



AMITA BUSINESS LTD VIA
HUNTER PAGE PLANNING

COTSWOLD COMMUNITY,
ASHTON KEYNES,
GLOUCESTERSHIRE

Ecological Assessment

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1. INTRODUCTION

1.1. Background & Proposals

- 1.1.1. Ecology Solutions was commissioned in May 2013 by Amita Business Ltd via Hunter Page Planning to undertake an Ecological Assessment of the site at Cotswold Community, Ashton Keynes, Wiltshire (see Plan ECO1).
- 1.1.2. The proposals for the application site are for residential development within the existing curtilage of the Cotswold Community, with new access roads and footpaths. The Proposed Layout Plan can be seen at Appendix 1.

1.2. Site Characteristics

- 1.2.1. The application site (hereafter referred to as 'the site') and wider study area are located to the northwest of the village of Ashton Keynes, Wiltshire. It is bordered to the north by grassland fields and a working mineral extraction site (quarries 87 and 88). To the east, the assessment site is bordered by Lake 62 of the Cotswold Water Park (CWP) and a minor road. To the west the assessment site is bordered by Lake 32 of the CWP and part of the Cotswold Water Park Key Wildlife Site (KWS), while to the south the assessment site is bordered by Spine Road West and Lakes 28, 28a and 30 of the CWP. Further to the south, west and east lies further lakes of the CWP, while further to the north lie further mineral extraction sites and lakes of the CWP.
- 1.2.2. The majority of the site and wider study area themselves comprise improved and semi-improved grassland, with ruderal-dominated grassland fields in the west of the assessment site, with hedgerows and tree belts separating the fields. The centre of the assessment site comprises a number of derelict buildings surrounded by amenity grassland, rough grassland, scrub, ruderal vegetation, a small woodland and an immature orchard. There are also a number of ponds present within the assessment site (one large pond and a number of small, amenity ponds, as well as a disused swimming pool)

1.3. Ecological Assessment

- 1.3.1. This document assesses the ecological interest of the site at Cotswold Community, Ashton Keynes, Wiltshire. The importance of the habitats within the site is evaluated with due consideration given to the guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM)¹.
- 1.3.2. Where necessary mitigation measures are recommended so as to safeguard any significant existing ecological interest within the site. Specific enhancement opportunities that are available for habitats and

¹Institute of Ecology and Environmental Management (2006) *Guidelines for Ecological Impact Assessment in the United Kingdom* (version 7 July 2006). <http://www.ieem.org.uk/ecia/index.html>

wildlife within the site are detailed where appropriate, with reference to the 'UK Post-2010 Biodiversity Framework'². Finally conclusions are drawn.

² JNCC and Defra (on behalf of the Four Countries' Biodiversity Group) (2012) *UK Post-2010 Biodiversity Framework*. July 2012. <http://jncc.defra.gov.uk/page-6189>

2. SURVEY METHODOLOGY

- 2.1. The methodology utilised for the survey work can be split into three areas, namely desk study, habitat survey and faunal survey. These are discussed in more detail below.

2.2. Desk Study

- 2.2.1. In order to compile background information on the assessment site and the surrounding area, Ecology Solutions contacted the Wiltshire and Swindon Biological Records Centre (WSBRC) and the Cotswold Water Park (CWP).
- 2.2.2. Further information on designated sites from a wider search area was obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC)³ database. This information is reproduced where appropriate on Plan ECO1 and at Appendix 2.

2.3. Habitat Survey Methodology

- 2.3.1. Habitat surveys were carried out between July 2013 and January 2015 in order to ascertain the general ecological value of the site and wider study area and to identify the main habitats and associated plant species.
- 2.3.2. The site and wider study area was surveyed based around extended Phase 1 survey methodology⁴, as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail.
- 2.3.3. Using the above method, the site and wider study area was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified.
- 2.3.4. All the species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent at different seasons. Nonetheless, the timing of the surveys included the optimal period for grassland and hedgerow habitats and it is considered an accurate and robust assessment has been made of the botanical interest.

2.4. Faunal Survey

- 2.4.1. Obvious faunal activity, such as birds or mammals observed visually or by call during the course of the surveys, was recorded. Specific attention was paid to any potential use of the site by protected species, species of principal importance (Priority Species), or other notable species.

³ <http://www.magic.gov.uk>

⁴ Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. England Field Unit, Nature Conservancy Council, reprinted JNCC, Peterborough.

- 2.4.2. In addition, specific surveys were undertaken for Badgers *Meles meles*, bats, reptiles and Great Crested Newts *Triturus cristatus*.
- 2.4.3. Experienced ecologists undertook the faunal surveys with regard to established best practice and guidance issued by Natural England. Details of the methodologies employed are given below.

Bats

- 2.4.4. Field surveys were undertaken within the site and wider study area with regard to best practice guidelines issued by, the Joint Nature Conservation Committee (2004⁵) and the Bat Conservation Trust (2012⁶).
- 2.4.5. The buildings within the site were subject to internal and external surveys in August and September 2013 and February 2014 using ladders, torches, mirrors, binoculars and an endoscope where necessary.
- 2.4.6. Evidence of the presence of bats was searched for, with particular attention paid to the roof areas and gaps between rafters and beams. Specific searches were made for bat droppings, which can indicate present or past use and extent of use, and other signs to indicate the possible presence of bats e.g. presence of stained areas, or areas that are conspicuously cobweb-free.
- 2.4.7. The probability of a building being used by bats as a summer roost site increases if it:
- is largely undisturbed;
 - dates from pre-20th Century;
 - has a large roof void with unobstructed flying spaces;
 - has access points for bats (though not too draughty);
 - has wooden cladding or hanging tiles; and/or
 - is in a rural setting and close to woodland or water.
- 2.4.8. Conversely, the probability decreases if a building is of a modern or pre-fabricated design/construction, is in an urban setting, has small or cluttered roof voids, has few gaps at the eaves or is a heavily disturbed premises.
- 2.4.9. The main requirements for a winter/hibernation roost site are that it maintains a stable (cool) temperature and humidity. Sites commonly utilised by bats as winter roosts include cavities/holes in trees, underground sites and parts of buildings. Whilst different species may show a preference for one of these types of roost site, none are solely dependent on a single type
- 2.4.10. All trees within the site were assessed for their potential to support roosting bats. Features typically favoured by bats were searched for, including:

⁵ Mitchell-Jones, A.J. & McLeish, A.P. (Eds.) (2004). *Bat Workers' Manual*. 3rd edition. Joint Nature Conservation Committee, Peterborough.

⁶ Bat Conservation Trust (2012). *Bat Surveys – Good Practice Guidelines (2nd Edition)*. Bat Conservation Trust, London.

- Obvious holes, e.g. rot holes and old Woodpecker holes;
 - Dark staining on the tree, below the hole;
 - Tiny scratch marks around a hole from bat claws;
 - Cavities, splits and or loose bark from broken or fallen branches, lightning strikes etc; and
 - Very dense covering of mature Ivy over trunk.
- 2.4.11. In addition, surveyors undertook evening and dawn back-tracking surveys in September 2013 using SongMeter EM3 bat detectors to record the data, which was subsequently analysed using Analook bat sound analysis software. This survey method, aimed to identify roosts by observing bats and tracking them to their roosts through their behaviour and flight paths. This survey method is also aimed at identifying the level of foraging, and the species present foraging and commuting within the site.
- 2.4.12. Surveyors also undertook evening emergence and dawn re-entry surveys of the buildings considered to have potential to support roosting bats. These surveys were undertaken between April and May 2014 using SongMeter EM3 bat detectors to record the data, which was subsequently analysed using Analook bat sound analysis software. This survey method aimed to identify if any bats were roosting within the building and the position of any access points used by bats as well as the species and number of bats using any identified roosts.
- 2.4.13. SongMeter EM3 bat detectors were also left within the loft spaces of buildings considered to have potential to support roosting bats between April and May 2014 to record any bat activity within the buildings overnight.

Badgers

- 2.4.14. Specific surveys for Badgers were carried out between July 2013 and January 2015.
- 2.4.15. The surveys comprised two main elements. Firstly, searching thoroughly for evidence of Badger setts. For any setts that were encountered standard survey practice would record the location of each sett entrance, even if the entrance appeared disused. The following specific information was recorded where appropriate:
- i) The number and location of well used or very active entrances; these are clear of any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently.
 - ii) The number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance, or have plants growing in or around the edge of the entrance.
 - iii) The number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be together with the remains of the spoil

heap.

- 2.4.16. Secondly, any evidence of Badger activity such as well worn paths, run-throughs, snagged hair, footprints, latrines and foraging signs was recorded so as to build up a picture of the use of the application site by this species.

Reptiles

- 2.4.17. Specific surveys for reptiles were carried out between September and October 2013. The methodology utilised principally derived from guidance given in the Herpetological Workers Manual.
- 2.4.18. Areas of suitable habitat were surveyed for the presence of reptiles using artificial refugia ("tins"). 226 0.5m x 0.5m roofing felt tins were placed within areas of suitable reptile habitat in the site.
- 2.4.19. The tins provide shelter and heat up quicker than the surroundings in the morning and can remain warmer than the surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles use them to bask under and raise their body temperature which allows them to forage earlier and later in the day.
- 2.4.20. To determine presence/absence the tins are checked for reptile activity over seven visits at appropriate times of the day (avoiding the middle of the day when the ambient air temperature is at its highest) in accordance with Natural England guidance. Optimum weather conditions for reptile surveying are temperatures between 10°C and 17°C, intermittent or hazy sunshine and little or no wind.

Great Crested Newts

- 2.4.21. There are eight ponds present within the assessment site (P1-P8 on Plan ECO2) that were surveyed for Great Crested Newts over four visits between April and May 2014 in suitable weather conditions using three methods per visit (torch survey, bottle-trapping, netting and/or egg-searching) in accordance with the Natural England (published under English Nature) guidance⁷ to determine the presence or absence of Great Crested Newts. A further two survey visits were undertaken at ponds P1-P3 in order to establish the population size of Great Crested Newts within these ponds.
- 2.4.22. The surveys were completed in suitable weather conditions using three methods (namely torch survey, netting and bottle-trapping), in accordance with Natural England guidance to determine the presence or absence of Great Crested Newts. In addition, egg searches were also conducted. Surveys were undertaken in accordance with current best practice as recommended by Natural England⁸.

⁷ Great Crested Newt Mitigation Guidelines, English Nature, August 2001.

⁸ English Nature (2001). *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

- 2.4.23. Suitable survey weather conditions are deemed to be those nights when the night-time air temperature is more than 5°C, with little or no wind, and no rain; surveys were conducted during such conditions.
- 2.4.24. Torch counting involves the use of high-powered torches to find and count the number of adults of each amphibian species. As recommended by Natural England, the entire margin of the ponds was walked once, slowly checking for Great Crested Newts.
- 2.4.25. In theory, netting involves sampling for a period dictated by the size of the water body, and Natural England recommends 15 minutes of search time for every 50 metres of shoreline. In practice, the search time significantly exceeded this recommendation.
- 2.4.26. Bottle-trapping involved setting traps made from 2 litre plastic bottles around the pond margins, and leaving the traps overnight before checking them the following morning. A density of one trap per two metres of shoreline was utilised, where possible, as recommended by Natural England.
- 2.4.27. Terrestrial habitats were also searched for Great Crested Newts. This involved searching under logs, rocks and rubbish, which are favoured hiding places.
- 2.4.28. The land within and surrounding the site was assessed in terms of its habitat quality and its ability to support Great Crested Newts.

3. ECOLOGICAL FEATURES

- 3.1. Habitat surveys were undertaken within the site in June 2014.
- 3.2. The following main habitat/vegetation types were identified within the site:

- Semi-improved Grassland;
- Ruderal Dominated Grassland;
- Rough grassland;
- Amenity Grassland;
- Amenity Planting;
- Ruderal Vegetation;
- Scrub;
- Orchard;
- Woodland;
- Hedgerows, Trees and Tree Belts;
- Ponds; and
- Buildings and Hardstanding.

- 3.3. The location of these habitats is shown on Plan ECO2.

Semi-improved Grassland

- 3.4. There are six semi-improved grassland fields within the site (F1, part of F10, F11, F12, F13 and F15). Field F1 is mown short, whereas fields F11-F13 are grazed short by Sheep and Alpacas.
- 3.5. Species present within the sward of field **F1** include abundantly found False Oat-grass *Arrhenatherum elatius* and Cock's-foot *Dactylis glomerata*, frequently found Creeping Bent *Agrostis stolonifera* and occasionally found Yorkshire Fog *Holcus lanatus*, Meadow Foxtail *Alopecurus pratensis* and Perennial Rye-grass *Lolium perenne*. Herbaceous species present include occasionally found White Clover *Trifolium repens*, Greater Plantain *Plantago major* and Yarrow *Achillea millefolium*, and rarely found Daisy *Bellis perennis*, Ribwort Plantain *Plantago lanceolata*, Dandelion *Taraxacum officinale* agg., Rough Hawkbit *Leontodon hispidus*, Field Bindweed *Convolvulus arvensis*, Cut-leaved Cranesbill *Geranium molle*, Creeping Buttercup *Ranunculus repens*, Common Ragwort *Senecio jacobaea* and Lady's Bedstraw *Galium verum*.
- 3.6. Species present within fields **F10-13** and **F15** are dominated by Creeping Bent, with occasionally found Cock's-foot. Herbaceous species present include rarely found Common Nettle *Urtica dioica*, Cow Parsley *Anthriscus sylvestris* and Dove's-foot Cranesbill *Geranium molle*.

Ruderal Dominated Grassland

- 3.7. A small section of field F2 lies within the site.
- 3.8. Species present within field **F2** include Cock's-foot, False Oat-grass, Yorkshire Fog, Creeping Bent, Perennial Rye-grass, Wild Oat *Avena fatua*, Italian Rye-grass *Lolium multiflorum* and Wheat *Triticum aestivum* within the sward. Herbaceous species present include Creeping Thistle *Cirsium arvense*, Field Poppy *Papaver rhoeas*, Oxeye Daisy *Leucanthemum vulgare*, Common

Ragwort, Ribwort Plantain, Greater Plantain, Rough Hawkbit, Spear Thistle *Cirsium vulgare*, Lesser Trefoil *Trifolium dubium*, Great Willowherb *Epilobium hirsutum*, Selfheal *Prunella vulgaris*, Prickly Sowthistle *Sonchus asper*, Scarlet Pimpernel *Anagallis arvensis*, Bristly Oxtongue *Picris echioides*, Dandelion, Broad-leaved Willowherb *Epilobium montanum*, Daisy, Field Bindweed, Field Pansy *Viola arvensis*, Forget-me-not *Myosotis* sp., Common Field Speedwell *Veronica persica*, Barren Brome *Bromus sterilis*, Shepherd's Purse *Capsella bursa-pastoris*, Fat Hen *Chenopodium album*, Lesser Burdock *Arctium minus*, Red Bartsia *Odontites vernus*, Thyme-leaved Speedwell *Veronica serpyllifolia*, Welled Thistle *Carduus crispus*, Cut-leaved Cranesbill and Creeping Cinquefoil *Potentilla reptans*.

Rough Grassland

- 3.9. There are areas of rough grassland surrounding the buildings in the centre of the site.
- 3.10. Species present within the sward include abundantly found Yorkshire Fog, with frequently found False Oat-grass and Cock's-foot, occasionally found Creeping Bent and Perennial Rye-grass and rarely found Pendulous Sedge *Carex pendula* and Meadow Foxtail. Herbaceous species present include occasionally found Common Ragwort, Field Bindweed and Creeping Cinquefoil, with rarely found Black Knapweed *Centaurea nigra*, Imperforate St. John's-wort *Senecio jacobaea*, Greater Celandine *Chelidonium majus*, Broad-leaved Willowherb, Dandelion *Taraxacum officinale* agg., Great Willowherb, Common Field Speedwell, Herb Robert *Geranium robertianum*, Wood Avens *Geum urbanum*, Common Nettle, Creeping Buttercup, Broad-leaved Dock *Rumex obtusifolius*, Hedge Woundwort *Stachys sylvatica*, Spear Thistle, Black Medic *Medicago lupulina*, White Champion *Silene latifolia*, Lesser Burdock, Ground Ivy *Glechoma hederacea*, Lady's Bedstraw *Galium verum*, Lesser Trefoil, Yarrow, Rough Hawkbit and Oxeye Daisy, with Pyramidal Orchid *Anacamptis pyramidalis* also found rarely in these areas.

Amenity Grassland

- 3.11. There are areas of amenity grassland present surrounding the buildings, that is maintained with a short sward length.
- 3.12. Species present in the sward are dominated by Perennial Rye-grass with occasionally found Yorkshire Fog, Cock's-foot and False Oat-grass. Herbaceous species present include occasionally found Creeping Buttercup and rarely found White Clover, Daisy, Ribwort Plantain, Selfheal, Greater Plantain, Field Scabious *Knautia arvensis* and Pyramidal Orchid.

Amenity Planting

- 3.13. There are areas of amenity planting associated with the buildings in the centre of the site.
- 3.14. A number of shrubs were recorded, including Potentilla *Potentilla* sp., Pyracantha *Pyracantha* sp., Buckthorn *Rhamnus cathartica*, Elder *Sambucus nigra*, Quince *Cydonia oblonga*, Bramble *Rubus fruticosus* agg., Rose *Rosa* sp., Ceanothus *Ceanothus* sp., Black Bryony *Tamus communis*, Winter Jasmine *Jasminum nudiflorum*, Viburnum *Viburnum*, Euonymous *Euonymous* sp., Cotoneaster *Cotoneaster* sp., Wysteria *Wisteria* sp., Mahonia *Mahonia* sp.,

Wilson's Honeysuckle *Lonicera nitida*, Wygelia *Wygelia* sp., Cypress *Cupressus* sp., Butcher's Broom *Ruscus aculeatus*, Butterfly Bush *Buddleja davidii*, Tutsan *Hypericum androsaemum*, Hawthorn *Crataegus monogyna*, Berberis *Berberis* sp., Mulberry *Morus* sp., Spruce *Picea* sp., Yew *Taxus baccata*, Clematis Montana *Clematis montana*, Himalayan Honeysuckle *Leycesteria formosa*, Broom *Cytisus scoparius*, Hazel *Corylus avellana*, Snowberry *Symphoricarpos albus*, Lilac *Syringa vulgaris*, Rose of Sharon *Hibiscus syriacus*, Mock Orange *Philadelphus* sp., Flowering Currant *Ribes sanguineum*, Sumac *Rhus* sp., Honeysuckle *Lonicera periclymenum*, Garden Privet *Ligustrum ovalifolium*, Hellebore *Helleborus* sp., Euphorbia *Euphorbia* sp., Dogwood *Cornus sanguinea*, Yucca *Yucca* sp., Cherry Laurel *Prunus laurocerasus* and Virginia Creeper *Parthenocissus quinquefolia*.

- 3.15. A number of annuals and perennials were also recorded including Cleavers *Galium aparine*, Yellow Loosestrife *Lysimachia vulgaris*, Sweet Pea *Lathyrus odoratus*, Prickly Sowthistle, Oriental Poppy *Cedric Morris*, Ivy, Sedum *Sedum* sp., Common Ragwort, Bergenia, Japanese Anemone *Anemone x Hybrida*, Catmint *Nepeta* sp., False Oat-grass, Yorkshire Fog, Brachyglottis *Brachyglottis* sp., Orpine *Sedum telephium*, Iris *Iris* sp., Teasel *Dipsacus pilosus*, Pendulous Sedge, Bristly Oxtongue, Lavender *Lavandula angustifolia*, Sweet William *Dianthus barbatus*, Wood Avens, Nipplewort *Lapsana communis*, Common Nettle, Honesty *Lunaria annua*, Spear Thistle, Geranium *Geranium* sp., Lady's Mantle *Alchemilla vulgaris agg.*, Aquilegia *Aquilegia* sp., Primrose *Primula vulgaris*, Lily of the Valley *Convallaria majalis*, Biting Stonecrop *Sedum acre*, White Stonecrop *Sedum album*, Bistort *Persicaria bistorta*, Red Hot Poker *Kniphofia 'Nobilis'*, Campanula *Campanula* sp., Erigeron *Erigeron* sp., Red Valerian *Centranthus ruber*, Variegated Yellow Archangel *Lamium galeobdolon*, Osteospermum *Osteospermum* and Evening Primrose *Oenothera biennis*.

Ruderal Vegetation

- 3.16. Areas of ruderal vegetation are present around the former farm buildings in the west of the site.
- 3.17. Grass species present include Cock's-foot and False Oat-grass, with herbaceous species present including Common Nettle, Hogweed *Heracleum sphondylium*, Hedge Bindweed *Calystegia sepium*, Great Mullein *Verbascum thapsus*, Forget-me-not and Thyme-leaved Speedwell.

Scrub

- 3.18. There are stands of scrub present in the centre of the site that are dominated by Bramble with Hawthorn and Blackthorn *Prunus spinosa* also present.

Orchard

- 3.19. There are two small areas of orchard present in the east of the site that comprises Apple *Malus* sp. and Plum *Prunus* sp. trees. Rough semi-improved grassland is present beneath these trees.

Woodland

- 3.20. There is a small area of woodland in the centre of the site. Tree species present include Horse Chestnut *Aesculus hippocastanum*, Sycamore *Acer*

pseudoplatanus, Norway Maple *Acer platanoides* and Beech *Fagus sylvatica*, with some Hazel, Snowberry and Bramble scrub in the understorey. Species present in the ground flora include Ivy, Cow Parsley, Lords and Ladies, Bluebells *Hyacinthoides non-scripta*, Dog's Mercury *Mercurialis perennis*, Violets *Viola* sp., Lesser Burdock *Arctium minus*, Wood Avenas and Snowdrops.

- 3.21. There is also a small area of woodland surrounding the small lake, P1, as well as on a small island within this lake. This area of woodland is dominated by Willow trees, surrounding and encroaching into the water. Other species present include Elder, Elm *Ulmus procera* and Bramble in the understorey, with Hogweed, Common Nettle, Hedge Bindweed, False Oat-grass, Cock's-foot, Great Mullein, Forget-me-not and Thyme-leaved Speedwell.

