Preliminary Ecological Assessment

For Developmental Application Site

At Linnburn

Hill Road

Tak Ma Doon Road

Kilsyth

North Lanarkshire

G65 0RQ

October 2021

Prepared by Baker Ecology for Andrew Bennie Planning Limited

Executive Summary
Baker Ecology was commissioned in October 2021 to conduct a Preliminary Ecological Appraisal (PEA) for an Application Site adjacent to Linnburn, Kilsyth. The survey considered not only habitats and species of plant present but also the potential presence of relevant European Protected Species (bats), Badgers, and potential breeding birds, with particular reference to those species with enhanced statutory protection.

Plants and Habitats
Habitats and species were common with no notable species or habitats found within the Application Site so are not constraints for development. However, if trees are being retained within site and adjacent to it, they must be protected adequately during site preparation and construction by following British Standards guidance for trees in relation to design, demolition and construction.

Bats
There was no bat roost potential in any tree within the Application Site so roosting bats are not an ecological constraint for the proposed development.

Badger
There was no evidence of Badgers within the Application Site or immediate 30m buffer zone, so they are not an ecological constraint for development.

Potential Breeding Birds
The Application Site had negligible value for breeding birds but there is some limited scope for a few common birds to use the shrubs and conifers as habitat for breeding. It is therefore possible that breeding birds could be a negligible - minor constraint depending on the time of year that any soft landscaping or site preparation works commences. We therefore recommend that to maintain an overall high due regard for the potential for breeding birds to be present any soft landscaping (i.e., shrub thinning or management or tree removal) is done between October and the end of February to avoid the bird breeding season.

If it is not possible to complete such works during the recommended period any breeding bird presence that may be a constraint can be confirmed by a walkover survey by an ecologist who can establish any immediate exclusion areas where site preparation would be delayed until breeding by the birds was complete – this would allow works in the rest of the site to continue.

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1. Introduction

Baker Ecology was commissioned in September 2021 to conduct a Preliminary Ecological Appraisal (PEA) for an Application Site adjacent to Linnburn, Kilsyth. The Site (NS 72050 78442, Figure 1.) consisted of amenity short-mown lawn, neglected ground and shrubbery. The site was bordered by existing residential development to the east, south, and west beyond Hill Road, with woodland and pasture to the north.

2. Scope of Assessment and Survey

The extended Phase I Habitat survey considered not only habitats and species of plant present but also the potential presence of relevant European Protected Species (bats), Badgers, and potential breeding birds, with particular reference to those species with enhanced statutory protection. Trees within the Application Site were also assessed. Surveys took place within the land ownership only, due to legal access constraints.

3. Relevant Policy and Guidance

This ecological assessment has been undertaken with regard to the legislative requirements given in the following:

- The Conservation (Natural Habitats &c.) Regulations 1994 (The Habitats Regulations);
- The Conservation (Natural Habitats &c.) Amendment (Scotland) Regulations as amended (2004, 2007, 2008, 2011, and 2012);
- Nature Conservation (Scotland) Act, 2004;
- Wildlife and Countryside Act 1981 (and subsequent amendment through The Conservation (Natural Habitats &c.) Amendment (Scotland) Regulations 2007, 2009, & 2011);
- Wildlife & Natural Environment (Scotland) Act (2011);
- Protection of Badgers Act, 1992 (and subsequent amendment through The Nature Conservation (Scotland) Act 2004);
- Wild Mammals (Protection) Act, 1996;
- The Convention on the Conservation of European Wildlife and Natural Habitats (The Berne Convention), 1979;
- The Land Reform (Scotland) Act, 2003;
- Scottish Planning Policy (June 2014) replaces NPPG14 and SPP (February 2010);
- The North Lanarkshire Biodiversity Strategy 2015 - 2020 (SLBS);
- The UK Biodiversity Action Plan (UK BAP), revised priority list 2007; and the
- Scottish Biodiversity List 2007

3.1. Biodiversity Status

The UK Biodiversity Action Plan (BAP) is the UK Government's commitment to the Convention on Biological Diversity signed in 1992. It is comprised of two types of Action Plans developed to set priorities for nationally and locally important habitats and wildlife:

Species Action Plans

- Produced for UK BAP Priority Species: information on the threats facing 382 species and action plan targets to achieve a positive conservation status;

- Grouped Species Action Plans - common policies, actions and targets for similar species, for example for Eyebrights, or Commercial Marine Fish. There are nine grouped action plans;

- Species Statements - overview of the status of species and broad policies developed to conserve them for two groups of species.

Several bat species are UK BAP priority species with action plans. Soprano Pipistrelles are a UK Biodiversity Action Plan priority species but Common Pipistrelle bats have now been removed from the list (2007). Daubenton's bat is a species of UK conservation concern.

Habitat Action Plans

- Broad Habitat Statements - summary descriptions of 28 natural, semi-natural and urban habitats and the current issues affecting the habitat and broad policies to address them; and

- UK BAP Priority Habitat Action Plans - detailed descriptions for 45 habitats falling within the Broad Habitat classification and detailed actions and targets for conserving these habitats.

Local Biodiversity Action Plans

Each Local Biodiversity Action Plan (LBAP) partnership, usually but not always at the local authority level identifies and establishes actions to conserve local priorities and also link this action to the delivery of national Species and Habitat Action Plan targets wherever possible. Grouped action plans at this level include bats, and Waders, for example.

Soprano & Common Pipistrelle bats were key species in the previous South Lanarkshire Biodiversity Strategy as all UK key BAP species were classed as key species locally. In the latest version of the strategy an ecosystem approach is taken, which encompasses conservation of key species by conservation of habitats.

