



Rampion Offshore Wind Farm



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Rampion Offshore Wind Farm –
Onshore EIA

Substation Phase 2 Ecology
Surveys Technical Report

Prepared For E.ON Climate and
Renewables

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1 INTRODUCTION

1.1 Purpose of this Report

This report presents the findings of the Phase 2 ecological surveys carried out at the proposed substation located at the terminal end of a proposed cable route through Sussex associated with a proposed off-shore windfarm development. The surveys comprised a botanical survey, Badger survey, roost survey for bats, arboricultural survey, reptile survey, terrestrial invertebrate scoping survey and Great Crested Newt surveys, carried out between March and July 2012.

1.2 Scheme Description

The onshore substation is required to convert electricity generated at the wind farm to a higher voltage suitable for onward transmission by National Grid's electricity transmission system. It will consist of four Super Grid Transformer (SGT) bays and will be located to the east of the 400kV National Grid substation at Bolney.

The proposed location is within land currently used for agriculture and covers an area of approximately 20 hectares. This area includes land which has been identified for construction, including access and lay down areas which will be required temporarily during the 2 year construction programme. The permanent substation compound will occupy an area of land within this, approximately 7.16 hectares in size.

1.3 Ecological Context

The proposed substation is situated at the terminal end of the proposed cable route, approximately 60 m east of the existing substation. It is enclosed along much of its southern boundary by an area of woodland. There are existing hedgerows with mature trees running north to south (approximately 200m) and east to west (approximately 350m) across the site. Access to the site is from Bob Lane following an existing farm track.

1.4 Structure of this Report

The remainder of the report is set out as follows:

- *Section 2* describes the survey and assessment methods;
- *Section 3* presents the results of the surveys;
- *Section 4* provides the evaluation of results,
- *Section 5* is the reference section;
- *Section 6* provides the figures;

- *Appendix A* – Relevant Legislation
- *Appendix B* – Phase 1 Target Notes and Botanical Survey Data
- *Appendix C* – BS5837 Tree Survey Data
- *Appendix D* – BS5837 Tree Constraints Plan
- *Appendix E* – Bat Roost Survey Data
- *Appendix F* – Badger Notes
- *Appendix G* – Great Crested Newt Survey Data
- *Appendix H* – Reptile Survey Weather Data
- *Appendix I* – Terrestrial Invertebrate Scoping Survey Report

2 METHODS

2.1 Survey Scope

The survey area comprises the substation footprint and adjacent land parcels required for temporary access and connection to the existing substation at Bolney. An Extended Phase 1 Habitat Survey was carried out in October 2011 and a number of detailed surveys followed, all of which are detailed in this report.

2.2 Survey Constraints

Exact details of the proposed tie-in area, including its location, were not known at the time of the survey therefore a wider area around the north of the existing substation was surveyed.

An initial Phase 1 Habitat Survey of the survey area was carried out in October 2011, with detailed surveys of grassland, woodland and hedgerows in late April 2012. Spring is an optimal time of year for surveying hedgerows and woodlands, and recording early flowering species in grasslands, but it is sub-optimal for detecting later flowering species, and grasses in their vegetative state, in particular, could easily have been overlooked.

2.3 Botanical Surveys

2.3.1 General

A Phase 1 Habitat Survey of the substation site was undertaken in October 2011 and reported in the Rampion Draft Environmental Statement (RSK 2012). This was undertaken at a sub-optimal time of year and detailed surveys were needed to fully evaluate the grassland, woodland and hedgerows. Based on the Phase 1 survey, detailed surveys were concentrated on the areas which are considered to have greatest botanical interest. However, areas not selected for further survey were revisited during the detailed surveys to confirm the assessment made during the autumn Phase 1 survey. In the case of grassland at *Target Note 277I*, the nature conservation value has been increased in line with the habitat being initially assessed as semi-improved, and later assigned to unimproved grassland. This report describes the habitats and plants from the whole survey area based on a combination of the Phase 1 and detailed survey results. An updated Phase 1 Habitat Map is appended in *Section 6* and displays the locations of target notes given in *Appendix B*; the Phase 1 map and target notes are used in this report for describing specific habitats and locations.

The detailed surveys were undertaken in late April by Richard Finch of RSK, a botanical specialist with over 5 years consultancy experience. April is an excellent time of year for recording in woodlands and hedges, and is adequate for recording in grasslands; however, it puts emphasis on detecting grasses in their vegetative state and it is possible that a few could have been overlooked. However, this is unlikely to affect the overall assessment.

Vascular plant nomenclature in this report follows Stace (2010). Scientific names are given first, followed by the English name in brackets. Mosses and liverworts follow Hill *et al.* (2008); lichens follow Smith *et al.* (2009).

2.3.2 *NVC Grassland Surveys and Species-listing*

The methodology of the National Vegetation Classification (NVC) was used to describe the vegetation types present in the Phase 2 survey sites (Rodwell 1991a, 1991b, 1992, 1995, 2000, 2006; Rodwell *et al.* 2000). NVC types were largely identified on the basis of observation and experience. Quadrat sampling was not routinely carried out, but quadrat data were nevertheless collected from two grasslands for the following reasons:

- to support interpretation of the main NVC types in the survey area; and
- to identify transitions between NVC types, and types poorly covered in the NVC system (Rodwell *et al.* 2000).

Quadrat data were collected from homogeneous stands of grassland vegetation. The cover of each species in a quadrat was estimated by eye and recorded on the Domin Scale (10 - over 90% cover, 9 - 76-90%, 8 - 51-75%, 7 - 34-50%, 6 - 26-33%, 5 - 11-25%, 4 - 5-10%, 3 - under 5% yet abundant, 2 - under 5% and occasional, 1 - under 5% and rare). Up to 5 two-metre quadrats were recorded in each sampled vegetation type, so that not only cover but also frequency estimates were available for each species (i.e. percentage occurrence in a quadrat - a species in 3 quadrats out of 5 has 60% frequency). Because NVC communities are determined primarily in terms of species-frequency, this facilitates the identification of NVC types, and especially improves computer matching to identify NVC types (Rodwell 2006).

The data are presented in *Appendix B* as floristic tables in the style of the definitive NVC tables given in *British Plant Communities* (Rodwell 1991a, 1991b, 1992, 2000). Species are ordered by their relative abundance, first by frequency class (class I – 0-20%, II – 21-40%, III – 41-60%, IV – 61-80%, V – 81-100%), and then by maximum cover value on the Domin Scale; any remaining ties are then ordered alphabetically.

Stands of vegetation were identified from quadrat data with the assistance of the computer-program MATCH (Malloch 1999), which computes similarity-coefficients between quadrat data and the published NVC tables that define the NVC communities and sub-communities. This gives only an initial indication of which NVC types the data are most likely to have been drawn from – the highest coefficient does not necessarily indicate the correct NVC diagnosis. It was then necessary to identify the

NVC type through careful consideration of the NVC descriptions in *British Plant Communities* (Rodwell 1991, 1992, 1995, 2000, Rodwell et al. 2000). In floristic tables in *Appendix B*, matching coefficients highlighted in bold text are acceptable NVC diagnoses, while coefficients highlighted in italics are informative but unacceptable.

2.3.3 *Species Lists*

Vascular plant species were listed from those grasslands and woodlands requiring more detailed survey. Conspicuous and readily identifiable species of bryophyte were also recorded, but a full bryophyte survey was not undertaken. At any given time a few vascular plants in a site will not be in evidence for serendipitous reasons, *e.g.* over-topping, temporary removal by grazing. Walk-through surveys should therefore never be regarded as exhaustive, though the lists presented here do adequately indicate the character of the vegetation. Plant species were identified carefully, but some species will be indeterminable because they are not in flower, or because only scrappy plants are available. Doubtful identifications are preceded in this report by ‘cf.’ where the plant is very probably the species indicated, but it is impossible to distinguish it from similar members of the genus with certainty.

Subjective estimates of the relative abundance of species were added to the plant species lists using a modified DAFOR scale. The DAFOR scale ranks species according to their relative abundance in a given parcel of land as follows: d – dominant, a – abundant, f – frequent, o – occasional, r – rare. In addition, the following prefixes are used: l – locally, v – very¹. The terms ‘abundant’ and ‘rare’ are used by convention, and apply only to relative-abundance within the recorded area. It does not mean that species are ‘rare’ in the district or the UK at large.

The species lists are presented in *Appendix B*.

2.3.4 *Hedgerows*

Nine hedges within the survey area were surveyed in detail to provide information on their nature conservation value and identify ‘Important’ hedges within the meaning of the *Hedgerow Regulations 1997*². They were evaluated only in respect of wildlife and landscape criteria in the *Regulations - Paragraphs 6 to 8 of Part II of Schedule 1*, but excluding *Sub-paragraph 6(1)(b) and 6(2)*. One modern *Crataegus monogyna* (Hawthorn) hedge at *Target Note 265* was not surveyed in detail as it is clearly of lower ecological value and would not qualify as an ‘Important’ hedge. The following data were collected for each hedge and are presented in Hedgerow Sheets in *Appendix B*.

¹ Few plants if any are technically dominant in the vegetation types that occur on the route, and we therefore used the convention A- abundant, F – frequent, O – occasional, R – rare, VR – very rare, which amounts to the same thing as the DAFOR scale, *i.e.* a five-point ranking on relative abundance.

² Statutory Instruments 1997 No. 1160.

- *Counts of the woody species found in a 30 m stretch of hedge.* A 30 m stretch was recorded in the middle of any hedge under 100 m, or in each half of any hedge under 200m, and in each third of any hedge over 200 m. The species found in each 30 m section were recorded together with indicative % abundances from the first section only. Only species listed in *Schedule 3* of the Regulations were used in calculations relating to hedgerow importance.
- *Observations on hedge-features.* These include the presence of a ditch, bank, or wall, the percentage by length of gaps, the number of standard trees, the presence of a parallel hedge within 15 m, the presence of woodland herbs (*Schedule 2* of the Regulations) and the number of connections with other hedges, woods and ponds.
- *Observations on hedge-features that have special significance.* Certain hedge-features modify threshold levels of data that determine whether or not a hedge is Important. They include footpaths alongside, and the presence of special woody species of significance in relation to hedgerow history.

Hedges may qualify as Important on historical as well as ecological grounds, and therefore likely historic field boundaries at road and field boundary crossings were also reviewed as part of the archeology assessment. Under the *Regulations* a hedgerow qualifies if it contains any of the following:

- any species in *Schedule 1(Part 1)*, 5 or 8 of the *Wildlife and Countryside Act 1981*;
- certain birds categorised as declining breeders (not considered here);
- any species categorised as ‘endangered’, ‘extinct’, ‘rare’ or ‘vulnerable’ in any of the British Red Data Books;
- 7 *Schedule 3* woody species in an average 30m stretch; or
- 6 woody species in an average 30m stretch and 3 of the hedge-features listed in the *Regulations*, or 5 species and 4 features; or
- 6 woody species in an average 30m stretch plus one of four ‘qualifying’ species; or
- if it is adjacent to a footpath, bridleway or byway, at least 4 woody species and 2 or more hedgerow features.

2.3.5

Assessment Criteria

Habitats

The scientific value of habitats for nature conservation is assessed according to widely accepted criteria of which the most important are naturalness, extent, rarity, and diversity. These and others are described in an extensive literature (Ratcliffe 1977, Usher 1986). In addition, the following criteria were used.

- Priority Habitat types identified in connection with UK implementation of the EC ‘Habitats Directive’3. Other important habitats and species are identified in National Biodiversity Action Plans (UK BAP website: www.ukbap.org.uk) and the Sussex Biodiversity Action Plan.

- Special importance attaches to ancient semi-natural habitats that depend for their survival on traditional types of land management, especially where these have suffered large reductions over the last fifty years due to agricultural intensification and extensification. Habitats in these categories are discussed in Rackham (1986).

Noteworthy Species

Noteworthy species are defined as follows:

- species protected by the *Wildlife and Countryside Act 1981*;
- species protected by European Directives and transposed into UK legislation;
- Red Data species (Cheffings and Farrell 2005);
- species listed in UK Biodiversity Action Plans (BAPs) or the Sussex BAP (LBAP);
- species listed as nationally scarce or notable in literature issued by conservation organisations or learned societies, *e.g.* ‘Nationally Scarce’ species found in less than 100 ten-kilometre grid-squares nationally (*e.g.* Stewart *et al.* 1994); and
- species described as rare or very rare in the Sussex Plant Atlas (Hall 1980).

2.4 Tree Survey

2.4.1 General

The survey was completed on the 14th and 15th March 2012. The survey was carried out from ground-level with the use of non specialist equipment (and was restricted in a number of instances due to physical features such as dense undergrowth). In these instances dimensions relating to the calculation of root protection areas have been estimated and categorisation of the trees has been guided by those parts of the tree that were visible.

Trees are living organisms and as such their health and condition is not static, but changes year by year. In light of this, the findings and recommendations within this report are only valid for a period of one year from survey. The health and condition of the trees as recorded within this report may change if there are, for instance extreme weather conditions or development work that impacts root protection areas.

The survey was carried out by Samuel Freakley, Senior Arboricultural Consultant, of RSK Environment, Lantra Professional Tree Inspector and holder of the Arboricultural Association’s Technician’s Certificate.

2.4.2 Scope of Work

The survey involved assessing, recording, and providing a schedule of the current condition of trees found within the survey area, categorising them in respect to their

³ Council Directive 92/43 EEC on the conservation of natural habitats and of wild flora and fauna.

suitability for retention using criteria outlined in BS5837 - Trees in Relation to Construction-Recommendations 2005.

A Tree Constraints Plan has also been prepared that shows the relative position and categorisation of each tree and group of trees and identifies root protection areas for the retained trees as described in BS5837.

Where possible, comments on the arboricultural implications of the proposed design have also been made with the aim of highlighting and, where possible, mitigating tree issues. Information has been provided relating to appropriate construction methods in the vicinity of trees which includes sections detailing recommended tree retention and removal, conflicts between retained trees and the development and methods for resolving any conflicts that may have been highlighted.

2.4.3 *Tree Preservation Orders and Conservation Areas*

E-mail and telephone consultation on the 22nd March with Herman Anderson, Horsham District Council, confirmed that the proposed substation site is not situated within a Conservation Area and none of the trees within the survey area are protected by Tree Preservation Orders.

2.4.4 *Tree Assessment*

Field data was recorded onto forms and transposed in the office into an MS Access database. Individual tree numbers and locations were plotted to a topographical survey showing tree positions. In instances where trees were not shown on the topographical survey tree positions were estimated.

The data recorded includes:

- Height - data gathered using a Suunto optical clinometer PM - 5/1520. Where access to the tree was not possible the heights were estimated.
- Diameter - measurements taken at 1.5 metres above ground level (complying with requirements for BS5837). Where multiple stems occurred below 1.5m the measurement was taken as the point immediately above the root flare. Girth data was gathered using a metric diameter tape, callipers or estimated when no access.
- Tree crown spread – estimated measurement of the four cardinal points to provide information to be used with the arboricultural constraints plan.
- Tree condition - judged visually using the guidelines produced in the report.
- Age class - estimated from an examination of the tree in question.

2.4.5 *Age Classification*

The following classification is used:

Y - Young:

Saplings and young trees under 10 years of age

MA – Middle Aged/Maturing:

Trees older than 10 years but less than one third of the life expectancy of their species, normally having the potential to make substantial extension growth.

M - Mature:

Trees between one third and two thirds of the life expectancy of their species. More or less full height and large girth, increasing only slowly.

OM- Over mature:

Trees beyond two thirds of the life expectancy of their species. No significant extension growth. Crown starting to break up and decrease in size.

V – Veteran:

Tree that shows features of biological, cultural or aesthetic value that are characteristic of an individual surviving beyond the typical age range for the species.

2.4.6 *Estimated remaining contribution in years*

The estimated remaining contribution in years is an estimate based on currently known factors of the possible remaining life of the tree as an asset. Clearly, it is impossible to predict changes in condition that may occur in the future and this reflects what is considered reasonable under existing circumstances, the following classification is used:

- Category R: Any condition that the tree currently retains will be lost within a period of 10 years.
- Category C: Currently in adequate condition and can remain on site until new planting can be established, within 10-20 years.
- Category B: A tree that can make a significant contribution, with a minimum of 20 years expected.
- Category A: A tree that can make a significant contribution, with a minimum of 40 years expected.

The estimated remaining contribution in years will be dependent on the interaction of the typical longevity of the species, its current age and condition with prevailing environmental factors. The estimated remaining contribution in years is also dependent on future tree management that can extend useful life in some instances.

2.4.7 *Tree Condition*

Each tree or group of trees has its physiological condition, structural condition and remaining life expectancy assessed leading to the BS5837 categorisation. The physiological condition of the trees is concerned with normal biological function of the living organism, for example its ability to respire, photosynthesise and grow. The physiology of a tree may be affected by multiple factors in isolation or jointly. For

example abiotic factors in the environment like drought stress or water logging or biotic factors such as animal browsing or pathogen attack.

For the purposes of this report the physiological condition of trees will be sub divided into; Good, Fair, Poor and Dead. A tree in Good physiological condition will be showing a full crown with healthy foliage without necrosis or chlorosis and shoot extension growth typical of that species. Such trees will be more able to adjust to any changes within their environment due to a development.

A tree in Fair physiological condition is likely to have a less dense crown, possibly with some foliage showing necrosis or chlorosis and shoot extension growth lower than that of a tree in good condition. These trees will be less able to adjust to any changes within their environment due to a development.

Trees in Poor physiological condition are likely to be showing advanced signs of decline, such as very open crowns, dieback and large amounts of deadwood. Shoot extension growth is likely to be very small and these trees are not likely to adjust to changes in environment due to a development. Such trees are not likely to be retained within a development site. Dead trees are those that are dead or dying and moribund.

The structural condition of trees also helps to inform the categorisation of the tree stock. A tree with a good root structure, stem and branching structure is unlikely to be predisposed to failure and will have a longer life expectancy.

Trees will often be encountered that have poor structures which may include the presence of decay, cavities, weak branch formation or girdling roots. These defects may be due to old age, for example veteran trees are very likely to have cavities and decay or they could be due to poor genetic tree stock where weak branch formation is common. In each instance the structure of the tree will help to inform its useful life expectancy. Depending upon the type of defect it may be possible to recommend remedial work which will allow the tree to be retained for many years, conversely in the instance of young tree stock with poor structures due to their genetics, remedial work is unlikely to allow long term retention and removal of such trees is often a preferable option.

The ages of the trees surveyed are estimated by the surveyor and divided into five categories: young; maturing; mature; over mature and veteran. It should be noted that these age descriptions can vary between species, for example a 60 year old Silver Birch can be described as mature but a 60 year old Oak is maturing. The table below is adapted from the Arboricultural Associations Guidance Note 4 and lists the expected life in years for a number of different species.

Table 2-1 Expected life for different tree species

Tree Species	Life expectancy in years
Majority of Poplars, Willows, Birches, Alders and Cherries.	50-70
Apple, Wild Cherry, Catalpa, Robinia, Tree of Heaven, Rowan, Whitebeam	70-100
Pear, Common Ash, Mulberry, Norway Spruce, Walnut, Field Maple, Horse Chestnut, Red Oak	100-150
Cedar of Lebanon, Tulip Tree, Scots Pine, Norway Maple, Hornbeam, Beech	150-200
Sycamore, Lime, Sweet Chestnut, London Plane, Common Oak	200-300
Yew	Greater than 300

Age is an important criteria within the categorisation of trees as a relatively old but short-lived tree in good structural and physiological condition with no defects may be classified as only having a useful life expectancy of 10-20 years and as such not a constraint to development.

2.4.8

Tree Categorisation using BS5837:2005

Following guidance in BS5837:2005 the tree survey categorises the tree stock in terms of the trees useful life expectancy and the condition. The following table provides an overview of each possible category.

Table 2-2 BS5837:2005 Categories

BS5837:2005 Categories	Definitions	Retention implications to a site
Category A (identified on the TCP in light green)	Trees of high quality and value able to make a substantial contribution to the site.	Every effort should be made to retain trees and amendments to a proposed scheme should be identified in preference to tree removal.
Category B (identified on the TCP in mid blue)	Trees of moderate quality and value able to make a significant contribution to the site.	Where possible amendments to a proposed scheme should be considered in preference to tree removal.
Category C (identified on the TCP in grey)	Trees of low quality and value in an adequate condition until new planting can be established, trees with impairments downgrading them from A or B category OR young trees with a stem diameter of less than 150mm.	The retention of trees may be advantageous in the short term, but they should not be seen as a constraint to development.

BS5837:2005 Categories	Definitions	Retention implications to a site
Category R (identified on the TCP in dark red)	Trees that have limited condition that will fail or die within 10 years and/or should be removed for reasons of arboricultural best practice	Not a material consideration in the planning process but may have other benefits such as ecological.

Trees that have been categorised as A, B or C should all be considered in the planning process whereas trees categorised as R should not; category R trees are either likely to be lost in the short term due to physiological or structural defects.

2.5 *Roost Surveys for Bats*

2.5.1 *Scope of Surveys*

All potential roosts within the substation survey areas were assessed from ground level to identify features likely to support bats. No buildings or other structures were identified within the survey area.

2.5.2 *Categorisation of Tree Features*

Features that might be used by roosting bats were described and categorised according to the standard RSK scheme as follows. Each feature was given a category during the ground level surveys (see below) and then re-categorised during the tree climbing surveys (see below).

Category 3 - Features that appear to be suitable for large maternity colonies along with roosts of lower conservation status. Any features that appear to be physically large enough to support high numbers of bats (*i.e.* 20+ individuals); provide internal darkness; provide shelter from the wind and rain; are higher than 2 m above ground level; have an entrance point free from clutter and are possibly, though not exclusively, heated by the sun. Examples of this type of feature are those well known to support maternity colonies such as woodpecker holes (*e.g.* for *Nyctalus noctula*, Noctule), extensive horizontal or vertical splits, and large plates of flaking bark (*e.g.* for *Barbastellus barbastella*, Barbastelle), hollow limbs, hollow branches, hollow trunks and other extensive rot holes (*e.g.* for *Myotis bechsteinii*, Bechstein's Bat). The species named are tree specialists in the UK but these types of features could be used by many of our species for breeding.

Category 2 - Features that appear to be suitable for small maternity colonies along with roosts of lower conservation status. Any features that appear to be physically large enough to support smaller numbers of bats (*i.e.* 5-20 individuals); provide internal darkness; provide shelter from the wind and rain; are higher than 2 m above ground level; have an entrance point free from clutter and are possibly, though not exclusively, heated by the sun. Examples of this type of feature could include less

extensive versions of the features listed above, cavities between overlapping branches, cavities behind callusing and lifted thick stemmed or mat ivy.

Category 1 - Features that appear to be unsuitable for maternity colonies, but that could be used for mating, occasional roosting, night roosting or hibernation. Any features that are only physically large enough to support individual bats or low numbers of bats (<5 individuals) OR are too low to the ground (<2 m) to provide protection for a maternity colony. Examples include any small features and all features below 2 m including hollow trunks with a low entrance, flaking bark, root balls *etc.*

Category 0 – Features with no potential to support roosting bats.

2.5.3 *Ground Level Tree Surveys*

Hannah Bilston and Beth Ludlow conducted the ground level tree surveys between the 14th and 16th March 2012. Hannah and Beth both hold licences to disturb bats for the purpose of survey work (licence numbers 20110424 and 20114752 respectively). All surveyors have been fully trained and have several seasons of experience in identifying trees with bat roosting potential.

The survey method enables the categorisation of each tree in relation to the value of the tree for bats. The methods used for assessing the category of bat roost potential are detailed in above.

Inspections of trees from ground-level involved viewing each tree from all angles using binoculars and a 500, 000 candle power torch to view higher areas. Trees with any features that could have potential for roosting bats (e.g. woodpecker holes, rot cavities, splits, cracks, flaking bark and thick-stemmed or matted climbing plants) were identified and marked with a small, silver, uniquely numbered tag.

For each tree, the following information was recorded onto a pre-designed survey sheet: tree tag number, grid reference, species and diameter at breast height.

For each feature, the following information was recorded onto a pre-designed survey sheet: feature description; height above ground level; distance from the trunk radially; orientation of the feature relative to the trunk; orientation of the entrance relative to the trunk; category of bat roost potential; and equipment required for closer access.

The surveys were all carried out in suitable weather conditions to survey trees (no fog or heavy rain).

2.5.4 *Tree Climbing Surveys*

Tree climbing surveys were carried out between the 30th May and 31st May on by James Pattenden and Rob Fear. James holds a licence to disturb bats for the purpose of survey work (licence number 20113945). Both surveyors hold certificates of

competence in Tree Climbing and Aerial Rescue and have been fully in inspecting features with bat roost potential.

The surveys were all carried out in suitable weather conditions to survey trees (no heavy rain or strong winds).

Access was gained to examine features in close detail (where possible) using ladders, ropes and harnesses by personnel qualified to climb trees and perform aerial rescue.

Once accessed, features were examined in detail using a bright torch, endoscope (fiberscope) or mirror to inspect (where possible) the full extent of the features and search for bats or evidence of bat activity (e.g. droppings, urine stains, odour, feeding remains, scratch marks, grease stains, wear marks).

For each feature, the following information was recorded onto a pre-designed survey sheet: internal dimensions, internal conditions, new category of bat roost potential, occupation by other species (e.g. birds, bees, hornets) and any evidence of bats (e.g. actual bats, bat droppings, staining, smell).

Bat droppings can prove beyond doubt that bats use a tree feature. Where droppings persist in the base of a dry hole or split, they can indicate the location of a bat roosting site. However, the absence of droppings does not indicate that a feature does not support a bat roost at another time of year. Droppings can decay rapidly in tree roosts.

The location, size, shape, texture and colour of droppings can be used to aid bat species identification, although this is not an exact science and is more difficult with tree roosts because droppings are often decayed or damp. Faeces or urine stains are sometimes found staining the wood or bark beneath roost holes in trees.

2.6 *Badger Survey*

2.6.1 *General*

Hannah Bilston and Beth Ludlow conducted the Badger walkover survey between the 14th and 16th March 2011. All staff are experienced ecologists and members of the Institute of Ecology and Environmental Management (IEEM).

The aim of Badger walkover survey was to ascertain the status of Badger within the survey boundary; and to inform any Natural England development licence application that may be required.

The survey boundary comprised the survey area and 30 metres outside this survey area to account for potential disturbance impacts.

2.6.2

Assessment Criteria

The survey area was systematically searched for evidence of Badger setts, paths, latrines and signs of foraging (snuffle holes). Badger footprints and Badger hairs were also recorded. Any evidence of Badger activity was recorded on a map.

When identified, the status of each Badger sett was categorised according to standard classification (Clark, 2007):

- *Main setts* are those with many entrance holes, conspicuous spoil heaps and obvious signs of use. These setts are usually in continuous use and are used by Badgers for breeding.
- *Annex setts* are those that are less than 150 m away from a main sett and connected by well-worn paths. They are usually smaller than a main sett, but still may have several entrance holes. Annex setts may not be used all the time.
- *Subsidiary setts* have 3-5 entrance holes and are at least 50 m from a main sett. They do not have an obvious path that connects them to another sett. They are not used continuously.
- *Outlying setts* have 1-3 holes and usually have little spoil (though recently excavated holes are an exception). They do not have a path connecting them to other setts they are rarely in continuous occupation and are frequently taken over by Fox and Rabbit.

The level of usage for each sett entrance was recorded as follows:

- *Well-used* holes show obvious signs of recent use by Badgers, including fresh spoil, bedding, fresh claw marks, dung, hair and footprints.
- *Partially-used* holes show no signs of recent use. The entrances may be partially blocked by leaf litter or small plants, but they could easily be re-used by Badgers. This includes setts that are only used occasionally at different times of the year.
- *Disused* holes show no sign of having been used by Badgers for many months (if not years), and include holes that show signs of collapse or are barely discernible. Such holes could not be re-used by Badgers without substantial effort. Badgers may occasionally re-excavate disused setts, particularly if territories change or other setts are lost.

2.7

Great Crested Newt Survey

2.7.1

General

The aquatic and terrestrial habitats within the substation survey area and within 500 m of the substation survey area were considered. The 500 m buffer was used rather than the previous 250m buffer associated with the proposed cable route due to the permanent loss of habitat associated with the construction of the substation.

All water bodies were identified within the survey area by using aerial photography, maps and during walkover surveys. Water bodies isolated from the development area by significant barriers to amphibian movement were discounted at this stage. This

included prominent roads, rivers and densely built up areas. All water bodies identified as having connectivity (of suitable habitat) with the works area were assessed for their potential to support Great Crested Newts.

2.7.2 *Personnel*

Paul Barnes and Victoria Gilbey carried out the habitat assessment for Great Crested Newts in March 2012. Paul Barnes carried out the pond surveys, (Natural England licence number 2011079) with the aid of assistants. All personnel are experienced ecologists and are members of the Institute of Ecology and Environmental Management (IEEM).

2.7.3 *Scoping Surveys*

All water bodies were visited by an ecologist in order to determine their current status i.e. extant, dried up, polluted etc. If the water bodies were potentially suitable for Great Crested Newts then a Habitat Suitability Index (HSI) was carried out. A subjective assessment was also made based on the experience of the surveyor.

For the ditches identified within the 500m buffer an assessment was made on the suitability to support Great Crested Newt based on a number of factors. The main factor used to determine suitability was the amount of flow present. This is because Great Crested Newts are not known to use water bodies with significant flow. Therefore any ditches with significant flow were discounted at this stage.

2.7.4 *Habitat Suitability Index*

Potentially suitable water bodies identified within 500 m of the substation survey area were assessed to determine whether they were suitable for Great Crested Newt using a Habitat Suitability Index (HSI) developed by Oldham *et al.* (2000).

This is derived from assessment systems developed by the US Fish and Wildlife Service. It is a numerical index, between 0 and 1, where 0 indicates unsuitable habitat and 1 represents optimal habitat. The HSI for the Great Crested Newt uses ten factors (suitability indices (SI) 1 to 10), which are thought to affect Great Crested Newts as follows:

- geographic location (SI 1);
- surface area (SI 2);
- hydrology (drying) (SI 3);
- water quality (SI 4);
- shade (SI 5);
- presence of water fowl (SI 6);
- presence of fish (SI 7);
- number of adjacent water features (SI 8);
- terrestrial habitat (SI 9); and
- macrophyte cover (SI 10).

Each factor is scored, and the ten scores are then converted to SI scores using a scale from 0.01 to 1 from graphs given in Oldham et al. (2000) and a HSI result is calculated using the following formula:

$$\text{HSI} = (\text{SI1} \times \text{SI2} \times \text{SI3} \times \text{SI4} \times \text{SI5} \times \text{SI6} \times \text{SI7} \times \text{SI8} \times \text{SI9} \times \text{SI10})^{1/10}$$

Further research by Brady (unpublished) has developed a system for using HSI scores to define pond suitability for Great Crested Newts according to the following categories:

- HSI <0.5 = poor
- HSI 0.5 – 0.59 = below average
- HSI 0.6 – 0.69 = average
- HSI 0.7 – 0.79 = good
- HSI > 0.8 = excellent

There is a positive correlation between HSI scores and presence and abundance of Great Crested Newts in ponds. Generally, ponds with high HSI scores are likely to support larger populations. However, the relationship is not sufficiently precise to conclude that a pond with a high HSI will definitely have a high newt population, or that a pond with a low HSI score will only have a low newt population or no newts at all.

During the HSI visits subjective assessments were also made based on the experience of the surveyor. This means that if ponds were extremely unlikely to support breeding Great Crested Newts then they were discounted at this stage. The HSI data was used to support these decisions. No HSI threshold was employed under which ponds were not surveyed.

2.7.5 *Presence/Absence Survey Techniques*

All water bodies suitable for Great Crested Newts were surveyed four times (where possible) for presence or absence using the following four survey methods (where appropriate).