Hedgerows, Trees and Tree Belts

- 3.22. There are eight hedgerows present within the site, as well as two tree belts and two small sections of tree belts. These hedgerows and tree belts are described individually below. Of these, hedgerow H21 are considered to be species-rich, comprising 5 or more woody species, while hedgerows H2, H7, H10, H19 and H20 are considered to potential qualify as important under the Hedgerow Regulations 1997 (although hedgerow H10 also contains a number of non-native, amenity species).
- 3.23. **H1** is approximately 2.5m in height and is box cut. This hedgerow is dominated Hawthorn, with Elder, Wild Privet and Dog Rose also present, with Bramble and Black Bryony trailing through. Ivy, Cleavers, Spear Thistle and Wood Avenas are present in the ground flora.
- 3.24. **H2** is approximately 2.5m box cut, with species present including Hawthorn, Willow, Elder, Elm, Ash, Blackthorn, Field Maple, Hazel and Wayfaring Tree *Viburnum lantana*. A Larch tree is also present within this hedgerow. Bramble is present trailing through, with Cleavers, Hogweed and Ivy in the ground flora.H1
- 3.25. **H7** is approximately 4 in height and is dominated by Blackthorn. Other species present include Elder, Apple, Dog Rose *Rosa canina*, Cherry *Prunus avium*, Hawthorn, Wild Privet *Ligustrum vulgare* and Field Maple *Acer capestre*, with Ash and Oak *Quercus* sp. trees. Hedge Bindweed and Bramble are present trailing through, with Common Nettle and Tufted Vetch *Vicia cracca* present in the ground flora.
- 3.26. **H10** is present along a seasonally wet ditch and is approximately 3-4m tall. This hedgerow is scrubby in nature and includes a number of amenity species from the adjacent neglected gardens. Species present include Elm, Pine *Pinus* sp., Elder, Willow *Salix* sp., Field Maple, Blackthorn, Dog Rose, Cherry, Apple, Hawthorn, Wayfaring Tree, Viburnum *Viburnum* sp., Cotoneaster *Cotoneaster* sp., Cherry Laurel, Cypress and Berberis. Bramble is trailing through with Ivy present in the ground flora.
- 3.27. Hedgerows **H19** and **H20** border the Spine Road West, are approximately 2.5m and are box cut, with species present including Hawthorn, Willow, Elder, Elm, Ash, Blackthorn, Field Maple and Hazel. Bramble is present trailing through, with Cleavers, Hogweed and Ivy in the ground flora.

- 3.28. **H21** is more than 6m in height and in unmanaged, with a number of trees within this hedgerow. Species present include Hawthorn, Crab Apple, Elder, Cherry Plum, Field Maple and Elm with Ash trees. Bramble is present trailing through and Ground Ivy, Garlic Mustard, Ivy and Cleavers are present in the ground flora.
- 3.29. **H22** is a continuation of H7 and is dominated by Blackthorn. Other species present include Elder, Apple, Dog Rose, Cherry, Hawthorn, Wild Privet and Field Maple, with Ash and Oak trees. Hedge Bindweed and Bramble are present trailing through, with Common Nettle and Tufted Vetch present in the ground flora.
- 3.30. Tree belt **TB1** borders the south-western boundary of the assessment site and is dominated by Larch with other species present including Ash and Willow, with Apple, Blackthorn, Elder and Field Rose in the understorey.
- 3.31. Tree belt **TB2** also borders the western boundary of the assessment site and comprise Ash and Willow with Elder, Hawthorn and Buckthorn in the understorey.
- 3.32. **TB3** comprises Balsam Poplar, Ash and Sycamore with Hazel, Blackthorn, Hawthorn and Elder in the understorey. Common Nettle is present in the ground flora.
- 3.33. **TB6** separates fields F1 and F13 and is comprised of a line of lime trees.
- 3.34. There are also a number of individual trees in the centre of the site, with species present including Horse Chestnut, Mulberry, White Willow *Salix alba*, Lime, Leyland Cypress *Cupressocyparis leylandii*, Blue Cedar *Glaucia Pendula*, Ash, Sycamore, Balsam Poplar *Populus* sp., Cherry, Silver Birch *Betula pendula*, Willow, Elm, Buckthorn, Laburnum, Larch *Larix decidua*, Grey Willow *Salix cinerea subsp. cinerea*, Hybrid Black Poplar *Populus* sp., Weeping Willow *Ehrharta stipoides*, Italian Alder *Alnus cordata* and Oak.

Ponds

- 3.35. There are eight ponds within the site (P1-P8) that are described individually below.
- 3.36. Pond **P1** is a small lake that is surrounded by Willows and has a small island in the centre. There is very little aquatic vegetation present, although Duckweed *Lemna minor* covers the surface of this lake.
- 3.37. Pond **P2** is a neglected swimming pool that is in a state of disrepair, with items of debris in the water and a net across the top of the pool. No aquatic vegetation is present within this pond, and the water level is generally less than 1m in depth.
- 3.38. Pond **P3** a neglected ornamental pond that is concrete lined and has a low bridge over it. This pond has become choked with vegetation and silted up, with species present including Typha *Typha* sp., Greater Willowherb *Epilobium hirsutum*, Pendulous Sedge, Bittersweet, Bergenia, Iris and Duckweed.
- 3.39. Pond **P4** is a raised, circular ornamental pond that is stocked with Goldfish. Pond Lilies are present within this pond.

- 3.40. Ponds **P5**, **P6** and **P8** are very small neglected amenity ponds, which are around 1m² in area. These ponds have little water and little aquatic vegetation, although have been choked by encroaching grass and amenity planting.
- 3.41. Pond **P7** is a seasonally ponded area associated with a seasonally wet ditch that runs north / south through the site. This ponded area is present to the south (P7a) and the north (P7b) of a bridge. There is no aquatic vegetation present within this seasonal pond.

Buildings and Hardstanding

- 3.42. There are 41 buildings within the site (labelled on Plan ECO3), each of which are described individually below. Generally all windows within these buildings have been boarded up and are well sealed.
- 3.43. Building **B1** is a barn that is single storey at its southern end and two storeys at its northern end. This building is constructed partly of brick with wooden supports and partly of stone, with a pitched, stone roofs and concrete ridge tiles. There are lots of gaps present beneath the tiles although the ridge tiles are well sealed. Internally, the majority of the building open to the roof, with boarding between the tiles and the rafters. There is a small roof void present at the northern end of this building, with a small void area of approximately 1m in height. Within this void the tiles are laid directly onto the batons with no lining present, although there is lime mortar present between the tiles. This loft void area is fairly light internally, and there are a number of cobwebs present throughout the void. There is an external, covered and open-sided link between building B1 and B2 that is constructed with wooden beams and rafters with a pitched stone roof. The tiles are well sealed with cement beneath the tiles, although there are a few holes in the cement.
- 3.44. **B2** is a two storey building constructed of stone with a pitched, stone-tiled roof. There are lots of gaps between the tiles and there is evidence of a previous fire in this building. Internally, the roof void is felt lined with painted beams and rafters. The floor is boarded and there are dormer windows present, covered by perforated metal sheeting, making the loft void light. Access to this loft void is via a permanent staircase, making the void area relatively open to the remainder of the building.
- 3.45. **B3** is a two storey building constructed of stone with a pitched stone-tiled roof, with gaps present beneath these tiles. A dormer window is also present within this building, which has a number of hanging tiles. Internally, this building is similar to B1, with the majority of the building open to the roof, with boarding between the tiles and the rafters. There is only a small roof void present at one end of the building. This void area is approximately 1m in height and is full of cobwebs. There is mortar present between the tiles and no lining is present.
- 3.46. **B4** comprises single storey section to the east and a main two storey section to the west. This building is constructed of stone, although a section of this building has been rendered, and with pitched, stone-tiled roofs. Internally, there are a number of small roof voids present, which are approximately 1-1.5m in height. These roof voids are generally full of cobwebs and are cluttered with beams. There is felt lining present and old wasp nests were recorded within these voids.

- 3.47. **B5** is a two storey building constructed of rendered brick, with a pitched, concrete-tiled section to the west and a flat, felt roofed section to the east. These two sections are linked by a flat roofed section. There are hanging tiles present on the pitched section and gaps beneath the soffit boards on the flat roofed section. Gaps are present between the wooden sarking under the eaves, there are raised tiles at the edges of the roof, and there are gaps beneath the lead flashing around a skylight. Internally, there is a window within the roof void area that is not boarded and has been broken, making the loft void light and draughty. The roof void has wooden flooring and plasterboard lining the roof, with a small separate void area above the main void, which has a false ceiling. The main void area is approximately 2.5m to the apex and is felt-lined in the central section, with the felt coming away from the walls in places. At the gable end, the void is lined with plasterboard that sections off the apex of the void, although large holes are present in the false ceiling of this smaller apex void area. There are no voids present in the porches.
- 3.48. **B6** is a brick-built building with a flat, felt roof. There are gaps present between the felt and the wooden soffits at the corners of the roof.
- 3.49. **B7** is a two-storey building constructed of rendered brick and pebble-dash, with a pitched, concrete-tiled roof. There are a number of flat, felt-lined single and two-storey extensions to the northwest of the main section of the building, as well as a section with a flat, corrugated plastic sheet roof. A few gaps are present between the tiles on this building, with some tiles missing, exposing the roofing felt beneath. Internally, the building has been subject to vandalism and experienced water damage. A roof void is present in the pitched section that is approximately 2m to the apex and is felt lined. There are a number of gaps beneath the felt lining, exposing the wooden boarding beneath. At the gable ends there are plasterboard walls present, which are deteriorating with gaps present in these walls. There is an unboarded window present at the western end of the roof, making the void light. Within the walls of the flat-roofed section, there are vents present.
- 3.50. **B8** is a single and two-storey building constructed of rendered brick, with a pitched, concrete-tiled roof on the two-storey section and a series of flat, felt roofs on the single storey sections. Velux windows are present within the pitched roof. Internally, a loft void is present within the pitched section, which has a wooden boarded floor and a felt lined roof. The void is approximately 3m to the apex and there are gaps present between the felt lining and in the plasterboard walls at the gable ends. There is an unboarded window present within the roof void that is broken, making the void light and draughty. Cobwebs are present along the walls and apex in the darker sections of the void, although are absent in the lighter apex near to the broken window.
- 3.51. **B9** is a small single-storey building constructed of breezeblocks with a flat, felt roof.
- 3.52. **B10** is another single-storey building constructed of breezeblocks with a flat, felt roof. A wooden clad link with a flat, felt roof, joins two section of this building together.
- 3.53. **B11** is the former gym and is constructed of brick with both single and two-storey sections. The single-storey section has a flat, felt roof, while the two-storey section has a shallow slanting corrugated metal roof.

- 3.54. **B12** is a two-storey building constructed of brick with a pitched, concrete-tiled roof. There are Velux windows present in the roof and there are garages attached to this eastern aspect of this building, constructed of brick and wooden walls and a sloping, corrugated metal roof. Gaps are present between the tiles. Internally, the roof is open to the floor, with painted horizontal wooden beams present creating a roof area, although no void is present. There is no felt lining present and the roof area is very light internally, due to the present of the Velux windows.
- 3.55. **B13** is a series of connected agricultural sheds that are constructed of breezeblocks with corrugated metal above, with a series of pitched and domed roofs constructed of corrugated metal and asbestos sheeting on metal beams and rafters. There are skylights present within the roof and the sheds are joined internally. No loft voids are present.
- 3.56. **B14** is a series of connected open-sided agricultural sheds. These sheds are constructed with wooden support beams with breezeblocks / concrete between, and with a series of different roof type (pitched, concrete-tiled with skylights present, pitched corrugated asbestos with some skylights, and pitched and flat corrugated asbestos. The roofs are constructed of wooden beams and rafters with the tiles / asbestos sheeting laid directly onto the rafters. No loft voids are present.
- 3.57. **B15** is a small shed constructed of breezeblocks with a flat, corrugated asbestos roof. The roof is constructed with wooden beams that are laid directly onto the external walls.
- 3.58. **B16** is constructed of breezeblock with a pitched, corrugated asbestos roof. Skylights are present within the roof and no void is present.
- 3.59. **B17** is a long, single storey building constructed of rendered brick and pebble-dashed with two pitched roof sections and a flat roofed, open-sided lean-to present on the northern end. The roofs are constructed with clay tiles, with Velux windows present in the southern section, and the lean-to has a sloping, corrugated asbestos roof. There is a small hole present in the northern gable end of the southern pitched section, although the tiles are generally in good condition with no gaps between them. Internally, the majority of the building is open from the floor to the apex, with the roofs lined with wooden or metal boarding, and metal beams. The skylights in these areas are boarded, making the building dark internally. In the southern end of this building there is a gallery void present on the first floor, running through the centre of the building, with rooms to the sides that are open from floor to the roof. This gallery void is approximately 3.5m to the apex and has wooden clad walls, floor and ceiling, and is linked to the rooms below by glassless windows. This gallery void is fairly light due to the presence of an unboarded skylight, although cobwebs are present throughout the void.
- 3.60. **B18** is a small brick-built garage with a pitched, concrete-tiled roof. The wooden soffits present are in a poor state of repair. Internally, the roof is constructed with wooden beams and rafters with felt lining present, and the garage door is missing. No void is present in this building.
- 3.61. Buildings **B19** and **B20** are two blocks of garages. The garages of B19 are open-sided, while those of B20 have wooden doors (all open at the time of survey). These garages are constructed of breezeblock with flat, felt roofs.

- 3.62. **B21** is a wooden pre-fabricated building that is constructed with wooden walls and a pitched, felt roof. No void is present.
- 3.63. **B22** is a three-storey building constructed of rendered brick, with a pitched, slate-tiled roof. The tiles are generally in a good state of repair. Velux windows are present in the roof and there is a barn door on the first storey. The windows on the third storey are not boarded, and some have been left partially open. Internally, there is a small, narrow loft void present that is approximately 1m in height. This void has wooden boarding on the floor and wooden cladding on the roof. An active wasp nest was recorded within this void and there are a few cobwebs present throughout.
- 3.64. **B23** is a long, single and two-storey building constructed of rendered brick. The central single-storey section is constructed with a pitched, corrugated metal roof, while the two-storey sections at either end of this building are constructed with pitched, concrete-tiled roofs. There are a number of dormer windows present within the eastern, two-storey section of this building, while an open Velux window is present in the western two-storey section. Internally, the central section has a loft void approximately 1.5m in height and is constructed with metal beams and the metal roof sheeting laid directly onto metal rafters. There is no lining present, although there is fibreglass insulation on the floor of this void. The apex of this void section was recorded as having cobwebs along the apex of this void. The two-storey section at the western end is approximately 1m to the apex and is lined with wooden cladding. Fibreglass insulation is present on the floor and there are cobwebs present at the apex of this void. A wasp nest is also present in this void. There is no void present in the eastern end of this building, with the roof space having been converted into rooms.
- 3.65. **B24** is another long, single and two-storey building that is constructed of rendered brick. Externally, the tiles are generally all in good condition. The two storey section at the eastern end has a pitched, concrete-tiled roof and there is a barn door in the southern gable end of this building. There is a loft void present in this two-storey section that is has wooden boarding internally and is approximately 3.5m to the apex. The single-storey section has a pitched, concrete-tiled roof with Velux windows and is built out to the roof internally.
- 3.66. **B25** is a bike shed that is constructed of rendered breezeblock with a wooden panelled wall present in one section, while the garage door is missing, making this garage open to the elements. The roof of this building is constructed with a sloping corrugated metal roof.
- 3.67. Buildings **B26**, **B29**, **B30** and **B31** are bungalows that are constructed with wooden panelled walls and pitched slate and concrete-tiled roofs. There are gaps between the tiles and the rafters at the gable edges, and there are also large gaps in the roofs of buildings B26 and B31. Internally, these buildings have loft voids present that are approximately 3-3.5m high and constructed with wooden beams and rafters. There is no lining present within these voids although there is fibreglass insulation present on the floor and cobwebs are present throughout. The loft void of B31 is light and draughty internally, due to a number of holes present in the roof (in particular at the eastern end of this building) and between the tiles.

- 3.68. Building **B27** is a single-storey cricket pavilion that is constructed of stone with a pitched, concrete-tiled roof, with a wooden veranda along the southeastern aspect. There is a ridge tile that has a hole present. There are a few gaps present between the soffit boards and the walls and there is an area of missing tiles along the ridgeline. Internally, there is a loft void present that is approximately 3m in height. Felt lining the present and there is fibreglass insulation on the floor. There are a number of breezeblock supporting walls within the void area, and there is a gap at the apex of this void, where the ridge tiles are missing externally.
- 3.69. **B28** is a small brick shed that is constructed with a pitched, concrete-tiled roof. No roof void is present.
- 3.70. **B32** is a garage constructed of rendered breezeblocks with a wooden garage door and a pitched, corrugated asbestos roof. No roof void is present.
- 3.71. **B33** is a semi-detached, two-storey building that is constructed of rendered brick with a pitched, slate-tiled roof, and there are a few gaps present between these tiles. There are two small porches with pitched, slate-tiled roofs are also present. Internally, the roof is divided into two void sections above the two semi-detached properties. Within these voids, the slate tiles are laid directly onto the batons, with no felt lining present, and there are cobwebs present throughout the voids.
- 3.72. Buildings **B34**, **B35** and **B36** are two-storey semi-detached buildings that are constructed of stone, with pitched, concrete tiles. There are a few holes present between the tiles at the gable ends of these buildings and at the eaves, with a few gaps also present between the wooden soffits. Small, wooden-sided porches and garages are attached to these buildings, which are constructed with flat, felt roofs. Internally, there are loft voids present that are approximately 2.5m high. There is felt lining present within these loft voids, with fibreglass insulation present on the floor. Cobwebs are present at the apex of these voids. Within B34, the northern half of the void has been half boarded, with wooden boarding present between the felt lining and the rafters in half of the roof.
- 3.73. **B37a** and **B37b** are two small, pebble-dashed concrete pump houses that have flat, felt roofs.
- 3.74. **B38** is a single-storey garage / shed block constructed with breezeblock and wooden walls that are open sided / with missing glass in the doors and windows to the west, and with sloping, corrugated asbestos roofs.
- 3.75. **B39** is a terrace of six former, two-storey residential properties. These buildings are constructed of pebble-dashed brick with a pitched, concrete-tiled roof. Internally, the roof voids are connected via doorways and are constructed with wooden beams and rafters and lining paper between the tiles and rafters. The loft voids are fairly breezy internally, and light in places, and there are cobwebs present throughout.
- 3.76. **B40** is a single-storey garage constructed with breezeblocks and a pitched, corrugated asbestos roof. No loft void is present.
- 3.77. **B41** is a single-storey, former forge that is constructed of breezeblocks and with a pitched, concrete-tiled roof. No loft void is present.

Background Records

- 3.78. Information returned by WSBRC and GCER shows that no notable or protected plant species have been recorded within the assessment site itself. The nearest record of the Nationally Scarce species Lesser Bearded Stonewort *Chara Curta* was recorded from approximately 0.4km south of the assessment site, and Smooth Stonewort *Nitella flexilis* was recorded approximately 0.2km south of the assessment site, both recorded in 2004. The nearest record of the Red List species Whorled Water-milfoil *Myriophyllum verticillatum* was returned from approximately 0.2km south of the assessment site in 2004, while the nearest record of the Nationally Scarce species Fringed Water Lily *Nymphoides peltata* was returned from approximately 1.3km east of the assessment site in 2004. The nearest record of the Red List species Sainfoin *Onobrychis viciaefolia* was returned from approximately 0.5km west of the assessment site in 2009, while the nearest record of the Nationally Scarce Stinking Hellebore *Helleborus foetidus* was returned from approximately 1.4km northwest of the assessment site in 2004. A number of Wiltshire County Notable species were also returned from within the search area, including Wood Horsetail *Equisetum sylvaticum*, Marsh Pennywort *Hydrocotyle vulgaris*, Early Marsh Orchid *Dactylorhiza incarnata*, Marsh Helleborine *Epipactis palustris*, Keeled-fruited Cornsalad *Valerianella carinata*, Narrow-leaved Bird's-foot Trefoil *Lotus glaber*, Marsh Willowherb *Epilobium palustre*, Cyprus Sedge *Carex pseudocyperus*, Needle Spike-rush *Eleocharis acicularis*, Rat's-tail Fescue *Vulpia myuros* and Barberry *Berberis vulgaris*. The Key Gloucestershire Species Black Poplar *Populus nigra ssp. betulifolia* was also returned from within the search area.
- 3.79. The Cotswold Water Park BAP includes action plans for Black Poplar and Stoneworts.
- 3.80. None of the above species were recorded within the assessment site itself.

4. WILDLIFE USE OF THE SITE

- 4.1. General observations were made during Ecology Solutions' surveys, between July 2013 and January 2015, of any faunal use of the assessment site with attention paid to the potential presence of protected species. Specific surveys have been undertaken with regard Badgers, bats, reptiles and Great Crested Newts. The results of these surveys can be seen on Plans ECO3 and ECO4-12.

Badgers

- 4.2. No evidence of Badgers was recorded within the site or wider study area during the surveys undertaken.
- 4.3. However, it is considered that the grassland, ruderal vegetation, scrub, orchard, woodland and hedgerows offer suitable foraging opportunities for Badgers, should they be present in the local area.
- 4.4. **Background Records.** A record of Badger was returned by WSBRC from within the site (field F1) in 1990, although it is not clear whether this is a field or sett record. The nearest record of a Badger sett was returned from the grid square to the south of the site in 1991.
- 4.5. The Wiltshire and Swindon Aggregate Minerals Site Allocation Local Plan also notes that a number of protected and notable species are present within the nearby County Wildlife Sites to the west and south of the site, including Badgers.

Bats

- 4.6. **Tree and Building Internal Surveys.** There are no trees within the site that were recorded as having potential to support roosting bats.
- 4.7. During the internal surveys of the buildings, a single bat was recorded roosting within building B22, with evidence of bat droppings recorded within buildings B2, B5, B7, B8, B17, B22, B31, B34 (northern and southern voids) and B36. Buildings B3, B4, B23, B24, B26, B27, B33 and B35 were also considered to have potential to support roosting bats.
- 4.8. Evidence of bat droppings and potential bat access points were recorded in a number of buildings within the site, as detailed below.
- 4.9. There are a number of gaps present between the tiles of buildings B1, B2 and B4, with hanging tiles present on the dormer windows and between the wooden sarking of building B3. Two Pipistrelle bat droppings were recorded in the central roof void section of building B4.
- 4.10. B5 – Externally, a gap is present within the wooden boarding under the eaves, and tiles are slightly raised at the edges. A small number of bat droppings were recorded externally on the walls and a boarded window. The felt lining within the void has severely deteriorated, exposing gaps between tiles and creating potential bat access points. End sections of the void have plasterboard walls which have large holes within them. A scattering of approximately ten old bat droppings was recorded under the apex (which was recorded as being cobweb-free at the time of survey) of the void in the south of the building. A

small number of Pipistrelle bat droppings were also recorded on an exterior wall, near an external flight of stairs, with potential bat access points present between the hanging tiles.

