but the north. The enclosure measures about 30m north-south, by 25m, is double ditched on the west, the ditches being about 10m apart. The north and south sides extend westwards for 40m, and open outwards. There are short stretches of detached linears to the south. The marks probably represent an Iron Age/Romano-British enclosure.	02156/66931
A29	Listed Building	3103	3281	Derwen House. Listed Grade II.	468814/-
119	Building	3124	3274	Location of water mill. The buildings now on site are not necessarily related to the former mill.	15586/-
121	Listed Building	3167	3253	Great Fernhill farmhouse. Listed Grade II. Mid-C17, extended late C18 with later additions and alterations.	19147/-
A32	Listed Building	3209	3249	Fernhill Hall. Listed Grade II. A country house, circa 1820-30.	13179
152	Linear monument			Shrewsbury and Chester railway. Opened 1846-8, the line incorporated the North Wales Mineral Railway and had several branches to mines along the route.	- /1370381
A34	Earthwork	3256	3420	Earthwork field boundary extending north-eastward from Top House	

OA no.	*Type*	*Easting*	*Northing*	*Description*	*SMR ref/NMR ref*
				Farm for 200 m to join an existing field boundary. A second earthwork boundary branches off this boundary and extends to the north-west	

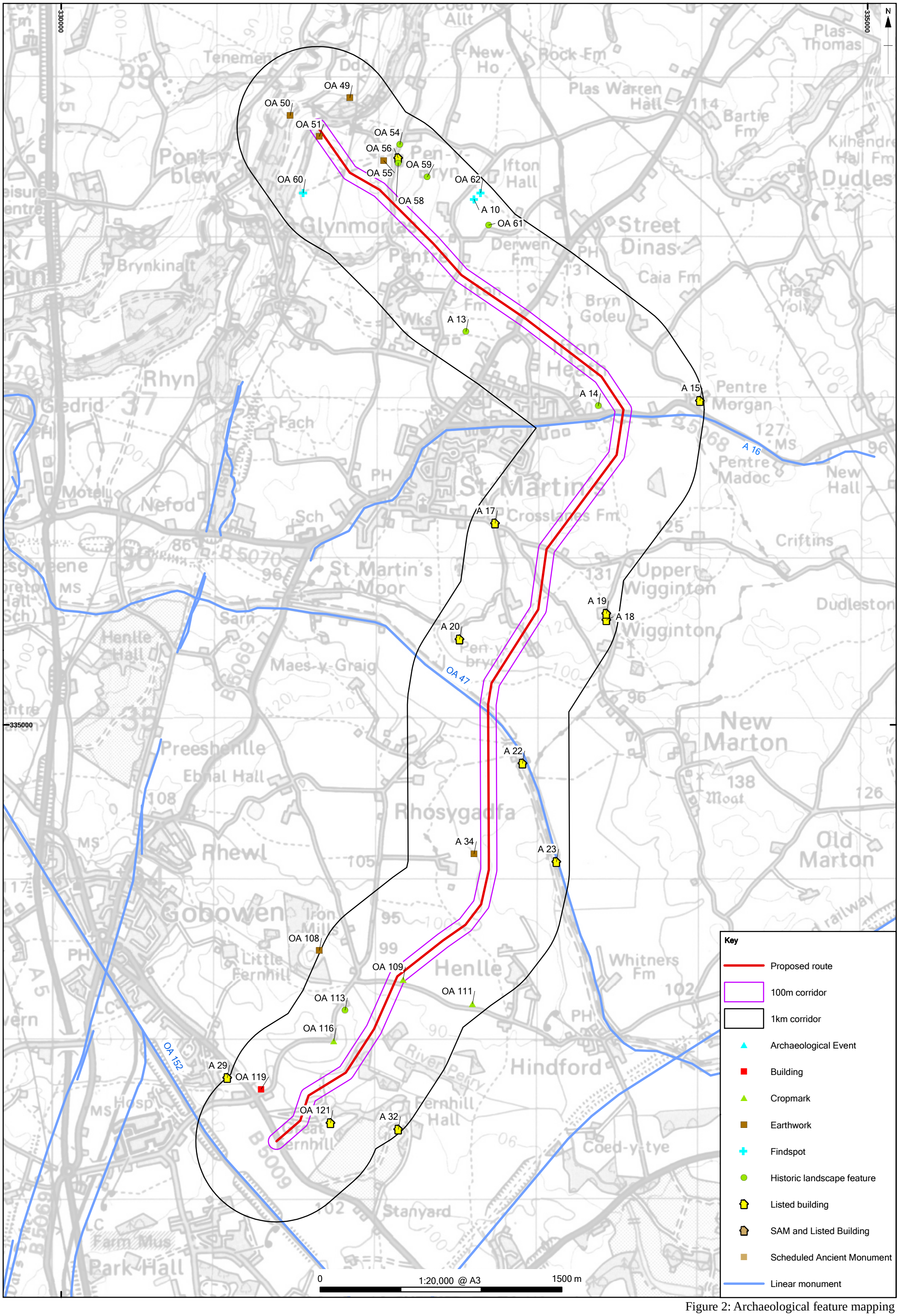

Figure 2: Archaeological feature mapping

Appendix 16C

Gazetteer of Cultural Heritage Features

NMR = National Monuments Record
DE = Cadw Scheduled Ancient Monument Number
MSA = Shropshire County Council Monument ID
ESA = Shropshire County Council Event ID
All other numbers = National Monuments Register Unique Identifier

OA no.	*Type*	*Easting*	*Northing*	*Description*	*SMR/NMR ref.*
5	Scheduled Ancient Monument	32985	34844	Offa's Dyke, Cadwgan Hall section,	304594
6	Historic Landscape Feature	32953	34833	Legacy Living History Site: Pair of reconstructed Iron Age round houses and former colliery tip, re-used as mound with steps for 'story telling', functioning as a living history/interpretation centre for children. Recorded during RCAHMW aerial reconnaissance on 14 Mar 2003.	402313
7	Scheduled Ancient Monument	32987	34832	Offa's Dyke, section extending 120m from Railway to Bronwylfa Road, Legacy. Runs generally NNW-SSE, continuing the alignment N of the disused railway, represented by earthworks & current linear features.	275791
8	Historic Landscape Feature	32940	34823	Cae'r Groes, Talwrn: name suggests the presence of a cross in the area. No cross is known.	400692
12	Listed Building/ Scheduled Ancient Monument	32961	34809	Esclusham Hall: A timber-framed hall house, probably of the late 15th or early 16th century, remodelled in 1677 by the insertion of an upper floor over the hall, and by the partial reconstruction of the external walls, together with the extension of the cross wing to the W. The walls are of painted brick, with rubble in the gable end. Pitched slate roof, with some timber-framing surviving in the rear wall, and ornately gabled dormers to the front of the main range. Listed Grade II*.	27140
13	Listed Building	32960	34800	Post-medieval outbuildings attached to Esclusham Hall. Listed Grade II.	31720
14	Scheduled Ancient Monument	32992	34800	Offa's Dyke, section N of Bryn Yr Owen Farm. A c.525m stretch of Offa's Dyke (Nprn306866), running generally NNW-SSE from Bronwylfa Road to Pentre Bychan Brook, with several changes in alignment, represented by discontinuous earthworks, current linear features & former parish boundaries.	275782
15	Historic Landscape Feature	32997	34795	Garden associated with Pentre Bychan House and Crematorium (OA 17). This garden is depicted on the Second Edition Ordnance Survey 25-inch map of Denbighshire XXVIII, sheet 14 (1899). Its main elements on that map include greenhouses, well, weirs, walled garden, orchard, woodland, lodge, contrived antiquity, pond, parkland, pinery, carriage drive, hydraulic pumps and cistern.	266432
16	Listed Building	32995	34794	Pentre Bychan Hall Dovecote: Grade II Listed. Pentrebychan Hall was built in 1823-4, replacing an earlier house. The dovecote built in 1721 was part of the appurtenances of the earlier house. The hall was demolished in 1962. Associated with Pentre Bychan dovecote	27640
17	Building	32995	34794	Pentre Bychan Crematorium: Opened in 1966, architects Sanger & Rothwell.	23408
18	Building	32990	34790	Pentre Bychan Crematorium Chapel: Opened in 1966, architects Sanger & Rothwell, the Chapel serves the Crematorium. Present status [2002]: Chapel	97354
19	Building	33104	34786	Timber Framed Barn associated with Hafod y-Bwch. OA 20). Grade II Listed.	302188
20	Building	33101	34786	Hafod y Bwch, Rhostyllen: Grade II Listed. 1612 gabled timber framed farmhouse, red bricked nogged. Early 17th century stair, modern north west wing. The S part of the house, plotted in 1975, is not depicted on OS Landline.	27271

				Associated with: Outbuildings (OA 19). A building essentially created in three phases: a late medieval timber framed hall-house which forms the W range; a timber-framed storeyed cross-wing to the S end of the hall, itself extended by 2 short parallel gabled wings to the E in the early 17th-century; and the encasing of the original timber frame of the hall range and cross-wing in stone. The 3-bay hall range retains evidence of an original 2-bay open hall with the survival of a truss with fine cusped braces. The fine 17th-century staircase with heavily moulded string and turned newels was introduced from Five Fords, Marchwiel c1970.	
21	Scheduled Ancient Monument	33090	34770	Hafod y Bwch round barrow: A circular mound, 40m in diameter and 2.8m high, crossed by a farm track and otherwise altered on the N.	DE047; 307139
22	Listed Building	331663	347349	Listed Signpost. Grade II.	16566.
24	Historic Landscape Feature	33118	34656	Hafod y Bwch Colliery, Rhosllanerchrugog: Former colliery, now dismantled. Rail connected to the main line between Wrexham and Shrewsbury, the colliery had a railway spur to serve Hafod Red Brick Works (NPRN 40776). Site visited by B. A. Malaws, 21 January 1993.	91679
25	Scheduled Ancient monument	33225	34633	Wat's Dyke: Section extending from Erdigg Country Park to Wynnstay Park. The section between Black Brook Bridge and Pentre-Clawdd, which the route crosses, is a Scheduled Ancient Monument.	306867
34	Listed Building	33205	34475	Moreton Below House, also known as Lower Moreton House. Listed grade II.	27530
36	Historic Landscape Feature	33278	34335	Park Eyton Farm, Ruabon: The name of farm preserves the memory of a large park once occupying the entire northern portion of the parish, and mentioned as early as the beginning of the 13th century. Depicted on the Second Edition Ordnance Survey 25-inch map of Denbighshire XXXV, sheet 12 (1899).	27618
37	Listed Building	33272	34318	Park Eyton Lodge, Wynnstay Park, Ruabon: Early 19th century lean to and modern addition. Lodge to the Wynnstay Estate, perhaps designed by James Wyatt. Built in the form of a Tetrastyle pedimented Greek Doric temple. Sandstone ashlar with rubble slate roof and chimney to rear. Central entrance in recessed arch. Later extension to right and rear. Listed Grade II.	27617
38	Listed Building	33253	34293	Wynnstay Park Kennels: A 2-storey brick and stone building with a nine-bay front elevation, and a giant rusticated arch under a steep pediment, with a bell cupola. Listed Grade II*.	401870
39	Building	33350	34290	Plas Goulbourn, outbuildings, Ruabon: Two long ranges of 17th-century half timbered outbuildings. One is framed in squares with long braces at alternate bay posts. Trusses have tie-beams, collars and struts. The other has fragments of framing only, rebuilt in brick. Associated with Plas Goulbourn (NPRN 27717).	37219
40	Building	33351	34287	Plas Goulbourn: Three-storey, nineteenth century brick-built farmhouse.	27717
42	Historic Landscape Feature	33235	34245	Cae Gosper, Dininlle Isaf, Rhiwabon. This field is thought to be the Capel Kollen mentioned in a 1620 survey and is traditionally the site of a cross and/or chapel. A cross is mentioned y Llwyd, but neither feature is known there today.	400703
43	Building	33186	34236	Dynhunlle and outbuildings, Ruabon: A very fine brick-built U-plan farm	31715

				complex comprising barns, stables, cow-sheds, byres and granaries, with a pigsty in the central yard.	
44	Listed Building	33271	34235	Crab Mill, Ruabon: Grade II Listed. A 2-storey hall-house, which might have been a long-house; now with a byre to the right-hand end. Originated as a medieval cruck-framed hall house, which survives in part, encapsulated by a 19th century reconstruction. This appears to have been a three-unit rectangular hall house with a central two bay hall, paired inner rooms and a possible outer parlour. In the early 18th century a chimney was inserted into the hall, possibly along with a first floor. Externally appears as 19th century, two-storeyed house with attached cow-houses under the same roof. Largely of brick, of various colours and bonds indicating different phases, with some masonry surviving from medieval structure and with the remains of a pegged slate-work roof. Main doorway alongside central chimney stack.	27076
46	Building	33163	33954	The remains of a small house, formerly a grange of Valle Crucis Abbey. The Historic Environment Record (undated) describes the site thus: *A well-built gable facing north survives fairly complete, together with the remains of mullioned windows and foundations.* The site survey carried out for this report (in April 2007) suggested that very little above ground evidence of the site survives: the remains now consist of group of low indistinct mounds.	27072
47	Historic Landscape Feature	32800	33900	Ellesmere Canal intended to link Dee and Mersey. The first section was completed in 1795 linking Chester with Whitby Wharf (now Ellesmere Port), with subsequent sections opening to Hurleston (1805), Frankton to Carreghofa and finally the Prees branch (1804) which never reached Prees, being halted at Quina Brook. All branches except the Pontcycyllte-Weston-Hurleston Junction had closed by 1939.	1340907
49	Earthwork	33179	33889	Two sides of what may be rectangular ditched enclosure with a raised interior, approximately 70m square. The third arm of the rectangle coincides with a removed field boundary. The postulated fourth, southern, arm would run through an area of woodland that has been extended north eastwards since the date of the County Series 25in Map. The east side is badly eroded or cut away, leaving a straight edge, which may have led to the rectangular interpretation. The southern side of the enclosure survives as a very slight depression. To the east of the enclosure, near the edge of the field are some slag heaps. The area between these and the straight edge of the enclosure might have been interpreted as a moat arm on the AP. To the west of the enclosure is an old field boundary orientated NW/SE, which is still visible at the very bottom, and continues into the wood at the top.	04413/-
50	Earthwork	33142	33878	A field boundary and ridge and furrow NE of Pont-y-Blew farmhouse. The ridges and furrow is too narrow and slight to be medieval and may be of 19th century date.	08259/-