Egg Searching

This involves searching marginal and aquatic vegetation for Great Crested Newt eggs, which are laid individually on plant leaves, and the leaf folded characteristically around the egg. The large size and yellowish/white coloration readily distinguishes the eggs of Great Crested Newts from those of smaller species.

Netting

Netting is carried out using a long-handled dip-net with a very fine mesh. The perimeter of the water body is walked, and 15 minutes of netting is carried out for

every 50 m of water-margin. The method is less effective than bottle trapping and torching when surveying for adult Great Crested Newts, but is very useful when searching for larvae. This method is used as an alternative or extra method of survey when weather conditions or other constraints did not allow bottle trapping to be carried out efficiently or safely. If a pond has significant quantities of dead leaf litter on the bottom, netting would not be carried out due to the amount of disturbance that would be caused and subsequent impact upon the water quality of the pond.

Torching

This technique is carried out at night, when newts are most active. Negative results are only meaningful when survey is carried out under suitable weather conditions. Ideal weather conditions are a night-time air temperature of more than 5° C, little or no wind, and no rain. Survey involves walking slowly around the edge of the pond and scanning the water with a torch (Clulite, 1,000,000 candle power) where access and safety permitted. Great Crested Newts can be easily identified and counted in clear water. The technique is less successful in thick weed or turbid water, but can still be used. Bright light may cause newts to seek cover where they will be undetected, but the technique is appropriate to establish presence and for estimating populations. The species, sex (if possible), number of newts, and survey times are recorded.

Bottle Trapping

This method involves trapping newts at night and if not carried out correctly it can be harmful to the trapped newts. Because of this, strict guidelines from Natural England are followed in accordance with Natural England licence conditions.

The method is reliable for detecting presence of Great Crested Newt, and is especially useful in weedy or turbid water where water visibility is poor or the vegetation is too dense to give good results from torch surveys. 'Funnel traps' constructed from plastic bottles attached to bamboo canes are submerged in the pond after dusk and removed early the following morning. Newts enter through the funnel entrance but cannot find their way back out again. The recommended density of traps is 1 trap every 2 m of margin, placed 2 m from the edge, though this depends upon habitat suitability, substrate as well as both incline and depth of the pond. Traps are checked in the early morning before the temperature rises, and the trapped newts are sexed, counted and released.

A cautionary approach to this method is used because there is a risk that newts may be harmed, even following standard trapping protocol as described by Natural England, and following questions raised on the safety of this technique (i.e. Denton, 2002). The technique is also unsuitable during periods of hot weather when dissolved oxygen levels in water decrease markedly, where water-levels are too low or if there is a risk of vandalism. If the risks are low, bottle trapping is maintained until the end of the survey period.

2.7.6 *Population Estimate*

If Great Crested Newts were detected then a further two surveys were carried out in order to gain a population estimate for the water body. This is calculated from the maximum number of newts caught or seen using one survey method. The maximum count breaks down into three size classes, presented in Table 2.3.

Table 2-3 Population Size Classes

Maximum Count recorded from any single survey method	Population Size Class
1-10	Small
11-100	Medium
101+	Large

2.8 *Reptile Survey*

2.8.1 *Habitat Assessment*

An Extended Phase 1 Habitat Survey was undertaken by RSK Environment in October 2011 which identified areas that are suitable for one or more of the four common reptile species. Particular attention was paid to those features that provide suitable basking areas (e.g. south-facing slopes), hibernation sites (e.g. banks, walls, piles of rotting vegetation) and opportunities for foraging (rough grassland and scrub).

Areas of suitable reptile habitat present within the substation survey area were then surveyed to confirm reptile presence/absence.

2.8.2 *Artificial Refuge Surveys*

The standard method for establishing reptile presence is to use reptile ‘tinning’ surveys. Artificial refuges (roofing felt tiles ‘tins’ approximately 0.5 m²) were placed in the areas that had been identified as suitable for reptiles during the habitat assessment. The felt tiles attract reptiles, which use them for shelter and to aid temperature regulation, which allows surveyors to find reptiles that would otherwise be widely dispersed and well-hidden.

8 locations of suitable reptile habitat were identified within or adjacent to the proposed substation. These included scrub edges, vegetated tracks/paths, rough grassland and patches of ruderal vegetation.

Reptile surveys were carried out from May to September 2011 for areas 03 and 06 which fall within the proposed cable route survey corridor (and were therefore surveyed in 2011) and May to July 2012 (areas 01, 02, 04, 05, 07 and 09) which are outside of the proposed cable route survey corridor. These are times of the year when reptiles are active. Tins were checked for reptiles on five occasions for areas 03 and 06 in 2011 (as per the agreed cable route survey methodology) and seven occasions for areas 01, 02, 04, 05, 07 and 09 in 2012. Surveys were undertaken during suitable weather (ideally in bright sunshine between the hours of 0830 to 1100 and 1600 to

1830 with air temperatures between 9 and 15°C, or if there is hazy or intermittent sunshine and little wind then between 9 and 18°C, not during rain).

When checking tins, a general watch was kept for other signs of reptiles, e.g. Grass Snake eggs, excrement or sloughed skins (often found beneath refuges).

2.9 *Terrestrial Invertebrate Scoping Survey*

Colin Plant (of Colin Plant Associates – Consultant Entomologists) and Victoria Gilbey of RSK Environment conducted a walkover survey of the proposed substation area and the potential tie in, access route locations on 25th May 2012.

The aim of this scoping survey was to examine the areas in order to make an assessment of the intrinsic invertebrate interest present

2.10 *Dormouse*

In 2011 artificial refuge surveys for Dormice were carried out in suitable hedgerows within and in close proximity to the proposed substation (Locations 70 & 71). These were then checked on five occasions between July and October.

No Dormice or signs of Dormice were found around the proposed substation. The nearest recorded Dormouse was at Titch Hill Farm, 22km away from the proposed substation.

3

RESULTS

3.1 Botanical Surveys

3.1.1 Overview

The survey area comprises the proposed substation location, the temporary access route across fields to the west of the proposed substation, and the potential tie-in area between the existing and proposed substations. The proposed substation lies across three agricultural fields with mature hedges forming the boundaries between them: one field is actively cropped; one is fallow arable; and one is species-poor semi-improved grassland used for grazing or silage. The temporary access route crosses two fields divided by a hedge and surrounded on all sides by mature hedges and woodland including Priorsbush Ancient Semi-natural Woodland to the north. The west field is semi-improved and the east field is an unimproved hay-meadow of high ecological value. The possible tie-in area comprises semi-improved horse pasture together with areas of scrub, tall ruderal and modern plantation woodland.

The following Phase 1 habitat types were recorded from, or adjacent to, the survey area:

- broad-leaved semi-natural woodland;
- broad-leaved plantation woodland;
- scrub;
- hedgerows;
- unimproved neutral grassland;
- semi-improved neutral grassland;
- poor semi-improved grassland;
- arable;
- tall ruderal;
- ponds; and
- a stream.

3.1.2 Broad-leaved Semi-natural Woodland

The woodland strips at *Target Note 277f* and *j* and the edges of Priorsbush are dominated by mature *Quercus robur* (Pedunculate Oak) trees, typically with some *Fraxinus excelsior* (Ash) as well. They have mixed shrub-layers including *Acer campestre* (Field Maple), *Crataegus monogyna* (Hawthorn), *Euonymus europaeus* (Spindle) and *Prunus spinosa* (Blackthorn) among others. A single tree of *Sorbus torminalis* (Wild Service-tree) was also recorded at *Target Note 277j*. Woodland herbs are the dominant ground flora and they also extend into the adjacent grassland for a few metres, forming colourful displays at the time of survey. The most frequent and abundant species are *Anemone nemorosa* (Wood Anemone), *Brachypodium*

sylvaticum (False Brome), *Hyacinthoides non-scripta* (Bluebell), *Mercurialis perennis* (Dog's Mercury), *Primula vulgaris* (Primrose) and *Viola* species (Violets). Other field-layer species include *Arum maculatum* (Lords-and-Ladies), *Poa trivialis* (Rough Meadow-grass) and the moss *Kindbergia praelonga*. These woodlands are broadly referable to the NVC type **W8 *Fraxinus excelsior*-*Acer campestre*-*Mercurialis perennis* woodland**. Species lists for these woods and are given in Table 6.3.2 in Appendix B.

Semi-natural woodlands to the south and north-east of the proposed substation were not surveyed in detail as they will not be directly affected by the proposed development. These woods have similar species compositions to the above but they are less semi-natural in character, for example they have been partly planted with exotic species.

3.1.3 *Broad-leaved Plantation Woodland*

A modern screening plantation to the east of the existing substation at Target Note 265 is dominated by *Populus ×canadensis* (Hybrid Black-poplar) and *Populus trichocarpa* (Western Balsam-poplar).

3.1.4 *Scrub*

Patches of scrub occur on disturbed ground around the existing substation, for example at Target Note 277o, where they consist of *Rubus fruticosus* agg. (Bramble) with *Cirsium arvense* (Creeping Thistle), *Sambucus nigra* (Elder) and *Urtica dioica* (Common Nettle). A dry ditch at Target Note 277n is overgrown with *Rubus fruticosus* agg. (Bramble) and *Prunus spinosa* (Blackthorn).

Ponds on the edges of the survey area are shaded by mature scrub consisting mainly of *Crataegus monogyna* (Hawthorn), *Prunus spinosa* (Blackthorn) and *Salix cinerea* (Grey Willow). The example at Target Note 264 has a woodland ground flora including *Hyacinthoides non-scripta* (Bluebell), *Mercurialis perennis* (Dog's Mercury) and *Primula vulgaris* (Primrose).

3.1.5 *Hedgerows*

The hedgerows in the survey area are generally mature, species-rich hedges that form a well-connected network with other hedges and woods in the surrounding area. A few of the hedges at Target Notes 277g and 278 have been trimmed recently, but most are unmanaged and a few are dominated by mature *Quercus robur* (Pedunculate Oak) standards, making them appear as tree-lines, e.g. Target Notes 271, 277k and 277r. As such, they range from about 2 m to over 20 m tall. They are typically species-rich, with at least 5 woody species per 30 m length of hedge, and support a number of features associated with ancient or ecologically important hedges such as standard trees, a supporting bank, species-rich ground floras and several connections with other

hedges or woods. Among the wide range of shrubs in the hedges, the most frequent are *Acer campestre* (Field Maple), *Cornus sanguinea* (Dogwood), *Corylus avellana* (Hazel), *Euonymus europaeus* (Spindle), *Fraxinus excelsior* (Ash), *Ligustrum vulgare* (Wild Privet), *Prunus spinosa* (Blackthorn) and *Rosa canina* (Dog-rose). The field-layers contain an abundance of woodland herbs, and a few hedges (*Target Notes 277a, c & k* along the boundaries of Option B) have upwards of 10 *Schedule 2* species (species used in *Hedgerow Regulations 1997* to characterise ecologically important hedges): the most abundant are *Anemone nemorosa* (Wood Anemone), *Arum maculatum* (Lords-and-Ladies), *Brachypodium sylvaticum* (False Brome), *Hyacinthoides non-scripta* (Bluebell), *Mercurialis perennis* (Dog's Mercury), *Primula vulgaris* (Primrose) and *Viola* species (Violets).

Of the 9 hedges assessed using the *Hedgerow Regulations 1997* criteria, 8 were found to be 'Important' hedges and only *Target Note 277p* was 'Not Important'. Hedgerow sheets summarizing the main ecological features of the hedges are given in *Section 6.4* in *Appendix B*.

3.1.6 *Unimproved and Semi-improved Neutral Grassland*

The eastern of two fields crossed by the temporary access route at *Target Note 277l* consists of species-rich unimproved grassland, which was ungrazed at the time of survey and about 10 cm tall. The sward contains a mixture of grass species including *Agrostis capillaris* (Common Bent), *Anthoxanthum odoratum* (Sweet Vernal-grass), *Cynosurus cristatus* (Crested Dog's-tail), *Festuca rubra* (Red Fescue), *Holcus lanatus* (Yorkshire-fog), *Schedonorus arundinaceus* (Tall Fescue) and *Trisetum flavescens* (Yellow Oat-grass), with *Luzula campestris* (Field Wood-rush) also abundant throughout. Broad-leaved herbs account for about 40 % of the cover, with *Lotus corniculatus* (Common Bird's-foot-trefoil), *Ranunculus acris* (Meadow Buttercup), *Ranunculus bulbosus* (Bulbous Buttercup), *Rumex acetosa* (Common Sorrel) and *Trifolium pratense* (Red Clover) the most abundant species. Notable additions to the sward include the woodland herb *Ajuga reptans* (Bugle), and two species characteristic of 'old meadows': *Anacamptis morio* (Green-winged Orchid) and *Ophioglossum vulgatum* (Adder's-tongue). Other woodland species such as *Anemone nemorosa* (Wood Anemone), *Hyacinthoides non-scripta* (Bluebell) and *Mercurialis perennis* (Dog's Mercury) are locally abundant at the field edges adjacent to hedges and woods. This grassland is broadly referable to the NVC type **MG5 *Cynosurus cristatus*-*Centaurea nigra* grassland**, and is probably best assigned to the **MG5a *Cynosurus cristatus*-*Centaurea nigra* grassland, *Lathyrus pratensis* sub-community**. An NVC table and a species list for this grassland are given in *Tables 6.2.2* and *6.3.1* in *Appendix B*.

The field at *Target Note 277e* has similar origins and shares many of the same species as the eastern field, but it is less species-rich and largely semi-improved (the eastern corner is unimproved and similar to *Target Note 277l*). It is dominated by grasses

such as *Agrostis capillaris* (Common Bent), *Alopecurus pratensis* (Meadow Foxtail), *Anthoxanthum odoratum* (Sweet Vernal-grass), *Holcus lanatus* (Yorkshire-fog), *Lolium perenne* (Perennial Rye-grass) and *Schedonorus arundinaceus* (Tall Fescue), with *Cynosurus cristatus* (Crested Dog's-tail), *Hordeum secalinum* (Meadow Barley) and *Trisetum flavescens* (Yellow Oat-grass) in smaller amounts. Broad-leaved herbs include *Cerastium fontanum* (Common Mouse-ear), *Lotus corniculatus* (Common Bird's-foot-trefoil), *Ranunculus acris* (Meadow Buttercup), *Ranunculus bulbosus* (Bulbous Buttercup) and *Rumex acetosa* (Common Sorrel). In comparison to *Target Note 277l*, *Lolium perenne* (Perennial Rye-grass) is probably the most abundant grass and broad-leaved herbs make up only 20 % of the cover: among these, *Lotus corniculatus* (Common Bird's-foot-trefoil) and *Trifolium pratense* (Red Clover) are far less abundant and others such as *Anacamptis morio* (Green-winged Orchid), *Luzula campestris* (Field Wood-rush) and *Ophioglossum vulgatum* (Adder's-tongue) are much reduced or absent. This grassland is referable to the NVC type **MG6b *Lolium perenne*-*Cynosurus cristatus* grassland, *Anthoxanthum odoratum* sub-community**. An NVC table and a species list for this grassland are given in *Tables 6.2.1* and *6.3.1* in *Appendix B*.

Grassland in the possible tie-in area is semi-improved, permanent horse pasture. It is heavily poached and has a short, open grass sward comprising a mixture of *Agrostis capillaris* (Common Bent), *Anthoxanthum odoratum* (Sweet Vernal-grass), *Cynosurus cristatus* (Crested Dog's-tail), *Holcus lanatus* (Yorkshire-fog), *Lolium perenne* (Perennial Rye-grass) and *Phleum bertolonii* (Smaller Cat's-tail). Broad-leaved herbs make up about 50% of the cover, with *Lotus corniculatus* (Common Bird's-foot-trefoil), *Ranunculus* species (Buttercups) and *Trifolium repens* (White Clover) the most abundant. Other species include *Cerastium fontanum* (Common Mouse-ear), *Potentilla reptans* (Creeping Cinquefoil) and *Prunella vulgaris* (Selfheal). Generally, it is not very species-rich and comprises common species; however, a few plants of *Ophioglossum vulgatum* (Adder's-tongue) were recorded and it may be more abundant than it appeared at the time. This grassland is referable to the NVC type **MG6b *Lolium perenne*-*Cynosurus cristatus* grassland, *Anthoxanthum odoratum* sub-community**.

3.1.7 *Poor-semi-improved Grassland and Arable*

Grassland fields in the area of the proposed substation are semi-improved and species-poor. The field at *Target Note 274* is used for grazing and silage production and has a closed, even sward dominated by coarse grasses such as *Dactylis glomerata* (Cock's-foot), *Holcus lanatus* (Yorkshire-fog) and *Phleum pratense* (Timothy). An area of grassland at *Target Note 272* is fenced off from the rest of the field and has a rough sward with tall ruderals such as *Urtica dioica* (Common Nettle) and *Rumex obtusifolius* (Broad-leaved Dock). The dominant grasses are *Agrostis capillaris* (Common Bent) and *Holcus lanatus* (Yorkshire-fog) with *Elytrigia repens* (Common Couch), *Lolium perenne* (Perennial Rye-grass) and *Phleum pratense* (Timothy), and

forbs include *Geranium dissectum* (Cut-leaved Crane's-bill), *Ranunculus repens* (Creeping Buttercup), *Trifolium repens* (White Clover) and *Vicia sativa* (Common Vetch).

Fallow arable land at *Target Note 270* has developed into species-poor grassland. It has a grassy sward comprising *Holcus lanatus* (Yorkshire-fog) and other grasses such as *Agrostis stolonifera* (Creeping Bent) and *Festuca rubra* (Red Fescue) together with the semi-ruderal forb *Helminthotheca echioides* (Bristly Oxtongue). Arable land to the north-west was sown with *Vicia faba* (Broad Bean) at the time of survey and had wide, species-poor grassland margins.

3.1.8 *Tall Ruderal*

An earth bank to the east of the existing Bolney substation at *Target Note 277q* supports weedy vegetation dominated by *Pulicaria dysenterica* (Common Fleabane) with *Cirsium arvense* (Creeping Thistle) and *Senecio* cf. *jacobaea* (Common Ragwort).

3.1.9 *Ponds and a Stream*

Ponds on the edges of the survey area at *Target Notes 264* and *277b* are heavily shaded by scrub and trees and have little or no aquatic vegetation. The pond at *Target Note 277m* is shaded by mature *Quercus robur* (Pedunculate Oak) trees along its eastern side but is more open along its western side with a marginal fringe of *Typha latifolia* (Bulrush). The water surface is largely dominated by *Lemna minor* (Common Duckweed).

A small stream along the southern edge of Priorsbush woodland supports a few common bryophytes characteristic of shady stream banks such as *Conocephalum conicum*.

3.2 *Tree Survey*

3.2.1 *General*

All trees and tree groups inspected were categorised using BS5837:2005 and the attached Tree Constraints Plans (Appendix D) show tree positions, numbers and retention categories.

A schedule of the inspected trees is included within Appendix C of this report. The schedule includes species, physiological and structural condition, age, work recommendations and retention values.

3.2.2 *Tree Categorisation*

Following guidance in BS5837:2005 the tree survey categorises the tree stock in terms of the trees useful life expectancy and the condition. Trees that have been categorised as A, B or C should all be considered in the planning process whereas trees categorised as R should not; category R trees are either likely to be lost in the short term due to physiological or structural defects. Although category C trees should be considered during the planning process they should not be seen as a constraint to development. The full details for each tree can be found in Appendix C.

3.2.3 *Recommended Pre-development tree works*

The majority of the tree works are required to remedy relatively serious structural defects, however most of the trees with serious defects were located in areas where target frequency was low, for example on agricultural field margins. In the most part the works relate to trees with stem cavities, or major deadwood over paths or by roads. All pre-development tree works are listed in Appendix C.

A high instance of decay fungi were recorded in the Oak trees along the farm access track. This did reduce the quality of the trees however the nature of the particular decay fungi, *Inonotus dryadeus*, will cause the Oaks to decline slowly, which generally reduced their BS5837 categorisation from A to B and only in a few instances down to C. These trees will decline in health and eventually require removal.

3.3 *Roost Surveys for Bats*

3.3.1 *Ground Level Tree Surveys*

Trees identified as having bat roosting potential within the proposed substation survey area are mapped using a unique number in *Figure 3, Section 6*. The trees are mapped according to the highest category of bat roosting potential awarded during the ground level tree surveys. Associated data is presented in Appendix F.

3.3.2 *Tree Climbing Surveys*

Any trees within the substation survey area identified during the ground level surveys were inspected in tree climbing surveys. In many cases the trees were re-categorised as a result. These are mapped using a unique number in *Figure 4*. The trees are mapped according to the highest category of bat roosting potential awarded during the tree climbing surveys. Associated data is presented in *Appendix E*. No evidence of roosting bats was found in any of the trees which were climbed.

3.4

Badger Survey

The results of the walkover Badger surveys are presented in *Figure 5, Section 6*.

Three Badger setts were identified within the substation survey area, One was located along the eastern boundary of the proposed substation. A second sett was identified adjacent to the pond in the south-west corner of the survey area, and the third was identified along the embankment of the existing field boundary between the proposed substation location and the temporary access route from the west. The details for each of the setts are provided in *Table 3.1* below.

Column 1 refers to the number of the Badger sett, as shown in *Figure 5*. *Columns 3-5* detail the size of the sett and current activity levels (through classification of each hole). *Column 6* provides an indication of the likely sett classification (based on size and activity levels). *Column 7* provides any additional information (or specific signs of activity) recorded at each sett during the survey.

Table 3-1 Substation Badger Survey Results, 2012

Target Note	Total number of holes	Well used holes	Partially used holes	Disused holes	Status	Additional notes
16	28	12	15	1	Main Sett	The sett is located along the banks of a waterbody and sits adjacent to a thick hedgerow and mature trees. Badger hair was identified within the entrances of all of the well-used holes and three of the partially used entrances. Evidence of fresh digging was identified at 11 entrances. The presence of bedding was identified at four of the well-used entrances. A Badger latrine was identified immediately adjacent to the north of the sett with fresh dung present. There are additional holes used only by Rabbits (too small for Badger or Fox).
20	3	0	3	0	Subsidiary/ Outlier	The sett is located along the banks of a waterbody, backed by mature trees and scrub. There are additional holes used only by Rabbits (too small for Badger or Fox). Badger hair was identified within all three entrances but the entrances were partially blocked by leaf litter indicating no recent activity.
9	1	0	0	1	Outlier	The sett is located along the embankment of the field boundary adjacent to a thick hedgerow and mature trees. Along the embankment there are additional holes used only by Rabbits (too small for Badger or Fox).

In addition, numerous dung pits, mammal paths and snuffle holes were identified within the survey area, concentrated within the narrow strips of woodland and hedgerows. This provides evidence that Badgers are active within the woodland areas adjacent to the boundary of the site.

3.5 *Great Crested Newt Survey*

3.5.1 *Scoping surveys*

A total of 57 water bodies were identified from maps, aerial photography and during walkover surveys in March 2011 and 2012. These are presented in *Figure 6* in *Section 6*. These water bodies break down into the following categories shown in *Table 3.3*.

Table 3-2. Results of Scoping Survey

Status of Water body	Number of Ponds/ditches
Potentially Suitable	33
Unsuitable water body (dry or ditch with flow)	18
No access	6
Total	57

3.5.2 *Habitat Suitability Index Scores and Subjective Assessment Conclusions*

A total of 33 potentially suitable water bodies were assessed using a Habitat Suitability Assessment (or a subjective assessment if they were a ditch). Raw data for these assessments are provided in *Appendix G*. These water bodies were split into suitable and unsuitable categories following these assessments (results shown in *Table 3.4*). Unsuitable or dangerous water bodies were not surveyed further. Descriptions of the reasoning behind unsuitable classifications are provided in *Appendix G*.

Table 3-3. Summary of Suitability Assessments

Status of Water body	Number of Ponds
Suitable (Medium to high HSI score and/or ecologist's assessment)	28
Unsuitable (Low HSI score and/or ecologists assessment)	5
Total	33

3.5.3 *Presence Absence Surveys*

A total of 28 water bodies were surveyed for Great Crested Newt, a summary of the results are shown in *Table 3.5* and summarised in *Table 3.6*. The raw data is presented in *Appendix G*.

Table 3-4. Presence-Absence and Population Size Estimate Survey Results

Pond/Ditch Number	HSI Score	Great Crested Newt Present	Population Size
134	0.70	No	-

Pond/Ditch Number	HSI Score	Great Crested Newt Present	Population Size
137	0.59	Yes (no population size estimate)	-
138	0.72	No	-
139	0.58	No	-
140	0.57	No	-
141	0.75	No	-
142	0.74	Yes - Max count 142	Large
144	0.59	Yes - Max count 2	Small
145	0.48	Unknown (none after 2 surveys)	-
148	0.50	Unknown (none after 2 surveys)	-
202	0.65	Yes – Max count 5	Small
203	0.51	No	-
204	0.67	No	-
205	0.82	Yes – Max count 2	Small
208	0.66	No	-
210	0.74	Yes – Max count 42	Medium
213	0.95	Yes – Max count 21	Medium
219	0.62	Yes – Max count 5	Small
220	0.56	No	-
222	0.49	Yes – Max count 4	Small
223	0.70	Yes – Max count 28	Medium
224	0.50	Yes – Max count 1	Small
225	0.53	No	-
225b	0.60	Yes – Max count 8	Small
226	0.83	Yes – Max count 10	Small
227	0.61	Unknown (none after 1 survey)	-
233	0.70	Yes (only 2 survey completed)	-
234	0.77	Yes (only 2 survey completed)	-

Table 3-5. Summary of Presence Absence and Population Size Estimate Survey Results

Status of Water Body	Number of Ponds
Unknown (due to access issues preventing full surveys from being carried out)	3
Absent	10
Present with no Population Size Estimate (due to access issues preventing full surveys from being carried out)	3
Low Population	8
Medium Population	3
High Population	1
Total	28

3.6 Reptile Survey

Nine areas of suitable habitat for common species of reptiles were identified within the substation survey area. Grass Snake (*Natrix natrix*) were recorded at survey locations 02, 04 and 09. No other reptile species were recorded during the surveys.

Table 3.7 summarises the results of the survey locations relevant to the proposed substation locations. Column 1 gives the numbers that relate to the discrete survey

locations shown in *Figure 7* in *Section 6*. *Columns 3 – 9* give information on species and numbers recorded on visits 1 to 7 respectively. Weather data for all the reptile checks undertaken is presented in *Appendix H*.

Table 3-6. Survey Results for Reptiles

Site No	Area description	Check 1	Check 2	Check 3	Check 4	Check 5	Check 6	Check 7
01	Scrub patches north of sub-station	0	0	0	0	0	0	0
02	Ruderal vegetation and rubble piles	0	0	0	0	0	1A Nn	0
03	Hedgerow edge and rough grassland*	0	0	0	0	0	-	-
04	Hedgerow edge and rough grassland	1A Nn	1A Nn, 1SA Nn	0	1A Nn	1A Nn	0	0
05	Hedgerow edge and rough grassland	0	0	0	0	0	0	0
06	Dry ditch and scrub*	0	0	0	0	0	-	-
07	Hedgerow edge and rough grassland	0	0	0	0	0	0	0
08	Hedgerow edge and rough grassland	0	0	0	0	0	0	0
09	Rough grassland*	0	1A Nn	0	0	0	-	-

* These locations were surveyed in 2011 as part of the reptile surveys carried out for the proposed cable route. The refuges were checked on five occasions between April to September 2011.

A – Adult

Nn – Grass Snake (*Natrix natrix*)

3.7 *Terrestrial Invertebrate Scoping Survey*

The results of the scoping survey are presented in full in *Appendix I*. The invertebrate interest of the grassland associated with substation location is probably low as a result of its reduced floral diversity. However, the hedgerow which runs east to west across the proposed substation is well-structured, exceptionally wide and contains mature trees in the mid-line which has created important edge habitats on both sides of the

hedge. Therefore the hedgerow not only has high invertebrate interest but also acts as an ecological corridor for invertebrate movement across the wider landscape.

The grassland associated with the temporary access route probably supports a significantly raised invertebrate interest within the edge habitats and the grassland. This field therefore has high invertebrate conservation value. The hedgerow which separates the two fields at the location of the proposed temporary access route was also noted as having a high invertebrate value associated with the four mature oak trees within its length. Several invertebrate species were noted, including examples of the hoverfly *Brachyopa scutellaris*, flying about the bases of the trunks. This is a saproxylic species that is Nationally Scarce.

4 EVALUATION AND CONCLUSIONS

4.1 Habitats and Plants

4.1.1 Broad-leaved Semi-natural Woodland

Priorsbush at *Target Notes 277d* and *277i* is designated as Ancient Semi-natural Woodland and, based on species composition alone, the smaller woodland strips at *Target Notes 277f* and *277j* appear to be of ancient origin also. They qualify as the UK and local BAP habitat 'Lowland Mixed Deciduous Woodland' and are of high nature conservation value.

Woodland to the south and north-east of the proposed substation location is also of ecological value, but will not be directly affected by the development.

4.1.2 Broad-leaved Plantation Woodland

The modern plantation at *Target Note 265* is of low ecological value.

4.1.3 Scrub

Mature scrub surrounding the ponds at *Target Notes 264, 277b* and *277m* has moderate ecological value, but recently invading scrub surrounding the existing substation is of low or negligible value.

4.1.4 Hedgerows

The hedgerows are well-connected, species-rich and probably of ancient origin: 8 out of 9 hedges are 'Important' under the *Hedgerow Regulations 1997* and they are therefore of high ecological value. They qualify under the UK and local BAP habitat 'Hedgerows'.

4.1.5 Unimproved and Semi-improved Neutral Grassland

The grassland at *Target Note 277l* is unimproved and has high ecological value: it is herb-rich with large populations of *Anacamptis morio* (Green-winged Orchid) and *Ophioglossum vulgatum* (Adder's-tongue); clearly benefits from favourable management; and qualifies as the UK and local BAP habitat 'Lowland Meadows'.

Unimproved neutral grassland is a declining habitat afforded priority status under the UK and local BAPs as 'Lowland Meadows'. The grassland at *Target Note 277l* is an excellent example of the habitat type currently under favourable management and therefore has high ecological value. The fact that it is surrounded by ancient woods and hedges has resulted in species-rich edge habitats along the field margins in which

species typical of woods and grasslands are growing together. This further increases the overall value of this site.

The semi-improved grasslands at *Target Notes 277* and *277e* are moderately species-rich and of higher than usual botanical interest for semi-improved grasslands on account of species such as *Hordeum secalinum* (Meadow Barley) and *Ophioglossum vulgatum* (Adder's-tongue). They do not qualify as 'Lowland meadows', as they have had an obvious history of agricultural improvement and contain only scattered plants of the above species, but are of moderate ecological value nonetheless.

4.1.6 *Poor Semi-improved Grassland and Arable*

The arable land and species-poor semi-improved grasslands are of low ecological value.

4.1.7 *Tall Ruderal*

This is species poor ruderal vegetation of negligible ecological value.

4.1.8 *Ponds and a Stream*

The ponds and stream, which lie outside the site boundaries, are of little botanical interest but they have ecological value as semi-natural water features.

4.2 *Tree Survey*

4.2.1 *Arboricultural implications*

The implications for trees are limited to mainly tree removal. Other minor implications are limited to protecting the roots of trees T50 and T51 and facilitation pruning to lift the lower branches over the proposed temporary access route from the south.

4.2.2 *Tree Removal and Tree Retention*

The following section details the number and BS5837 categories of the trees that require removal taking each option in turn.

As a result of the proposed substation three tree groups and twenty five trees require removal, the spread of BS5837 categorisation can be seen in the table below.

Category C and category R trees are highlighted in grey as these trees should not be seen as a constraint to development.