- 4.11. B6 – There are gaps present between the felt roofing and between the wooden soffit boards at the corners of the buildings.
- 4.12. B7 – Externally, there is damage to the roof through missing / slipped tiles and exposed interior lining in the northwest of the building. There is severe deterioration to the felt lining and plasterboard in the void, providing potential bat access points. A small concentration of old bat droppings (approximately five) was recorded in the north of the void, as well as evidence of Mouse dropping throughout the roof void.
- 4.13. B8 – Has a severely deteriorated interior lining and plasterboard walls, providing potential bat access points. An un-boarded window at the northern end has a small hole present, which makes this end of the void light and draughty internally, although a small scattering (approximately 10) of old bat droppings were recorded under the apex. A small number of Pipistrelle bat droppings were also recorded externally, above hanging tiles and on an external door at the top of a flight of external stairs.
- 4.14. B12 – There are gaps present between the tiles around the Velux windows in the roof of this building.
- 4.15. B17 – The majority of this building has no void present and is open from the floor to the apex. A few holes are present within the brickwork extending to the outside (ventilation blocks), as well as between the tiles around the Velux windows, which provide potential bat access points. A short section of void is present in the south of this building and two old bat droppings were recorded under the apex at the gable end of the void, which were recorded as being very dry and crumbly. Cobwebs were recorded throughout this void, indicating bats have not been using this void recently.
- 4.16. B22 – Within the small void, a scattering of old bat droppings were recorded throughout the void, and on the walls at the gable ends. At the southern end of this void, together with more than 100 fresh Pipistrelle droppings. A single bat was seen disappearing into a crevice at the apex of the void, although identification of the species was not possible. The northern end of the void was recorded as housing an active wasp nest, although a few bat droppings were recorded in the cobwebs near this nest. Internally, bat droppings were also recorded on the walls at both at the northern and southern gable ends, beneath the apexes. Potential bat access points were recorded between the tiles around the Velux windows and through the open dormer windows.
- 4.17. B23 – There are three roof voids present, none of which have felt lining. In the two-storey section at the eastern end, there are gaps between the tiles and the converted roof space that provide potentially suitable bat access points. No evidence of bats was recorded internally in any of the roof voids, although evidence of Mouse and bird dropping were recorded.
- 4.18. B24 – Generally the roof tiles are in good condition, although there are a few small gaps between the tiles around the Velux windows.

- 4.19. B26 – Externally, there are a number of gaps present between the roof tiles and wooden soffit boards, as well as large gaps present in the roof of this building.
- 4.20. B27 – Externally, some of the soffit boards have partially rotted and there are some missing tiles along the ridgeline of the roof. Internally, there is damage to the felt lining and an area of the roof is damaged at the apex, providing potential bat access points. However, no evidence of bats was recorded within this building.
- 4.21. B29 – Externally, there are some small gaps present between the roof tiles and between the soffit boards, while internally evidence of Mouse droppings was recorded.
- 4.22. B30 – Externally, there are some small gaps present between the roof tiles and between the soffit boards.
- 4.23. B31 – The external woodwork of this building is in a poor state of repair with numerous holes and rot damage present. There are gaps present between the roof tiles and soffit boards, and there are also a number of roof tiles missing. Beneath the apex of this void, a small concentration of approximately 25 bat droppings was recorded, although these were noted as being old and crumbly. Evidence of Mouse and bird droppings was also recorded within the void of this building.
- 4.24. B33 – Potential bat access points are present between the tiles of this building. Internally, evidence of Mouse droppings was recorded in the eastern half of this roof void.
- 4.25. B34 – Potential bat access points are present between the tiles and between the wooden soffits. Evidence of bat droppings were recorded in the southern void of B34, with a concentration of around 100 old bat droppings recorded beneath the apex, and a scattering of five bat droppings recorded through the void. In the northern void of B34, a scattering of five old bat droppings were recorded in the void.
- 4.26. B35 – Potential bat access points are present between the tiles and between the wooden soffits. No evidence of bats was recorded internally.
- 4.27. B36 – Potential bat access points are present between the tiles at the gable ends and between the wooden soffits. Within the southern void of building B36 a single Pipistrelle dropping was recorded within the void.
- 4.28. B39 – Potential bat access points are present between the tiles and between the wooden soffits.
- 4.29. No evidence of bats was recorded within any of the other buildings present in the site, and none of these other buildings were recorded as having potential to support roosting bats.
- 4.30. **Dawn and Dusk Backtracking Surveys.** During the dusk back-tracking survey carried out on the 2nd September 2013, the majority of bat activity was recorded associated with the woodland to the west of B1 and southwest of B4 in the centre of the site, as well as in the courtyard of buildings B1-B4. Less activity was recorded associated with buildings B23 and B24 in the northeast of

the site. Within the wider study area, the majority of bat activity was recorded along hedgerow H5 and TB2 in the west of the wider study area, with some activity also recorded along hedgerow H21 and TB3. The majority of registrations recorded were from both Common Pipistrelle *Pipistrellus pipistrellus* (204 registrations) and Soprano Pipistrelle *Pipistrellus pygmaeus* bats (183 registrations). Very little activity was recorded from other species, with 31 registrations of Noctule bats recorded and only four registrations of Nathusius' Pipistrelle *Pipistrellus nathusii* two registrations of Myotis *Myotis* sp. and two registrations of Brown Long-eared bats *Plecotus auritus* recorded. The results of these surveys can be seen on Plan ECO4a.

- 4.31. During the dawn back-tracking survey carried out on the 3rd September 2013, again the majority of activity was recorded within the woodland areas and the central courtyard. During this survey, the vast majority of activity was recorded from Soprano Pipistrelle bats, with a total of 212 registrations recorded. Very little activity was recorded from other bat species, with only nine registrations recorded from Common Pipistrelle bats and only three registrations recorded from Myotis bats. The results of these surveys can be seen on Plan ECO4b.
- 4.32. **Evening Emergence and Dawn Re-entry Surveys.** Evening emergence and dawn re-entry surveys were carried out on buildings B2-B5, B7-B8, B17, B22-B24, B26, B27, B31 and B33-B36 that were considered to have potential to support roosting bats, between the 8th April 2014 and the 29th May 2014. During these surveys, bats were recorded roosting within buildings B3, B5, B7, B22, B24, B26, B33 and B36. No bats were recorded roosting within any of the other buildings surveyed.
- 4.33. Building B3 was surveyed on the 25th April, 28th April, 22nd May and 23rd May 2014 at different aspects. On the 23rd May 2014, a single Pipistrelle sp. was recorded re-entering between tiles in the valley of two roof aspects, on the northeastern aspect of building B3. The results of these surveys can be seen on Plan ECO5.
- 4.34. Building B5 was surveyed on the 10th April and 19th May 2014. On the 19th May 2014, a single Common Pipistrelle and a single Soprano Pipistrelle were recorded emerging from the southeastern aspect of the eastern half of building B5. The results of these surveys can be seen on Plan ECO6.
- 4.35. Building B7 was surveyed on the 15th April, (dawn and dusk), 17th April, 2nd May, 9th May, 19th May and 20th May at different aspects. On the 15th April 2014, a single Common Pipistrelle and a single Soprano Pipistrelle were recorded emerging from beneath the roofing felt on the corner of a flat-roofed section on the northeastern aspect of building B7. On the 17th April 2014, a single Soprano Pipistrelle was recorded emerging from beneath a window in the northwestern aspect of building B7. On the 19th May 2014, a single Pipistrelle sp. was recorded re-entering beneath the felt of the flat-roofed section on the northeastern aspect of building B7. The results of these surveys can be seen on Plan ECO7.
- 4.36. Building B22 was surveyed on the 30th April and 28th May 2014. On the 30th April 2014, a total of nine Common Pipistrelle bats were recorded emerging from between raised tiles around a skylight on the southwestern aspect of building B22. On the 29th May 2014, 25 Common Pipistrelle were recorded re-entering between the raised tiles beneath the skylight on the southwestern

aspect of building B22. The results of these surveys can be seen on Plan ECO8.

- 4.37. Building B24 was surveyed on the 28th April, 29th April, 20th May and 29th May 2014 at different aspects. On the 28th April 2014, a single Common Pipistrelle was recorded re-entering and then emerging from the southeastern corner of building B24, during a dawn re-entry survey. On the 20th May 2014, two Common Pipistrelle bats were recorded emerging from between the tiles around a chimney at the eastern end of B24. A single Soprano Pipistrelle was also recorded emerging from B24, from behind the chipboard of a boarded-up window at the eastern end of building B24, on the southeastern aspect. The results of these surveys can be seen on Plan ECO9.
- 4.38. Building B26 was surveyed on the 1st May and 9th May 2014. On the 1st May 2014, a total of five Soprano Pipistrelle bats were recorded re-entering building B26, between the chipboard of two boarded-up windows, four on the northern aspect of the building and one on the western aspect. The results of these surveys can be seen on Plan ECO10.
- 4.39. Building B33 was surveyed on the 8th April, 30th April, 2nd May and 7th May 2014 at different aspects. On the 8th April 2014, a single Soprano Pipistrelle was recorded emerging from the northwestern corner of the eastern half of building B33. On the 7th May 2014, seven Soprano Pipistrelle bats were recorded re-entering the northwestern corner of the eastern half of building B33. The results of these surveys can be seen on Plan ECO11.
- 4.40. Building B36 was surveyed on the 9th April, 29th April and 13th May 2014 at different aspects. On the 9th April 2014, a single Pipistrelle sp. was recorded emerging from above the northern-most first floor window on the southern half of building B36. The results of these surveys can be seen on Plan ECO12.
- 4.41. Given the results of the emergence and re-entry surveys, it is considered that buildings B3, B5, B26 and B36 are used as minor, transitory roosts of Common and Soprano Pipistrelle bats, while buildings B7, B24 and B33 are considered to be minor roosts of Common and Soprano Pipistrelle bats, while building B22 is considered to represent a maternity colony of Common Pipistrelle bats.
- 4.42. Building B2 was surveyed on the 24th April, 28th April, 16th May and 23rd May 2014 at different aspects, and no bats were recorded emerging or re-entering this building.
- 4.43. Building B4 was surveyed on the 23rd April, (dawn and dusk), 14th May and 21st May 2014, and no bats were recorded emerging or re-entering this building.
- 4.44. Building B8 was surveyed on the 15th April, 16th April, 17th April, 1st May, 2nd May, 9th May, 12th May and 20th May at different aspects, and no bats were recorded emerging or re-entering this building.
- 4.45. Building B17 was surveyed on the 22nd April, 25th April, 13th May and 15th May 2014, and no bats were recorded emerging or re-entering this building.
- 4.46. Building B23 was surveyed on the 2nd May, 6th May, 7th May and 9th May, and no bats were recorded emerging or re-entering this building.

- 4.47. Building B27 was surveyed on the 14th April and 12th May, and no bats were recorded emerging or re-entering this building.
- 4.48. Building B31 was surveyed on the 14th April and 7th May, and no bats were recorded emerging or re-entering this building.
- 4.49. Building B35 was surveyed on the 9th April and 6th May, and no bats were recorded emerging or re-entering this building.
- 4.50. Building B36 was surveyed on the 11th April and 14th May, and no bats were recorded emerging or re-entering this building.
- 4.51. During the emergence and re-entry surveys, the vast majority of activity recorded within the assessment site was from Common and Soprano Pipistrelle bats. Moderate levels of activity from Nathusius' Pipistrelle were also recorded within the assessment site, with less activity recorded from Myotis sp. Only occasional activity was recorded from Noctule, Serotine and Lesser Horseshoe, with very occasional activity recorded from Brown Long-eared bats.
- 4.52. **Automated Surveys.** SongMeter SM2 bat detectors were placed within the loft voids of buildings B4, B5, B7, B8, B17, B22, B31, B34 northern void and southern void, and B36, and left for a period of four consecutive nights in each building.
- 4.53. During these surveys, a number of registrations of bat activity were recorded on the detector left within the loft void of building B31. On the 28th April 2014, a total of 16 registrations of Common Pipistrelle, four registrations of Soprano Pipistrelle and a single registration of a Nathusius' Pipistrelle were recorded between 21:03-23:13 (the first being 38 minutes after sunset and no registrations recorded the following morning). On the 29th April 2014, a total of 12 registrations of Common Pipistrelle were recorded between 20:44 and 22:57 (the first being 18 minutes after sunset and no registrations of this species recorded the following morning) with a single registrations of a Lesser Horseshoe recorded at 03:29 on the 30th April 2014 (2 hours 10 minutes before sunrise). On the 30th April 2014, a total of 61 registrations of Common Pipistrelle and three registrations of Soprano Pipistrelle bats were recorded between 20:43 and 03:59 on the 1st May 2014 (25 minutes after sunset and 2 hours 38 minutes before sunrise). Finally, on the 1st May 2014 a total of 18 registrations of Common Pipistrelle and a single registration of a Soprano Pipistrelle bat were recorded between 20:54 and 00:09 on the 2nd May 2014 (24 minutes after sunset), with a further single registration of Soprano Pipistrelle recorded at 02:59 on the 2nd May (2 hours 36 minutes before sunrise).
- 4.54. Although the timings of the first registrations indicate there is a roost of Common Pipistrelle bats nearby, the timings of the last registrations do not indicate bats returning to this building in the morning. Further, given the results of the specific bat emergence / re-entry survey of building B31, and that there is a large hole in the roof of this building, and no bats were recorded emerging / re-entering this building, it is considered that the registrations were recorded from either bats outside the roof void, commuting past building B31 from their roost to foraging grounds, and from bats foraging outside the roof void during the night.

- 4.55. On the detector left in the southern void of building B34 between 16th – 18th May 2014, a total of 18 registrations of Lesser Horseshoe were recorded on the 18th May between 22:29-22:45, with no registrations recorded on any of the other days. Given the timing of the first registrations (1 hour 28 minutes after sunset) and that no registrations were recorded the following morning, it is considered that the registrations recorded were from a Lesser Horseshoe bat foraging outside the loft void.
- 4.56. No registrations of any other bats were recorded on the detectors left in any of the other buildings during these surveys.
- 4.57. **Background Records.** Information returned by WSBRC and GCER did not return records of any bat roosts within the site itself. The nearest record of a Whiskered bat *Myotis mystacinus* roost was recorded from approximately 0.7km northwest of the site in 2005. The nearest records of Natterer's *Myotis nattereri* and Brown Long-eared bat roosts were returned from the grid square to the southeast in 2010, while a maternity roost of Soprano Pipistrelle was also returned from this grid square in 2009. The nearest field record of a Noctule *Nyctalus noctula* was returned from approximately 0.9km north of the site in 2010. The nearest field record of a Daubenton's bat *Myotis daubentonii* was returned from approximately 1.2km east of the site in 2009.
- 4.58. The Cotswold Water Park BAP includes an action plan for bats, while the Wiltshire and Swindon Aggregate Minerals Site Allocation Local Plan also notes that bats are known from the nearby County Wildlife Sites to the west and south of the site.

Other Mammals

- 4.59. Evidence of Rabbits *Oryctolagus cuniculus* was recorded throughout the wider study area, and Roe Deer *Capreolus capreolus* were also recorded within the wider study area.
- 4.60. **Background Records.** No other notable mammals were returned from within the site as part of the desk study exercise. The nearest record of Hedgehog *Erinaceus europaeus*, a Priority Species, was returned from 0.4km southwest of the site in 2006, and the nearest record of Polecat, also a Priority Species, was returned from approximately 0.7km west of the site in 2006. The nearest record of Water Vole *Arvicola amphibius* (a Priority Species) was returned from approximately 0.4km northwest of the site in 2006, while the nearest record of Otter (a European Protected Species and Priority Species) was from approximately 0.3km west of the site in 2008. The nearest record of Brown Hare *Lepus europaeus* and Harvest Mouse *Micromys minutus*, both Priority Species, were returned from the grid square to the west of the site in 2006 and 2004 respectively.
- 4.61. The Cotswold Water Park BAP includes an action plans for Water Vole and Otter.
- 4.62. The Wiltshire and Swindon Aggregate Minerals Site Allocation Local Plan also notes that a number of protected and notable species are present within the nearby County Wildlife Sites to the west and south of the site, including Otters and Water Vole.

Birds

- 4.63. A number of common bird species were recorded within the site and wider study area during the surveys undertaken. These include Blackbird *Turdus merula*, Chiffchaff *Phylloscopus collybita*, Swift *Apus apus*, Wren *Troglodytes troglodytes*, Chaffinch *Fringilla coelebs*, Woodpigeon *Columba palumbus*, Jackdaw *Coloeus monedula*, Goldcrest *Regulus regulus*, Swallow *Hirundo rustica*, Collared Dove *Streptopelia decaocto*, Buzzard *Buteo buteo*, Carrion Crow *Corvus corone*, Blue Tit *Cyanistes caeruleus*, Greenfinch *Carduelis chloris*, Green Woodpecker *Picus viridis*, Pied Wagtail *Motacilla alba*, Robin *Erithacus rubecula*, Whitethroat *Sylvia communis*, Tawny Owl *Strix aluco*, Rook *Corvus frugilegus*, Great Tit *Parus major*, and Blackcap *Sylvia atricapilla*. Greylag Geese *Anser anser* were recorded flying over the site, as well as in the fields to the northeast of the wider study area.
- 4.64. The Priority Species Dunnock *Prunella modularis* and Bullfinch *Pyrrhula pyrrhula* were recorded within the site, as were the Red List and Priority Species House Sparrow *Passer domesticus*, Redwing *Turdus iliacus*, Song Thrush *Turdus iliacus* and Fieldfare *Turdus pilaris*, and the Schedule 1 species Barn Owl *Tyto alba* (heard near building B8 although no evidence of roosting was recorded). The Red List and Priority Species, Cuckoo *Cuculus canorus*, was heard calling from vegetation associated with the adjacent lakes, while the Red List and Priority Species Skylark *Alauda arvensis* was recorded in fields to the northeast of the site.
- 4.65. Evidence of old, disused House Martin *Delichon urbicum* nests was recorded under the eaves of building B7, while a Swallow was also recorded flying through the open Velux windows of building B12.
- 4.66. It is considered that the orchard, woodland, hedgerows, trees and tree belts within the site would offer suitable foraging and nesting opportunities for a range of birds. Suitable foraging opportunities also exist within the site, within the grassland areas, amenity planting and grassland and ponds.
- 4.67. **Background Records.** Information received from WSBRC recorded a number of birds from within the wider study area, including Lapwing *Vanellus vanellus* (a Red List and Priority Species) recorded in 2011, Grey Partridge *Perdix perdix* (a Red List and Priority Species) recorded in 2008, Fieldfare *Turdus pilaris* (a Red List and Schedule 1 species) in 2008 and Common Crossbill *Loxia curvirostra* (a Schedule 1 species) recorded in 2012.
- 4.68. A number of records of notable birds were returned from the adjacent lakes of the water park, to the north, west, south and east of the site. Species recorded within approximately 0.1km of the assessment site boundary include Little Gull *Hydrocoloeus minutus* (a Schedule 1 species recorded in 2006), Herring Gull *Larus argentatus* (a Red List and Priority Species recorded in 2011), Mediterranean Gull *Ichthyaeetus melanocephalus* (a Schedule 1 species recorded in 2006), Dunlin *Calidris alpina* (a Red List species recorded in 2005), Black-tailed Godwit *Limosa limosa* (a Red list, Schedule 1 and Priority Species recorded in 2005), Curlew *Numenius arquata* (a Priority Species recorded in 2005), Whimbrel (a Red list and Schedule 1 species recorded in 2005), Greenshank *Tringa nebularia* (a Schedule 1 species recorded in 2006), Black Tern *Chlidonias niger* (a Schedule 1 species recorded in 2010), Great Bittern *Botaurus stellaris* (a Red list, Schedule 1 and Priority Species recorded in 2003), Common Kingfisher *Alcedo atthis* (a Schedule 1 species recorded in

2007), Woodlark *Lullula arborea* (a Schedule 1 and Priority Species recorded in 2004), Black-necked Grebe *Podiceps nigricollis* (a Schedule 1 species recorded in 2005), Barn Owl (a Schedule 1 species recorded in 2006), Ruff *Philomachus pugnax* (a Schedule 1 species recorded in 2012), Wood Sandpiper *Tringa glareola* (a Schedule 1 species recorded in 2004), Merlin *Falco columbarius* (a Schedule 1 species recorded in 2012), Snow Bunting *Plectrophenax nivalis* (a Schedule 1 species recorded in 2006), Starling *Sturnus vulgaris* (a Red list and Priority Species recorded in 2011) and Redwing (a Red list and Schedule 1 species recorded in 2011).

- 4.69. Species returned within 0.4km of the site boundary include Gargany *Anas querquedula* (a Schedule 1 species recorded in 2002), Little Ringed Plover *Charadrius dubius* (a Schedule 1 species recorded in 2012), Green Sandpiper *Tringa ochropus* (a Schedule 1 species recorded in 2012), Red-throated Diver *Gavia stellata* (a Schedule 1 species recorded in 2003), Skylark (a Red list and Priority Species recorded in 2012), Yellowhammer *Emberiza citrinella* (a Red List and Priority Species recorded in 2011), Reed Bunting *Emberiza schoeniclus* (a Priority Species recorded in 2012), Lesser Redpoll *Acanthis cabaret* (a Red List and Priority Species recorded in 2012), Linnet *Carduelis cannabina* (a Red List and Priority Species recorded in 2012), Yellow Wagtail *Motacilla flava* (a Red List and Priority Species recorded in 2010) and Song Thrush (a Red List and Priority Species recorded in 2007).
- 4.70. The nearest record of Greater Scaup *Aythya marila* (a Red List, Schedule 1 and Priority Species) was recorded 0.7km southwest of the site in 2010. The nearest records of Arctic Skua *Stercorarius parasiticus* (a Red List and Priority Species recorded in 2006), Corn Bunting *Emberiza calandra* (a Red List and Priority Species recorded in 2011) and Brambling *Fringilla montifringilla* (a Schedule 1 species recorded in 2008) were returned from approximately 0.5km south of the site, while the nearest record of Spotted Flycatcher *Muscicapa striata* (a Red List and Priority Species) was returned from approximately 1.2km east of the site in 1992. The nearest record of House Sparrow (a Red List and Priority Species) was returned from approximately 1km southwest of the site in 2010. Notable birds returned from approximately 1km of the site boundary include Cuckoo (a Red list and priority Species recorded in 2012), Hobby (a Schedule 1 species recorded in 2009), Marsh Tit *Poecile palustris* (a Red List and Priority Species recorded in 2006) and Grasshopper Warbler *Locustella naevia* (a Red List and Priority Species recorded in 2011), while the nearest record of Cetti's Warbler *Cettia cetti* (a Schedule 1 species) was returned from approximately 1.2km southeast of the site in 2008. The nearest record of Black Redstart *Phoenicurus ochruros* (a Schedule 1 species recorded in 2010) and Little Tern *Sternula albifrons* (a Schedule 1 species recorded in 2006) were returned from approximately 1.6km southeast of the site.
- 4.71. A number of records of notable birds were returned from the grid square to the north of the site. Species returned from this location include Bearded Tit *Panurus biarmicus* (a Schedule 1 species recorded in 2012), Black-necked Grebe (a Schedule 1 species recorded in 1992), Common Quail *Coturnix coturnix* (a Schedule 1 species recorded in 2012), Wryneck *Jynx torquilla* (a Red List and Priority Species recorded in 2002), Honey Buzzard *Pernis apivorus* (a Schedule 1 species recorded in 2003) and Temminck's Stint *Calidris temminckii* (a Red List and Schedule 1 species recorded in 2003). The nearest record of Turtle Dove *Streptopelia turtur* (a Red List and Priority Species) was returned from the grid square to the west of the wider study area in 1993, while the nearest record of Osprey *Pandion haliaetus* (a Schedule 1

species) was returned from approximately 0.6km north of the assessment site in 2005. Following correspondence with WSBRC, they have clarified that Osprey are regularly recorded on migration within the CWP but have not been recorded breeding.

