

Dunsbury Hill Farm, Havant

Reserved Matters Application Plot 2 Ecological Impact Assessment

Portsmouth City Council

November 2015



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Non-technical Summary

Site Details	Scheme: Dunsbury Hill Farm Plot 2 Location: near Havant, Hampshire Size: 2.672ha
Scheme Details	Reserved Matters application for a B8 warehouse development.
Desk Studies and Field Surveys	Update desk study for statutory designated sites and review of nearby proposed new developments. Update ecological surveys undertaken in summer 2015 for reptiles, bats and dormouse, as well as update extended Phase 1 habitat survey.
Relevant Ecological Features	• No new statutory designated sites have been identified since the ES which accompanied the hybrid Planning Application for the development was submitted; • Desk study identified one large housing development proposed on land east of Horndean affecting Bechstein's bats, an Annex II European Protected Species (ecological information for the Scheme dating 2014). • Surveys to date include ; ○ Application Site used by adders, grass snake, slow worms and common lizards, as well as common and soprano pipistrelle bats, serotine and noctule; ○ Bechstein's adult female recorded during a trapping survey in early September 2015 in Cherry Tree Row SINC, approx. 35m south of the Application Site. ○ Dormouse nests found in Cherry Tree Row SINC woodland and scrub which border the Application Site.
Agreed Avoidance, Mitigation and Compensation Measures	• Cherry Tree Row woodland SINC to be protected from incursion during construction; tree protection zone implementation, pollution prevention guidelines implemented; • Woodland buffer planting along the west, south and east sides of the Application Site; • Reptile translocation of front (northern) defunct hedgerow and enhancement of receptor site (i.e. Habitat Creation Area) • Appropriate lighting design, and installation of permanent solid fencing along the west, south and east sides of the Application Site to avoid light spill onto Cherry Tree Row SINC and to minimise light spill onto buffer planting; • Ecological Clerk of Work presence during construction works which could potentially affect dormice and reptiles;

Significance of Residual Effects	With the implementation of mitigation stated in the EcIA and the Habitat Management and Maintenance Plan discharged as part of the A1(ii) Planning condition for the wider Dunsbury Hill Farm Site, there are not predicted to be any residual effects on the designated habitats or protected species present at the site or within immediate surroundings.
Agreed Enhancement Measures	Eight Schwegler bat boxes to be erected prior to the commencement of the works in Cherry Tree Row SINC Log and brash piles will be created within the woodland margins using wood from any shrubs cleared or woodland canopy pruned as a result of vegetation clearance. A further ten dormouse nest boxes will be installed in Cherry Tree Row SINC

1. Introduction

1.1. Terms of Reference

Atkins Limited (Atkins) was commissioned by Portsmouth City Council to undertake an Ecological Impact Assessment (EclA) in support of a Reserved Matters application for a B8 warehouse development (hereafter referred to as the Scheme) at Plot 2, part of the Dunsbury Hill Farm development near Havant, Hampshire.

Planning permission for the Dunsbury Hill Farm development site (Reference APP/12/00338) was granted on the 19th February 2014. The Hybrid Application included:

- Full planning permission granted for “a new access link road with bus gate to Woolston Road; together with landscaping, infrastructure and associated works (hereafter referred to as “the Link Road”).”
- Outline planning permission for “the development for employment uses and a hotel with conference facilities; together with landscaping, infrastructure and associated works.”

This EclA has been undertaken with reference to current good practice¹ and forms part of the technical information to discharge conditions A17 & A18 of APP/12/00338 in relation to Plot 2 and accords with the site-wide Ecology Strategy approved under Condition A1.

Construction of the Link Road is currently underway. Plot 2 is the first Reserved Matters Application being submitted in relation to the Outline Planning permission. Plot 2 is centred on Ordnance Survey grid reference SU699090 and is identified by the planning red line boundary on Drawing No. DHF-BMD-Z2-XX-DR-A-10000-P3-Location plan in **Appendix A** (hereafter referred to as the Application Site).

This report presents ecological information obtained during a desk study and field survey work undertaken in connection with the original Hybrid Planning Application and pre-construction survey work undertaken since the permission was granted. The methodology of these surveys is detailed in Appendix B and relevant legislation in **Appendix C**. This EclA evaluates the nature conservation value of the Application Site and its ecological features, assesses the significance of any impacts of the proposed road on these features and sets out mitigation measures in respect of impacts. This evaluation also considers in-combination effects of the proposed development at the application site in the context of the wider Dunsbury Hill Farm development as a whole. This assessment takes into account mitigation and compensation measures previously agreed by the applicant within the Hybrid Planning permission.

1.2. The Application Site

The Application Site is located on a former arable field parcel, between Waterlooville and Leigh Park, on the north western side of Havant Borough, and to the east of the A3 (M) motorway Junction 3. The Application Site is surrounded on three sides by mature broadleaved woodland predominantly containing mature oak, ash and goat willow. The wider landscape consists of Prospect School and residential houses to the east. The north and west is also former arable, now partly under construction for the new Link Road development. The south is a mosaic of mature broadleaved woodland, rough grassland and the Hermitage Stream.

Old grass field margins border the Application Site itself, and wet grassland with wet flushes are located to the southern part of the field on waterlogged soil. A hedge runs along the north boundary of the Application Site.

The Application Site is 2.672 hectares. The Phase 1 Habitat Map provided as Figure 1 in **Appendix D** shows the current habitat within and adjacent to the Application Site. The development proposals are shown in Figure 2 in **Appendix D**.

¹ Chartered Institute of Ecology and Environmental Management (2006) *Guidelines for Ecological Impact Assessment in the United Kingdom*.

1.3. The Scheme

The wider Dunsbury Hill Farm development site for which outline planning permission has been granted occupies 20.2 ha of land and will be developed in separate phases over a number of years. Once all of the phases are complete, this development will provide approximately 650,000 sq ft of new employment floor space, with a hotel and conference centre, a new junction to connect the Site to the A3 (M) via Hulbert Road, a bus gate to connect the site to Leigh Park through a bus-only access point, a Link Road to define a primary circulation route through the development site and a dedicated transport link to maintain and improve circulation to and around the development site. The existing bridleway which crosses the development site will be maintained and improved. As part of the Link Road construction, a canalised section of the Hermitage Stream which runs across the development site will be re-aligned and naturalised, in line with the Water Framework Directive objectives and to enhance biodiversity on the development site.

The Application Site subject to this Reserved Matters submission includes Plot 2 of the Dunsbury Hill Farm development site. Plot 2 is a proposed 120,000 sq ft B8 Warehouse, with associated offices and mezzanine accommodation, to be constructed in two phases. Phase 1 comprises of a total of 90,800 sq ft warehouse and office area over three floors, with Phase 2 providing an additional 39,147 sq ft. As part of Phase 1, externally there will be staff and visitor car parking, secure cycle parking, and a secure staff amenity area and soft landscaping. A segregated lorry access serves a secure delivery and dispatch area, 35 m wide running the length of the building with 10 dock levellers, 3 level -access loading doors and parking for eight lorries. The Scheme is shown on the illustration provided in **Appendix A**.

1.4. Background and Scope of the Assessment

Ecological survey work has been undertaken across the Dunsbury Hill Farm development site since 2010 in connection with planning application and pre-construction survey work. An Environmental Statement (ES)² was lodged with the submission of the Hybrid Planning Application in 2012. The ES identified the presence of habitats and species across the Dunsbury Hill Farm development site that would be affected by the wider scheme and provided an outline of proposed mitigation.

The design of the wider Dunsbury Hill Farm development has aimed to avoid such effects as far as possible through minimising habitat loss (retention of hedgerows and woodland edges) and the implementation of sensible lighting schemes. In addition to this, the applicant agreed to allocate a 3.4ha former arable field specifically for habitat creation where various ecological features will be created and managed throughout the life of the Dunsbury Hill Farm development and beyond to enhance biodiversity.

Following the granting of the Full Planning Permission for the Link Road, mitigation licences for bats and dormice pertaining to the Link Road construction were granted by Natural England in 2014. A Habitat Management and Maintenance Plan³ was produced as part of the dormouse mitigation licence, which covers the Link Road and associated infrastructure. It outlined the general vision for the Dunsbury Hill Farm development in terms of nature conservation and provided some information regarding measures that will be undertaken for species present on site such as dormice and bats. This document will be updated for each of the subsequent phases of development once they have reached detailed design stage. Masterplans were also produced for the Link Road phase as part of the bat and dormouse mitigation licences⁴. These documents set out the various phases of the Dunsbury Hill Farm overall development in the view to help assess the overall impacts of the proposed development on the bat population, and the future mitigation across the whole project. The information within the ES, mitigation licences and ecological survey work across the Dunsbury Hill Farm development site carried out in connection with detailed design work for Plot 2 as well as for the Hermitage Stream re-alignment was used to inform this reserved matters application.

The proposals at the Application Site considered in this EcIA build on the principles approved and described in the general vision for the Dunsbury Hill Farm development site in terms of nature conservation, habitat creation and enhancements which would take place in the open space around the development to minimise any long term impact on habitats and species, as previously agreed in the Outline Planning Permission.

² Atkins, 2012. *Dunsbury Hill Farm Site, Environmental Statement*.

³ Atkins, 2014. *Dunsbury Hill Farm Habitat Management and Maintenance Plan*.

⁴ Atkins, 2014. *Dunsbury Hill Farm Bat and Dormouse Masterplans* (pertaining to Natural England licences 2014-412-EPS-MIT of bats and 2014_456-EPS-MIT for dormouse).

2. Methodology

This EcIA describes the ecological baseline and evaluates the nature conservation value of ecological features present with the Ecological Zone of Influence (EZOI) for the Scheme (see Section 2.3 for further details), characterises the potential impacts and the effects of the Scheme on these ecological features, sets out agreed avoidance, mitigation, compensation and enhancement measures, and assesses the significance of the residual effects of the Scheme on these features

2.1. Desk Study

An update desk study was undertaken in 2015 to obtain ecological data relevant to the Application Site and the EcIA, including records of statutory and non-statutory designated sites.

A review of local planning policy relevant to the Scheme was also undertaken as part of the desk study. To inform the cumulative impact assessment for the Scheme, the review included obtaining details of major committed developments which have a high level of certainty within the next five years (collectively referred to as identifiable developments).

Full details of the desk study methodology are provided in **Appendix B**.

2.2. Field Surveys

2.2.1. Extended Phase 1 Habitat Survey

The bulk of survey work used to inform this EcIA is based on information gathered across the Dunsbury Hill Farm development site to inform the ES, the dormouse and bat mitigation licences for the Link Road, and further survey work relating to the Hermitage Stream. The Dunsbury Hill Farm development site was intensively surveyed between 2010 and 2015 to establish information regarding habitats and species across the wider site. The picture gathered from this information is relevant for use within this EcIA. Update survey work has been undertaken across the wider site in 2015 where deemed necessary (see below for Phase 2 surveys).

With this in mind, the field methodology information included below covers only the most recent detailed survey work completed within and immediately surrounding the Application Site in 2015.

An ecological walkover survey of areas within and adjacent to the Application Site (including land up to 50 m from the Application Site boundary where access allowed (the Survey Area)) was undertaken on the 18th August 2015 broadly following the Phase 1 habitat survey methodology⁵. The walkover survey records information on the habitats within the Survey Area but was extended to include a search for evidence of presence, and an assessment of the potential of each habitat to support notable and protected species as recommended by CIEEM⁶.

2.2.2. Phase 2 Surveys

Based on the results of the desk study and extended Phase 1 habitat survey, the following Phase 2 ecological surveys were undertaken to support this EcIA:

- Update dormouse presence/absence surveys;
- Update reptile surveys (for the purpose of population assessment);
- Update bat activity transect surveys and passive monitoring; and
- Bat trapping survey.

⁵ Joint Nature Conservation Committee (2010) *Handbook for Phase 1 habitat survey - a technique for environmental audit*.

⁶ Chartered Institute of Ecology and Environmental Management (2012) *Guidelines for Preliminary Ecological Assessment*.

Further details of these surveys are provided in **Appendix E**.

2.2.3. Limitations to Assessment

The period for undertaking surveys for dormouse presence commences in April⁷ but it was not possible to start the updated dormouse presence/ absence surveys for this Scheme at Plot 2 until June 2015. However, dormouse monitoring as part of the Link Road for the wider Dunsbury Hill Farm Scheme has been undertaken since May 2014, with some of the dormouse nest boxes being located in the woodland along the western edge of Plot 2. In addition, ecological watching briefs targeted at dormice (as well as bats and reptiles) were carried out over several months in 2014 under a dormouse mitigation licence for vegetation clearance as part of the Link Road construction. Therefore, the presence/likely absence surveys are considered to have been sufficient in detecting the potential presence of dormice in the habitats surrounding Plot 2. Dormouse surveys will be continuing until the end of October 2015.

The list of invasive plant species included on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) is extensive and these plants are found in a range of different habitats, including aquatic habitats. The ecology surveys checked for the presence of Japanese knotweed, giant knotweed, hybrid knotweed, giant hogweed, Himalayan balsam, rhododendron and cotoneaster species. However, there may be other invasive plant species present on the Application Site which were not recorded, but it is considered that this survey is sufficient to identify any significant constraints posed by invasive plants.

Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. The ecological surveys undertaken to support this EclA have not therefore produced a complete list of plants and animals and the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future. However, the results of these surveys have been reviewed and are considered to be sufficient to undertake this EclA.

2.3. Ecological Zone of Influence

The Ecological Zone of Influence (EZol) is an area defined by the assessment in which there may be ecological receptors subject to impacts and subsequent effects as a result of the Scheme.

The EZol was determined through:

- a review of the existing conditions within the Application Site in comparison with Scheme designs and construction information;
- consideration of the proposed activities (during construction and operation phases);
- the desk study information including an examination of mapping data;
- records of protected and notable species; and
- findings of the field survey work.

The Application Site occupies an area of previously farmed arable land adjacent to an existing construction site. Due to the scale and nature of the proposed development, location and adjacent land use, it is not considered that the impacts of the scheme would extend beyond the footprint of the development and its immediate surroundings. It was therefore considered appropriate to assess only those designated sites which are present within or directly adjacent to the Application Site or which the Application Site crosses. These sites are non-statutory designated sites for Nature conservation. There are no statutory designated sites within 2 km of the Scheme. In setting the EZol for designated sites, it has been assumed that the Environment Agency pollution prevention guidelines⁸ will be implemented faultlessly to prevent any indirect impacts to water courses or notable aquatic /wet habitats.