Table 4-1. Tree categories to be removed

BS5837 Categorisation	Number of Trees to be Removed	Number of Groups of Trees to be Removed
Category A	6	0
Category B	10	0
Category C	7	3
Category R	2	0
Totals	25	3

Category C trees, within BS5837 guidance, should not be seen as a constraint to development. The reason behind the large number of category C trees links to the presence of the decay fungi in trees T30 to T42. These trees were Oaks and showing signs of advanced decline.

4.2.3 *Mitigation of tree loss*

Where trees are removed to allow for proposed construction, new trees will be planted to help mitigate their loss. These trees should be native species of local provenance and should be adequately protected and maintained to allow them to become established within the landscape.

4.2.4 *Protective fencing and construction exclusion zones*

The positioning of the protective fencing which forms the construction exclusion zones will be detailed prior to construction. The fencing must be in place prior to works commencing and remain in situ until all construction works have been completed or the construction of the site boundary fence, which will then serve to exclude construction from the root protection areas of retained trees.

4.2.5 *Facilitation pruning*

Facilitation pruning has been recommended in two instances; T50 and T51, both Oak trees require lifting if the access route from the south is required. Branches overhanging the entrance should be lifted to provide 5.5 metres clearance. This will prevent branches overhanging the entrance from becoming damaged during construction.

All facilitation pruning works should be carried out in accordance with BS3998: 2010 by an appropriately qualified Arborist.

4.2.6 *Three dimensional cellular confinement*

The installation of a 3D cellular confinement system is required to protect the roots of T50 and T51 if the entrance is to be used. The entrance is currently blocked.

The cellular confinement system reduces compaction of soil beneath it without constraining root development and allows footpaths or roads to be constructed over root protection areas.

Specific design details regarding the type of cellular confinement system used should be confirmed with the manufacturer in conjunction with a suitably qualified engineer.

4.2.7 *Further inspection of the tree stock*

In a number of instances trees that had relatively serious defects or defects that could not be quantified, have been recommended for further investigation. The need to undertake these further investigations is dependant upon whether trees are to be retained.

4.3 ***Roosting Bats***

A small number of trees (number not confirmed yet) which have been classified as having potential to support roosting bats will have to be removed to facilitate the construction of the proposed substation.

Bats are known to move roost frequently, and can switch roosts every three days. Therefore prior to any removal of trees which have been highlighted as having potential for roosting bats the features will be inspected using ladders or tree climbing equipment (or subject to an emergence survey if features cannot be accessed safely). If any roosts are identified, and destruction cannot be avoided, further surveys may be necessary to inform the EPS licensing process.

The BCT Guidelines (BCT 2011) recommend that when a tree with high potential to support roosting bats is felled, a bat box should be erected on a nearby tree. It should be assumed that a tree with high potential to support roosting bats may be used by bats at some point even if no bats have been recorded using it during the surveys. It is therefore recommended that before any trees which are classified as Category 1, 2 or 3 in terms of their bat roost potential are felled, a Schwegler 1FF is erected on a nearby tree. This will help to compensate for the potential roost lost and help to ensure the potential roost 'stock' of an area is not decreased as a result of the works. Schwegler 1FF bat boxes are known to be used by a variety of bat species and are also unlikely to be used by nesting birds which can out-compete bats for bat boxes during the nesting bird season.

4.4 ***Badgers***

Under the existing legislation it is illegal to damage or destroy a Badger sett; obstruct access to a sett; and disturb a Badger whilst it is occupying a sett. It is not illegal, and therefore a licence is not required, to carry out disturbing activities in the vicinity of a

sett if no Badger is disturbed and the sett is not damaged or obstructed (Natural England, 2007). Within the legislation the definition of a sett is “any structure or place which displays signs indicating current use by a Badger”.

Under the existing legislation a licence from Natural England would be required to remove any active setts. As part of the licence Badgers would need to be excluded from the affected sett. This includes erecting Badger gates across all entrances to the sett. The Badger gates are initially left open to allow Badgers to freely access to and from the 'sett' (allowing the Badgers to get used to the gate) and then the gates are modified to only open one way, allowing Badgers to leave the sett but not return. Exclusions (with the gates locked to one-way) must run for at least 21 days and an ecologist must visit every 3 days to ensure the badgers are not trying to dig their way back into the sett. Only once the 21 day exclusion has been completed may the sett be destroyed with an ecologist present.

It should be noted that licenced works, including sett exclusions, are only normally issued by Natural England during the period of July to November in any year.

4.4.1 Foraging and Commuting

The site currently contains pasture grassland which constitute suitable foraging habitat. These habitats will be affected by the development proposals and plans will therefore result in the reduction of available foraging habitat for Badgers under both development options. However, alternative foraging areas will continue to be available locally in terms of the boundary woodlands that are present outside of the site.

The majority of evidence of foraging activity by Badgers has been recorded within areas of woodland and hedgerows to the north and east of the site. These habitats will not be affected by the works and Badgers will continue to have access to these areas.

The proposed substation site is surrounded by woodland that will remain during the works period to act as cover for commuting Badgers and as such, Badgers commuting through the woodland or along the woodland edge will not be impacted.

Construction work will be confined to daylight hours and will not require artificial lights for working. As a result, there will be no disruption to Badgers commuting through the boundary vegetation.

4.4.2 Construction works

The Badger survey identified that Badgers are active within habitats immediately adjacent to the site boundary.

It is not currently anticipated that any of the Badger setts identified will require closure, however some level of disturbance during construction is likely.

Best practice control measures should be implemented throughout the duration of the works. These controls will be explained to all site contractors through the delivery of a toolbox talk by an ecologist. The toolbox talk will provide general guidance regarding working practices in relation to Badgers and a summary of the relevant legislation.

4.5 *Great Crested Newts*

4.5.1 *General Evaluation*

The results from the surveys show that Great Crested Newts will be affected by the construction and operation of the proposed substation. Therefore a Great Crested Newt development licence must be obtained from Natural England prior to construction of the substation.

No Great Crested Newt breeding ponds or water bodies will be affected. Despite this the substation footprint contains areas which are suitable for foraging, resting and hibernating terrestrial Great Crested Newts. In the absence of mitigation there is a high risk that Great Crested Newts will be killed or injured by the substation construction. In the long-term there will be a permanent loss of terrestrial habitat in the footprint of the substation. The development will act as a 'soft' barrier to movement whereby dispersal will be limited by the intrinsic unsuitability of the developed area and the increased risk of mortality.

4.5.2 *Potential Mitigation and Working Methods*

Appropriate mitigation measures will include, but not be limited to, a translocation. This will involve the installation of amphibian-proof fencing around the working areas (including access tracks and set-down areas) and using pit-fall traps and carpet tiles to catch and remove all Great Crested Newts. All other animals captured will also be translocated. Such a scheme must take place during suitable conditions in the newt active season March - October inclusive for a period of time appropriate to the population size. In this case a 90 day translocation would be most appropriate. Suitable surrounding terrestrial habitat is extensive and translocated newts would be placed in a suitable donor area less than 250m from where they were caught. Following completion of the translocation, construction could begin. The amphibian-proof fencing would remain in place until construction is complete.

Long-term mitigation for the site could include permanent amphibian-proof fencing to be installed around the substation to prevent Great Crested Newts from wandering into the substation footprint and potentially coming to harm. This would also allow any

ground disturbance works essential to the running of the substation to go ahead in future without potentially time-consuming and costly mitigation for Great Crested Newts. This approach would require the surrounding habitat be maintained as favourable, and in some cases enhanced (such as additional planting and hibernacula creation), for terrestrial Great Crested Newts. This would ensure that dispersal and migration routes are not negatively affected in the long-term.

4.6 *Reptiles*

Grass Snakes are present in low numbers at survey locations 02, 04 and 09. If the habitat on site remains the same in terms of its suitability for common reptiles a mitigation strategy involving the strimming of vegetation (under supervision of an ecologist) to discourage reptiles from the area prior to any works commencing would be most appropriate. This would include any access tracks and set down areas as well as the substation footprint itself.

4.7 *Terrestrial invertebrates*

The hedgerow which runs east to west across the proposed substation and the field to the east of the proposed substation have high invertebrate interest. The loss of these habitats would necessitate specific mitigation measures to avoid long term impact to the invertebrate communities present.

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FIGURES

Figure 1 – Location Map

Figure 2 – Substation Phase 1 Map

Figure 3 - Substation Ground Level Tree Assessment

Figure 4 - Results of Tree Climbing Surveys

Figure 5 - Substation Badger Survey Results

Figure 6 - Substation Great Crested Newt Survey Results

Figure 7 - Substation Reptile Survey Results.



- Legend:
- Development Boundary
 - Site Access
 - Potential Mitigation Area
 - Substation Permanent Land Take
 - Substation Temporary Land Take



Rev	Date	Description	Drn	Chk	App
00	23.11.12	Loc	RG	SP	VG

Rampion Wind Farm



Figure 1 - Substation Location Map

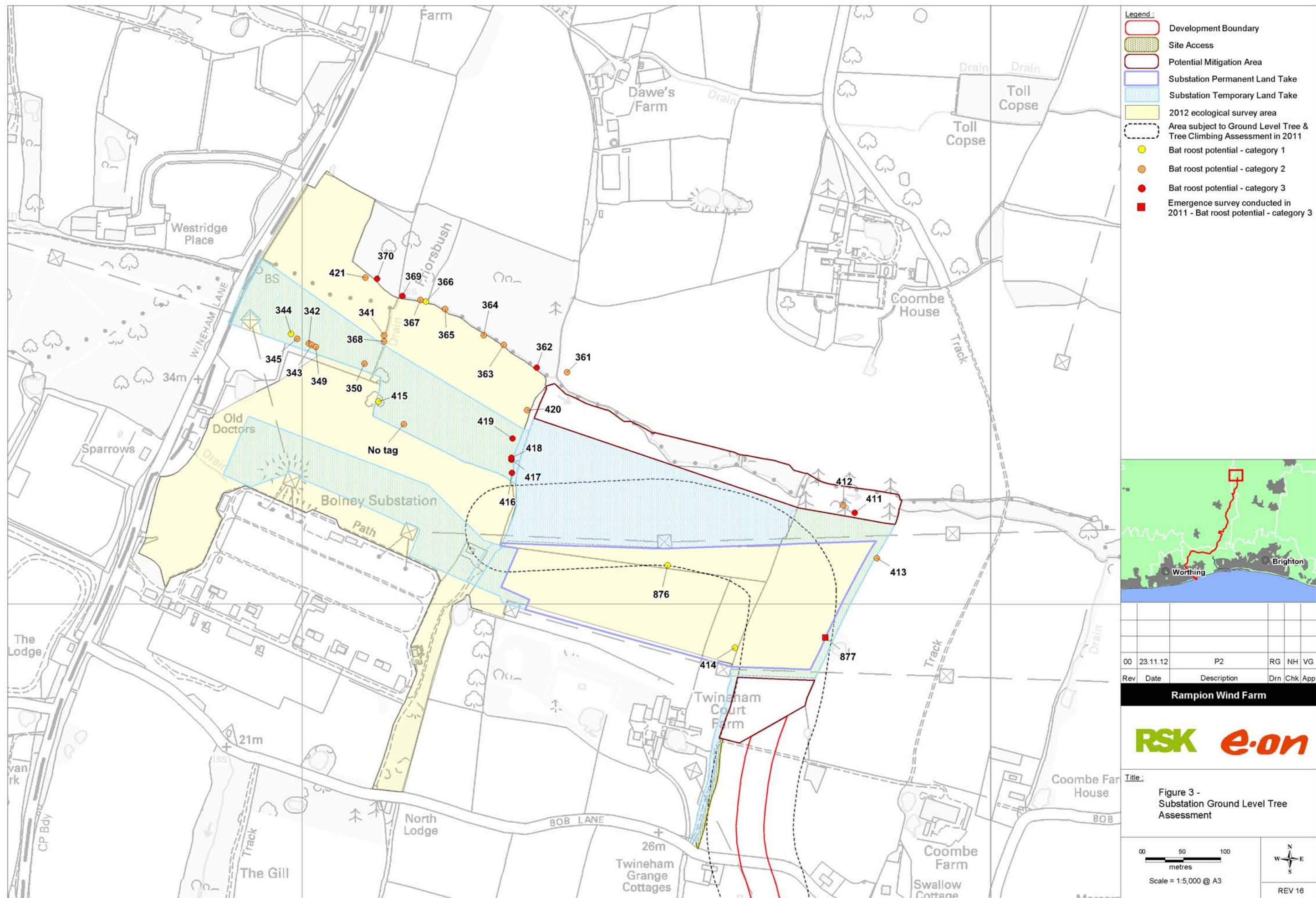
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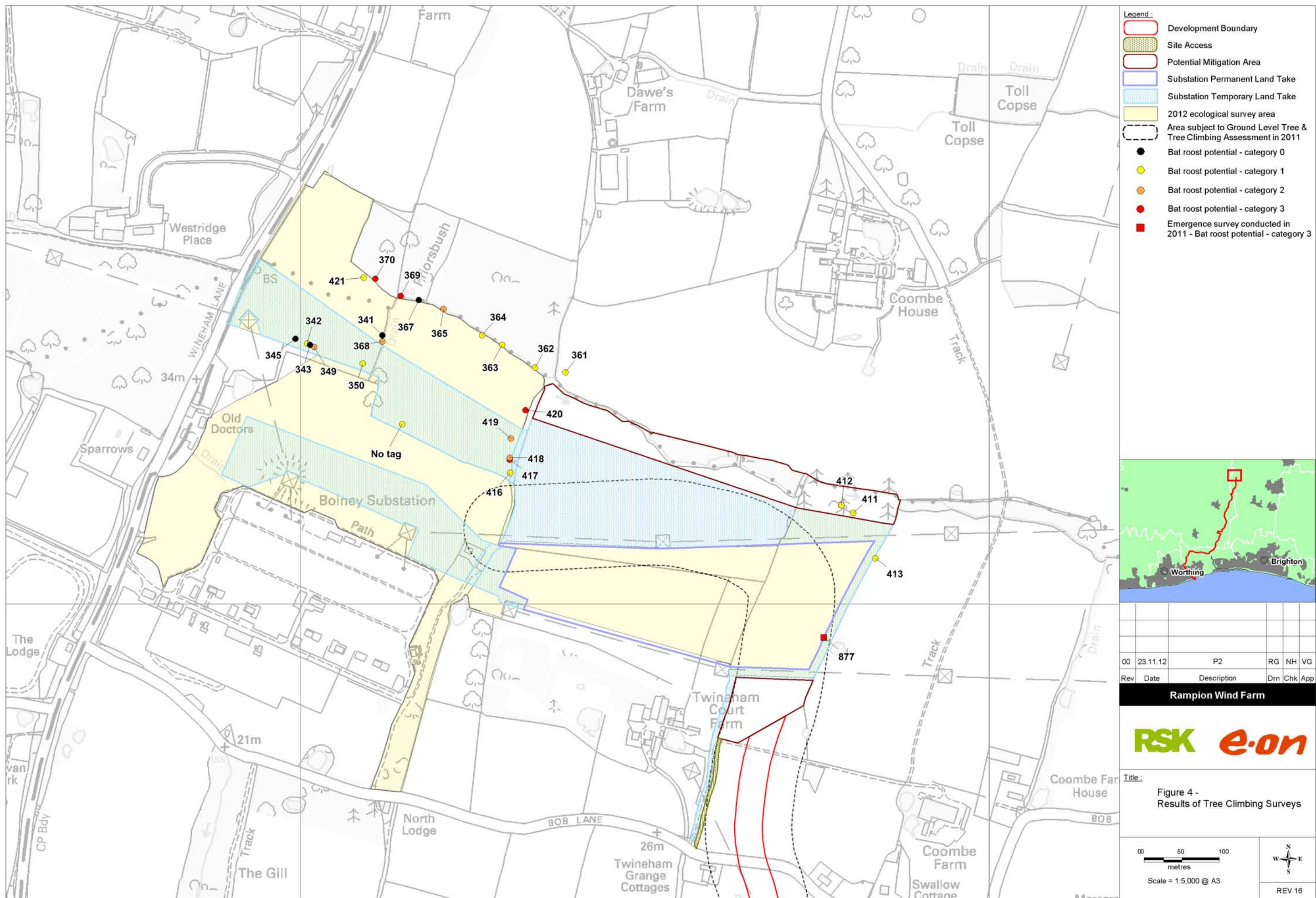
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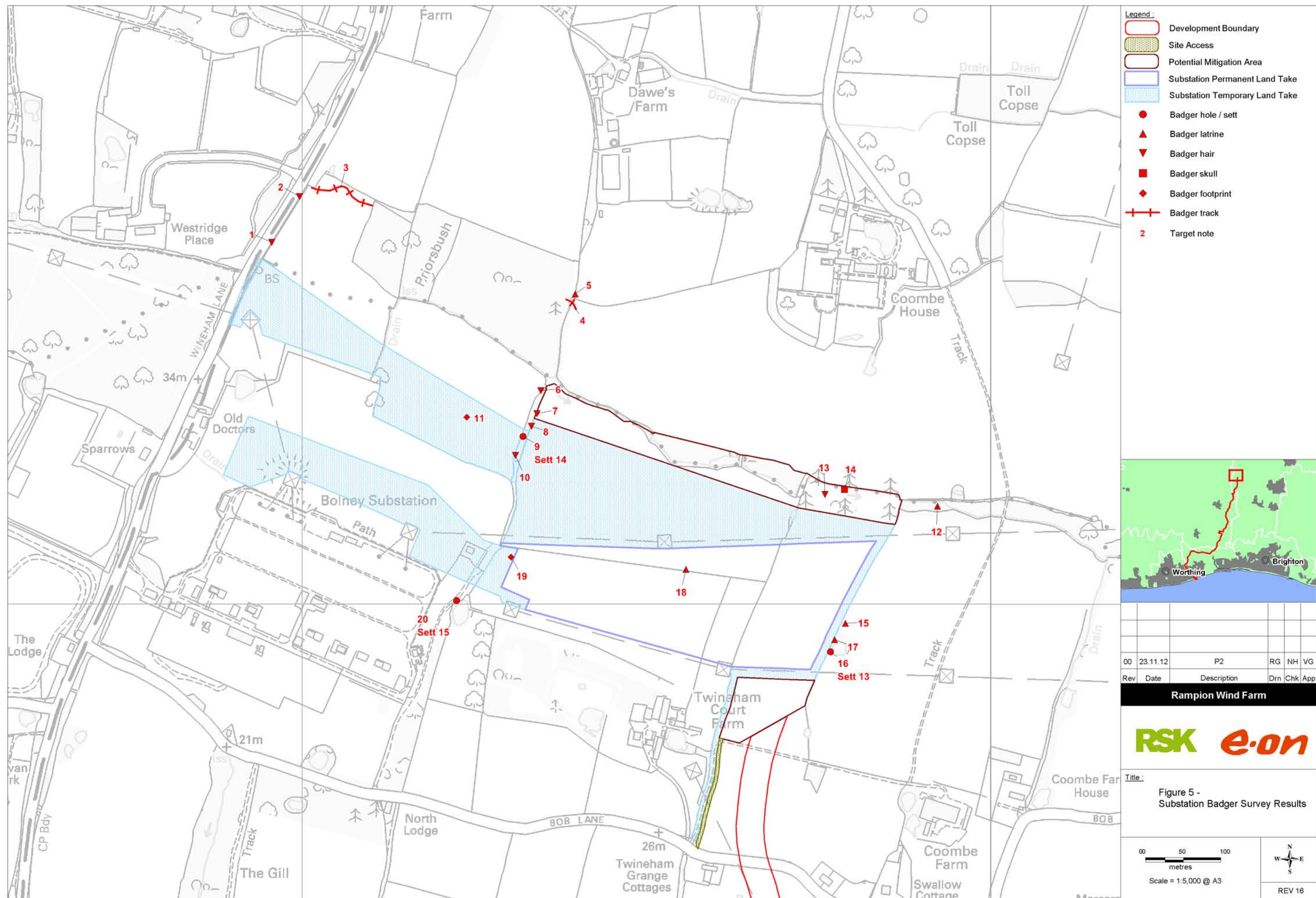
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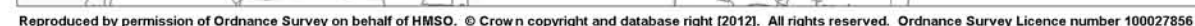
REV 16

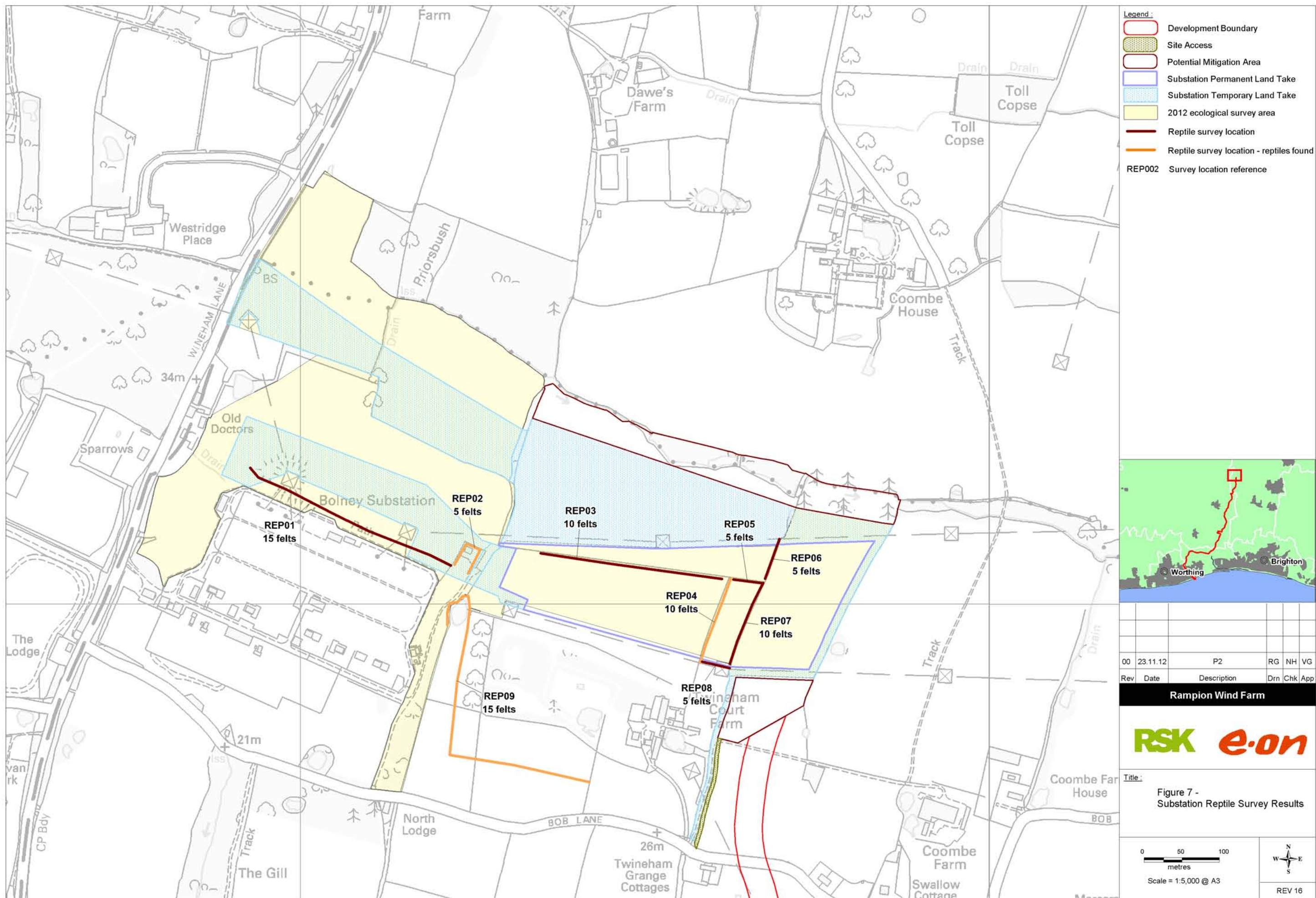












APPENDIX A – RELEVANT LEGISLATION

General

This section briefly describes the legal protection afforded to protected species. It is for information only and is not intended to be comprehensive or to replace specialised legal advice. It is not intended to replace the text of the legislation, but summarises the salient points.

Bats

All species of British bat are protected by The Wildlife and Countryside Act 1981 (as amended) extended by the Countryside and Rights of Way Act 2000. This legislation makes it an offence to:

- intentionally kill, injure or take a bat;
- possess or control a bat;
- intentionally or recklessly damage, destroy or obstruct access to a bat roost; and
- intentionally or recklessly disturb a bat whilst it occupies a bat roost.

Bats are also European Protected Species listed on The Conservation of Habitats and Species Regulations 2010. This legislation makes it an offence to:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats, including in particular any disturbance which is likely (a) to impair their ability - (i) to survive, to breed or reproduce, or to rear or nurture their young; or (ii) hibernate or migrate, where relevant; or (b) to affect significantly the local distribution or abundance of the species to which they belong.
- damage or destroy a breeding site or resting place of a bat; and
- possess, control, transport, sell, exchange a bat, or offer a bat for sale or exchange.

All bat roosting sites receive legal protection even when bats are not present.

Badger

Meles meles (Badger) is protected in Britain under the Protection of Badgers Act 1992 and Schedule 6 of the Wildlife and Countryside Act 1981 (as amended).

The legislation affords protection to Badgers and Badger setts, and makes it a criminal offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a Badger, or to attempt to do so;
- interfere with a sett by damaging or destroying it;
- to obstruct access to, or any entrance of, a Badger sett; or

- to disturb a Badger when it is occupying a sett

Great Crested Newt

Triturus cristatus (Great Crested Newt) is listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receives full protection under *Section 9*. This species is also listed as a European Protected Species on *Schedule 2* of the *Conservation (Natural Habitats, etc.) Regulations 2010* which gives it full protection under *Regulation 39*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the CROW Act).

Under the above legislation it is an offence to:

- kill, injure or take an individual of such a species;
- possess any part of such species either alive or dead;
- intentionally or recklessly damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
- intentionally or recklessly disturb such a species whilst using any place of shelter or protection; or
- sell or attempt to sell any such species.

The Great Crested Newt is included as a Priority Species in the UK Biodiversity Action Plan (UKBAP) and also as a species of principal importance for the conservation of biological diversity in England under *Section 74* of the CROW Act.

Reptiles

The four common reptile species are listed under *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), in respect of *section 9(5)* and part of *9(1)*. This protection was extended by the *Countryside and Rights of Way Act 2000*.

The legislation makes it an offence to:

- intentionally, or recklessly, kill or injure any of the above species, and/or;
- sell, or attempt to sell, any part of the species, alive or dead.

The two rarer species receive greater protection under both the *Wildlife and Countryside Act* and also from the *Conservation (Natural Habitats, etc.) Regulations 1994* which gives them full protection under *Regulation 39*.

APPENDIX B – PHASE 1 TARGET NOTES AND BOTANICAL SURVEY DATA

6.1 Phase 1 Target Notes

Target Note 264. A pond surrounded by dense *Crataegus monogyna* (Hawthorn) and *Prunus spinosa* (Blackthorn) scrub together with *Salix cinerea* (Grey Willow) bushes and a few mature *Quercus robur* (Pedunculate Oak) trees. The field-layer of the scrub includes the woodland herbs *Hyacinthoides non-scripta* (Bluebell), *Mercurialis perennis* (Dog's Mercury) and *Primula vulgaris* (Primrose), but the pond is so heavily shaded that it is of negligible botanical interest.

Target Note 265. A plantation of *Populus ×canadensis* (Hybrid Black-poplar) and *Populus trichocarpa* (Western Balsam-poplar) screening the Bolney Substation with a tall, leggy *Crataegus monogyna* (Hawthorn) hedge along its eastern edge.

Target Note 270. Fallow arable land that has developed into species-poor grassland. It has a grassy sward comprising *Holcus lanatus* (Yorkshire-fog) and other grasses such as *Agrostis stolonifera* (Creeping Bent) and *Festuca rubra* (Red Fescue) together with the semi-ruderal forb *Helminthotheca echinoides* (Bristly Oxtongue).

Target Note 271. A hedge comprising a line of *Quercus robur* (Pedunculate Oak) trees about 15 m tall over a shrub-layer of *Prunus spinosa* (Blackthorn) with *Acer campestre* (Field Maple) and *Crataegus monogyna* (Hawthorn). The field-layer is fairly sparse, though there are scattered plants of *Arum maculatum* (Lords-and-Ladies), *Iris foetidissima* (Stinking Iris) and *Primula vulgaris* (Primrose). There is a dry ditch along the east side.

Target Note 272. Species-poor rough grassland with a patch of *Urtica dioica* (Common Nettle) and *Rumex obtusifolius* (Broad-leaved Dock). The grassland sward is dominated by a mixture of *Agrostis capillaris* (Common Bent) and *Holcus lanatus* (Yorkshire-fog) with *Elytrigia repens* (Common Couch), *Lolium perenne* (Perennial Rye-grass) and *Phleum pratense* (Timothy) among other grasses. Forbs include *Geranium dissectum* (Cut-leaved Crane's-bill), *Ranunculus repens* (Creeping Buttercup), *Trifolium repens* (White Clover) and *Vicia sativa* (Common Vetch).

Target Note 273. A double fence-line enclosing a strip of **MG1b *Arrhenatherum elatius* grassland, *Urtica dioica* sub-community** with scattered scrub.

Target Note 274. Species-poor semi-improved grassland dominated by coarse grasses such as *Dactylis glomerata* (Cock's-foot), *Holcus lanatus* (Yorkshire-fog) and *Phleum pratense* (Timothy).

Target Note 275. A dense, wide hedge about 5-6 m high and 6-10 m wide with a few mature *Quercus robur* (Pedunculate Oak) standards. It largely consists of *Prunus spinosa* (Blackthorn) suckers that have outgrown the original hedge – a line of leggy *Crataegus monogyna* (Hawthorn) shrubs along the north edge – together with other species at lower abundances including *Cornus sanguinea* (Dogwood), *Fraxinus excelsior* (Ash), *Ligustrum vulgare* (Wild Privet), *Rosa canina* (Dog-rose) and *Salix cinerea* (Grey Willow). The field-layer is generally sparse but with a scatter of grasses, *Arum maculatum* (Lords-and-Ladies), *Mercurialis perennis* (Dog's Mercury), *Rumex sanguineus* (Wood Dock), *Urtica dioica* (Common Nettle) and *Viola riviniana* (Common Dog-violet).

Target Note 277. Semi-improved horse pasture with an open grass sward comprising a mixture of *Agrostis capillaris* (Common Bent), *Anthoxanthum odoratum* (Sweet Vernal-grass), *Cynosurus cristatus* (Crested Dog's-tail), *Holcus lanatus* (Yorkshire-fog), *Lolium perenne* (Perennial Rye-grass) and *Phleum bertolonii* (Smaller Cat's-tail). Broad-leaved herbs make up about 50% of the cover, with *Lotus corniculatus* (Common Bird's-foot-trefoil), *Ranunculus* species (Buttercups) and *Trifolium repens* (White Clover) the most abundant. Other species include *Cerastium fontanum* (Common Mouse-ear), *Potentilla reptans* (Creeping Cinquefoil) and *Prunella vulgaris* (Selfheal). It is probably referable to the NVC type **MG6b *Lolium perenne*-*Cynosurus cristatus* grassland, *Anthoxanthum odoratum* sub-community.**

Target Note 277a. A hedge or narrow strip of woodland comprising mostly semi-mature *Fraxinus excelsior* (Ash) trees over a shrub-layer including *Acer campestre* (Field Maple), *Corylus avellana* (Hazel) and *Prunus spinosa* (Blackthorn). The field-layer is a carpet of *Hedera helix* (Ivy) and *Mercurialis perennis* (Dog's Mercury) with some *Brachypodium sylvaticum* (False Brome) and *Rubus fruticosus* agg. (Bramble). It is referable to the NVC type **W8d *Fraxinus excelsior*-*Acer campestre*-*Mercurialis perennis* woodland, *Hedera helix* sub-community.**

Target Note 277b. A dry pond shaded by a mature *Quercus robur* (Pedunculate Oak) together with younger *Fraxinus excelsior* (Ash) trees and *Salix cinerea* (Grey Willow) bushes.