- 4.72. Records for Red Kite *Milvus milvus* and Peregrine *Falco peregrinus* (both Schedule 1 species) were returned from Lake 32 to the west of the site in 2012 and 2004 respectively.
- 4.73. The Cotswold Water Park BAP includes action plans for breeding waterbirds, wintering birds, Bittern *Botaurus stellaris*, Reed Bunting and Nightingale *Luscinia megarhynchos*.
- 4.74. The Wiltshire and Swindon Aggregate Minerals Site Allocation Local Plan also notes that a number of protected and notable species are present within the nearby County Wildlife Sites to the west and south of the site, including Merlin, Hobby, Mediterranean Gull, Whimbrel, Green Sandpiper, Little Ringed Plover and Osprey.
- 4.75. As stated above, Fieldfare, Barn Owl, Redwing, Song Thrush and House Sparrow were recorded within the wider study area, while Skylark and Cuckoo were recorded near to the site.
- 4.76. Of the other above species, it is considered that the habitats present within the site offer suitable foraging and nesting opportunities for Grey Partridge, Common Crossbill, Starling, Yellowhammer, Lesser Redpoll, Linnet, Turtle Dove and Red Kite, with some limited foraging and nesting opportunities for Reed Bunting, Woodlark, Merlin, Spotted Flycatcher, Hobby, Marsh Tit, Grasshopper Warbler, Cetti's Warbler and Nightingale. It is also considered the habitats present within the site offer some suitable foraging opportunities for Yellow Wagtail, and wintering opportunities for Brambling. However, it is not considered any of these species would be reliant on the habitats present within the site.
- 4.77. It is not considered the habitats present within the site offer suitable opportunities to the remainder of the above species.

Reptiles

- 4.78. Surveys for reptiles were carried out between September and October 2013, with the areas of rough grassland. During these surveys, no reptiles were recorded within the site. The dates and weather conditions for these surveys can be seen in Table 1 below.

Survey number	Date	Weather conditions	Temp. °C
1	06.09.13	Overcast and dry	14
2	10.09.13	Little cloud and dry	15
3	12.09.13	Sunny and dry	16
4	16.09.13	Little cloud and dry	15
5	19.09.13	Little cloud and dry	17
6	04.10.13	Partially cloudy and dry	17
7	08.10.13	Partially cloudy and dry	16

Table 1. Reptile survey results 2013.

- 4.79. **Background Records.** Information received from WSBRC returned a record of Grass Snake *Natrix natrix* from approximately 100m west of the southern boundary of the site in 2006. The nearest record of Adder *Vipera berus* was returned from GCER from approximately 0.5km west of the site in 2009, while the nearest record of Common Lizard *Zootoca vivipara* was also returned by GCER from approximately 0.9km north of the site in 2011.

Great Crested Newts

- 4.80. There are eight ponds present within the site (P1-P8 on Plan ECO2) that were surveyed for Great Crested Newts between April and May 2014. During these surveys, ponds P5 and P6 were recorded as holding only very little water, while ponds P7 and P8 were recorded as being dry throughout the surveys. Pond P7, a ponded area of the seasonally wet ditch that runs through the site, was only recorded as holding water during periods of heavy rain early and late in the year, while pond P8 was only recorded as holding very shallow water early in the year, prior to the commencement of surveys for Great Crested Newts. The results of these surveys can be seen in Table 2 below.

Survey no.	Weather	Temp .°C	Date	Pond no.	Great Crested Newt			Smooth Newt		Palmate Newt	
					Male	Female	Male / Female	Male	Female	Male	Female
1	Overcast and dry	12	10.4.14	P1	0	0	0	0	1	0	1
				P2	0	0	23	1	1	0	1
				P3	0	0	0	0	0	0	0
				P4	0	0	0	0	0	0	0
				P5	0	0	0	0	0	0	0
				P6	0	0	0	0	0	0	0
				P7	0	0	0	0	0	0	0
				P8	0	0	0	0	0	0	0
2	Clear and dry	8	16.4.14	P1	0	0	0	4	0	0	0
				P2	0	0	25	0	0	0	0
				P3	0	0	0	2	0	0	0
				P4	0	0	0	1	0	0	0
				P5	0	0	0	0	0	0	0
				P6	0	0	0	0	0	0	0
				P7	0	0	0	0	0	0	0
				P8	0	0	0	0	0	0	0
3	Overcast and dry	12	24.4.14	P1	1	0	0	1	0	0	1
				P2	0	0	26	0	0	0	0

				P3	0	1	0	0	0	0	0
				P4	0	0	0	0	0	0	0
				P5	0	0	0	0	0	0	0
				P6	0	0	0	0	0	0	0
				P7	0	0	0	0	0	0	0
				P8	0	0	0	0	0	0	0
4	Cloudy with light rain showers	8	02.5.14	P1	0	0	0	6	0	1	1
				P2	1	3	0	1	0	0	0
				P3	0	0	0	0	0	0	0
				P4	0	0	0	0	0	0	0
				P5	0	0	0	0	0	0	0
				P6	0	0	0	0	0	0	0
				P7	0	0	0	0	0	0	0
				P8	0	0	0	0	0	0	0
5	Overcast and dry	11	08.5.14	P1	0	0	0	8	1	1	0
				P2	2	1	0	0	1	0	0
				P3	0	0	0	0	0	0	0
6	Clear and dry	15	15.5.14	P1	0	0	0	2	2	0	0
				P2	5	2	0	17	0	0	0
				P3	0	0	0	0	0	0	0

Table 2. Great Crested Newt survey results 2014.

- 4.81. As can be seen from Table 2 above, small populations of Great Crested Newts were recorded from ponds P1 the lake, (with a maximum count of one male Great Crested Newt) and P3 (with a maximum count of one male and two female Great Crested Newts on any one occasion), while a medium population of Great Crested Newts was recorded from pond P2, the former swimming pool (with a maximum count of 26 adults).
- 4.82. During the surveys, small populations of Smooth Newt were recorded within ponds P1 and P3, with a medium population recorded in pond P2. Small populations of Palmate Newt were also recorded within ponds P1 and P2, with Common Frog also recorded in pond P2.
- 4.83. During the reptile surveys carried out in 2013, Common Toad *Bufo bufo* were recorded within the site beneath the survey tins.
- 4.84. **Background Records.** No records of any Great Crested Newts were returned from within the site itself, with the nearest record returned from approximately 0.9km northwest of the site in 2007. A record of Common Toad *Bufo bufo* was returned from the grid square to the north of the site in 2008, while the nearest record of Common Frog *Rana temporaria* was returned from the grid square to the west of the site in 2005. The nearest record of Smooth Newt *Lissotriton vulgaris* was returned from approximately 0.8km northwest of the site in 2010.
- 4.85. The Cotswold Water Park BAP includes an action plan for Great Crested Newts.
- 4.86. The Wiltshire and Swindon Aggregate Minerals Site Allocation Local Plan also notes that a number of protected and notable species are present within the nearby County Wildlife Sites to the west and south of the site, including Great Crested Newts.

Invertebrates

- 4.87. It is considered that the site is likely to support a range of common invertebrate species, although there is no evidence to suggest that any notable invertebrates would be present.
- 4.88. **Background Records.** The WSBRC returned a record of Small Heath *Coenonympha pamphilus* (a Red List and Priority Species) from approximately 0.5km east of the site in 2006. No other records of any notable invertebrates were returned from within the site itself, with the nearest record of Freshwater Crayfish returned from approximately 1km south of the site in 1999.
- 4.89. A number of records of notable moths were returned from within the search area, including White Ermine *Spilosoma lubricipeda* (a Priority Species recorded in 2006 0.1km west), Cinnabar *Tyria jacobaeae* (a Priority Species recorded in 2012 0.4km east), Dotted Ermel *Ethmia dodecea* (a Priority Species recorded in 2011 0.8km southwest) and Small Emerald *Hemistola chrysoprasaria* (a Priority Species recorded 1.6km southeast in 1996). A number of notable moths were recorded from the grid square to the northwest of the assessment site, including the Pyralid moth *Calamotropha paludella* (a Nationally Scarce species), as well as the Priority Species Blood-vein *Timandra comae*, Dusky Thorn *Ennomos fuscantaria*, Grey Dagger *Acronicta psi*, Knot Grass *Acronicta rumicis*, Rosy Rustic *Hydraecia micacea* and Small Phoenix *Ecliptopera silaceata*, all recorded in 2003. The nearest record of Buff Ermine *Spilarctia luteum* was returned from approximately 1.6km southeast of the wider study area in 1996.
- 4.90. A number of notable butterflies were also recorded within the search area, including Wall *Lasiommata megera* (a Red List and Priority Species) recorded 1km east in 1991, Brown Hairstreak *Thecla betulae* (a Red List and Priority Species recorded from two grid squares to the southeast in 2007), Grizzled Skipper *Pyrgus malvae* (a Red List and Priority Species recorded 1.8km southwest in 1990) and Small Blue *Cupido minimus* (a Priority Species recorded 0.5km west in 1989).
- 4.91. Other notable invertebrates recorded from the search area include the beetle *Donacia cinerea* (a National Scarce species recorded 1.6km southeast in 1997), the wasp *Dolichovespula media* (a Nationally Scarce species recorded 0.1km west in 2006), as well as the beetles *Hygrotus nigrolineatus* (a Nationally Scarce species) and *Nebrioporus elegans* (a Red List and Nationally Scarce species) both recorded 0.7km north in 2010, and the Brooklime Gull Weevil *Gymnetron veronicae* (a Nationally Scarce species recorded 0.9km north in 2010).
- 4.92. The Cotswold Water Park BAP includes action plans for the Barberry Carpet, Glow Worm, and Dragonflies.
- 4.93. The Wiltshire and Swindon Aggregate Minerals Site Allocation Local Plan also notes that a number of protected and notable species are present within the nearby County Wildlife Sites to the west and south of the site, including Brown Hairstreak and Small Blue.
- 4.94. It is considered that the habitats within the site offer suitable opportunities for Small Heath, White Ermine, Cinnabar, Blood-vein, Grey Dagger, Knot Grass, Rosy Rustic, Small Phoenix, Buff Ermine and Brown Hairstreak, given that the

larval foodplants of these species include grasses, herbaceous plants and scrub. The lake P1 and to a lesser extent the ponds within the site offer limited opportunities for the water beetles *Donacia cinerea*, *Dolichovespula media* and *Nebrioporus elegans*. It is considered that the habitats present within the site also offer some suitable opportunities for the wasp *Dolichovespula media*, Glow Worm and dragonflies, and very limited opportunities for *Calamotropha paludella*. However, it is not considered that any of the above species would be reliant upon the habitats present within the site.

- 4.95. The Wall butterfly is generally confined to coastal site, while the Dotted Ermel is a species of chalk grassland where its larval foodplant, Common Gromwell is found. Small Emerald is also a species of limestone areas where its larval foodplant Traveller's Joy is found. The Grizzled Skipper is a species of unimproved grassland and woodland rides, with its larval foodplants being scrub and herbaceous plants, while the larval foodplant of Small Blue is Kidney Vetch. As such, it is not considered the habitats present within the site offer suitable opportunities for these species. It is also not considered that the habitats present within the site offer suitable opportunities for Freshwater Crayfish, Brooklime Gull Weevil or the Barberry Carpet.

5. ECOLOGICAL EVALUATION

5.1. The Principles of Ecological Evaluation

- 5.1.1. The latest guidelines for ecological evaluation produced by CIEEM⁹ propose an approach that involves professional judgement, but makes use of available guidance and information, such as the distribution and status of the species or features within the locality of the project.
- 5.1.2. The methods and standards for site evaluation within the British Isles have remained those defined by Ratcliffe¹⁰. These are broadly used across the United Kingdom to rank sites so priorities for nature conservation can be attained. For example, current sites of Special Scientific Interest (SSSI) designation maintains a system of data analysis that is roughly tested against Ratcliffe's criteria.
- 5.1.3. In general terms, these criteria are size, diversity, naturalness, rarity and fragility, while additional secondary criteria of typicalness, potential value, intrinsic appeal, recorded history and the position within the ecological/geographical units are also incorporated into the ranking procedure.
- 5.1.4. Any assessment should not judge sites in isolation from others, since several habitats may combine to make it worthy of importance to nature conservation.
- 5.1.5. Further, relying on the national criteria would undoubtedly distort the local variation in assessment and therefore additional factors need to be taken into account, e.g. a woodland type with a comparatively poor species diversity, common in the south of England, may be of importance at its northern limits, say in the border country.
- 5.1.6. In addition, habitats of local importance are often highlighted within a local Biodiversity Action Plan (BAP). The Wiltshire BAP¹¹ and Cotswold Water Park BAP currently lists a number of priority habitats and species.
- 5.1.7. Levels of importance can be determined within a defined geographical context from the immediate site or locality through to the International level.
- 5.1.8. The legislative and planning policy context are also important considerations and have been given due regard throughout this assessment.

⁹ Institute of Ecology and Environmental Management (2006). Guidelines for Ecological Impact Assessment in the United Kingdom (version 7 July 2006). <http://www.ieem.org.uk/ecia/index.html>.

¹⁰ Ratcliffe, D A (1977). *A Nature Conservation Review: the Selection of Study areas of Biological National Importance to Nature Conservation in Britain*. Two Volumes. Cambridge University Press, Cambridge.

¹¹ <http://www.ukbap-reporting.org.uk>

5.2. Habitat Evaluation

Designated Sites

- 5.2.1. **Statutory Sites:** There are no statutory designated nature conservation sites within the assessment site.

SAC

- 5.2.2. The nearest Special Area of Conservation (SAC) is the North Meadows and Clattinger Farm SAC, which lies approximately 2.1km southwest of the site. The North Meadows and Clattinger Farm SAC is designated for the presence of the Annex 1 habitat Lowland Hay Meadow, and is separated into two areas, one to the west of the assessment site (Clattinger Farm) and one approximately 4.9km to the east of the assessment site (North Meadows). The western part of this SAC is also designated as the Clattinger Farm Site of Special Scientific Interest (SSSI), while the eastern part of this SAC is also designated as the North Meadow Cricklade SSSI and Local Nature Reserve (LNR). The Clattinger Farm SSSI is designated for the presence of unimproved grassland with an outstanding meadow flora, and is the only known lowland farm in Britain to have not received any agricultural chemicals. To the east, the North Meadow Cricklade SSSI is designated for the presence of a traditionally managed hay meadow including the largest British population of Snake's Head Fritillaries.
- 5.2.3. Under the EC Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna, commonly referred to as the Habitats Directive (Council Directive 92/43/EEC), Member States are required to take special measures to maintain the distribution and abundance of certain priority habitats and species (listed in Annexes I and II of the Directive). In particular each Member State is required to designate the most suitable sites as SACs. All such SACs will form part of the Natura 2000 network under article 3(1) of the Habitats Directive.
- 5.2.4. The Conservation of Species and Habitats Regulations 2010 (as amended), commonly referred to as the Habitats Regulations, transpose the requirements of the Habitats Directive (and Birds Directive) into UK legislation. The Habitats Regulations aim to protect a network of sites in the UK that have rare or important habitats and species in order to safeguard biodiversity.
- 5.2.5. Under the Habitats Regulations, Competent Authorities have a duty to ensure that all the activities they regulate have no adverse effect on the integrity of any of the Natura 2000 sites. Regulation 61 of the Habitats Regulations requires that:

"61(1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for a plan or project, which:-

- (a) is likely to have a significant effect on a European site or a European offshore marine site in Great Britain (either alone or in combination with other plans or projects) and*

(b) is not directly connected with or necessary for the management of the site,

shall make an appropriate assessment of the implications for the site in view of that site's conservation objectives.

61(3) The competent authority must for the purposes of the assessment consult the appropriate nature conservation body and have regard to any representations made by that body within such reasonable time as the authority may specify.

61(5) In the light of the conclusions of the assessment, and subject to regulation 62, the authority shall agree to a plan or project only after having ascertained that it will not adversely affect the integrity of the European site.

61(6) In considering whether a plan or project will adversely affect the integrity of the site, the authority shall have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which they propose that the consent, permission or other authorisation should be given."

- 5.2.6. Regulation 61 of the Habitats Regulations therefore sets out a two stage process. The first test is to determine whether the plan / project is likely to have a significant effect on the European site, the second test (if applicable) is to determine whether the plan / project will affect the integrity of the European site.

- 5.2.7. As part of the Wiltshire Core Strategy, a Habitat Regulations Assessment (HRA) has been undertaken, titled the 'Wiltshire Core Strategy Submission Draft – Assessment under the Habitats Regulations' (February 2012). Within this document, it is stated that in relation to the North Meadows and Clattinger Farm SAC:

"Natural England indicated that the current level of recreational activity is at or above capacity on the North Meadow Cricklade SSSI, which is a component of the North Meadow and Clattinger Farm SAC. Current information on the SAC (JNCC) and the component SSSI identify that site level management is the most important factor in maintaining a favourable condition status. The HRA concluded the management of recreational activity will need to continue to be dealt with at the site level through, for example, maintenance of the public footpaths and the restriction of access to areas of the site that are being adversely affected."

- 5.2.8. The HRA goes on to state that, in relation to Policy 50 of the Draft Core Strategy:

"It is considered that Policy 50 provides sufficient safeguards in relation to potential impacts associated with recreational pressure on SPAs, such as Salisbury Plain and other European sites."

...

"As noted above potential recreational pressure on the North Meadow and Clattinger Farm SAC will be managed through site level management,

therefore increased recreational pressure from housing development would not have a likely significant effect upon this site."

- 5.2.9. Since production of the HRA, the Wiltshire Core Strategy has been formally adopted, and Core Strategy 50 of the adopted Wiltshire Core Strategy (January 2015) states:

"Any development potentially affecting a Natura 2000 site must provide avoidance measures in accordance with the strategic plans or guidance set out in paragraph 6.70 above where possible, otherwise bespoke measures must be provided to demonstrate that the proposals would have no adverse effect upon the Natura 2000 network. Any development that would have an adverse effect on the integrity of a European nature conservation site will not be in accordance with the Core Strategy."

- 5.2.10. The referenced paragraph 6.70 states, in relation to other strategic plans and guidance documents, that:

"Other plans and guidance documents will be produced by Wiltshire Council as necessary. Wiltshire Council has also signed a Memorandum of Understanding with Natural England to ensure that all of these measures are effectively delivered."

- 5.2.11. Further, the Wiltshire Core Strategy (WCS) Updated HRA (April 2014) states that:

*"The Local Plan document review identified potential LSE [Likely Significant Effects] of increased recreational pressure upon the North Meadows and Clattinger Farm SAC associated with to [sic] Local Plan documents. The Swindon Borough Local Plan addresses this issue through its biodiversity and green infrastructure policy. The Cotswold District Local Plan HRA suggests that further information is required to assess the potential effects of recreational disturbance at this site, however the WCS HRA found that management at the site will address increased recreational pressures and it is considered that that mechanism will also address the Cotswold District's development. **It is therefore considered that these three plans would not have any adverse in-combination effects upon the integrity of the North Meadows and Clattinger Farm SAC through increased recreational pressures.**"*

- 5.2.12. In relation to nitrogen deposition, the HRA states that:

"According to the SW RSS HRA [South West Regional Spatial Strategy Habitat Regulations Assessment] North Meadow and Clattinger Farm SAC is a site where Nitrogen deposition is currently exceeding critical loads but this is over 200m from a major road and agricultural activity may be the source of the problem."

- 5.2.13. Further the Wiltshire Core Strategy Updated HRA (April 2014) states that:

"Local Plan HRAs identified potential LSEs associated with nitrogen deposition upon numerous sites including Cotswold Beechwoods SAC, North Meadows and Clattinger Farm SAC, River Avon SAC / SPA and the Solent and Southampton Water SPA; the WCS HRA also identified similar

*LSE associated with these sites. These effects are to be addressed through a series of transport strategies and policies within the plans themselves, taking a similar approach to the WCS. **It is considered that these plans would not have an in-combination effect on any one of these Natura 2000 sites through nitrogen deposition.***

- 5.2.14. With regards to impacts of water quality, the Wiltshire and Swindon Aggregate Minerals Site Allocations Local Plan (May 2013) states that there are *'no likely significant effects on the designated features of the SAC'* and that *'it is very unlikely that water quality, or water resources will be reduced within the European site as a function of quarrying from this site. Precautionary measures are available to protect groundwater and prevent impact from dust deposition, pollution or increased siltation from run off reaching the SAC.'*
- 5.2.15. Given the above, it is considered that the development proposals will not have any direct impact on the North Meadow and Clattinger Farm SAC through land-take. Further, given the conclusions of the Wiltshire Core Strategy Updated HRA, it is considered that the development proposals are not likely to have any significant adverse effects on the North Meadows and Clattinger Farm SAC either alone or in combination with other plans or projects.

LNR

- 5.2.16. The nearest Local Nature Reserve (LNR) is Coke's Pit LNR, which lies approximately 400m west of the site. This LNR is a lake that is designated for the presence of a variety of habitats including open water, shingle islands, reedbeds, grassland and hedgerows, and supports a range of breeding birds (including Reed Bunting, Tufted Duck, Great Crested Grebe and Nightingale). This LNR also supports Water Voles, Water Shrews and a large variety of Dragonflies and Damselflies. The assessment site is separated from this LNR by the lake of the CWP Pit 32 LWS and a minor road.
- 5.2.17. Best practice methods (compliance with Environmental Agency Pollution Prevention Guidelines (PPG5): 'Works and maintenance in or near water') and effective engineering solutions will be employed to ensure that contaminated run-off is prevented from entering the CWP Pit 32 LWS / Cotswold Water Park KWS, and subsequently the Coke's Pit LNR during the construction and operational phases of the residential development, and as such it is not considered there will be any adverse direct or indirect effects on this statutory designated site as result of the proposals.

SSSI

- 5.2.18. The nearest SSSI is the Cotswold Water Park SSSI that lies approximately 1.3km south of the site. This SSSI is designated as a series of lakes formed by mineral extraction that support a variety of plant communities and are nationally scarce marl lakes, and represents the most extensive marl lake system in Britain. The lakes also support populations of breeding and wintering birds. This SSSI is separated from the site by Spine Road West, the CWP Pit 28, 28a, 29, 30, 35, 38 LWS and other LWSs, and the River Thames or Isis. Best practice methods (compliance with Environmental Agency Pollution Prevention Guidelines (PPG5): 'Works

and maintenance in or near water') and effective engineering solutions will be employed to ensure that contaminated run-off is prevented from entering the CWP Pit 32 LWS / Cotswold Water Park KWS, and subsequently the Cotswold Water Park SSSI. As such, it is considered that there would not be any adverse direct or indirect impacts on this SSSI as a result of the development proposals.