⁷ English Nature, 2006. *Dormouse Conservation Handbook second edition*.

⁸ <https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg>.

The EZoI for protected species is defined on a species-specific basis based on the likely effects of the Scheme as detailed in Table 2.3 below (distances are taken from the Application Site boundary).

Table 2-3: Ecological Zone of Influence for Protected Species

Species	Distance from the Application Site boundary	Justification
Dormouse	500 m	Although dormice have a large home range, direct impacts from killing or injury is only likely to occur within the Application Site in suitable habitat, whilst impacts from disturbance (namely noise and lighting) on foraging, breeding and hibernating dormice are only likely to occur within the first 500 meters of the Application Site.
Bats	3 km	Direct impacts from killing and injury will not occur within the Application site as there will be no loss of features suitable for roosting bats. Impacts from loss of foraging habitat will occur within the Application Site (field margin/woodland edge/hedge) whilst disturbance (namely noise and lighting) on foraging and commuting bats are only likely to occur with the first 500m of the Application site. However, following discussions with the County Ecologist and the discovery of several Bechstein's roosts (including maternity roosts) at a proposed development site near Horndean in 2014 (approx. 3 km north of Dunsbury Hill Farm) ⁹ , the Zone of Influence for this particular species was increased to 3 km.
Badgers	30 m	Badgers sett tunnels typically extend up to 20 m from the sett entrance ¹⁰ . Vibrations from heavy machinery and excavation of soils within 30 m of a sett entrance may cause the collapse of tunnels. Significant impacts from the proposed works on a sett beyond 30 m from the Application Site are not anticipated.
Reptiles	Application Site boundary	Direct impact to reptiles from killing and injury may occur during construction and removal of the northern boundary hedgerow where all four species of common reptile are present. The development will impact reptiles in terms of habitat loss of the hedgerow and grassland. It is not anticipated that the proposed works will result in impacts to reptiles beyond the Application Site boundary.

2.4. Temporal Scope

To define the temporal scope for ecological assessment, the proposed activities were reviewed in order to establish when impacts could occur and over what duration. Impacts have been assessed in the context of the predicted baseline conditions within the EZoI during the lifetime of the project (i.e. the assessment takes into account how the existing conditions might change between the surveys and the start of construction and/or operation). For this phase, construction is programmed to start in January 2016 with an operational target of autumn 2016. The proposed development will be operational for at least 20 years. Construction activity is currently taking place immediately north, north east and west of the Application Site and will continue throughout spring 2016. Initial phases of this work will change the habitats immediately adjacent to the Application Site. Therefore, baseline conditions described within this document make reference to any anticipated changes to the conditions identified through the desk study and site survey. These changes are taken into account as part of the impact assessment.

⁹ See Planning Application "Land East of Horndean" http://planningpublicaccess.easthants.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=EHANT_DCAPR_233593

¹⁰ English Nature (2002) *Badgers and development*. http://www.badgerland.co.uk/help/en_badgers_development.pdf

2.5. Nature Conservation Evaluation and Impact Assessment

The methodology for assessing the nature conservation value of an ecological feature, and the assessment of impacts and potential effects (including cumulative impacts and effects) of the Scheme are provided in **Appendix B**.

2.6. Mitigation Hierarchy

The principles of the mitigation hierarchy^{11,12} have been adopted and used when considering potential impacts and subsequent effects on ecological receptors within the EZol.

The principles of the mitigation hierarchy are:

- (1) Avoidance;
- (2) Mitigation;
- (3) Compensation; and,
- (4) Enhancement.

¹¹ Department for Communities and Local Development (2012) National Planning Policy Framework, para 118.

<https://www.gov.uk/government/publications/national-planning-policy-framework--2>

¹² Chartered Institute of Ecology and Environmental Management (2006) *Guidelines for Ecological Impact Assessment in the United Kingdom*, para 1.16.

3. Existing Baseline Conditions and Nature Conservation Evaluation

All of the ecological features within the EZoI of the Scheme have been valued according to the criteria outlined in **Appendix B**.

3.1. Designated Sites and Ancient Woodland

Table 3-1 summarises the designated sites and ancient woodlands situated within the EZoI for the Scheme.

Table 3-1-1 Designated Sites within Ecological Zone of Influence

Site Name and Designation	Reason for Designation	Distance (at closest point) and direction from Application Site	Relevant Target Notes	Nature Conservation Value
Cherry Tree Row SINC (Site of Importance for Nature Conservation)	Ancient (relic) semi-natural woodland including areas of wet woodland.	Bordering the Application Site to the east, south and south-west corner with some overhang of canopy of mature trees into the site.	1	County

3.2. Main Habitats

Table 3-2 details the main habitats situated within the EZoI for the Scheme. These habitats are indicated on the extended Phase 1 habitat survey plan (Figure 1 **Appendix D**) with specific features highlighted by Target Notes (TN) on the drawing. Target Note descriptions and photographs are provided in **Appendix D**.

Table 3-2 Main Habitats within Ecological Zone of Influence

Habitat Type	Distance (at closest point) and direction from Application Site	Relevant Target Notes	Nature Conservation Value	Rationale for Valuation
WOODLAND (not including SINC above) Broadleaved woodland (the SINC designation does not extend all the way up the western boundary of the Application Site).	Bordering the Application Site on the west boundary.	1	County	Area of undesignated woodland but provides connective habitat providing nesting/roosting and foraging opportunities for protected species such as dormice, bats and reptiles as well as for birds.

Habitat Type	Distance (at closest point) and direction from Application Site	Relevant Target Notes	Nature Conservation Value	Rationale for Valuation
HEDGEROW Defunct hedge containing mainly thick bramble but also hawthorn, small stands of goat willow and English oak, and bracken at either end.	Within (northern boundary)	5 & 6	Application Site	Provide foraging opportunities for birds, dormice and bats and linkage to adjacent woodland.
FIELD - Poor Semi-improved grassland: arable set aside comprising <i>agrostis</i> dominated grassland.	Within the plot (Majority of Plot 2)	2	Application Site	Provide suitable habitat for species such as reptiles and invertebrates and foraging areas for birds and other mammals.
FIELD MARGINS - Poor semi-improved grassland with marshy grassland/wet flushes in places	Within (to the south)	3	Application Site	Provide suitable habitat for species such as reptiles and invertebrates.
SCRUB - Bramble and willow scrub bordering the woodland	Within (along the edges of the plot)	4	Application Site	Provide foraging opportunities for birds, dormice and bats and linkages to adjacent woodland.

In addition, a number of Biodiversity Action Plan (BAP) Priority Habitats (which include some of the habitat stated above) are recorded within 1 km of the proposed development, some of which are adjacent to it. These BAP Priority Habitats are:

- Wet woodland (adjacent to the Application Site);
- Lowland mixed deciduous woodland (adjacent to the Application Site); and
- Lowland meadows.

3.3. Notable Species

Notable species that have been recorded within the EZoI for the Scheme are detailed below in Table 3-3. A summary of the Phase 2 species survey results is also provided in **Appendix E**.

Table 3-3 Notable Species within Ecological Zone of Influence

Species or Species Group	Receptor	Nature Conservation Value	Rationale
Bats (common and soprano pipistrelles, noctule, serotine)	Woodland, field margins	Local	All native bats are European Protected Species. In addition, serotine and pipistrelle bats (both common and soprano) are Hampshire Biodiversity Action Plan (BAP) species.
Bats (Bechstein's)	Woodland	Regional	Bechstein's bat is considered rare on a European and UK level, and the Application Site is located 3 km south-east from the only confirmed Hampshire population of breeding Bechstein's bats outside the New Forest ¹³ . Myotis bat species were not found during the transect activity surveys nor the passive monitoring surveys undertaken within the site in 2015. The adult female Bechstein's trapped in early September 2015 was caught in the woodland approximately 35m south of the southern Site boundary. The bat was caught 2h 45m after sunset and did not appear to have bred this year. Past studies ¹⁴ have shown that Bechstein's bats favour foraging under closed canopy woodland with a strong understorey ¹⁵ which is well represented in Cherry Tree Row Wood and immediately adjacent to the Application Site. Given the foraging habitat woodland areas immediately adjacent to the south of the Application Site, it should be valued at the Regional level in accordance with good practice guidance 'Valuing Bats in Ecological Impact Assessment' ¹⁶ .
Dormouse	Woodland and woodland edge, hedgerow	County	Dormouse is a Species of Principle Importance in the UK and local BAP priority species. The Hampshire BAP states that Hampshire is a national stronghold for dormice, holding at least 10% of the national population. However, the species is categorised as declining, scarce and highly threatened within Hampshire.
Reptiles (common lizard, slow worm, adder, grass snake)	Hedgerow, field margins	Local	Four species of reptiles are present and breeding within the site.

¹³ WYG, October 2014. *Highwood Land (Horndean) Limited and CALA Homes (South Home Counties) Limited Land East of Horndean Bat Survey Report*

¹⁴ Schofield, H. & Morris, C., 2000. *Ranging behaviour and habitat preferences of female Bechstein's bat, Myotis bechsteinii (Kuhl, 1818), in summer*. Report held by The Vincent Wildlife Trust.

¹⁵ Harris, S. & Yelden, D.W., 2008. *Mammals of the British Isles: Handbook*. 4th Edition. Southampton: The Mammal Society.

¹⁶ S. Wray et al., 2010. *Valuing Bats in Ecological Impact Assessment* (IEEM In Practice Magazine, December 2010).

3.4. Ecological Features excluded from further assessment

Based on the results of the desk study and field surveys undertaken to support the EclA, and the subsequent nature conservation evaluation of each ecological feature, potential effects on features of value in the context of the Application Site or lower, have been scoped out of further assessment. These features are:

- Designated Sites – Due to the distances between the Application Site and the SINCs located within the EZol, the closest of which is Neville's Park Areas 2 & 3 SINC (designated as agriculturally unimproved grassland) 25 m from the Application Site boundary, and the adoption of relevant Construction Code of Practice (CCoP) and Pollution Prevention Guidelines (PPGs), no significant effects on any additional designated sites are anticipated to occur from the Scheme;
- Habitats – species-poor grassland, scrub, field margins and the defunct hedgerow present within the Application Site have been valued as being important within the context of the Application Site and its immediate environs only. This evaluation is based on the fact that these habitats are abundant in the local area and none of them qualify as being notable¹⁷; and
- Species (birds) - The Application Site does not possess any features that would suggest it would be of any special ornithological value, with the habitats present being common and widespread in the Havant Borough. Therefore, detailed update breeding and wintering bird surveys have not been undertaken. No effects on the local breeding bird assemblage are anticipated to occur from the Scheme. Mitigation to prevent individual nests being damaged or destroyed during clearance works has been outlined below in Section 5.

¹⁷ JNCC (2012) UK Post-20 10 Biodiversity Framework.

4. Impact Assessment, Agreed Mitigation Measures and Significance of Residual Effects

This Section aims to characterise the potential impacts and the effects of the Scheme on the valued ecological features, sets out agreed avoidance, mitigation, compensation and enhancement measures, and assesses the significance of the residual effects of the Scheme on these features.

In general terms, the potential impacts and effects characterised in this Section are negative, although in some instances positive impacts and effects may occur.

Receptors outside the EZoI will not be affected by any activities or processes involved in the Scheme and are therefore not considered in this impact assessment. As detailed above in section 3.4, only features of Local value or higher have been included within the impact assessment.

Portsmouth City Council has agreed that the mitigation measures identified in this section will be incorporated into the detailed design proposals for the Scheme and implemented as part of the overall development of the Application Site.

4.1. General Mitigation Measures

The following mitigation measures will be implemented during the construction phase to prevent any legal offences being committed and to comply with existing legislation and good practice:

- general measures to avoid or alleviate negative impacts upon ecological receptors including following the Environment Agency pollution prevention guidelines¹⁸ in relation to avoidance of pollution;
- measures to protect trees within and immediately adjacent to the Application Site boundary¹⁹;
- lighting strategy to avoid or minimise light spill onto habitats immediately adjacent to the Application Site, including the newly created buffer planting within the Application Site. To aid this, permanent solid fencing (minimum height of 8'0") will be erected along the west, south and east sides of the Application Site;
- Lighting strategy will follow the latest guidelines issued by the Bat Conservation Trust²⁰ (such as using narrow spectrum light sources that emit minimal ultra-violet light; and avoidance of white and blue wavelengths of the light spectrum);
- an Ecological Clerk of Works (ECW) will be employed for the duration of construction of the Scheme and for pre-construction site clearance works to ensure that measures to avoid or alleviate impacts on nature conservation receptors are implemented;
- vegetation clearance will be minimised and undertaken outside the core bird nesting season (1st March and 31st August) to avoid damage or destruction of occupied nests or harm to breeding birds (see **Appendix C**). If this cannot be achieved, works within the core bird nesting season will require an inspection of vegetation to be cleared for breeding birds and their occupied nests by a suitably qualified ecologist no more than 24 hours prior to any works being undertaken. If any nesting birds are identified during the survey they will be left *in situ* for their entire nesting period and alternative approaches to the work proposed. This may include leaving an exclusion zone around the nests to avoid disturbance;

¹⁸ <https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg>.

¹⁹ British Standards Institution (2012) *Guide for Trees in relation to design, demolition and construction: recommendations*. BS 5837:2012.

²⁰ Bat Conservation Trust, 2014. *Artificial lighting and wildlife Interim Guidance: Recommendations to help minimise the impact artificial lighting*.

- displacement of reptiles (i.e. translocation) commenced on the 18th September 2015 from the hedgerow, which is to be removed, at the north of the Application Site in order to prevent killing or injury to individuals during construction. Due to undertaking such activity towards the end of the reptile active season, it is possible that the translocation effort (currently assessed as 30 days based on the latest population assessment surveys) will not be completed this year and will have to be paused for winter, and restarted in March 2016, weather depending; and
- A Habitat Creation Area for the wider scheme is being created in a former arable field approximately 500 m north of the Site. The habitat creation will include two reptile hibernacula, planting of native trees and hedgerow species, and the creation of two scrapes which will create shallow waterbodies. Landscape planting for the wider scheme (link road and other development plots) is also covered by Planning Condition A1 which requires individual plot landscaping to accord with the "Landscape, Open Space and Ecology Strategy" approved in August 2015.