Target Note 277c. A hedge comprising a line of young *Fraxinus excelsior* (Ash) trees about 15 m tall over a shrub-layer of mostly *Crataegus monogyna* (Hawthorn) and *Prunus spinosa* (Blackthorn). There is a bank and a shallow, dry ditch. The field-layer consists of *Brachypodium sylvaticum* (False Brome) and other grasses together with scattered woodland forbs including *Mercurialis perennis* (Dog's Mercury).

Target Note 277d. A large area of ancient woodland dominated in the canopy by mature *Quercus robur* (Pedunculate Oak) with *Fraxinus excelsior* (Ash). It has a well-developed shrub-layer including *Acer campestre* (Field Maple), *Crataegus monogyna* (Hawthorn) and *Prunus spinosa* (Blackthorn). The field-layer is dominated

by *Hyacinthoides non-scripta* (Bluebell) and *Mercurialis perennis* (Dog's Mercury) with *Anemone nemorosa* (Wood Anemone), *Ficaria verna* (Lesser Celandine), *Primula vulgaris* (Primrose) and *Viola* species (Violets) among the other woodland forbs. This wood is broadly referable to the NVC type **W8 *Fraxinus excelsior*-*Acer campestre*-*Mercurialis perennis* woodland**.

Target Note 277e. Semi-improved agricultural grassland dominated by grasses such as *Agrostis capillaris* (Common Bent), *Alopecurus pratensis* (Meadow Foxtail), *Anthoxanthum odoratum* (Sweet Vernal-grass), *Holcus lanatus* (Yorkshire-fog), *Lolium perenne* (Perennial Rye-grass) and *Schedonorus arundinaceus* (Tall Fescue) with *Cynosurus cristatus* (Crested Dog's-tail), *Hordeum secalinum* (Meadow Barley) and *Trisetum flavescens* (Yellow Oat-grass). Broad-leaved herbs include *Cerastium fontanum* (Common Mouse-ear), *Lotus corniculatus* (Common Bird's-foot-trefoil), *Ranunculus acris* (Meadow Buttercup), *Ranunculus bulbosus* (Bulbous Buttercup) and *Rumex acetosa* (Common Sorrel).

Target Note 277f. A narrow woodland strip dominated by mature *Quercus robur* (Pedunculate Oak) – mostly growing on a bank along the northern side – with young *Carpinus betulus* (Hornbeam) and *Fraxinus excelsior* (Ash). The field-layer contains abundant *Mercurialis perennis* (Dog's Mercury) and frequent *Brachypodium sylvaticum* (False Brome) and *Rubus fruticosus* agg. (Bramble) together with small amounts of *Daphne laureola* (Spurge-laurel) and *Viola reichenbachiana/riviniana* (a Dog-violet). It is probably referable to the NVC type **W8a *Fraxinus excelsior*-*Acer campestre*-*Mercurialis perennis* woodland, *Primula vulgaris*-*Glechoma hederacea* sub-community**.

Target Note 277g. A field hedge with a few *Quercus robur* (Pedunculate Oak) standards. The shrub-layer had been trimmed to about 1.9 m high and 1.7m wide and comprises *Crataegus monogyna* (Hawthorn) and *Prunus spinosa* (Blackthorn) with smaller amounts of *Acer campestre* (Field Maple), *Cornus sanguinea* (Dogwood), *Corylus avellana* (Hazel), *Ligustrum vulgare* (Wild Privet) and *Rosa canina* (Dog-rose). The field-layer is grazed by cattle and has patches of bare earth. Species recorded include *Brachypodium sylvaticum* (False Brome), *Geum urbanum* (Wood Avens), *Glechoma hederacea* (Ground-ivy) and *Mercurialis perennis* (Dog's Mercury).

Target Note 277h. A strip of unimproved grassland along the field edge adjacent to Priorsbush woodland. The grassland has a fine-leaved sward comprising *Agrostis capillaris* (Common Bent), *Festuca ovina/rubra* (a Fescue) and *Trisetum flavescens* (Yellow Oat-grass) together with a wide range of grassland and woodland forbs. These include *Ajuga reptans* (Bugle), *Cerastium fontanum* (Common Mouse-ear), *Lotus corniculatus* (Common Bird's-foot-trefoil), *Leontodon hispidus* (Rough Hawkbit), *Potentilla reptans* (Creeping Cinquefoil), *Potentilla sterilis* (Barren

Strawberry), *Prunella vulgaris* (Selfheal), *Rumex acetosa* (Common Sorrel), *Viola hirta* (Hairy Violet) and *Viola reichenbachiana/riviniana* (a Dog-violet).

Target Note 277i. The eastern part of Priorsbush wood has mature *Quercus robur* (Pedunculate Oak) trees and a small stream along its southern edge; however, the interior of the wood has been replanted with *Fraxinus excelsior* (Ash) and other species in the last 50 years. Woodland herbs along the wood edge include abundant *Hyacinthoides non-scripta* (Bluebell) and *Mercurialis perennis* (Dog's Mercury).

Target Note 277j. A narrow strip of woodland dominated by mature *Quercus robur* (Pedunculate Oak) trees with a shrub-layer of *Crataegus monogyna* (Hawthorn) and other shrubs including *Acer campestre* (Field Maple), *Euonymus europaeus* (Spindle) and *Prunus spinosa* (Blackthorn). The field-layer comprises a carpet of the woodland herbs *Anemone nemorosa* (Wood Anemone), *Anthriscus sylvestris* (Cow Parsley), *Brachypodium sylvaticum* (False Brome), *Hyacinthoides non-scripta* (Bluebell) and *Mercurialis perennis* (Dog's Mercury). It is broadly referable to the NVC type **W8 *Fraxinus excelsior*-*Acer campestre*-*Mercurialis perennis* woodland**.

Target Note 277k. An overgrown hedge about 6m high and 5 m wide with taller *Quercus robur* (Pedunculate Oak) standards approaching 20 m in height. The main hedgerow shrubs are *Acer campestre* (Field Maple), *Crataegus monogyna* (Hawthorn) and *Prunus spinosa* (Blackthorn). The field-layer is dominated by woodland herbs, especially *Anemone nemorosa* (Wood Anemone), *Hyacinthoides non-scripta* (Bluebell) and *Mercurialis perennis* (Dog's Mercury), which are most abundant along the field edge to the north. Other field-layer species include *Lamium galeobdolon* (Yellow Archangel), *Ranunculus auricomus* (Goldilocks Buttercup) and *Viola riviniana* (Common Dog-violet). The west end of the hedge is wider and supports frequent mature *Quercus robur* (Pedunculate Oak) standards giving the hedge a similar character to the woodland strips described in *Target Notes 277f* and *277j*.

Target Note 277l. Unimproved neutral grassland with a herb-rich sward. The most frequent grasses are *Agrostis capillaris* (Common Bent), *Anthoxanthum odoratum* (Sweet Vernal-grass), *Cynosurus cristatus* (Crested Dog's-tail), *Festuca rubra* (Red Fescue), *Holcus lanatus* (Yorkshire-fog), *Schedonorus arundinaceus* (Tall Fescue) and *Trisetum flavescens* (Yellow Oat-grass). Other prominent species include *Luzula campestris* (Field Wood-rush) and the broad-leaved herbs *Lotus corniculatus* (Common Bird's-foot-trefoil), *Ranunculus acris* (Meadow Buttercup), *Ranunculus bulbosus* (Bulbous Buttercup), *Rumex acetosa* (Common Sorrel) and *Trifolium pratense* (Red Clover). Notable additions to the sward include the woodland herb *Ajuga reptans* (Bugle), and two species characteristic of 'old meadows': *Anacamptis morio* (Green-winged Orchid) and *Ophioglossum vulgatum* (Adder's-tongue). Other woodland species such as *Anemone nemorosa* (Wood Anemone), *Hyacinthoides non-scripta* (Bluebell) and *Mercurialis perennis* (Dog's Mercury) are locally abundant at

the field edges adjacent to hedges and woods. This grassland is broadly referable to the NVC type **MG5 *Cynosurus cristatus*-*Centaurea nigra* grassland**.

Target Note 277m. A pond shaded by mature *Quercus robur* (Pedunculate Oak) trees along its eastern side and more open along its western side with a marginal fringe of *Typha latifolia* (Bulrush). The water surface is largely dominated by *Lemna minor* (Common Duckweed).

Target Note 277n. A dry ditch dominated by *Rubus fruticosus* agg. (Bramble) and *Urtica dioica* (Common Nettle) together with *Prunus spinosa* (Blackthorn) scrub.

Target Note 277o. Patches of *Rubus fruticosus* agg. (Bramble) scrub with *Cirsium arvense* (Creeping Thistle), *Sambucus nigra* (Elder) and *Urtica dioica* (Common Nettle).

Target Note 277p. An unmanaged hedge comprising leggy shrubs including *Acer campestre* (Field Maple), *Crataegus monogyna* (Hawthorn) and *Prunus spinosa* (Blackthorn) together with a few *Quercus robur* (Pedunculate Oak) trees and patches of *Rubus fruticosus* agg. (Bramble) scrub at the base.

Target Note 277q. A bank supporting weedy vegetation dominated by *Pulicaria dysenterica* (Common Fleabane) with *Cirsium arvense* (Creeping Thistle) and *Senecio cf. jacobaea* (Common Ragwort).

Target Note 277r. An overgrown hedge characterised by tall, mature *Quercus robur* (Pedunculate Oak) standards with a mixed shrub-layer including *Acer campestre* (Field Maple), *Crataegus monogyna* (Hawthorn), *Ilex aquifolium* (Holly), *Prunus spinosa* (Blackthorn) and *Rosa canina* (Dog-rose). The field-layer is dominated by *Mercurialis perennis* (Dog's Mercury) with *Brachypodium sylvaticum* (False Brome), *Hyacinthoides non-scripta* (Bluebell) and *Urtica dioica* (Common Nettle).

Target Note 278. A field hedge trimmed to a height and width of about 2.5 m and comprising mainly *Crataegus monogyna* (Hawthorn) and *Prunus spinosa* (Blackthorn) with small amounts of *Quercus robur* (Pedunculate Oak) and *Rosa canina* (Dog-rose). The field-layer is sparse and there is a dry ditch along its east side.

6.2 NVC Tables

Table 6.2.1. NVC-style table for two quadrats in semi-improved grassland at Target Note 277e.

Species	Q1	Q2
<i>Lolium perenne</i> (Perennial Rye-grass)	6	7
<i>Brachythecium rutabulum</i>	4	6
<i>Schedonorus arundicaceus</i> (Tall Fescue)	6	3
<i>Agrostis capillaris</i> (Common Bent)	2	6
<i>Anthoxanthum odoratum</i> (Sweet Vernal-grass)	5	4
<i>Holcus lanatus</i> (Yorkshire-fog)	4	3
<i>Ranunculus acris</i> (Meadow Buttercup)	3	4
<i>Ranunculus bulbosus</i> (Bulbous Buttercup)	4	3
<i>Cynosurus cristatus</i> (Crested Dog's-tail)	4	2
<i>Hordeum secalinum</i> (Meadow Barley)	4	2
<i>Trisetum flavescens</i> (Yellow Oat-grass)	4	1
<i>Poa trivialis</i> (Rough Meadow-grass)	3	3
<i>Agrostis stolonifera</i> (Creeping Bent)	3	3
<i>Rumex acetosa</i> (Common Sorrel)	2	3
<i>Cerastium fontanum</i> (Common Mouse-ear)	3	1
<i>Festuca rubra</i> (Red Fescue)	2	2
<i>Alopecurus pratensis</i> (Meadow Foxtail)	-	4
<i>Trifolium dubium</i> (Lesser Trefoil)	-	4
<i>Trifolium repens</i> (White Clover)	-	4
<i>Lotus corniculatus</i> (Common Bird's-foot-trefoil)	3	-
<i>Poa pratensis</i> (Smooth Meadow-grass)	3	-
<i>Trifolium pratense</i> (Red Clover)	3	-
<i>Cardamine pratensis</i> (Cuckooflower)	1	-
<i>Ophioglossum vulgatum</i> (Adder's-tongue)	-	1
<i>Potentilla reptans</i> (Creeping Cinquefoil)	-	1
<i>Taraxacum</i> sect. <i>Ruderalia</i> (Common Dandelion)	1	-
Matching coefficients: MG6b 61.9 , MG6 undifferentiated 58, MG6a 56.5, MG5 undifferentiated 55.1, MG5a 55.1, MG3a 53.3, MG5b 52.9, MG3 undifferentiated 52.9, MG4 52.8, MG6c 52.7		
Diagnosis. This grassland has many species in common with adjacent unimproved grassland (<i>Target Note 277l</i>), but it is less herb-rich and grasses make up a larger proportion of the sward. The agricultural grass <i>Lolium perenne</i> (Perennial Rye-grass) is much more abundant, whereas species less tolerant of improvement or disturbance, such as <i>Ajuga reptans</i> (Bugle), <i>Anacamptis morio</i> (Green-winged Orchid) and <i>Ophioglossum vulgatum</i> (Adder's-tongue) are absent or very rare. It is referable to the NVC type MG6b <i>Lolium perenne</i>-<i>Cynosurus cristatus</i> grassland, <i>Anthoxanthum odoratum</i> sub-community.		

Table 6.2.2. Floristic (NVC-style) table for 5 two-metre square quadrats in unimproved grassland at Target Note 277L.

Species	Q1	Q2	Q3	Q4	Q5	Frq.	Cov.
<i>Festuca rubra</i> (Red Fescue)	3	4	8	4	7	V	3-8
<i>Trifolium pratense</i> (Red Clover)	6	7	5	7	7	V	5-7
<i>Agrostis stolonifera</i> (Creeping Bent)	3	7	3	3	3	V	3-7
<i>Schedonorus arundinaceus</i> (Tall Fescue)	5	5	4	6	5	V	4-6
<i>Holcus lanatus</i> (Yorkshire-fog)	4	4	3	6	4	V	3-6
<i>Anthoxanthum odoratum</i> (Sweet Vernal-grass)	5	4	4	5	4	V	4-5
<i>Trisetum flavescens</i> (Yellow Oat-grass)	5	3	3	3	3	V	3-5
<i>Agrostis capillaris</i> (Common Bent)	5	1	3	2	5	V	1-5
<i>Luzula campestris</i> (Field Wood-rush)	4	3	4	3	3	V	3-4
<i>Rumex acetosa</i> (Common Sorrel)	2	1	4	1	3	V	1-4
<i>Brachythecium rutabulum</i>	3	3	3	3	3	V	3
<i>Lotus corniculatus</i> (Common Bird's-foot-trefoil)	2	2	3	3	3	V	2-3
<i>Ranunculus acris</i> (Meadow Buttercup)	3	3	3	3	2	V	2-3
<i>Ranunculus bulbosus</i> (Bulbous Buttercup)	3	3	3	2	3	V	2-3
<i>Cynosurus cristatus</i> (Crested Dog's-tail)	3	3	3	5	-	IV	3-5
<i>Trifolium repens</i> (White Clover)	3	3	4	-	2	IV	2-4
<i>Cerastium fontanum</i> (Common Mouse-ear)	2	2	1	-	1	IV	1-2
<i>Lolium perenne</i> (Perennial Rye-grass)	5	-	1	3	-	III	1-5
<i>Poa pratensis</i> (Smooth Meadow-grass)	4	3	-	2	-	III	2-4
<i>Prunella vulgaris</i> (Selfheal)	-	-	3	3	3	III	3
<i>Anacamptis morio</i> (Green-winged Orchid)	1	-	-	2	2	III	1-2
<i>Cardamine pratensis</i> (Cuckooflower)	2	1	-	-	1	III	1-2
<i>Ajuga reptans</i> (Bugle)	-	3	5	-	-	II	3-5
<i>Carex flacca</i> (Glaucous Sedge)	-	3	-	-	2	II	2-3
<i>Ophioglossum vulgatum</i> (Adder's-tongue)	-	-	3	-	2	II	2-3
<i>Taraxacum</i> sect. <i>Ruderalia</i> (Common Dandelion)	-	-	3	-	1	II	1-3
<i>Ranunculus repens</i> (Creeping Buttercup)	2	-	-	2	-	II	2
<i>Lathyrus pratensis</i> (Meadow Vetchling)	-	-	-	4	-	I	4
<i>Festuca ovina</i> (Sheep's-fescue)	2	-	-	-	-	I	2
<i>Phleum</i> cf. <i>bertolonii</i> (Smaller Cat's-tail)	-	2	-	-	-	I	2
<i>Leontodon hispidus</i> (Rough Hawkbit)	-	1	-	-	-	I	1
<i>Plantago lanceolata</i> (Ribwort Plantain)	-	-	-	1	-	I	1
<i>Vicia cracca</i> (Tufted Vetch)	-	1	-	-	-	I	1
<i>Viola hirta</i> (Hairy Violet)	-	-	-	-	1	I	1

Matching coefficients: **MG5 undifferentiated 62**, *MG5b* 60.8, *MG5a* 60.7, *MG6a* 60.4, *MG5c* 56.5, *MG6* undifferentiated 56.3, *MG4* 55.5, *MG6a* 53.7, *MG3* undifferentiated 53.3, *MG3a* 52.9

Diagnosis. This grassland is characterised by a suit of species indicative of lack of improvement, most notably *Anacamptis morio* (Green-winged Orchid) and *Ophioglossum vulgatum* (Adder's-tongue), and is clearly referable to the NVC type *MG5 Cynosurus cristatus* - *Centaurea nigra* grassland, which is the typical grassland of grazed hay-meadows. The high frequency of *Trisetum flavescens* (Yellow Oat-grass) and presence of calcicoles such as *Linum catharticum* (Fairy Flax) and *Viola hirta* (Hairy Violet) at the field edges suggest the *MG5b Galium verum* sub-community over the *MG5a Lathyrus pratensis* sub-community, however, the absence of the two additional *MG5b* constants *Achillea millefolium* (Yarrow) and *Galium verum* (Lady's Bedstraw) mean that it cannot be assigned to one or other with confidence.

6.3 Species Lists

Table 6.3.1. Plant species recorded from grasslands. Column 1 – Target Note 277e; column 2 – Target Note 277l. Species marked with an asterisk are woodland or ruderal herbs generally confined to the field edges alongside woods and hedges.

Species	277e	277l
a) Trees, shrubs and climbers		
* <i>Acer campestre</i> (Field Maple), seedling	vr	-
* <i>Acer pseudoplatanus</i> (Sycamore), seedling	vr	-
* <i>Crataegus monogyna</i> (Hawthorn)	-	vr
* <i>Euonymus europaeus</i> (Spindle)	vr	-
* <i>Prunus spinosa</i> (Blackthorn), seedling	vr	r
* <i>Quercus robur</i> (Pedunculate Oak)	la	-
* <i>Quercus</i> cf. <i>rubra</i> (Red Oak)	vr	-
* <i>Rosa</i> species (a Rose), seedling	-	vr
* <i>Rubus fruticosus</i> agg. (Bramble)	r	r
b) Herbs and ferns		
<i>Achillea millefolium</i> (Yarrow)	-	r
<i>Agrostis capillaris</i> (Common Bent)	a	a
<i>Agrostis stolonifera</i> (Creeping Bent)	f	f
<i>Ajuga reptans</i> (Bugle)	r	f
<i>Alopecurus pratensis</i> (Meadow Foxtail)	f	o
<i>Anacamptis morio</i> (Green-winged Orchid)	-	f
* <i>Anemone nemorosa</i> (Wood Anemone)	r	lf
<i>Anthoxanthum odoratum</i> (Sweet Vernal-grass)	a	a
* <i>Anthriscus sylvestris</i> (Cow Parsley)	r	lf
* <i>Arctium minus</i> agg. (Lesser Burdock)	r	r
* <i>Arum maculatum</i> (Lords-and-Ladies)	r	lf
* <i>Brachypodium sylvaticum</i> (False Brome)	r	lf
<i>Cardamine pratensis</i> (Cuckooflower)	lf	o
<i>Carex caryophylla</i> (Spring-sedge)	-	r
<i>Carex flacca</i> (Glaucous Sedge)	r	o
<i>Carex panicea</i> (Carnation Sedge)	-	r
<i>Cerastium fontanum</i> (Common Mouse-ear)	f	f
<i>Cerastium glomeratum</i> (Sticky Mouse-ear)	r	r
* <i>Cirsium arvense</i> (Creeping Thistle)	r	r
<i>Cirsium vulgare</i> (Spear Thistle)	-	r
* <i>Cruciata laevipes</i> (Crosswort)	vr	-
<i>Dactylis glomerata</i> (Cock's-foot)	r	r
* <i>Euphorbia amygdaloides</i> (Wood Spurge)	-	r
<i>Festuca ovina</i> (Sheep's-fescue)	-	o
<i>Festuca rubra</i> (Red Fescue)	a	a
* <i>Ficaria verna</i> (Lesser Celandine)	r	lf
* <i>Galium aparine</i> (Cleavers)	r	lf
<i>Geranium dissectum</i> (Cut-leaved Crane's-bill)	r	r
* <i>Geum urbanum</i> (Wood Avens)	r	lf
* <i>Glechoma hederacea</i> (Ground-ivy)	r	r
* <i>Glyceria fluitans</i> (Floating Sweet-grass)	vr	-
<i>Helminthotheca echioides</i> (Bristly Oxtongue)	vr	-
<i>Holcus lanatus</i> (Yorkshire-fog)	f	a
* <i>Hyacinthoides non-scripta</i> (Bluebell)	lf	la

<i>*Iris foetidissima</i> (Stinking Iris)	-	vr
<i>Lathyrus pratensis</i> (Meadow Vetchling)	o	o
<i>Leontodon hispidus</i> (Rough Hawkbit)	-	o
<i>Linum catharticum</i> (Fairy Flax)	-	r
<i>Lolium perenne</i> (Perennial Rye-grass)	a	f
<i>Lotus corniculatus</i> (Common Bird's-foot-trefoil)	o	f
<i>Luzula campestris</i> (Field Wood-rush)	la	a
<i>*Mercurialis perennis</i> (Dog's Mercury)	lf	la
<i>Ophioglossum vulgatum</i> (Adder's-tongue)	vr	o
<i>*Orchis mascula</i> (Early-purple Orchid)	-	r
<i>Phleum cf. bertolonii</i> (Smaller Cat's-tail)	o	o
<i>Plantago lanceolata</i> (Ribwort Plantain)	-	r
<i>Poa annua</i> (Annual Meadow-grass)	-	vr
<i>Poa pratensis</i> (Smooth Meadow-grass)	f	f
<i>Poa trivialis</i> (Rough Meadow-grass)	o	o
<i>Potentilla reptans</i> (Creeping Cinquefoil)	r	r
<i>*Potentilla sterilis</i> (Barren Strawberry)	r	r
<i>*Primula vulgaris</i> (Primrose)	r	lf
<i>Prunella vulgaris</i> (Selfheal)	-	o
<i>Pulicaria dysenterica</i> (Common Fleabane)	vr	-
<i>Ranunculus acris</i> (Meadow Buttercup)	a	f
<i>Ranunculus bulbosus</i> (Bulbous Buttercup)	f	f
<i>Ranunculus repens</i> (Creeping Buttercup)	o	f
<i>Rumex acetosa</i> (Common Sorrel)	f	f
<i>Rumex crispus</i> (Curled Dock)	r	-
<i>*Rumex obtusifolius</i> (Broad-leaved Dock)	vr	-
<i>*Rumex sanguineus</i> (Wood Dock)	lf	lf
<i>Schedonorus arundinaceus</i> (Tall Fescue)	a	a
<i>Senecio jacobaea</i> (Common Ragwort)	-	vr
<i>Sonchus oleraceus</i> (Smooth Sow-thistle)	-	vr
<i>Stellaria graminea</i> (Lesser Stitchwort)	r	-
<i>*Stellaria media</i> (Common Chickweed)	r	r
<i>*Tamus communis</i> (Black Bryony)	-	vr
<i>Taraxacum</i> sect. <i>Ruderalia</i> (Common Dandelion)	o	o
<i>Trifolium dubium</i> (Lesser Trefoil)	f	o
<i>Trifolium pratense</i> (Red Clover)	a	a
<i>Trifolium repens</i> (White Clover)	f	f
<i>Trisetum flavescens</i> (Yellow Oat-grass)	f	f
<i>*Urtica dioica</i> (Common Nettle)	lf	lf
<i>*Veronica chamaedrys</i> (Germander Speedwell)	r	lf
<i>Veronica serpyllifolia</i> (Thyme-leaved Speedwell)	o	o
<i>Vicia cracca</i> (Tufted Vetch)	r	o
<i>*Vicia sepium</i> (Bush Vetch)	r	r
<i>Viola hirta</i> (Hairy Violet)	-	r
<i>*Viola odorata</i> (Sweet Violet)	-	r
<i>*Viola riviniana</i> (Common Dog-violet)	r	lf
c) Bryophytes		
<i>Brachythecium rutabulum</i>	a	f

Table 6.3.2. Plant species recorded from woodlands. Column 1 – Target Notes 277d and 277i; column 2 – Target Note 277f; column 3 – Target Note 277j.

Species	277d & ie	277fl	277j
a) Trees, shrubs and climbers			
<i>Acer campestre</i> (Field Maple)	f	o	o
<i>Carpinus betulus</i> (Hornbeam)	-	a	-
<i>Cornus sanguinea</i> (Dogwood)	o	-	-
<i>Corylus avellana</i> (Hazel)	o	o	o
<i>Crataegus monogyna</i> (Hawthorn)	f	f	a
<i>Daphne laureola</i> (Spurge-laurel)	r	vr	r
<i>Euonymus europaeus</i> (Spindle)	o	r	o
<i>Fraxinus excelsior</i> (Ash)	a	f	f
<i>Hedera helix</i> (Ivy)	r	-	r
<i>Ilex aquifolium</i> (Holly)	r	r	r
<i>Ligustrum vulgare</i> (Wild Privet)	r	o	r
<i>Lonicera periclymenum</i> (Honeysuckle)	r	o	o
<i>Picea sitchensis</i> (Sitka Spruce)	r	-	-
<i>Prunus avium</i> (Wild Cherry)	r	-	-
<i>Prunus spinosa</i> (Blackthorn)	f	f	f
<i>Quercus robur</i> (Pedunculate Oak)	a	a	d
<i>Rosa arvensis</i> (Field-rose)	-	-	r
<i>Rosa canina</i> (Dog-rose)	o	-	o
<i>Rubus fruticosus</i> agg. (Bramble)	f	la	o
<i>Sambucus nigra</i> (Elder)	o	o	-
<i>Sorbus torminalis</i> (Wild Service-tree)	-	-	vr
<i>Thuja plicata</i> (Western Red-cedar)	r	-	-
b) Herbs and ferns			
<i>Agrostis capillaris</i> (Common Bent)	r	o	o
<i>Agrostis stolonifera</i> (Creeping Bent)	-	r	-
<i>Ajuga reptans</i> (Bugle)	o	-	-
<i>Alliaria petiolata</i> (Garlic Mustard)	r	r	r
<i>Anemone nemorosa</i> (Wood Anemone)	f	o	f
<i>Anthoxanthum odoratum</i> (Sweet Vernal-grass)	r	r	r
<i>Anthriscus sylvestris</i> (Cow Parsley)	o	-	a
<i>Arctium minus</i> agg. (Lesser Burdock)	r	-	-
<i>Arum maculatum</i> (Lords-and-Ladies)	f	f	f
<i>Brachypodium sylvaticum</i> (False Brome)	f	f	a
<i>Carex remota</i> (Remote Sedge)	r	-	-
<i>Carex sylvatica</i> (Wood-sedge)	o	-	-
<i>Cerastium fontanum</i> (Common Mouse-ear)	-	r	-
<i>Chaerophyllum temulum</i> (Rough Chervil)	r	-	-
<i>Circaea lutetiana</i> (Enchanter's-nightshade)	o	-	-
<i>Dactylis glomerata</i> (Cock's-foot)	r	o	r
<i>Dryopteris dilatata</i> (Broad Buckler-fern)	r	-	-
<i>Dryopteris filix-mas</i> (Male-fern)	o	-	-
<i>Euphorbia amygdaloides</i> (Wood Spurge)	o	-	r
<i>Festuca rubra</i> (Red Fescue)	r	-	-
<i>Ficaria verna</i> (Lesser Celandine)	f	o	o
<i>Galium aparine</i> (Cleavers)	o	f	r
<i>Geum urbanum</i> (Wood Avens)	f	f	f
<i>Glechoma hederacea</i> (Ground-ivy)	o	o	o

<i>Hyacinthoides non-scripta</i> (Bluebell)	a	a	a
<i>Iris foetidissima</i> (Stinking Iris)	r	-	-
<i>Lamiastrum galeobdolon</i> (Yellow Archangel)	r	-	-
<i>Lapsana communis</i> (Nipplewort)	r	-	r
<i>Mercurialis perennis</i> (Dog's Mercury)	a	a	d
<i>Moehringia trinervia</i> (Three-nerved Sandwort)	-	o	
<i>Orchis mascula</i> (Early-purple Orchid)	r	r	
<i>Phyllitis scolopendrium</i> (Hart's-tongue)	vr	-	
<i>Poa trivialis</i> (Rough Meadow-grass)	f	a	f
<i>Polystichum setiferum</i> (Soft Shield-fern)	o	-	
<i>Potentilla sterilis</i> (Barren Strawberry)	o	r	r
<i>Primula vulgaris</i> (Primrose)	f	-	f
<i>Ranunculus acris</i> (Meadow Buttercup)	-	r	
<i>Ranunculus bulbosus</i> (Bulbous Buttercup)	-	vr	
<i>Rumex sanguineus</i> (Wood Dock)	f	f	f
<i>Scrophularia nodosa</i> (Common Figwort)	vr	-	
<i>Stachys sylvatica</i> (Hedge Woundwort)	r	-	vr
<i>Stellaria holostea</i> (Greater Stitchwort)	o	r	o
<i>Stellaria media</i> (Common Chickweed)	-	r	
<i>Tamus communis</i> (Black Bryony)	-	r	
<i>Taraxacum</i> sect. <i>Ruderalia</i> (Common Dandelion)	-	-	vr
<i>Urtica dioica</i> (Common Nettle)	o	o	o
<i>Veronica chamaedrys</i> (Germander Speedwell)	o	r	
<i>Veronica montana</i> (Wood Speedwell)	r	-	
<i>Vicia sepium</i> (Bush Vetch)	-	-	r
<i>Viola odorata</i> (Sweet Violet)	o	-	
<i>Viola reichenbachiana</i> (Early Dog-violet)	f	o	o
<i>Viola riviniana</i> (Common Dog-violet)	f	f	f
c) Bryophytes			
<i>Atrichum undulatum</i>	o	r	-
<i>Brachythecium rutabulum</i>	f	f	o
<i>Bryum capillare</i>	-	-	r
epiphytic lichens	f	-	-
<i>Fissidens</i> species	o	o	r
<i>Hypnum andoi</i>	-	f	f
<i>Hypnum cupressiforme</i>	o	-	o
<i>Isoetecium myosuroides</i>	o	-	-
<i>Kindbergia praelonga</i>	f	f	f
<i>Mnium hornum</i>	o	-	-
<i>Thamnum alopecurum</i>	r	-	-