- 5.2.19. **Non-statutory Sites:** There are no non-statutory designated nature conservation sites within the site itself.
- 5.2.20. The nearest non-statutory designated site of nature conservation importance are the CWP Pit 32 LWS and part of the Cotswold Water Park KWS adjacent to the western boundary of the site, the CWP Pit 62 LWS lies approximately 0.2km to the east of the site (adjacent to the boundary of the wider study area), and the CWP Pits 28, 28a, 29, 30, 35, 38 LWS that lies to the south of Spine Road West, to the south of the site (approximately 20m south of the assessment site). The main habitats of these LWS are standing open water, with CWP Pit 32 LWS also known for its importance for wintering water birds (and the Cotswold Water Park KWS also known for its bird and invertebrate interest), and CWP Pit 28, 28a, 29, 30, 35, 38 LWS also known for its importance for wintering and breeding water birds. The CWP Pit 32 LWS and CWP Pit 62 LWS lie adjacent to the site boundary and is separated by hedgerows and tree belts, while the CWP Pit 28, 28a, 29, 30, 35, 38 LWS is separated from the site by the Spine Road West.
- 5.2.21. Standard engineering practice in respect of pollution control, as part of the development proposals would negate any potential effect to the LWSs and KWS. As such, it is considered unlikely that there will be any direct or indirect adverse effects on these non-statutory designated sites as a result of development.
- 5.2.22. An increased level of dust deposition may arise from the passage of construction traffic during the residential development, although such impacts are usually restricted to within around 15m and so should not extend into the LWSs and KWS. Nonetheless, measures to mitigate for dust emissions will be implemented and any potential effects would easily be mitigated for through the use of standard mitigation techniques, such that residual effects are of negligible significance.
- 5.2.23. Where mitigation measures rely on water, it is expected that only sufficient water would be applied to damp down the material. There should not be any excess to potentially contaminate local waterbodies. Even with these measures in place, there remains a slight risk that the closest portions of the CWP Pit 32 LWS / Cotswold Water Park KWS and CWP Pits 28, 28a, 29, 30, 35, 38 LWS to the assessment site might be affected by very occasional dust-soiling impacts. Any effects will be temporary and relatively short lived, and will only arise during dry weather with the wind blowing towards the receptor, at a time when dust is being generated and mitigation measures are not being fully effective. The overall impacts during the construction phase with mitigation measures in place are judged to be of negligible significance.

- 5.2.24. The adopted lighting scheme for the assessment site proposals will be designed to be generally low level and, if necessary, there will be a restriction of light to selected areas by fitting hoods that direct the light below the horizontal plane (preferably at an angle less than 70 degrees) during the operational phase. The lakes of the adjacent LWSs / KWS are buffered from the assessment site by hedgerows and tree belts, and are well separated from the area proposed for residential development, and therefore significant light spill effects are considered unlikely. However, lighting should specifically be avoided / minimised or directed away from the LWSs / KWS, particularly any lighting along the new access road off the Spine Road West.
- 5.2.25. Given the above, it is not considered there will be any direct or indirect adverse effects on these non-statutory designated sites as a result of the proposals.
- 5.2.26. A number of additional statutory and non-statutory sites are located in the wider area, but no significant effects are anticipated.

Habitats

Semi-improved Grassland

- 5.2.27. The semi-improved grassland fields within the site are of limited ecological value, comprising only common and widespread species, and are grazed by livestock / maintained with a short-mown sward.
- 5.2.28. The semi-improved fields are to be retained and converted to gardens of new properties.
- 5.2.29. **Mitigation and Enhancements.** The retained semi-improved grassland within the site will be oversown with a native species-rich grass seed mixture that is tolerant of regular mowing (such as Emorsgate's EL1 Flowering lawn Mixture) where feasible.

Ruderal Dominated Grassland

- 5.2.30. The small strip of ruderal-dominated grassland in the southwest of the site is of negligible ecological value, comprising only common and widespread species.
- 5.2.31. This small strip of ruderal-dominated grassland will be lost to a new footpath.
- 5.2.32. **Mitigation and Enhancements.** The creation of new areas of species-rich grassland within the site, as set out above, would more than offset losses of the ruderal-dominated grassland.

Rough Grassland

- 5.2.33. The rough grassland within the site is of some ecological value in the context of the site, supporting a slightly wider variety of plant species, although the majority of species within these areas are common and widespread. These areas of rough grassland offer suitable terrestrial habitat for Great Crested Newts (see below).

- 5.2.34. The majority of this rough grassland will be retained within the development proposals.
- 5.2.35. **Mitigation and Enhancements.** The retained areas of rough grassland will be oversown with a species-rich native rough wildflower seed mixture (such as Emorsgate's Tussock Mixture EM10), and will be subject to a suitable management regime that will increase the floristic diversity of the assessment site. These areas of grassland will be managed with a tussocky sward.
- 5.2.36. New areas of rough grassland will be created within the development site and will be sown with a native wildflower grassland seed mixture (such as Emorsgate's Tussock Mixture EM10). These new areas of rough grassland will also be maintained with a tussocky sward and be subject to a suitable management regime that will increase the floristic diversity of the assessment site accordingly.
- 5.2.37. The enhancement of the retained rough grassland and creation of new areas of rough grassland will more than compensate for the minor loss of small areas of rough grassland.

Amenity Grassland and Planting

- 5.2.38. The amenity grassland and planting is of limited ecological value, comprising short mown grassland and non-native plants. However, the amenity planting does offer some suitable nesting opportunities for birds (see below).
- 5.2.39. Areas of amenity grassland and planting are to be lost to the development proposals / included in areas scheduled for new amenity planting and the new landscaped spine.
- 5.2.40. **Mitigation and Enhancements.** New areas of amenity grassland within the assessment site are to be created within the development proposals, and as set out above, the retained rough grassland will be oversown with a species-rich native seed mixture. In addition, areas of new amenity grassland will be sown with a native species-rich grass mixture that is tolerant of regular mowing (such as Emorsgate's EL1 Flowering Lawn Mixture) where feasible, which will compensate for the loss of areas of amenity grassland.
- 5.2.41. In addition, new areas of landscape planting will be planted utilising a diverse mix of native species, or species of benefit to wildlife wherever possible, which will mitigate for the loss of areas of amenity planting.

Ruderal Vegetation

- 5.2.42. The ruderal vegetation in the west of the site is of negligible ecological value in terms of its species content and is to be lost to the development proposals / converted into areas of amenity grassland and planting.
- 5.2.43. **Mitigation and Enhancements.** The creation of new areas of species-rich grassland within the site would more than offset the loss of the ruderal vegetation.

Scrub

- 5.2.44. The small areas of scrub within the site are of limited ecological value in terms of their species content, comprising only common and widespread species. However, these areas of scrub do offer suitable nesting opportunities for birds and, where they lie within 100m of ponds P1, P2 and P3, suitable terrestrial habitat for Great Crested Newts (see below).
- 5.2.45. The area of scrub to the south of F15 and that surrounding the former sewage works are to be lost to the development proposals / converted into areas of grassland, while the area of scrub in the north of the assessment site is to be retained.
- 5.2.46. **Mitigation and Enhancements.** Where the areas of scrub are to be converted into grassland, these areas will be sown with a species-rich seed mixture tolerant of regular mowing, as set out above.
- 5.2.47. The creation of new areas of species-rich grassland within the site and the planting of new, native trees and shrubs, will offset the losses to the scrub and enhance the floristic diversity of the assessment site.

Orchard

- 5.2.48. The orchard areas are of some ecological value in the context of the site. The orchard trees offer some limited suitable nesting opportunities for birds and suitable foraging for bats, while the rough grassland below, where it lies within 100m of ponds P1, P2 and P3, offers suitable terrestrial habitat for Great Crested Newts (see below).
- 5.2.49. The orchard areas are to be lost to the development proposals, although it may be possible to retain some fruit trees within residential gardens.
- 5.2.50. **Mitigation and Enhancements.** The development proposals include the planting of a number of new native trees, such as within the open space areas, and will include a number of fruit trees that will mitigate for the loss of the areas of orchard.

Woodland

- 5.2.51. The woodland within the site is of greater ecological value in the context of the site, and this habitat offers suitable nesting opportunities for birds and suitable terrestrial habitat for Great Crested Newts, as well as suitable foraging opportunities for bats (see below).
- 5.2.52. This majority of this woodland is to be retained and safeguarded within the development proposals, although there will be minor losses to facilitate the development proposals.
- 5.2.53. **Mitigation and Enhancements.** Measures will be put in place to ensure that the retained woodland is safeguarded from direct impacts during any renovation / construction works, e.g. fenced-off to prevent encroachment into these areas by machinery. No machinery or materials will be stored within these areas at any point during the development.

- 5.2.54. An increased level of dust may arise from the passage of construction traffic. Deposition of this dust on the surrounding vegetation may lead to temporary declines in woodland flora. Such impacts are usually within around 15m and measures to mitigate dust emissions will be implemented during the construction phase. Any potential effects would be easily minimised through use of standard mitigation techniques such that residual effects are of negligible significance. Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. There should not be any excess to potentially contaminate local lakes or watercourses. Even with these measures in place, there remains a slight risk that the woodland might be affected by very occasional dust-soiling impacts. Any effects will be temporary and relatively short lived, and will only arise during dry weather with the wind blowing towards the receptor, at a time when dust is being generated and mitigation measures are not being fully effective.
- 5.2.55. As set out above, the development proposal include the planting of new native trees and copses throughout the proposals, which will be planted with native species of local provenance, and will serve to enhance the habitat and species diversity of the assessment site. The creation and enhancement of areas of woodland and copse will help to further the aims of the Woodland Priority Habitat, as set out within the CWP BAP.

Hedgerows, Trees and Tree Belts

- 5.2.56. The hedgerows, trees and tree belts within the assessment site are also of greater ecological value in the context of the site, in particular the species-rich hedgerows (H3, H7, H10 and H21) and hedgerows that potentially qualify as important under the Hedgerow Regulations 1997 (H2, H7, H19 and H20). The hedgerows, tree and tree belts offer suitable nesting opportunities for birds, foraging and navigational opportunities for bats, and where they lie within 100m of ponds P1, P2 and P3, suitable terrestrial habitat for Great Crested Newts (see below).
- 5.2.57. The vast majority of the boundary hedgerows are to be retained and safeguarded within the development proposals, although there will be minor losses to hedgerows H2, H10, H19 and H20.
- 5.2.58. **Mitigation and Enhancements.** Measures will be put in place to ensure that retained sections of hedgerows are safeguarded from direct impacts during the construction phase, e.g. fenced-off during construction to prevent encroachment into these areas by construction machinery. No construction machinery or materials will be stored within these areas at any point during the development.
- 5.2.59. An increased level of dust may arise from the passage of construction traffic. Deposition of this dust on the surrounding vegetation may lead to temporary declines in hedgerow flora. Such impacts are usually within around 15m and measures to mitigate dust emissions will be implemented during the construction phase. Any potential effects would be easily minimised through use of standard mitigation techniques such that residual effects are of negligible significance. Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. There should not be any excess to potentially

contaminate local lakes or watercourses. Even with these measures in place, there remains a slight risk that the hedgerows might be affected by very occasional dust-soiling impacts. Any effects will be temporary and relatively short lived, and will only arise during dry weather with the wind blowing towards the receptor, at a time when dust is being generated and mitigation measures are not being fully effective. The overall impacts during the construction phase with mitigation measures in place are judged to be of negligible significance.

- 5.2.60. New hedgerow planting of a length / area greater than that lost is to be included within the development proposals. The new hedgerow planting will be based around native species of local provenance. New native trees will also be included within the landscape proposals, which will be based around native species of local provenance. The planting of new hedgerows and trees will more than mitigate for the loss of hedgerows to the development proposals. The planting of new, native hedgerows throughout the assessment site will also help to further the aims of the Boundary Features Priority Habitat, as set out within the CWP BAP. The inclusion of native Black Poplar within the planting scheme would also serve to increase the distribution of this species and further the aims of the Species Action plan for this Priority Species, as set out within the CWP BAP.

Ponds

- 5.2.61. Ponds P5-P8 are very small, shallow and ephemeral, and are considered to be of low ecological value. Pond P4 is a raised, ornamental fish pond that is also considered to have low ecological value. These ponds are considered to be poor examples of their habitat type. Ponds P1 and P3 are considered to be of greater ecological value within the site, and support low populations of Great Crested Newts, while pond P2 (the former swimming pool) is considered to be of low ecological value in terms of its habitat value, although does support a medium population of (trapped) Great Crested Newts. Ponds P1-P4 also offer suitable foraging opportunities for bats.
- 5.2.62. Ponds P1, P3, P5, P6 and P7 are to be retained and safeguarded within the development proposals. Ponds P1 and P3 to be retained within the areas of open space and surrounded by retained and new native trees and new and enhanced wildflower grassland, that will provide retained and enhanced wildlife links between retained ponds P1 and P3. Ponds P5 and P6 to be retained and enhanced within gardens, while pond P7 is to be retained associated with the seasonally wet ditch.
- 5.2.63. Ponds P2 (that supports a medium population of Great Crested Newts), P4 and P8 are to be lost to the development proposals.
- 5.2.64. **Mitigation and Enhancements.** The development proposals include the creation of two new ponds within the areas of new / enhanced rough grassland. These new ponds will be planted with new native aquatic and marginal vegetation of known value to wildlife, which will increase the floristic diversity of the assessment site, and will be designed specifically for Great Crested Newts (see below). The creation of these two new ponds will mitigate for the loss of pond P2. The creation of new ponds

within the assessment site will also help to further the aims of the Ponds Priority Habitat, as set out within the CWP BAP.

- 5.2.65. The loss of ponds P4 and P8 will be of negligible ecological significance. However, the creation of new ponds within the development proposals, as set out above, will more than mitigate for the loss of these ponds.
- 5.2.66. Best practice methods (compliance with Environmental Agency Pollution Prevention Guidelines (PPG5): 'Works and maintenance in or near water') and effective engineering solutions will be employed to ensure that contaminated run-off is prevented from entering any of the retained / new ponds during the construction or operational phases.
- 5.2.67. As part of the mineral extraction works adjacent to the site boundary, two new lakes will be created that will diversify habitats present within the site and also serve to increase the floristic diversity of the site. These lakes will be created with a range of depths and include shallow areas at its margins, and its creation will help to further the aims of the Standing Open Water Priority Habitat, as set out within the CWP BAP. Shallow and steeper banks will be created at the edges of these lakes, and will be planted with areas of grassland, scrub and trees. Areas of the lake margins will be maintained with a shallow profile and be unshaded by trees, which will create suitable habitat for species such as Stoneworts to colonise, and this will help to further the aims of the Species Action plan for Stoneworts, as set out within the CWP BAP. The lakes themselves will be planted with native aquatic vegetation, with native marginal planting and reedbeds fringing the margins of the lakes, which will help to further the aims of the Fen, Marsh and Reedswamp Priority Habitat, as set out within the CWP BAP. Areas of gravel / shingle banks at the margins of the lakes and gravel / shingle islands within the lakes themselves (created with bare sand / gravel / shingle) will help to further the aims of the Bare Ground and Early Succession Habitats Priority Habitat, within the CWP BAP.
- 5.2.68. The grassland surrounding the lakes will be sown with a native wildflower grassland seed mixture, including species suitable for wetland, and will be sown with a seed mixture suitable for the soil type post-mineral extraction (such as Emorsgate's Tussock Mixture EM10 and / or Emorsgate's Meadow Mixture for Wetlands EM8). These areas will be maintained as rough grassland and be subject to a suitable management regime that will increase the floristic diversity of the assessment site accordingly. New tree and scrub planting will be created at the margins of the lakes, and will be based around native species of local provenance.

Buildings and Hardstanding

- 5.2.69. The buildings and hardstanding within the assessment site are of negligible intrinsic ecological value, although buildings B3, B5, B7, B22, B24, B26, B33 and B36 support roosts of Common and Soprano Pipistrelle bats (see below).
- 5.2.70. The vast majority of the derelict buildings within the assessment site are to be lost to the development proposals, although buildings B1-B4 are to be retained.

- 5.2.71. **Mitigation and Enhancements.** No mitigation is required in respect of these habitats. However, given the presence of a Common and Soprano Pipistrelle bat roosts, a Natural England European Protected Species licence will be required before the buildings can be demolished (see bats below).

5.3. Faunal Evaluation

Bats

- 5.3.1. **Legislation.** All bats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and included on Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended) ("the Habitats Regulations"). These include provisions making it an offence to:
- Deliberately kill, injure or take (capture) bats;
 - Deliberately disturb bats in such a way as to be likely to significantly affect:-
 - (i) the ability of any significant group of bats to survive, breed or rear or nurture their young; or to hibernate; or
 - (ii) to affect significantly the local distribution or abundance of the species concerned;
 - Damage or destroy any breeding or resting place used by bats;
 - Intentionally or recklessly obstruct access to any place used by bats for shelter or protection (even if bats are not in residence).
- 5.3.2. The words 'deliberately' and 'intentionally' include actions where a court can infer that the defendant knew 'the action taken would almost inevitably result in an offence, even if that was not the primary purpose of the act.
- 5.3.3. The offence of damaging (making it worse for the bat) or destroying a breeding site or resting place is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.
- 5.3.4. In accordance with the Habitats Regulations the licensing authority (Natural England) must apply the three derogation tests as part of the process of considering a licence application. These tests are that:
1. the activity to be licensed must be for imperative reasons of overriding public interest or for public health and safety;
 2. there must be no satisfactory alternative; and
 3. the favourable conservation status of the species concerned must be maintained.
- 5.3.5. Licences can usually only be granted if the development is in receipt of full planning permission (and relevant conditions, if any, discharged).
- 5.3.6. Seven species of bat are Priority Species, these are Barbastelle *Barbastella barbastellus*, Bechstein's *Myotis bechsteinii*, Noctule, Soprano Pipistrelle, Brown Long-eared, Greater Horseshoe *Rhinolophus ferrumequinum*, and Lesser Horseshoe.

- 5.3.7. **Site Usage.** There are no trees within the site that were recorded as having potential to support roosting bats.
- 5.3.8. Buildings B3, B5, B26 and B36 were recorded as supporting minor, transitory roosts of Common and Soprano Pipistrelle bats, while buildings B7, B24 and B33 were recorded as supporting minor roosts of Common and Soprano Pipistrelle bats. Building B22 is considered to represent a maternity colony of Common Pipistrelle bats.
- 5.3.9. The vast majority of activity recorded within the site was from Common and Soprano Pipistrelle bats (relatively light-tolerant species). Moderate levels of activity from Nathusius' Pipistrelle (a relatively light-tolerant species) were also recorded within the assessment site, with less activity recorded from Myotis sp. Only occasional activity was recorded from Noctule, Serotine both relatively light-tolerant species) and Lesser Horseshoe, with very occasional activity recorded from Brown Long-eared bats.
- 5.3.10. Buildings B5, B7, B22, B24, B26, B33 and B36 are to be lost to the development proposals, although building B3 is to be retained within the development proposals.
- 5.3.11. It is considered that the orchard, woodland, hedgerows, trees and ponds within the site offer suitable foraging and navigational opportunities for bats.
- 5.3.12. **Mitigation and Enhancements.** As a consequence of the results of the surveys, the proposals will result in roosts of Common and Soprano Pipistrelle bats within buildings B5 and B7 being lost to the development proposals, while the roosts of Common and Soprano Pipistrelle bats within buildings B3, B22, B24, B26, B33 and B36 may be affected by any re-roofing works as part of the renovation works. As a result of these surveys, it is considered that a Natural England European Protected Species licence would likely be necessary before development work can commence on these buildings. The minor transitory roost of Pipistrelle sp. bats within building B3 will be unaffected by the development proposals.
- 5.3.13. Using the sliding scale of mitigation (Figure 4 in the Bat Mitigation Guidelines 2004) it is considered that the status of the minor transitory and minor roosts within buildings B3, B5, B7, B24, B26, B33 and B36 represent '*Small number of common species. Not a maternity site*'. The mitigation/compensation requirement would be somewhere between the following: '*Flexibility over provision of bat-boxes, access to new buildings etc. No conditions about timing or monitoring,*' and '*Provision of new roost facilities where possible. Need not be exactly like-for-like, but should be suitable, based on species' requirements. Minimal timing constraints or monitoring requirements.*'
- 5.3.14. Given the minor nature of the Common and Soprano Pipistrelle bat roosts observed within buildings B5, B7, B24, B26, B33 and B36, it is considered that in order to compensate for the loss of these roosts, bat boxes such as Schwegler 1FF bat boxes, bat bricks or bat access tiles will be provided on suitable mature/semi-mature trees or new buildings in the vicinity of the buildings to be lost, and connected to green corridors, such as retained / new tree belts, that will provide suitable flightlines for bats. This will

provide new suitable roosting conditions for Common and Soprano Pipistrelle, which are predominantly crevice-hole dwellers.

- 5.3.15. It is considered that status of the roost of Common Pipistrelle within building B22 represents a '*Maternity colony of common species*' and any mitigation / compensation requirement would be '*Timing constraints. More or less like-for-like replacement. Bats not to be left without a roost and must be given time to find the replacement. Monitoring for 2 years preferred.*'
- 5.3.16. In order to compensate for the loss of the maternity roost of Common Pipistrelle bats within B22, it is considered that a replacement roost will need to be provided within a building in the vicinity of that lost. The replacement roost should comprise a large capacity integrated bat box within the fabric of the new building (such as a series of bat access tiles, or at least three Schwegler 2FR Bat Tubes linked together internally) with the new access points located at the same orientation as that lost. This replacement roost should be connected to green corridors, such as the retained tree belts and new trees, which will provide suitable flightlines for bats.
- 5.3.17. The planting of new native trees and hedgerows, and the creation of new wildflower grassland and species-rich grassland, will provide retained and enhanced foraging and navigational opportunities for bats.
- 5.3.18. Where lighting is necessary during construction, any potential light spillage will be reduced by directing light below the horizontal plane, preferably at an angle less than 70 degrees away from features that offer suitable foraging opportunities for bats, e.g. the woodland, trees, tree belts and hedgerows, albeit the most numerous species recorded within the assessment site are all relatively tolerant of lighting in any event.
- 5.3.19. During the operational phase, although there is likely to be an increase in lighting within the site, dark corridors will be maintained within the landscaped spine, along the retained and new hedgerows, trees and tree belts, and along the margins of the new lakes. If necessary, a sympathetic lighting regime will be employed, involving the use of directional, low-powered LED lighting to minimise light spillage. A sensitive lighting regime could be secured through condition.
- 5.3.20. As an enhancement, further bat boxes (such as Schwegler 1FF boxes) are to be erected on retained semi-mature / mature trees within the assessment site, to provide additional roosting opportunities for bats. Bat boxes will be placed at the margins of the new lakes, which will provide new roosting opportunities for species such as Nathusius' Pipistrelle, which are known from the assessment site. Such measures will benefit bats, many of which are Priority Species.
- 5.3.21. The creation of new lakes following the mineral extraction works, to be planted with native marginal and aquatic plants and surrounded by areas of wildflower grassland, scrub and tree planting, will diversify habitats present and provide significantly enhanced foraging opportunities for bats, including Nathusius' Pipistrelle, which is a species that has been recorded within the assessment site and that is closely associated with water.