51	Earthwork	33160	33865	Part of Wat's Dyke, an early medieval defensive earthwork. It is seriously eroded in stretches, but runs from the edge of the road at SJ 3180 3872 south west to SJ 3156 3852. Part of 1502.	08308/-
54	Historic landscape feature	33210	33860	A trackway of post-medieval date from aerial photographs as part of the Overton to Chirk gas pipeline survey.	08260/-
55	Earthwork	33200	33385	The Shropshire SMR records a small mound at Pen Y Bryn, 80 ft in diameter, situated on a raised point of land on the verge of the valley of the Dee. However, nothing is visible on CPD 1983 vertical APs and no such feature could be identified during the walkover survey. The mound, if it ever existed, may have been a natural glacial feature or an upcast mound from the coalmining that took place along this side of the Ceiriog Valley. If a genuine barrow formerly existed here, and has now been levelled by ploughing, there is the possibility of surviving buried remains including the surrounding ring ditch and the cist or urn containing the burial.	02859/66834
56	Listed building	33209	33850	Post-Medieval barn 10m north of Pen-y-Bryn, Grade II listed. Late C17 extended C18 with later additions and alterations. Original 3-bay barn extended by one bay to left in C18. A building is shown in this location on the tithe map, but nothing is indicated on the 1810 enclosure map. It is therefore unclear whether there was anything on this site before the early 19th century.	19085/- MSA10670
58	Historic Landscape Feature	33209	33849	Top House Farm, Pen-y-Bryn. Although the farm contains a Listed barn allegedly of 17th century origin, and buildings are shown on the site on the tithe map, none are indicated on an 1810 enclosure map. It is therefore unclear whether there was a farm or cottage on this site before the early 19th century, and it is unlikely that the site has origins before the late 17th century. Whatever its date, the site appears to have been an isolated farmstead, not the focus of a nucleated settlement	08304/- MSA18314
59	Historic landscape feature	33227	33840	Former water course SE of Pen Y Bryn plotted from aerial photographs during an assessment for the Overton to Chirk gas pipeline route and shown as a stream on the tithe map. On the eastern side of the stream, at the southern end, earthworks were noted during a field inspection and interpreted as scarps related to the stream. The OS 2nd edition map also shows this feature as a stream channel. A watching brief on the Overton to Chirk gas pipeline picked up a linear feature at this location, which was interpreted as the old streambed.	08261/- MSA18008 MSA18008
60	Findspot	33150	33830	Findspot of a flint scraper of probable Neolithic date.	04616/- MSA14693
61	Historic landscape feature	33265	33810	Coal workings c 300 m south of Ifton Hall	06546/-
62	Findspot	33260	33830	A group of three flints and cherts was recovered from the topsoil of the field to the south east of Grandarr during a watching brief on the Overton to Chirk gas pipeline in 2004. The flints consisted of one broken blade (flint), one flake (chert) and one piece of debitage from knapping (chert).	08316/-
66	Historic landscape feature	33251	33744	Iftonrhyn Colliery Earthworks. The colliery was in production from the 19th	06540/-

				century, and is labelled as disused on the OS 2nd Edition (1902).	MSA3170
108	Earthwork			Earthwork remains of twentieth century army practice trenches of zig-zag and 'crenellated' form.	66907
109	Cropmark	33212	33342	Cropmarks of up to four circular enclosure ditches, possibly the remains of round barrows of later Prehistoric date.	02158/66934
111	Cropmark	33255	33327	Two possible ring ditches SW of Henlle	02288/66922
113	Building	33176	33323	Iron Mill. Buildings on either side of the road probably represent a post-medieval iron works.	06550/-
115	Cropmark	33169	33304	Cropmark of a trackway of probable Iron Age to Roman date, probably associated with enclosure OA116.	MSA13762, 02156
116	Cropmark	33166	33300	Cropmark of a rectangular enclosure at Great Fernhill. The site lies upon level arable land, gently sloping away at a distance to all but the north. The enclosure measures about 30m north-south, by 25m, is double ditched on the west, the ditches being about 10m apart. The north and south sides extend westwards for 40m, and open outwards. There are short stretches of detached linears to the south. The marks probably represent an Iron Age/Romano-British enclosure.	02156/66931 MSA13762
119	Building	33124	33274	Location of water mill. The buildings now on site are not necessarily related to the former mill.	15586/- MSA17001
121	Listed building	33167	33253	Great Fernhill farmhouse. Listed Grade II. Mid-Cl7, extended late C18 with later additions and alterations.	19147/-
122	Historic Landscape Feature	33077	33246	A demolished toll house of unknown date near Twnpath Cottages, Great Fernhill	MSA17276, 15377
126	Building	33050	33230	Shropshire Orthopaedic Hospital of 1920, replacing the original hospital of 1900 established at Florence House. It occupied the site of a WWI military camp and hospital and comprised a series of single storey ward blocks with a central spinal corridor.	1063259, 101303
128	Listed Building				MSA10688, 19104, MSA28838
129	Historic Landscape Feature	33020	33210	Site of railway station on the Shrewsbury and Chester Railway, opened in 1848, closed in 1966.	500967, 6037
132	Earthwork				1400476, MU.87.4
133	Building	33030	33160	Park Hall Camp, a military base in the grounds of Park Hall used during the two world wars.	1511543, 268
134	Historic Landscape Feature	33007	33154	The Shrewsbury, Oswestry and Chester Junction Railway was completed in 1848. OS map 1875 shows embankment for railway line N of Oswestry railway station (cf SA5704). In 1845 the Shrewsbury Oswestry and Chester Junction Railway was formed with the intention of constructing a line from the Shrewsbury to	MSA12622, 05779

				Chester railway at Gobowen, through Oswestry to Llanymynech. The line was only completed as far as Oswestry, in December 1848, by which time the company had been amalgamated with the North Wales Mineral Railway to form the Shrewsbury and Chester Railway, itself later absorbed into the Great Western Railway in 1854. In 1845 the Shrewsbury, Oswestry & Chester Railway (which a year later merged with the North Wales Mineral Railway to become the Shrewsbury & Chester Railway, or SCR) was authorised by Parliament to construct not only a railway from Shrewsbury to Chester, but also a branch line leaving it at Gobowen. The original scheme was intended to link up at Crickheath with the proposed Shropshire Union of Railway	
135	Historic Landscape Feature	33065	33147	Ornamental duck pond, once part of Park Hall, now the property of Park Farm. 130m long, 50m wide, and has three islands, two small ones centrally placed in the east half, the third one (32m by 17m) occupying the western end, with a channel 8m wide encircling it on the north, west and south sides giving it a moat like appearance. The island is only around a foot above the water level, ideal for nesting birds, but not buildings. A grassy spoil heap from the construction of the pond extends the length of the north side (20m wide by 1.5m high). Surveyed in 1991 by Wendy Horton for Shropshire County Council (ESA2746).	66910
136	Historic Landscape Feature	33070	33147	In a field NW of Old Park Hall is a small oblong moat. A small moat like feature, not described, is shown on the OS 6ins map of 1873. A sub-rectangular moat is depicted with two oblong ponds on its E side on the Tithe Award map.	2986, SA1961
138	Cropmarks	32992	33138	Temporary Roman camp (possible). Rather faint N and E sides with signs of west side of single ditched feature with rounded NE corner. Other linear features inside. Three sides of a possible rectangular enclosure, the SE side wanting, measuring 100m NE/SW by 80m transversely. Two linear markings parallel with the NE side, within the enclosure, measure 75m and 20m respectively. Nothing visible on the ground. A field observation was carried out by the Ordnance Survey in 1979 (OS Record Card SJ23SE15).	MSA13470, 01412
142	Scheduled Ancient Monument	32957	33109	Old Oswestry hillfort. A fine example of a nationally rare type of Iron Age hillfort (large and with multiple ramparts), Old Oswestry forms part of a significant concentration in the Marches and is of particular interest because of its later reuse as part of Wat's Dyke.	00351/27556
148	Historic Landscape Feature	33080	33080	Site of railway station on the Whitchurch, Ellesmere and Oswestry Railway, opened in 1864 and closed in 1964	500980, 6050
152	Historic Landscape Feature	33930	32556	Shrewsbury & Chester Railway. The Shrewsbury, Oswestry & Chester Railway (SOCR) was authorised by Parliament in 1845. It had been supported by the North Wales Mineral Railway (NWM), whose traffic around Wrexham and Chester appeared to be under threat from a rival London & Birmingham Railway scheme to link Shrewsbury and Chester, and who had offered the SOCR the use of their line north of Ruabon. In 1846 the SOCR and NWM merged to become	MSA18721, 08444

				the Shrewsbury & Chester Railway (SCR).	
153	Historic Landscape Feature	33050	34775	Area of ridge and furrow cultivation identified during walkover survey	
154	Historic Landscape Feature	33315	34310	Area of ridge and furrow cultivation identified during walkover survey	
155	Historic Landscape Feature	33310	34390	A small stream to the east of the road between Park Eyton Farm and Gyfelia defines the boundary between the historic parishes of Ruabon and Erbistock	
156	Listed building	33280	34280	Bryn House. Listed Grade II. 17th century brick farmhouse, remodelled 1749, with modern alterations	
157	Registered Park	33000	34200	Wynnstay Park. An outstanding eighteenth century landscape park, one of the largest and most important in Wales. Although now cut in two by the A483 trunk road, the park still retains many of its historic features, some of which are attributed to Richard Woods and Capability Brown	
158	Scheduled Ancient Monument	32940	33130	A section of the eighth century frontier boundary of Mercia known as Wat's Dyke. The remains of the dyke's earthen bank and flanking ditch extend north and south from Old Oswestry hillfort (see SJ 23 SE 7). The southern section stands as an earthwork	10398873
159	Historic Park	33300	34100	Pen-y-Lan. An early nineteenth century landscape park in the fine, unspoilt scenery of the Dee valley, which survives in its entirety and is still managed as a park	
160	Earthwork	33140	33980	Two ponds with earthwork embankments. Willows and oaks growing on the banks suggest they are of some antiquity	
161	Earthwork	33145	33975	Possible drainage earthworks observed during walkover survey	
163	Historic Landscape Feature	35438	34073	The Oswestry, Ellesmere and Whitchurch Branch of the Cambrian Railway reached Whitchurch in 1858 as a single line from Crewe to Shrewsbury. The Tattenhall Junction line was opened in 1872.	MSA12992, 05892
500-624	Historic Landscape Features			Extant hedgerows that appear on the tithe maps of Chirk (1839), Ellesmere (Duddleston) (1839), Erbistock (1845), Ruabon (Moreton Below, Bodylltyn, Rhyddallt, Belan, Hafod, Moreton Anglicorum, Dinhille Issa) (1846), St Martin's (Ifton Rhyn) (1838), Whittington (Ebnal) (1839), Whittington (Hindford and Henlle) (1839), Whittington (Fernhill) (1839), Whittington (Whittington) (1839), and Wrexham (1844).	
A10	Findspot	33256	33826	A group of three worked flints was recovered during a watching brief on the Overton to Chirk gas pipeline trench south west of Ifton Hall Farm. The flints consisted of two broken flakes or blades, and a single piece of debitage (which was actually of chert) from knapping activity	08315/-MSA18327
A14	Historic landscape feature	33333	33698	Brickworks, operational early 19th-early 20th century.	06542/-MSA3171
A15	Listed building	33396	33701	Pentre Morgan farmhouse. Listed Grade II*. Constructed c 1668 on site of an earlier building, with later additions and alterations.	- /1056492 MSA84541
A16	Linear monument			Course of an ancient road. Identified from map evidence, there is no trace of it on	- /66825

				the ground.	
A17	Listed building	33269	33625	Cross Lanes farmhouse. Listed Grade II.	- /255726 MSA29684 MSA10669
A18	Listed building	33338	33565	Plas Wiggin farmhouse. Listed Grade II. Probably C14 or C15 core, remodelled early C17 with later additions and alterations.	19089/255731 MSA10674
A19	Listed building	33338	33569	Barn c 50 m north of Plas Wiggin farmhouse. Listed Grade II. Mid-Cl7 with later alterations.	19090/255732 MSA10675
A20	Listed building	33247	33553	Pen-y-Bryn farmhouse, Wigginton. Listed Grade II. Probably C16 or C17 with later additions and alterations.	19088/255730 MSA10673 MSA29786
A21	Linear monument			Ellesmere canal. Constructed between 1791 and 1805 to link Shrewsbury with the Dee and Mersey.	- /1340907
A22	Listed building	33286	33476	Cottage. Listed Grade II. Lock keeper's cottage associated with New Marton Lock on Ellesmere canal. Built *c* 1801.	19109/255761 MSA11633
A23	Listed building	33307	33415	New Marton Bottom Lock on Ellesmere canal. Listed Grade II.	19164/255853 MSA10746
A29	Listed building	33103	33281	Derwen House. Listed Grade II.	468814/- MSA19041
A32	Listed building	33209	33249	Fernhill Hall. Listed Grade II. A country house, *c* 1820-30 and grounds.	13179 MSA4072
A34	Earthwork	33256	33420	Earthwork field boundary extending north eastward from Top House Farm for 200 m to join an existing boundary. A second earthwork boundary branches off this boundary to north west.	walkover
1006	Building			Near Twmpath Cottages, Great Fernhill	MSA17276
1013	Findspot			Group of three flints c300m SE of Lower House Farm	MSA18328
1015	Building			Farmhouse at Ifton farm	MSA22352
1016	Building			Cartshed, converted to Garage, with Granary over, at Ifton farm	MSA22353
1017	Building			Threshing Barn, converted to Garage, with Granary over, at Ifton farm	MSA22354
1018	Building			Unspecified Farm Building (Loose Box?) at Ifton farm	MSA22355
1019	Building			Cartshed, converted to Storage and Pig Pens, at Ifton farm	MSA22356
1020	Building			Pigsties at Ifton farm	MSA22357

APPENDIX 18A
ARBORICULTURAL SURVEY METHOD

Appendix 18A: Arboricultural survey method

Introduction

This appendix formed part of the environmental information provided to engineers designing the overhead line *(700.157 Environmental restrictions within 80m route corridor, dated 30.01.08)*. Arboricultural survey information was collected initially for the preferred route corridor, and subsequently updated with alternatives and route corridor refinements.

Method of Survey

Field survey extent

The exact positioning of the line and support poles has not yet been determined. These will be positioned within a corridor of 80m width (40m either side of a notional centre line). Stays to supports may extend outside this corridor by an estimated maximum of 5m. Additionally, any trees which could potentially fall over and land within this corridor (but are situated outside it) also needed to be considered. A further 20m on each side was therefore surveyed, giving a total survey corridor width of 130m.

Field survey method

Data was collected in the field using a tablet computer (Fujitsu Stylistic ST or Panasonic Toughbook) running ArcPad mapping software and OS landline information. Plotting of tree or group positions as shown by GPS (see below) opened an associated data table covering the parameters listed below.

Positional information was transferred to the tablet computer in real time from a backpack-mounted GPS with differential beacon (Trimble ProXR or CSI Wireless DGPS Max). These GPS units will deliver sub metre accuracy. Field accuracy was repeatedly monitored by comparing the positional fix shown on the OS landline map with the actual position over the ground of the GPS unit.

Tree heights were determined using a MDL LaserAce hypsometer. This handheld unit allows the heights of trees to be determined accurately even when access cannot be gained to the base of a tree due to reasons such as vegetation or other accessibility restrictions. Values obtained from the hypsometer were manually inputted into the relevant data table of the ArcPad software.

Surveying was carried out during October 2006, March, April, July 2007, ***October 2011 and July 2012.*** Weather conditions varied between days of good sunshine to overcast days to rainy days. Surveying was not carried out in heavy rain due to impairment of equipment functioning.

Survey data collected was adapted from the British Standards defined in *BS5837(2005*), 'Trees in relation to construction – Recommendations'. ***There is a 2012 update to BS5837, the result of the survey are not materially affected by the update.*** The data was collected separately for trees and tree groups, as follows:

Species: The common name is given (for groups – the 5 main species);

Height: The height of the crown is given. (for groups, the maximum height of the crowns within the group). Heights were derived using a LaserAce Hypsometer (see below);

Maximum Crown: The maximum crown distance is twice the greatest radial distance between the trunk and the outer edge of the trees crown. For groups, the edge of the crown of the group was mapped.