4.2. Designated Sites and Ancient Woodland

4.2.1. Construction Impacts, Mitigation and Residual Effects

Cherry Tree Row woodland SINC

The construction zone within the Application Site is bordered to the south, east and south-west by Cherry Tree Row Woodland SINC, a locally designated site. There would be short term adverse impacts associated with construction namely the risk of aquatic and dust pollution, however pollution prevention measures will be implemented to minimise these risks. These short-term impacts would not affect the integrity of the designated site. Temporary fencing would be used to avoid accidental incursion into the woodland. There would be a loss of a small areas of goat willow and bramble scrub which borders the woodland to the south-west corner and south east corner of the site to allow for the earthworks to take place and further small areas along the western and eastern boundaries to allow for the construction of the Site and installation of the security fencing. However, the cleared scrub will be allowed to regrow naturally post-construction and a native species mix of buffer planting (detailed in **Appendix F**) will be provided to protect the woodland edges (as stated in the ES and secured by Planning Condition A1 with the submission of a Landscape, Open Space and Ecology Strategy). Therefore, these impacts are assessed as *neutral and not significant*.

4.2.2. Operational Impacts, Mitigation and Residual Effects

Following establishment of the new woodland buffer planting, the operational long term impacts on the SINC habitat are expected to be *neutral and not significant*.

4.3. Main Habitats

4.3.1. Construction Impacts, Mitigation and Residual Effects

The Scheme will result in the permanent loss of 1.95 ha of former arable land and 0.7 ha of field margins. It will also result in the temporary loss of 1060sq m of woodland edge and hedge of woodland edge scrub during construction. The defunct hedgerow at the north of the scheme will be lost but will be replaced at the northern boundary of the Site.

To compensate for the permanent loss of these habitats, the scheme design will incorporate the following features:

- creation of approximately 1,941 m² of matrix planting in the form of woodland buffer, designed to protect the woodland and to benefit biodiversity and at the north of the site designed to replace the defunct hedgerow;

-
- 1,293 m² of species rich grass planting, 291 m² of shrubs and 36 trees, mostly to the front (north) of the Application site;
 - Landscaping design to detail a planting regime; and
 - Retaining walls at the southern end of the site required due to the gradient of slope will be clad in timber with climbing plants such as honeysuckle or wild clematis or screened with additional native tree and shrub planting.

Species and planting mixes are detailed in **Appendix F**. All species will be native species to the UK and of local provenance where possible.

Following maturity, the compensation habitat creation and planting would reduce impacts to a level at which they will not result in any significant effect on the conservation status of the habitats concerned.

4.3.2. Operational Impacts, Mitigation and Residual Effects

Following maturity, the compensation habitat creation and planting would reduce impacts to a level at which they will not result in any significant effect on the conservation status of the habitats concerned.

4.4. Notable Species

4.4.1. Construction Impacts, Mitigation and Residual Effects

Reptiles

The Scheme will result in the loss of the defunct hedgerow running along the northern boundary of the Application Site which currently connects to adjacent woodland via thick bracken at each end. All four common species of reptile are currently present within the hedgerow as confirmed during the presence/absence surveys in 2015 and previously as part of the original ES. It is thought likely that this is a breeding and hibernating site. All life stages of slow worm were recorded. There is therefore a risk of killing and injury to individual reptiles during construction and removal of the habitat.

Reptiles are currently being translocated from the defunct hedgerow to the habitat creation area at the northern end of the wider Dunsbury Hill Farm development site, approximately 500m to the north of the Application Site. Two reptile hibernacula will be constructed in October 2015 in the Habitat Creation Area, to compensate for the habitat lost as part of the wider Scheme and to enhance this field as a receptor site for any reptile translocation required in connection with subsequent Reserved Matters Applications. In addition, new habitats will be created as part of the enhancement proposals for the wider development to provide suitable habitat for reptiles. These will be subject to a long term management plan and would result in an increase in the Dunsbury Hill Farm development site's potential to support reptiles.

Taking into account the agreed mitigation measures detailed above, it is considered that impacts on reptiles would result in *permanent beneficial impact of neutral significance*.

Dormouse

The Scheme will result in the loss of the defunct hedgerow running along the northern boundary of the Application Site which currently provides connective habitat to the woodland on the east side (connectivity to the wider site will still remain). The Scheme will also result in the loss of habitat providing food sources to dormouse (namely bramble scrub) within the hedgerow and woodland edge in the short term, until it either regenerates or replacement habitat has established.

During the 2015 update surveys, four unoccupied dormouse nests were discovered within the western edge of Cherry Tree Row woodland SINC that borders the Application Site (in October 2015). Due to the presence of suitable habitat within the Application Site and previous records of dormice in the area, a dormouse mitigation licence from Natural England will be required before the works in suitable dormouse

habitat (i.e. defunct hedgerow removal and localised cutting back of bramble and willow scrub) can take place. The hedgerow removal is currently programmed for summer 2016.

The timing of works involving vegetation clearance and groundworks in suitable habitat will be carefully planned to minimise risks of killing or injuring individual dormice. This will include:

- Coppicing trees, shrubs and scrub with hand tools with ecological clerk of works present, during the winter months, when dormice would be hibernating at / below ground level and, where practical, removing all material by hand to avoid impacts on dormice; and
- Undertaking ground disturbance, such as grubbing out tree roots and soil stripping after dormice have emerged from hibernation in April/May.

Areas of dormouse habitat that will not be affected by the works will be protected by high visibility fencing to minimise risks of accidental incursion.

A hedgerow will be replanted using a diverse range of native hedgerow species and trees to replace the current defunct species-poor hedgerow. Where possible hawthorn and young standard trees within the current hedgerow will be retained and translocated. The additional buffer planting mentioned under the woodland mitigation section will improve dormice habitat by including species that dormice rely on for feeding, nesting and hibernating, such as hazel, bramble, honeysuckle, blackthorn and elder. Ten dormouse boxes will be erected within Cherry Tree Row woodland SINC to provide additional nesting sites.

The enhancement of existing habitat would provide immediate habitat improvements, helping maintain the local dormouse population while the newly planted areas become established. There would be a slight increase in woodland habitat through the proposed buffer planting which totals 1941 m² and through measures implemented in the wider Dunsbury Hill Farm development site such as hedgerow strengthening, habitat creation, and enhancements of connectivity across the site through a dormouse “underbridge”. Therefore, taking these measures into account, the impacts would be *neutral and not significant*.

Bats

No trees will be directly affected by the Scheme as the construction of the warehouse and associated infrastructure is located within a former arable field, with the exception of possible pruning of an oak branch currently overhanging the heras fencing as advised in the Arboricultural Report²¹ and young standard trees as part of the hedgerow on the northern boundary. Therefore direct impacts on roosting bats can be discounted.

There are currently no existing barriers to foraging and dispersal routes for bats within the Application Site. The field and woodland margins provide good foraging habitats whilst the hedgerow and woodland edges provide good commuting routes. Bat activity was generally low during the update transect surveys in June and July 2015, as they were in previous bat activity surveys in 2010 and 2011. Bats were predominantly foraging and commuting along the woodland edge on the southern and eastern boundaries of the Application Site, in a similar way to observations during the 2010 and 2011 bat activity surveys (when bats were using the western boundary of the site to commute as opposed to the eastern side; this could potentially be explained by the current construction of the link road).

No records of *Myotis* bats were noted during the update transect activity surveys nor during the update passive monitoring in June and July 2015. The Bechstein's bat, an adult female (parous), recorded in the trapping survey in early September 2015 was caught in Cherry Tree Row SINC to the south of the Application Site. It can be inferred that Bechstein's bats are not currently using the field and margins within the Application Site, but are instead foraging in the adjacent woodland and using it to commute between the various woodland SINCS bordering the wider development site.

Construction close to the edges of woodland involves the removal (or coppicing) of small areas of woodland edge willow scrub which may reduce the amount of feeding habitat in the short term, until it either regenerates or replacement habitat has established. New planting in the form of buffer zones on site as well

²¹ Gristwood and Toms (2015) BS5837:2012 Tree Survey Report. Site: Plot 2, Dunsbury Hill Farm, Leigh Park

as in the wider development site along with hedgerow strengthening and habitat creation, will provide compensation for loss of any woodland edge habitat.

Lighting is known to have adverse impacts on some bat species. Adverse impacts caused by light pollution will be minimised by the use of full cut-off luminaires which emit no light above the horizontal. Hoods/cowls and/or louvres will also be mounted on the lighting columns to direct the light to the intended area to be lit only.

During construction, temporary lighting design will minimise light spill into the woodland areas that are used by bats for foraging and commuting. This short-term effect of the construction activities is considered to be of *temporary adverse effect of slight significance*.

4.4.2. Operational Impacts, Mitigation and Residual Effects

Reptiles and Dormouse

The newly created and enhanced habitats on site would be maintained under the management plan for the wider site. The implementation of the management plan is expected to result in a *permanent beneficial impact of neutral significance*.

Bats

As the habitat creation areas mature, foraging and commuting and roosting potential for bats would improve, but this would be compensation for the construction phase habitat loss. Lighting levels can adversely affect some bat species. The lighting design for the Site will aim to minimise light spill. There is virtually no light spill into the woodland on the west and south side with light levels at less than 1 Lux at ground level. There is slightly more light spill into the woodland edge and buffer planting at the south east corner and on the eastern side around lighting columns required for the loading bays, but levels reduce to below 1 Lux further into the woodland. There will therefore be areas of the Site that will become less suitable for foraging bats (namely the northern and eastern boundaries bordering the access road and the loading bays). These areas had low bat activity, and will not include the key areas of retained woodland and buffer habitat to the south of the Site. In addition, the installation of a permanent solid fence along the woodland edges will further protect flight corridors. Therefore, the site would still retain commuting and foraging opportunities for bats. Overall, it is considered therefore, that impacts on bats would be *neutral in the long term*.

4.5. Enhancements

As enhancement, eight Schwegler bat boxes will be erected prior to the commencement of the works on mature trees within Cherry Tree Row SINC to increase opportunities for bats to roost. Locations for bat boxes will be chosen following guidance from the Bat Conservation Trust²². The bat boxes will be a mixture of 1FN and 1FF, both being self-cleaning and suitable for the species recorded on site.

Log and deadwood piles will be created within the woodland margins using wood from any shrubs cleared or woodland canopy pruned as a result of the proposed works in order to create habitat for insects. The locations of log and deadwood piles will be chosen in consultation with a Suitably Qualified Ecologist.

A further ten dormouse boxes will be installed in Cherry Tree Row SINC to enhance this habitat and provide further nesting opportunities.

4.6. Ecological Management and Monitoring Plan

Planning Condition A11 of the outline planning permission states that an Environment and Construction Management Plan is produced for each Phase of development. Such a plan (EMP) will be produced which will detail all of the ecological mitigation and enhancements within the Application Site that will be delivered as part of the construction and operation phases of the Scheme.

²² http://www.bats.org.uk/pages/bat_boxes.html#Putting up your box

This will include the mitigation measures for bats, reptiles and dormice and for woodland habitat. It will detail the planting of the woodland buffer within landscape areas and will include lists of species to be used and how the habitats should be managed to enhance and maintain their nature conservation value.

The Habitat Maintenance and Management Plan will also be updated for each new phase of the wider development site.

5. Conclusion

This EcIA is based on a desk study and ecological surveys undertaken at the wider Dunsbury Hill Farm Site since 2010. The assessment includes the results of a desk study, ecological surveys including extended Phase 1 habitat survey, and update surveys for reptiles, bats and dormouse. The ecological features present within the Survey Area are shown in the Phase 1 habitat survey map and associated target notes with photographs in **Appendix D**.

Potential impacts of the Scheme and the mitigation proposed has taken into account both the assessment of the value of each ecological receptor, the specific legislation relating to habitats and species recorded, the policies within the National Planning Policy Framework (NPPF)²³, and the Local Plan²⁴ and projects.

An approved Habitat Management and Maintenance Plan²⁵ has been discharged under planning condition A1(ii) on a site wide basis.

The mitigation proposed has been agreed with Portsmouth City Council. Table 5 below provides a summary of the EcIA for the Scheme.

Table 5 Summary of Ecological Impact Assessment

Ecological Feature	Survey Results	Nature Conservation Value	Potential Impacts & Effects	Summary of Mitigation	Significance of Residual Effects
Cherry Tree Row woodland SINC	Immediately adjacent to Application Site	County	Pollution - aquatic and dust during construction and aquatic during operation; Loss of woodland edge (willow and bramble scrub) resulting in degraded quality and functionality of the woodland.	-Erect protection fencing during construction to avoid incursion. -Buffer planting. -Compliance with Environment Agency Pollution Prevention Guidelines.	Impacts assessed as neutral and not significant. No residual effects are predicted on the designated site within the EZol.
Bats	Common and soprano pipistrelles, serotine and noctule were recorded on site. Bechstein's bat was trapped on site using a harp trap.	Local Regional	Woodland edge/hedgerow loss; Increased noise during construction; Increased light spill during construction and operation, resulting in loss of foraging and commuting habitat, disturbance from noise and lighting potentially reducing ecological fitness of existing roosting habitat.	-Buffer planting, implementation of lighting design, erection of permanent solid fence. -Minimising light spill onto the woodland, use of night-scented wild flowers to attract insects (prey source) -Consultation with ecologist if any mature trees to be effected.	Construction impacts assessed as having temporary adverse effect of slight significance but impacts on bats would be neutral in the long term. No residual effects predicted on the conservation status of the populations of common and soprano pipistrelle, serotine, noctule and Bechstein's within the EZol.

²³ Communities and Local Development (2012) National Planning Policy Framework

²⁴ <http://www.havant.gov.uk/sites/default/files/documents/ADOPTED%20CORE%20STRATEGY%20.pdf>

²⁵ Habitat Management and Maintenance Plan, (2014) Atkins.