3.2. Notable Habitats and Plants

Notable habitats in the UK are protected by statutory designation as Special Areas of Conservation if their value is recognised internationally, Sites of Special Scientific Interest (SSSI) if have a national value, or as Local Nature Reserves (LNR) if valued within a local authority area. The Wildlife and Countryside Act 1981 transposes European legislation conferring protection on such habitats: Sections 28 to 33 of Part 2 of the Wildlife and Countryside Act detail the law regarding SSSIs. Sections 34 to 53 deal with other protected areas within Great Britain.

Several plant species are classed as European Protected Species and are listed in Annex IV of the EC Habitats Directive, and in the UK on Schedule IV of the Conservation (Natural Habitats &c.) Regulations 1994 (The Habitats Regulations). In addition, there are a number of species protected by the Wildlife & Countryside Act 1981, which makes it an offence (subject to exceptions) to pick, uproot, trade in, or possess (for the purposes of trade) any wild plant listed in Schedule 8, and prohibits the unauthorised intentional uprooting of such plants. It also contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9. It also provides a mechanism making any of the above offences legal through the granting of licences by the appropriate authorities.

The most problematic invasive, non-native plants were listed on Schedule 9 of the Wildlife & Countryside Act 1981. Under section 14(2) of the Act it was an offence to plant or otherwise cause to grow any species of plant listed on Schedule 9. Due to identification of a whole host of additional

problematic invasive species a draft list of species for addition to the Schedule was prepared in 2007 and consulted on.

Invasive species presence across ownership boundaries raised issues with liability at many sites where any scheduled invasive plant species have knowingly been allowed to spread onto neighbouring properties as it was illegal to allow them to spread thus. The relatively recent Wildlife & Natural Environment (Scotland) Act (2011) significantly amended the Wildlife and Countryside Act in Scotland, and has removed ambiguity on liability by simplifying the issue of invasive non-native species in the wild and avoided the need for addition to a revised list by simply making it an offence to plant or cause **any** non-native plant species to grow in the wild. This change in policy has brought Scotland to the forefront of invasive species and control by demonstrating a high recognition of the issues invasive plant species are causing including high costs for control and eradication.

Some invasive species are more onerous to deal with than others, for example, Japanese Knotweed may take three or more years to eradicate, and any waste containing Japanese Knotweed is classed as controlled waste, and cannot be used for exemptions under Waste Management Licensing. For off-site disposal it must be buried in a licensed landfill site at a depth of at least 5m. Section 34 of the Environmental Protection Act 1990 places a duty of care on all waste producers to ensure that any wastes are disposed of safely and that a written description of the wastes, and any specific harmful properties, is provided to the site operator. Failure to appropriately dispose of any material containing Japanese Knotweed or several other invasive species may lead to prosecution under Sections 33 and 34 of the Environmental Protection Act 1990 and Section 14 of the WCA 1981. The Nature Conservation (Scotland) Act 2004 increased the penalties available to someone committing a Section 14 offence. Penalties on summary conviction were increased to include imprisonment for up to six months and/or a fine not exceeding £40,000. On conviction on indictment, the penalties are an unlimited fine (i.e., whatever the court feels to be commensurate with the offence) and/or a 2-year prison sentence.

3.3. European Protected Species: The Conservation (Natural Habitats &c.) Regulations 1994 (The Habitats Regulations)

Full consideration of European Protected Species (EPS) must be given as part of the planning application process, not as an issue to be dealt with at a later stage.

As stated previously, several plant species are classed as European Protected Species and are listed in Annex IV of the EC Habitats Directive, and in the UK on Schedule IV of the Conservation (Natural Habitats &c.) Regulations 1994 (The Habitats Regulations). Full consideration of European Protected Species (EPS) must be given as part of the planning application process, not as an issue to be dealt with at a later stage. The European Protected Species of potential relevance to this survey area were the following nine species of plant:

Creeping Marshwort	*Apium repens*
Early Gentian	*Gentianella anglica*
Fen Orchid	*Liparis loeselii*
Floating-leaved water Plantain	*Luronium natans*
Kilarney Fern	*Trichomanes speciosum*
Lady's Slipper	*Cypripedium calceolus*
Slender Naiad	*Najas flexilis*
Shore Dock	*Rumex rupestris*
Yellow Marsh Saxifrage	*Saxifraga hirculus*

The European Protected Species of animal of potential relevance to this survey area were bat species found in the Central Belt of Scotland.

European Protected Species are protected in Annex IVa in the EC Habitats and Species Directive, which is transposed into UK legislation by the Conservation (Natural Habitats &c.) Regulations 1994 (Schedule II of The Habitats Regulations). The full details of this legislation can be viewed at:

http://www.opsi.gov.uk/SI/si1994/Uksi_19942716_en_4.htm

This legislation was amended on the 14th February 2007 (The Conservation (Natural Habitats &c.) Amendment (Scotland) Regulations 2007.), and explanatory guidance on this was published by the Scottish Government in April 2007. The amendment removed all EPS from Schedule 5 of the Wildlife & Countryside Act 1981. There are therefore now no defences in the WCA 1981 whatsoever for any actions impacting on EPS, and protection is afforded by the following legislation only:

Under Regulation 39 of the Conservation (Natural Habitats &c.) Regulations 1994 (The Habitats Regulations) it is now a criminal offence (subject to specific exceptions) to:

(a) deliberately or recklessly to capture, injure or kill a wild animal of a European protected species; (only defences are mercy killing, capture for tending a disabled animal or circumstances where the animal is captive bred and lawfully held).

(b) deliberately or recklessly–

(i) to harass a wild animal or group of wild animals of a European protected species;

(ii) to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;

(iii) to disturb such an animal while it is rearing or otherwise caring for its young;

(iv) to obstruct access to a breeding site or resting place of such an animal, or otherwise to deny the animal use of the breeding site or resting place;

(v) to disturb such an animal in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species to which it belongs; or

(vi) to disturb such an animal in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young;

(c) deliberately or recklessly to take or destroy the eggs of such an animal; or

(d) to damage or destroy a breeding site or resting place of such an animal.