Condition: This is an assessment of the trees vigour and vitality. It provides an indication of how well the tree may respond to nearby disturbance. It is not an assessment of the structural integrity of the tree;

Age: Young trees are below a quarter of their life expectancy, semi-mature between a quarter and a half, early-mature between a half and three quarters, and mature trees are above three quarters of their life expectancy. Veteran trees have features of biological, cultural, or aesthetic value that are characteristic of but not exclusive to individuals surviving past the typical age range of that species;

DBH (Diameter at breast height): For single stemmed trees the diameter is recorded 1.5 metres above the ground. For multi-stemmed trees the diameter is measured directly above the root flare;

BS Quality Category: Tree quality is given as Category A, B, C, or R. Further details of the categories is given below.

SULE (Safe Useful Life Expectancy): This is an estimate of the life expectancy of a tree which may have a significant target such as roads, pedestrians, or buildings. Short indicates less than 10 years, medium 10 to 40 years, and long as over 40 years.

Protected Species: This is an estimate of for the likelihood that bats or owls are using the tree as a roost. It is based on the numbers of features such as cracks and cavities that were observed.

The **BS Quality Category** is based on the recommendations of Table 1 within *BS5837(2005)*. This categorises trees and groups as follows:

Category A – Trees and groups of high quality and value
These trees and groups will have a life expectancy of over 40 years and will fulfil one or more of the following criteria:

- Trees that are good examples of their species, especially if rare or unusual;
- Healthy young trees of good form and vitality;
- Visually dominant individual or component of a larger group or avenue;
- Trees that provide significant screening or softening of effect to the locality in relation to views;
- Comprise a particular visual feature such as an avenue;
- Have particular historical, cultural, or conservation values.

Category B – Trees and groups of moderate quality and value
These trees and groups will have a life expectancy of over 20 years and will fulfil one or more of the following criteria:

- Trees that are good examples of their species, especially if rare or unusual but are downgraded due to remedial defects or previous poor past management;
- Form significant landscape features;
- Have clearly identifiable historical, cultural, or conservation values.

Category C – Trees and groups of low quality and value
These trees and groups will have a life expectancy of over 10 years that do not qualify as A or B categories.

Category R – Trees and groups unsuitable for long term retention
These are trees and groups that would be unsuitable for retention if in the vicinity of a significant target such as roads, pedestrians, or buildings. They may be dead, dying, diseased, or have a serious structural defect. These trees may still provide potential bat and owl habitats so mitigation may be required following their removal.

APPENDIX 18B
TREES WITHIN (OR POTENTIALLY ABLE TO FALL WITHIN) 80M TOLERANCE CORRIDOR

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T1	English Oak	14	10	550	Good	Mature	B	Medium	Long	
T3	Turkey Oak	13	10	450	Good	Semi Mature	B	Low	Long	
T4	Oak species	18	20	1150	Good	Mature	A	Medium	Long	Good form
T8	Goat Willow	4	6	250	Good	Semi Mature	C	Low	Medium	Multi-stemmed basal
T9	English Oak	16	10	950	Good	Mature	B	Medium	Long	
T10	Oak species	15	17	1100	Good	Mature	A	High	Long	Cracks in failure stubs
T11	Oak species	14	18	1400	Fair	Veteran	A	High	Long	Moderate deadwood
T12	Oak species	17	12	1150	Good	Mature	A	Medium	Long	
T13	Horse Chestnut	17	16	800	Poor	Mature	C	Medium	Short	Major deadwood and dieback
T14	Oak species	12	11	450	Good	Semi Mature	B	Medium	Long	
T15	Oak species	14	18	800	Good	Mature	B	Medium	Long	
T16	Oak species	16	16	1400	Fair	Mature	B	High	Long	Extensive basal cavity
T17	English Oak	20	20	1400	Good	Mature	A	Medium	Long	
T2	Oak species	18	16	800	Good	Mature	A	Low	Long	Minor deadwood
T23	Oak species	8	4	250	Good	Young	C	Low	Long	
T25	Oak species	11	9	550	Good	Semi Mature	B	Medium	Long	
T26	Oak species	12	12	700	Good	Mature	A	Medium	Long	Large deadwood stubs, Fistulina at base
T27	Oak species	10	9	650	Good	Semi Mature	B	Medium	Dead	Basal wounds evident
T29	Oak species	16	12	700	Poor	Mature	C	High	Medium	Cavities, Major deadwood. Buttress wounds
T40	Ash	14	10	400	Fair	Early Mature	B	Medium	Long	
T41	Alder	8	12	400	Fair	Semi Mature	C	Medium	Medium	Suppressed. Lean to East
T42	Sycamore	12	12	550	Fair	Mature	B	Low	Long	Ivy in lower crown
T43	Oak species	15	13	1000	Poor	Mature	C	Medium	Medium	Major dieback
T44	Oak species	19	19	1800	Excellent	Mature	A	High	Long	Minor stem wound
T51	Sycamore	16	12	600	Good	Mature	B	Low	Long	
T52	Oak species	15	12	650	Good	Mature	B	Medium	Dead	Ivy on stem and inner crown
T53	Oak species	9	10	1300	Good	Mature	B	High	Medium	Cracks in scafold branches
T54	English Oak	14	14	1000	Fair	Veteran	A	High	Long	Decay fungi at base
T55	Alder	11	8	400	Fair	Semi Mature	C	Low	Medium	
T57	English Oak	18	16	650	Good	Mature	A	Medium	Long	
T75	Oak species	23	22	1300	Excellent	Mature	A	High	Long	
T76	Oak species	18	16	1000	Good	Mature	A	High	Long	
T77	Oak species	18	18	1000	Good	Mature	A	High	Long	
T79	English Oak	18	19	900	Good	Mature	B	High	Long	

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T80	English Oak	16	17	1000	Good	Mature	A	High	Long	
T81	Sycamore	18	18	1100	Good	Mature	B	Medium	Long	
T82	English Oak	16	11	950	Fair	Mature	B	High	Medium	Low vigour, large cavity with moderate decay. Good habitat value.
T83	Sycamore	18	18	1100	Good	Mature	B	Medium	Long	
T84	English Oak	15	13	750	Good	Mature	B	Medium	Long	
T85	English Oak	4	3	650	Removal	Mature	R	Low	Short	Tree failed
T123	Goat Willow	8	8	400	Good	Semi Mature	C	Low	Medium	
T124	Sycamore	20	15	800	Poor	Mature	R	Medium	Short	
T125	English Oak	14	12	1200	Fair	Veteran	B	Medium	Long	
T126	English Oak	12	6	450	Fair	Semi Mature	B	Low	Long	
T127	Ash	11	9	500	Poor	Mature	C	Low	Medium	
T128	English Oak	12	10	700	Good	Mature	B	Medium	Long	
T129	English Oak	14	12	500	Fair	Mature	B	Low	Medium	
T131	English Oak	12	10	600	Good	Mature	B	Low	Long	
T132	English Oak	9	9	500	Poor	Mature	R	Medium	Short	
T133	English Oak	12	12	500	Fair	Mature	B	Low	Medium	
T134	Cherry species	8	8	500	Fair	Veteran	C	Low	Medium	
T135	English Oak	14	14	600	Good	Mature	B	Low	Long	
T136	English Oak	9	12	550	Fair	Mature	B	Low	Medium	
T137	Alder	10	6	500	Fair	Mature	C	Low	Short	
T138	Alder	6	6	400	Poor	Mature	R	Medium	Short	
T139	Alder	7	8	450	Poor	Mature	R	High	Short	Multi-stemmed
T142	English Oak	9	12	600	Good	Veteran	A	High	Long	
T143	Ash	14	10	600	Fair	Mature	C	Medium	Medium	
T145	Alder	8	6	450	Good	Mature	B	Low	Medium	
T146	Cherry species	10	12	550	Poor	Mature	R	Medium	Dead	
T147	Cherry species	11	8	350	Poor	Mature	C	Low	Short	
T148	Cherry species	11	10	400	Poor	Mature	C	Low	Short	
T151	Sycamore	15	11	800	Good	Mature	B	Low	Medium	Stem trifurcate from base, included bark unions
T152	Sycamore	14	12	1000	Good	Mature	B	Low	Long	Multi-stem base
T153	Sycamore	16	11	950	Fair	Mature	B	Low	Medium	Stem basally trifurcate, tight bark union
T154	English Oak	13	12	1000	Good	Mature	B	Medium	Long	Minor deadwood
T156	Sycamore	12	12	500	Fair	Mature	B	Low	Medium	

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T157	Sycamore	14	10	400	Fair	Mature	C	Low	Medium	
T158	Sycamore	14	12	450	Good	Mature	B	Low	Long	
T159	Sycamore	14	12	650	Good	Mature	B	Low	Long	
T160	Sycamore	16	12	600	Good	Mature	B	Low	Long	
T161	English Oak	16	20	1000	Good	Mature	B	Low	Long	
T162	Sycamore	10	5	250	Fair	Early Mature	C	Low	Long	
T163	Sycamore	10	5	250	Good	Early Mature	C	Low	Long	
T164	English Oak	12	10	550	Fair	Mature	C	Medium	Medium	
T165	English Oak	12	10	500	Good	Mature	B	Medium	Long	
T166	English Oak	8	16	450	Fair	Mature	C	Medium	Medium	
T167	English Oak	6	12	350	Poor	Semi Mature	R	Low	Dead	
T168	English Oak	16	18	700	Good	Mature	B	Medium	Long	
T172	English Oak	14	12	600	Good	Mature	A	Medium	Long	
T173	English Oak	12	14	400	Poor	Semi Mature	C	Medium	Medium	
T174	English Oak	12	12	400	Fair	Semi Mature	C	Medium	Long	
T175	English Oak	15	18	550	Good	Mature	B	Medium	Long	
T176	English Oak	12	12	500	Fair	Semi Mature	B	Medium	Long	
T177	English Oak	11	10	500	Fair	Mature	B	Medium	Long	
T178	English Oak	11	12	450	Fair	Semi Mature	B	Medium	Long	
T183	English Oak	14	12	550	Fair	Mature	B	Medium	Long	
T184	English Oak	10	10	300	Fair	Early Mature	C	Low	Long	
T185	English Oak	9	12	350	Fair	Early Mature	C	Low	Long	
T186	English Oak	10	10	500	Good	Mature	B	Medium	Long	
T187	English Oak	14	12	450	Fair	Mature	B	Medium	Long	
T188	English Oak	10	12	350	Fair	Semi Mature	C	High	Long	
T189	English Oak	6	8	400	Poor	Semi Mature	C	Medium	Medium	
T190	English Oak	8	14	450	Fair	Semi Mature	C	Medium	Long	
T191	English Oak	8	12	500	Fair	Mature	B	High	Long	
T192	English Oak	11	12	500	Fair	Mature	B	Medium	Long	
T193	Cherry species	8	10	350	Poor	Mature	R	Medium	Dead	
T194	English Oak	14	14	700	Good	Mature	B	High	Long	
T195	English Oak	9	10	450	Fair	Mature	C	Medium	Medium	
T196	English Oak	12	14	650	Fair	Mature	B	Medium	Long	
T197	English Oak	10	10	450	Fair	Semi Mature	B	Medium	Long	

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T198	English Oak	12	9	450	Fair	Mature	B	Medium	Long	
T199	English Oak	11	12	500	Good	Mature	B	Medium	Long	
T200	English Oak	8	10	550	Good	Mature	B	Medium	Long	
T201	English Oak	13	14	750	Good	Mature	B	Medium	Long	
T202	English Oak	10	10	750	Fair	Mature	B	Medium	Long	
T203	English Oak	11	10	450	Fair	Mature	B	Medium	Medium	
T204	English Oak	12	16	500	Good	Mature	A	Medium	Long	
T208	English Oak	8	12	800	Fair	Mature	B	Medium	Long	Leader previously snapped out, decay fungi at base
T209	Willow species	6	8	450	Fair	Mature	C	Low	Medium	Top snapped out
T211	English Oak	14	12	550	Good	Mature	A	Medium	Long	
T212	English Oak	14	12	550	Good	Mature	B	Medium	Long	
T213	English Oak	15	10	550	Good	Mature	A	Medium	Long	
T214	English Oak	12	12	450	Fair	Semi Mature	B	Medium	Long	
T215	English Oak	13	12	550	Good	Mature	B	Medium	Long	
T216	Goat Willow	10	7	600	Good	Young	C	Low	Medium	
T217	English Oak	14	16	600	Good	Mature	B	Low	Long	
T218	English Oak	16	14	1000	Fair	Veteran	B	High	Medium	Fistulina fungal fruiting body at base
T219	English Oak	16	16	700	Poor	Mature	C	High	Medium	Fire damage to 1 half of trunk, major deadwood
T220	English Oak	16	16	1100	Good	Mature	B	Medium	Long	Moderate deadwood
T221	English Oak	7	12	650	Poor	Mature	C	Medium	Medium	Highly suppressed
T222	English Oak	16	16	800	Fair	Mature	B	Medium	Medium	Moderate dieback to north side of canopy
T223	Alder	9	6	300	Removal	Mature	R	Low	Dead	Ivy covered
T224	Sycamore	16	12	600	Good	Mature	B	Low	Long	Bifurcate at 6m
T226	Alder	19	12	650	Removal	Mature	R	Low	Short	Good deadwood habitat
T227	Alder	19	12	600	Removal	Mature	R	Low	Short	Good deadwood habitat
T228	Sycamore	16	8	400	Good	Mature	C	Low	Long	15 degree lean to stem
T229	English Oak	11	10	500	Fair	Mature	B	High	Medium	Ivy on scafold branches
T230	English Oak	16	14	500	Good	Mature	A	Medium	Long	Good form, minor deadwood
T231	English Oak	14	14	400	Good	Mature	C	Low	Long	Minor deadwood
T232	English Oak	14	14	550	Good	Mature	B	Medium	Long	Minor deadwood
T233	English Oak	14	12	600	Good	Mature	B	Medium	Long	Minor deadwood
T234	English Oak	9	9	700	Good	Mature	B	Medium	Long	Heavily tumoured stem
T235	English Oak	8	8	600	Fair	Semi Mature	B	High	Long	Cracks where limbs failed, Minor deadwood
T236	English Oak	15	16	700	Good	Mature	A	Medium	Long	Good form