6.4 Hedgerow Sheets

Hedge Number: STATUS:		271 Important			
SCHEDULE 3 WOODY SPECIES		In whole hedge	In 30 m sample stretches		
			XPt	2	3
<i>Acer campestre</i> (Field Maple)		✓	-	✓	-
<i>Cornus sanguinea</i> (Dogwood)		✓	-	-	-
<i>Crataegus monogyna</i> (Hawthorn)		✓	✓ (9%)	✓	-
<i>Euonymus europaeus</i> (Spindle)		✓	-	-	✓
<i>Prunus spinosa</i> (Blackthorn)		✓	✓ (60%)	✓	✓
<i>Quercus robur</i> (Pedunculate Oak)		✓	✓ (30%)	✓	✓
<i>Rosa canina</i> (Dog-rose)		✓	✓ (1%)	✓	✓
<i>Salix cinerea</i> (Grey Willow)		✓	-	✓	-
Total - Schedule 3 species:		8	4	6	4
OTHER WOODY SPECIES					
None		-	-	-	-
Total - All Woody Species:		8	4	6	4
FEATURES					
Supporting bank or wall:		✓			
Less than 10% gaps:		✓			
Standard trees:		✓			
Ditch for >50% of hedgerow length:		✓			
Parallel hedge within 15m:		-			
Four or more connection points:		✓ (4)			
Connections: 4 hedge(s), 0 ponds(s) and 0 wood(s) = (4) points					
Three or more Schedule 2 species:		✓ (3)			
Schedule 2 Species: <i>Arum maculatum</i> , <i>Brachypodium sylvaticum</i> , <i>Primula vulgaris</i>					
PHASE 1 DESCRIPTION					
A hedge comprising a line of <i>Quercus robur</i> (Pedunculate Oak) trees about 15 m tall over a shrub-layer of <i>Prunus spinosa</i> (Blackthorn) with <i>Acer campestre</i> (Field Maple) and <i>Crataegus monogyna</i> (Hawthorn). The field-layer is fairly sparse, though there are scattered plants of <i>Arum maculatum</i> (Lords-and-Ladies), <i>Iris foetidissima</i> (Stinking Iris) and <i>Primula vulgaris</i> (Primrose). There is a dry ditch along the east side.					
CONCLUSION					
Average Number of Schedule 3 Species per 30m Stretch:		4.67			
Number of Features:		6			
Special Qualifying Species:		0			
Threshold Altering Factors:		1			

Hedge Number:		275			
STATUS:		Important			
SCHEDULE 3 WOODY SPECIES		In whole hedge	In 30 m sample stretches		
			XPt	2	3
<i>Acer campestre</i> (Field Maple)		✓	-	-	-
<i>Cornus sanguinea</i> (Dogwood)		✓	✓ (10%)	✓	-
<i>Crataegus monogyna</i> (Hawthorn)		✓	✓ (2%)	✓	✓
<i>Daphne laureola</i> (Spurge-laurel)		✓	-	-	-
<i>Euonymus europaeus</i> (Spindle)		✓	-	✓	-
<i>Fraxinus excelsior</i> (Ash)		✓	✓ (2%)	-	-
<i>Ilex aquifolium</i> (Holly)		✓	-	-	-
<i>Ligustrum vulgare</i> (Wild Privet)		✓	-	✓	-
<i>Prunus spinosa</i> (Blackthorn)		✓	✓ (75%)	✓	✓
<i>Pyrus pyraeaster</i> (Wild Pear)		✓	✓ (1%)	-	-
<i>Quercus robur</i> (Pedunculate Oak)		✓	✓ (5%)	✓	-
<i>Rosa canina</i> (Dog-rose)		✓	✓ (5%)	✓	✓
<i>Salix cinerea</i> (Grey Willow)		✓	-	✓	-
<i>Sambucus nigra</i> (Elder)		✓	-	-	-
Total - Schedule 3 species:		14	7	8	3
OTHER WOODY SPECIES					
None		-	-	-	-
Total - All Woody Species:		14	7	8	3

FEATURES*Supporting bank or wall:* -*Less than 10% gaps:* -*Standard trees:* ✓*Ditch for >50% of hedgerow length:* -*Parallel hedge within 15m:* -*Four or more connection points:* -(2)*Connections:* 2 hedge(s), 0 ponds(s) and 0 wood(s) = (2) points*Three or more Schedule 2 species:* ✓(5)

Schedule 2 Species: *Arum maculatum*, *Brachypodium sylvaticum*, *Hyacinthoides non-scripta*,
Mercurialis perennis, *Viola riviniana*

PHASE 1 DESCRIPTION

A dense, wide hedge about 5-6 m high and 6-10 m wide with a few mature *Quercus robur* (Pedunculate Oak) standards. It largely consists of *Prunus spinosa* (Blackthorn) suckers that have outgrown the original hedge – a line of leggy *Crataegus monogyna* (Hawthorn) shrubs along the north edge – together with other species at lower abundances including *Cornus sanguinea* (Dogwood), *Fraxinus excelsior* (Ash), *Ligustrum vulgare* (Wild Privet), *Rosa canina* (Dog-rose) and *Salix cinerea* (Grey Willow). The field-layer is generally sparse but with a scatter of grasses, *Arum maculatum* (Lords-and-Ladies), *Mercurialis perennis* (Dog's Mercury), *Rumex sanguineus* (Wood Dock), *Urtica dioica* (Common Nettle) and *Viola riviniana* (Common Dog-violet).

CONCLUSION*Average Number of Schedule 3 Species per 30m Stretch:* 6*Number of Features:* 2*Special Qualifying Species:* 0*Threshold Altering Factors:* 0

Hedge Number:	277a			
STATUS:	Important			
SCHEDULE 3 WOODY SPECIES	In whole hedge	In 30 m sample stretches		
		1	2	3
<i>Acer campestre</i> (Field Maple)	✓	✓(5%)	✓	-
<i>Betula pendula</i> (Silver Birch)	✓	-	-	-
<i>Carpinus betulus</i> (Hornbeam)	✓	✓(10%)	-	-
<i>Cornus sanguinea</i> (Dogwood)	✓	-	✓	-
<i>Corylus avellana</i> (Hazel)	✓	✓(2%)	✓	-
<i>Crataegus monogyna</i> (Hawthorn)	✓	✓(25%)	✓	-
<i>Daphne laureola</i> (Spurge-laurel)	✓	-	-	-
<i>Euonymus europaeus</i> (Spindle)	✓	-	✓	-
<i>Fraxinus excelsior</i> (Ash)	✓	✓(20%)	✓	-
<i>Ligustrum vulgare</i> (Wild Privet)	✓	-	✓	-
<i>Prunus spinosa</i> (Blackthorn)	✓	✓(25%)	✓	-
<i>Quercus robur</i> (Pedunculate Oak)	✓	✓(10%)	✓	-
<i>Rosa canina</i> (Dog-rose)	✓	-	-	-
<i>Sambucus nigra</i> (Elder)	✓	-	-	-
<i>Ulmus procera</i> (English Elm)	✓	✓(3%)	-	-
Total - Schedule 3 species:	15	8	9	-
OTHER WOODY SPECIES				
<i>Acer pseudoplatanus</i> (Sycamore)	✓	✓(10%)	✓	-
Total - All Woody Species:	16	9	10	-
FEATURES				
Supporting bank or wall:	-			
Less than 10% gaps:	✓			
Standard trees:	✓			
Ditch for >50% of hedgerow length:	-			
Parallel hedge within 15m:	✓			
Four or more connection points:	✓ (4)			
Connections:	2 hedge(s), 0 ponds(s) and 1 wood(s) = (4) points			
Three or more Schedule 2 species:	✓(11)			
Schedule 2 Species:	<i>Anemone nemorosa</i> , <i>Arum maculatum</i> , <i>Brachypodium sylvaticum</i> , <i>Geum urbanum</i> , <i>Hyacinthoides non-scripta</i> , <i>Lamium galeobdolon</i> , <i>Mercurialis perennis</i> , <i>Primula vulgaris</i> , <i>Ranunculus auricomus</i> , <i>Viola reichenbachiana</i> , <i>Viola riviniana</i>			
PHASE 1 DESCRIPTION				
A hedge or narrow strip of woodland comprising mostly semi-mature <i>Fraxinus excelsior</i> (Ash) trees over a shrub-layer including <i>Acer campestre</i> (Field Maple), <i>Corylus avellana</i> (Hazel) and <i>Prunus spinosa</i> (Blackthorn). The field-layer is a carpet of <i>Hedera helix</i> (Ivy) and <i>Mercurialis perennis</i> (Dog’s Mercury) with some <i>Brachypodium sylvaticum</i> (False Brome) and <i>Rubus fruticosus</i> agg. (Bramble). It is referable to the NVC type W8d <i>Fraxinus excelsior</i>-<i>Acer campestre</i>-<i>Mercurialis perennis</i> woodland, <i>Hedera helix</i> sub-community.				
CONCLUSION				
Average Number of Schedule 3 Species per 30m Stretch:	8.5			
Number of Features:	5			
Special Qualifying Species:	0			
Threshold Altering Factors:	0			

Hedge Number:		277c			
STATUS:		Important			
SCHEDULE 3 WOODY SPECIES		In whole hedge	In 30 m sample stretches		
			1	2	3
<i>Acer campestre</i> (Field Maple)		✓	-	-	-
<i>Crataegus monogyna</i> (Hawthorn)		✓	✓ (40%)	-	-
<i>Euonymus europaeus</i> (Spindle)		✓	✓ (5%)	-	-
<i>Fraxinus excelsior</i> (Ash)		✓	✓ (20%)	-	-
<i>Malus domestica</i> (Apple)		✓	✓ (5%)	-	-
<i>Prunus spinosa</i> (Blackthorn)		✓	✓ (30%)	-	-
<i>Quercus robur</i> (Pedunculate Oak)		✓	-	-	-
<i>Rosa canina</i> (Dog-rose)		✓	-	-	-
<i>Sambucus nigra</i> (Elder)		✓	-	-	-
Total - Schedule 3 species:		9	5	-	-
OTHER WOODY SPECIES					
<i>Acer pseudoplatanus</i> (Sycamore)		✓	-	-	-
Total - All Woody Species:		10	5	-	-
FEATURES					
Supporting bank or wall:		✓			
Less than 10% gaps:		✓			
Standard trees:		✓			
Ditch for >50% of hedgerow length:		✓			
Parallel hedge within 15m:		-			
Four or more connection points:		✓ (6)			
Connections: 2 hedge(s), 1 ponds(s) and 1 wood(s) = (6) points					
Three or more Schedule 2 species:		✓ (10)			
Schedule 2 Species: <i>Ajuga reptans</i> , <i>Anemone nemorosa</i> , <i>Arum maculatum</i> , <i>Brachypodium sylvaticum</i> , <i>Carex remota</i> , <i>Geum urbanum</i> , <i>Hyacinthoides non-scripta</i> , <i>Mercurialis perennis</i> , <i>Primula vulgaris</i> , <i>Viola odorata</i>					
PHASE 1 DESCRIPTION					
A hedge comprising a line of young <i>Fraxinus excelsior</i> (Ash) trees about 15 m tall over a shrub-layer of mostly <i>Crataegus monogyna</i> (Hawthorn) and <i>Prunus spinosa</i> (Blackthorn). There is a bank and a shallow, dry ditch. The field-layer consists of <i>Brachypodium sylvaticum</i> (False Brome) and other grasses together with scattered woodland forbs including <i>Mercurialis perennis</i> (Dog's Mercury).					
CONCLUSION					
Average Number of Schedule 3 Species per 30m Stretch:		5			
Number of Features:		6			
Special Qualifying Species:		0			
Threshold Altering Factors:		0			

Hedge Number:		277g			
STATUS:		Important			
SCHEDULE 3 WOODY SPECIES		In whole hedge	In 30 m sample stretches		
			1	2	3
<i>Acer campestre</i> (Field Maple)		✓	✓(3%)	-	-
<i>Cornus sanguinea</i> (Dogwood)		✓	✓(10%)	-	-
<i>Crataegus laevigata</i> (Midland Hawthorn)		✓	-	-	-
<i>Crataegus monogyna</i> (Hawthorn)		✓	✓(35%)	-	-
<i>Euonymus europaeus</i> (Spindle)		✓	✓(2%)	-	-
<i>Fraxinus excelsior</i> (Ash)		✓	✓(10%)	-	-
<i>Ligustrum vulgare</i> (Wild Privet)		✓	-	-	-
<i>Prunus spinosa</i> (Blackthorn)		✓	✓(30%)	-	-
<i>Quercus robur</i> (Pedunculate Oak)		✓	✓(10%)	-	-
<i>Rosa canina</i> (Dog-rose)		✓	-	-	-
Total - Schedule 3 species:		10	7	-	-
OTHER WOODY SPECIES					
None			-	-	-
Total - All Woody Species:		10	7	-	-
FEATURES					
Supporting bank or wall:		-			
Less than 10% gaps:		✓			
Standard trees:		✓			
Ditch for >50% of hedgerow length:		✓			
Parallel hedge within 15m:		-			
Four or more connection points:		-(4)			
Connections: 0 hedge(s), 0 ponds(s) and 2 wood(s) = (4) points					
Three or more Schedule 2 species:		✓(7)			
Schedule 2 Species: <i>Anemone nemorosa</i> , <i>Arum maculatum</i> , <i>Brachypodium sylvaticum</i> , <i>Hyacinthoides non-scripta</i> , <i>Lamium galeobdolon</i> , <i>Mercurialis perennis</i> , <i>Primula vulgaris</i>					
PHASE 1 DESCRIPTION					
A field hedge with a few <i>Quercus robur</i> (Pedunculate Oak) standards. The shrub-layer had been trimmed to about 1.9 m high and 1.7m wide and comprises <i>Crataegus monogyna</i> (Hawthorn) and <i>Prunus spinosa</i> (Blackthorn) with smaller amounts of <i>Acer campestre</i> (Field Maple), <i>Cornus sanguinea</i> (Dogwood), <i>Corylus avellana</i> (Hazel), <i>Ligustrum vulgare</i> (Wild Privet) and <i>Rosa canina</i> (Dog-rose). The field-layer is grazed by cattle and has patches of bare earth. Species recorded include <i>Brachypodium sylvaticum</i> (False Brome), <i>Geum urbanum</i> (Wood Avens), <i>Glechoma hederacea</i> (Ground-ivy) and <i>Mercurialis perennis</i> (Dog's Mercury).					
CONCLUSION					
Average Number of Schedule 3 Species per 30m Stretch:		7			
Number of Features:		5			
Special Qualifying Species:		0			
Threshold Altering Factors:		0			

Hedge Number:		277k			
STATUS:		Important			
SCHEDULE 3 WOODY SPECIES		In whole hedge	In 30 m sample stretches		
			1	2	3
<i>Acer campestre</i> (Field Maple)		✓	✓ (30%)	✓	-
<i>Corylus avellana</i> (Hazel)		✓	✓ (10%)	-	-
<i>Crataegus monogyna</i> (Hawthorn)		✓	✓ (25%)	✓	-
<i>Daphne laureola</i> (Spurge-laurel)		✓	-	-	-
<i>Fraxinus excelsior</i> (Ash)		✓	-	-	-
<i>Prunus spinosa</i> (Blackthorn)		✓	✓ (25%)	✓	-
<i>Quercus robur</i> (Pedunculate Oak)		✓	✓ (10%)	✓	-
<i>Rosa canina</i> (Dog-rose)		✓	-	✓	-
<i>Sambucus nigra</i> (Elder)		✓	-	✓	-
Total - Schedule 3 species:		9	5	6	-
OTHER WOODY SPECIES					
None			-	-	-
Total - All Woody Species:		9	5	6	-
FEATURES					
Supporting bank or wall:		✓			
Less than 10% gaps:		✓			
Standard trees:		✓			
Ditch for >50% of hedgerow length:		-			
Parallel hedge within 15m:		-			
Four or more connection points:		-(3)			
Connections: 1 hedge(s), 0 ponds(s) and 1 wood(s) = (3) points					
Three or more Schedule 2 species:		✓(11)			
Schedule 2 Species: <i>Anemone nemorosa</i> , <i>Arum maculatum</i> , <i>Brachypodium sylvaticum</i> , <i>Geum urbanum</i> , <i>Hyacinthoides non-scripta</i> , <i>Lamium galeobdolon</i> , <i>Mercurialis perennis</i> , <i>Primula vulgaris</i> , <i>Ranunculus auricomus</i> , <i>Viola reichenbachiana</i> , <i>Viola riviniana</i>					
PHASE 1 DESCRIPTION					
An overgrown hedge about 6m high and 5 m wide with taller <i>Quercus robur</i> (Pedunculate Oak) standards approaching 20 m in height. The main hedgerow shrubs are <i>Acer campestre</i> (Field Maple), <i>Crataegus monogyna</i> (Hawthorn) and <i>Prunus spinosa</i> (Blackthorn). The field-layer is dominated by woodland herbs, especially <i>Anemone nemorosa</i> (Wood Anemone), <i>Hyacinthoides non-scripta</i> (Bluebell) and <i>Mercurialis perennis</i> (Dog's Mercury), which are most abundant along the field edge to the north. Other field-layer species include <i>Lamium galeobdolon</i> (Yellow Archangel), <i>Ranunculus auricomus</i> (Goldilocks Buttercup) and <i>Viola riviniana</i> (Common Dog-violet). The west end of the hedge is wider and supports frequent mature <i>Quercus robur</i> (Pedunculate Oak) standards giving the hedge a similar character to the woodland strips described in <i>Target Notes 277f</i> and <i>277j</i> .					
CONCLUSION					
Average Number of Schedule 3 Species per 30m Stretch:		5.5			
Number of Features:		4			
Special Qualifying Species:		0			
Threshold Altering Factors:		0			

Hedge Number:		277p			
STATUS:		Not Important			
SCHEDULE 3 WOODY SPECIES		In whole hedge	In 30 m sample stretches		
			1	2	3
<i>Acer campestre</i> (Field Maple)		✓	-	-	-
<i>Crataegus monogyna</i> (Hawthorn)		✓	✓(95%)	-	-
<i>Fraxinus excelsior</i> (Ash)		✓	-	-	-
<i>Prunus spinosa</i> (Blackthorn)		✓	-	-	-
<i>Quercus robur</i> (Pedunculate Oak)		✓	-	-	-
<i>Rosa canina</i> (Dog-rose)		✓	✓(5%)	-	-
Total - Schedule 3 species:		6	2	-	-
OTHER WOODY SPECIES					
None			-	-	-
Total - All Woody Species:		6	2	-	-
FEATURES					
<i>Supporting bank or wall:</i>		-			
<i>Less than 10% gaps:</i>		✓			
<i>Standard trees:</i>		✓			
<i>Ditch for >50% of hedgerow length:</i>		✓			
<i>Parallel hedge within 15m:</i>		-			
<i>Four or more connection points:</i>		-(3)			
<i>Connections:</i> 1 hedge(s), 1 ponds(s) and 0 wood(s) = (3) points					
<i>Three or more Schedule 2 species:</i>		✓(5)			
<i>Schedule 2 Species:</i> <i>Ajuga reptans</i> , <i>Arum maculatum</i> , <i>Brachypodium sylvaticum</i> , <i>Dryopteris filix-mas</i> , <i>Viola riviniana</i>					
PHASE 1 DESCRIPTION					
An unmanaged hedge comprising leggy shrubs including <i>Acer campestre</i> (Field Maple), <i>Crataegus monogyna</i> (Hawthorn) and <i>Prunus spinosa</i> (Blackthorn) together with a few <i>Quercus robur</i> (Pedunculate Oak) trees and patches of <i>Rubus fruticosus</i> agg. (Bramble) scrub at the base.					
CONCLUSION					
<i>Average Number of Schedule 3 Species per 30m Stretch:</i>		2			
<i>Number of Features:</i>		4			
<i>Special Qualifying Species:</i>		0			
<i>Threshold Altering Factors:</i>		0			

Hedge Number:		277r			
STATUS:		Important			
SCHEDULE 3 WOODY SPECIES		In whole hedge	In 30 m sample stretches		
			1	2	3
<i>Acer campestre</i> (Field Maple)		✓	✓(5%)	-	-
<i>Cornus sanguinea</i> (Dogwood)		✓	✓(2%)	-	-
<i>Crataegus monogyna</i> (Hawthorn)		✓	✓(20%)	-	-
<i>Euonymus europaeus</i> (Spindle)		✓	✓(3%)	-	-
<i>Fraxinus excelsior</i> (Ash)		✓	✓(5%)	-	-
<i>Ilex aquifolium</i> (Holly)		✓	✓(5%)	-	-
<i>Prunus spinosa</i> (Blackthorn)		✓	✓(40%)	-	-
<i>Quercus robur</i> (Pedunculate Oak)		✓	✓(15%)	-	-
<i>Rosa canina</i> (Dog-rose)		✓	✓(5%)	-	-
Total - Schedule 3 species:		9	9	-	-
OTHER WOODY SPECIES					
None			-	-	-
Total - All Woody Species:		9	9	-	-
FEATURES					
Supporting bank or wall:		✓			
Less than 10% gaps:		✓			
Standard trees:		✓			
Ditch for >50% of hedgerow length:		-			
Parallel hedge within 15m:		-			
Four or more connection points:		-(3)			
Connections: 1 hedge(s), 0 ponds(s) and 1 wood(s) = (3) points					
Three or more Schedule 2 species:		✓(3)			
Schedule 2 Species: <i>Arum maculatum</i> , <i>Hyacinthoides non-scripta</i> , <i>Mercurialis perennis</i>					
PHASE 1 DESCRIPTION					
An overgrown hedge characterised by tall, mature <i>Quercus robur</i> (Pedunculate Oak) standards with a mixed shrub-layer including <i>Acer campestre</i> (Field Maple), <i>Crataegus monogyna</i> (Hawthorn), <i>Ilex aquifolium</i> (Holly), <i>Prunus spinosa</i> (Blackthorn) and <i>Rosa canina</i> (Dog-rose). The field-layer is dominated by <i>Mercurialis perennis</i> (Dog's Mercury) with <i>Brachypodium sylvaticum</i> (False Brome), <i>Hyacinthoides non-scripta</i> (Bluebell) and <i>Urtica dioica</i> (Common Nettle).					
CONCLUSION					
Average Number of Schedule 3 Species per 30m Stretch:		9			
Number of Features:		4			
Special Qualifying Species:		0			
Threshold Altering Factors:		0			

Hedge Number:		278			
STATUS:		Important			
SCHEDULE 3 WOODY SPECIES		In whole hedge	In 30 m sample stretches		
			XPt	2	3
<i>Acer campestre</i> (Field Maple)		✓	✓(9%)	-	-
<i>Crataegus laevigata</i> (Midland Hawthorn)		✓	✓(1%)	-	-
<i>Crataegus monogyna</i> (Hawthorn)		✓	✓(20%)	-	-
<i>Euonymus europaeus</i> (Spindle)		✓	✓(1%)	-	-
<i>Prunus spinosa</i> (Blackthorn)		✓	✓(59%)	-	-
<i>Quercus robur</i> (Pedunculate Oak)		✓	✓(9%)	-	-
<i>Rosa canina</i> (Dog-rose)		✓	✓(1%)	-	-
Total - Schedule 3 species:		7	7	0	0
OTHER WOODY SPECIES					
None		-	-	-	-
Total - All Woody Species:		7	7	0	0
FEATURES					
Supporting bank or wall:		✓			
Less than 10% gaps:		✓			
Standard trees:		✓			
Ditch for >50% of hedgerow length:		✓			
Parallel hedge within 15m:		-			
Four or more connection points:		✓ (4)			
Connections: 2 hedge(s), 0 ponds(s) and 1 wood(s) = (4) points					
Three or more Schedule 2 species:		-(1)			
Schedule 2 Species: <i>Ajuga reptans</i>					
PHASE 1 DESCRIPTION					
A field hedge trimmed to a height and width of about 2.5 m and comprising mainly <i>Crataegus monogyna</i> (Hawthorn) and <i>Prunus spinosa</i> (Blackthorn) with small amounts of <i>Quercus robur</i> (Pedunculate Oak) and <i>Rosa canina</i> (Dog-rose). The field-layer is sparse and there is a dry ditch along its east side.					
CONCLUSION					
Average Number of Schedule 3 Species per 30m Stretch:		7			
Number of Features:		5			
Special Qualifying Species:		0			
Threshold Altering Factors:		1			

APPENDIX C – BS5837 TREE SURVEY DATA

Group Data - Substation Area

Group Number	Dominant Species	Lesser / Individual Species	Diameter at 1.5m (cms)	Ave Height (m)	Age	Average Spread (m)	Physiological Condition	Structural Condition	Condition/Comments	ULE (years)	BS Category
1	Prunus spinosa		10	4	MA	6	Good	Multi stemmed basal	Scrub	10-20	C2
2	Prunus spinosa Acer campestre Fraxinus excelsior Crataegus monogyna		15	6	M	4	Fair	Multi stemmed basal	Scrubby lapsed hedgerow	10-20	C2
3	Crataegus monogyna Quercus robur		15	2	MA	3	Good	Multi stemmed basal	Hedgerow	10-20	C2
4	Crataegus monogyna Prunus spinosa		15	2	MA	3	Good	Multi stemmed basal	Hedgerow	10-20	C2

Group Number	Dominant Species	Lesser / Individual Species	Diameter at 1.5m (cms)	Ave Height (m)	Age	Average Spread (m)	Physiological Condition	Structural Condition	Condition/Comments	ULE (years)	BS Category
5	Prunus spinosa Crataegus monogyna Quercus robur		15	4	MA	4	Fair	Multi stemmed basal	Lapsed hedgerow and scrubby woodland edge	10-20	C2
6	Salix sp Fraxinus excelsior Crataegus monogyna Prunus spinosa	Sambucus nigra	15	6	M	4	Fair	Multi stemmed basal	lapsed hedgerow in the scrubby woodland edge	10-20	C2
7	Fraxinus excelsior Abies species		30	18	MA	8	Good	Single stemmed species	Corner of woodland	20-40	B2
8	Crataegus monogyna Prunus spinosa		10	4	MA	3	Good	Multi stemmed basal	Hedgerow	10-20	C2
9	Crataegus monogyna Prunus spinosa Fraxinus excelsior		15	9	M	4	Good	Multi stemmed basal	Lapsed hedgerow with old coppice ash amongst it	20-40	B2

Group Number	Dominant Species	Lesser / Individual Species	Diameter at 1.5m (cms)	Ave Height (m)	Age	Average Spread (m)	Physiological Condition	Structural Condition	Condition/Comments	ULE (years)	BS Category
10	Prunus spinosa Fraxinus excelsior Crataegus monogyna Acer campestre		20	6	M	4	Good	Multi stemmed basal	Hedgerow with old coppice ash	20-40	B2
11	Prunus spinosa Crataegus monogyna		15	2	M	4	Fair	Multi stemmed basal	Hedgerow	10-20	C2
12	Prunus spinosa Acer campestre		15	4	MA	4	Good	Multi stemmed basal	Hedge	10-20	C2
13	Fraxinus excelsior Crataegus monogyna Prunus spinosa Sorbus sp.	Aesculus hippocasta	25	9	MA	8	Good	Mixed structures, mixed group of trees	None	20-40	B2

Group Number	Dominant Species	Lesser / Individual Species	Diameter at 1.5m (cms)	Ave Height (m)	Age	Average Spread (m)	Physiological Condition	Structural Condition	Condition/Comments	ULE (years)	BS Category
14	Fraxinus excelsior Aesculus hippocastanum Quercus robur Crataegus monogyna		40	18	M	12	Good	Mixed structural condition. Some of the trees have weak structures and basal decay	Woodland belt edge group.	20-40	B2
15	Crataegus monogyna		15	4	M	4	Good	Multi stemmed basal	lapsed hedgerow	10-20	C2
16	Quercus robur Salix sp. Crataegus monogyna		30	15	MA	10	Fair	Mixed form	Collapsed Willows present in group	20-40	B2
17	Quercus robur Crataegus monogyna Prunus spinosa		50	16	M	12	Fair	Some single stemmed Oaks with a hedgerow in between individual trees. Track running under the canopies of trees to the east.	Many of the trees are in decline, with Inonotus dryadeus and Ganoderma decay fungi common on the Oaks amongst the group	20-40	B2

Group Number	Dominant Species	Lesser / Individual Species	Diameter at 1.5m (cms)	Ave Height (m)	Age	Average Spread (m)	Physiological Condition	Structural Condition	Condition/Comments	ULE (years)	BS Category
18	Acer campestre Sorbus sp Quercus robur		25	8	MA	6	Fair	Mixed group and a lapsed hedgerow	None	20-40	B2
19	Prunus spinosa Ulmus sp. Fraxinus excelsior Quercus robur	Prunus laurocerasus	20	6	MA	4	Fair	Hedgerow with sporadic young trees	None	20-40	B2
20	Populus nigra var. Crataegus monogyna		35	16	M	6	Poor	Single stemmed species trees with scrub beneath them	None	10-20	C2
21	Fraxinus excelsior Ulmus sp Salix sp		30	12	MA	6	Good	Single stemmed species tree	None	20-40	B2
22	Fraxinus excelsior Populus nigra var. Salix sp.		40	20	MA	10	Fair	Mixed form group	None	20-40	B2

Group Number	Dominant Species	Lesser / Individual Species	Diameter at 1.5m (cms)	Ave Height (m)	Age	Average Spread (m)	Physiological Condition	Structural Condition	Condition/Comments	ULE (years)	BS Category
23	Salix sp.	Carpinus betulus	30	12	MA	8	Good	Mixed form group	None	20-40	B2
	Fraxinus excelsior										
	Crataegus monogyna										
	Aesculus hippocastanu										
24	Quercus robur		15	8	MA	4	Fair	Mixed form group	None	10-20	C2
	Salix sp.										
	Crataegus monogyna										

Group Data - Access area

Group Number	Dominant Species	Lesser / Individual Species	Diameter at 1.5m (cms)	Ave Height (m)	Age	Average Spread (m)	Physiological Condition	Structural Condition	Condition/Comments	ULE (years)	BS Category
1	Fraxinus excelsior Crataegus monogyna Prunus spinosa Acer pseudoplatanus		30	16	MA	8	Good	Mixed structural condition	Lapsed hedgerow at the foot of the group	20-40	B2
2	Fraxinus excelsior Quercus robur Crataegus monogyna Corylus avellana		30	18	MA	8	Good	Multi stemmed	Many multi stemmed trees along the road edge and lapsed coppice	20-40	B2
3	Fraxinus excelsior Acer campestre Acer pseudoplatanus		40	16	M	8	Good	Multi stemmed basal	Previously coppiced and lapsed hedgerow	20-40	B2
4	Fraxinus excelsior Prunus spinosa Quercus robur		35	12	MA	6	Good	Multi stemmed basal	Coppiced hedgerow with some single stemmed trees	40+	B2

Group Number	Dominant Species	Lesser / Individual Species	Diameter at 1.5m (cms)	Ave Height (m)	Age	Average Spread (m)	Physiological Condition	Structural Condition	Condition/Comments	ULE (years)	BS Category
5	Quercus robur Fraxinus excelsior		50	20	M	10	Good	Single stemmed species	Edge of woodland with hawthorn hedge along the fence line boundary	40+	A2
6	Fraxinus excelsior Acer campestre Crataegus monogyna		30	14	MA	6	Good	Single stemmed species and multi stemmed basal	Woodland edge group	20-40	B2
7	Crataegus monogyna Fraxinus excelsior Quercus robur Prunus spinosa		15	8	MA	3	Good	Some Single stemmed species and some multi stemmed species	Hedgerow and individual trees forming a boundary feature	20-40	C2
8	Acer campestre Prunus spinosa Crataegus monogyna		15	4	M	3	Good	Multi stemmed hedgerow	None	10-20	C2
9	Quercus robur Fraxinus excelsior Acer campestre Carpinus betulus		50	17	MA	14	Good	Mixed structural condition	Screen belt not recorded on topographical survey. Mature Oaks are located throughout the maturing tree group	40+	A2