It should be noted that only the offence of damaging or destroying a breeding site or resting place of an EPS is a strict liability offence. The remaining offences are offences only where they are carried out "deliberately" or "recklessly".

In Scotland licenses may be granted by NatureScot to permit certain activities that would otherwise be illegal due to their potential impact on EPS or their places of shelter/breeding, whether or not they are present in these refuges. This includes for developmental work. Under Regulation 44 of The Habitats Regulations, the provisions in Regulation 39 (protection of animals) do not apply to anything done for any of the purposes defined in Regulation 44 provided that any action is carried out "under and in accordance with the terms of a licence granted by the appropriate authority".

Three tests must be satisfied before a development licence for disturbance of an EPS or damage to a site/destruction of a site used by EPS will be granted. Note: A license application will fail unless all three tests are satisfied.

- Test 1 - the licence application must demonstrably relate to one of the purposes specified in

Regulation 44(2). This regulation states that licences may be granted by NatureScot where the activities to be carried out under any proposed licence are for the purpose of "preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment";

- Test 2 - Regulation 44(3)(a) states that a licence may not be granted unless NatureScot is satisfied "that there is no satisfactory alternative"; and
- Test 3 - Regulation 44(3) (b) states that a licence cannot be granted unless NatureScot is satisfied "that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range".

Note: Breach of Licensing Conditions
A new regulation 46A came into force on 15th May 2007. This now makes it an offence to breach any conditions attached to a licence. Licence conditions should therefore be adhered to at all times.

3.4. Additional Legal Protection for Bats

- Additional protection is afforded through the Bern Convention (1979), enacted in Scotland through the Nature Conservation Act (Scotland) 2004;
- Appendix III, the Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1980), Appendix 2; and
- The Bonn Convention's Agreement on the Conservation of Bats in Europe (London, 1991).

It is also a legal obligation in Scotland to consult with NatureScot before you do anything that might affect bats or their roosts such as:

- Removal of hollow, old, or decaying trees;
- Blocking, filling, or installing grilles over old mines or caves; and
- Building, alteration, maintenance, or re-roofing

In all cases where bats are found to occupy trees or buildings and there is a developmental issue, NatureScot must be informed before any development takes place. A licence to permit development may then be obtained from NatureScot if appropriate.

3.5. Badger
In the UK, Badgers are protected under the Protection of Badgers Act 1992 (c.51), which repeals the previous Badgers Acts of 1973 and 1991, and certain sections of other relevant acts such as The Wildlife and Countryside Act 1981, The Environmental Protection Act 1990, The Animals (Scientific Procedures) Act 1986, The Natural Heritage (Scotland) Act 1991, and The Criminal Justice Act 1991. The Protection of Badgers Act 1992 was further amended and strengthened through the Nature Conservation Act (Scotland) 2004.

The 1992 Act makes it an offence to:

- Wilfully kill, injure, catch, or take a Badger from the wild (or attempt to);
- Cruelly ill-treat a Badger, digging for Badgers, using Badger tongs, using a firearm other than permitted (under the exceptions regarding humane dispatch of an injured animal) within the Act;
- Damage, destroy or obstruct access to any part of a Badger sett (whether occupied or unoccupied);

- Disturb a Badger while it is occupying a sett, either by intent or by negligence;
- Dig a Badger sett;
- Cause a dog to enter a Badger sett;
- Sell or offer for sale a live Badger, have possession or control of a live Badger. Be in possession of a live or dead Badger or any part of one; and
- Mark a Badger or attach any ring, tag, or other marking device to a Badger.

Note: A Badger sett is defined within the Act as "any structure or place which displays signs indicating current use by a Badger" where current use means "any sett within an occupied Badger territory regardless of when it may have last been used".

It is also a legal obligation to obtain a licence from NatureScot before you do anything that might affect Badgers or their setts, for example for:

- Development purposes [as defined under the Town & Country Planning (Scotland) Act 1997]; and
- Alteration or maintenance of existing buildings where Badgers are found.

It is also a legal obligation in Scotland to consult with NatureScot before you do anything that might impact Badger setts, whether currently occupied or not.

Despite the above legislative protection, Badgers are not a UK Biodiversity priority species for conservation and are only considered of UK conservation concern.

3.6. Potential Breeding Birds

All breeding birds have basic statutory protection under the Wildlife & Countryside Act 1981. In addition, a number of species that are rare or uncommon are afforded enhanced statutory protection during the breeding season by inclusion on Schedule One of the Wildlife & Countryside Act 1981, which protects adults in places of rest, their eggs, and young.

- All breeding birds in the UK are protected through Sections 1-8 (referring to Schedules 1 to 4) of the Wildlife & Countryside Act [WCA] (enacting the Bern Convention and the Birds Directive), and subsequent amendments through the Nature Conservation (Scotland) Act 2004. With certain exceptions, all wild birds, their eggs and dependent young are protected from intentional killing, injuring and taking; they cannot be in anyone's possession, whether live or dead, and nests (whilst being built or in use) cannot intentionally be taken, damaged or destroyed. A general licence permits control of some species with landowner consent.
- Schedule 1 of the WCA is a list of nationally rare breeding birds for which all offences carry special (higher) penalties. The legislation also makes it an additional offence to intentionally or recklessly disturb adults or the dependent young of these species, at any stage of their breeding.
- Schedule 2 is a list of traditionally hunted birds for which protection does not apply outside a "close season".
- European legislation provides additional legal protection as European Protected Species for a number of species of high conservation concern.