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T237	English Oak	11	14	550	Good	Mature	B	Medium	Long	Heavily suppressed
T241	English Oak	14	16	1250	Good	Veteran	A	High	Long	Minor deadwood, basalstem wound
T251	English Oak	18	14	900	Good	Veteran	A	High	Long	Excellent form
T252	English Oak	12	12	450	Good	Semi Mature	B	Medium	Long	Good form
T253	English Oak	5	8	400	Poor	Semi Mature	C	Low	Long	Highly suppressed
T254	Alder	8	7	1000	Fair	Semi Mature	C	Medium	Medium	Previous leader failures
T255	English Oak	16	14	650	Good	Mature	A	Medium	Long	Minor deadwood
T258	English Oak	11	12	450	Good	Mature	B	Medium	Long	Ivy covering scafold branches
T259	English Oak	12	12	450	Good	Mature	B	Medium	Long	
T260	English Oak	14	18	600	Good	Mature	B	High	Dead	
T261	English Oak	12	14	600	Good	Mature	A	Medium	Long	Minor deadwood, sprouting shoots in crown, good form
T262	English Oak	12	12	550	Excellent	Mature	B	High	Long	
T263	English Oak	14	12	450	Good	Semi Mature	B	Medium	Long	
T266	Ash	11	8	300	Fair	Early Mature	C	Low	Long	
T267	English Oak	10	14	600	Good	Mature	B	High	Long	
T268	English Oak	12	12	600	Fair	Mature	B	Medium	Long	Minor deadwood and dieback
T269	Apple	8	10	600	Fair	Mature	B	Low	Medium	
T270	English Oak	15	14	800	Good	Mature	B	Medium	Long	
T272	English Oak	8	7	450	Good	Semi Mature	C	Medium	Long	Crown being enveloped by Ivy
T273	English Oak	8	8	500	Fair	Semi Mature	B	Low	Long	Minor dieback and deadwood
T274	Turkey Oak	14	10	450	Good	Semi Mature	B	Low	Long	Good form
T275	English Oak	8	9	400	Good	Semi Mature	C	Medium	Long	Suppressed by adjacent ash, ivy on scafold
T276	Ash	17	16	400	Good	Early Mature	B	Low	Medium	
T277	Ash	15	12	700	Fair	Semi Mature	C	High	Short	Ash Heart Rot fungal fruiting body on stem, branch stump regrowth
T278	English Oak	9	8	400	Good	Semi Mature	B	Medium	Dead	
T279	English Oak	16	18	1100	Good	Mature	B	High	Long	Minor deadwood
T280	English Oak	17	17	600	Good	Mature	A	Medium	Long	10 degree southeast lean
T281	English Oak	17	14	600	Good	Mature	B	Medium	Long	Ivy on trunk and scafold branches
T282	English Oak	15	16	950	Good	Mature	B	Medium	Long	Minor deadwood
T283	English Oak	17	17	1000	Good	Mature	B	High	Long	Sprouting shoots in crown, branch stump regrowth
T284	English Oak	14	16	700	Fair	Semi Mature	C	Medium	Medium	20 degree northerly stem lean, exacerbated by and suppressed by adjacent ash
T285	Ash	16	14	650	Fair	Semi Mature	C	Medium	Medium	Large limb recently failed, stem occluding that of adjacent Oak.

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T286	Ash	15	10	450	Fair	Early Mature	C	Low	Medium	Ivy on scafold branches
T289	English Oak	8	10	700	Good	Semi Mature	B	Medium	Long	Ivy on trunk and scafold
T290	English Oak	14	19	800	Good	Mature	A	Medium	Long	Good form, ivy on trunk and scafold branches
T291	English Oak	7	6	400	Good	Early Mature	B	Low	Dead	Minor deadwood
T292	English Oak	10	9	550	Good	Semi Mature	B	High	Long	Major leaders have previously failed resulting in compact crown
T293	English Oak	8	9	450	Good	Semi Mature	B	High	Medium	Laetiporous fungal fruiting body remnants on stem wound
T294	English Oak	14	14	800	Good	Mature	A	Medium	Long	Good form
T295	Ash	20	12	700	Fair	Mature	B	Medium	Medium	Ivy on trunk and scafold branches
T296	English Oak	13	14	1100	Good	Mature	A	Medium	Long	Stem basally bifurcate
T297	English Oak	15	18	650	Removal	Mature	R	Medium	Dead	Good deadwood habitat
T298	Oak species	20	14	1200	Good	Mature	A	Medium	Long	
T299	Oak species	26	20	1150	Excellent	Mature	A	High	Long	
T300	Oak species	20	16	1150	Good	Mature	A	High	Long	
T301	Oak species	10	6	500	Good	Semi Mature	B	Medium	Long	
T302	Oak species	14	8	600	Fair	Semi Mature	C	Low	Long	
T303	Oak species	14	12	550	Fair	Mature	C	Medium	Long	
T304	Oak species	14	12	650	Good	Mature	B	Medium	Long	
T305	Oak species	11	8	450	Fair	Semi Mature	B	Low	Long	
T306	Oak species	9	6	500	Good	Early Mature	C	Low	Long	
T307	Oak species	7	10	500	Fair	Mature	B	High	Long	
T308	Oak species	15	16	500	Fair	Mature	B	Medium	Long	
T309	Oak species	14	16	700	Good	Mature	B	Medium	Long	
T310	English Oak	18	8	450	Fair	Semi Mature	B	Low	Long	
T311	Oak species	20	20	700	Fair	Mature	B	Medium	Long	Stem bifurcate basal
T312	Oak species	12	12	500	Good	Semi Mature	B	Medium	Long	
T313	Sycamore	18	12	400	Poor	Mature	C	Low	Medium	
T314	Sycamore	20	12	450	Poor	Mature	C	Medium	Medium	Twin stemmed
T315	Oak species	11	14	800	Good	Mature	B	Medium	Long	Ivy on stem and scafold branches
T316	English Oak	14	12	500	Good	Mature	B	Medium	Long	
T317	English Oak	12	9	500	Good	Mature	B	Medium	Long	
T318	English Oak	13	8	500	Fair	Mature	B	Medium	Long	
T319	Oak species	17	14	1450	Excellent	Mature	A	High	Long	
T320	Oak species	8	8	600	Poor	Mature	R	High	Short	
T321	Elm	11	9	550	Poor	Mature	R	Low	Short	Dead

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T322	English Oak	13	8	1200	Good	Mature	A	Medium	Long	
T325	Oak species	15	14	450	Good	Mature	B	Medium	Long	Values estimated from plot 17
T326	Oak species	15	14	700	Good	Mature	B	Medium	Long	Values estimated from plot 17
T327	Oak species	15	14	700	Good	Mature	B	Medium	Long	Values estimated from plot 17
T329	Oak species	14	14	800	Good	Mature	B	Medium	Long	
T330	Ash	21	18	500	Good	Semi Mature	B	Low	Long	
T331	Ash	28	12	750	Fair	Mature	B	Medium	Medium	
T332	Sycamore	18	10	450	Poor	Mature	C	Low	Medium	
T333	English Oak	19	16	550	Fair	Mature	B	Medium	Medium	Leaning stem
T334	English Oak	18	12	550	Fair	Mature	B	Medium	Medium	Leaning stem
T335	English Oak	14	14	550	Fair	Mature	B	Medium	Medium	
T336	English Oak	13	12	400	Fair	Semi Mature	B	Medium	Long	
T338	English Oak	14	13	600	Good	Semi Mature	A	Medium	Long	
T339	Ash	13	8	500	Good	Early Mature	C	Low	Long	Multi-stemmed base
T340	Ash	18	14	650	Good	Mature	B	Low	Long	
T342	English Oak	18	10	750	Good	Mature	B	High	Long	
T344	Ash	18	12	700	Good	Mature	B	Low	Long	
T345	English Oak	15	12	650	Good	Mature	B	High	Long	
T346	English Oak	16	12	500	Good	Mature	B	Medium	Long	
T347	English Oak	10	10	550	Fair	Semi Mature	B	Medium	Long	Dense crown, ivy enveloping lower crown
T348	English Oak	20	17	1000	Good	Mature	A	Medium	Long	Good form
T349	English Oak	10	6	500	Removal	Mature	R	Medium	Short	Good deadwood habitat
T350	English Oak	20	15	750	Fair	Mature	B	Medium	Long	
T351	English Oak	13	10	650	Good	Mature	B	Medium	Long	Hardcore around base
T352	English Oak	15	12	650	Good	Mature	B	Medium	Long	Hardcore around base
T354	Field Maple	10	8	300	Good	Mature	C	Low	Medium	
T355	English Oak	18	12	750	Good	Mature	B	Medium	Medium	Inonotus dryadeus fungal fruiting body at base
T356	English Oak	16	10	800	Good	Mature	A	Medium	Long	
T357	English Oak	10	7	650	Fair	Mature	C	Medium	Medium	
T358	English Oak	13	10	700	Fair	Mature	B	Medium	Long	Stem bifurcate mid stem
T359	English Oak	14	15	550	Fair	Mature	B	Medium	Long	
T360	English Oak	13	12	500	Good	Semi Mature	B	Low	Long	
T361	English Oak	13	8	450	Good	Semi Mature	C	Low	Long	Stem bifurcate mid
T362	English Oak	10	11	1100	Good	Mature	B		Long	Hardcore around 1/2 base

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T365	English Oak	11	9	600	Good	Early Mature	C	Low	Medium	Regrowth from 2m stump with cubical brown rot
T366	English Oak	11	12	1000	Good	Mature	B	High	Long	
T367	English Oak	13	15	600	Fair	Mature	B	Medium	Long	Crown asymmetric and dense, ivy on stem and scafold branches
T368	English Oak	14	14	750	Good	Mature	B	Medium	Long	Ivy on stem and scafold branches
T369	English Oak	13	15	900	Fair	Mature	B	High	Long	Sprouting shoots throughout crown, ivy
T370	English Oak	8	12	350	Good	Early Mature	B	Low	Dead	Crown asymmetric to southeast
T372	Goat Willow	8	6	500	Good	Early Mature	C	Low	Medium	Position and details estimated from road
T373	English Oak	12	14	550	Good	Mature	A	Medium	Long	
T374	English Oak	12	12	450	Good	Mature	B	Medium	Long	Position and details estimated from road
T375	Ash	9	5	250	Fair	Young	C	Low	Medium	
T376	Ash	13	12	450	Good	Semi Mature	B	Medium	Medium	
T377	Ash	15	12	400	Good	Semi Mature	B	Medium	Medium	
T379	False Acacia	12	12	700	Good	Mature	B	High	Medium	Previously mid-stem bifurcate form until above failure. Laetiporous fungal fruiting body present
T380	English Oak	16	14	850	Excellent	Mature	A	Medium	Long	
T381	English Oak	13	14	700	Fair	Mature	B	Medium	Long	
T382	English Oak	15	15	950	Excellent	Mature	A	High	Long	Large sized deadwood to 25cm diameter
T383	English Oak	12	10	500	Fair	Semi Mature	B	Medium	Long	
T384	English Oak	13	14	550	Fair	Mature	B	Medium	Dead	
T387	Ash	14	14	600	Fair	Mature	C	High	Short	Cavities, Several Inonotus brackets
T388	Ash	16	12	450	Fair	Mature	B	Low	Medium	
T389	English Oak	13	10	550	Fair	Semi Mature	B	Medium	Long	Ivy in lower crown, sprouting shoots throughout crown
T390	Ash	14	10	500	Fair	Early Mature	C	Low	Long	Basal multi-stemmed form
T391	English Oak	13	12	700	Excellent	Mature	A	Medium	Long	Good form
T392	English Oak	13	12	700	Good	Mature	B	Medium	Long	Asymmetric crown to southwest
T393	English Oak	14	16	650	Fair	Mature	B	High	Long	
T396	Ash	17	18	1300	Good	Mature	A	Medium	Long	
T400	English Oak	18	20	1400	Good	Mature	A	High	Long	Inonotus dryadeus fungal fruiting body at stem base, major deadwood, high failure potential of scafold branches
T401	Ash	19	17	1050	Fair	Mature	B	Medium	Medium	
T402	English Oak	11	11	650	Poor	Semi Mature	C	High	Short	
T403	English Oak	18	18	1300	Excellent	Mature	A	High	Long	Good form
T404	Ash	13	5	400	Fair	Semi Mature	B	Low	Long	Suppressed

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T405	English Oak	14	12	500	Good	Semi Mature	B	Low	Long	Asymmetric form due to adjacent Ash
T406	English Oak	22	22	2000	Excellent	Early Mature	A	High	Long	Good form
T417	English Oak	18	16	1000	Excellent	Mature	A	Medium	Long	Good form
T447	Horse-chestnut	8	7	350	Good	Early Mature	B	Low	Long	
T448	Elm species	6	3	100	Fair	Young	C	Low	Long	
T449	English Oak	11	15	850	Good	Mature	A	High	Long	
T450	English Oak	12	12	700	Good	Mature	A	Medium	Long	
T489	English Oak	15	10	600	Good	Mature	B	Medium	Long	
T490	English Oak	13	14	750	Good	Mature	A	Medium	Long	Good form
T492	Ash	20	14	850	Poor	Mature	C	Medium	Short	Several large Inonotus fungal fruiting body brackets, moderate dieback
T493	Aspen	17	13	800	Poor	Semi Mature	C	Low	Short	Stem basally bifurcate, asymmetric crown to north,moderate dieback
T495	Sycamore	2	4	150	Fair	Young	C		Medium	Stem basllay bifurcate, moderate die back
T496	Sycamore	5	6	250	Fair	Young	C		Long	Beginning to obstruct utility lines
T497	Sycamore	4	5	200	Fair	Young	C		Long	Beginning to obstruct utility lines
T498	Sycamore	4	5	200	Fair	Young	C		Long	Beginning to obstruct utility lines
T499	Sycamore	4	5	200	Fair	Young	C		Long	Beginning to obstruct utility lines
T506	Elm species	8	7	200	Fair	Early Mature	C	Low	Medium	Multi-stemmed base
T517	Sycamore	19	20	1050	Good	Mature	B	Low	Long	Bifurcate mid stem
T528	English Oak	15	15	100	Fair	Mature	C	High	Medium	Moderate deadwood to 15cms diameter, small leaf size, moderate crown dieback
T529	English Oak	16	14	100	Fair	Mature	B	High	Medium	
T531	English Oak	14	15	750	Good	Mature	A	High	Long	Slight leaf chlorosis, sprouting shoots in crown, long seams on stem, small deadwood
T532	Crab-apple	7	14	450	Fair	Mature	B	Medium	Medium	Asymetric crown, sprouting shoots on stem
T533	English Oak	12	17	900	Fair	Mature	A		Long	Previous browsing damage to stem base and possible basal decay, poor pruning wounds, sprouting shoots on stem and crown, small deadwood
T534	Field Maple	9	13	500	Poor	Mature	C		Short	Stem bifurcate at 1.5m, stem bleeding canker, in decline, scaffold limb failing
T535	English Oak	14	5	1000	Good	Mature	A	High	Long	Small basal stem cavity, small deadwood, previous branch failure, small die back to crown, slight branch subsidence