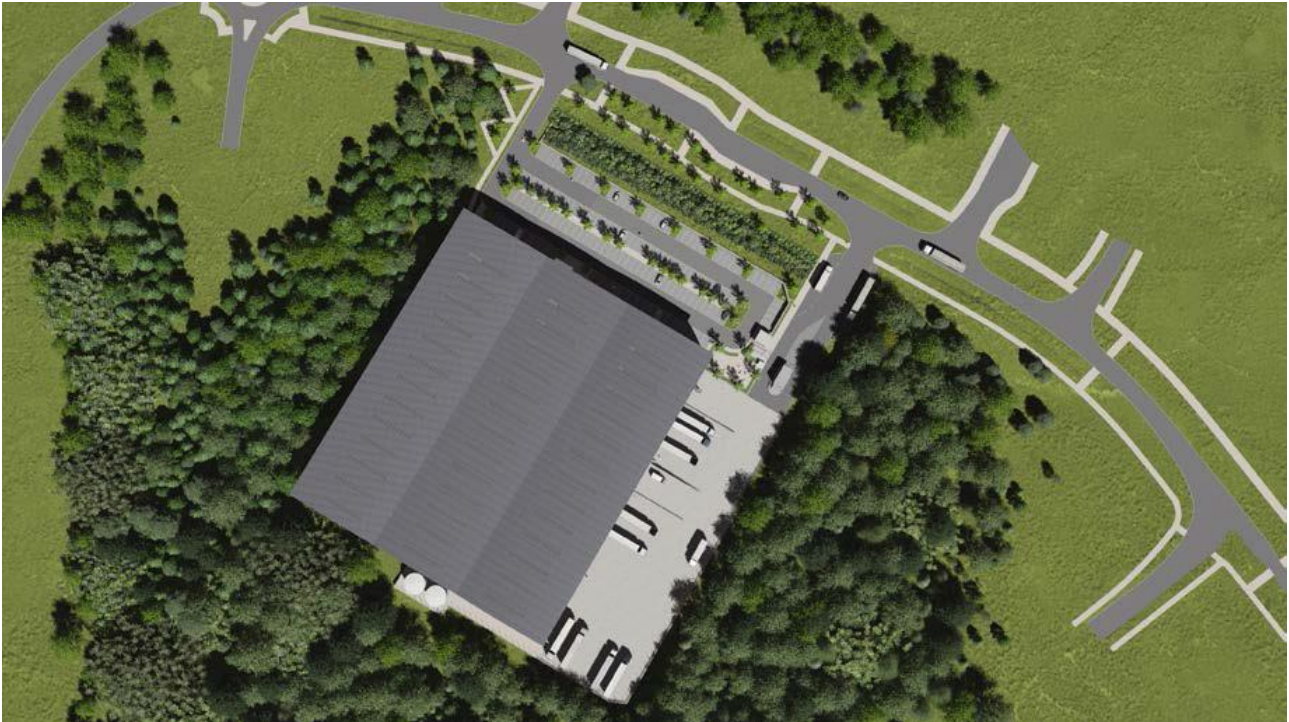
Ecological Feature	Survey Results	Nature Conservation Value	Potential Impacts & Effects	Summary of Mitigation	Significance of Residual Effects
Dormouse	Dormice were found within Cherry Tree Row SINC in 2011 and again in October 2015 (unoccupied nests)	County	Loss of hedgerow and woodland edge resulting in loss of foraging and nesting habitat, and potential killing and injury during construction.	-Vegetation clearance to be kept to a minimum and to be carried out under a European Protected Species Mitigation Licence, -Buffer planting including species to increase food and nesting resource (e.g. hazel, honeysuckle)	Construction impacts assessed as neutral and not significant. Implementation of the management plan is expected to result in a permanent beneficial impact of neutral significance. No residual negative effects predicted on the conservation status of dormouse within the EZol.
Reptiles	All four species of common species of reptiles have been found on site	Local	Loss of hedgerow and woodland edge resulting in risk of killing and injury during construction and permanent loss of reptile foraging, breeding and potentially hibernation habitat.	-Translocation of reptiles from hedgerow to suitable receptor site, -Buffer planting for foraging and shelter, -Creation of two hibernacula in the Habitat Creation Area	Implementation of mitigation and the management plan is expected to result in a permanent beneficial impact of neutral significance. No residual negative effects predicted on the conservation status of the populations of slow worm, common lizard, grass snake and adder within the Ezol.

The Scheme incorporates measures to avoid significant harm to valued ecological features, and where this isn't possible appropriate mitigation has been agreed with Portsmouth City Council to be implemented. The Scheme has included opportunities to incorporate and enhance biodiversity within the proposals. As detailed above in Table 5, the Scheme would not result in any significant residual effects on valuable ecological features. Taking this into account, the Scheme accords with the principles of UK and local planning policy.

Appendices

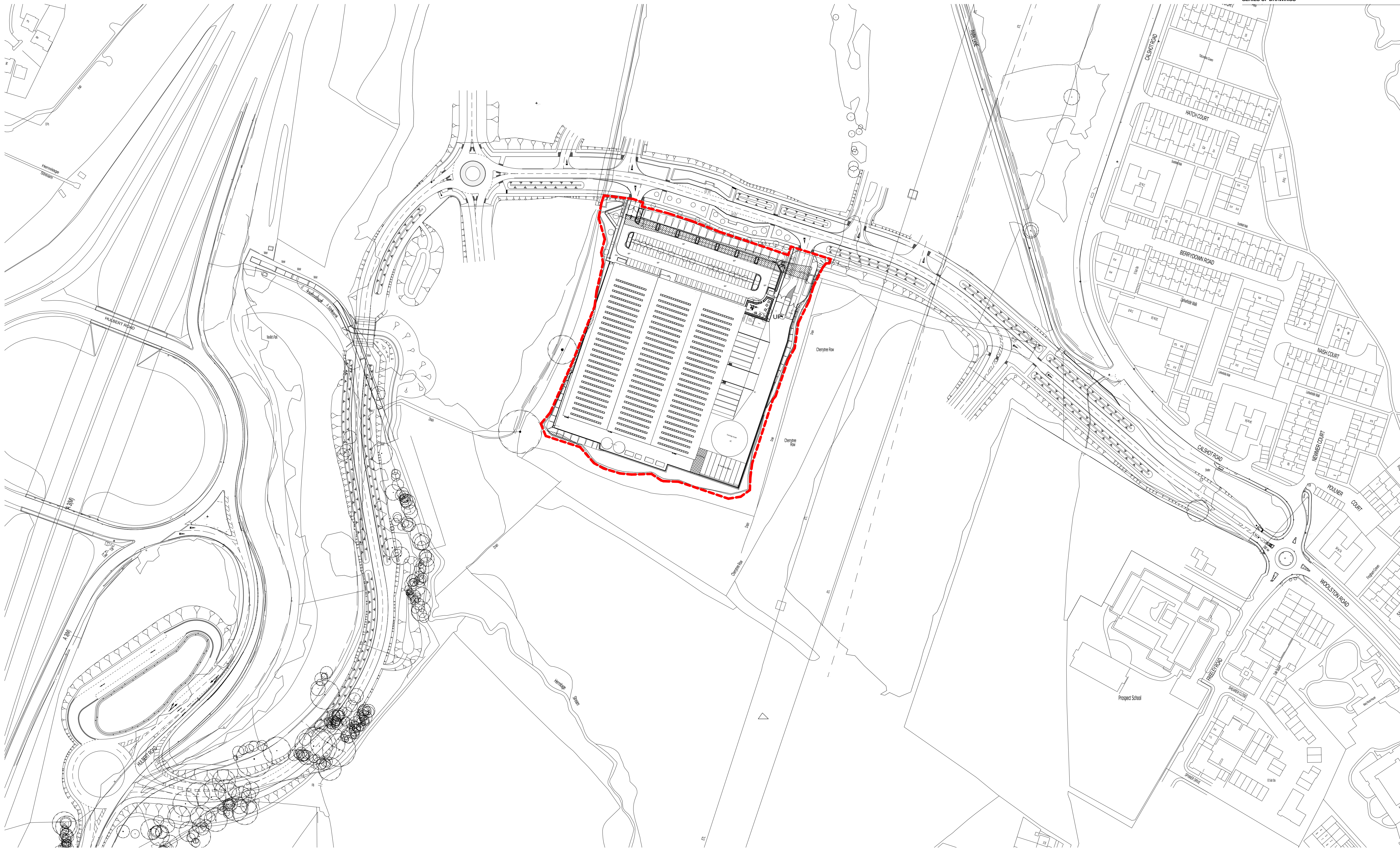
Appendix A. Scheme Drawing

A.1. Development Proposal

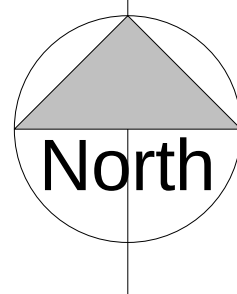


Source: Extract from Access Statement (the access road to the plot is not part of this application as it is covered by the full planning permission and is currently under construction)

A.2. Location Plan showing Planning Application Boundary



1 Location Plan
1 : 1250



----- Application Site

Ordnance Survey Licence Number 100022432

P5	JR	SL	01.10.15	Red Line Boundary Updated and Site plan Updated
P4	JW	SL	30.09.15	Red Line Boundary Updated and Site plan Updated
P3	JR	SL	23.09.15	Building Location Updated
P2	JR	SL	14.09.15	Red Line Boundary Updated
rev	by	chkd	date	description



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project	B8 Warehouse, Plot 2 Dunsbury Hill Farm	drawn	JR	BAM job no.	4487	drp. status	S2
title	Location Plan	checked	SL				
scale	1 : 1250 @ A1	date	26/08/15	originator	zone	level	type
drp / doc ref	DHF-	project code	BAMD- Z2- XX- DR- A-	rate	number	rev.	
					10001	P5	

Appendix B. Methodology of Assessment

B.1. Desk Study

The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk) was reviewed for any new information on designated sites of nature conservation importance (statutory sites only) within 1 km of the Application Site. This was extended to 2 km for internationally designated sites; these being Special Protection Areas (SPAs), Wetlands of International Importance (Ramsar sites) and Special Areas of Conservation (SACs).

Ordnance Survey maps and the *Where's the Path* website (<http://wtp2.appspot.com/wheresthepath.htm>) were used to initially identify the presence of water bodies within 500 m of the Application Site boundary, in order to establish if the land within and immediately surrounding the Application Site could be used as terrestrial habitat for great crested newts. This species typically uses suitable terrestrial habitat up to 500 m from a breeding pond²⁶. However, there is a notable decrease in great crested newt abundance beyond a distance of 250 m from a breeding pond²⁷.

A review of local planning policy relevant to the Scheme was also undertaken as part of the desk study.

B.2. Extended Phase 1 Habitat Survey

An update extended Phase 1 habitat survey was undertaken by two Atkins ecologists on the 18th August 2015 broadly following the Phase 1 habitat survey methodology as set out in Joint Nature Conservation Committee guidance (JNCC, 2010)²⁸. All land within and adjacent to the Application Site (including land up to 50 m from the Application Site boundary (the Survey Area)) was surveyed according to CIEEM guidance²⁹. Plant names recorded in this survey follow Stace (2010)³⁰.

The aim of the survey was mainly to verify that the habitats recorded during the original Phase 1 Habitat survey undertaken as part of the ES for the outline planning application had not changed since, and also to populate a BREEAM report.

The survey also looked for evidence of the presence of invasive plants listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) and subject to strict legal control. The list of invasive plant species included on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) is extensive and these plants are found in a range of different habitats, including aquatic habitats. The extended Phase 1 habitat survey checked for the presence of Japanese knotweed, giant knotweed, hybrid knotweed, giant hogweed, Himalayan balsam, rhododendron and cotoneaster species. Other invasive species, in particular those associated with aquatic habitats may not have been recorded, but it is considered that this survey is sufficient to identify any significant constraints posed by invasive species.

Methodologies for the Phase 2 surveys (namely bats, reptiles and dormouse) can be found in Appendix E.

B.3. Nature Conservation Evaluation

A number of criteria have become accepted as a means of assessing the nature conservation value of a defined area of land which are set out in *A Nature Conservation Review* (Ratcliffe, 1977) and include diversity, rarity and naturalness.

¹⁵ Great Crested Newt Mitigation Guidelines (English Nature, 2001).

²⁷ Natural England. An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt (ENRR576) <http://publications.naturalengland.org.uk/publication/134002>.

²⁸ Joint Nature Conservation Committee (2010) *Handbook for Phase 1 habitat survey - a technique for environmental audit*.

²⁹ Chartered Institute of Ecology and Environmental Management (2012) *Guidelines for Preliminary Ecological Assessment*.

³⁰ Stace, C E (2010) *New Flora of the British Isles*, 3rd edition. Cambridge University Press.

The nature conservation value or potential value of an ecological feature is determined within the following geographic context:

- **International** importance (such as Special Areas of Conservation, Special Protection Areas, Ramsar sites);
- **National** importance (such as Sites of Special Scientific Interest);
- **Regional** for example, Environment Agency regional biodiversity indicators, important features in Natural England Natural Areas;
- **Metropolitan, County, Vice-County or Other Local Authority-wide Area** (such as Local Nature Reserves, Sites of Importance for Nature Conservation, ancient woodlands);
- **Local (parish)** importance (undesigned ecological features such as old hedges, woodlands, ponds); and,
- The **Application Site** e.g. small pond, marshy grassland, mature tree and species-rich hedgerow.

B.4. Impact Assessment

The assessment of the potential effects of the Scheme takes into account both on-site effects and those that may occur to adjacent and more distant ecological features. Impacts can be permanent or temporary and can include:

- Direct loss of wildlife habitats;
- Fragmentation and isolation of habitats;
- Disturbance to species from noise, light or other visual stimuli;
- Changes to key habitat features; and
- Changes to the local hydrology, water quality and/or air quality.

Effects are unlikely to be significant where features of low value or sensitivity are subject to small or short-term impacts. However, where there is a number of small scale effects that are not significant alone, the assessor may determine that, cumulatively, these may result in an overall significant effect. Impacts have been assessed as being either negative or positive and significant or not significant.

For designated sites, effects are considered significant when a project and associated activities is likely to either undermine or support the conservation objectives or condition of the site(s) and its features of interest.

For ecosystems, effects are considered significant when a project and associated activities is likely to result in a change in ecosystem structure and function.

Consideration is given to whether:

- any processes or key characteristics will be removed or changed;
- there will be an effect on the nature, extent, structure and function of component habitats; and,
- there is an effect on the average population size and viability of component species.

Functions and processes acting outside the formal boundary of a designated site has also been considered, particularly where a site falls within a wider ecosystem e.g. wetland sites.

Many ecosystems have a degree of resilience to perturbation that allows them to tolerate some biophysical change. For this EcIA, ecological effects have been considered in the light of any information available or reasonably obtainable about the capacity of ecosystems to accommodate change.

The conservation status of undesignated habitats and species within a defined geographical area is described as follows and has been used in this assessment to determine whether the effects of the proposals are likely to be significant:

- For habitats, conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area
- For species, conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

When assessing potential effects on conservation status, the known or likely background trends and variations in status have been taken into account. The level of ecological resilience or likely level of ecological conditions, that would allow the population of a species or area of habitat to continue to exist at a given level, or continue to increase along an existing trend or reduce a decreasing trend, has been estimated where appropriate to do so.