'The Population Status of Birds in the UK' was originally produced in 2002, and listed the UK status of 247 species of bird. Of these 40 were "red-listed" and 121 "Amber-listed" as species of conservation concern, and 86 species "Green-listed". This listing did not provide additional legal protection for these species but highlighted those of concern for nature conservation purposes. The lists have been updated several times and were updated a fourth time in 2015 (Eaton et al. 2015), resulting in re-designation of the UK status of 247 species of bird: 67 are now "red-listed" and 96 "Amber-listed" as species of conservation concern, while only 81 species are "Green-listed".

4. Desk Study

A desk-based review of sites designated for their nature conservation interest was completed in September 2021.

4.1. Sites with Statutory Nature Conservation Designations

Records were obtained from the NatureScot Sitelink database: There were two sites with a statutory nature conservation designation within 1km of the Application Site (Dumbreck Marsh Local Nature Reserve and Dullatur Marsh Site of Special Scientific Interest). The development of the Application Site is not considered to have any potential for adverse impacts on any such designated sites so they are not considered further in this assessment.

4.2. Sites with Non-Statutory Nature Conservation Designations

One site with a non-statutory nature conservation designation was within 100m of the Application Site (Garrell Burn Glen Site of Importance for Nature Conservation – SINC 77/06). A number of other SINC sites were within 1km of the Site. The proposed development is not considered to have potential for any significant adverse impacts on any of the non-statutory designated sites including the nearby one so they are not considered further in this report.

4.3. Protected Species Records

The NBN Atlas (NBN) was consulted for relevant species records from datasets posted by NatureScot/SNH/JNCC [Acorna Ecology has written permission to cite data from SNH data sets (Colin McLeod) and from the Mammal Society]:

The following datasets on the NBN Atlas were checked:

- JNCC collation of taxon designations" provided by Joint Nature Conservation Committee;
- SNH/NatureScot Species Repository;
- Compilation of records of 12 Article 17 terrestrial mammal species in Scotland; and
- SNH Bat Casework records 1970-2007.

The NBN Atlas contained no relevant protected species records from within the last ten years, although Natterer's Bat was recorded once within 1km (2004, SNH Casework Records 1970 – 2007).

5. Bat Species in Scotland

5.1. UK Bat Populations and Roost Significance

Ten species of bat are known from Scotland (Table 5.1):

Table 5.1. Population estimates for the 10 species of UK bats found in Scotland (from Wray et al. 2010)

Status in the UK	Scotland
Common (>100,000 bats)	Common Pipistrelle Soprano Pipistrelle
Rare (10,000 – 100,000 bats)	Natterer's Bat Brown Long-eared Bat Daubenton's Bat
Rarest (<10,000 bats)	Noctule Bat Leisler's Bat Nathusius' Pipistrelle Whiskered Bat Brandt's Bat

Of these, five species are relatively widespread in Central Scotland:

- Common Pipistrelle Bat (*Pipistrellus pipistrellus*) 45 kHz;
- Soprano Pipistrelle Bat (*Pipistrellus pygmaeus*) 55 kHz;
- Daubenton's Bat (*Myotis daubentonii*);
- Brown Long-eared Bat (*Plecotus auritus*); and
- Natterer's Bat (*Myotis nattereri*)

Another four also occur in Central Scotland but tend to have restricted distributions, or less is known about their distribution:

- Nathusius's Pipistrelle Bat (*Pipistrellus nathusii*) 38 kHz – (Edinburgh, Stirlingshire, Fife, Perth & Kinross, Renfrewshire, Midlothian, and possible but unconfirmed in Ayrshire);
- Noctule Bat (*Nyctalus noctula*) (more of a southern Scottish distribution but recorded in Ayrshire, Lanarkshire, Glasgow, Stirlingshire, West Lothian and East Dunbartonshire);
- Whiskered Bat (*Myotis mystacinus*) – within the Ayrshire, Lanarkshire, Stirlingshire, and Midlothian areas; and
- Leislers Bat (*Nyctalus leisleri*) (more of a southern Scottish distribution but known from East Renfrewshire, and North Ayrshire, and possible but unconfirmed in South Lanarkshire).

From publicly available information at least eight of these species are known to occur in North Lanarkshire, with the only ones absent or not recorded being Nathusius's Pipistrelle Bat and Brandt's Bat. The 10th Scottish species Brandt's Bat (*Myotis brandtii*) is considered to be rare, with only a few records and roosts known, and its known distribution is currently limited to southern Scotland and western Perthshire.

5.2. Bat Roost Types

Nine main types of roost have been identified (Collins 2016). These are:

- Day roosts (March – November but more-so in the summer): used for resting during the day, and may be occupied daily by solitary or small numbers of males, or may be used infrequently as part of a chain of roost sites alternated daily but are rarely occupied at night. Whole colonies of some species such the Leisler's bat will change roost during the day including taking young with them;

- Night roosts (March – November): a place where bats rest or shelter during the night but are rarely present during the day. Can be used by solitary bats or entire colonies, and are often indicated by large accumulations of insect remains and some droppings;

- Feeding roosts (May – November): a place where individual bats or small groups may rest or feed during the night between bouts of foraging, in times when weather changes, or just for a temporary rest. May be used by solitary bats to whole colonies but are rarely used during the day;

- Transitional/occasional roosts (spring or autumn generally but may be used April-October): Some roosts may be transitional, when small numbers are present for a limited period, usually during the spring and autumn.

- Swarming sites (August – November) tend to be around caves and mines and may be used for hibernation as well as being important for mating, with large numbers of male and female bats gathering from late summer to autumn.