These enhancements will also serve to further the aims of the Species Action Plan for bats, as set out within the CWP BAP.

Birds

- 5.3.22. **Legislation.** Section 1 of the Wildlife and Countryside Act 1981 (as amended) is concerned with the protection of wild birds, whilst Schedule 1 lists species that are protected by special penalties. All species of birds receive general protection whilst nesting.
- 5.3.23. **Site Usage.** The Priority Species Dunnock and Bullfinch were recorded within the site, as were the Red List and Priority Species House Sparrow, Redwing, Song Thrush and Fieldfare, and the Schedule 1 species Barn Owl (heard near building B8 although no evidence of roosting was recorded). The Red List and Priority Species, Cuckoo, was heard calling from vegetation associated with the lakes adjacent to the wider study area. Evidence of old, disused House Martin nests was recorded under the eaves of building B7, while a Swallow was also recorded flying through the open Velux windows of building B12.
- 5.3.24. It is considered that the orchard, woodland, hedgerows and trees within the site offer suitable foraging and nesting opportunities for a range of birds. Suitable foraging opportunities also exist within the site, within the grassland areas, amenity planting and grassland and ponds.
- 5.3.25. The woodland and tree belts and the vast majority of the trees are to be retained, although hedgerows and sections of hedgerows are to be lost to the development proposals.
- 5.3.26. **Mitigation and Enhancements.** The provision of new native hedgerows and trees within the site will provide new suitable nesting and foraging opportunities for birds, e.g. provision of berry / fruit-bearing species that will provide seasonal resources for birds. The creation and enhancement of areas of wildflower grassland will also provide new and enhanced foraging opportunities for birds. It is recommended that any landscape planting within the site comprise native species / species of benefit to wildlife wherever possible, which will provide further suitable foraging and nesting opportunities for birds.
- 5.3.27. The enhancement and creation of areas of wildflower grassland within the within the assessment site will also provide suitable foraging opportunities for birds e.g. Grasshopper Warbler (known from the local area).
- 5.3.28. The planting of new native scrub and trees within the assessment site, will also provide new foraging and breeding opportunities for a range of birds, including Turtle Dove (known from the local area).
- 5.3.29. In order to safeguard any nesting bird species within the assessment site, the clearance of any hedgerows and trees will be undertaken outside of the bird breeding season (March-July inclusive). Should this not be possible potential nesting habitat is subject to a check survey immediately prior to its removal by an experienced ecologist. Should any nesting birds be identified then the nest should be fully safeguarded *in situ* and subject to a disturbance buffer of at least 5 metres and only removed once it has been confirmed any fledglings have left the nest.

- 5.3.30. In addition, nest boxes will be placed on suitable retained trees within the assessment site, such as within the landscaped spine, and on new buildings. These will provide new nesting opportunities for a range of birds. Using nest boxes of varying designs would maximise the species complement attracted to the assessment site and, where possible, could be tailored to provide opportunities for Red Listed / Priority Species, e.g. House Sparrow and Barn Owl, that are known from the local area.
- 5.3.31. The creation of new lakes following the mineral extraction works will be planted with a range of native aquatic and marginal plants, which will provide new suitable foraging opportunities for a range of aquatic birds. The new lakes will be created with areas of deeper water and shallow margins, which will also provide a range of habitats for foraging waterfowl. The provision of new marginal planting and reedbeds along the lake margins will provide new suitable nesting and foraging opportunities for a range of aquatic birds recorded from the local area, including Bittern (a Species Action Plan for which is set out within the CWP BAP), Reed Bunting (a Species Action Plan for which is set out within the CWP BAP), Cetti's Warbler, Cuckoo and Bearded Tit. The creation of the new lakes will also provide suitable opportunities for a number of the migrant wetland birds recorded as part of the desk study, as well as the resident species Gargany, Mediterranean Gull, Curlew, Black-tailed Godwit, Herring Gull and Little Gull. The creation of gravel / shingle beaches and gravel / shingle bird nesting islands will also provide suitable new breeding opportunities for species such as Little Ringed Plover, Black-tailed Godwit and other ground nesting species such as gulls and terns recorded within the local area. The above enhancements will help to further the aims of the Species Action plan for Breeding Waterbirds and for Wintering Waterbirds, as set out within the CWP BAP.
- 5.3.32. The planting of new native scrub and woodland at the margins of the new lakes (including species such as Birch and Willow) will provide new foraging and nesting opportunities for a range of birds, including Nightingale (a Species Action Plan for which is set out within the CWP BAP), Merlin, Hobby and potentially for Osprey (although this species has only been recorded on migration through the CWP and has not been recorded breeding).
- 5.3.33. The Cotswold Water Park BAP highlights the issue of birdstrike at the RAF Fairford and RAF Brize Norton airbases, and the new lakes should be designed to benefit wildlife and aquatic birds, while also deterring large flocks of birds from congregating. If necessary the design of the new lakes should be discussed with the RAF. Further detail on the design of the new lakes can be seen in the Minerals ES.

Great Crested Newts

- 5.3.34. **Legislation.** The legislative protection afforded to Great Crested Newts and the licensing provisions associated are the same as outlined above with regard to bats.
- 5.3.35. **Site Usage.** Small populations of Great Crested Newts were recorded from ponds P1, the lake, and P3, while a medium population of Great Crested Newts was recorded from pond P2, the former swimming pool.

- 5.3.36. **Mitigation and Enhancements.** As a result of the surveys, it is considered that a Natural England European Protected Species licence will likely be necessary before any development work can commence. As part of the licence application, a mitigation strategy will be proposed that will ensure maintenance of the local newt population at a favourable conservation status.
- 5.3.37. Although it is known that Great Crested Newts can disperse up to 500 metres through suitable terrestrial habitat from their breeding pond, it is widely accepted that they tend to utilise suitable terrestrial habitat within a much closer distance. Activity is usually concentrated within 100 metres of breeding ponds and key habitat is located within 50 metres (termed by Natural England as core habitat).
- 5.3.38. Indeed, English Nature Research Report Number 576 (An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt *Triturus cristatus* by Warren Cresswell and Rhiannon Whitworth) states:
- “The most comprehensive mitigation, in relation to avoiding disturbance, killing or injury is appropriate within 50m of a breeding pond. It will also almost always be necessary to actively capture newts 50-100m away. However, at distances greater than 100m, there should be careful consideration as to whether attempts to capture newts are necessary or the most effective option to avoid incidental mortality. At distances greater than 200-250m, capture operations will hardly ever be appropriate.”*
- 5.3.39. It is considered that the rough grassland, longer areas of amenity grassland, scrub, woodland and hedgerows within 50m of ponds P1, P2 and P3 offer suitable core terrestrial habitat for Great Crested Newts (with the short amenity grassland and amenity planting offering sub-optimal core terrestrial habitat), while the rough grassland, rough amenity grassland, orchard, scrub and hedgerows within 250m of ponds P1, P2 and P3 offer suitable intermediate terrestrial habitat for Great Crested Newts (with the short amenity grassland and amenity planting offering sub-optimal intermediate terrestrial habitat). Within the wider 500m radius from ponds P1, P2 and P3, the hedgerows and rough amenity grassland are also considered to offer suitable distant terrestrial habitat for this species (with the short amenity grassland and amenity planting offering sub-optimal distant terrestrial habitat). The majority of the intensively grazed semi-improved grassland within 500m of these ponds are considered unlikely to support Great Crested Newts during their terrestrial phase (given that they are intensively grazed).
- 5.3.40. The vast majority of the woodland and rough grassland within the assessment site is to be retained within the development proposals, although areas of scrub, rough amenity grassland and hedgerows are to be lost to the development proposals.
- 5.3.41. Pond P2, the former swimming pool, is to be lost to the development proposals.

- 5.3.42. A translocation exercise will be carried out on suitable terrestrial habitat for Great Crested Newts that are to be affected by the development proposals within 100m of ponds P1, P2 and P3.
- 5.3.43. Two new ponds will be created to mitigate for the loss of pond P2, and these will be situated within the areas of open space in the centre of the assessment site. These new ponds will be designed specifically for use by Great Crested Newts, and will be planted with native aquatic and marginal vegetation, which will provide enhanced breeding opportunities for this species over the current situation (with no aquatic vegetation being present within pond P2). The two new ponds will be created prior to the loss of pond P2, and Great Crested Newts (and other amphibians trapped within this pond) will be translocated into the newly created ponds. These new ponds will mitigate for the loss of pond P2 and provide new aquatic habitat for Great Crested Newts, and will allow dispersal of Great Crested Newts between ponds, which will be seen as an enhancement over the existing situation. The creation of these new ponds will be seen as an enhancement for this species, and will further the aims of the Species Action plan for Great Crested Newts, as set out within the CWP BAP.
- 5.3.44. The creation of new areas of wildflower grassland, will provide new suitable terrestrial habitat for Great Crested Newts and will mitigate for the loss of areas of suitable terrestrial habitat to the development proposals.
- 5.3.45. The creation of log piles / hibernacula within the assessment site will also provide new suitable new hibernation opportunities for amphibians.
- 5.3.46. The creation of new lakes following the mineral extraction works, to be created with shallow margins and fringed with marginal vegetation, will also provide potentially suitable new aquatic habitat for Great Crested Newts.

Invertebrates

- 5.3.47. **Site Usage.** Given the habitats present it is likely an assemblage of common invertebrate species would be present within the site.
- 5.3.48. **Mitigation and Enhancements.** The planting of new native trees and hedgerows and the creation of areas of species-rich grassland would provide retained and enhanced habitat for a range of invertebrates. The creation of areas of rough grassland would also provide suitable habitat for e.g. Glow Worm (a Species Action Plan for which is set out within the CWP BAP), while the inclusion of Kidney Vetch would provide larval foodplants for species such as Small Blue (a Priority Species known from the local area).
- 5.3.49. The planting of native scrub, trees and woodland, including species such as Traveller's Joy, Blackthorn and Ash will also provide new opportunities for e.g. the Priority Species Small Emerald, Brown Hairstreak (also a Red List species) and Grey Dagger, known from the local area. The inclusion of Barberry within the new native hedgerow planting will also provide suitable new opportunities for the Barberry Carpet, and will help to further the aims of the Species Action Plan for this species, as set out within the CWP BAP.

- 5.3.50. The creation of new ponds within the assessment site will also provide suitable new habitat for a range of damselflies and dragonflies, which will further the aims of the Species Action Plan for Dragonflies and Damselflies, as set out in the CWP BAP.
- 5.3.51. The creation of log piles within areas of open space would benefit a range of saproxylic species (as well as providing refuge for reptiles and amphibians). The implementation of other measures recommended above would also likely provide knock-on benefits for invertebrates, e.g. through tree planting and use of planting of wildlife benefit.
- 5.3.52. The creation of new lakes following the mineral extraction works, to be planted with native aquatic and marginal plants, including areas of reedbeds, will provide suitable new opportunities for a range of aquatic invertebrates over the existing situation e.g. for the Nationally Scarce Pyralid moth *Calamotropha paludella*, and the Nationally Scarce water beetles known from the local area. The planting of a range of native aquatic and marginal plants within the new lakes will also provide suitable new habitat for a range of damselflies and dragonflies, which will further the aims of the Species Action Plan for Dragonflies and Damselflies, as set out in the CWP BAP.

6. PLANNING POLICY CONTEXT

- 6.1. The planning policy framework that relates to nature conservation in Ashton Keynes, Wiltshire, is issued at two main administrative levels: nationally through the National Planning Policy framework (NPPF); and locally through the Wiltshire Core Strategy (January 2015). The proposed development will be judged in relation to the policies contained within these documents.

6.2. National Policy

National Planning Policy Framework

- 6.2.1. The National Planning Policy Framework (NPPF) sets out the Government's requirements for the planning system and was adopted on 27th March 2012.
- 6.2.2. The key element of the NPPF is that there should be 'a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking' (paragraph 14). It is important to note that this presumption 'does not apply where development requiring Appropriate Assessment under the Birds or Habitats Directives is being considered, planned or determined' (paragraph 119).
- 6.2.3. A number of policies in the NPPF are comparable to those in Planning Policy Statement (PPS)9 (which it replaced), including reference to minimisation of impacts to biodiversity and provision of net gains to biodiversity where possible (paragraph 109) and ensuring that Local Authorities place appropriate weight to statutory and non-statutory nature conservation designations, protected species and biodiversity.
- 6.2.4. The NPPF also considers the strategic approach which local authorities should adopt with regard to the protection, enhancement and management of green infrastructure, priority habitats and ecological networks, and the recovery of priority species.
- 6.2.5. Paragraph 118 of the NPPF comprises a number of principles which Local Authorities should apply, including encouraging opportunities to incorporate biodiversity in and around developments, provision for refusal of planning applications if significant harm cannot be avoided, mitigated or compensated for, applying the protection given to European sites to potential SPAs, possible SACs, listed or proposed Ramsar sites and sites identified (or required) as compensatory measures for adverse effects on European sites, and the provision for the refusal for developments resulting in the loss or deterioration of 'irreplaceable' habitats unless the need for, and benefits of, the development in that location clearly outweigh the loss.
- 6.2.6. National policy therefore implicitly recognises the importance of biodiversity and that, with sensitive planning and design, development and conservation of the natural heritage can co-exist and benefits can, in certain circumstances, be obtained.

6.3. Local Policy

Wiltshire Core Strategy (2015)

- 6.3.1. The Wiltshire Core Strategy was adopted in January 2015, and forms part of the emerging Local Development Framework (LDF), that will eventually replace the four local plans covering Wiltshire.
- 6.3.2. This Core Strategy contains two policies that relate in whole or in part to nature conservation (Core Policy 50 and Core Policy 54).
- 6.3.3. Core Policy 50 refers to the protection of internationally, nationally and locally designated sites, as well as Priority Species and Habitats, and is concerned with enhancements to biodiversity. Core Policy 54 relates directly to the Cotswold Water Park, which supports the provision of outdoor / water-based sports, leisure and recreation, as well as being concerned with enhancements to biodiversity.

Wiltshire and Swindon Aggregate Minerals Site Allocations Local Plan (May 2013)

- 6.3.4. The Wiltshire and Swindon Aggregate Minerals Site Allocations Local Plan (adopted May 2013) refers directly to the site and wider study area, as Land at Cotswold Community.
- 6.3.5. This document sets out the preferred restoration objectives, including enhancements for biodiversity through connectivity of habitat, enhancements to hedgerows and ditches, planting of Blackthorn hedgerows for Brown Hairstreak butterflies, and aiming to meet the targets for Priority Habitats and Species set out within the CWP BAP.
- 6.3.6. With regard to site development on biodiversity, and as set out above with regard to the North Meadows and Clattinger Farm SAC, it is considered that there would be *'no likely significant effects on the designated features of the SAC'* and that *'it is very unlikely that water quality, or water resources will be reduced within the European site as a function of quarrying from this site. Precautionary measures are available to protect groundwater and prevent impact from dust deposition, pollution or increased siltation from run off reaching the SAC.'*
- 6.3.7. This document also references a number of species known from the nearby CWSs to the west and south of the wider study area, including Merlin, Hobby, Brown Hairstreak, Small Blue, Badgers, Mediterranean Gull, Whimbrel, Green Sandpiper, Otter, Water Vole, Little Ringed plover, Osprey, Great Crested Newts and bats, with this document stating that *'the barns located within the Cotswold Community support known bat roosts'*. Following correspondence with WSBRC, it was noted that the *'known bat roosts'* within the barns is a reference to a working knowledge of the area rather than held records of bat roosts, which is reflected by the lack of bat roost information returned as part of the desk study exercise.

Minerals Development Control Policies (September 2009)

- 6.3.8. The Minerals Development Control Policies (adopted September 2009) contains two policies of relevance to nature conservation (Policies MDC6 and MDC9).
- 6.3.9. Policy MDC6 is concerned with the protection and enhancement of Priority Habitats and Species, as well as the protection of locally designated sites. Policy MDC9 refers to the restoration of sites following mineral extraction, and is concerned with aiming to deliver the objectives of Biodiversity Action Plans.

Minerals Core Strategy (July 2009)

- 6.3.10. The Minerals Core Strategy (adopted July 2009) contains two policies of relevance to nature conservation, Strategic Objective 4 and Policy MSC 10.
- 6.3.11. Strategic Objective 4 and Policy MCS 10 both refer to the need for a restoration-led approach to mineral extraction, and are concerned with providing a positive contribution to the local CWP BAP, as well as implementation of the South West Nature Map. Policy MCS 10 also refers to the need for schemes to be designed to prevent bird strike.

6.4. Discussion

- 6.4.1. Given the findings of the Wiltshire Core Strategy Habitat Regulations Assessment, it is considered that the development proposals will not have any direct impact on the North Meadow and Clattinger Farm SAC through land-take. Further, given the conclusions of the Wiltshire Core Strategy Updated HRA, it is considered that the development proposals are not likely to have any significant adverse effects on the North Meadows and Clattinger Farm SAC either alone or in combination with other plans or projects. The development proposals will have no adverse effects on any other statutory or non-statutory designated sites and as such the proposals will accord with Core Policies 50 and 54 of the Wiltshire Core Strategy, the principles set out in the Wiltshire and Swindon Aggregate Minerals Site Allocations Local Plan, and Policy MDC6 of the Minerals Development Control Policies.
- 6.4.2. The development proposals include enhancements that will help to further the aims of the CWP BAP, and as such the proposals accord with Core Policy 54 of the Wiltshire Core Strategy, the principles set out within the Wiltshire and Swindon Aggregate Minerals Site Allocations Local Plan, Policy MDC9 of the Minerals Development control Policies and Strategic objective 4 and policy MCS 10 of the Minerals Core Strategy. Further detail on how the mineral extraction proposals accord with the policies set out in the Minerals Development Control Policies and the Minerals Core Strategy, can be seen in the Minerals ES.
- 6.4.3. In conclusion, implementation of the measures set out in this report would enable development of the site to accord with national and local planning policy for ecology and nature conservation.

7. SUMMARY AND CONCLUSIONS

- 7.1. Ecology Solutions was commissioned by Amita Business Ltd via Hunter Page Planning to undertake an Ecological Assessment of the site at Cotswold Community, Ashton Keynes, Wiltshire and subsequently to prepare an Ecology and Nature Conservation chapter as part of an Environmental Statement.
- 7.2. The development proposals are for residential development generally on the footprint of the derelict buildings, although with the refurbishment of four listed buildings, with new access roads and footpaths.
- 7.3. The site was surveyed based around extended Phase 1 survey methodology, as recommended by Natural England between July 2013 and January 2015. In addition specific surveys were undertaken in respect of bats, Badgers, reptiles and Great Crested Newts.
- 7.4. Given the conclusions of the Wiltshire Core Strategy Updated HRA, it is considered that the proposals are not likely to have any significant adverse effects on the North Meadows and Clattinger Farm SAC either alone or in combination with other plans or projects.
- 7.5. There are not considered to be any significant adverse effects on any other statutory and non-statutory sites of nature conservation interest from the proposals.
- 7.6. No evidence of Badgers or reptiles was recorded within the site or wider study area during the surveys undertaken.
- 7.7. There are no trees within the site that have developed features suitable to support roosting bats.
- 7.8. As a consequence of the results of the surveys, the proposals would result in roosts of Common and Soprano Pipistrelle bats within buildings B5, B7, B22, B24, B26, B33 and B36 being directly affected. As a result of these surveys, it is considered that a Natural England licence would likely be necessary before development work can commence on these buildings. The minor transitory roost of Pipistrelle sp. bats within building B3 will be unaffected by the development proposals.
- 7.9. Given the minor nature of the Common and Soprano Pipistrelle bat roosts observed within buildings B5, B7, B24, B26, B33 and B36, it is considered that in order to compensate for the loss of these roosts, bat boxes such as Schwegler 1FF bat boxes, bat bricks or bat access tiles will be provided on suitable mature/semi-mature trees or new buildings in the vicinity of the buildings to be lost, and connected to green corridors, such as retained / new tree belts, that will provide suitable flightlines for bats. This will provide new suitable roosting conditions for Common and Soprano Pipistrelle, which are predominantly crevice-hole dwellers.
- 7.10. In order to compensate for the loss of the maternity roost of Common Pipistrelle bats within B22, it is considered that a replacement roost will need to be provided within a building in the vicinity of that lost.
- 7.11. The planting of new native trees and hedgerows, and the creation of new wildflower grassland and species-rich grassland, as well as the creation of new

lakes following the mineral extraction works will provide retained and enhanced foraging and navigational opportunities for bats.

- 7.12. Measures to avoid lighting impacts during construction and operation are also proposed and could be secured through condition.
- 7.13. As an enhancement, further bat boxes are to be erected on retained semi-mature / mature trees within the assessment site, to provide additional roosting opportunities for bats.
- 7.14. The planting of new native trees, hedgerows and scrub and the creation of species-rich grassland within the site will provide enhanced opportunities for birds while the erection of bird boxes within the site will also provide new opportunities for nesting birds.
- 7.15. Small populations of Great Crested Newts were recorded from ponds P1, the lake, and P3, while a medium population of Great Crested Newts was recorded from pond P2, the former swimming pool.
- 7.16. It is considered that a Natural England European Protected Species licence will likely be necessary before any development work can commence. As part of the licence application, a mitigation strategy will be proposed that will ensure maintenance of the local newt population at a favourable conservation status. A translocation exercise will be carried out on suitable terrestrial habitat for Great Crested Newts that is to be affected by the development proposals within 100m of ponds P1, P2 and P3.
- 7.17. Two new ponds will be created to mitigate for the loss of pond P2 and is an enhancement for this species, and will further the aims of the Species Action plan for Great Crested Newts, as set out within the CWP BAP.
- 7.18. The creation of new areas of wildflower grassland, will provide new suitable terrestrial habitat for Great Crested Newts and will mitigate for the loss of areas of suitable terrestrial habitat to the development proposals.
- 7.19. The creation of log piles / hibernacula within the assessment site will also provide new suitable new hibernation opportunities for amphibians.
- 7.20. The creation of new lakes following the mineral extraction works, to be created with shallow margins and fringed with marginal vegetation, will also provide potentially suitable new aquatic habitat for Great Crested Newts.
- 7.21. In conclusion, through the implementation of the safeguards and recommendations set out within this report it is considered that the proposals accord with planning policy with regard to nature conservation at all administrative levels.