The mitigation measures described within the EcIA have been incorporated into the design and operational phasing programme and taken into account in the assessment of the significance of effects. These mitigation measures include those required to achieve the minimum standard of established good practice together with additional measures to further reduce any negative impacts of the Scheme. The mitigation measures include those required to reduce or avoid the risk of committing legal offences. In addition to measures required to ameliorate negative impacts on valued ecological features, further biodiversity enhancement measures have been identified and will be incorporated into the Scheme as it is progressed.

Appendix C. Planning Policy and Legislation

C.1. National Planning Policy Framework, 2012

The National Planning Policy Framework (NPPF)³¹ sets out the Governments planning policies for England and how these are expected to be applied by Local Authorities within their Local Development Frameworks (LDF). Chapter 11 of the NPPF 'Conserving and enhancing the natural environment' sets out the requirements to consider biodiversity in planning decisions.

The paragraphs within Chapter 11 relevant to the Scheme are summarised below:

109 *The planning system should contribute to and enhance the natural and local environment by:*

- *Protecting and enhancing valued landscapes, geological conservation interests and soils;*
- *Recognising the wider benefits of ecosystem services; and,*
- *Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.*

114 *Local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife or geodiversity sites or landscape areas will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites, so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks.*

117 *Local planning authorities should set out a strategic approach in their Local Plans, planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure.*

To minimise impacts on biodiversity and geodiversity, planning policies should:

- *plan for biodiversity at a landscape-scale across local authority boundaries; identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation;*
- *promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan;*
- *aim to prevent harm to geological conservation interests; and where Nature Improvement Areas are identified in Local Plans, consider specifying the types of development that may be appropriate in these Areas.*

118 *When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:*

- *if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*

³¹ Communities and Local Development (2012) National Planning Policy Framework

- *proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest;*
- *development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;*
- *opportunities to incorporate biodiversity in and around developments should be encouraged;*
- *planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss.*

C.2. Havant Borough Local Plan

The Havant Borough *Core Strategy Local Development Framework of 2011*³² sets out the policies to be adopted within the Local Authority Area. The Core Strategy includes a number of environment based planning policies. Those relevant to this assessment include:

Policy CS11: Protecting and Enhancing the Special Environment and Heritage of Havant Borough:

Planning permission will be granted for development that:

1. Ensures the key landscape and built form principles set out in the Havant Borough Townscape, Landscape and Seascape Character Assessment are protected and where possible enhanced by partnership working with developers, groups and the wider community.
2. Protects and where possible enhances the borough's statutory and non-statutory designated landscape, habitats and features of biological, hydrological or geological interest. Protection and enhancement will be achieved by appropriate adaptation and mitigation measures including wardening, education and information and the creation of new habitats, water bodies/courses planting of new trees and woodland.
3. Has particular regard to the following hierarchy of nature conservation designations within the borough (as identified on the Proposals Map):
 - (i) Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar [International].
 - (ii) Sites of Special Scientific Interest (SSSI) and National Nature Reserves [National].
 - (iii) Sites of Importance for Nature Conservation (SINC), Local Nature Reserves (LNR), other Ancient Woodland not identified in (ii) above [Local].
4. Protects and where appropriate enhances the borough's statutory and non-statutory heritage designations by appropriately managing development in or adjacent to conservation areas, listed buildings, scheduled ancient monuments, historic parks and gardens, archaeological sites, buildings of local historic or architectural interest.
5. Supports an ongoing programme of survey of habitats and species and designation of Sites of Importance for Nature Conservation.
6. Incorporates partnership working with conservation organisations to improve public understanding of biodiversity and to manage public access to designated sites, particularly on the coast, to reduce harm to nature conservation interests.
7. Incorporates partnership working with landowners and developers to ensure land management practices restore, enhance and where appropriate create new valued landscapes, habitats and their soil structure, particularly the ancient woodland remnants of the Forest of Bere and coastal salt marsh.
8. Protects wildlife habitats and wildlife corridors to prevent the fragmentation of existing habitats and to allow species, for example Brent Geese, to respond to the impacts of climate change by making provision for habitat adaptation e.g. coastal managed realignment and species migration.

³² <http://www.havant.gov.uk/sites/default/files/documents/ADOPTED%20CORE%20STRATEGY%20.pdf>

9. Maintains undeveloped gaps between the settlements of Emsworth/Havant; Havant/Waterlooville; Havant/Portsmouth; Emsworth/Westbourne and Leigh Park/Rowlands Castle as shown on the Proposals Map.

10. Protects the best and most versatile agricultural land that has the greatest potential for local food security.

11. Responds to the emerging evidence from the Solent Disturbance and Mitigation Project, the published recommendations, and future related research.

C.3. Local Biodiversity Action Plans

See Hampshire Biodiversity Action Plan: http://www3.hants.gov.uk/hampshire_bap_vol_2.pdf

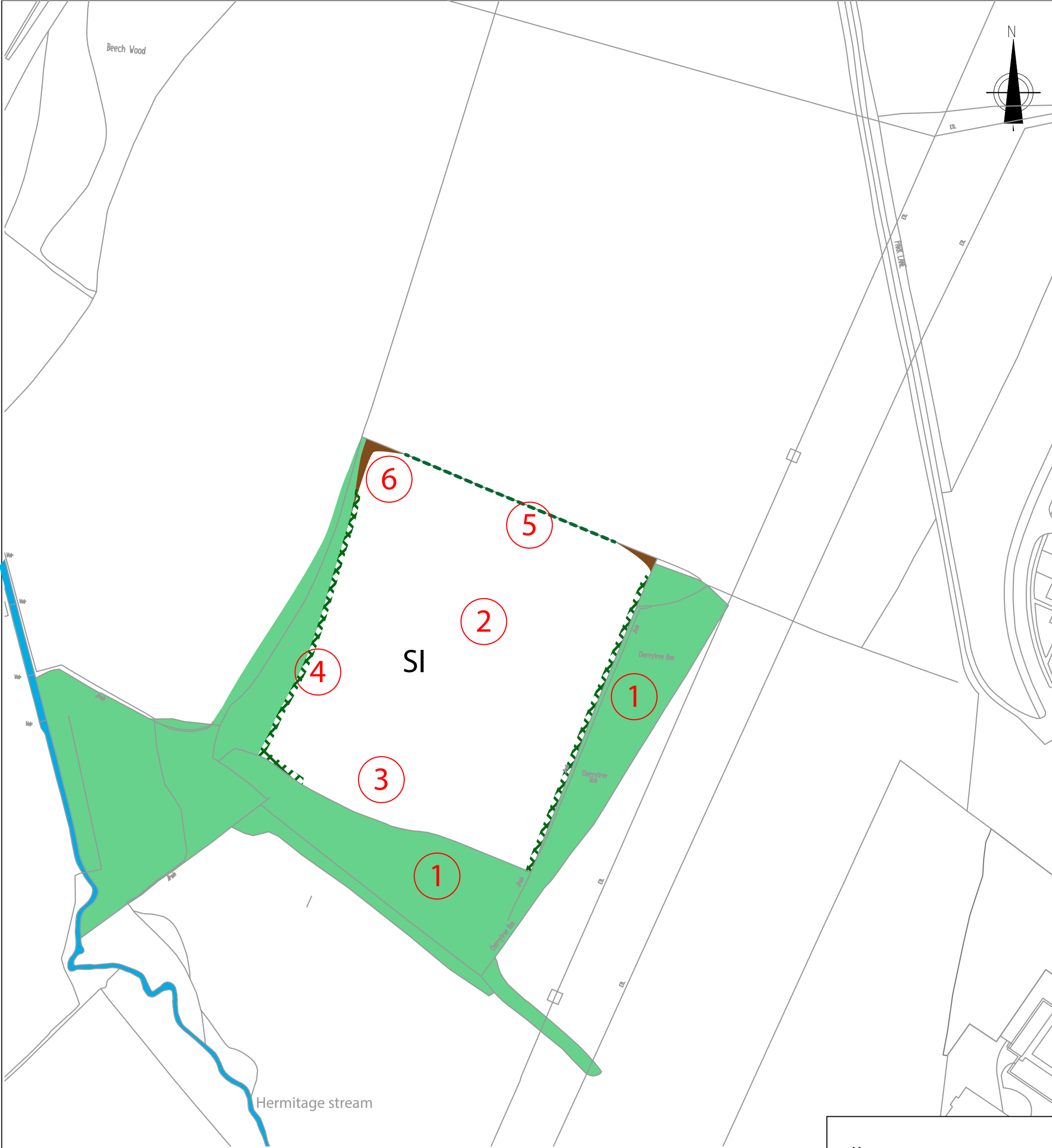
C.4. Summary Table of Relevant Legislation

Species	Legislation (England & Wales)	Offences	Licensing procedures and guidance (England)
Bats <i>European protected species</i>	Conservation of Habitats and Species Regulations 2010 (as amended) Reg 41	Deliberately ¹ capture, injure or kill a bat; deliberate disturbance ² of bats; or damage or destroy a breeding site or resting place used by a bat. [The protection of bat roosts is considered to apply regardless of whether bats are present.]	A Natural England (NE) licence in respect of development is required in England. <i>European Protected Species: Mitigation Licensing- How to get a licence</i> (NE 2010) <i>Bat Mitigation Guidelines</i> (English Nature 2004) <i>Bat Workers Manual</i> (JNCC 2004)
	Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb ³ a bat in such a place.	Licence from NE is required for surveys (scientific purposes) that would involve disturbance of bats or entering a known or suspected roost site.
Badger	Protection of Badgers Act 1992	Wilfully kill, injure or take a badger; or intentionally or recklessly damage, destroy or obstruct access to a badger sett or disturb a badger in its sett. [It is not illegal to carry out disturbance activities in the vicinity of setts that are not occupied.]	Where required, licences for development activities involving disturbance or sett interference or closure are issued by Natural England. Licences for activities involving watercourse maintenance, drainage works or flood defences are issued under a separate process. Licences are normally not granted from December to June inclusive because cubs may be present within setts. <i>Badgers & Development</i> (NE 2007)
Dormouse <i>European protected species</i>	Conservation of Habitats and Species Regulations 2010 (as amended) Reg 41	Deliberately ¹ capture, injure or kill a dormouse; deliberate disturbance ² of a dormouse; or damage or destroy a breeding site or resting place used by a dormouse.	A Natural England licence in respect of development is required in England. <i>European Protected Species: Mitigation Licensing- How to get a licence</i> (NE 2010) <i>Dormouse Conservation Handbook</i> (English Nature 2006)
	Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb ³ a dormouse in such a place.	Licence issued for survey and conservation by Natural England.

Birds	Wildlife and Countryside Act 1981 (as amended) S.1	Intentionally kill, injure or take any wild bird; intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built; intentionally take or destroy the nest or eggs of any wild bird. [Special penalties are liable for these offences involving birds on Schedule 1 (e.g. most birds of prey, kingfisher, barn owl, black redstart, little ringed plover).] Intentionally or recklessly disturb a Schedule 1 species while it is building a nest or is in, on or near a nest containing eggs or young; intentionally or recklessly disturb dependent young of such a species.	No licences are available to disturb any birds in regard to development. Licences are available in certain circumstances to damage or destroy nests, but these only apply to the list of licensable activities in the Act and do not cover development. General licences are available in respect of 'pest species' but only for certain very specific purposes e.g. public health, public safety, air safety.
Adder Common lizard Grass snake Slow worm	Wildlife and Countryside Act 1981 S.9(1) and S.9(5)	Intentionally kill or injure any common reptile species.	No licence is required in England. However an assessment for the potential of a site to support reptiles should be undertaken prior to any development works which have potential to affect these animals.
Rabbits, foxes and other wild mammals	Wild Mammals (Protection) Act 1996	Intentionally inflict unnecessary suffering to any wild mammal.	Natural England provides guidance in relation to rabbits (TIN003, Rabbits- management options for preventing damage, July 2007) and foxes (which are also protected under the Wildlife and Countryside Act 1981 from live baits and decoys, see TAN43 April 2005 and TAN08 April 2005) as well as other wild mammals; see Natural England's website for the list of 'Regulatory Guidance, Best Practice and Information'. Lawful and humane pest control of these species is permitted.

Appendix D. Extended Phase 1 Habitat Survey Plan and Target Notes

D.1. Figure 1 – Phase 1 Habitat Map



Key

-  Broadleaved Semi-natural woodland
-  Scrub
-  Continuous bracken
-  Species-poor defunct hedge
-  Ecological target note
- SI Species-poor semi-improved grassland

Figure No 1
Ecology Phase 1 Habitat Survey Map

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 **Portsmouth**
CITY COUNCIL

Dunsbury Hill Farm Plot 2.

Sheet Size	Original Scale	Designed/Drawn CP	Checked	Authorised
A3	NTS @ A3	Date 05/10/2015	Date 06/10/2015	Date 06/10/2015
Status	Drawing Number			Rev
I	001			-

D.2. Target Notes and Photographs

Target Note Reference	Description and photograph
1	Cherry Tree Row SINC - Broad-leaved Semi-Natural Ancient Woodland. Dormouse and bats known to be present.  Photo - view looking south east to the SINC
2	Former Arable and grazed Field. Clear differentiation between previously arable land which is now <i>Agrostis</i> species dominated grassland, and the original field margins. Roe deer frequently observed.  Photo – View looking north

3	Southern boundary of field is wetter grassland with scattered soft and hard rush and marsh thistle. (Roe deer present too)  Photo looking west along southern boundary of woodland SINC
4	Continuous scrub bordering the woodland comprising mainly of brambles and goat willow 

5	The Northern boundary comprises a defunct hawthorn hedge with bramble and one standard semi mature oak tree at the eastern end. Vernacular name - Adder Hedge. Common reptiles including adder known to be present and are to be translocated. The hedge joins Cherry Row SINC at the eastern end.  Photo – View looking east
6	The north west corner of Plot 2 is dominated by bracken – providing excellent habitat common reptiles especially adders. An access route for small machinery has been created at this point  Photo – view looking north west from Plot 2

D.3. Figure 2 - Development Plan



H Site boundary amended	PC	02-10-15
G Site plan amended following client comments	PC	29-09-15
F Building adjust for fire access	PC	23-09-15
E Revised after client comments	PC	14-09-15
D Revised after client comments	PC	9-09-15
C Revised after client comments	PC	7-09-15
B Cycle route, sprinkler tanks and fire escapes added	PC	2-09-15
A Building updated	PC	1-09-15

drawing status: Planning			
project: B8 Warehouse Dunsbury Hill Farm			
job number: LP2018			
drawing title: B8 Warehouse, Dunsbury Hill Farm Landscape Proposals			
drawing number: LP2018-LA-WS-L-90-02			
revision	scale	date	
H	1:250	25-08-2015	
for information		drawn	date
for construction		PC	JP

Appendix E. Phase 2 Survey Results

At the time of writing this report, bat and reptile surveys have been completed and the final dormouse survey is scheduled for mid-October. A summary of the methodology and findings can be found below.