- Mating roosts (September – October): where mating takes place from late summer and may continue through the winter;

- Maternity roosts (May - August): the most obvious roost type. These consist almost exclusively of females, most of which give birth and raise a single young but sometimes may include males in some species of bats. These colonies usually disperse by the autumn, although some species may remain in one roost all year round;

- Hibernation roosts (October – March); roost sizes may vary from individual to groups but must have a high humidity and constant cool temperature above freezing but generally less than 4°C; and

- Satellite roosts (May – August): alternative roosts near to maternity roosts used by a few breeding females or small groups of females throughout the breeding season;

Note: swarming sites (August – November) tend to be around caves and mines and may be used for hibernation as well as gathering for mating. Table 5.2. below presents the levels of importance of different roost types:

Table 5.2. Determination of level of importance of bat roost type (from Wray et al. 2010)

Geographic Frame of Reference for Roost Importance	Roost Type
Local	Feeding perches Individual bats of common species Small numbers of common species (non-maternity) Mating sites of common species

Geographic Frame of Reference for Roost Importance	Roost Type
County	Feeding perches of rare/rarest species Small numbers of rare/rarest species (non-maternity) Hibernation sites for small numbers of common/rarer species Maternity sites of common species
Regional	Large swarming sites Mating sites for rarer/rarest species Maternity sites of rarer species Significant hibernation sites for rarer/rarest species or all species assemblages
National	Sites meeting SSSI guidelines Maternity sites of rarest species
International	SAC sites

In Scotland, most species of bats roost by concealing themselves in crevices and are not easy to find. The presence of droppings is a key sign to their presence but numbers of droppings vary widely and even some large roosts have little evidence of droppings to indicate their presence. Hibernating bats however leave little or no trace of their presence. Other possible signs are a characteristic odour like ammonia. In addition, a clean or polished area at a place through which light can enter may suggest an entrance/exit hole.

Roosts may occur in a wide variety of places, particularly temporary roosts during dispersal and migration but can be categorised into three main groups:

- Those in quarries, caves, mineshafts, tunnels, and bridges;
- Those in buildings; and
- Those in trees

This study focused on potential roosting in trees.

5.3. Bats and Trees: Features of Potential Value for Use by Roosting Bats

Trees may provide safe dry places for bats to roost, although some bats prefer to roost in buildings when suitable buildings are present. Some bats remain roost faithful for prolonged periods, while others may have several alternate roost sites, and others may range much further using roosts several kilometres apart as weather conditions, food availability, and seasons change. Potential roost sites in trees may include:

- Crevices in bark:
- Gaps under loose bark on dead branches or trunks;

- Rotted knot holes;
- Hollow trunks;
- Cracks, splits etc. in stems and branches;
- Rotted-out branches;
- Growth deformities, compression forks, cankers;
- Gaps between overlapping branches;
- Dense ivy coverage;
- Woodpecker and Squirrel holes;
- Bird nesting boxes/bat boxes already present; and
- Crow, Magpie, and Buzzard nests.

6. Survey Methods

6.1. Notable Plants, Habitats & Scheduled Invasive Plants

The Phase I Habitat walkover survey was completed within the Application Site following the standard methodology and definitions used to map and describe habitats as per the Joint Nature Conservancy Committee guidelines (JNCC, 2010). Key locations of botanical interest were identified and target notes recorded where appropriate.

The objectives of this Phase I survey were to:

i. Provide a baseline assessment of habitat distribution and extent within the boundaries of the area;

ii. Provide a preliminary evaluation of the ecological value of the habitats;

iii. Record any notable species; and

iv. Record any non-native plants listed on Section 14(2) of Schedule 9 of the Wildlife & Countryside Act 1981.

In addition, the five trees within the Application Site were surveyed to British Standards for tree condition.

6.2. Bats: Preliminary Ground Level Assessment of Trees for Bat Roost Potential

All methodology followed Bat Conservation Trust Bat Surveys: Good Practice Guidelines (Collins 2016). Note on the Bat Survey Guidelines from Bat Conservation Trust (January 2016):

*"**Professional judgement and surveyor experience: The guidelines are not a prescription for professional bat work. They do not aim to override professional judgement and cannot be used to replace experience. Deviations from the methods described are acceptable providing the ecological rationale is clear and the ecologist is suitably qualified and experienced. In some cases, it may be necessary to support such decisions with evidence, particularly if they may lead to legal challenge."***

The aim of this survey was to determine if any trees within the Application Site or where possible immediately adjacent to it had potential value for use by roosting bats or evidence of any actual bat

presence by a detailed inspection of the exterior of the tree from ground level. The survey looked for features that bats could use for roosting (PRFs) and categorised the trees according to their individual potential value for use by roosting bats (Table 6.2. below). Mature trees within the site were checked for PRFs such as crevices, holes, splits, tears, and ivy that could be used by bats to enter roosting sites such as those listed above, along with field signs of bat occupancy such as urine streaking, grease marks, smooth or worn surfaces, or droppings caught on bark or on webs. Where appropriate, inspections were made using binoculars. Trees with no bat roost potential were not recorded individually.

Table 6.2. Tree/Building suitability assessed according to the Categories listed in the BCT Guidelines (Collins 2016)

Suitability	Description of Roosting Habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[a] and / or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e., unlikely to be suitable for maternity or hibernation[b]). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential[c]
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[a] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[a] and surrounding habitat.

a For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

b Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten et al., 2015, in Collins 2016). This phenomenon requires some research in the UK but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.
c This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

6.3. Badgers

Field survey methodology followed Harris et al. (1989). Badgers leave many different signs of their occurrence, so are relatively easy to detect, these include:

- Badger setts may be large networks of connected tunnels and chambers with several entrances that are usually shaped like a flattened arch and 20-30cm high and 25-35cm across, or have a single entrance to either a small burrow or large network of tunnels. Bones in and around the entrance, usually indicate Fox activity (rank fox smell may be noticeable). Fox earths have smaller entrances, but foxes may occupy Badger setts even when Badgers are in residence;
- Scraps of fresh bedding that have been dragged in (often grassy material) may be found around the sett entrance. There may also be scraps of old bedding that has been dragged out;
- Day nests are piles of bedding above ground that are used by Badgers occasionally;