Group Number	Dominant Species	Lesser / Individual Species	Diameter at 1.5m (cms)	Ave Height (m)	Age	Average Spread (m)	Physiological Condition	Structural Condition	Condition/Comments	ULE (years)	BS Category
10	Fraxinus excelsior Quercus robur Acer campestre		30	10	M	6	Fair	Single stemmed species	Small group that includes a veteran ash the is squat in form	20-40	B2
11	Crataegus monogyna Ilex aquifolium Quercus robur Fraxinus excelsior		35	15	MA	8	Fair	Multi stemmed basal	Lapsed hedgerow on the edge and a shelter belt of trees	20-40	B2
12	Quercus robur Crataegus monogyna Prunus spinosa Acer campestre		25	5	M	4	Fair	Mixed form structural condition	Hedgerow with a few small trees located in it.	20-40	B2
13	Acer campestre Ilex aquifolium Crataegus monogyna Fraxinus excelsior	Prunus spinosa	15	8	MA	4	Fair	Single stemmed species	None	20-40	C2

Tree Survey Data - Substation Area

October 2012

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
1	Quercus robur	59	16	4	8	7	7	3	M	Good	Single stemmed species	40+	A1	None
2	Quercus robur	33	12	4	5	5	2	4	MA	Good	Single stemmed species	40+	B1	Asymmetrical crown
3	Quercus robur	30*	10	3	4	4	4	3	MA	Good	Single stemmed species	40+	A1	Restricted visual tree assessment
4	Quercus robur	55	10	4	6	3	6	3	M	Fair	Single stemmed species	40+	B1	Ivy covered tree with a squat crown
5	Fraxinus excelsior	38	13	4	5	4	6	3	MA	Good	Single stemmed species	40+	B1	Wavy stem
6	Quercus robur	61	12	4	8	3	5	2	M	Fair	Single stemmed species	20-40	B1	Moderate deadwood
7	Quercus robur	42	12	4	6	4	2	3	MA	Good	Single stemmed species	40+	B1	Asymmetrical crown

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
8	Fraxinus excelsior	60*	13	4	4	4	5	4	M	Good	Multi stemmed basal	20-40	B1	Coppice regeneration, restricted visual tree assessment
9	Quercus robur	72	16	7	7	7	9	4	M	Fair	Single stemmed species	40+	A1	None
10	Quercus robur	40*	12	4	5	4	5	4	MA	Fair	Multi stemmed basal	20-40	B1	Restricted visual tree assessment
11	Fraxinus excelsior	35	12	5	4	4	5	3	MA	Good	Single stemmed species	40+	A1	None
12	Quercus robur	56	11	6	6	4	5	3	M	Fair	Single stemmed species	40+	A1	None
13	Quercus robur	61	15	4	5	4	5	3	M	Poor	Single stemmed species	10-20	C1	Tree declining in health with thin upper crown and dieback
14	Fraxinus excelsior	35*	8	3	3	4	4	3	MA	Good	Multi stemmed basal with tight forks and included bark unions	10-20	C1	Weak branch unions
15	Quercus robur	51	8	3	5	4	4	4	M	Fair	Single stemmed species	20-40	B1	Squat tree with low vitality

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
16	Quercus robur	74	10	5	5	5	5	4	M	Fair	Bifurcate at 1.8m	20-40	B1	Thin crown with moderate deadwood. The tree has previously been reduced beneath the power lines
17	Quercus robur	48	12	5	5	5	5	3	M	Fair	Single stemmed species	10-20	C1	Tree has low vitality
18	Quercus robur	45	10	3	4	3	6	3	M	Fair	Single stemmed species	20-40	B1	The tree is growing at an angle and is ivy covered
19	Quercus robur	53	10	2	4	4	6	4	M	Fair	Trifurcate at 2m	20-40	B1	Ivy covered tree with low vitality
20	Quercus robur	36	10	4	2	4	4	3	MA	Fair	Single stemmed species	20-40	B1	Low vitality
21	Quercus robur	64	14	7	4	6	6	4	M	Fair	Single stemmed species	20-40	B1	Reduced vitality
22	Quercus robur	69	15	5	5	6	5	4	M	Fair	Single stemmed species	20-40	B1	Ivy covered restricted visual tree assessment and a thinning crown

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
23	Fraxinus excelsior	28	8	3	3	3	3	4	MA	Good	Single stemmed species	40+	A1	None
24	Quercus robur	56	10	7	6	6	4	4	M	Fair	Single stemmed species	20-40	B1	Tree declining in health with moderate deadwood
25	Sorbus torminalis	40*	10	5	4	3	3	2	M	Fair	Single stemmed species	20-40	B1	Ivy covered, restricted visual tree assessment
26	Quercus robur	75	16	5	7	6	7	4	M	Good	Single stemmed species, major stem wound to 1m above ground level, possible lightning strike in past, partially occluded	20-40	B1	Major deadwood over the pond area with bat potential
27	Quercus robur	31	7	2	1	3	3	4	MA	Good	Single stemmed species	40+	B1	None
28	Quercus robur	33	7	2	4	4	4	4	MA	Good	Single stemmed species	40+	A1	None
29	Quercus robur	32	9	2	4	4	4	3	MA	Fair	Single stemmed species	10-20	C1	Tree reduced heavily to the north due to the proximity to power lines

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
30	Quercus robur	64	12	5	7	5	5	3	M	Fair	Single stemmed species	20-40	B1	Ivy covered tree reduced in the past
31	Quercus robur	62	13	4	5	7	6	4	M	Good	Single stemmed species	40+	A1	None
32	Quercus robur	53	13	4	4	7	6	2	M	Good	Single stemmed species	40+	A1	None
33	Quercus robur	56	13	3	3	4	3	3	M	Fair	Single stemmed species with branches recently lifted	10-20	C1	Basal cavity and Inonotus dryadeus noted
34	Quercus robur	64	13	6	5	5	5	3	M	Fair	Single stemmed species	20-40	B1	Some decline in the crown
35	Quercus robur	74	13	5	5	6	6	2	M	Fair	Single stemmed species with basal cavity	20-40	B1	Dense ivy and thinning crown
36	Quercus robur	70	15	5	6	6	6	2	M	Good	Single stemmed species with basal swelling of the stem possibly indicating internal decay	20-40	B1	None
37	Quercus robur	58	13	4	4	6	7	4	M	Poor	Single stemmed species	10-20	C1	Inonotus dryadeus at the base of the thin crown

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
38	Quercus robur	45*	13	3	2	3	3	4	M	Poor	Single stemmed species, Inonotus dryadeus at the base of stem	<10	R	Very thin crown and tree in poor health
39	Quercus robur	70	14	5	7	6	6	4	M	Poor	Single stemmed species	<10	R	Thin crown which is in decline
40	Quercus robur	39	13	2	3	3	3	5	MA	Fair	Single stemmed species	10-20	C1	Thin crown with basal cavity
41	Quercus robur	51	13	4	5	6	6	5	M	Poor	Single stemmed species, Inonotus dryadeus at the base of the stem	10-20	C1	Thin crown with a basal cavity
42	Quercus robur	54	13	4	2	4	6	5	M	Fair	Single stemmed species	10-20	C1	Thin crown
43	Quercus robur	126	18	6	10	10	8	3	M	Good	Single stemmed species, previous limb failure and moderate deadwood	40+	A3	Woodpecker holes in the upper crown.
44	Quercus robur	77	15	7	7	7	7	2	M	Good	Single stemmed species	40+	A1	None
45	Quercus robur	32	10	3	2	3	3	5	MA	Good	Single stemmed species	20-40	B1	Temporary road surface laid over root plate

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
46	Quercus robur	46	10	4	4	3	4	3	MA	Good	Single stemmed species	20-40	B1	Temporary road surface over the root plate
47	Quercus robur	51	14	6	4	7	6	2	MA	Good	Single stemmed species	40+	A1	None
48	Quercus robur	34	10	3	4	2	6	3	MA	Good	Single stemmed species, asymmetrical crown	20-40	B1	None
49	Quercus robur	70*	14	7	7	6	7	5	M	Fair	Single stemmed species, ivy covered, restricted visual tree assessment	10-20	C1	Reduced crown beneath the power lines
50	Quercus robur	52	12	5	5	4	4	5	M	Fair	Single stemmed species	20-40	B1	Ivy covered
51	Quercus robur	50*	12	6	5	4	4	5	M	Fair	Single stemmed species	20-40	B1	None

* Estimation

Tree Survey Data - Access area

October 2012

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
1	Fraxinus excelsior	40	15	4	4	5	3	3	MA	Good	Single stemmed species	40+	A2	None
2	Fraxinus excelsior	33	16	4	4	4	3	3	MA	Good	Single stemmed species	40+	B2	None
3	Carpinus betulus	27	12	4	3	4	3	2	MA	Good	Single stemmed species	40+	B2	None
4	Carpinus betulus	31	12	3	4	5	2	2	MA	Good	Single stemmed species	40+	B2	None
5	Fraxinus excelsior	36	12	3	3	4	1	4	MA	Good	Bifurcate basal	10-20	C2	Tight forks with included bark unions
6	Quercus robur	24	8	2	3	5	0	5	MA	Fair	Single stemmed species	20-40	B2	Suppressed by group to the west
7	Fraxinus excelsior	32	18	2	4	6	3	6	MA	Good	Single stemmed species	40+	A2	None

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
8	Fraxinus excelsior	37	18	4	2	5	4	6	MA	Good	Single stemmed species	40+	A2	None
9	Fraxinus excelsior	43	18	4	4	5	2	6	MA	Good	Single stemmed species dividing at 3m to bifurcate	40+	A2	None
10	Fraxinus excelsior	35	18	2	2	5	2	5	MA	Good	Single stemmed species	40+	B2	Asymmetrical crown
11	Acer campestre	40	11	5	5	5	5	1	M	Good	Single stemmed species	20-40	B1	None
12	Fraxinus excelsior	44	18	2	3	6	1	4	MA	Good	Bifurcate basal, tight forks and included bark unions	10-20	C2	None
13	Quercus robur	37	18	3	2	6	1	4	MA	Good	Single stemmed species	40+	B2	Asymmetrical crown
14	Fraxinus excelsior	30	18	5	5	6	1	4	MA	Good	Single stemmed species	40+	B2	Asymmetrical crown
15	Quercus robur	60*	16	5	8	9	7	4	M	Good	Single stemmed species	40+	A2	Restricted visual tree assessment and no access

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
16	Fraxinus excelsior	50*	15	3	5	5	3	4	M	Good	Multi stemmed basal, coppice	40+	A3	None
17	Fraxinus excelsior	73	18	5	4	1	6	3	M	Good	Bifurcate basal	40+	B2	None
18	Fraxinus excelsior	33	18	2	7	2	5	3	MA	Good	Single stemmed species	40+	B2	Suppressed by T17
19	Quercus robur	40*	12	6	5	2	8	3	MA	Fair	Multi stemmed basal, cavity at the stem base	10-20	C1	Restricted visual tree assessment
20	Fraxinus excelsior	76	22	10	8	8	12	4	M	Fair	Single stemmed species, previous limb failure, possible bat	20-40	B3	Possible bat habitat in the cavities
21	Quercus robur	76	21	3	9	6	9	3	M	Good	Single stemmed species	40+	B1	Previous limb failure
22	Quercus robur	57	20	3	8	7	5	4	M	Good	Single stemmed species	40+	B1	Minor deadwood
23	Quercus robur	49	18	3	7	3	4	2	M	Poor	Major stem decay and bark loss	<10	R	Crown failure immanent, bat potential

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
24	Quercus robur	61	19	3	9	6	5	2	M	Good	Single stemmed species, moderate deadwood on the woodland side	40+	B2	None
25	Quercus robur	110	20	8	11	10	10	2	M	Good	Single stemmed species, previous limb failure	40+	A2	Bat potential
26	Quercus robur	64	13	3	6	6	6	2	M	Fair	Single stemmed species	10-20	C1	Thin upper crown and some dieback
27	Quercus robur	58	17	3	9	6	6	2	M	Good	Single stemmed species	20-40	B2	Thinning upper crown
28	Quercus robur	62	20	5	7	7	9	3	M	Good	Single stemmed species	40+	A2	None
29	Quercus robur	85	18	5	7	9	8	3	M	Good	Single stemmed species	40+	A1	None
30	Quercus robur	62	15	6	6	6	6	4	M	Poor	Single stemmed species	10-20	C1	Thin crown
31	Quercus robur	60	16	6	8	8	6	4	M	Poor	Single stemmed species	10-20	C1	Thin crown

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
32	Quercus robur	62	21	7	5	8	5	3	M	Good	Single stemmed species	40+	A2	None
33	Quercus robur	51	20	3	5	7	4	2	M	Good	Single stemmed species	40+	B2	None
34	Quercus robur	61	18	7	2	4	5	4	M	Fair	Single stemmed species	20-40	B3	Woodpecker holes at 3m
35	Acer campestre	28	8	3	2	3	2	2	MA	Fair	Bifurcate at 1.5m	20-40	B2	None
36	Quercus robur	66	18	9	9	9	8	4	M	Good	Single stemmed species	40+	A2	None
37	Quercus sp.	68	20	9	9	5	5	3	M	Good	Single stemmed species	20-40	B2	Moderate deadwood
38	Quercus robur	87	20	9	9	9	6	4	M	Good	Single stemmed species	40+	A2	None
39	Quercus robur	72	17	7	8	5	5	3	M	Fair	Single stemmed species	20-40	B2	Major deadwood over the wood

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
40	Fraxinus excelsior	76	22	8	5	7	8	3	M	Good	Single stemmed species, woodpecker holes at 3m, possibly a hollow stem	20-40	B2	Moderate deadwood
41	Quercus robur	84	18	9	10	10	8	3	M	Good	Single stemmed species with previous upper crown loss, maturing re-growth has re-formed upper crown	40+	B2	None
42	Quercus robur	68	18	7	10	7	6	4	M	Fair	Single stemmed species	20-40	B2	Moderate deadwood
43	Quercus robur	72	18	2	10	5	6	4	M	Fair	Single stemmed species	20-40	B2	Moderate deadwood close to the footpath
44	Quercus robur	64	18	6	8	5	5	4	M	Fair	Single stemmed species	20-40	B2	Major deadwood over the footpath
45	Quercus robur	78	18	10	13	7	5	4	M	Fair	Single stemmed species	20-40	B2	Previous limb failure with a sparse crown
46	Quercus sp.	69	18	7	8	8	5	6	M	Fair	Single stemmed species	20-40	B2	Moderate deadwood, thin crown
47	Quercus robur	41	15	5	6	3	4	3	M	Fair	Single stemmed species	20-40	B2	None

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
48	Quercus petaea	80*	18	9	8	9	8	2	M	Good	Multi stemmed at 3m	40+	A2	Minor deadwood
49	Quercus robur	61	15	4	9	10	4	2	M	Poor	Trifurcate at 3m	10-20	C1	Thin crown and suppressed tree
50	Quercus robur	45*	15	7	7	7	7	2	M	Poor	Single stemmed species	<10	R	Moribund tree, almost dead, major deadwood, good habitat for wildlife
51	Quercus robur	79	19	9	8	7	6	3	M	Good	Single stemmed species	40+	A2	Moderate deadwood
52	Quercus robur	45*	14	4	8	5	5	3	M	Good	Single stemmed species with a twisted stem	40+	B2	Tree suppressed and previous limb failure
53	Quercus robur	81	18	4	10	4	6	4	M	Good	Single stemmed species	40+	A2	None
54	Quercus robur	48	15	8	5	6	1	2	M	Poor	Single stemmed species	10-20	C2	Stem bleeds and tree in decline
55	Quercus robur	45*	15	6	4	3	3	4	M	Dead	Single stemmed species	<10	R	Dead standing tree

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
56	Quercus robur	30*	15	5	7	2	5	2	MA	Good	Single stemmed species	40+	B2	Suppressed tree
57	Quercus robur	45*	18	8	7	2	4	5	M	Fair	Single stemmed species	20-40	B2	Twisted stem with major deadwood over the wood
58	Quercus robur	89	18	10	10	8	7	3	M	Good	Single stemmed species	40+	A2	Twisted and hung up limb over the wood providing good habitat. Limb is safe to remain in situ
59	Quercus robur	70*	19	10	10	9	5	3	M	Good	Single stemmed species	40+	A2	None
60	Quercus robur	70*	8	0	9	3	4	2	MA	Poor	Single stemmed species	10-20	C2	Suppressed by T61 and propping up branches of T61
61	Fraxinus excelsior	42	22	10	15	7	9	5	M	Good	Single stemmed species	40+	A2	Branch over field is propped by T60
62	Quercus robur	70*	16	10	10	10	3	4	M	Good	Single stemmed species	20-40	B2	Ivy covered, hazard beam in upper crown over wood but no target

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
63	Quercus robur	82	18	2	10	8	8	3	M	Good	Single stemmed species	40+	B2	Asymmetrical crown, with previous limb failure
64	Fraxinus excelsior	52	22	3	6	5	4	12	M	Good	Single stemmed species	40+	A2	None
65	Fraxinus excelsior	37	18	1	7	4	3	3	MA	Fair	Single stemmed species	20-40	B2	Suppressed tree
66	Quercus robur	66	18	5	10	5	7	2	MA	Fair	Single stemmed species with woodpecker holes at 4m	20-40	B2	Thin crown
67	Quercus patraea	77	19	9	10	4	8	4	MA	Good	Single stemmed species	20-40	B2	Moderate deadwood
68	Fraxinus excelsior	55	19	10	9	8	9	8	M	Fair	Single stemmed species	10-20	C2	Sparsely branched tree with long end weighted branches. Possibly scars from Inonotus on primary limbs
69	Quercus robur	107	21	9	6	10	10	3	M	Fair	Single stemmed species	40+	B2	Deadwood over path
70	Quercus robur	76	21	4	8	10	8	4	M	Good	Single stemmed species	40+	B2	Major deadwood to the east of the canopy

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
71	Quercus robur	56	18	5	7	4	7	3	M	Good	Single stemmed species	40+	A2	None
72	Fraxinus excelsior	48	17	5	5	4	5	4	M	Poor	Single stemmed species, split and cavity from ground level to 3m	<10	R	Possible bat habitat
73	Quercus robur	57	17	8	3	8	8	4	M	Good	Single stemmed species with previous crown loss	40+	B2	Minor deadwood
74	Quercus robur	68	18	7	6	5	8	3	M	Good	Single stemmed species	40+	A2	None
75	Fraxinus excelsior	62	18	4	6	8	5	4	M	Poor	Single stemmed species, crack from ground level to 10m	<10	R	Possible bat habitat
76	Quercus robur	65	18	6	6	7	7	3	M	Good	Single stemmed species	40+	A2	None
77	Quercus robur	65	19	6	7	10	8	3	M	Good	Single stemmed species	40+	A2	None
78	Sorbus torminalis	46	11	3	7	6	5	3	M	Good	Single stemmed species	40+	A3	Previous limb failure

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
79	Quercus robur	68	18	5	8	6	9	5	M	Good	Single stemmed species	20-40	B2	Two woodpecker holes at 8m, possible bat habitat
80	Fraxinus excelsior	38	18	1	4	6	5	4	MA	Good	Single stemmed species	20-40	B2	Asymmetrical crown
81	Fraxinus excelsior	48	17	5	5	4	3	4	MA	Fair	Bifurcate basal with an extensive basal cavity	<10	R	Sheltered tree
82	Fraxinus excelsior	68	21	7	7	5	8	4	MA	Fair	Single stemmed species with a major basal cavity	<10	R	None
83	Quercus robur	54	15	8	6	6	5	4	MA	Good	Single stemmed species	40+	A2	None
84	Quercus robur	94	19	10	8	8	9	3	M	Good	Single stemmed species	40+	A2	Previous limb failure
85	Quercus robur	82	19	7	9	7	6	3	M	Good	Single stemmed species	40+	A2	None
86	Acer campestre	42	8	4	5	4	4	2.5	M	Good	Bifurcate basal	20-40	B2	None

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
87	Quercus robur	68	19	6	7	6	6	3	M	Fair	Single stemmed species with previous limb failure	20-40	B2	The crown of the tree has re-formed over the limb failure
88	Fraxinus excelsior	64	18	9	8	7	7	4	M	Fair	Single stemmed species, cavities around the root flares. Restricted visual tree assessment	<10	R	Inonotus on the stem at 3m
89	Quercus robur	34	12	4	4	3	3	3	MA	Good	Single stemmed species	40+	A2	None
90	Quercus robur	55	15	7	7	6	5	3	MA	Good	Single stemmed species with lower butt swelling with possible cavities. Tree was sounded with a mallet but no hollow was detected	20-40	B2	Slightly thin crown
91	Quercus robur	58	14	6	5	5	5	3	MA	Good	Single stemmed species	40+	A2	None
92	Quercus robur	86	18	8	5	6	6	5	M	Good	Single stemmed species	40+	A2	None
93	Fraxinus excelsior	39	13	8	7	5	4	3	MA	Fair	Trifurcate at 2m	20-40	B2	Minor deadwood

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
94	Fraxinus excelsior	37	13	5	7	4	5	3	MA	Fair	Single stemmed species	40+	B2	Previous limb failure and minor deadwood
95	Quercus robur	58	16	6	5	6	6	3	MA	Good	Single stemmed species	40+	B2	Previous limb failure, compaction from animals around the root plate
96	Acer campestre	33	13	2	2	2	2	2	M	Fair	Single stemmed species, cavities from ground level to 8m	10-20	C1	Basal stem cavities with habitat potential
97	Quercus robur	60	16	5	4	6	4	3	M	Fair	Single stemmed species	20-40	B2	Moderate deadwood
98	Quercus robur	55	16	4	4	5	5	2	M	Good	Single stemmed species	40+	A2	None
99	Quercus robur	67	18	8	6	8	7	3	M	Good	Single stemmed species	40+	A2	Minor deadwood
100	Quercus robur	48	18	5	4	6	7	3	MA	Fair	Single stemmed species	20-40	B2	Thin crown with abrupt branch bends
101	Quercus robur	61	18	4	4	6	6	3	MA	Fair	Single stemmed species	20-40	B2	Moderate dieback and deadwood

* Estimation

Tree Number	Species	Diameter at 1.5m (cms) *	Height (m)	Crown Spread (m)				Canopy Height Above Ground Level (m)	Age Class	Physiological Condition	Structural Condition	Estimated Remaining Contribution (years)	BS Category Grading	Comments
				North	South	East	West							
102	Quercus robur	74	19	7	7	9	8	3	M	Good	Single stemmed species	40+	A2	None

* Estimation

Group Root Protection Areas - Substation Area

Group Number	Tree Species	Retention Category	RPA - Radius (m)
1	Prunus spinosa	C2	1.2
2	Prunus spinosa Acer campestre	C2	1.8
3	Crataegus monogyna Quercus robur	C2	1.8
4	Crataegus monogyna Prunus spinosa	C2	1.8
5	Prunus spinosa Crataegus monogyna	C2	1.8
6	Salix sp Fraxinus excelsior	C2	1.8
7	Fraxinus excelsior Abies species	B2	3.6
8	Crataegus monogyna Prunus spinosa	C2	1.2
9	Crataegus monogyna Prunus spinosa	B2	1.8
10	Prunus spinosa Fraxinus excelsior	B2	2.4
11	Prunus spinosa Crataegus monogyna	C2	1.8
12	Prunus spinosa Acer campestre	C2	1.8
13	Fraxinus excelsior Crataegus monogyna	B2	3
14	Fraxinus excelsior Aesculus hippocastanum	B2	4.8

The radius of the Root Protection Area is measured from the centre of the edge trees in a group

Group Number	Tree Species	Retention Category	RPA - Radius (m)
15	Crataegus monogyna	C2	1.8
16	Quercus robur Salix sp.	B2	3.6
17	Quercus robur Crataegus monogyna	B2	6
18	Acer campestre Sorbus sp	B2	3
19	Prunus spinosa Ulmus sp.	B2	2.4
20	Populus nigra var. Crataegus monogyna	C2	4.2
21	Fraxinus excelsior Ulmus sp	B2	3.6
22	Fraxinus excelsior Populus nigra var.	B2	4.8
23	Salix sp. Fraxinus excelsior	B2	3.6
24	Quercus robur Salix sp.	C2	1.8

The radius of the Root Protection Area is measured from the centre of the edge trees in a group

Group Root Protection Areas - Access area

Group Number	Tree Species	Retention Category	RPA - Radius (m)
1	Fraxinus excelsior Crataegus monogyna	B2	3.6
2	Fraxinus excelsior Quercus robur	B2	3.6
3	Fraxinus excelsior Acer campestre	B2	4.8
4	Fraxinus excelsior Prunus spinosa	B2	4.2
5	Quercus robur Fraxinus excelsior	A2	6
6	Fraxinus excelsior Acer campestre	B2	3.6
7	Crataegus monogyna Fraxinus excelsior	C2	1.8
8	Acer campestre Prunus spinosa	C2	1.8
9	Quercus robur Fraxinus excelsior	A2	6
10	Fraxinus excelsior Quercus robur	B2	3.6
11	Crataegus monogyna Ilex aquifolium	B2	4.2
12	Quercus robur Crataegus monogyna	B2	3
13	Acer campestre Ilex aquifolium	C2	1.8

The radius of the Root Protection Area is measured from the centre of the edge trees in a group

Tree Root Protection Areas - Substation Area

Tree Number	Tree Species	Retention Category	RPA Radius (m)	RPA Area (m2)
1	Quercus robur	A1	7.08	157.5
2	Quercus robur	B1	3.96	49.3
3	Quercus robur	A1	3.6	40.7
4	Quercus robur	B1	6.6	136.8
5	Fraxinus excelsior	B1	4.56	65.3
6	Quercus robur	B1	7.32	168.3
7	Quercus robur	B1	5.04	79.8
8	Fraxinus excelsior	B1	6	113.1
10	Quercus robur	B1	4	50.3
11	Fraxinus excelsior	A1	4.2	55.4
12	Quercus robur	A1	6.72	141.9
13	Quercus robur	C1	7.32	168.3
14	Fraxinus excelsior	C1	3.5	38.5
15	Quercus robur	B1	6.12	117.7
16	Quercus robur	B1	8.88	247.7
17	Quercus robur	C1	5.76	104.2
18	Quercus robur	B1	5.4	91.6
19	Quercus robur	B1	6.36	127.1
20	Quercus robur	B1	4.32	58.6
21	Quercus robur	B1	7.68	185.3
22	Quercus robur	B1	8.28	215.4
23	Fraxinus excelsior	A1	3.36	35.5
24	Quercus robur	B1	6.72	141.9
25	Sorbus torminalis	B1	4.8	72.4
26	Quercus robur	B1	9	254.5
27	Quercus robur	B1	3.72	43.5
28	Quercus robur	A1	3.96	49.3

Tree Number	Tree Species	Retention Category	RPA Radius (m)	RPA Area (m2)
29	Quercus robur	C1	3.84	46.3
30	Quercus robur	B1	7.68	185.3
31	Quercus robur	A1	7.44	173.9
32	Quercus robur	A1	6.36	127.1
33	Quercus robur	C1	6.72	141.9
34	Quercus robur	B1	7.68	185.3
35	Quercus robur	B1	8.88	247.7
36	Quercus robur	B1	8.4	221.7
37	Quercus robur	C1	6.96	152.2
40	Quercus robur	C1	4.68	68.8
41	Quercus robur	C1	6.12	117.7
42	Quercus robur	C1	6.48	131.9
43	Quercus robur	A3	15	706.9
44	Quercus robur	A1	9.24	268.2
45	Quercus robur	B1	3.84	46.3
46	Quercus robur	B1	5.52	95.7
47	Quercus robur	A1	6.12	117.7
48	Quercus robur	B1	4.08	52.3
49	Quercus robur	C1	8.4	221.7
50	Quercus robur	B1	6.24	122.3
51	Quercus robur	B1	6	113.1

Tree Root Protection Areas - Access area

Tree Number	Tree Species	Retention Category	RPA Radius (m)	RPA Area (m2)
1	Fraxinus excelsior	A2	4.8	72.4
2	Fraxinus excelsior	B2	3.96	49.3
3	Carpinus betulus	B2	3.24	33
4	Carpinus betulus	B2	3.72	43.5
5	Fraxinus excelsior	C2	3.6	40.7
6	Quercus robur	B2	2.88	26.1
7	Fraxinus excelsior	A2	3.84	46.3
8	Fraxinus excelsior	A2	4.44	61.9
9	Fraxinus excelsior	A2	5.16	83.6
10	Fraxinus excelsior	B2	4.2	55.4
11	Acer campestre	B1	4.8	72.4
12	Fraxinus excelsior	C2	5.28	87.6
13	Quercus robur	B2	4.44	61.9
14	Fraxinus excelsior	B2	3.6	40.7
15	Quercus robur	A2	7.2	162.9
16	Fraxinus excelsior	A3	5	78.5
17	Fraxinus excelsior	B2	7.3	167.4
18	Fraxinus excelsior	B2	3.96	49.3
19	Quercus robur	C1	4	50.3
20	Fraxinus excelsior	B3	9.12	261.3
21	Quercus robur	B1	9.12	261.3
22	Quercus robur	B1	6.84	147
24	Quercus robur	B2	7.32	168.3
25	Quercus robur	A2	13.2	547.4
26	Quercus robur	C1	7.68	185.3
27	Quercus robur	B2	6.96	152.2
28	Quercus robur	A2	7.44	173.9

Tree Number	Tree Species	Retention Category	RPA Radius (m)	RPA Area (m2)
29	Quercus robur	A1	10.2	326.9
30	Quercus robur	C1	7.44	173.9
31	Quercus robur	C1	7.2	162.9
32	Quercus robur	A2	7.44	173.9
33	Quercus robur	B2	6.12	117.7
34	Quercus robur	B3	7.32	168.3
35	Acer campestre	B2	3.36	35.5
36	Quercus robur	A2	7.92	197.1
37	Quercus sp.	B2	8.16	209.2
38	Quercus robur	A2	10.44	342.4
39	Quercus robur	B2	8.64	234.5
40	Fraxinus excelsior	B2	9.12	261.3
41	Quercus robur	B2	10.08	319.2
42	Quercus robur	B2	8.16	209.2
43	Quercus robur	B2	8.64	234.5
44	Quercus robur	B2	7.68	185.3
45	Quercus robur	B2	9.36	275.2
46	Quercus sp.	B2	8.28	215.4
47	Quercus robur	B2	4.92	76
48	Quercus petaea	A2	9.6	289.5
49	Quercus robur	C1	7.32	168.3
51	Quercus robur	A2	9.48	282.3
52	Quercus robur	B2	5.4	91.6
53	Quercus robur	A2	9.72	296.8
54	Quercus robur	C2	5.76	104.2
56	Quercus robur	B2	3.6	40.7
57	Quercus robur	B2	5.4	91.6
58	Quercus robur	A2	10.68	358.3

Tree Number	Tree Species	Retention Category	RPA Radius (m)	RPA Area (m2)
59	Quercus robur	A2	8.4	221.7
60	Quercus robur	C2	8.4	221.7
61	Fraxinus excelsior	A2	5.04	79.8
62	Quercus robur	B2	8.4	221.7
63	Quercus robur	B2	9.84	304.2
64	Fraxinus excelsior	A2	6.24	122.3
65	Fraxinus excelsior	B2	4.44	61.9
66	Quercus robur	B2	7.92	197.1
67	Quercus patraea	B2	9.24	268.2
68	Fraxinus excelsior	C2	6.6	136.8
69	Quercus robur	B2	12.84	517.9
70	Quercus robur	B2	9.12	261.3
71	Quercus robur	A2	6.72	141.9
73	Quercus robur	B2	6.84	147
74	Quercus robur	A2	8.16	209.2
76	Quercus robur	A2	7.8	191.1
77	Quercus robur	A2	7.8	191.1
78	Sorbus torminalis	A3	5.52	95.7
79	Quercus robur	B2	8.16	209.2
80	Fraxinus excelsior	B2	4.56	65.3
83	Quercus robur	A2	6.48	131.9
84	Quercus robur	A2	11.28	399.7
85	Quercus robur	A2	9.84	304.2
86	Acer campestre	B2	4.2	55.4
87	Quercus robur	B2	8.16	209.2
89	Quercus robur	A2	4.08	52.3
90	Quercus robur	B2	6.6	136.8
91	Quercus robur	A2	6.96	152.2