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T536	English Oak	20	18	1000	Fair	Mature	B	High	Long	Possible moribund roots with associated dieback and deadwood on west side, minor basal stem cavity
T537	English Oak	16	18	950	Fair	Mature	B	High	Long	Asymetric crown, moderate deadwood to 15cm diameter, previous branch failure, snapped partailly failed limb, compaction
T538	English Oak	11	10	700	Fair	Mature	B	High	Long	Longnitudinal stem cavity uoto lower crown, long seam on stem, basal compaction, moderate deadwood
T540	Field Maple	12	14	650	Fair	Mature	B		Long	Multistemmed form from base, crossing/fused branches in crown, exposed browsed roots
T541	Ash	18	16	1000	Fair	Mature	B	High	Medium	Severe basal cavity extending up stem, deadwood upto 20cm diameter, compaction around roots, exposed roots
T542	Ash	16	10	900	Poor	Mature	C		Medium	Stem bifurcate at 2m, in decline, dying roots due to compaction and browsing, major deadwood in crown
T543	Ash	15	7	650	Removal	Mature	R		Short	co-dom failed in past, extensive long wound, poaching/browsing, daldinia
T545	English Oak	17	16	850	Fair	Mature	B	High	Medium	Visually dominant, stem base sweling, moderate basal stem cavity, previous scaffold limb failure, sparse crown, moderate crown dieback, deadwood to 25cm, loosened bark
T548	Ash	18	16	900	Fair	Mature	C	Bat	Medium	monitor annually, ivy clad, insp inhibted by ivy, exposed compacted root plate, inonotus bracket, min die back, min dw,
T549	Sycamore	15	12	750	Good	Mature	A		Long	good form, some poaching at base, min dw
T551	Alder	10	10	800	Poor	Mature	C	Bat	Medium	poss basal decay, asymetrical crown, reduced in the past, in decline, mod decay cavities
T552	Alder	10	10	800	Poor	Semi Mature	C		Medium	trifurcate, sparse crown, small leaf size, mod die back,
T553	Ash	15	13	500	Fair	Mature	B	Medium	Long	Browsing damage to stem base, swollen stem, moderate deadwood to 10cm diameter
T554	Alder	13	14	1100	Poor	Mature	C		Medium	Basal stem cavity, 3 x ganoderma fungal fruiting bodies at 1-2m, stem reaction growth to 2m, weeping wounds, 70% die back to northwest of crown, moderate deadwood to 20cm diameter
T555	Alder	7	10	900	Poor	Semi Mature	C		Medium	Multistemmed form, asymetric crown, crossing fused limbs, previous branch failure, possible basal stem decay
T556	Elm species	7	6	650	Poor	Semi Mature	R		Dead	bifurcate, dead
T557	Alder	11	9	850	Removal	Mature	R		Dead	Stem trifurcate at 1.5m, dead

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T558	Alder	15	16	1000	Poor	Mature	C	High	Medium	Significant basal stem decay, previous leader failure leaving 3m tear out wound, small crown dieback, sprouting shoots from stem base
T562	Alder	9	10	600	Fair	Semi Mature	C		Long	Stem basally multistemmed, weak included bark unions
T563	Sycamore	18	17	500	Fair	Mature	B		Long	Stem bifurcate at 3m, minor deadwood to 10cm diameter, previous branch failure, basal sweep
T564	English Oak	24	20	1900	Fair	Veteran	A	High	Long	Scaffold branch failure and heavy pruning in past, moderate deadwood to 20cm diameter, slight wind swept form asymetric crown, moderate butress wound, visually dominant
T565	English Oak	16	17	1800	Fair	Veteran	A	High	Long	Brown rot evident in open stem wound to 2m, moderate deadwood to 30cm diameter, crossing fused branches in crown
T569	Ash	16	14	1150	Poor	Mature	C		Medium	Stagnant ditch to south, probable root death with associated bottle base and crown die back, daldinia fungal fruiting body on deadwood (to 20cm diameter over 20% of crown), inonotus fungal fruiting bracket on ground
T570	Sycamore	13	13	650	Poor	Mature	C		Medium	monitor, stilted exposed,compacted root plate, reactio wood bulges at 1m, mod dw to 7cm, small lleaf size, excessive fruiting,
T572	English Oak	19	17	1200	Good	Mature	A		Long	Erosion around exposed root plate, major reaction growth around buttressing, moderate deadwood to 15cm diameter, hung-up failed branch, previous branch failure, visually dominant
T573	English Oak	12	12	900	Poor	Mature	B	High	Long	Evidence of possible lightning strike, major longitudinal wound to 3m with stem occlusion, major stem decay, old bird nest in cavity, small dieback and deadwood, sprouting shoots throughout crown
T574	English Oak	11	13	550	Poor	Mature	C	High	Long	Longitudinal stem wound to crown break, 50% of stem and roots affected, associated major stem decay, previous scaffold limb failure
T575	Ash	19	18	1300	Fair	Mature	A	High	Long	Visually dominant, inspection of base obscured by hedge, longitudinal seams with included bark from base to 3m, ivy on stem and lower crown, basal swelling, previous scaffold failures
T576	English Oak	13	13	950	Fair	Mature	A		Long	compaction and ploughing damage at base, exposed roots and buttresses to south, previous branch failure, moderate deadwood to 10cm diameter, sprouting shoots in crown

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T577	English Oak	11	15	850	Fair	Mature	B		Long	Basal compaction and ploughing damage, browsing damage to exposed roots, major basal swelling to south, longitudinal bark cracks, poor pruning wounds, sprouting shoots on upper stem and crown, moderate deadwood to 15cm diameter
T579	English Oak	14	14	1050	Fair	Mature	B		Long	Stem previously bifurcate at 2m, failed with associated tear out wound to base, open decay cavity, basal compaction, included wound on east scaffold branch, reaction growth bulge west side at 2.5m, moderate deadwood to 10cm diameter
T580	Ash	9	9	300	Fair	Early Mature	B		Long	Stem bifurcate at 2m, good form, small deadwood to 2cm
T581	Sycamore	12	13	500	Fair	Mature	B		Long	Stem arising from side of stump, bifurcate at 2m, ivy throughout crown, inspection limited by hedge, good crown form
T582	Sycamore	6	7	150	Fair	Young	C		Long	Stem base kinked toward highway, shooting stems from base, vehicle damage to crown
T583	Sycamore	5	6	200	Fair	Young	C		Long	Stem basally bifurcate, basal sprouting shoot growth, squat form
T586	Sycamore	5	5	200	Fair	Early Mature	B		Long	Stem kinked towards highway at 0.25m, pruned away from highway and utility cable in past
T588	English Oak	13	12	700	Fair	Mature	B		Long	On side of water filled ditch, basal bark cracking, soil erosion at base, stem bifurcate at 3m, moderate crown dieback, moderate deadwood to 7cm diameter, included longitudinal seam on east of stem
T589	English Oak	16	16	1100	Fair	Mature	B	High	Long	Erosion at stem base, exposed roots, stem bifurcate at 2.5m with included bark, moderate crown dieback particularly over ditch, deadwood to 7cm diameter
T590	English Oak	10	7	1050	Poor	Veteran	B	High	Long	In decline, crown naturally reducing in size, stag-headed appearance, all new growth from sprouting stems, deadwood to 20cm diameter
T591	English Oak	15	16	950	Fair	Mature	A		Long	Good form, slightly stilted root plate, small deadwood, sprouting shoots on stem where flailed
T592	English Oak	16	14	1000	Fair	Mature	B	High	Long	Ivy up stem and in crown, possible internal shear fracture from base to 2m, slightly asymetrical crown, moderate deadwood to 10cm diameter
T593	English Oak	11	12	650	Fair	Mature	B	High	Long	Possible previous leader failure, stem ivy clad, excessive fruiting, asymetric crown, suppressed form

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T594	English Oak	15	15	1050	Fair	Mature	B		Long	Situated in standing water, previous scaffold branch failure, small deadwood to 10cm diameter
T595	Sycamore	17	15	900	Good	Mature	A		Long	Stem ase obscured by holly bush, some fused included unions, visually dominant, good form, pruning wounds on stem to 2m
T597	English Oak	18	19	1300	Fair	Mature	A		Long	Visually dominant, compaction at stem base, stilted root plate, small basal decay cavities, moderate deadwood to 10cm diameter, hung up limb in crown, longitudinal helical seam from base to crown break
T598	Ash	17	17	1150	Fair	Mature	A	High	Long	Visually dominant, compaction around stem, longitudinal crack to 1.5m with ganoderma fungal fruiting body, ivy on stem and in crown has been severed, moderate deadwood to 10cm diameter, previous branch failure, stem bifurcate at 2.5m, possible weak union
T599	English Oak	16	16	750	Fair	Mature	A		Long	Lean toward pond, compaction at stem base, slightly asymetric crown, small deadwood to 15cm diamater, pruning wounds
T600	Cherry species	13	12	1100	Poor	Veteran	B	High	Medium	Senescent growth, major reaction growth bulges and cording, major deadwood and dieback, thin crown, small canker lesions
T603	Sycamore	15	14	800	Fair	Mature	B		Long	Poor pruning wounds, minor deadwood, basal sprouting shoots
T605	Ash	14	12	400	Fair	Semi Mature	B		Long	Previous scaffold branch tear-out wounds, stem bifurcate at 2m, small deadwood and dieback
T606	Sycamore	15	14	1200	Fair	Mature	A	High	Long	Compaction around stem base, water filled ditch to west, good form, lowest scaffold branch subsiding
T607	English Oak	17	16	1250	Fair	Mature	B	High	Long	Moderate basal cavity, moderate root damage and exposed roots, previous scaffold branch failure, hazard beam branch weakness, moderate deadwood to 15cm diameter, slightly thin crown
T611	English Oak	15	16	1250	Fair	Mature	B		Long	Browsing damage to base, root damage and compaction, helical seam from base to crown break, major deadwood to 20cm diamater, previous scaffold branch failure, good form
T612	English Oak	15	14	800	Fair	Mature	B	High	Long	Base obscured by holly and ivy clad stem, new foliage chlorotic, small deadwood, slightly sparse crown
T613	English Oak	14	15	800	Fair	Mature	B		Long	Stem lean 15deg southeast, bifurcate at 2m, minor ivy on stem & crown, minor deadwood to 7cm diameter, sprouting shoots in crown

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T614	English Oak	18	16	1050	Fair	Mature	A	High	Long	Base obscured by vegetation, visually dominant, previous branch failure, small deadwood to 1cm diameter, hung up branch in crown
T615	Sycamore	19	17	1000	Fair	Mature	B		Long	Base obscured by vegetation, ivy up stem, stem bifurcate at 4m, high crown, slightly thin crown
T616	Apple	13	12	350	Fair	Early Mature	B		Long	Browsing damage to stem base, stem bifurcate at 3m, stem kinked, suppressed form, thin crown
T617	Sycamore	15	13	600	Fair	Mature	B		Long	Base obscured by vegetation, basal sprouting shoots, good form, minor deadwood
T618	Ash	17	16	850	Fair	Mature	B		Long	Base obscured by vegetation, stem kinked at 3m and bifurcate at 3.5m, previous branch failure, minor deadwood to 5cm diameter
T619	Sycamore	13	13	600	Fair	Semi Mature	B	High	Long	Stem trifurcate at base, base obscured by hedge, ivy in crown, mid-stem branch failure at 3m, pruned away from road
T620	Ash	14	12	800	Fair	Mature	B		Long	Base obscured by vegetation, slight swollen stem base, sprouting shoots from base, ivy up stem, moderate dieback to crown, deadwood to 7cm diameter, mechanical damage, some branches subsiding
T621	Ash	16	14	1000	Fair	Mature	B	High	Medium	Longitudinal stem wound partially occluded, possible decay, stem obscured by ivy, stem bifurcate at 3m, moderate deadwood to 10cm diamater over highway, moderate crown dieback, previous scaffold branch failure
T622	English Oak	13	16	800	Good	Mature	A		Long	Stem base obscured by vegetation, ivy up stem and lower crown, sprouting shoots in crown, small deadwood, good form
T623	English Oak	14	14	600	Fair	Mature	B		Long	poaching/compaction at base, bifircate at 3m, min dw,
T624	Sycamore	12	11	500	Poor	Mature	C		Medium	major stem tear out wound, leader failure, poaching/compaction at base, sparse crown w/ mod dw to 7cm,
T625	Ash	13	7	650	Poor	Mature	C		Dead	fell if targets increase, standing deadwood, daldinia, major decay cavity at base, root damage
T626	Ash	10	6	650	Poor	Mature	C		Short	reduce to 3m if targets increase, in decline, some epicormic growth, 80% crown death, browsing damage to root plate, daldinia throughout

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T627	Ash	15	13	600	Fair	Mature	B		Long	Stem base obscured by vegetation, moderate dieback, previous branch failure, Ash Heart Rot fungal fruiting body, slightly thin crown
T628	English Oak	14	14	850	Excellent	Mature	B	High	Long	Previously stem bifurcate at 1m, moderate decay cavity, stem lean 15 deg east, moderate deadwood to 10cm diameter, previous scaffold branch failure
T629	Ash	10	8	700	Fair	Mature	B		Medium	Major crown failure in past, stem bifurcate at 3m, failure above this point, vigorous regrowth, 2 remaining scaffolds with vigorous growth
T630	Sycamore	15	5	450	Poor	Mature	C		Short	In decline, major dieback, 15% crown remaining
T631	Sycamore	9	5	700	Poor	Mature	C		Dead	Standing deadwood, stem lean 30deg west, good ground deadwood from failed stems
T632	Ash	18	15	950	Fair	Mature	B		Long	Base obscured by vegetation, small bark lesions and necrosis, stem trifurcate at 3m, stem over highway failed, previous branch failures, small dieback and deadwood
T633	Sycamore	18	16	1500	Good	Mature	A		Long	Exposed roots, visually dominant, good form, small deadwood
T634	Elder	3	3	200	Fair	Mature	C		Medium	Browsing damage to stem, stem multistemmed at base, situated under existing uility line
T653	English Oak	15	14	950	Fair	Mature	B		Long	Acute scaffold branch angles in crown, small deaswood to 10cm diameter
T654	Ash	16	15	1050	Poor	Veteran	C	High	Medium	Massive stem/crown failure in past, open decay cavity from 2m to crown break, large diameter sprouting shoots from wound top, possible weak attachment
T656	English Oak	15	15	750	Fair	Mature	A		Long	Comapction at base, waterlogged, browsing damage to base and lower crown, slightly small leaf size
T657	English Oak	10	7	950	Poor	Mature	C		Dead	Standing deadwood
T659	Ash	10	9	550	Poor	Mature	C	Medium	Medium	Major stem failure in past, major scaffold branch failure, most new growth sprouting shoots major deadwood to 15cm diameter
T660	English Oak	18	18	1200	Fair	Mature	B		Long	Moderate basal cavity, compaction damage, large scaffold failure, small deadwood to 10cm diameter
T661	English Oak	15	14	900	Fair	Mature	B		Long	Moribund major root, associated reaction growth caused slight heave, small deadwood and dieback to 5cm diameter
T663	English Oak	10	7	650	Poor	Mature	C		Medium	In decline, major stem wound from base to crown 1/3 of stem, major dieback and deadwood, major sprouting stems