- Badgers are clean animals and create spoil heaps outside the main sett, which may contain old bedding, bits of fur, and perhaps small bones. They also use latrines, and will have one or more that are used until the hole is full, and then they start another;
- Badger droppings are very varied depending on the diet (black and slimy means a diet rich in worms, but cereal grains, seeds, and hard parts of insects may be seen). The smell and texture are very distinctive; as is the usual deposition in small oblong latrines either by the sett or at strategic locations on the territory boundary (different individuals have different home ranges within the clan territory). Occasionally droppings are not deposited in latrines but left lying on the ground;
- Clear footprints will show a prominent central pad, either four or five toes and claw marks, and may be found leading to and from the sett, as well as on Badger trails. The front foot usually has longer claws than the back foot, and the prints may overlap, with the back print partially obscuring the front;
- Badger Hairs may be found caught on fences, on brambles or other thorny plants as well as in old bedding outside setts. The guard hairs are 7.5-10cm long, distinctly wiry to the touch, and are mainly white/off-white with a distinctive black band near the white tip. Shorter belly hairs may also be found but are finer and less wiry so are harder to confirm as Badger unless guard hairs or another field sign is found;
- Scratch marks on trees and rocks, fenceposts, wooden greenhouses, barns, or even garden furniture. Scratch marks often show a series of four or five parallel deep gouges, but sometimes lighter parallel lines of scratches are left where Badger claws have clipped something they have scrambled over (such as logs obstructing a Badger trail);
- Badgers have their own traditional networks of regularly used trails both through woodland and across fields that may have been used for many years, and may be worn to a clearly visible rut in the soil, with any new plant growth flattened. Prints may be evident on these trails and where boundary features or obstacles cross the route, Badger hairs may be found caught (for example, on barbed wire, low thorny branches, wooden fences, etc. Closer to the sett, these trails may be muddy through constant use;
- Ground disturbance from foraging Badgers may include round/oval snuffle holes a few cm deep when they forage for worms (50% of lowland Badger diet (especially on lawns and golf-courses). Signs of digging for roots, bulbs such as pignut, and tubers. Beetles and grubs may also be eaten, and the remains of wasp nests torn out of the ground are a sign of Badgers in an area. Badgers usually dig down through the top to avoid getting stung. Bark ripped from rotting logs or tree trunks may also be signs of foraging and grub extraction; and
- On cold, still, winter days, steam may rise from active Badger sett entrances.

Land within the Application Site was searched for evidence of Badgers during the Phase I habitat survey.

6.4. Potential Breeding Birds

The Phase I habitat survey was completed outwith the breeding bird season but with over 30 years' experience of bird surveys and habitat use by breeding birds the surveyor was able to assess the Application Site for potential use by breeding birds and to advise accordingly.

6.5. Limitations

There were no significant constraints on any of the survey work as completed.

7. Results

7.1. Notable Plants, Habitats & Scheduled Invasive Plants

7.1.1. Notable Plants

No notable plants were found within the Application Site but a total of 28 species of plants were noted (Appendix 1.).

7.1.2. Habitats

The Application Site had six Phase I habitat types present (Figure 1. illustrates habitats and target note locations). No nationally or regionally notable examples of any habitat were found within the Application Site (Appendix 1. Plates), and there were no significant semi-natural habitats present: habitat types found were unremarkable in the general wider suburban area.

A3.3 Mixed scattered trees including cypress sp. and Silver Birch;

C3.1 Tall ruderals – brambles, etc. as part of weedy vegetation under shrubbery;

J1.2 Amenity grass;

J1.3 Ephemeral – weedy species colonising bare ground;

J1.4 Introduced shrubs – ornamental shrubbery in eastern side of proposed access into site; and

J4 Bare ground

7.1.3. Scheduled Invasive Plants

No scheduled invasive plants were detected during the survey.

7.1.4 Trees

Five trees were present within the Application Site: Lawson Cypress, two Leyland Cypress, Silver Birch, and False Cypress var. All were classed as C2, which is suitable for retention but not of high value either on a species or landscape basis. Heights varied from 4 – 10m, with the smaller trees suppressed – the trees were an ornamental planting as part of entrance soft landscaping for the existing house adjacent to the Application Site. Appendix 3. presents the tree parameters collected as part of the assessment.

7.2. Bats: Preliminary Ground Level Assessment of Trees for Bat Roost Potential

No trees within the Application Site had potential for use by roosting bats.

7.3. Badgers

There was no evidence of any Badger field sign or resting place within the Application Site.

7.4. Potential Breeding Birds

No birds were detected during the survey but it is likely that Blackbird, Robin, and Wren may use the habitats present as part of their home ranges.

8. Conclusions

8.1. Plants and Habitats

Habitats and species were common with no notable species or habitats found within the Application Site (including trees) so are not constraints for development. However, if trees are being retained within Site and adjacent to it, they must be protected adequately during site preparation and construction by following British Standards guidance for trees in relation to design, demolition and construction. It is important to ensure that site contractors are aware of this and that they have a duty

to ensure that they do not damage trees during site clearance or construction (such as branch damage, ground compaction, and root destruction etc.). Common types of damage to trees during development that are potentially relevant here are listed below:

- abrasion of bark and wounds that leave wood tissue exposed;
- severing and removal of roots by excavation;
- broken branches leaving wood tissues exposed;
- poisoning of roots from spillage or storage of fuel, oil, chemicals and any other potentially noxious materials; and
- installation of impermeable surfaces

The part of the tree most susceptible to damage is the root system because:

- roots cannot be seen and their extent is not realized, hence root protection zones are important for any tree to be retained and should be clearly demarcated and protected by Heras fencing or another robust barrier (Appendix 3. for RPA radius); and
- a lack of understanding of root function and their importance for the health of the tree

The effects of damage can be serious but often it takes several years for this to become evident and is not always linked back to the actual cause during development work. Often by the time the damage becomes evident the developer may no longer own the site leaving the new owner with the problem and the potential need for costly tree work.