PLANS AND APPENDICES

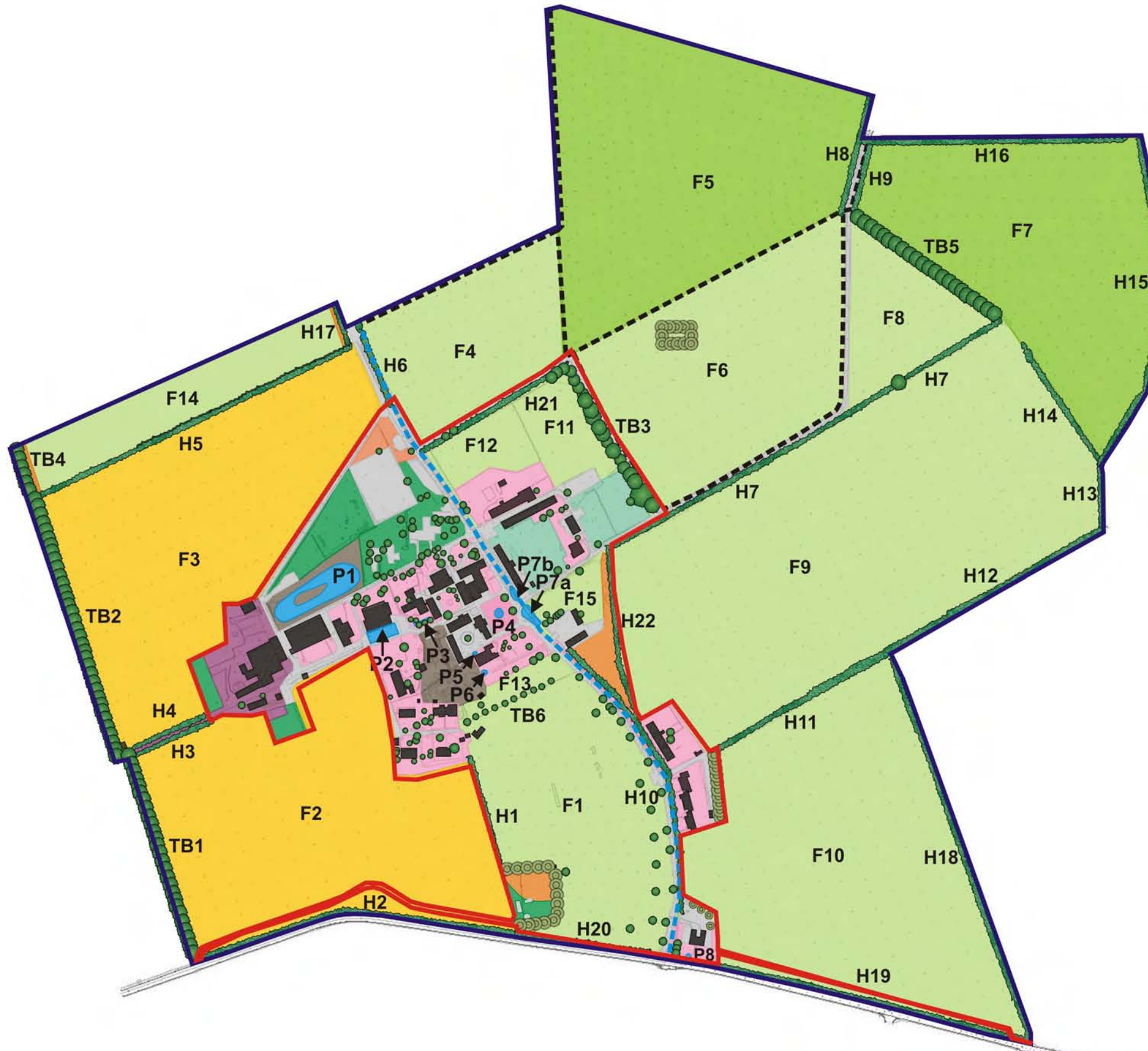
PLANS

PLAN ECO1

Site Location and Ecological Designations

PLAN ECO2

Ecological Features



KEY:

- SITE BOUNDARY
- WIDER STUDY AREA
- SEMI-IMPROVED GRASSLAND
- IMPROVED GRASSLAND
- ROUGH GRASSLAND
- RUDERAL DOMINTATED GRASSLAND
- WOODLAND
- ORCHARD
- RUDERAL VEGETATION
- SCRUB
- AMENITY GRASSLAND AND PLANTING
- BUILDING
- HARDSTANDING
- POND
- HEDGEROW
- CONIFEROUS TREE
- TREE
- SEASONALLY WET DITCH
- FENCE



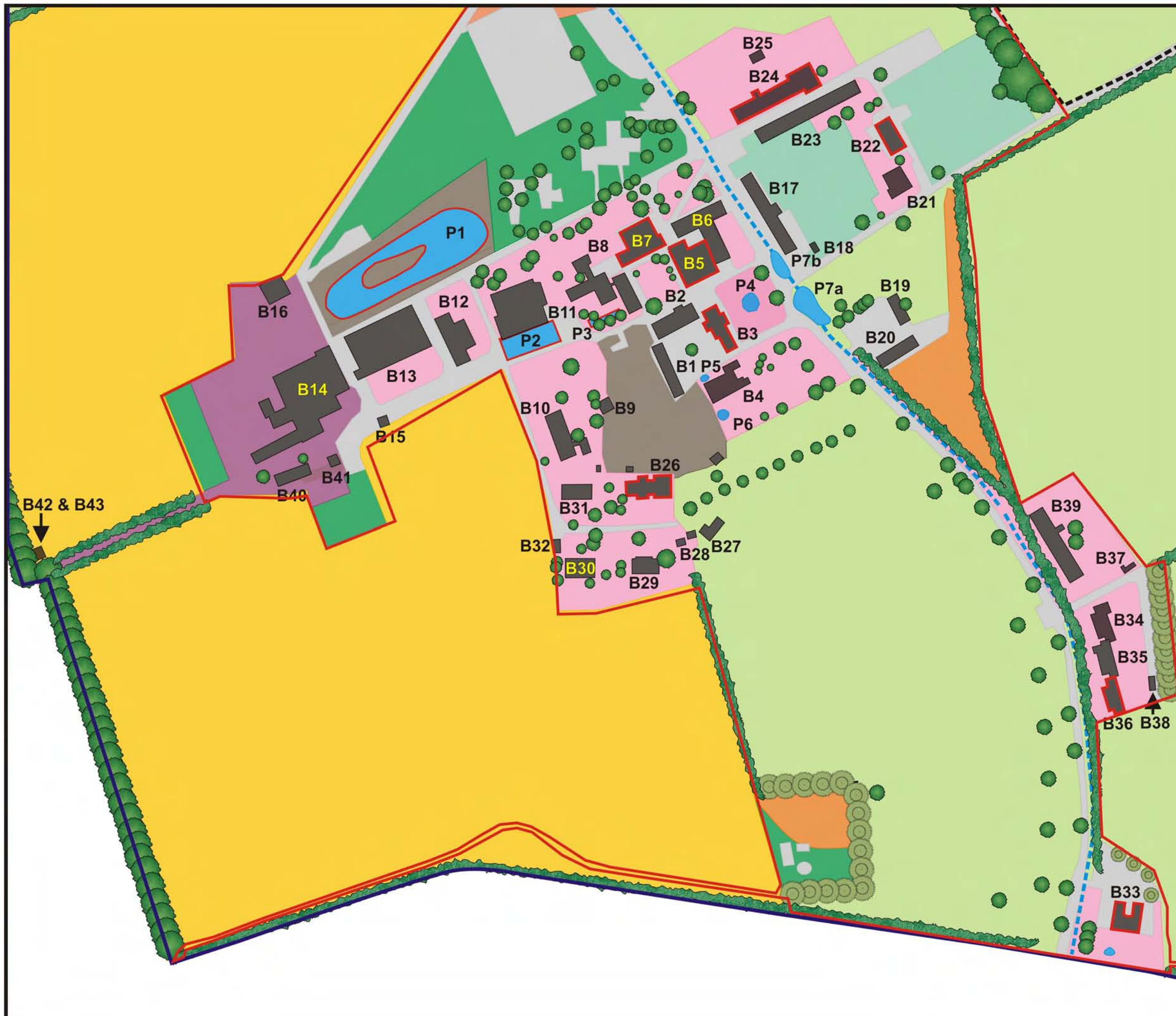
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5898: COTSWOLD COMMUNITY,
ASHTON KEYNES

PLAN ECO2:
ECOLOGICAL FEATURES

PLAN ECO3

Protected Species



KEY:

- SITE BOUNDARY
- WIDER STUDY AREA
- POND WITH GREAT CRESTED NEWTS RECORDED
- BUILDING SUPPORTING A BAT ROOST



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SITE, ASHTON KEYNES

PLAN ECO3:
PROTECTED SPECIES

PLAN ECO4a

Dusk Backtracking Survey Results 02.09.13



KEY:

-  SITE BOUNDARY
-  WIDER STUDY AREA
-  COMMON PIPSTRELLE REGISTRATION
-  SOPRANO PIPSTRELLE REGISTRATION
-  NATHUSIUS' PIPSTRELLE REGISTRATION
-  NOCTULE REGISTRATION
-  MYOTIS REGISTRATION
-  BROWN LONG-EARED BAT REGISTRATION



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ASHTON KEYNES

PLAN ECO4a:
DUSK BACKTRACKING SURVEY
RESULTS 02.09.13

PLAN ECO4b

Dawn Backtracking Survey Results 02.09.13



KEY:

-  SITE BOUNDARY
-  WIDER STUDY AREA
-  COMMON PIPSTRELLE REGISTRATION
-  SOPRANO PIPSTRELLE REGISTRATION
-  NATHUSIUS' PIPSTRELLE REGISTRATION
-  NOCTULE REGISTRATION
-  MYOTIS REGISTRATION



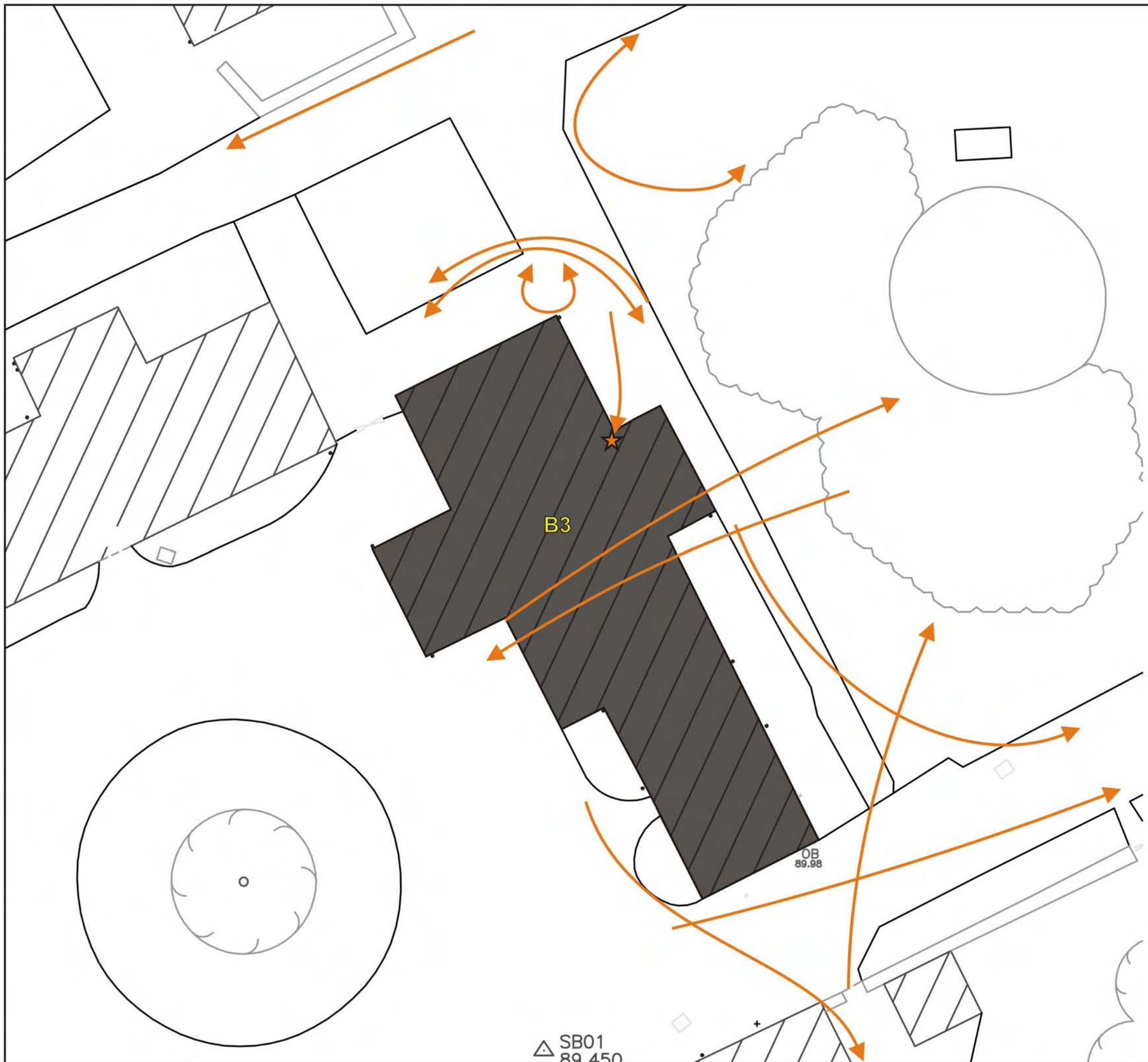
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ASHTON KEYNES

PLAN ECO4b:
DAWN BACKTRACKING SURVEY
RESULTS 03.09.13

PLAN ECO5

Bat Emergence / Re-entry Results B3



KEY:

- ★ 1x PIPISTRELLE SP.
RE-ENTRY POINT 23.5.14
- PIPISTRELLE SP.
FLIGHT LINES



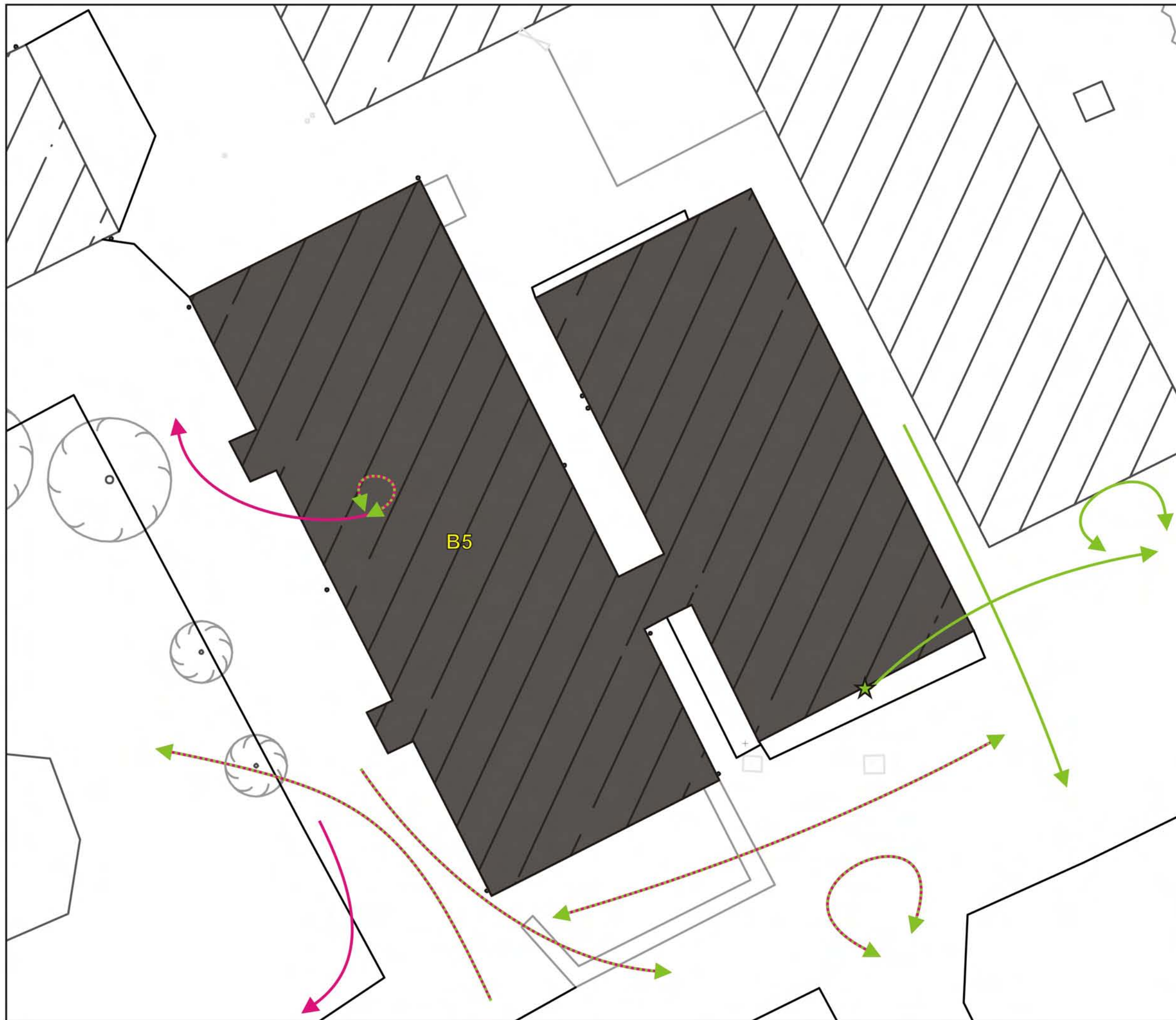
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ASHTON KEYNES

PLAN ECO5:
BAT EMERGENCE / RE-ENTRY
RESULTS B3

PLAN ECO6

Bat Emergence / Re-entry Results B5



KEY:

-  1x SOPRANO PIPISTRELLE EMERGENCE POINT 23.5.14
-  COMMON PIPISTRELLE FLIGHT LINES
-  SOPRANO PIPISTRELLE FLIGHT LINES
-  COMMON & SOPRANO PIPISTRELLE FLIGHT LINES



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ASHTON KEYNES

PLAN ECO6:
BAT EMERGENCE / RE-ENTRY
RESULTS B5

PLAN ECO7

Bat Emergence / Re-entry Results B7



KEY:

-  1x COMMON PIPISTRELLE EMERGENCE POINT 15.4.14
-  1x SOPRANO PIPISTRELLE EMERGENCE POINT 15.4.14
-  1x SOPRANO PIPISTRELLE EMERGENCE POINT 17.4.14
-  1x PIPISTRELLE SP. RE-ENTRY POINT 19.5.14
-  SOPRANO PIPISTRELLE FLIGHT LINES
-  COMMON PIPISTRELLE FLIGHT LINES
-  COMMON & SOPRANO PIPISTRELLE FLIGHT LINES
-  NATHUSIUS PIPISTRELLE FLIGHT LINES
-  SEROTINE FLIGHT LINES



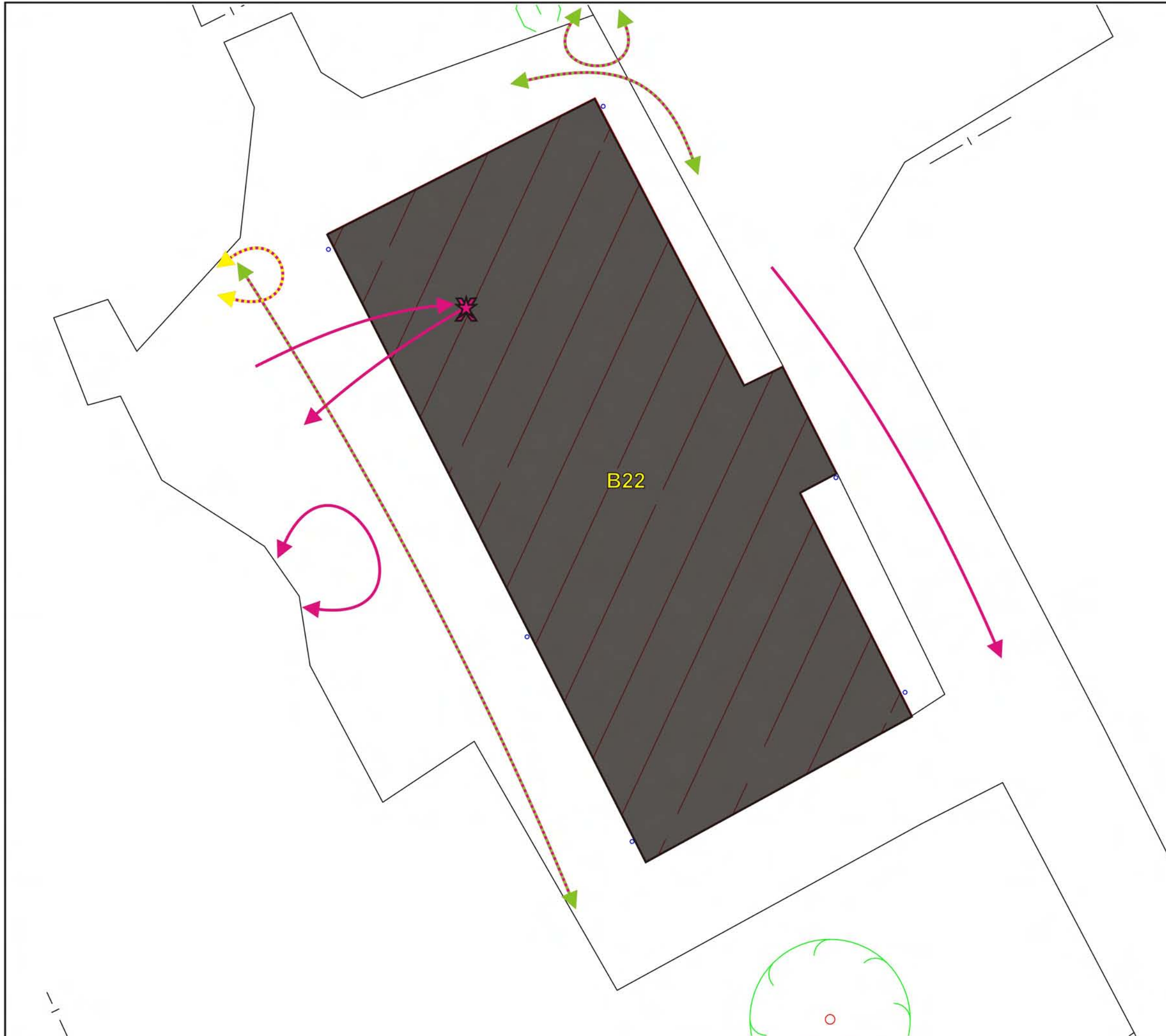
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ASHTON KEYNES

PLAN ECO7:
BAT EMERGENCE / RE-ENTRY
RESULTS B7

PLAN ECO8

Bat Emergence / Re-entry Results B22



KEY:

-  9x COMMON PIPISTRELLE EMERGENCE POINT 30.4.14
-  25x COMMON PIPISTRELLE RE-ENTRY POINT 29.5.14
-  SOPRANO PIPISTRELLE FLIGHT LINES
-  COMMON PIPISTRELLE FLIGHT LINES
-  COMMON & SOPRANO PIPISTRELLE FLIGHT LINES
-  NATHUSIUS' PIPISTRELLE FLIGHT LINES
-  COMMON & NATHUSIUS' PIPISTRELLE FLIGHT LINES