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T665	Aspen	12	8	300	Fair	Early Mature	C		Long	Stem ivy clad, possible stem decay cavity, bifircate at 3m
T666	English Oak	14	14	900	Fair	Mature	B		Long	Inspection obscured by ivy and shed, stem bifurcate at 2.5m, small deadwood
T667	English Oak	16	16	1100	Fair	Mature	B		Long	Basal erosion with exposed roots, compaction around stem, fully occluded scaffold failure, stem previously bifurcate at 2.5m now failed, moderate deadwood to 10cm diameter, small dieback
T668	English Oak	15	15	1100	Fair	Mature	B		Long	Erosion and compaction around roots, burring on lower stem, sprouting shoots on stem, helical growth pattern from bifurcate stem union at 2m
T669	English Oak	14	13	800	Fair	Mature	B		Long	Compaction at stem base with exposed roots, small deadwood, browsing damage to lower crown, stem bifurcate at 3m
T671	English Oak	13	11	950	Fair	Mature	B		Long	Compaction and erosion to base, stem bifurcate at 2.5m, moderate deadwood to 10cm diameter, crown in decline
T672	English Oak	14	15	850	Fair	Mature	A		Long	<10deg stem lean to west, stream adjacent, moderate compaction and exposed roots, broad crown, ivy up stem, moderate deadwood to 7cm diameter, small dieback, sprouting shoots in crown
T673	English Oak	16	14	700	Fair	Mature	B		Long	Compaction and erosion round stem, longitudinal stem seam, thin chlorotic crown
T674	English Oak	14	14	850	Fair	Mature	B		Long	Stream adjacent, moderate basal compaction and erosion, ivy clad stem and crown, moderate dieback and deadwood to 10cm diameter, chlorotic foliage
T676	English Oak	15	16	750	Fair	Mature	B		Long	On steep stream bank, associated reaction growth, moderate basal cavity, asymetric crown, small deadwood to 5cm diameter, dog-leg scaffold branch, sprouting shoots on stem
T677	Sycamore	16	16	800	Fair	Mature	A		Long	On steep stream bank, helical bulges from base, small deadwood to 5cm diameter, stem bifurcate at 3.5m, tight included bark union
T678	English Oak	14	14	1350	Poor	Veteran	B	High	Long	Stem lean 30deg over stream, major internal decay to at least 3m probabaly whole stem, good habitat, major deadwood to 15cm diamater, major dieback to crown, senescing crown, major sproutign shoots throughout crown

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T679	Ash	18	16	1200	Fair	Mature	B	High	Long	Stream side, basal erosion exposing roots along bank, stem bifurcate at 2.5m, included union, previous scaffold failure, exudate from wounds, large diameter sprouting shoots in crown
T680	English Oak	14	14	800	Fair	Mature	B		Long	Stream bank side, erosion round major roots, self corrected stem lean, stem bifurcate at 2m, stem over stream subsiding, partial failure in crown, moderate dieback and deadwood to 7cm diameter, small leaf size
T681	English Oak	16	16	1050	Fair	Mature	B		Long	Basal compaction and ploughing damage, small dieback, 2 x recent scaffold failures leaving crown exposed on south side, small deadwood to 5cm diameter
T682	Ash	16	14	700	Fair	Mature	B		Long	Major browsing and compaction damage around stem, burrs on stem, thin crown, moderate dieback, small deadwood to 5cm diameter
T683	English Oak	14	14	850	Fair	Mature	B		Long	Root damage due to deep ploughing, tree bunded 1m above field level, sprouting shoots on stem and crown, previous branch failure, hazard beam branch structure, moderate cavity at 2m and poor pruning wound, small deadwood to 5cm diameter, small dieback
T685	English Oak	5	5	600	Poor	Mature	C	High	Short	Senescing, 2m wound up stem, major stem decay, major crown die back, major deadwood
T686	English Oak	14	18	950	Fair	Mature	B		Long	Compaction and stilted exposed roots, 2m wound on scaffold branch, moderate deadwood, previous failure
T687	English Oak	12	14	850	Poor	Mature	B	High	Medium	Compaction around stem, previous basal wounding, sprouting shoots on stem, 3m wound on scaffold branch, suppressed by adjacent tree, major deadwood, previous branch failure
T688	English Oak	14	15	850	Fair	Mature	B		Long	Ploughing and browsing basal damage, stem sprouting shoots, small stem wound, small crown dieback, moderate deadwood
T690	English Oak	5	8	350	Fair	Young	C		Medium	Bifurcate stem splitting
T691	Osier	5	8	300	Fair	Early Mature	C		Long	Phellinus fungal fruiting body at base, multistemmed union
T692	Goat Willow	7	12	650	Fair	Mature	C		Medium	Multistemmed from base, minor deadwood
T696	Silver Birch	15	16	1050	Good	Veteran	A	Low	Medium	
T697	Oak species	18	15	1200	Good	Mature	A	Medium	Long	Good form
T698	Hawthorn	8	10	400	Fair	Mature	C	Medium	Medium	
T699	English Oak	15	14	700	Good	Mature	B	Medium	Long	

LEGACY: TREE DATA SCHEDULE

Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
T703	Crack Willow	18	12	450	Good	Mature	B	Low	Medium	Multistemmed basal form
T709	Alder	10	10	1100	Fair	Veteran	B	Medium	Short	Large stem wound. Unusual trunk form due to adaptive growth
T716	English Oak	13	12	600	Good	Mature	B	Medium	Long	
T717	Sweet Chestnut	19	6	800	Poor	Mature	R	Low	Short	5% of trunk live to 8m
T718	Holly	3	4	100	Good	Early Mature	C	Low	Long	
T719	English Oak	14	10	600	Good	Mature	B	Medium	Long	
T720	Beech	22	16	1100	Good	Mature	A	Medium	Medium	
T722	English Oak	12	18	650	Good	Mature	A		Long	
T723	Sycamore	15	16	0	Fair	Mature	B	High	Medium	In hedgerow, minor deadwood, minor die back
T724	Hazel	7	8	450	Fair	Mature	B		Long	Overgrown hazel
T725	English Oak	14	19	1400	Good	Mature	A	High	Long	Some severed roots, heavy burring up stem
T726	Holly	7	8	50	Fair	Semi Mature	B		Long	Flailed holly and hawthorn
T739	English Oak	18	15	500	Good	Mature	B	Medium	Long	mature tree in younger woodland
T740	Alder	10	6	400	Poor	Mature	C	Medium	Short	Coppice stool multi stem, hollow centre where stems arise
T741	Alder	14	8	350	Fair	Mature	C	Low	Medium	Coppice stool, 6 stems spreading
T742	English Oak	14	10	600	Fair	Mature	B	Medium	Long	Good form, some crown decline
T744	Ash	5	2	150	Good	Young	C	Low	Long	Growing in hedge
T745	Birch	6	2	200	Good	Young	C	Low		Trackside
T746	Sycamore	15	12	450	Poor	Middle Age	R	Medium	Short	Significant Lean to south
T753	Oak	16	13	600	Fair	Mature	C		Medium	
T754	Oak	20	17	900	Good	Mature	A	Medium	Long	
T755	Elm	14	10	300	Dead		R			
T756	Oak	19	24	1500	Good	Mature	B		Medium	trifurcate at 5m, restricted access

APPENDIX 18C
TREE GROUPS WITHIN (OR POTENTIALLY ABLE TO FALL WITHIN) 80M TOLERANCE CORRIDOR

LEGACY: TREE GROUP DATA SCHEDULE

Ref	Tree Species	Top Height	Condition	Age	BS5387 TQA	Protected Species Potential	SULE	Comments	Area (m2)
G4	English Oak, Field Maple, Holly	12	Good	Early Mature	B	Medium	Long	Mixed Wood	1520
G5	Oak species, Ash, Alder, Sweet Chestnut, Cherry species	16	Excellent	Mature	A	Medium	Long		2754.14
G8	Ash, Blackthorn, English Oak, Hawthorn, Apple	9	Good	Young	C	Low	Long	Broadleaved wood	6494.20
G10	Sycamore, Alder	18	Fair	Mature	B	Medium	Medium	Broadleaved wood	420.58
G16	Alder, Hazel	15	Good	Semi Mature	B	Low	Medium		519.72
G18	Not recorded	12						Broadleaved wood	438.39
G19	Willow species, Cherry species, Alder, Sycamore, Ash	7	Fair	Young	C	Low	Long	Age class young to S mature	6481.92
G20	Oak species, Willow species, Cherry species	15	Poor	Early Mature	C	Medium	Medium		3645.67
G24	English Oak, Goat Willow, Hawthorn	16	Good	Mature	B	High	Long		894.05
G25	Alder, Hawthorn, Ash	15	Good	Mature	B	Medium	Long		678.69
G26	English Oak, Goat Willow	12	Good	Mature	B	Medium	Long		984.05
G27	Alder, Hazel, Hawthorn	8	Fair	Early Mature	C	Medium	Long	Includes dead trees	1158.67
G28	Alder, Willow species, Sycamore	14	Good	Semi Mature	B	Medium	Medium		1388.01
G29	English Oak, Ash	16	Good	Mature	A	Medium	Long		521.66
G30	English Oak, Alder	20	Good	Mature	B	High	Long		2583.48
G32	Ash, Field Maple, Sycamore, Alder	7	Good	Young	C	Low	Long		205.03
G33	Blackthorn, Ash, Hawthorn, Goat Willow	7	Excellent	Young	C	Low	Long		733.94
G44	Sycamore, Ash	21	Good	Mature	B	Low	Long		62.18
G45	Alder	16	Fair	Semi Mature	C	Low	Medium		150.84
G46	Sycamore	22	Good	Mature	B	Medium	Long		191.23
G47	Ash, Blackthorn, Hazel	14	Good	Early Mature	C	Low	Long		127.14
G48	Alder	18	Fair	Semi Mature	B	Low	Medium		81.93
G49	White Willow	24	Fair	Mature	C	Medium	Medium	Typical limb failures	86.78
G50	Alder	20	Fair	Early Mature	C	Low	Medium		120.69
G51	White Willow, Sycamore	17	Fair	Early Mature	C	Low	Medium		183.52
G52	Sycamore	15	Good	Mature	B	Low	Long	4 trees together. Consider as group	21.59
G80	Elm species, Elder	11	Good	Early Mature	C	Low	Medium		259.84
G82	Ash, Horse-chestnut	12	Fair	Semi Mature	B	Low	Long		58.86
G83	Ash, Horse-chestnut	13	Fair	Semi Mature	C	Low	Long	Ivy on trunks	202.05
G85	Sycamore, Field Maple	7	Good	Early Mature	C	Low	Long		13.19
G87	Ash	20	Good	Mature	B	Low	Medium	Ivy on trunks and inner crowns	298.23
G88	Ash, Horse-chestnut, Sycamore	20	Good	Mature	B	Low	Medium	Ivy on trunks and inner crowns	361.17
G89	Ash, Horse-chestnut, Sycamore	18	Fair	Mature	C	Low	Medium	Ivy on trunks and inner crowns	197.70
G90	Birch species, Swedish Whitebeam, Cherry species	7	Good	Young	C	Low	Long		58.21
G91	Birch species	6	Fair	Young	C	Low	Long		60.68
G92	Birch species, Cherry species, Mountain Ash	9	Good	Young	C	Low	Long		105.28
G93	English Oak, Elm species	9	Good	Semi Mature	B	Low	Long		58.97

LEGACY: TREE GROUP DATA SCHEDULE

Ref	Tree Species	Top Height	Condition	Age	BS5387 TQA	Protected Species Potential	SULE	Comments	Area (m2)
G94	Alder	8	Good	Mature	B	Low	Medium		168.29
G95	Alder	18	Good	Mature	B	Low	Medium		639.43
G96	White Willow	7	Good	Young	C	Low	Long	Shrubby multi-stemmed form	90.29
G97	White Willow, Goat Willow, Alder	12	Fair	Semi Mature	C	Low	Medium		1850
G98	Alder	9	Good	Semi Mature	C	Low	Medium		4763
G99	Alder, Sycamore	12	Good	Semi Mature	C	Low	Long		1420
G101	English Oak, Sycamore, Ash, Silver Birch, Cherry species	16	Good	Mature	B	Medium	Long	Edge of country park. Steep bank.	7701.93
G102	Ash	10	Good	Young	C	Low	Long		724.24
G104	Ash, Silver Birch	11	Good	Young	C	Low	Long	Buffer planting	1865.78
G108	Sycamore	15	Good	Early Mature	C	Low	Long		175.47
G109	Hazel, Ash, Sycamore, Holly	7	Good	Early Mature	C	Low	Long		1170.46
G110	Ash, Sycamore	14	Fair	Early Mature	C	Low	Medium		55.88
G111	White Willow	11	Fair	Semi Mature	C	Low	Medium	Trunk previously failed. Regrowth from stem.	26.31
G112	Sycamore, English Oak, Ash	14	Good	Mature	C	Medium	Long		708.47
G114	Sycamore, Oak, Willow, Rowan	6	Good	Young	C		Long		794.63
G115	Sycamore, Oak, Rowan, Willow	5	Good	Young	C		Long		682.27
G135	Hawthorn, Willow species	14	Fair	Mature	C	Low	Long		747.76
G136	Ash, Alder	16	Good	Semi Mature	B	Medium	Long		1656.21
G138	Cherry species	12	Poor	Early Mature	C	Low	Medium		295.12
G139	Oak species	17	Fair	Mature	B	Medium	Long		44.12
G142	Blackthorn, Hazel, Hawthorn	8	Fair	Mature	C		Medium	Crossing, fused limbs, 1 dead stem, overgrown	621.91
G143	Hawthorn, Holly, Hazel	9	Fair	Mature	C		Medium	Exposed roots, mixed condition, unmanaged hedgerow	363.37
G146	Hazel, Hawthorn, Holly	12	Fair	Mature	C		Medium	Unmanaged hedgerow of mixed conditiom	920.92
G147	Alder, Holly	9	Fair	Semi Mature	C		Medium	Group of multi-stemmed alder. Weak unions at base	1530
G148	Sycamore	15	Fair	Mature	B		Long	2 multi-stemmed trees. Moderate basal cavity. Weak included unions at base. Minor deadwood. Abrupt bend in stem	1827
G149	Hawthorn, Hazel	8	Fair	Mature	C		Medium	Overgrown hedgerow trees of mixed condition	2742
G150	Field Maple, Hawthorn	14	Fair	Mature	C		Medium	Previously pruned back from utility line. Uneven thin crown. Leggy	2405
G151	Alder, Hawthorn	14	Fair	Mature	B		Long	Most multistemmed, included unions, minor deadwood, basal sprouting shoots, some root browsing	178.53

Ref	Tree Species	Top Height	Condition	Age	BS5387 TQA	Protected Species Potential	SULE	Comments	Area (m2)
G152	Hazel	13	Fair	Mature	B		Long	Group of approx 12 stems, ivy on stem and in crown, minor deadwood	208.32
G153	Alder, Sycamore	14	Fair	Mature	B		Long	Stream side trees of mixed condition, some multistemmed	506.40
G154	Alder	14	Fair	Mature	B		Long	Stream side trees of mixed condition	248.81
G155	Alder, Willow species, Sycamore	16	Fair	Mature	B		Long	Mixed condition stream side trees	452.84
G156	Willow species, Alder	15	Fair	Mature	C		Medium	Generally fair to poor condition trees	221.87
G160	Poplar species, Alder, Cherry species, Birch species, English Oak	13	Fair	Young	C		Long	Plantation of mixed condition/species/form	30299.82
G161	Ash, Hawthorn, Blackthorn	10	Fair	Semi Mature	C		Medium	Remnant hedgerow, mixed condition, ash fair, hawthorn poor	874.18
G162	Aspen, Ash, Alder	12	Good	Early Mature	B		Long	Remnant ditch, small wetland area, some compaction, basal stemsweep, exposed roots	399.26
G163	Willow species, Alder, Hawthorn	7	Fair	Semi Mature	B		Long	Mixed willow and alder, 1 dead stem (elm), mixed condition, generally good	66.02
G164	English Oak, Hawthorn, Field Maple	13	Fair	Mature	B		Long	Generally good condition/form, some stem kinking, basal sweep	362.27
G165	Hazel, Hawthorn, Holly	7	Fair	Mature	B		Long	Predominantly hazel, good form, dense, other species 3-5m	106.87
G168	Hazel, Hawthorn, Holly	6	Fair	Mature	C		Long	Some failures, hazel overwhelmed by dog rose, mixed condition	127.84
G171	Ash, Elm species	7	Fair	Young	C		Long	Elm stem wounds, bark necrosis, ditch side, ash multistemmed at base	50.11
G172	Field Maple, Sycamore, Hazel	12	Fair	Semi Mature	C		Long	Hedgerow hazel young, maple asymetric crowns due to failure of tree between, ganoderma, ustulina fungal fruiting bodies	158.70
G173	Goat Willow	6	Fair	Mature	C		Long	Ditch-side willow, leans, stem failure and subsequent correction	77.31
G174	Ash, Goat Willow, Hawthorn	6	Fair	Young	B		Long	Good screen around pond, generally good condition young to semi-mature	273.36
G175	Holly, Ash	8	Fair	Mature	C		Long	Mixed condition overgrown hedgerow, ash heavy lean over road, crossed fused limbs	179.65