E.1. Update Dormouse Surveys

On the 9th June 2015, 50 dormouse nest tubes were installed in suitable habitat on the edge of the Application Site by a suitably qualified ecologist. Monthly checks of the nest tubes were carried out monthly between June and October inclusive, in suitable weather conditions. Four dormouse nests were found during the October 2015 check. No other signs of dormice nor small mammals were found. Full results are detailed in the technical note below.

E.2. Update Reptile Surveys / Population Assessment

On the 9th June 2015, 40 artificial refugia (combination of bitumen felt tiles and metal sheets) were installed by a suitably qualified ecologist on either side of the defunct hedgerow that borders the northern end of the site. Monitoring of the refugia started one week later (to allow for the refugia to “bed in”), with 20 visits scheduled to take place between June and September, to allow for an assessment of the population of reptile species present on site, in view of a translocation exercise. Visits were carried out in suitable weather conditions, and low numbers of slow worms, adders, common lizard and grass snakes were recorded, including juveniles. After 18 visits it became necessary to commence the translocation of reptiles and the survey results were considered to be sufficient to advise trapping effort. Full results are detailed in the technical note below.

E.3. Bats

E.3.1. Update bat activity surveys and passive monitoring

The update bat activity survey work was completed in August and a Technical Note detailing results can be found below.

E.3.2. Trapping Survey

On the 7th September 2015, a trapping survey took place at Cherry Tree Row SINC, within the strip of woodland that borders the southern edge of the Application Site. The survey was led by licensed consultant Gareth Harris, using the following equipment:

- 1x triple high mist net (6m),
- 1x triple bank harp trap with one AR125 lure,
- 1x 6m mist net with one AR125 lure,
- 1x 9m mist net.

The equipment above was installed and the nets were open just before sunset (19:37). The survey ended at 23:00 due to low temperatures and low bat activity.

Two bats were caught: an adult female Bechstein’s and a female common pipistrelle. Details of the captures and a photograph of the Bechstein’s bat can be found in the table below. Activity on site during the trapping survey was generally very low.

Date /time 7/9/15		Location: Dunsbury park, Havant			Nets: (MN, HT, TH): 1x triple high (6m), 1x 3bank Harp, 1x6m mist, 1x9m mist. 2x AR125 lures			Weather conditions (wind, cloud cover, temperature, moon): still dry, 15C falling to 10C, 0-1/8ths cloud					
Extracted by	Processed by	Time	Bat/bat weight	Bag weight	Species	Sex	Age	F/arm	Sexual Maturity	Ring number	Ringer	Comment	Which trap
GOH	CD	2105	25.5	21	45PIP	F	A	32.3	parous	n/a			harp with lure
GOH	CD	2215	27	17.5	BECHS	F	A	42.8	parous but probably not bred this year	H5585	GOH	mites/bat flies	harp with lure (playing Bechstein's social call)



TECHNICAL NOTE

Project:	Dunsbury Hill, Havant	To:	Chloe Delgery, Atkins Ltd
Subject:	Dormouse Survey	From:	Sam Munslow
Date:	28 th October 2015	cc:	Charlotte Phillips, Atkins Ltd

Background

Ecological Survey & Assessment Limited (ECOSA) were commissioned by Atkins Ltd to undertake an updating dormouse survey between June and October (inclusive) 2015 at a parcel of land at Dunsbury Hill, Havant. Atkins had previously carried out dormouse surveys at the site in 2010 and, due to positive results and the proposed development impacting upon this species, had obtained a European Protected Species (EPS) Mitigation licence. Due to the amount of time that has lapsed since the original 2010 survey was undertaken, and the fact that development of the site is now imminent, ECOSA were appointed by Atkins to update the dormouse survey. This Technical Note presents the methodology and results of the dormouse survey carried out by ECOSA during 2015.

Survey Methods

A total of 50 nest tubes were placed in suitable habitat across the site on the 9th June 2015 (**Appendix 1**). The survey area was pre-determined by Atkins and is the same survey area as that during the 2010 surveys, comprising woodland and hedge along field margins of a site located Dunsbury Hill, Havant. A suitably experienced and qualified ecologist checked the nest tubes on four occasions during July, August, September and October 2015. **Table 1** provides details of the surveys carried out. The dormouse survey was undertaken in accordance with best practice guidance set out in the Dormouse Conservation Handbook¹.

¹ Natural England (2006) Dormouse Conservation Handbook. Peterborough



Table 1: Phase 2 dormouse surveys

Survey Date (2015)	Temperature	Weather Conditions
9 th June (tube distribution)	18°C	Sunny with some cloud, 20% cloud cover, light wind
24 th July	15°C	Light rain, 100% cloud cover, light breeze
27 th August	16°C	Overcast, 100% cloud cover, light breeze
17 th September	21°C	Patchy cloud, bright and warm, 35% cloud cover, light wind
9 th October	17.5°C	Sunny and clear, 0% cloud cover, no wind

Survey Limitations

Opportunities for nest tube distribution were somewhat restricted at the site due to the nature of the habitat, (mainly woodland habitat rather than hedgerows, with few horizontal branches available for attaching tubes). Even spacing of the tubes was therefore not always possible across the site. It is not considered that this limitation poses any risk to the validity of the survey results.

Results

Four dormouse nests were found in dormouse four of the artificial nest tubes located along the western boundary of the site. No actual dormice were recorded during any of the site visits in 2015 and no other evidence of small mammals was recorded in any of the nest tubes on any survey occasion. During the 24th July survey, an adult common lizard was found in one of the nest tubes. The results of the Phase 2 dormouse survey are presented in **Table** . The dormouse survey area is shown on a sketch map within **Appendix 1**.

Table 2: Phase 2 dormouse survey results

Survey Date (2015)	Nest	Individual	Notes
24th July	-	-	Common lizard found in Tube 12
27th August	-	-	-
17th September	-	-	-
9th October	Tubes 14, 16, 18 and 23	-	-

Appendix 1 Map Showing Dormouse Survey Area

This map shows the City of London with ten designated locations for refugia. Each location is labeled with its name and the number of refugia it contains:

- Location A**: 5 Refugia
- Location B**: 10 Refugia
- Location C**: 10 Refugia
- Location D**: 2 Refugia
- Location E**: 11 Refugia
- Location F**: 8 Refugia
- Location G**: 5 Refugia
- Location H**: 5 Refugia
- Location I**: 2 Refugia
- Location J**: 10 Refugia

A handwritten note "Car Not Ref" with an arrow points to Location D. A route is marked with numbers 1 through 10 around Location J. The map also features a north arrow and a scale bar from 0 to 300m.

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KEY

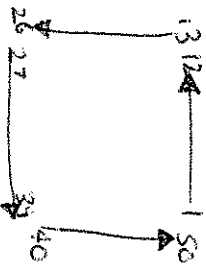
	PLANTING APPLICATION BOUNDARY
	LOCATION OF ARTIFICIAL REPTILE REFUGIA

Please note:
This plan uses an earlier version of the planning application boundary.
Please see correct planning application boundary on Figure 1.2 of the ES.

Phase 2 Dormouse Survey – Tube Distribution Form

Site: <u>Dunshing HT</u>		Date: <u>7/6/15</u>
Recorder: <u>EV</u>	PM: <u>5M</u>	Time: <u>10:00</u>
Risk Assessment Checklist completed? <u>W</u>		

Weather: <u>Windy, some cloud</u>	Temp: <u>18°C</u>
Cloud Cover (%): <u>20%</u>	Wind Speed/Dir: <u>1-3 mph</u>
Map with locations completed ☒	
Number of Tubes Installed: <u>50</u>	
Comments / Information: <u>See attached plan but basically:</u>	



Office Use Only		
Received	Logged	Survey No.
10.6.15	HT	of

TECHNICAL NOTE

Project:	Dunsbury Hill, Havant	To:	Chloe Delgery, Atkins Ltd
Subject:	Reptile Survey	From:	Sam Munslow
Date:	8 th October 2015	cc:	Charlotte Phillips, Atkins Ltd

Background

Ecological Survey & Assessment Limited (ECOSA) were commissioned by Atkins Ltd to undertake reptile surveys between June and September inclusive 2015 at a parcel of land at Dunsbury Hill, Havant. The surveys were aimed at assessing the status of reptiles at the site. This Technical Note presents the findings of the reptile survey work carried out by ECOSA during the 2015 surveys. The remit was to provide the methods and results of the surveys undertaken. The findings of these surveys will then be incorporated into an ecological assessment which will be compiled by Atkins.

Survey Methods

The reptile survey consisted distributing a total of 40 bitumen tiles (roofing felt) approximately 500 millimetres (mm) x 500mm in size in areas of suitable habitat; the survey location was pre-determined by Atkins and comprises a section of hedgerow (see **Appendix 1** Atkins map, location J). The survey mats were laid along the northern and southern edges of the hedgerow.

The refugia were distributed across the site on the 9th June 2015. An additional seven metal tins were distributed on the 14th July 2015 to replace a small number of refugia which were found to be missing during one of the visits. These refugia were left to 'bed in' for seventeen days and were subsequently inspected for reptiles on eighteen occasions. The original remit was for 20 visits but as the translocation exercise was to be carried out during 2015, it was deemed not necessary to complete all 20 visits. During each survey visit the species, sex (if possible) and age of all reptiles encountered was recorded. The details of weather conditions for each Phase 2 reptile survey date are provided in **Table 1**.

Preliminary Ecological Appraisals • Phase 1 and 2 Surveys • NVC • EclA • Management Plans • Protected Species Licensing
Habitats • Badger • Bats • Dormouse • Birds • Reptiles • Amphibians • Invertebrates • Riparian and Aquatic Species

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Table 1 Details of the Phase 2 reptile survey

Survey Date	Air Temperature (°C)	Weather Conditions
26 th June 2015	16	70% cloud cover, sunny, no wind
30 th June 2015	18	0% cloud cover, clear skies, gentle breeze
7 th July 2015	18	40% cloud cover, sunny, no wind
14 th July 2015	16	100% cloud cover, cloudy, cool, light wind
20 th July 2015	18	100% cloud cover, cloudy, light rain, no wind
27 th July 2015	17	100% cloud cover, cloudy, no wind
31 st July 2015	17	20% cloud cover, clear, no wind
3 rd August 2015	18	100% cloud cover, cloudy, no wind
7 th August 2015	18	40% cloud cover, sunny, no wind
21 st August 2015	18	100% cloud cover, overcast, no wind
27 th August 2015	16	100% cloud cover, cloudy, light wind
2 nd September 2015	15	100% cloud cover, cloudy, gentle wind
4 th September 2015	13	0% cloud cover, clear, damp, no wind
7 th September 2015	15	95% cloud cover, sunny, no wind
9 th September 2015	16	100% cloud cover, cloudy, no wind
11 th September 2015	17	50% cloud cover, sunny, no wind
14 th September 2015	16	30% cloud cover, sunny, clear, wet, no wind
16 th September 2015	15	100% cloud cover, overcast, no wind

Survey Limitations

A number of the refugia were found to have been disturbed along the northern side of the hedgerow during the site visit on the 7th July 2015; these had been accidentally mown during routine grassland management. The destroyed tiles were replaced with metal tins on the 14th July 2015. This is not considered a significant limitation, given the small number of refugia affected, the fact that this happened relatively early on in the survey period and the number of surveys unaffected by the disturbance.

Results

Small numbers of slow-worm *Anguis fragilis*, adder *Vipera berus* and grass snake *Natrix natrix* were identified during the Phase 2 reptile survey, confirming the presence of reptiles at this site. A summary of the Phase 2 reptile surveys undertaken is provided in **Table 2**. The survey recorded peak counts of 23 adult slow-worm, three adult adder and one juvenile grass-snake along the hedgerow surveyed. Occurrences of common lizard *Zootoca vivipara* were found outside of the Phase 2 reptile surveys during a Phase 2 dormouse survey (the individual was found inside a dormouse tube on the south-western corner of the field) and also during the installation of the reptile fence on the 17th September 2015; one adult common lizard was seen on each of these occasions.