Tree Number	Tree Species	Retention Category	RPA Radius (m)	RPA Area (m2)
92	Quercus robur	A2	10.32	334.6
93	Fraxinus excelsior	B2	4.68	68.8
94	Fraxinus excelsior	B2	4.44	61.9
95	Quercus robur	B2	6.96	152.2
96	Acer campestre	C1	3.96	49.3
97	Quercus robur	B2	7.2	162.9
98	Quercus robur	A2	6.6	136.8
99	Quercus robur	A2	8.04	203.1
100	Quercus robur	B2	5.76	104.2
101	Quercus robur	B2	7.32	168.3
102	Quercus robur	A2	8.88	247.7

Preliminary Group Work - Substation Area

Group Number	Structural condition	Preliminary Management Recommendations
14	Mixed structural condition. Some of the trees have weak structures and basal decay	Remove poor form trees from the group and those with weak structures or advanced basal decay
17	Some single stemmed Oaks with a hedgerow in between individual trees. Track running under the canopies of trees to the east.	Further investigation required to determine the extent of basal decay in the Oaks
19	Hedgerow with sporadic young trees	Remove dead elm from group

Preliminary Group Work - Access area

Group Number	Structural condition	Preliminary Management Recommendations
1	Mixed structural condition	Remove dead trees from the group

Preliminary Tree Work - Substation Area

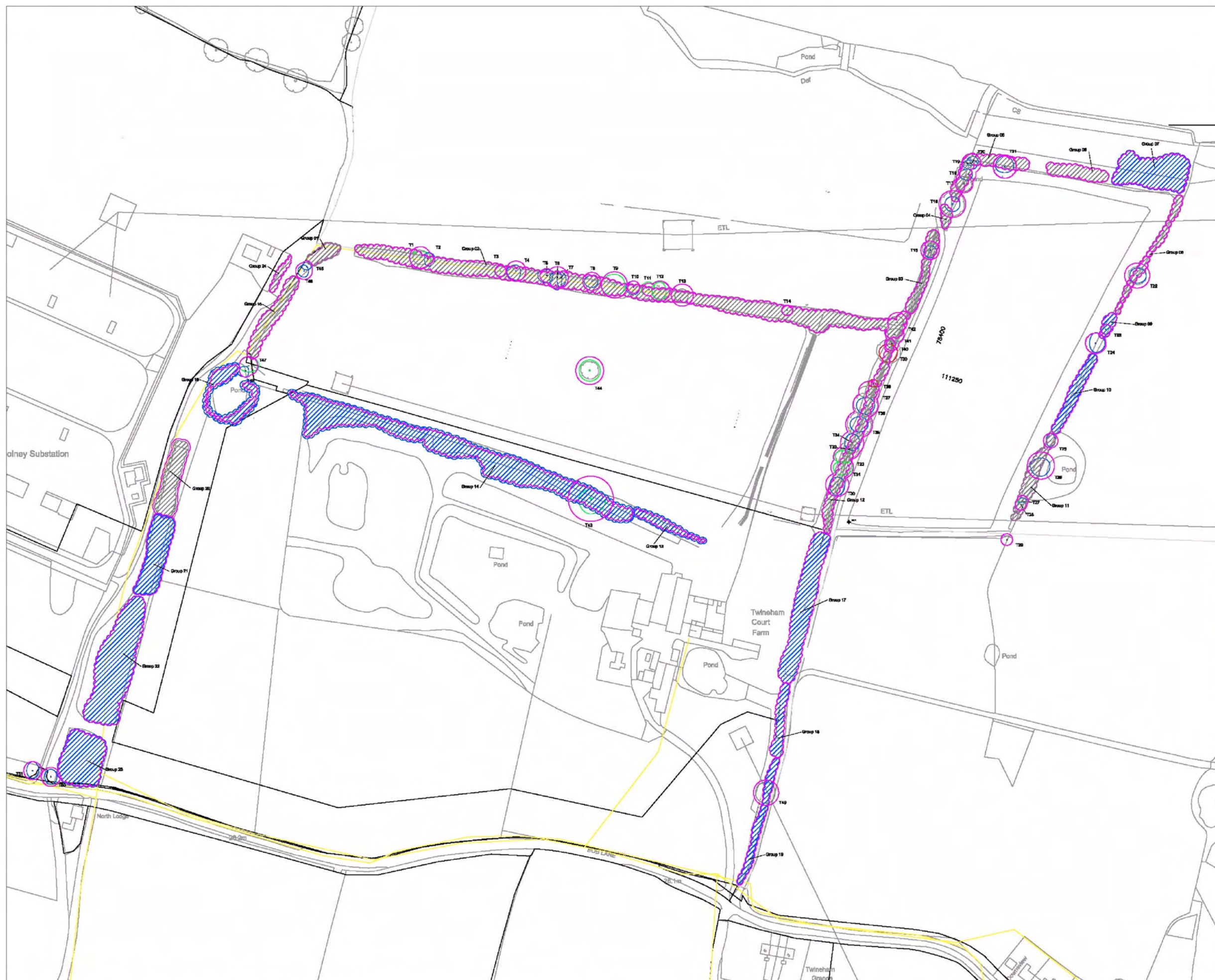
Tree Number	Species	Structural Condition	Recommendations
35	Quercus robur	Single stemmed species with basal cavity	Further investigation required to determine the extent of basal decay
36	Quercus robur	Single stemmed species with basal swelling of the stem possibly indicating internal decay	Further investigation required to determine the extent of basal decay
37	Quercus robur	Single stemmed species	Further investigation required to determine the extent of basal decay
43	Quercus robur	Single stemmed species, previous limb failure and moderate deadwood	Undertake an inspection of the holes in the upper crown to inform further works

Preliminary Tree Work - Access area

Tree Number	Species	Structural Condition	Recommendations
23	Quercus robur	Major stem decay and bark loss	Habitat pole to 8m, an ecologist will be required to supervise the works
30	Quercus robur	Single stemmed species	None
34	Quercus robur	Single stemmed species	Inspect cavities at 3m to inform tree works
40	Fraxinus excelsior	Single stemmed species, woodpecker holes at 3m, possibly a hollow stem	Investigate woodpecker holes to inform further tree works
43	Quercus robur	Single stemmed species	Remove deadwood on the field side of the tree
44	Quercus robur	Single stemmed species	Remove deadwood and the split primary limb over the footpath and on the field side of the crown
62	Quercus robur	Single stemmed species	Remove hanging branches
66	Quercus robur	Single stemmed species with woodpecker holes at 4m	Inspect woodpecker holes to inform tree works
68	Fraxinus excelsior	Single stemmed species	Inspect tree in winter to identify any decay fungi that may be present and inform tree works
69	Quercus robur	Single stemmed species	Remove deadwood over path
70	Quercus robur	Single stemmed species	Remove deadwood on the eastern side of the tree
72	Fraxinus excelsior	Single stemmed species, split and cavity from ground level to 3m	Habitat pole to 6m
75	Fraxinus excelsior	Single stemmed species, crack from ground level to 10m	Inspect cavities to inform tree works
79	Quercus robur	Single stemmed species	Reduce crown in height by 4m and 2m in width
81	Fraxinus excelsior	Bifurcate basal with an extensive basal cavity	Habitat pole to 6m
82	Fraxinus excelsior	Single stemmed species with a major basal cavity	Fell tree

Tree Number	Species	Structural Condition	Recommendations
88	Fraxinus excelsior	Single stemmed species, cavities around the root flares. Restricted visual tree assessment	Habitat pole at 6m
96	Acer campestre	Single stemmed species, cavities from ground level to 8m	Reduce by 4m in height

APPENDIX D – BS5837 TREE CONSTRAINTS PLANS



Legend :

- Tree Group BS5837 Category A
- Tree Group BS5837 Category B
- Tree Group BS5837 Category C
- Tree Group BS5837 Category R
- Tree BS5837 Category A
- Tree BS5837 Category B
- Tree BS5837 Category C
- Tree BS5837 Category R
- Root Protection Area
- T22/G3 Tree or tree group number

00	22.10.12	Arb	RF	NH	VG
Rev	Date	Description	Drn	Chk	App

Rampion Wind Farm

RSK e-on

Title :
Appendix D -
Tree Constraints Plan -
Substation Area

0 25 50
metres

Scale = 1:2,500 @ A3

N
W
E
S

REV 16



Legend :

- Tree Group BS5837 Category A
- Tree Group BS5837 Category B
- Tree Group BS5837 Category C
- Tree Group BS5837 Category R
- Tree BS5837 Category A
- Tree BS5837 Category B
- Tree BS5837 Category C
- Tree BS5837 Category R
- Root Protection Area
- T22/G3 Tree or tree group number

00	22.10.12	Arb	RF	NH	VG
Rev	Date	Description	Drn	Chk	App

Rampion Wind Farm

RSK e-on

Title :
Appendix D -
Tree Constraints Plan - Access
Area

0 20 40
metres
Scale = 1:2,000 @ A3

N
W
E
S

REV 16

APPENDIX E – BAT ROOST SURVEY DATA

Option	Tree Tag No.	Grid Reference	Tree Species	DBH	Bat potential feature description	Category of feature	Category when climbed	Date climbed	Notes	Fully inspected	Evidence of bats	Emergence survey required
A	411	TQ 24802 21132	Standing dead tree	40	Loose bark across of the tree trunk and main branches	3	1	31/05/2012	-	Y	N	N
A	412	TQ 24785 21143	Ash	40	Hole created by a canker wound - leading into cavity within the main trunk. Extends	2	1	31/05/2012	Cavity extends 30cm up. Low height from the ground.	Y	N	N
A	413	TQ 24834 21066	Oak	68	Mature ivy on main trunk	2	1	31/05/2012	Ivy only suitable for individual bats, not really a category 2. Not Climbed.	N	-	Only if tree is to be removed
A	414	TQ 24628 20936	Oak	70	Mature ivy on main trunk	1						
A	876	TQ 24530 21056	Oak	70	entrance into cavity	1						
B	344	TQ 23983 21392	Ash	30	Cavity from fallen branch. Appears to extend upwards	1						
B	345	TQ 23992 21385	Oak	30	(1) Loose bark across of the tree trunk and main branches	2	0	30/05/2012	Open/exposed areas. Not suitable.	Y	N	N
B					(2) Longtidinal split along branch appears to create cavity	1						
B	341	TQ 24118 21390	Oak		Knothole cavity	2	0	30/05/2012	Too small, no evidence.	Y	N	N
B	342	TQ 24009 21378	Oak	60	Loose bark on branch	2	1	30/05/2012	Cavity in dead branch 3m south is suitable for individual bats.	Y	N	Only if tree is to be removed
B	343	TQ 2401321376	Oak	60	(1) Dead branch with hole - entrance to cavity	2	0	30/05/2012	Nothing suitable.	Y	N	N
B					(2) 2nd Dead branch with hole - entrance to cavity	2						
B	349	TQ 24019 21373	Oak	80	(1) Small knot hole on trunk - entrance to cavity	1 2	2 1	30/05/2012	Small cavity suitable, but no bat evidence Suitable, but no evidence.	Y	N	Only if tree is to be removed
B					(2) Scar wound from fallen branch	1						
B	350	TQ 24090 21349	Oak	50	Gaps around sawn off branch	2	1	30/05/2012	-	Y	N	Only if tree is to be removed
B	415	TQ 24110 21294	Oak	40	Hole in branch	1						
B	No tag	TQ 24147 12161	Oak	30	(1) Hole in trunk	2	1	31/05/2012		Y	N	N
B					(2) Hole in branch	2						
B	416	TQ 24304 21190	Oak	30	Hole at the base of the trunk - extends upwards	3	1	31/05/2012	Not extensive, always category 1.	Y	N	N
B	417	TQ 24303 21209	Oak	60	(1) Woodpecker hole on trunk	3	3	31/05/2012	Extra feature, 5m up, 2m out, rot hole. Birds nest.	Y	N	N
B					(2) split on underside of branch	1 2	1 3	31/05/2012	Birds nest, category 3 feature Category 1 feature.	Y	N	N
B	418	TQ 24303 21212	Oak	60	(1) Hole in main trunk	1 2 3	0 0 2	31/05/2012	Last cavity only visable when climbing 4.5m up, extensive hole, south facing.	Y	N	N
B					(2) Cavity from canker wound	2						
B					(3) Cavity - exposed heartwood, entrance to cavity at top	2						
B	419	TQ 24305 21240	Oak	50	Possible lighting damage - long split along trunk with hole and loose bark around	3	2	31/05/2012	-	Y	N	N
B	420	TQ 24326 21281	Oak	30	Lighting damage - longitudinal split along length of trunk	2	3	31/05/2012	-	Y	N	N
B	361	TQ 24384 21336	Oak	60	(1) Cavity from where branch has been cut off	1	0	31/05/2012	Lowest hole not a hole, highest hole at 6m is not extensive.	Y	N	N
B					(2) Hole	2	1	31/05/2012	-			
B	362	TQ 24340 21343	Oak	40	Large knothole on main trunk	3	1	31/05/2012	Birds nest, not extensive.	Y	N	N
B	363	TQ 24292 21376	Oak	80	Knot hole	2	1	31/05/2012	Not extensive.	Y	N	N
B	364	TQ 24263 21390	Oak	100	(1) Knot hole	2	1	31/05/2012	Not extensive.	Y	N	N
B					(2) Knot hole	1	1	31/05/2012	-			
B	366	TQ 24179 21439	Oak	50	Diagonal split from broken branch	1						

B	367	TQ 24171 21441	Oak	60	Holes around dead branch	2	0	31/05/2012	Not suitable, too small.	Y	N	N
									Dead leaves and shredded grass in hole, possibly a birds nest but packed in 11m up, holes in snapped end of main trunk, birds nest on there, north west aspect 6m up, 2-5m out, South facing aspect, small hole in split on the branch.			
B	369	TQ 24145 21447	Oak	80	Hole on branch	3	3 2 1	31/05/2012		Y	N	N
B	368	TQ 24118 21381	Oak	50	(1) Knothole	1 2	2 0	30/05/2012				
B					(2) Cavity at end of broken branch	1	-	30/05/2012	West side 3m end of branch cavity.	Y	N	Only if tree is to be removed
B	370	TQ 24108 21472	Oak	100	Hole around dead branch	2 3	2 3	30/05/2012	40cm length of cavity	Y N	N -	Only if tree is to be removed
B	421	TQ 24091 21474	Oak	40	Loose bark	2	1	30/05/2012	Only suitable for individual bats and occasional use.	Y	N	Only if tree is to be removed
B	365	TQ 24207 21428	Oak		Split		2	31/05/2012	Large horizontal split, 7m up, 3m out, south facing aspect.	Y	N	N
A	877	as per 2011 data sheet	Oak		Large cavity in the centre of the tree	3	1 2	31/05/2012	Holes in dead part of stem (Heart wood) 2-8m. All other apparent holes inspected, all category 0.	Y	N	N

APPENDIX F – BADGER NOTES*Refer Figure 5 - Badger Survey Results*

Badger Note (BN)	Feature
1	Badger guard hair caught on fence
2	Badger guard hair caught on fence
3	Mammal pathways
4	Mammal pathway across ditch, badger guard hair caught on fence
5	Badger dung pit - freshly used
6	Badger guard hairs caught on barbed wire fence
7	Badger guard hairs caught on barbed wire fence
8	Badger guard hairs caught on barbed wire fence
9	Disused outlier - single hole - entrance faces east
10	Badger guard hairs caught on barbed wire fence
11	badger footprint - heading north west
12	Badger dung pit - freshly used
13	Area dense scrub of bramble of hawthorn, several mammal paths leading into it, no evidence of excavations, old badger guard hair found.
14	Badger skull
15	Badger dung pit - freshly used
16	Main badger sett composed of 28 holes - 12 well used, 15 partially used and 1 disused
17	Badger latrine - freshly used
18	Badger dung pit - freshly used
19	Badger footprint - all heading south west
20	Badger sett - outlier - two holes partially used

APPENDIX G – GREAT CRESTED NEWT SURVEY DATA***Habitat Suitability Index Results******Pond 134***

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	50m ²	0.1
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Good	1
Shade (SI 5)	0-60%	1
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Possible	0.67
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Good	1
Macrophyte Cover (SI 10)	20%	0.5

HSI Score = 0.70

Pond 137

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	50m ²	0.1
Pond Drying (SI 3)	Sometimes	0.5
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	Completely shaded	0.2
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	None	0.3

HSI Score = 0.48

Pond 138

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	50m ²	0.2
Pond Drying (SI 3)	Sometimes	1
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	Completely shaded	0.4
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	0.67
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	1
Macrophyte Cover (SI 10)	None	0.3

HSI Score = 0.59

Pond 139

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	50m ²	0.1
Pond Drying (SI 3)	Sometimes	0.5
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	0-60%	1
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Poor	0.33
Macrophyte Cover (SI 10)	50%	0.8

HSI Score = 0.48

Pond 140

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	400m ²	0.8
Pond Drying (SI 3)	Sometimes	0.5
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	0-60%	1
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Poor	0.33
Macrophyte Cover (SI 10)	50%	0.8

HSI Score = 0.58

Pond 141

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	400m ²	0.8
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Moderate	0.67
Shade (SI 5)	0-60%	1
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Possible	0.67
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Good	1
Macrophyte Cover (SI 10)	None	0.3

HSI Score = 0.78

Pond 142

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	500m ²	1
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Moderate	0.67
Shade (SI 5)	90%	0.4
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	0.67
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Good	1
Macrophyte Cover (SI 10)	10%	0.35

HSI Score = 0.74

Pond 144

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	400m ²	0.8
Pond Drying (SI 3)	Rarely	1
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	Completely shaded	0.2
Water Fowl (SI 6)	Minor	0.67
Fish (SI 7)	Possible	0.67
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	None	0.3

HSI Score = 0.59

Pond 145

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	50m ²	0.1
Pond Drying (SI 3)	Sometimes	0.5
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	Completely shaded	0.2
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	None	0.3

HSI Score = 0.48

Pond 148

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	50m ²	0.1
Pond Drying (SI 3)	Annually	0.1
Water Quality (SI 4)	Moderate	0.67
Shade (SI 5)	Completely shaded	0.2
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	Roughly 80% cover	1

HSI Score = 0.50

Pond 149

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	50m ²	0.1
Pond Drying (SI 3)	Annually	0.1
Water Quality (SI 4)	Good	1
Shade (SI 5)	Roughly 80%	0.6
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Good	1
Macrophyte Cover (SI 10)	60% cover	0.9

HSI Score = 0.59

Pond 202

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	50m ²	0.1
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Good	1
Shade (SI 5)	10% shade	1
Water Fowl (SI 6)	Minor	0.67
Fish (SI 7)	Minor	0.33
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	80% cover	1

HSI Score = 0.65

Pond 203

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	1200m ²	0.92
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Moderate	0.67
Shade (SI 5)	40% shade	1
Water Fowl (SI 6)	Minor	0.67
Fish (SI 7)	Major	0.01
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	20% cover	0.5

HSI Score = 0.76

Pond 204

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	400m ²	0.8
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	90% shade	0.4
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	0% cover	0.3

HSI Score = 0.67

Pond 205

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	600m ²	1
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Good	1
Shade (SI 5)	70% shade	0.8
Water Fowl (SI 6)	Minor	0.67
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	15% cover	0.45

HSI Score = 0.82

Pond 207

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	150m ²	0.3
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Bad	0.01
Shade (SI 5)	20% shade	1
Water Fowl (SI 6)	Major	0.01
Fish (SI 7)	Possible	0.67
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Poor	0.33
Macrophyte Cover (SI 10)	None	0.3

HSI Score = 0.27

Pond 208

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	300m ²	0.6
Pond Drying (SI 3)	Rarely	1
Water Quality (SI 4)	Good	1
Shade (SI 5)	Completely shaded	0.2
Water Fowl (SI 6)	Minor	0.67
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	None	0.3

HSI Score = 0.66

Pond 209

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	750m ²	1
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	70% shade	0.8
Water Fowl (SI 6)	Minor	0.67
Fish (SI 7)	Major	0.01
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	10% cover	0.35

HSI Score = 0.45

Pond 210

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	625m ²	1
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Good	1
Shade (SI 5)	90% shade	0.4
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Minor	0.33
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	30% cover	0.6

HSI Score = 0.74

Pond 211

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	500m ²	1
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	90% shade	0.4
Water Fowl (SI 6)	Minor	0.67
Fish (SI 7)	Major	0.01
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	None	0.3

HSI Score = 0.42

Pond 212

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	250m ²	0.6
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Good	1
Shade (SI 5)	10% shade	1
Water Fowl (SI 6)	Minor	0.67
Fish (SI 7)	Minor	0.33
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	70% cover	1

HSI Score = 0.78

Pond 213

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	675m ²	1
Pond Drying (SI 3)	Rarely	1
Water Quality (SI 4)	Good	1
Shade (SI 5)	60% shade	1
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Good	1
Macrophyte Cover (SI 10)	90% cover	0.9

HSI Score = 0.95

Pond 214

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	150m ²	0.3
Pond Drying (SI 3)	Rarely	1
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	Completely shaded	0.2
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	None	0.3

HSI Score = 0.58

Pond 219

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	300m ²	0.6
Pond Drying (SI 3)	Rarely	1
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	100%	0.2
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	None	0.3

HSI Score = 0.62

Pond 220

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	300m ²	0.6
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Good	1
Shade (SI 5)	5% shade	1
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Major	0.01
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	60% cover	0.9

HSI Score = 0.56

Pond 222

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	150m ²	0.3
Pond Drying (SI 3)	Annually	0.1
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	90% shade	0.4
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	None	0.3

HSI Score = 0.49

Pond 223

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	375m ²	0.8
Pond Drying (SI 3)	Rarely	1
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	90% shade	0.4
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	10%	0.4

HSI Score = 0.70

Pond 224

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	150m ²	0.3
Pond Drying (SI 3)	Annually	0.1
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	90% shade	0.4
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	10% cover	0.4

HSI Score = 0.50

Pond 225

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	1100m ²	0.92
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Good	1
Shade (SI 5)	50% shade	1
Water Fowl (SI 6)	Minor	0.67
Fish (SI 7)	Major	0.01
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	20% cover	0.5

HSI Score = 0.53

Pond 225b

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	<50m ²	0.1
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	None	1
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	<10% shade	0.3

HSI Score = 0.60

Pond 226

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	240m ²	0.5
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Good	1
Shade (SI 5)	50% shade	1
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	20% cover	0.5

HSI Score = 0.83

Pond 227

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	240m ²	0.5
Pond Drying (SI 3)	Rarely	1
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	100%	0.2
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	None	0.3

HSI Score = 0.61

Pond 233

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	250m ²	0.5
Pond Drying (SI 3)	Rarely	1
Water Quality (SI 4)	Poor	0.33
Shade (SI 5)	65% shade	0.9
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	0% cover	0.3
HSI Score = 0.70		

Pond 234

Factor	Value	Score
Location (SI 1)	A	1
Surface Area (SI 2)	375m ²	1
Pond Drying (SI 3)	Never	0.9
Water Quality (SI 4)	Moderate	0.67
Shade (SI 5)	80% shade	0.6
Water Fowl (SI 6)	Absent	1
Fish (SI 7)	Absent	1
Ponds (SI 8)	>10/km ²	1
Terrestrial Habitat (SI 9)	Moderate	0.67
Macrophyte Cover (SI 10)	None	0.3
HSI Score = 0.77		

Presence / Absence and Population Estimates***Surveys at Pond 134***

Survey	1	2	3	4	5	6
Date	30/03/2011	14/04/2011	09/05/2011	17/05/2011		
Air temperature (°C)	9.5	7.7	8	12.8		
Water temperature (°C)	9.9	9.2	14	13.2		
Turbidity (0-5)	1					
Vegetation Cover (0-5)	4					
Egg search	0	0	Not used	0		
	2 Lv		1 Lh	1 Lv		
Torching	(2AM), 3 U (Lh/Lv)	0	(1AM), 1 Lv (1AM)	(1AM), 1 U (1AF)		
Bottle trapping	9 Lv (4AF, 5AM)	13 Lv (7AF, 6AM)	4 Lv (3AF, 1AM)	0		
Netting	Not used	Not used	3 Lv (1AF, 2AM)	Not used		
Notes						
Conclusion	Absent					
Population class size	-					

Surveys at Pond 137

Survey	1	2	3	4	5	6
Date	07/04/2011	20/04/2011	10/05/2011	19/05/2011		
Air temperature (°C)	14	14.5	8.8	10.9		
Water temperature (°C)	13	Not recorded	11.2	14.6		
Turbidity (0-5)						
Vegetation Cover (0-5)						
Egg search	0	0	0	0		
Torching	9 Lv (5AF, 4AM)	7 U (Lh/Lv)	2 Lv (2AF)	0		
Bottle trapping	2 Lh (1AF, 1AM), 8 Lv (7AF, 1AM)	1 Lh (1AF), 8 Lv (2AF, 6AM)	Not used	3 Tc (1AF, 2AM)		
Netting	Not used	Not used	Not used	Not used		
Notes	Survey 3 - Not trapping or netting – too shallow					
Conclusion	Present					
Population class size	-					

Surveys at Pond 138

Survey	1	2	3	4	5	6
Date	07/04/2011	20/04/2011	10/05/2011	19/05/2011		
Air temperature (°C)	15	14.5	10.8	-		
Water temperature (°C)	14	not recorded	12.8	-		
Turbidity (0-5)						
Vegetation Cover (0-5)						
Egg search	0	0	Lh/Lv	-		
Torching	23 Lv (17AF, 6AM)	4 Lh (4AM), 20 U (Lh/Lv)	15 Lv (10AF, 5AM)	-		
Bottle trapping	4 Lv (3AF, 1AM)	5 Lh (3AF, 2AM), 7 Lv (1AF, 6AM)	1 Lh (1AM), 3 Lv (1AF, 2AM)	-		
Netting	Not used	Not used	Not used	-		
Notes	Survey 4 - Pond dry					
Conclusion	Absent					
Population class size	-					

Surveys at Pond 139

Survey	1	2	3	4	5	6
Date	07/04/2011	20/04/2011	10/05/2011			
Air temperature (°C)	10	9.9	-			
Water temperature (°C)	11	13.3	-			
Turbidity (0-5)			-			
Vegetation Cover (0-5)			-			
Egg search	0	0	-			
Torching	0	0	-			
Bottle trapping	0	Not used	-			
Netting	Not used	Not used	-			
Notes	Survey 2 - No trapping or netting – too shallow. Survey 3 - Pond dry					
Conclusion	Absent					
Population class size	-					

Surveys at Pond 140

Survey	1	2	3	4	5	6
Date	06/04/2011	20/04/2011	10/05/2011	19/05/2011		
Air temperature (°C)	12	14.2	9.8	8.8		
Water temperature (°C)	11	12.8	11.9	11.1		
Turbidity (0-5)						
Vegetation Cover (0-5)						
Egg search	0	0	0	0		
Torching	0	3 Lv (3AF)	0	0		
Bottle trapping	1 Lv (1AM)	0	0	0		
Netting	Not used	Not used	Not used	Not used		

Notes

Conclusion	Absent
Population class size	-

Surveys at Pond 141

Survey	1	2	3	4	5	6
Date	06/04/2011	20/04/2011	10/05/2011	19/05/2011		
Air temperature (°C)	10.5	14.8	9.1	11.3		
Water temperature (°C)	10	14.3	13.1	13.8		
Turbidity (0-5)						
Vegetation Cover (0-5)						
Egg search	0	0	0	0		
Torching	0	0	0	0		
Bottle trapping	Not used	Not used	Not used	Not used		
Netting	Not used	Not used	Not used	Not used		

Notes

All Surveys - 95% not accessible, access to banks too dangerous to trap or net

Conclusion	Absent
Population class size	-

Surveys at Pond 142

Survey	1	2	3	4	5	6
Date	06/04/2011	20/04/2011	19/05/2011	23/05/2011	-	-
Air temperature (°C)	9.5	15.1	11.1	8.5	-	-
Water temperature (°C)	9.3	15	13.9	12.1	-	-
Turbidity (0-5)						
Vegetation Cover (0-5)						
Egg search	Tc	Not used	Not used	Not used	-	-
Torching	200+ Lh/Lv, 142 Tc (56AF, 86AM)	200+ Lh/Lv, 103 Tc (42 AF, 61AM)	2 Lh (1AF, 1AM), 4 Lv (4AF), 2 Tc (2AF)	9 Lh (5AF, 4AF), 1 Lv (1AM), 3 Tc (3AF) , 2 U (Lh/Lv)	-	-
Bottle trapping	3 Lv (1AF, 2AM), 57 Tc (20AF, 37AM)	Not used	Not used	Not used	-	-
Netting	Not used	Not used	Not used	Not used	-	-
Notes	Surveys 4 and 5 did not go ahead due to alterations to the cable route. Netting and bottle trapping methods not used after survey 1 for welfare reasons – high population established.					