Lack of protection can also result in damage to bark and branches that can disfigure a tree and result in disease and decay that also reduce safe life expectancy, so it is essential to consider tree canopy spread, height of branches above the ground and space required for operating plant as further constraints and to avoid unsightly damage to branches.

Best Practice Measures to Protect Trees

In addition, the following best practice is advised:

1. No storage of mounds of soil within the drip line of any tree during site preparation and excavation of foundations;
2. Ground levels shall not be uplifted above existing ground levels of retained trees within the drip line of their canopies due to impact on root systems;
3. The works area must be clearly demarcated using Heras or similar fencing to prevent machinery from inadvertently tracking within root protection areas or within drip lines of retained trees;
4. Any trees retained where branches may obscure access or works area must be appropriately trimmed by an arbor squad and not have branches broken off by machinery;
5. Tracking within the canopy dripline of any retained tree is not to be permitted; and
6. Where possible, raise tree canopies rather than remove trees.

The completed development should have appropriate stormwater and groundwater drainage systems such that there is negligible impact on the current groundwater system of the site. It is not only essential to prevent water logging that may result in tree death but also to prevent any long-term drying out of the ground that may impact tree health in the long-term due to over-efficient drainage.

Detailed information regarding appropriate tree protection is detailed within the BSI Standards Publication - BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations should be followed and reference may be made in regard to the NJUC 'Guidelines for the Planning, Installation, and Maintenance of Utility Apparatus in Proximity to Trees'.

8.2. Bats

There was no bat roost potential within the Application Site so roosting bats are not an ecological constraint for the proposed development.

8.3. Badgers

There was no evidence of Badgers within the Application Site or adjacent to it, so they are not an ecological constraint for development.

8.4. Potential Breeding Birds

The Application Site had negligible value for breeding birds but there is some limited scope for a few common birds to use the shrubs and conifers as habitat for breeding. It is therefore possible that breeding birds could be a negligible - minor constraint depending on the time of year that any soft landscaping or site preparation works commences. We therefore recommend that to maintain an overall high due regard for the potential for breeding birds to be present any soft landscaping (i.e., shrub thinning or management or tree removal) is done between October and the end of February to avoid the bird breeding season.

If it is not possible to complete such works during the recommended period any breeding bird presence that may be a constraint can be confirmed by a walkover survey by an ecologist who can establish any immediate exclusion areas where site preparation would be delayed until breeding by the birds was complete – this would allow works in the rest of the site to continue.

9. References/relevant reading

BSI Standards Publication. 2010. BS3998: 2010 Recommendations for Tree Work

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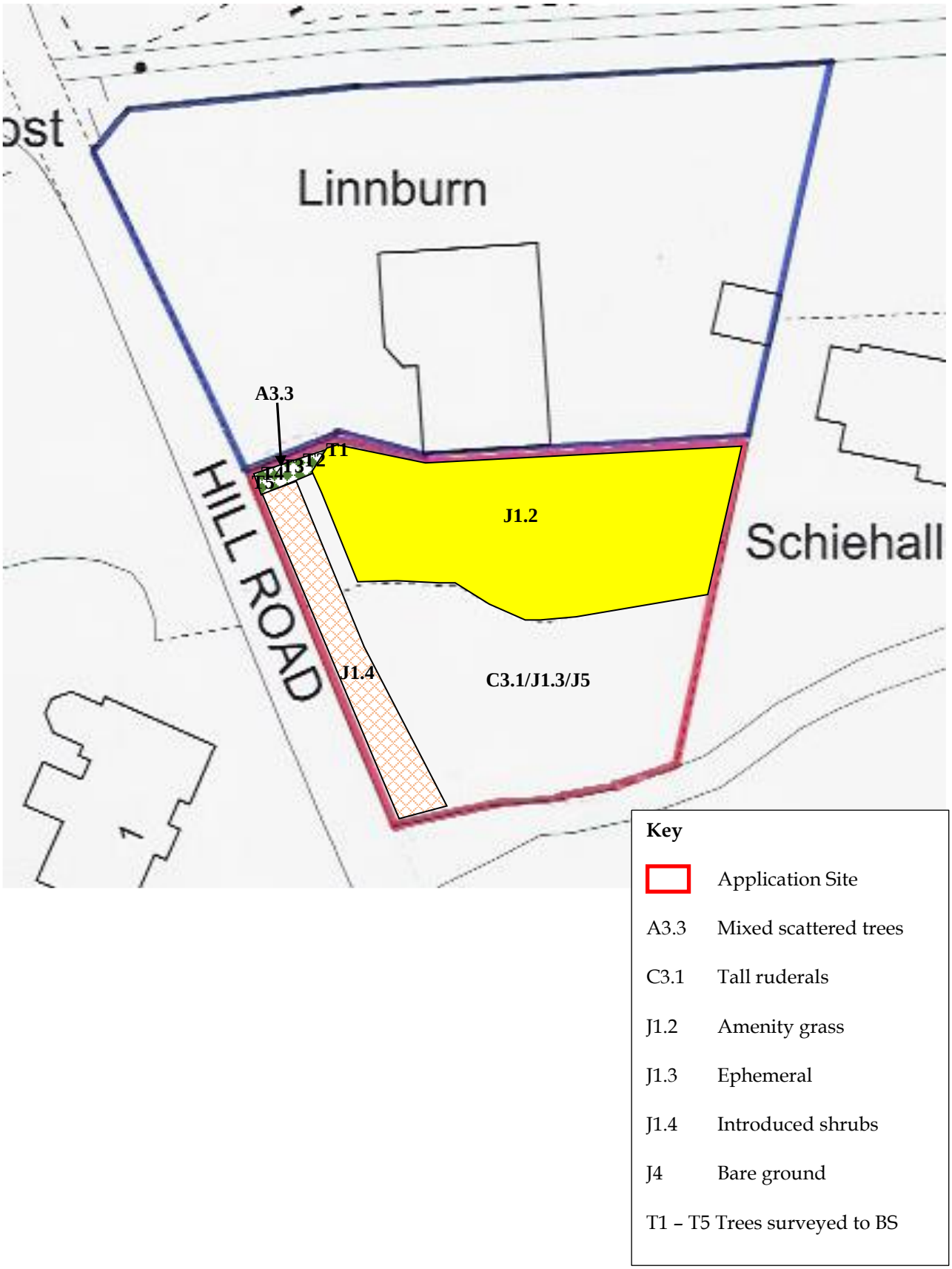
Figure 1. Application Site boundary and Phase I habitats