Table 2: Summary of Phase 2 reptile survey results at land at Dunsbury Hill, Havant

Survey Date	Number of Individuals Recorded*			
	Slow-worm	Adder	Grass snake	Common lizard
26 th June 2015	22 (2)	0	0	0
30 th June 2015	4	0	0	0
7 th July 2015	1	1	0	0
14 th July 2015	8 (1)	0	0	0
20 th July 2015	15 (2)	1	0	0
27 th July 2015	15 (2)	1(1)	0	0
31 st July 2015	15 (1)	0	0	0
3 rd August 2015	17(1)	2	0	0
7 th August 2015	3(2)	3	0	0
21 st August 2015	28(2)	2	0	0
27 th August 2015	1(1)	0	0(1)	0
2 nd September 2015	2	0	0	0
4 th September 2015	7(6)	1	0	0
7 th September 2015	6	0	0	0
9 th September 2015	10(2)	1	0	0
11 th September 2015	9(1)	1	0	0
14 th September 2015	1(1)	0	0	0
16 th September 2015	2(3)	0	0	0
Adult Peak Count	28	3	0	0

* Juvenile numbers provided in brackets

Conclusion and Recommendations

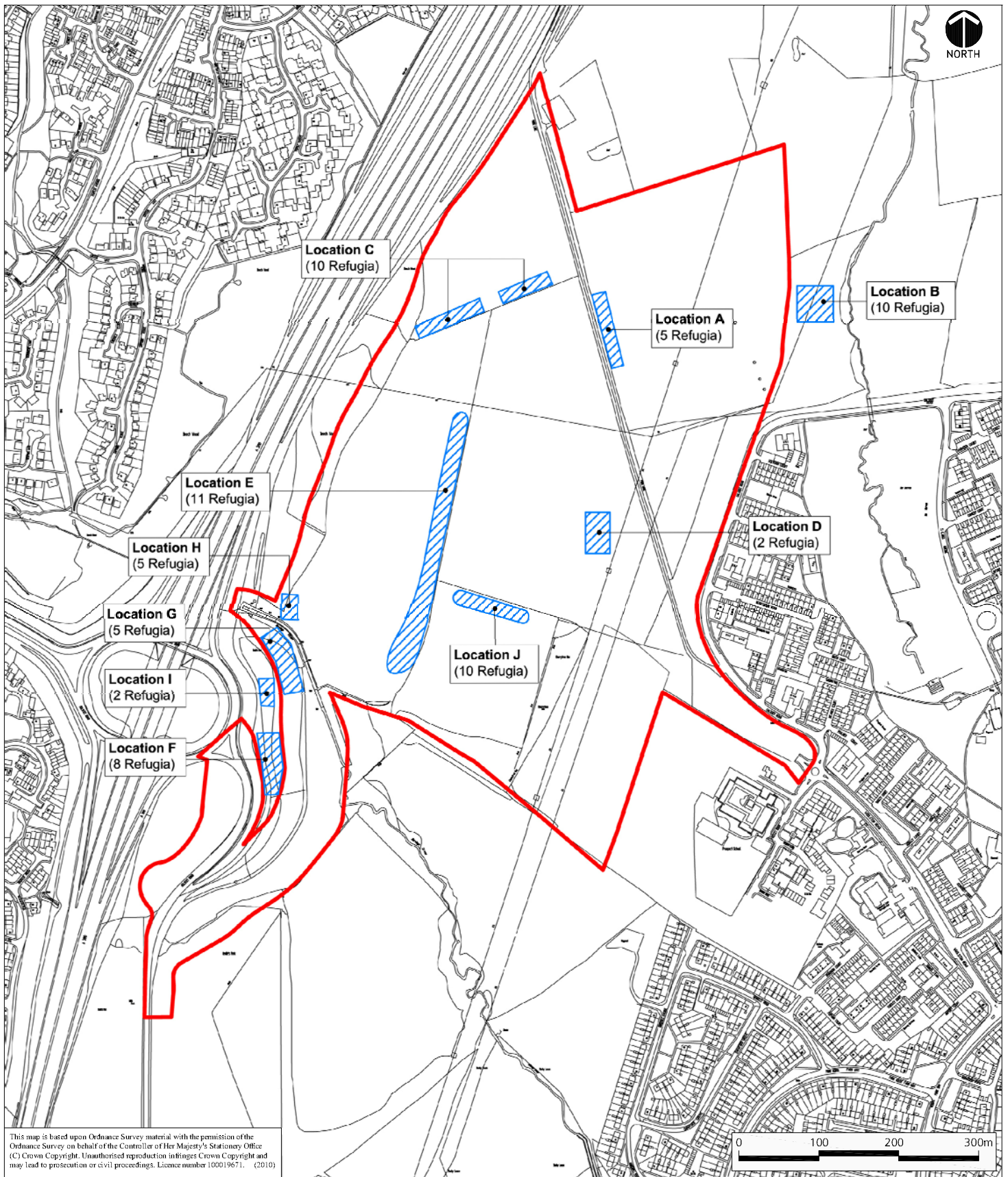
A total of 40 reptile refugia were laid in suitable habitat across the site and checked by a suitably experienced ecologist for reptiles on eighteen occasions during favourable weather conditions between June to September 2015 inclusive.

Populations of slow-worm, adder and grass snake were identified during the survey. Two adult common lizard were also recorded on site, one during a dormouse survey (within a tube) and one during the reptile fence installation. A peak count of 28 adult slow-worm, three adder and one grass snake were recorded on a single survey occasion. Adults and juveniles of slow-worm, adder and grass snake were found during the surveys, suggesting reptiles are breeding within the hedgerow. The hedgerow also provides suitability for hibernating reptiles.

The proposed works will result in the loss of this hedgerow and as such, translocation of reptiles is required. A receptor site, north of the site, has been identified and prepared by Atkins ecologists. The translocation of reptiles had commenced at the time of writing this report (translocation commenced on the 28th September 2015). Based on the results of the survey, a total of 30 consecutive days are anticipated to be needed for the translocation. The translocation will continue, however, until five clear days has been achieved.

Once the translocation has been completed, the hedgerow and around of grassland at the base of the hedgerow, will be sensitively cleared under ecological supervision.

Appendix 1 Map Showing Location of Reptile Refugia



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KEY

-  PLANNING APPLICATION BOUNDARY
-  LOCATION OF ARTIFICIAL REPTILE REFUGIA

Please note:

This plan uses an earlier version of the planning application boundary. Please see correct planning application boundary on Figure 1.2 of the ES.

Dunsbury Hill Farm Reptile Survey Location Figure 15C.1

Not to Scale
December 2011

TECHNICAL NOTE

Project:	Dunsbury Hill, Havant	To:	Chloe Delgery, Atkins Ltd
Subject:	Bat Surveys – Automated and Transects	From:	Sam Munslow
Date:	2 nd September 2015	cc:	

Background

Ecological Survey & Assessment Limited (ECOSA) were commissioned by Atkins Ltd to undertake transect and automated bat surveys during June and July 2015 at a parcel of land at Dunsbury Hill, Havant. The surveys were aimed at establishing the level of foraging and commuting bats at the site. This Technical Note presents the findings of the bat survey work carried out by ECOSA during the 2015 surveys. The remit was to provide the methods and results of the surveys undertaken. The findings of these surveys will then be incorporated into an ecological assessment which will be compiled by Atkins.

Survey Methods

The two transect surveys were carried out at the site on the 29th June and 20th July 2015 (see Table 1 for survey details). The transect surveys were punctuated by regular point counts, during which, the surveyors stopped walking for a period of three minutes to record bat activity at that point. The transect route and point count locations were agreed with Atkins prior to the surveys taking place, incorporating the site boundaries and traversing the centre of the site (Appendix 1). During the transect surveys, one surveyor was equipped with a Pettersson D240X time-expansion bat detector linked to an Edirol RO-9 recording device for the full duration of each survey

In addition to transect surveys, automated monitoring was undertaken at the end of June and end of July 2015 using two remote bat detectors placed within suitable bat foraging and commuting habitat on site. Two Wildlife Acoustics Song Meter 2 (SM2) detectors were deployed at two agreed locations (**Appendix 1**).

The SM2 detectors were secured along the eastern and southern site boundaries at a height of 2-4m using bungee cords and covered with camouflage material for security reasons. The microphones were positioned to face outwards towards the nearest open space and the detectors left to record

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Registered Office: 3-4 Eastwood Court, SO51 8JJ Registered in England No: 6129868



continuously for three full consecutive nights during the survey periods. Recording times were from 30 minutes before sunset until sunrise the following morning (see **Table 2** for survey details).

Table 1 provides details of the transect survey dates and weather conditions. **Table 2** provides details of the automated detector survey dates and weather conditions.

Table 1 Transect Survey Timings

Survey Date	Survey Type	Duration	Weather Conditions	Sunset/ Sunrise Time
29 th June 2015	Transect	21:06-23:14	0% cloud cover, 17.9-12°C, dry with no wind	21:21
20 th July 2015	Transect	21:00-23:00	100% cloud cover, 21.5-20.5°C, dry with wind force 4	21:07

Table 2 Automated Detector Survey Timings

Period	Date	Weather Conditions*					Sunrise	Sunset
		Temperature (°C)			Wind (km/h)	Rain (mm)		
		High	Low	Mean				
June 2015	29 th June 2015	21	11	16	6	0	04.54	21.21
	30 th June 2015	26	9	18	7	0	04.54	21.21
	1 st July 2015	28	16	22	11	0	04.55	21.21
July 2015	24 th July 2015	14	12	13	6	0	05.19	21.02
	25 th July 2015	19	10	14	13	0	05.20	21.01
	26 th July 2015	17	12	14	10	0	05.22	20.59

*Data sourced from www.wunderground.com

Data Analysis

Recordings made with the Pettersson detectors during the transect surveys were later analysed using Sonobat[®] (v2.9.7) to confirm the identity of any species encountered.

At the end of each automated survey period, the remote bat detector was retrieved from the site, data was downloaded and then analysed using Analook[®] v. 3.7.20. This software is used to analyse a high volume of sound files efficiently, and to 'tag' each file with a bat species name to species or genus level. The automated detector produces recordings, each of these recordings is then analysed individually and the bat species present are tagged. Non-bat 'noise' files are kept on file but not tagged. Each discrete recording of a species is called a registration. The data can then be exported to Microsoft Excel[®] for manipulation using pivot tables. This facilitates a detailed data analysis of various parameters.

The number of registrations recorded is not a measure of the number of bats present at each location; the number of registrations can only be used to provide a quantitative assessment of the level of bat activity at a particular location (i.e. the greater the number of registrations, the greater the level of bat activity), and the data cannot differentiate between, for example, a single bat passing the detector 10

times or 10 bats passing the detector on a single occasion. Sonobat® (v2.9.7) was used to confirm the species identity for any ambiguous bat calls. Where suitable recordings were obtained, bats were identified to species level wherever possible.

Results

Transect Survey Results

The two bat transect surveys recorded three species of bat at the site: common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and noctule *Nyctalus noctula*.

The highest number of registrations detected overall were those of common pipistrelle. Activity levels within the site were unexpectedly low on the first transect, with an overall increase in activity during the second transect. Bats recorded were predominantly foraging and commuting along the woodland edge on the southern and eastern boundaries of the site. A number of common pipistrelle social calls were also heard during both transects. No bat activity was recorded in the centre of the site. Bat transect survey results are detailed in **Table 3**.

Table 3: Bat Activity Recorded during the Transect Surveys

Survey Date	General Bat Activity at the Site
29 th June 2015	Overall, 9 passes of bat were recorded. A total of seven common and two soprano pipistrelle were recorded during the survey. The first pass was that of noctule, recorded at 21.37 at the south-western site corner; this was the only noctule registration for the duration of the survey. The last pass, common pipistrelle, was recorded at 22.31. Activity during the survey was dominated by common pipistrelle. All bats recorded were associated with the site boundaries, mainly the southern and eastern woodland margins. No bats were recorded along the northern or western edges of the site. There were no bat registrations within the centre of the site.
20 th July 2015	Overall, a large amount of foraging and commuting activity was recorded, mainly common pipistrelle. The first pass was recorded at 21.39, common pipistrelle, and the last at 22.44, again common pipistrelle. Foraging and commuting activity was near constant along the woodland edges on the eastern and southern edges of the site with species recorded in this area wholly comprising common and soprano pipistrelle. One noctule pass was recorded at 22.39 near the south-western site corner. No bats were recorded in the centre of the site.

Automated Bat Detector Survey Results

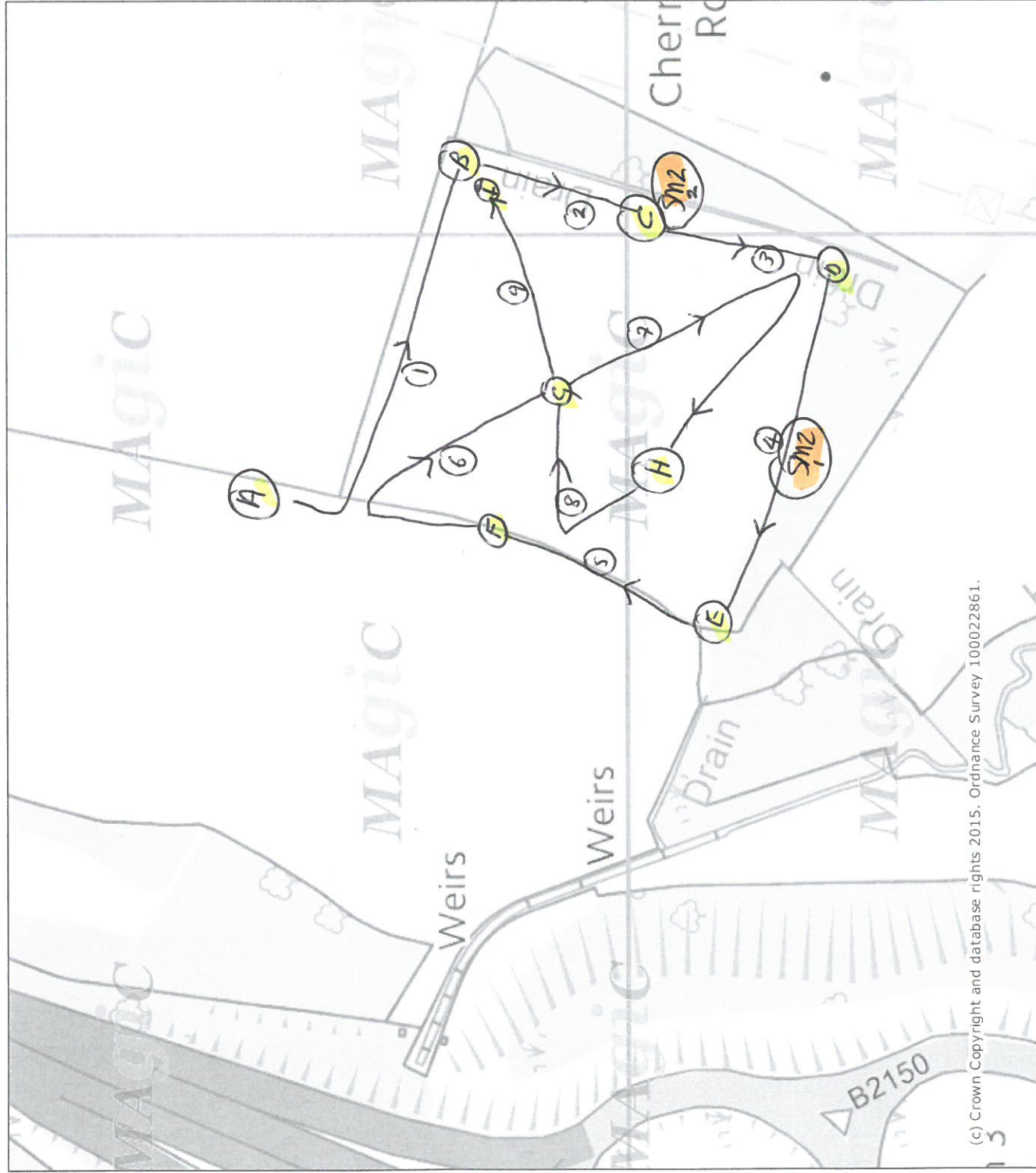
The automated bat detector survey results represent over 48 hours of remote monitoring per recorder, recording 944 bat registrations of five species: common pipistrelle, soprano pipistrelle, serotine *Eptesicus serotinus* and noctule. No particularly rare bat species were recorded and the number of bat registrations recorded and diversity of bat species is considered relatively low given the rural location of the site.