Conclusion	Present
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Population class size	High
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Surveys at Pond 144

Survey	1	2	3	4	5	6
Date	06/04/2011	20/04/2011	10/05/2011	19/05/2011	23/05/2011	25/05/2011
Air temperature (°C)	11	15.3	9.1	8.8	8.5	10.7
Water temperature (°C)	10	14.6	13.1	12.3	12.5	12.3
Turbidity (0-5)						
Vegetation Cover (0-5)						
Egg search	0	0	0	0	0	0
Torching	3 Lv (2AF, 1AM), 1 Tc (1AF)	7 Lv (7AF), 2 Tc (2AF)	50 Bb (50+L)	1 Tc (1AF) , 1 U (1AF)	Bb (L), 1 U (AF)	0
Bottle trapping	4 Lv (3AF, 1AM)	3 Lh (3AM), 1 Lv (1AF)	25 Bb (25+L)	0	0	1 Lv (1AM), 1 Tc (1AF)
Netting	Not used	Not used	Not used	Not used	Not used	Not used
Notes						

Conclusion	Present
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Population class size	Low
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Surveys at Pond 145

	1	2	3	4	5	6
<i>Survey</i>						
Date	03/04/12	11/04/12				
Air temperature (°C)	7	8.1				
Water temperature (°C)	-	-				
Turbidity (0-5)	1	1				
Vegetation Cover (0-5)	0	0				
Egg search	0	0				
Torching	0	2U(Lh/Lv)				
Bottle trapping	Not used	Not used				
Netting	0	0				
Notes	Surveys 1 and 2 – Bottle trapping not used – night time air temperature <5°C. Access refused after survey 2					
Conclusion	-					
Population class size	-					

Surveys at Pond 148

	1	2	3	4	5	6
<i>Survey</i>						
Date	03/04/12	11/04/12				
Air temperature (°C)	7	8.2				
Water temperature (°C)	-	-				
Turbidity (0-5)	1	1				
Vegetation Cover (0-5)	3	3				
Egg search	0	0				
Torching	0	0				
Bottle trapping	Not used	Not used				
Netting	Not used	Not used				
Notes	Surveys 1 and 2 – Bottle trapping not used – night time air temperature <5°C. Access refused after survey 2.					
Conclusion	-					
Population class size	-					

Surveys at Pond 202

Survey	1	2	3	4	5	6
Date	26/03/12	12/04/12	24/04/12	02/05/12	22/05/12	06/06/12
Air temperature (°C)	9.3	6.2	9.1	9.3	18.3	14.1
Water temperature (°C)	-	-	-	-	-	-
Turbidity (0-5)	2	2	3	3	2	3
Vegetation Cover (0-5)	4	2	3	3	4	3
Egg search	Tc found	Not used	Not used	Not used	Not used	Not used
Torching	4 Tc , 13Lv, 10U(Lh/Lv)	1Tc , 2Lv, 20U(Lh/Lv)	1Tc , 15Lv, 14U(Lh/Lv)	1Tc , 11Lv, 28U(Lh/Lv), 5Lh	5Tc , 3Lv, 7U(Lh/Lv), 1Rt	2 Tc , 3Lv, 4U(Lh/Lv), 2Lh (Rt, Bb larvae)
Bottle trapping	Not used	Not used	Not used	Not used	Not used	Not used
Netting	5Lv	3Lv	0	0	Not used	Not used
Notes	All surveys – Bottle trapping not used - Pond lined					

Conclusion	Present
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Population class size	Small
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Surveys at Pond 203

Survey	1	2	3	4	5	6
Date	26/03/12	12/04/12	24/04/12	02/05/12		
Air temperature (°C)	10.9	6.8	8.8	9.6		
Water temperature (°C)	-	-	-	13.3		
Turbidity (0-5)	3	1	1	1		
Vegetation Cover (0-5)	1	1	1	1		
Egg search	0	1U(Lh/Lv)	0	1U(Lh/Lv)		
Torching	7Lv, 1U(Lh/Lv), 9BbA	25Lv, 8U(Lh/Lv), BbL	17Lv, 10U(Lh/Lv), 1RtA	20Lv, 19U(Lh/Lv), Bb		
Bottle trapping	Not used	Not used	7Lv, 2U(Lh/Lv)	7Lv, 2U(Lh/Lv)		
Netting	0	0	0	0		
Notes	Surveys 1 and 2 – Bottle trapping not used – night time air temperature <5°C					

Conclusion	Absent
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Population class size	-
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Surveys at Pond 204

	1	2	3	4	5	6
<i>Survey</i>						
Date	26/03/12	12/04/12	24/04/12	02/05/12		
Air temperature (°C)	10.5	7.1	8.6	9.2		
Water temperature (°C)	-	-	-	-		
Turbidity (0-5)	2	1	1	2		
Vegetation Cover (0-5)	0	0	0	0		
Egg search	0	0	0	0		
Torching	0	3U(Lh/Lv)	13U(Lh/Lv)	3Lv, 2U(Lh/Lv), 1BbA		
Bottle trapping	Not used	Not used	Not used	Not used		
Netting	Not used	Not used	Not used	Not used		
Notes	All surveys – bottle trapping and netting not used – deep mud prevents safe access					
Conclusion	Absent					
Population class size	-					

Surveys at Pond 205

	1	2	3	4	5	6
<i>Survey</i>						
Date	27/03/12	16/04/12	25/04/12	02/05/12	23/05/12	31/05/12
Air temperature (°C)	7.2	4.0	9.4	10.4	17.7	15.1
Water temperature (°C)	-	-	-	-	-	-
Turbidity (0-5)	3	2	1	1	3	3
Vegetation Cover (0-5)	3	1	1	1	4	5
Egg search	Tc found	Not used	Not used	Not used	Not used	Not used
Torching	0	1U(Lh/Lv)	1Tc , 13U(Lh/Lv), 1RtA	2Tc , 2Lv, 7U(Lh/Lv)	1RtA, 1BbA	0
Bottle trapping	Not used	Not used	Not used	Not used	Not used	Not used
Netting	Not used	Not used	Not used	Not used	Not used	Not used
Notes	All surveys – Bottle trapping and netting not used – deep mud prevents safe access					
Conclusion	Present					
Population class size	Small					

Surveys at Pond 208

	1	2	3	4	5	6
<i>Survey</i>						
Date	28/03/12	17/04/12	30/04/12	08/05/12		
Air temperature (°C)	7	7.1	12.2	11.7		
Water temperature (°C)	-	-	13.2	-		
Turbidity (0-5)	2	2	2	2		
Vegetation Cover (0-5)	0	0	0	0		
Egg search	0	0	0	0		
Torching	4U(Lh/Lv), 1RtA	1U(Lh/Lv)	1BbA	2Lv, 2U(Lh/Lv)		
Bottle trapping	Not used	Not used	0	0		
Netting	0	0	Not used	Not used		

Notes Surveys 1 and 2 – Bottle trapping not used – night time air temperature <5°C

Conclusion Absent

Population class size -

Surveys at Pond 210

	1	2	3	4	5	6
<i>Survey</i>						
Date	27/03/12	16/04/12	24/04/12	02/05/12	22/05/12	06/06/12
Air temperature (°C)	12	5.9	9.6	10.8	16.5	13.8
Water temperature (°C)	-	-	11.6	13.3	19.9	16.8
Turbidity (0-5)	3	2	1	1	2	2
Vegetation Cover (0-5)	1	1	1	1	1	1
Egg search	Tc found	Not used	Not used	Not used	Not used	Not used
Torching	7Tc , 4Lv	2Tc , 1Lv, 1RtA	3U(Lh/Lv)	8Tc , 1Lv, 2U(Lh/Lv), 2Lh	42Tc , 5Lv, 5U(Lh/Lv), RtA	1Tc , U(Lh/Lv/Tc) (larvae), Rt & Bb (larvae)
Bottle trapping	Not used	Not used	1Tc , 2Lv, 2U(Lh/Lv)	2Tc , 1Lh	Not used	7 Lv
Netting	Not used	0	0	0	Not used	Not used

Notes Survey 1 and 2 – Bottle trapping not used - night time air temperature <5°C. Survey 5 – Bottle trapping not used – water temperature >18°C. 40% of pond perimeter could not be access due to dense vegetation.

Conclusion Present

Population class size Medium

Surveys at Pond 213

	1	2	3	4	5	6
<i>Survey</i>						
Date	27/03/12	16/04/12	25/04/12	02/05/12	23/05/12	31/05/12
Air temperature (°C)	7.9	4	9.5	11.7	19	14.8
Water temperature (°C)	-	-	11.1	12.8	20.2	17.8
Turbidity (0-5)	1	1	1	1	1	1
Vegetation Cover (0-5)	4	4	4	3	3	4
Egg search	0	0	0	0	0	0
Torching	42Lv, 42U(Lh/Lv)	1Tc, 6Lv, 8U(Lh/Lv)	1Tc, 32Lv, 28U(Lh/Lv), 1RtA	5Tc, 34Lv, 30U(Lh/Lv), 6Lh	21Tc, 19Lv, 32U(Lh/Lv), 7Lh, 2RtA	10Tc, 1Lv, 8U(Lh/Lv)
Bottle trapping	Not used	Not used	3Tc, 9Lv, 5U(Lh/Lv)	2Tc, 4Lv, 4U(Lh/Lv)	Not used	12 Tc
Netting	0	0	Not used	Not used	Not used	Not used
Notes	Survey 1 and 2 – Bottle trapping not used - night time air temperature <5°C. Survey 5 – Bottle trapping not used – water temperature >18°C.					

Conclusion	Present
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Population class size	Medium
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Surveys at Pond 219

	1	2	3	4	5	6
<i>Survey</i>						
Date	26/03/12	12/04/12	24/04/12	02/05/12	22/05/12	06/06/12
Air temperature (°C)	8.9	5.9	7.9	10.2	16.2	13.4
Water temperature (°C)	-	-	8.2	11.5	>18	14.3
Turbidity (0-5)	1	1	1	3	4	2
Vegetation Cover (0-5)	0	1	0	0	0	0
Egg search	0	0	0	0	0	0
Torching	1Tc, 4Lv, 2U(Lh/Lv), 1Rt	5Tc, 2U(Lh/Lv)	2Tc, 1RtA	2Tc	3Tc, 1U(Lh/Lv)	0
Bottle trapping	Not used	Not used	0	0	Not used	0
Netting	0	0	Not used	Not used	Not used	Not used
Notes	Surveys 1 and 2 – Bottle trapping not used - night time air temperature <5°C. Survey 5 – Bottle trapping not used – Water temperature >18°C. Surveys 4, 5 and 6 – Access not possible to 50% of pond perimeter due to rise in water level following heavy rain.					

Conclusion	Present
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Population class size	Small
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Surveys at Pond 220

	1	2	3	4	5	6
<i>Survey</i>						
Date	28/03/12	17/04/12	30/03/12	08/05/12	-	-
Air temperature (°C)	9.6	8.1	14.8	11.8	-	-
Water temperature (°C)	-	-	15.1	14.7	-	-
Turbidity (0-5)	4	4	4	4	-	-
Vegetation Cover (0-5)	1	1	1	1	-	-
Egg search	(Lh/Lv) found	(Lh/Lv) found	(Lh/Lv) found	(Lh/Lv) found	-	-
Torching	3Lv	RtL, BbL	2U(Lh/Lv), 1BbA	1Lv, 2U(Lh/Lv), 1Lh	-	-
Bottle trapping	Not used	Not used	0	0	-	-
Netting	0	0	Not used	Not used	-	-
Notes	Surveys 1 and 2 – Bottle trapping not used - night time air temperature <5°C.					
Conclusion	Absent					
Population class size	-					

Surveys at Pond 222

	1	2	3	4	5	6
<i>Survey</i>						
Date	28/03/12	17/04/12	30/04/12	08/05/12	24/05/12	30/05/12
Air temperature (°C)	9.3	8.1	13.7	11.5	19.5	14.2
Water temperature (°C)	-	-	14.3	15.5	20.4	18.2
Turbidity (0-5)	4	1	4	4	2	2
Vegetation Cover (0-5)	0	0	0	1	3	1
Egg search	0	0	<i>Tc</i>			
Torching	4U(Lh/Lv)	1U(Lh/Lv)	4Tc, 1U(Lh/Lv), 3RtA	2Tc, 1Lv, 2U(Lh/Lv), 1RtA, 1BbA	1Tc, 5RtA, 2BbA	2 Lv, 1 RtA
Bottle trapping	Not used	Not used	<i>3Tc</i>			
Netting	Not used	Not used	Not used	0	Not used	Not used
Notes	Surveys 1 and 2 – Bottle trapping and netting not used - night time air temperature <5°C and water depth too shallow. Surveys 5 and 6 – Bottle trapping not used – Water temperature >18°C.					
Conclusion	Present					
Population class size	Small					

Surveys at Pond 223

	1	2	3	4	5	6
<i>Survey</i>						
Date	28/03/12	17/04/12	30/04/12	08/05/12	24/05/12	30/05/12
Air temperature (°C)	9.5	8.1	13.1	11.5	18.5	14.2
Water temperature (°C)	-	-	13.3	12.9	20.2	18.4
Turbidity (0-5)	3	2	1	3	2	2
Vegetation Cover (0-5)	1	1	1	0	1	1
Egg search	Tc found	Not used	Not used	Not used	Not used	Not used
Torching	11 Tc , 1 Lv, 7 U(Lh/Lv)	4 Tc , 2 U(Lh/Lv)	23 Tc , 10 U(Lh/Lv), 2RtA	28 Tc , 1Lv, 2 U(Lh/Lv)	16 Tc , 1 Lv, 3 U(Lh/Lv), 2Rt	3 Tc , 1Lv, 2U(Lh/Lv)
Bottle trapping	Not used	Not used	17Tc , 2U(Lh/Lv)	11Tc , 1Lv	Not used	Not used
Netting			Not used	Not used	Not used	Not used
	<i>1 Tc</i>	<i>1 Tc</i>				

Notes Surveys 1 and 2 – Bottle trapping not used - night time air temperature <5°C. Surveys 5 and 6 – Bottle trapping not used – Water temperature >18°C.

Conclusion	Present
Population class size	Medium

Surveys at Pond 224

	1	2	3	4	5	6
<i>Survey</i>						
Date	30/04/12	02/05/12	08/05/12	22/05/12	24/05/12	30/05/12
Air temperature (°C)	13.2	12.2	11.5	15.5	19.7	14.0
Water temperature (°C)	12.9	-	12.4	-	20.6	-
Turbidity (0-5)	2	2	3	4	4	-
Vegetation Cover (0-5)	1	1	0	1	4	-
Egg search	0	0	0	0	0	0
Torching	1 Lv, 2U(Lh/Lv)	0	0	0	1 RtA	2Rt
Bottle trapping	1 Tc	0	0	Not used	Not used	Not used
Netting	Not used	Not used	Not used	Not used	Not used	Not used

Notes Initiation of survey delayed - Pond initially dry and became wet after heavy rain. Surveys 4, 5 and 6 – Bottle trapping and netting not used – Water temperature >18°C and water depth too shallow.

Conclusion	Present
Population class size	Small

Surveys at Pond 225

	1	2	3	4	5	6
<i>Survey</i>						
Date	02/04/12	23/04/12	01/05/12	09/05/12		
Air temperature (°C)	8.0	8.1	10.2	14.8	-	-
Water temperature (°C)	-	-	14.5	15.0	-	-
Turbidity (0-5)	4	4	4	4	-	-
Vegetation Cover (0-5)	1	1	1	1	-	-
Egg search	0	0	0	0	-	-
Torching	0	4U(Lh/Lv)	0	0	-	-
Bottle trapping	Not used	Not used	0	0	-	-
Netting	0	0	Not used	Not used	-	-
Notes	Surveys 1 and 2 – Bottle trapping not used - night time air temperature <5°C.					
Conclusion	Absent					
Population class size	-					

Surveys at Pond 225b

	1	2	3	4	5	6
<i>Survey</i>						
Date	02/04/12	23/04/12	01/05/12	09/05/12	23/05/12	31/05/12
Air temperature (°C)	8.0	7.0	8.9	8.9	18.6	15.1
Water temperature (°C)	-	-	-	-	-	-
Turbidity (0-5)	4	3	4	3	4	4
Vegetation Cover (0-5)	0	0	0	0	0	0
Egg search	0	0	0	0	Not used	Not used
Torching	0	5Tc, 1Lv 1Tc (dead)	8Tc, 2Lv, 2U(Lh/Lv)	7Tc, 1 U(Lh/Lv)	5Tc, 1Lv, 3U(Lh/Lv)	6Tc, 1U(Lh/Lv)
Bottle trapping	Not used	Not used	Not used	Not used	Not used	Not used
Netting	1Lv	1 Tc (dead)	0	0	Not used	Not used
Notes	All surveys – Bottle trapping not used – Concrete bottom.					
Conclusion	Present					
Population class size	Small					

Surveys at Pond 226

	1	2	3	4	5	6
<i>Survey</i>						
Date	02/04/12	23/04/12	01/05/12	09/05/12	23/05/12	31/05/12
Air temperature (°C)	8.0	7.6	9.6	14.3	17.8	15.2
Water temperature (°C)	-	-	13.2	14.1	20.0	18.5
Turbidity (0-5)	2	3	3	3	2	1
Vegetation Cover (0-5)	1	4	3	2	2	2
Egg search	0		Not used	Not used	Not used	Not used
		<i>Tc</i>				
Torching	11 Lv	4 Tc, 5U(Lh/Lv)	3Tc, 5Lv, 2Lh, 7U(Lh/Lv)	2Tc, 1Lv, 5U(Lh/Lv), 3Lh	10 Tc, 25Lv	4Tc, 17Lv, 3Lh, 21U(Lh/Lv)
Bottle trapping	Not used	Not used	5Lv, 3Lh	9Tc, 3Lv, 2Lh	Not used	Not used
Netting	1 Lv	2Lh, 1RtA	2Lv, 2Lh	0	Not used	Not used
Notes	Surveys 1 and 2 – Bottle trapping not used - night time air temperature <5°C. Surveys 5 and 6 – Bottle trapping not used – Water temperature >18°C.					

Conclusion	Present
Population class size	Small

Surveys at Pond 227

	1	2	3	4	5	6
<i>Survey</i>						
Date	11/04/12	-	-	-	-	-
Air temperature (°C)	8.5	-	-	-	-	-
Water temperature (°C)	-	-	-	-	-	-
Turbidity (0-5)	3	-	-	-	-	-
Vegetation Cover (0-5)	1	-	-	-	-	-
Egg search	0	-	-	-	-	-
Torching	0	-	-	-	-	-
Bottle trapping	Not used	-	-	-	-	-
Netting	0	-	-	-	-	-
Notes	Survey 1 – Bottle trapping not used - night time air temperature <5°C. Access refused after survey 1.					

Conclusion	-
Population class size	-

Surveys at Pond 233

	1	2	3	4	5	6
<i>Survey</i>						
Date	03/04/12	11/04/12				
Air temperature (°C)	7.0	8.2	-	-	-	-
Water temperature (°C)	-	-	-	-	-	-
Turbidity (0-5)	4	4	-	-	-	-
Vegetation Cover (0-5)	0	0	-	-	-	-
Egg search	0	0	-	-	-	-
Torching	2 Tc, 2U(Lh/Lv)	1Lv, 8U(Lh/Lv)	-	-	-	-
Bottle trapping	Not used	Not used	-	-	-	-
Netting	0	0	-	-	-	-
Notes	Surveys 1 and 2 – Bottle trapping not used - night time air temperature <5°C. Access refused after survey 2.					

Conclusion	Present
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Population class size	-
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Surveys at Pond 234

	1	2	3	4	5	6
<i>Survey</i>						
Date	03/04/12	11/04/12				
Air temperature (°C)	7.0	7.2	-	-	-	-
Water temperature (°C)	-	-	-	-	-	-
Turbidity (0-5)	1	1	-	-	-	-
Vegetation Cover (0-5)	0	0	-	-	-	-
Egg search	0	0	-	-	-	-
Torching	1Tc, 4Lv,5U(Lh/Lv)	1Tc, 3U(Lh/Lv)	-	-	-	-
Bottle trapping	Not used	Not used	-	-	-	-
Netting	0	0	-	-	-	-
Notes	Surveys 1 and 2 – Bottle trapping not used - night time air temperature <5°C. Access refused after survey 2.					

Conclusion	Present
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Population class size	-
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Codes used in the tables:

Tc – Great Crested Newt (*Triturus cristatus*)Lv – Smooth Newt (*Lissotriton vulgaris*)Lh – Palmate Newt (*Lissotriton helveticus*)U(Lh/Lv) – Small Newt (*Lissotriton vulgaris* or *Lissotriton helveticus*) not identified to species

U – Newt not identified to species

Rt – Common Frog (*Rana temporaria*)Bb – Common Toad (*Bufo bufo*)

A – Adult

J – Juvenile

SA – Sub-adult

Not used – survey method not used

APPENDIX H – REPTILE SURVEY WEATHER DATA

Site No	Survey Visit	Date	Time	Temp. (Air)	Wind (Beaufort)	Cloud (Octas)	Suitable Conditions Yes, No or Fair
REP 001	1	23/05/12	09:00	20.1	2	0	Fair
	2	25/05/12	09:15	23.1	2	0	Fair
	3	31/05/12	08:55	16.0	2	6	Yes
	4	06/06/12	10:05	17.8	2	7	Yes
	5	22/06/12	09:00	17.0	3	6	Yes
	6	03/07/12	10:30	16.0	1	6	Yes
	7	12/07/12	09:00	14.0	1	3	Yes
REP 002	1	23/05/12	09:00	20.1	2	0	Fair
	2	25/05/12	09:15	23.1	2	0	Fair
	3	31/05/12	08:55	16.0	2	6	Yes
	4	06/06/12	10:05	17.8	2	7	Yes
	5	22/06/12	09:00	17.0	3	6	Yes
	6	03/07/12	10:30	16.0	1	6	Yes
	7	12/07/12	09:00	14.0	1	3	Yes
REP 003	1	26/05/11	08.00	15.7	3	8	Yes
	2	02/06/11	09.05	15	3	0	Yes
	3	25/08/11	13.00	19	2	4	Yes
	4	12/09/11	12.30	25	6	4	Fair
	5	26/09/11	14.00	19.3	2	4	Yes
	-						
	-						
REP 004	1	23/05/12	09:00	20.1	2	0	Fair
	2	25/05/12	09:15	23.1	2	0	Fair
	3	31/05/12	08:55	16.0	2	6	Yes
	4	06/06/12	10:05	17.8	2	7	Yes
	5	22/06/12	09:00	17.0	3	6	Yes
	6	03/07/12	10:30	16.0	1	6	Yes
	7	12/07/12	09:00	14.0	1	3	Yes
REP 005	1	23/05/12	09:00	20.1	2	0	Fair
	2	25/05/12	09:15	23.1	2	0	Fair
	3	31/05/12	08:55	16.0	2	6	Yes
	4	06/06/12	10:05	17.8	2	7	Yes
	5	22/06/12	09:00	17.0	3	6	Yes
	6	03/07/12	10:30	16.0	1	6	Yes
	7	12/07/12	09:00	14.0	1	3	Yes
REP 006	1	26/05/11	08.00	15.7	3	8	Yes
	2	02/06/11	09.05	15	3	0	Yes
	3	07/09/11	13.30	18.8	3	7	Yes
	4	12/09/11	12.15	25	6	4	Fair
	5	26/09/11	14.00	19.3	2	4	Yes
	-						
	-						

Site No	Survey Visit	Date	Time	Temp. (Air)	Wind (Beaufort)	Cloud (Octas)	Suitable Conditions Yes, No or Fair
REP 007	1	23/05/12	09:00	20.1	2	0	Fair
	2	25/05/12	09:15	23.1	2	0	Fair
	3	31/05/12	08:55	16.0	2	6	Yes
	4	06/06/12	10:05	17.8	2	7	Yes
	5	22/06/12	09:00	17.0	3	6	Yes
	6	03/07/12	10:30	16.0	1	6	Yes
	7	12/07/12	09:00	14.0	1	3	Yes
REP 008	1	23/05/12	09:00	20.1	2	0	Fair
	2	25/05/12	09:15	23.1	2	0	Fair
	3	31/05/12	08:55	16.0	2	6	Yes
	4	06/06/12	10:05	17.8	2	7	Yes
	5	22/06/12	09:00	17.0	3	6	Yes
	6	03/07/12	10:30	16.0	1	6	Yes
	7	12/07/12	09:00	14.0	1	3	Yes
REP 009	1	26/07/11	10:00	15	3	0	Yes
	2	08/08/11	12:00	17	3	6	Yes
	3	23/08/11	15:15	18	0	8	Yes
	4	12/09/11	12:00	25	6	4	Fair
	5	29/09/11	14:00	25.2	1	0	Fair
	-						
	-						

***APPENDIX I – TERRESTRIAL INVERTEBRATE SCOPING SURVEY
REPORT***



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40 The Green
South Bar
Banbury
OX16 9AE

Our reference: BS/2688/12

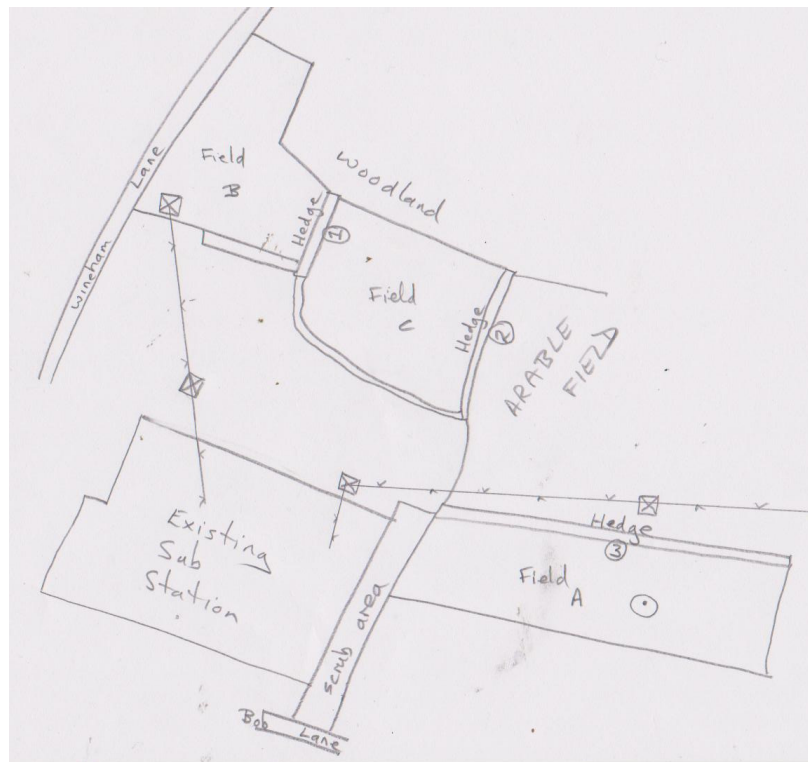
28th May 2012

Dear Victoria,

Rampion Sub-station: Appraisal of Invertebrate Interest

Further to your e-mailed instruction of 19th April 2012, I am now able to report my professional opinions following the visit that I made to the area around the sub-station with you on 25th May 2012.

Please refer to the following sketch map, which indicates the areas that I examined.



Invertebrate habitats encountered

I examined in detail three separate fields, labelled as Fields A, B and C in the map above. I also looked at three hedges (labelled as Hedges 1, 2 and 3) and a single, isolated oak tree in the middle area of Field A (Tree 1). My findings are as follows:

Field A (*Sub-station Option A*)

There is a visual definition into three zones, based on sward height and colour. Alongside the length of Hedge 3 a strip is evidently mown at least annually. Blackthorn saplings that have grown during the current year arise from older rootstocks and a small number of oak seedlings arise from acorns; these facts suggest that the grass here has not yet been mown this year.

The main bulk of the field is rather poor semi-improved grassland that differs in colour in the western and eastern halves, suggesting that there is a different dominant grass species in each. Apart from this obvious difference, the entire field seems to support extremely few flowering plant species and so will present an inevitably poor foraging resource for insects that depend upon pollen and nectar as an energy source.

The intrinsic invertebrate interest of this field is, consequently, expected to be low and will certainly be lower than that of other local grasslands that have a greater floral diversity.

Field B (*Sub-station Option B – west side*)

This is more herb-rich than Field A and is evidently grazed by horses from time to time, but nevertheless is of a semi-improved character. The floral diversity is significantly lower than some other fields in the local area and the invertebrate assemblage associated with it will be similarly reduced.

An adjacent tree group to the north provides shelter and a measure of micro-climate control over the site. The grassland/woodland interface is relatively abrupt, but nevertheless apparently contributes significantly to invertebrate habitat diversity. Indeed, the greatest invertebrate interest of this field is likely to be vested in its perimeter zone, both in the woodland/grassland interface and alongside the hedges in the south and east, with Hedge 1 perhaps being particularly important.

Field C (*Sub-station Option B – east side*)

The sward in this field is clearly un-improved. A wide range of plant species, including at least one species of orchid, is expected to be attended by an equally wide range of invertebrate taxa. As with Field B it is sheltered by woodland, that also creates an edge-zone habitat, and by Hedge 2.

This field will also have a high invertebrate interest associated with its edge habitats but unlike Fields A and B this one will also support a significantly raised intrinsic invertebrate interest within the grassland itself. This field is regarded as being of high invertebrate conservation value.

Hedge 1

The hedge itself has evidently been flailed on a regular basis and this will have significantly damaged its intrinsic invertebrate interest, though it does assist in the control of microclimate in fields B and C. However, the four mature oak trees within its length demonstrate a considerably higher value. Several species were noted including examples of the hoverfly *Brachyopa scutellaris* flying about the bases of the trunks. This is a saproxylic species that is Nationally Scarce.

Saproxylic invertebrates are those that are dependent, during at least some part of their life-cycle, upon dead or dying wood of usually over-mature, damaged or dead trees (standing or fallen), upon wood-inhabiting fungi or upon other species associated with this habitat or upon microhabitats associated with the process of decay of wood, including sap-runs, rot-holes, fungal hyphae and others. There are over 1,700 species of invertebrate in the UK which depend to a lesser or greater extent on decaying wood habitat for the successful completion of their lifecycle. This number represents 6% of the total UK invertebrate fauna.

Saproxyllic micro-habitats are prominent in association with these trees. In particular there is a relatively large volume of undisturbed aerial dead wood. This feature supports a range of invertebrates that differs from those affecting fallen timber and this element of the invertebrate fauna, at least, is probably of very high conservation interest.

Hedge 2

This hedge also contains a line of mature oak trees. The hedge itself has widened with age and the central zone is rather devoid of vegetation, so that there are effectively two closely parallel hedge lines forming the single unit. The shaded, central zone is probably rather poor for invertebrates but as with Hedge 1, this compartment will also have a raised invertebrate interest, as well as acting in some degree as a controller of micro-climate within the fields.

Hedge 3

The original hedge seems now to be rather lost along the midline within a Blackthorn-dominated secondary growth that has caused the hedge to become exceptionally wide.

Although the adjacent grassland strip is evidently mown, so that a transitional herb zone has not developed, the hedge remains well-structured, with mature trees in the mid-line forming the apex of a low triangle in cross-section. This creates an edge habitat on both sides of the hedge that not only has an intrinsic invertebrate interest but which will certainly act as a physical corridor for invertebrate movement across the wider landscape.

It should be noted, in addition, that all of the hedges, including those not examined, form a physically continuous network within the wider landscape. The raised invertebrate interest of grassland, woodland, hedgerow and other habitats in the local area will depend upon this network to a considerable degree for its overall well-being.

Tree 1 (*in the centre of Substation Option A*)

In general, mature trees of native British species have a raised interest in terms of invertebrate conservation and Tree 1 will indeed support a range of invertebrate species. That said, Tree 1 appears to be somewhat lacking in micro-habitats of interest to specialist invertebrates (such as dead branches, sap runs, hollows, etc) and additionally it rests exposed in the centre of an open, herb-poor field so that there is no physical continuity with other tree groups or hedges.

Although aesthetically pleasant it may, therefore, not have a role in invertebrate conservation that is at the same high level of those trees that are positioned within the older hedgerows.

Conclusions and recommendations

It is my opinion that Field C, particularly in combination with Hedge 1 and to a lesser extent Hedge 2, has a significantly high value as an invertebrate habitat and it is, consequently, regarded as being of high overall conservation significance. These three features should, ideally, be retained.

The loss of any part of the unimproved grassland habitat or associated hedges would necessitate a significant degree of mitigation. Additional survey work would be important in that situation to ensure that such mitigation is wholly appropriate.

The loss of Field B may be of lesser consequence in terms of the wider invertebrate ecology, but the loss of any of the oak trees from Hedge 1, or indeed their incidental degradation as a consequence of removing the rather poor hedge that protects them, ought to be avoided.

Field A has little apparent invertebrate interest at present, but the loss of Hedge 3 will have a major negative impact on invertebrate movement across the wider landscape. If at all possible, Hedge 3 ought to be retained.

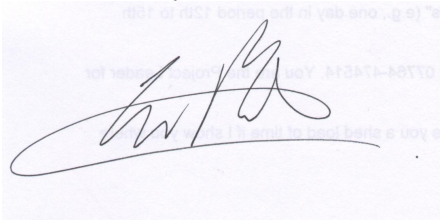
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I hope that this report is adequate for the current needs of your client. I emphasise the need for additional survey and interpretation in order to guide mitigation if there is an intention to damage Field C or Hedge 1 in particular. I would also be keen to gain a better understanding of Hedge 3 if this is to be lost – again so that mitigation might be better designed. The loss of other areas could be more easily mitigated using best practice.

If you have any questions please do not hesitate to contact me.

With best wishes,

Yours sincerely,

A handwritten signature in black ink, appearing to read 'C. W. Plant', is written over a light blue rectangular background. The signature is fluid and cursive, with a long horizontal stroke extending to the left.

Colin W. Plant
Managing Partner