Appendix 1. Phase I habitat plant species list

Bramble	*Rubus fruticosus agg.*
Broad-leaved Dock	*Rumex obtusifolius*
Cherry Laurel	*Prunus laurocerasus*
Cleavers	*Galium aparine*
Coltsfoot	*Tussilago farfara*
Common Figwort	*Scrophularia nodosa*
Common Ivy	*Hedera helix ssp. helix*
Common Nettle	*Urtica dioica*
Common Ragwort	*Senecio jacobaea*
Creeping Buttercup	*Ranunculus repens*
Daisy	*Bellis perennis*
Dandelion	*Taraxacum officinale agg.*
Ground-elder	*Aegopodium podagraria*
Groundsel	*Senescio vulgaris*
Herb-robert	*Geranium robertianum*
Lady's Mantle	*Alchemilla mollis*
Lawson's Cypress	*Chamaecyparis lawsoniana*
Leyland Cypress	*Cypress laylandii*
Male Fern	*Dryopteris filix-mas*
Meadow Buttercup	*Ranunculus acris*
Red Fescue	*Festuca rubra*
Self-heal	*Prunella vulgaris*
Silver Birch	*Betula pendula*
Smooth Sow-thistle	*Sonchus oleraceus*
Spear Thistle	*Cirsium vulgare*
White Clover	*Trifolium repens*
Wild Mustard	*Sinapis arvensis*
Yorkshire-fog	*Holcus lanatus*

Appendix 2. Plates

Plate 1. View SSW from Manse Road to rear of garage buildings

Plate 2. View SSW towards the eastern aspect of the garage and associated buildings and hard standing/car parking

Plate 3. View towards Manse Road along eastern side of access

Plate 4. Tall ruderals in view south across site to trees in rear of image

Plate 5. View east across former pasture development area

Plate 6. View south across former pasture development area

Appendix 3. Tree

Table 1. Tree Survey Schedule

Tag #	Species	Height (m)	Diam. (cm)	Crown Spread (m) N	S	E	W	RPA Rad (m)	BS Cat	Age Class	Structural Condition	Preliminary Management	WLP	ERY
0801	Lawson Cypress	7	9, 14, 7, 6	1.5	1	1	1	1.9	C2	Y	Fair	NWR	2	10 to 20
0802	False Cypress	5	13	1.5	1.2	0.5	0.5	1.3	C2	Y	Poor, suppressed by trees 1 & 3	NWR	2	10 to 20
0803	Leyland Cypress	10	23	2.5	2.5	2	2.5	2.3	C2	SM	Fair	Prune dead wood	2	10 to 20
0804	Leyland Cypress	8	24	1.5	2	1	2	2.4	C2	SM	Fair	Prune dead wood	2	10 to 20
0805	Silver Birch	9	7	2	1.5	0.3	1	0.7	C2	Y	Fair, suppressed by tree 4	Prune dead wood	2	10 to 20

Abbreviations used in Tree Survey Schedules

LE = Life Expectancy <10yrs, 10-20, 20-40, >40yrs

MS = Multi-stemmed
Cond Cat = **Tree Condition Category**;
Category A = Trees of high quality and value to be considered for retention
Category B = Trees of moderate quality and value to be considered for retention
Category C = Trees of low quality and value to be considered for retention
Category U = Trees for Removal
Subcategories: 1) mainly arboricultural value 2) mainly landscape value 3) Mainly cultural/ conservation value
NWR = No Work Required

Age Class: Y Young SM Semi-mature M Mature EM Early Mature OM Over Mature
Diam. – Diameter of main trunk at 1.5m above ground level
D – DEADWOOD
DWS – DEAD WOOD SNAGS
VIG. - VIGOROUS
POT. - POTENTIAL
VET. VETERAN
LVES - LEAVES
FLWS - FLOWERS
N NORTH
S SOUTH
E EAST
W WEST
CALL. CALLUSED (WOUND HEALING)
TP - TARGET PRUNE (THE CORRECT METHOD OF PRUNING BRANCHES WHICH PREVENTS DAMAGE TO MAIN STEM CAUSED BY CUTTING BEYOND THE BRANCH COLLAR OR LEAVING TOO LONG A STUB LIABLE TO DECAY. TP ALLOWS EFFECTIVE WOUND HEALING PROCESS PROVIDED TREE IS IN GOOD HEALTH
SCAFF- SCAFFOLD (MAJOR LIMB/BRANCH)
COND - CONDITION
HB - HAZARD BEAM CRACK IN LIMB/BRANCH
RI - REGULAR INSPECTIONS
AB - ABNORMAL/LY
MED. MEDIUM
EXT. EXTENSIVE
HANGER - HANGING BRANCH DETACHED FROM TREE WITH POT. TO FALL AND DAMAGE PEOPLE OR PROPERTY
BS CAT BRITISH STANDARDS CATEGORY
RPA rad ROOT PROTECTION AREA RADIUS
WLP – WILDLIFE POTENTIAL VALUE (1 high - 3 low)
ERY – ESTIMATED REMAINING YEARS