Ref	Tree Species	Top Height	Condition	Age	BS5387 TQA	Protected Species Potential	SULE	Comments	Area (m2)
G176	Plum, Hazel	5	Fair	Semi Mature	B		Long	Plum slightly suppressed, hazel vigorous coppice stools	45.66
G177	Weeping Willow, Douglas Fir, Lawson Cypress	10	Fair	Semi Mature	A	Low	Long	Ornamental garden planting of generally good condition	1647
G178	Alder, Elder, Hawthorn, Holly	10	Fair	Semi Mature	C		Long	Stream and ditchside trees of mixed condition	1067
G181	Alder, Blackthorn, Hazel, Hawthorn	6	Fair	Mature	C		Long	Overgrown hedgerow trees, failed mature alder regenerating	145.72
G182	Hawthorn, Holly, Elder, Alder	9	Fair	Mature	C		Long	Overgrown stream side hedgerow trees, mixed condition	310.78
G183	Hazel, Field Maple, Elder	6	Fair	Mature	B		Long	Hedgerow trees of generally good condition	33.09
G184	Hazel, Elder, Hawthorn, Alder	12	Fair	Mature	C		Long	Mixed stream side trees, generally fair to poor in condition, alder poorly pruned with bottle base	67.88
G185	Goat Willow, Alder	8	Fair	Semi Mature	B		Long	All basally multistemmed with weak unions, minor deadwood	85.91
G187	Lombardy Poplar	6	Good	Young	C		Long	Row of young poplar, some weak unions	399.02
G192	English Oak, Birch species, Sycamore	22	Excellent	Mature	A	Medium	Long		507.71
G193	Alder, Sycamore	13	Good	Early Mature	B	Low	Long		176.50
G194	English Oak	16	Good	Mature	B	Medium	Long		195.13
G196	Ash	14	Fair	Early Mature	C	Low	Long		79.28
G201	Ash, Hazel	12	Good	Semi Mature	B		Medium		184.72
G202	Hawthorn, Field Maple, Alder	9	Fair	Semi Mature	C	Medium	Long		78.97
G203	Hawthorn	4	Poor	Mature	C		Medium	Remnant hedgerow	40.86
G204	Hawthorn, English Oak	6	Good	Mature	B		Long	Remnant hedgerow with one suppressed oak.	258.59
G205	Cherry species, English Oak, Ash, Hazel, Holly	20	Good	Semi Mature	B	Medium	Long	Small wood of mixed natives including birch, sycamore	4919.36
G206	Hazel, English Oak, Holly, Willow species, Sycamore	15	Fair	Semi Mature	B		Long	Riverside trees, bank erosion exposing roots, some trees with diie back	381.34
G207	Small-leaved Lime, English Oak	23	Fair	Mature	B	Medium	Medium	Exposed roots due to bank erosion	572.70
G208	English Oak	20	Good	Mature	B		Long	Previous branch failure	229.82
G209	Alder, Norway Spruce, Hazel, Wild Cherry, English Oak	20	Good	Semi Mature	B		Long	Mixed woodland including exotics, some stem failures	3267.14
G210	Alder, English Oak, Sycamore, Wild Cherry	19	Good	Semi Mature	B				2483.59
G211	Alder, Willow Species, Hazel, English Oak	16	Fair	Mature	B		Medium	Erosion	2039.00
G218	Hazel, Hawthorn	8	Fair	Mature	C		Medium	track side.	45
G219	Cherry, Maple, Hawthorn	9	Fair	Semi Mature	C		Medium	grazing field	133

LEGACY: TREE GROUP DATA SCHEDULE

Ref	Tree Species	Top Height	Condition	Age	BS5387 TQA	Protected Species Potential	SULE	Comments	Area (m2)
G220	Field maple, Hawthorn	7	Fair	Semi Mature	C		Medium	grazing field/crop	6
G221	Willow, Hawthorn, Maple	7	Fair	Semi Mature	C		Medium	crops.	150
G222	Hathorn, Field maple.	5	Fair	Semi Mature	C		Medium		190
G223	Holly, Hazel	7	Fair	Semi Mature	C		Medium		61
G224	Hawthorn, Blackthorn, Elder	7	Fair	Semi Mature	C		Medium		170
G225	Hawthorn	8	Fair	Semi Mature	C		Medium	grazing	24
G226	Blackthorn	6	Fair	Semi Mature	C		Medium	grazing	28
G227	Holly	4	Fair	Semi Mature	C		Medium		7
G228	Hawthorn	7	Fair	Semi Mature	C		Medium	Hedge	29
G229	Alder	6	Fair	Young	C		Long		14
G230	Hawthorn, alder	8	Good	Semi Mature	C		Medium	On edge of a ditch	185.00

APPENDIX 18D
TREE GROUPS WITHIN (OR POTENTIALLY ABLE TO FALL WITHIN) 80M TOLERANCE CORRIDOR

Map Frame No	Ref	Species	Height	Max Crown	DBH	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Notes
1	T685	English Oak	5	5	600	Poor	Mature	C	Medium	Short	senescent, 2m wound up stem, major stem decay, major crown fie back, major deadwood
1	T688	English Oak	14	15	850	Fair	Mature	B		Long	Ploughing and browsing basal damage, stem sprouting shoots, small stem wound, small crown dieback, moderate deadwood
1	T690	English Oak	5	8	350	Fair	Young	C	Low	Medium	bifurcate stem splitting
1	T747	Ash	17	16	500	Good	Mature	B		Medium	
1	T748	Sycamore	18	15	1000	Good	Mature	B		Medium	
1	T749	Beech	8	12	200	Good	Young	C		Long	
1	T750	Oak	5	12	150	Good	Young	C		Long	
2	T125	English Oak	14	12	1200	Fair	Veteran	B	Medium	Long	
2	T133	English Oak	12	12	500	Fair	Mature	B	Low	Medium	
2	T134	Cherry species	8	8	500	Fair	Veteran	C	Low	Medium	
2	T218	English Oak	16	14	1000	Fair	Veteran	B	High	Medium	Fistulina fungal fruiting body at base
3	T175	English Oak	15	18	550	Good	Mature	B	Medium	Long	
3	T177	English Oak	11	10	500	Fair	Mature	B	Medium	Long	
3	T178	English Oak	11	12	450	Fair	Semi Mature	B	Medium	Long	
3	T190	English Oak	8	14	450	Fair	Semi Mature	C	Medium	Long	
3	T191	English Oak	8	12	500	Fair	Mature	B	High	Long	
3	T198	English Oak	12	9	450	Fair	Mature	B	Medium	Long	
3	T199	English Oak	11	12	500	Good	Mature	B	Medium	Long	
3	T200	English Oak	8	10	550	Good	Mature	B	Medium	Long	
3	T201	English Oak	13	14	750	Good	Mature	B	Medium	Long	
3	T202	English Oak	10	10	750	Fair	Mature	B	Medium	Long	
3	T252	English Oak	12	12	450	Good	Semi Mature	B	Medium	Long	Good form
3	T253	English Oak	5	8	400	Poor	Semi Mature	C	Low	Long	Highly suppressed
3	T254	Alder	8	7	1000	Fair	Semi Mature	C	Medium	Medium	Previous leader failures
3	T268	English Oak	12	12	600	Fair	Mature	B	Medium	Long	Minor deadwood and dieback
3	T269	Apple	8	10	600	Fair	Mature	B	Low	Medium	Untidy crown
4	T1	English Oak	14	10	550	Good	Mature	B	Medium	Long	
5	T309	Oak species	14	16	700	Good	Mature	B	Medium	Long	
5	T315	Oak species	11	14	800	Good	Mature	B	Medium	Long	Ivy on stem and scaffold
5	T316	English Oak	14	12	500	Good	Mature	B	Medium	Long	
5	T317	English Oak	12	9	500	Good	Mature	B	Medium	Long	
5	T318	English Oak	13	8	500	Fair	Mature	B	Medium	Long	
5	T319	Oak species	17	14	1450	Excellent	Mature	A	High	Long	
5	T320	Oak species	8	8	600	Poor	Mature	R	High	Short	
5	T321	Elm	11	9	550	Poor	Mature	R	Low	Short	Dead
5	T322	English Oak	13	8	1200	Good	Mature	A	Medium	Long	
6	T16	Oak species	16	16	1400	Fair	Mature	B	High	Long	Extensive basal cavity

6	T297	English Oak	15	18	650	Removal	Mature	R	Medium	Dead	Good deadwood habitat
6	T347	English Oak	10	10	550	Fair	Semi Mature	B	Medium	Long	Dense crown, ivy enveloping lower crown
6	T348	English Oak	20	17	1000	Good	Mature	A	Medium	Long	Good form
6	T350	English Oak	20	15	750	Fair	Mature	B	Medium	Long	
6	T754	Oak	20	17	900	Good	Mature	A	Medium	Long	
7	T360	English Oak	13	12	500	Good	Semi Mature	B	Low	Long	
7	T361	English Oak	13	8	450	Good	Semi Mature	C	Low	Long	Bifurcate mid stem
7	T381	English Oak	13	14	700	Fair	Mature	B	Medium	Long	
7	T382	English Oak	15	15	950	Excellent	Mature	A	High	Long	Large sized deadwood to 25cm diameter
7	T390	Ash	14	10	500	Fair	Early Mature	C	Low	Long	Basal multi-stemmed
7	T391	English Oak	13	12	700	Excellent	Mature	A	Medium	Long	Good form
7	T404	Ash	13	5	400	Fair	Semi Mature	B	Low	Long	Suppressed
7	T405	English Oak	14	12	500	Good	Semi Mature	B	Low	Long	Asymmetric due to adjacent Ash
7	T406	English Oak	22	22	2000	Excellent	Early Mature	A	High	Long	Good form
8	T41	Alder	8	12	400	Fair	Semi Mature	C	Medium	Medium	Suppressed. Lean to East
8	T417	English Oak	18	16	1000	Excellent	Mature	A	Medium	Long	Good form
8	T42	Sycamore	12	12	550	Fair	Mature	B	Low	Long	Ivy in lower crown
8	T697	Oak species	18	15	1200	Good	Mature	A	Medium	Long	Good form
8	T703	Crack Willow	18	12	450	Good	Mature	B	Low	Medium	multistemmed basal
8	T722	English Oak	12	18	650	Good	Mature	A	Low	Long	
8	T723	Sycamore	15	16	0	Fair	Mature	B	Medium	Medium	hedgerow, minor deadwood, minor die back
8	T726	Holly	7	8	50	Fair	Semi Mature	B	Low	Long	flailed holly and hawthorn
9	T755	Elm	14	10	300	Dead		R			
9	T756	Oak	19	24	1500	Good	Mature	B		Medium	trifurcate at 5m, restricted access
9	T76	Oak species	18	16	1000	Good	Mature	A	High	Long	
10	T653	English Oak	15	14	950	Fair	Mature	B		Long	Acute scaffold branch angles in crown, small deaswood to 10cm diameter
10	T657	English Oak	10	7	950	Poor	Mature	C	Low	Dead	Standing deadwood
10	T669	English Oak	14	13	800	Fair	Mature	B	Low	Long	Compaction at base, exposed roots, minor deadwood, browsing damage to lower crown, stem bifurcate at 3m
11	T572	English Oak	19	17	1200	Good	Mature	A	Low	Long	Erosion and exposed root plate, major reaction growth buttressing, moderate deadwood to 15cm diameter, hung-up failed branch, previous branch failure, visually dominant
11	T573	English Oak	12	12	900	Poor	Mature	B	Medium	Long	Possible lightning strike, major longitudinal wound to 3m, stem occlusion, major stem decay, nest in stem decay cavity, minor die back and deadwood, sprouting shoots throughout crown
11	T574	English Oak	11	13	550	Poor	Mature	C	Medium	Long	Longitudinal stem wound to crown break , 50% of stem and roots affected, associated major stem decay, previous scaffold branch failure

11	T575	Ash	19	18	1300	Fair	Mature	A	Medium	Long	Visually dominant, inspection obscured by hedge at base, longitudinal seams with included bark from base to 3m, ivy on stem and lower crown, basal swelling, previous scaffold failure x 2
11	T576	English Oak	13	13	950	Fair	Mature	A		Long	compaction and ploughing damage at base, exposed roots and buttresses to south, previous branch failure, moderate deadwood to 10cm diameter, sprouting shoots in crown
11	T577	English Oak	11	15	850	Fair	Mature	B	Low	Long	Basal compaction and ploughing damage, browsing damage to exposed roots, major basal swelling to south side, longitudinal bark cracks, poor pruning wounds, sprouting shoots on upper stem and crown, moderate deadwood to 15cm diameter
11	T581	Sycamore	12	13	500	Fair	Mature	B	Low	Long	Stem arising at right angle from stool, bifurcate at 2m, ivy throughout crown, inspection limited by hedge, good crown form
11	T612	English Oak	15	14	800	Fair	Mature	B	Bat	Long	base obscured by holly, ivy clad, new golisge chlorotic, min dw, slightly sparse crown
11	T614	English Oak	18	16	1050	Fair	Mature	A	Medium	Long	Stem base obscured by vegetation, visually dominant, previous branch failure, minor deadwood to 1cm diameter, hung up branch
11	T615	Sycamore	19	17	1000	Fair	Mature	B	Low	Long	Stem base obscured by vegetation, ivy up stem, bifurcate at 4m, high crown, slightly thin
12	T543	Ash	15	7	650	Removal	Mature	R		Short	Co-dominant stem failed previously. Extensive longitudinal wound. Poaching and browsing damage around base. Daldinia present
12	T548	Ash	18	16	900	Fair	Mature	C	Bat	Medium	Inspection inhibted by ivy. Exposed compacted root plate. Inonotus bracket. Minor dieback and deadwood
12	T549	Sycamore	15	12	750	Good	Mature	A		Long	Good form. Some poaching at base. Minor deadwood
12	T550	Alder	9	12	1200	Poor	Veteran	C	Medium	Medium	retrenched to develop new lower crown, maj die back, majority scaffold limbs failed, bottle butt, epi around base
12	T551	Alder	10	10	800	Poor	Mature	C	Bat	Medium	Possible basal decay. Asymmetrical crown, previously reduced. In decline. Moderate decay cavities
12	T589	English Oak	16	16	1100	Fair	Mature	B	Medium	Long	Erosion at base, exposed roots, stem bifurcate at 2.5m with included bark, moderate dieback particularly over ditch, deadwood to 7cm diameter
12	T619	Sycamore	13	13	600	Fair	Semi Mature	B	Medium	Long	Stem trifurcate at base, base obscured by hedge, ivy in crown, mid-stem failure at 3m, pruned away from road