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PLAN ECO8:
BAT EMERGENCE / RE-ENTRY
RESULTS B22

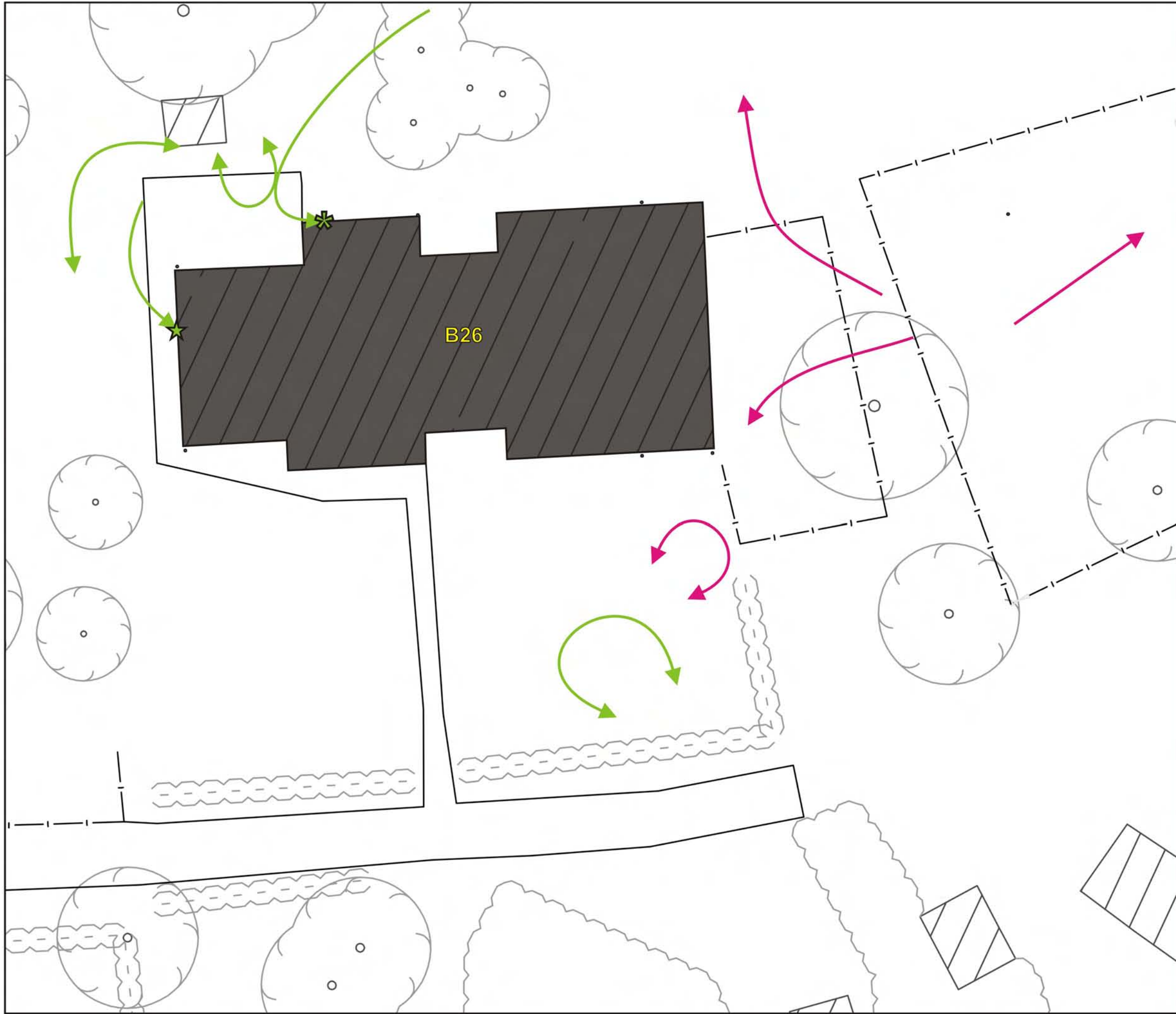
PLAN ECO9

Bat Emergence / Re-entry Results B24



PLAN ECO10

Bat Emergence / Re-entry Results B26



KEY:

-  1x SOPRANO PIASTRELLE EMERGENCE POINT 1.5.14
-  4x SOPRANO PIASTRELLE EMERGENCE POINT 1.5.14
-  COMMON PIASTRELLE FLIGHT LINES
-  SOPRANO PIASTRELLE FLIGHT LINES



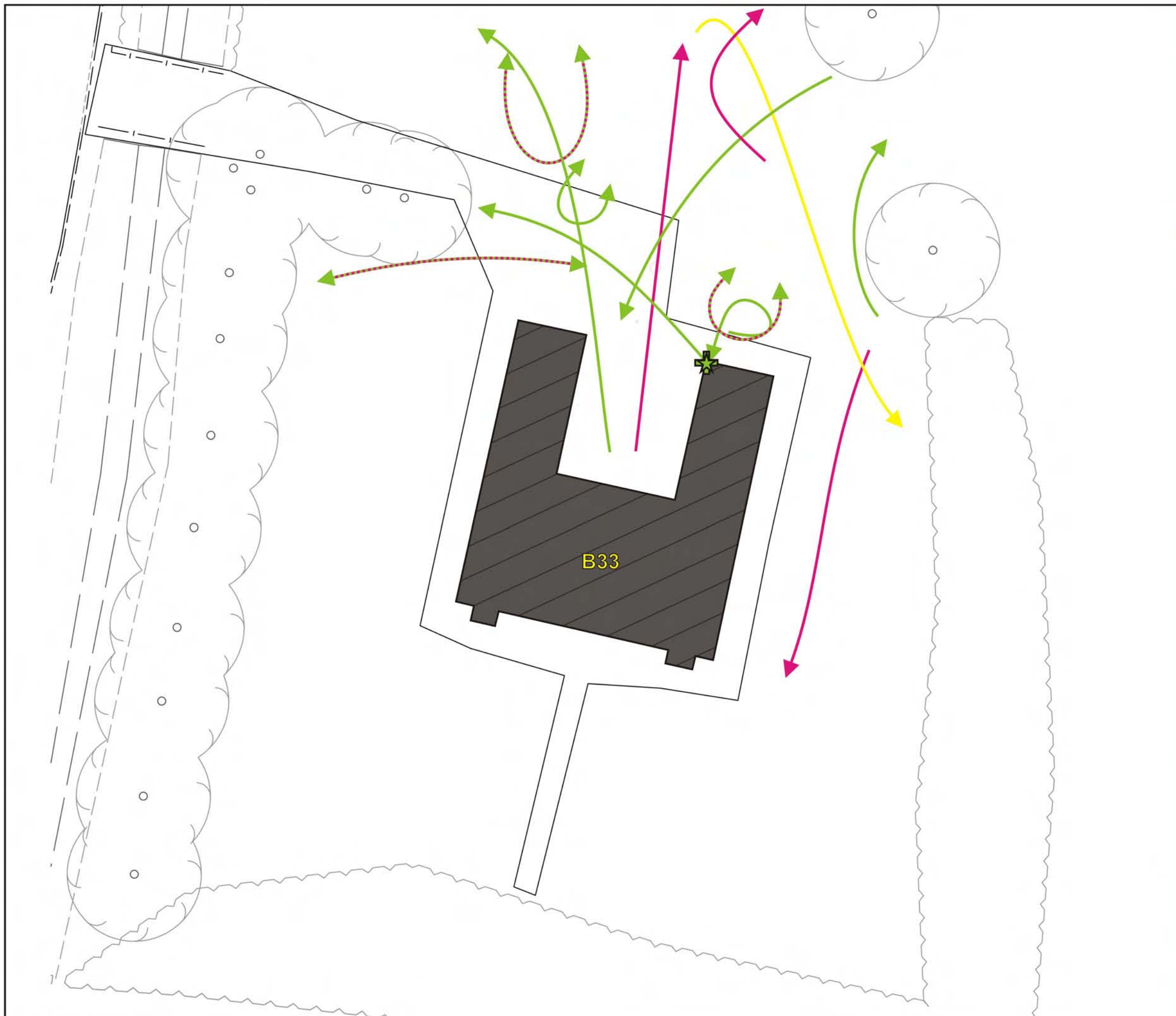
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PLAN ECO10:
BAT EMERGENCE / RE-ENTRY
RESULTS B26

PLAN ECO11

Bat Emergence / Re-entry Results B33



KEY:

-  7x SOPRANO PIPISTRELLE RE-ENTRY POINT 07.5.14
-  1x SOPRANO PIPISTRELLE EMERGENCE POINT 08.4.14
-  COMMON PIPISTRELLE FLIGHT LINES
-  SOPRANO PIPISTRELLE FLIGHT LINES
-  NATHUSIUS' PIPISTRELLE FLIGHT LINES
-  COMMON & SOPRANO PIPISTRELLE FLIGHT LINES



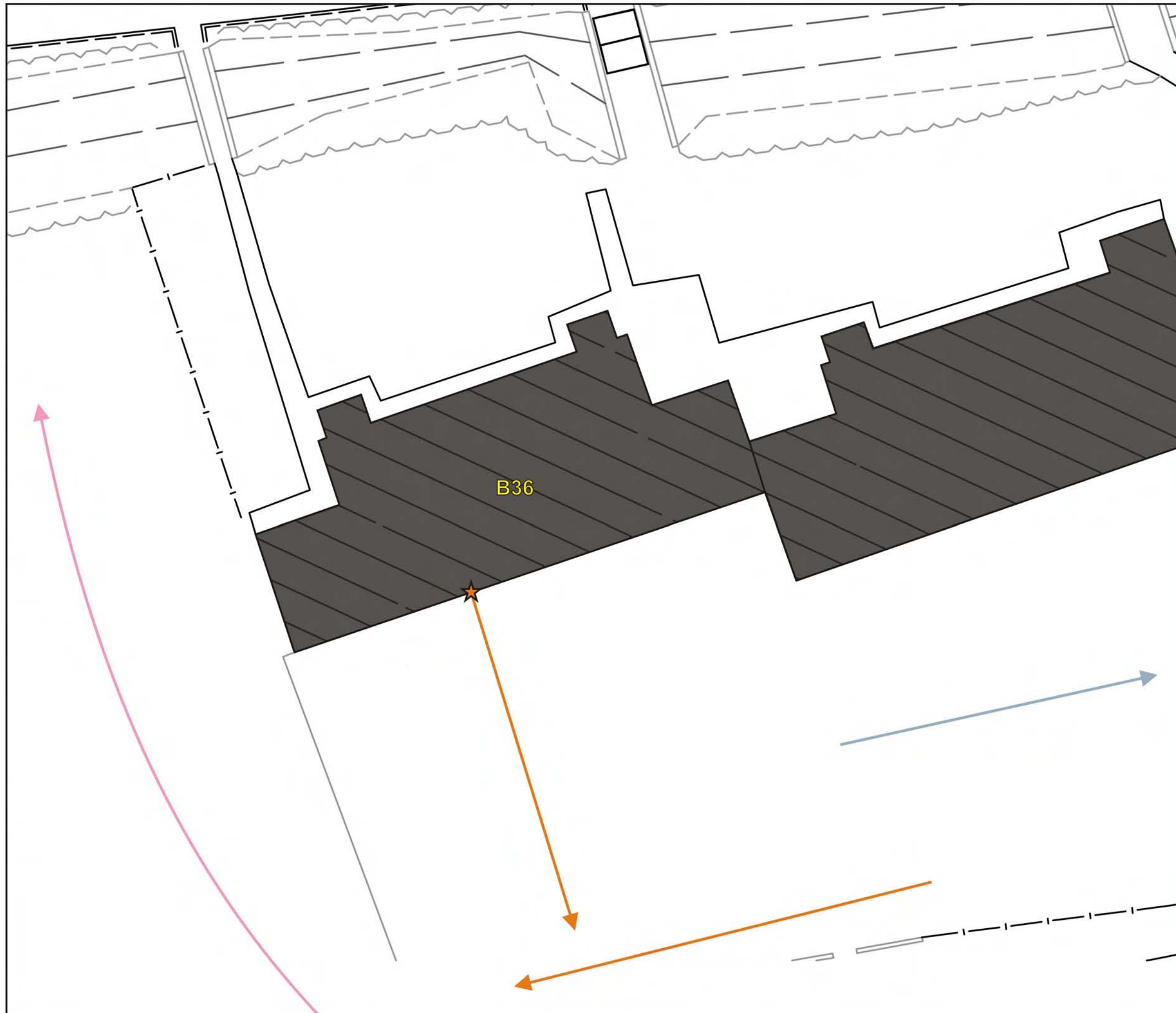
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ASHTON KEYNES

PLAN ECO11:
BAT EMERGENCE / RE-ENTRY
RESULTS B33

PLAN ECO12

Bat Emergence / Re-entry Results B36



KEY:

-  1x PIPISTRELLE SP. EMERGENCE POINT 09.4.14
-  PIPISTRELLE SP. FLIGHT LINES
-  SEROTINE FLIGHT LINES
-  MYOTIS FLIGHT LINES



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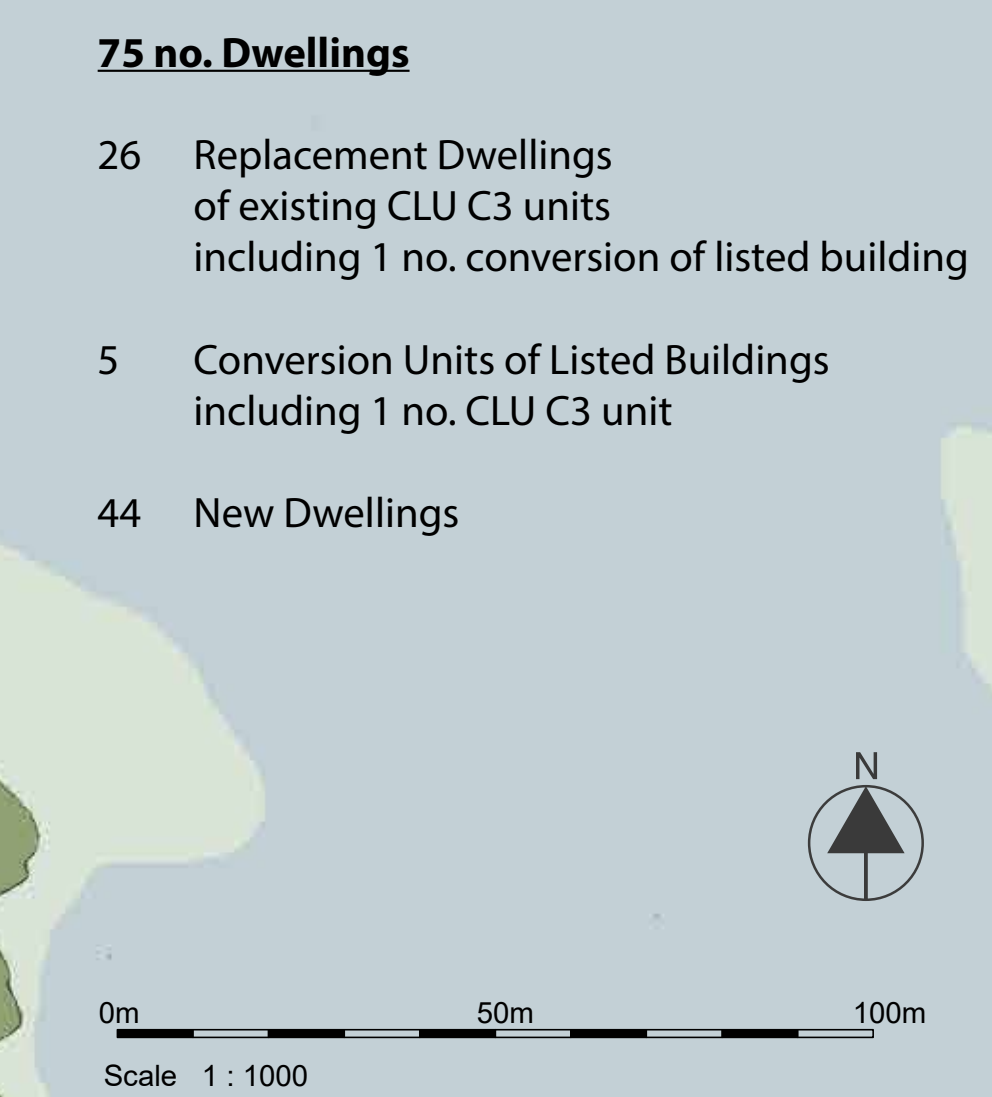
5898: COTSWOLD COMMUNITY,
ASHTON KEYNES

PLAN ECO12:
BAT EMERGENCE / RE-ENTRY
RESULTS B36

APPENDICES

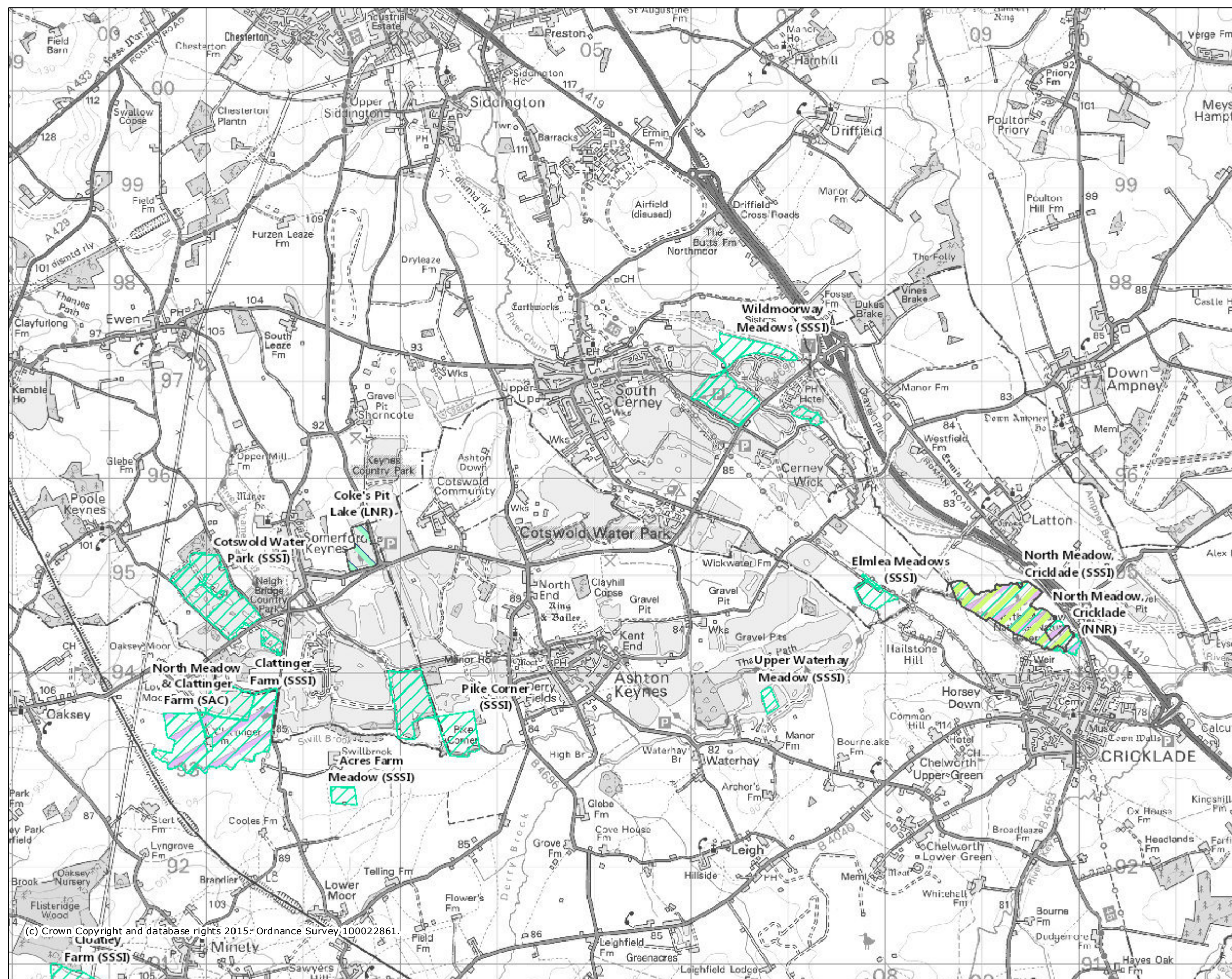
APPENDIX 1

Proposed Layout Plan



APPENDIX 2

Information downloaded from MAGIC



Legend

- Local Nature Reserves (England)
- National Nature Reserves (England)
- Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- Special Areas of Conservation (England)
- Special Protection Areas (England)

Projection = OSGB36

xmin = 395200

ymin = 190900

xmax = 415500

ymax = 200800

Map produced by MAGIC on 6 February, 2015.

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APPENDIX 3

Schwegler 1FF Bat Box Specification

Bat Boxes

Schwegler bat boxes are made from 'woodcrete' and have the highest rates of occupation of all types of box.

The 75% wood sawdust, clay and concrete mixture is ideal, being durable whilst allowing natural respiration and temperature stability. These boxes are rot and predator proof and extremely long lasting.

Boxes can be hung from a branch near the tree trunk or fixed using 'tree-friendly' aluminum nails.



1FF Bat Box

The rectangular shape makes the 1FF suitable for attaching to the sides of buildings or in sites such as bridges, though it may also be used on trees. It has a narrow crevice-like internal space to attract Pipistrelle and Noctule bats.

Woodcrete (75% wood sawdust, concrete and clay mixture)

Width: 27cm

Height: 43cm

Weight: 8.3kg

APPENDIX 4

Suitable Examples of Bird Boxes

Bird Boxes

Schwegler bird boxes have the highest rates of occupation of all types of box. They are designed to mimic natural nest sites and provide a stable environment with the right thermal properties for chick rearing and winter roosting. Boxes are made from 'Woodcrete'. This 75% wood sawdust, clay and concrete mixture is breathable and very durable making these bird boxes extremely long lasting.



1B Bird Box

This is the most popular box for garden birds and appeals to a wide range of species. The box can be hung from a branch or nailed to the trunk of a tree with a 'tree-friendly' aluminium nail.

Available in four colours and three entrance hole sizes. 26mm for small tits, 32mm standard size and oval, for redstarts.

2H Bird Box

This box is attractive to robins, pied wagtails, spotted flycatcher, wrens and **black redstarts**.

Best sited on the walls of buildings with the entrance on one side.

Schwegler boxes have the highest occupation rates of all box types. They are carefully designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting. They can be expected to last 25 years or more without maintenance.



2M Bird Box

A free-hanging box offering greater protection from predators.

Supplied complete with hanger which loops and fastens around a branch.

With standard general-purpose 32mm diameter entrance hole.

Schwegler boxes have the highest occupation rates of all box types. They are carefully designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting. They can be expected to last 25 years or more without maintenance.



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