Common pipistrelle was the species most frequently recorded, representing 95% of all bat activity. Detailed species accounts are provided in **Table 4**.

Table 4: Species Numbers Recorded During Each Survey Period

Species	Survey Period	No. of Registrations	% of Registrations
Common pipistrelle	June 2015	211	22%
	July 2015	685	73%
	Total	896	95%
Noctule	June 2015	11	1%
	July 2015	0	-
	Total	11	1%
Serotine	June 2015	12	1%
	July 2015	0	-
	Total	12	1%
Soprano pipistrelle	June 2015	24	3%
	July 2015	1	0.1%
	Total	25	3%

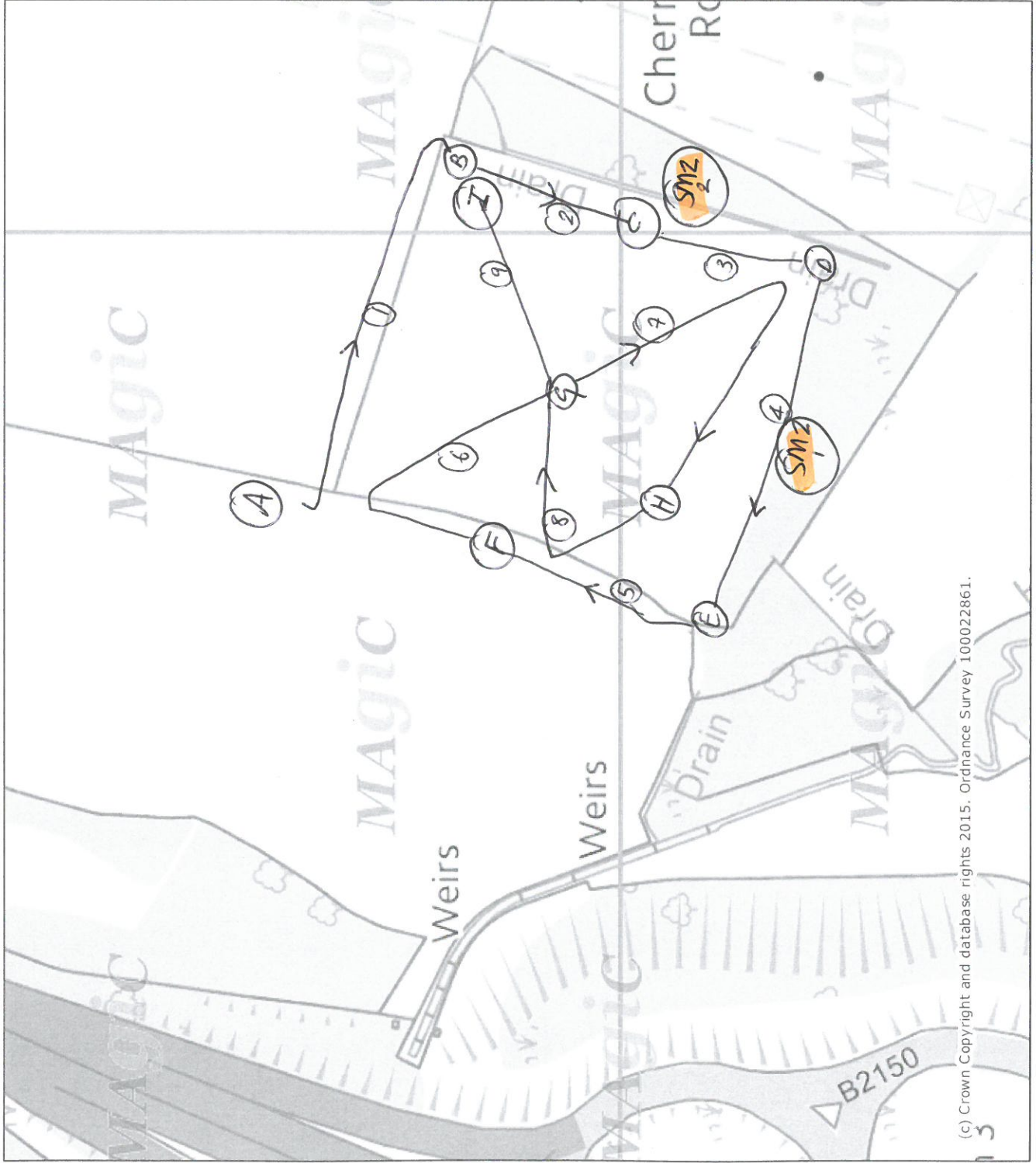
Appendix 1 Transect Route and SM2 Locations



- SM2 LOCATIONS
- POINT COUNTS
- DIRECTION OF TRANSECT

Projection = OSGB36
 xmin = 469400
 ymin = 108800
 xmax = 470300
 ymax = 109300

Map produced by MAGIC on 1 September, 2015.
 Copyright resides with the data suppliers and the map must not be reproduced without their permission. Some information in MAGIC is a snapshot of the information that is being maintained or continually updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.



- SMZ LOCATIONS
- POINT COUNTS
- DIRECTION OF TRANSECT

Projection = OSGB36
 xmin = 469400
 ymin = 108800
 xmax = 470300
 ymax = 109300

Map produced by MAGIC on 1 September, 2015.
 Copyright resides with the data suppliers and the map must not be reproduced without their permission. Some information in MAGIC is a snapshot of the information that is being maintained or continually updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.

Appendix F. Native Species Planting List and Site plan

F.1. Native Species Planting List

Buffer Planting Woodland

Rowan
Field Maple
Hazel
Crab apple
Alder (southern wet woodland boundary)
Goat willow (southern wet woodland boundary)
Grey willow (southern wet woodland boundary)

Buffer planting Shrubs

Hawthorn
Blackthorn
Holly
Spindle
Guelder rose
Elder

Climbers (introduce in existing woodland edge and use on retaining wall)

Dog Rose
Honeysuckle
Wild clematis

Landscape planting Trees (car park)

Hornbeam
Oak (Fastigiata variety)
Silver Birch
Field Maple

Hedge Species

Hazel
Field Maple
Hawthorn
Spindle
Blackthorn
Oak
Dog Rose
Honeysuckle

Grass seed mixes.

1) Species rich grassland suitable for semi shade under woodland canopy requiring little management.

A suitable mix would be EM10 Tussock mixture' (or similar approved) (<http://wildseed.co.uk/mixtures/view/10/tussock-mixture>). This contains approximately 25 species of wildflowers and grasses, 7 species of which are found on the site already.

2) For amenity areas

Woodland edge seed mix (or similar approved)

<https://www.habitataid.co.uk/woodland-edge-seed-mix>

Plug planting could be used if the topsoil is not stripped to reduce arable weeds.

F.2. Site Plan Showing Planting

Tree Planting

Large standard trees (20-25cm girth) will be used to the north of the building for the car park and adjacent access roads. The following species will be used to compliment the new main access road planting- *Carpinus betulus* 'Streetwise', *Quercus robur* 'Fastigiata', *Betula pendula* and *Acer campestre* 'Streetwise'.

Native Shrub Planting to Car Park

A simple palette of native shrubs will be used in the car park including *Hedera helix*, *Rosa canina*, *Lonicera periclymenum*, *Cornus sanguinea* and *Viburnum opulus*. The shrubs will typically be 3 litre containers planted at 3 per m². Within the areas of *Hedera*, under planting of *Narcissus pseudonarcissus* will add additional interest.

Hedge Planting

Hawthorn hedging, *Crataegus monogyna*, will be planted around the staff rest area to screen the space from the car park. The hawthorn will be planted as 1.5 to 1.8m high, root balled stock in a double staggered row at 45cm centres. A post and wire netting fence 1.5m high will run down the middle of the hedge to provide support and prevent access through the hedge.

Matrix planting -Woodland

Name	Common Name	Percentage of mix
<i>Acer campestre</i> (t)	Field Maple	5%
<i>Corylus avellana</i>	Hazel	25%
<i>Crataegus monogyna</i>	Hawthorn	25%
<i>Euonymus europaeus</i>	Spindle Tree	5%
<i>Ilex aquifolium</i>	Holly	5%
<i>Lonicera periclymenum</i>	Honeysuckle	5%
<i>Malus sylvestris</i> (t)	Crab apple	5%
<i>Rosa canina</i>	Dog Rose	5%
<i>Sambucus nigra</i>	Elder	5%
<i>Sorbus aucuparia</i> (t)	Rowan	5%
<i>Viburnum opulus</i>	Guelder Rose	10%

Matrix planting- Wet Woodland

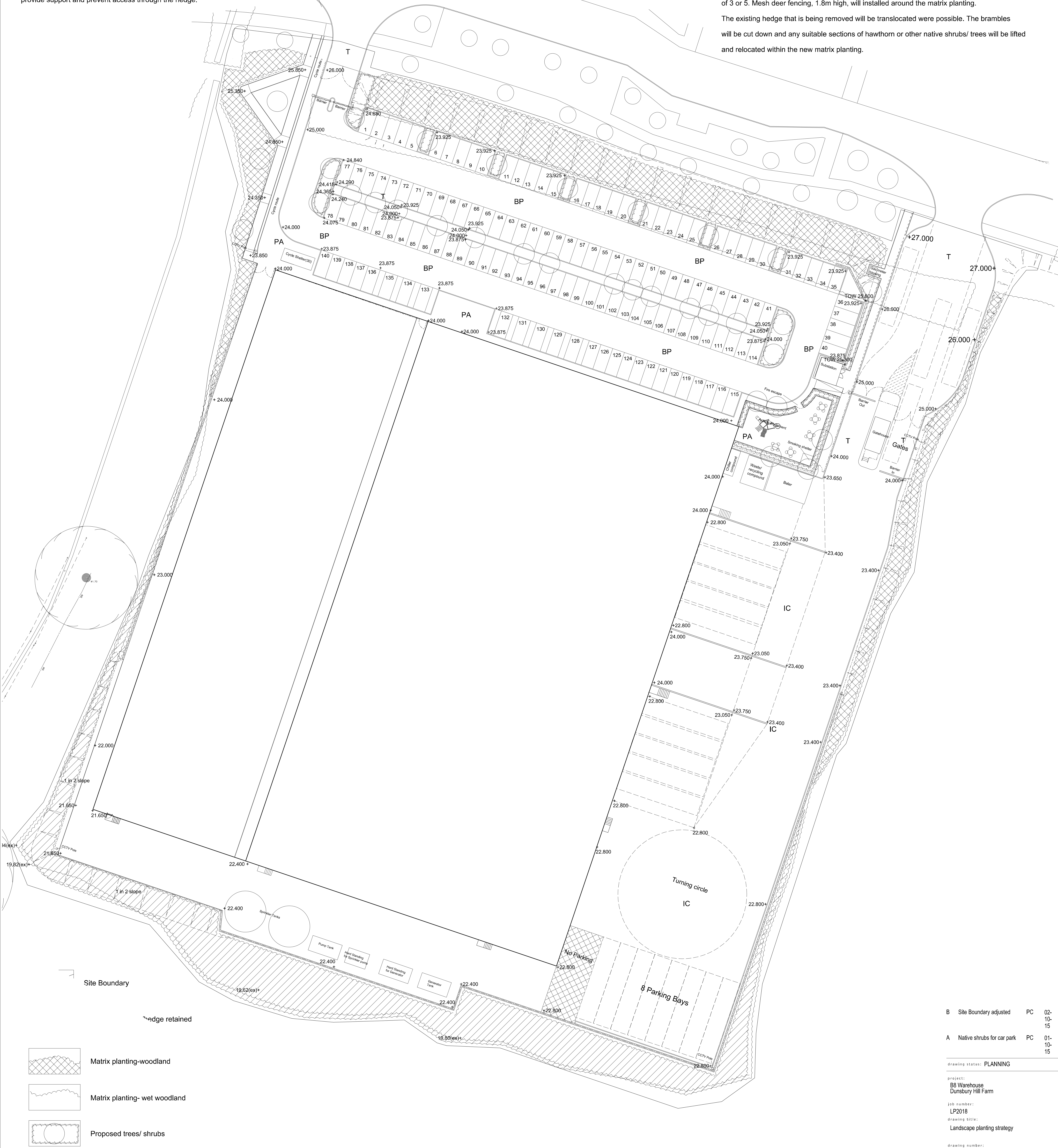
Name	Common Name	Percentage of mix
<i>Acer campestre</i> (t)	Field Maple	5%
<i>Alnus glutinosa</i> (t)	Alder	20%
<i>Crataegus monogyna</i>	Hawthorn	10%
<i>Ilex aquifolium</i>	Holly	5%
<i>Rosa canina</i>	Dog Rose	5%
<i>Salix caprea</i>	Goat Willow	20%
<i>Salix cinerea</i>	Grey Willow	20%
<i>Sambucus nigra</i>	Elder	5%
<i>Viburnum opulus</i>	Guelder Rose	10%

Matrix Planting Specification

Planting arranged on 1.5m grid, shrubs typically 45-60cm transplants with shrub guards, tree species (t) typically 1.5 to 1.8m feathered bare root stock with spiral guards.

Shrubs arranged randomly in groups of 5, 7 or 9. Trees arranged randomly in groups of 3 or 5. Mesh deer fencing, 1.8m high, will be installed around the matrix planting.

The existing hedge that is being removed will be translocated were possible. The brambles will be cut down and any suitable sections of hawthorn or other native shrubs/ trees will be lifted and relocated within the new matrix planting.



B	Site Boundary adjusted	PC	02-10-15
A	Native shrubs for car park	PC	01-10-15
drawing status: PLANNING			
project: B8 Warehouse Dunsbury Hill Farm			
job number: LP2018			
drawing title: Landscape planting strategy			
drawing number: LA-WS-L-90-03			
revision	scale	date	
B	1:500 @ A2		
for information	drawn	date	
for construction	GL	PC	29-09-15

WARNING

Significant hazards continue to be identified in the architectural design shown on this drawing. It is the responsibility of the client to ensure that the design is safe and that the construction is in accordance with the design. It is the responsibility of the client to ensure that the design is safe and that the construction is in accordance with the design.

Significant hazards are defined as:

- Hazards that may be life threatening or cause significant damage to property or the environment.
- Hazards that may be life threatening or cause significant damage to property or the environment.
- Hazards that may be life threatening or cause significant damage to property or the environment.

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