12	T620	Ash	14	12	800	Fair	Mature	B	Low	Long	Base obscured by vegetation, slight bottle base, sprouting shoots from base, ivy up stem, moderate dieback and deadwood to 7cm diameter, mechanical damage, minor branch subsidence
12	T621	Ash	16	14	1000	Fair	Mature	B	Medium	Medium	Longitudinal stem wound, partially occluded, possible minor decay, obscured by ivy, stem bifurcate at 3m, moderate deadwood to 10cm diameter over highway, moderate dieback, previous scaffold branch failure
12	T627	Ash	15	13	600	Fair	Mature	B		Long	Stem base obscured by vegetation, moderate dieback, previous branch failure, Ash Heart Rot fungal fruiting body, slightly thin crown
12	T628	English Oak	14	14	850	Excellent	Mature	B	High	Long	Previously stem bifurcate at 1m, moderate decay cavity, stem lean 15 deg east, moderate deadwood to 10cm diameter, previous scaffold branch failure
12	T629	Ash	10	8	700	Fair	Mature	B		Medium	Major crown failure in past, stem bifurcate at 3m, failure above this point, vigorous regrowth, 2 remaining scaffolds with vigorous growth
12	T630	Sycamore	15	5	450	Poor	Mature	C		Short	In decline, major dieback, 15% crown remaining
12	T631	Sycamore	9	5	700	Poor	Mature	C		Dead	Standing deadwood, stem lean 30deg west, good ground deadwood from failed stems
12	T632	Ash	18	15	950	Fair	Mature	B		Long	Base obscured by vegetation, small bark lesions and necrosis, stem trifurcate at 3m, stem over highway failed, previous branch failures, small dieback and deadwood
13	T541	Ash	18	16	1000	Fair	Mature	B	High	Medium	Severe basal cavity extending up stem, deadwood upto 20cm diameter, compaction around roots, exposed roots
13	T542	Ash	16	10	900	Poor	Mature	C		Medium	Stem bifurcate at 2m, in decline, dying roots due to compaction and browsing, major deadwood in crown
13	T545	English Oak	17	16	850	Fair	Mature	B	High	Medium	Visually dominant, stem base sweling, moderate basal stem cavity, previous scaffold limb failure, sparse crown, moderate crown dieback, deadwood to 25cm, loosened bark
14	T540	Field Maple	12	14	650	Fair	Mature	B		Long	Multistemmed form from base, crossing/fused branches in crown, exposed browsed roots
15	T717	Sweet Chestnut	19	6	800	Poor	Mature	R	Low	Short	5% of trunk live to 8m
15	T719	English Oak	14	10	600	Good	Mature	B	Medium	Long	
16	T492	Ash	20	14	850	Poor	Mature	C	Medium	Short	Several large Ash Heart Rot fungal fruiting brackets, moderate dieback
16	T493	Aspen	17	13	800	Poor	Semi Mature	C	Low	Short	Stem basally bifurcate. asymmetric crown to north, moderate dieback

1 and 2	T139	Alder	7	8	450	Poor	Mature	R	High	Short	Multi-stemmed
1 and 2	T143	Ash	14	10	600	Fair	Mature	C	Medium	Medium	
1 and 2	T751	Oak	13	14	400	Fair	Mature	B	Low	Medium	ivy on strm
1 and 2	T752	Oak	13	14	400	Good	Mature	B		Long	
10 and 11	T660	English Oak	18	18	1200	Fair	Mature	B	Low	Long	Moderate basal cavity, poaching damage, large scaffold failure, minor deadwood to 10cm diameter
11 and 12	T590	English Oak	10	7	1050	Poor	Veteran	B	Medium	Long	In decline, crown retrenchment, stag-headed, all new growth epicormic, deadwood to 20cm
11,12	T600	Cherry species	13	12	1100	Poor	Veteran	B	High	Medium	Senescent growth, major reaction growth bulges and cording, major deadwood and dieback, thin crown, small canker lesions
11,12	T605	Ash	14	12	400	Fair	Semi Mature	B		Long	Previous scaffold branch tear-out wounds, stem bifurcate at 2m, small deadwood and dieback
14 and 15	T563	Sycamore	18	17	500	Fair	Mature	B		Long	Stem bifurcate at 3m, minor deadwood to10cm diameter, previous branch failure, basal sweep
14,15	T562	Alder	9	10	600	Fair	Semi Mature	C		Long	Stem basally multistemmed, weak included bark unions
14,15	T739	Oak	18	16		Good	Mature	B	T4NEW	Long	
2 and 3	T146	Cherry species	10	12	550	Poor	Mature	R	Medium	Dead	
2 and 3	T147	Cherry species	11	8	350	Poor	Mature	C	Low	Short	
2 and 3	T148	Cherry species	11	10	400	Poor	Mature	C	Low	Short	
2 and 3	T156	Sycamore	12	12	500	Fair	Mature	B	Low	Medium	
2 and 3	T228	Sycamore	16	8	400	Good	Mature	C	Low	Long	15 degree lean
2 and 3	T229	English Oak	11	10	500	Fair	Mature	B	High	Medium	Ivy on scaffold limbs
2 and 3	T230	English Oak	16	14	500	Good	Mature	A	Medium	Long	Good form. Minor deadwood
3 and 4	T211	English Oak	14	12	550	Good	Mature	A	Medium	Long	
3 and 4	T276	Ash	17	16	400	Good	Early Mature	B	Low	Medium	
3 and 4	T277	Ash	15	12	700	Fair	Semi Mature	C	High	Short	Ash Heart Rot. Stump regrowth, Snapped scafolds. Cavity
3 and 4	T278	English Oak	9	8	400	Good	Semi Mature	B	Medium	Dead	
3 and 4	T279	English Oak	16	18	1100	Good	Mature	B	High	Long	Minor deadwood
3 and 4	T280	English Oak	17	17	600	Good	Mature	A	Medium	Long	10 degree South-east lean
4 and 5	T9	English Oak	16	10	950	Good	Mature	B	Medium	Long	
5 and 6	T15	Oak species	14	18	800	Good	Mature	B	Medium	Long	
5 and 6	T331	Ash	28	12	750	Fair	Mature	B	Medium	Medium	
5 and 6	T332	Sycamore	18	10	450	Poor	Mature	C	Low	Medium	
5 and 6	T753	Oak	16	13	600	Fair	Mature	C		Medium	
6,7	T366	English Oak	11	12	1000	Good	Mature	B	High	Long	

9 and 10	T668	English Oak	15	15	1100	Fair	Mature	B		Long	Erosion and compaction around roots, burring on lower stem, sprouting shoots on stem, helical growth pattern from bifurcate stem union at 2m
9 and 10	T683	English Oak	14	14	850	Fair	Mature	B	Low	Long	Root damage due to deep ploughing, tree bunded 1m above field level, sprouting shoots on stem and crown, previous branch failure, hazard beam, moderate cavity at 2m and poor pruning wound, minor deadwood to 5cm diameter, minor dieback
9 and 10	T81	Sycamore	18	18	1100	Good	Mature	B	Medium	Long	
9 and 10	T83	Sycamore	18	18	1100	Good	Mature	B	Medium	Long	
9 and 10	T84	English Oak	15	13	750	Good	Mature	B	Medium	Long	
9,11	T681	English Oak	16	16	1050	Fair	Mature	B		Long	Basal compaction and ploughing damage, small dieback, 2 x recent scaffold failures leaving crown exposed on south side, small deadwood to 5cm diameter
9,12	T682	Ash	16	14	700	Fair	Mature	B		Long	Major browsing and compaction damage around stem, burrs on stem, thin crown, moderate dieback, small deadwood to 5cm diameter

APPENDIX 18E
TREE GROUPS WITHIN TREE MANAGEMENT WORKS ZONE FOR PROPOSED ROUTE

LEGACY: TREE GROUP DATA of AFFECTED AREAS

Map Frame No	Ref	Tree Species	Top Height	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Comments	Area m2
1	G104	Ash, Silver Birch	11	Good	Young	C	Low	Long	Buffer planting	52
1	G114	Sycamore, Oak Willow Rowan	6	Good	Young	C	Low	Long		151
1	G115	Sycamore, Oak Rowan Willow	5	Good	Young	C	Low	Long		117
1	G217	Ash, maple, oak, cherry, blackthorn, hazel, sycamore, birch	9	Fair	Semi Mature	C		Long	young group side of dual carriageway	4186
2	G219	Cherry, Maple, Hawthorn	9	Fair	Semi Mature	C		Medium	grazing field	133
3	G229	Alder	6	Fair	Young	C		Long		14
4	G25	Alder, Hawthorn Ash	15	Good	Mature	B	Medium	Long		679
4	G26	English Oak, Goat Willow	12	Good	Mature	B	Medium	Long		984.05
6	G221	Willow, Hawthorn, Maple	7	Fair	Semi Mature	C		Medium	crops.	150
6	G24	English Oak, Goat Willow, Hawthorn	16	Good	Mature	B	High	Long		894.05
6	G27	Alder, Hazel Hawthorn	8	Fair	Early Mature	C	Medium	Long	Includes dead trees	425
6	G30	English Oak, Alder	20	Good	Mature	B	High	Long		578
7	G222	Hawthorn, Field maple.	5	Fair	Semi Mature	C		Medium		190
7	G32	Ash, Field Maple Sycamore Alder	7	Good	Young	C	Low	Long		76
8	G192	English Oak, Birch species, Sycamore	22	Excellent	Mature	A	Medium	Long		507.71
8	G193	Alder, Sycamore	13	Good	Early Mature	B	Low	Long		162
8	G202	Hawthorn, Field Maple Alder	9	Fair	Semi Mature	C	Medium	Long		79
8	G203	Hawthorn,	4	Poor	Mature	C	Low	Medium	Remnant hedgerow	41
8	G208	English Oak,	20	Good	Mature	B	Low	Long	Previous branch failure	230
8	G209	Alder, Norway Spruce, Hazel, Wild Cherry, English Oak	20	Good	Semi Mature	B		Long	Mixed woodland including exotics, some stem failures	3267.14
8	G210	Alder, English Oak, Sycamore, Wild Cherry	19	Good	Semi Mature	B				2483.59
8	G211	Alder, Willow species Hazel English Oak	16	Fair	Mature	B	Low	Medium	Soil errosion	952
9	G135	Hawthorn, Willow species	14	Fair	Mature	C	Low	Long		412
9	G138	Cherry species,	12	Poor	Early Mature	C	Low	Medium		295
9	G16	Alder, Hazel	15	Good	Semi Mature	B	Low	Medium		311
9	G20	Oak species, Willow species Cherry species	15	Poor	Early Mature	C	Medium	Medium		588
9	G49	White Willow,	24	Fair	Mature	C	Medium	Medium	Typical limb failures	87
9	G51	White Willow, Sycamore	17	Fair	Early Mature	C	Low	Medium		113
10	G175	Holly, Ash	8	Fair	Mature	C	Low	Long	Mixed condition overgrown hedgerow, ash heavy lean over road, crossed fused limbs	60
10	G183	Hazel, Field Maple, Elder	6	Fair	Mature	B		Long	Hedgerow trees of generally good condition	33.09
10	G184	Hazel, Elder, Hawthorn, Alder	12	Fair	Mature	C		Long	Mixed stream side trees, generally fair to poor in condition, alder poorly pruned with bottle base	67.88
11	G161	Ash, Hawthorn, Blackthorn	10	Fair	Semi Mature	C		Medium	Remnant hedgerow, mixed condition, ash fair, hawthorn poor	874.18
11	G162	Aspen, Ash, Alder	12	Good	Early Mature	B		Long	Remnant ditch, small wetland area, some compaction, basal stemsweep, exposed roots	399.26

LEGACY: TREE GROUP DATA of AFFECTED AREAS

Map Frame No	Ref	Tree Species	Top Height	Condition	Age	BS5837 TQA	Protected Species Potential	SULE	Comments	Area m2
11	G227	Holly	4	Fair	Semi Mature	C		Medium		7
11	G228	Hawthorn	7	Fair	Semi Mature	C		Medium	Hedge	29
12	G163	Willow species, Alder, Hawthorn	7	Fair	Semi Mature	B		Long	Mixed willow and alder, 1 dead stem (elm), mixed condition, generally good	66.02
12	G172	Field Maple, Sycamore Hazel	12	Fair	Semi Mature	C	Low	Long	Hedgerow hazel, young, acers asymetrical crowns due to failure of tree between, ganoderma, ustulina	159
12	G223	Holly, Hazel	7	Fair	Semi Mature	C		Medium		61
13	G148	Sycamore	15	Fair	Mature	B		Long	2 multi-stemmed trees. Moderate basal cavity. Weak included unions at base. Minor deadwood. Abrupt bend in stem	1827
13	G149	Hawthorn, Hazel	8	Fair	Mature	C		Medium	Overgrown hedgerow trees of mixed condition	2742
13	G150	Field Maple, Hawthorn	14	Fair	Mature	C		Medium	Previously pruned back from utility line. Uneven thin crown. Leggy	2405
14	G142	Blackthorn, Hazel Hawthorn	8	Fair	Mature	C	Low	Medium	Crossing, fused limbs, 1 dead stem, overgrown,	62
14	G146	Hazel, Hawthorn, Holly	12	Fair	Mature	C		Medium	Unmanaged hedgerow of mixed conditiom	920.92
14	G226	Blackthorn	6	Fair	Semi Mature	C		Medium	grazing	28
16	G83	Ash, Horse-chestnut	13	Fair	Semi Mature	C	Low	Long	Ivy on trunks	202.05
16	G87	Ash,	20	Good	Mature	B	Low	Medium	Ivy on trunks and inner crowns	110
16	G89	Ash, Horse-chestnut Sycamore	18	Fair	Mature	C	Low	Medium	Ivy on trunks and inner crowns	167
11 and 12	G164	English Oak, Hawthorn Field Maple	13	Fair	Mature	B	Low	Long	Generally good condition/form, somestem kinking, basal sweep	110
14 and 15	G154	Alder	14	Fair	Mature	B		Long	Stream side trees of mixed condition	248.81
14 and 15	G160	Poplar species, Alder Cherry species Birch species English Oak	13	Fair	Young	C	Low	Long	Plantation of mixed condition/species/form	5311
7 and 8	G204	Hawthorn, English Oak	6	Good	Mature	B		Long	Remnant hedgerow with one suppressed oak.	258.59
7 and 8	G205	Cherry species, English Oak Ash Hazel Holly	20	Good	Semi Mature	B	Medium	Long	Small wood of mixed natives including birch, sycamore	902
7 and 8	G8	Ash, Blackthorn English Oak Hawthorn Apple	9	Good	Young	C	Low	Long	Broadleaved wood	1125
8 and 9	G45	Alder	16	Fair	Semi Mature	C	Low	Medium		150.84
8 and 9	G46	Sycamore	22	Good	Mature	B	Medium	Long		191.23
4	G230	Hawthorn, alder	8	Good	Semi Mature	C		Medium	On edge of a ditch	185.00
2 and 3	G95	Alder	18	Good	Mature	B	Low	Medium		639
11	G168	Hazel, Hawthorn, Holly	6	Fair	Mature	C		Long	some failures, hazel overwhelmed by dog rose, mixed condition	127