

NW Bicester

An application for the exemplar phase of the
NW Bicester Eco Development proposals submitted by
P3Eco (Bicester) Limited and the A2Dominion Group

Environmental Statement Volume 3: Appendices



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P3 Eco (Bicester) Ltd and A2Dominion Group

Bicester Eco Development

Exemplar Environmental Statement

Volume 3: Appendices

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Two handwritten signatures in black ink. The first signature is "CSmith" and the second is "Julia Faure Walker".

Approver Andrew Saunders

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Report No 0505-UA001881-UP31R-01

Date November 2010

This report has been prepared for P3 Eco (Bicester) Ltd and A2Dominion Group in accordance with the terms and conditions of appointment for Exemplar Environmental Statement dated May 2010. Hyder Consulting (UK) Limited (2212959) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

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2 August 2010

Dear Sir or Madam

Bicester Eco-town Exemplar Site: Environmental Impact Assessment (EIA) Request for Screening and Scoping Opinion

We are writing on behalf of our clients, P3 Eco and A2 Dominion, regarding the need for and scope of an Environmental Impact Assessment to accompany the outline planning application for the Bicester Eco-town Exemplar Site.

The proposed site is 33ha, and works will comprise of the following:

- approximately 400 residential units;
- a Care Home (Class C2);
- a primary school;
- B1(a) office accommodation;
- retail units (class A1 – A5);
- social and community facilities within class D with associated means of access;
- car parking;
- landscape;
- amenity space; and
- service infrastructure.

Further details of the proposals, including a location plan and site boundary are provided in the attached report.

This is a formal request for a screening opinion under Regulation 5(1) of the Town and Country Planning (Environmental Impact Assessment) Regulations 1999 (as amended). We note that a response to this formal request is required to be made within three weeks.

Given the nature and scale of the proposed development, we understand that it is likely that an EIA will be required, and we therefore also request a formal opinion on the scope of the assessment. We have prepared a Scoping Report for the Exemplar Site of the Eco-town development, which outlines the key constraints identified and our proposed approach to assessment for each topic. We kindly request that your formal scoping response be provided within the statutory period of five weeks.



However, in the meantime, we are proceeding with our assessment of the Exemplar Site, in line with the approach outlined in the attached Scoping Report, and would therefore welcome interim discussions and comments on our proposed approach.

If you have any queries, please do not hesitate to contact me on the direct dial provided above or by e-mail at caroline.soubry-smith@hyderconsulting.com.

Yours sincerely

A handwritten signature in black ink, appearing to read "CSmith".

Caroline Soubry-Smith
Principal Environmental Consultant

Enc Bicester Eco-town Exemplar Site Scoping Report

Bicester Eco Town - Exemplar Site

Environmental Impact Assessment




Scoping Report



Bicester Eco Town - Exemplar Site

Environmental Impact Assessment

Scoping Report

Author	Various, compiled by Julia Bentley	
Checker	Caroline Soubry-Smith	
Approver	Julian Galloway	
Report No	0501-UA001881-UA31R-01	
Date	19 July 2010	

This report has been prepared for P3 Eco Ltd and A2 Dominion in accordance with the terms and conditions of appointment for Bicester Ecotown. Hyder Consulting (UK) Limited (2212959) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

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1 INTRODUCTION

1.1 Background

In July 2009, the Department for Communities and Local Government published 'Planning Policy Statement (PPS): eco-towns' a supplement to PPS1 Delivering Sustainable Development. The PPS1 supplement includes requirements relating to sustainability, affordable housing, low and zero carbon technologies and public transport.

Within the PPS1 supplement, eco-towns are to provide as sustainable developments of at least 5,000 homes with other ancillary developments to include one job per household. Four 'first wave' locations were identified with the potential to have an Eco-town; including north-west Bicester.

The Eco-towns PPS outlines the Government's objectives for planning that are set out in PPS1 and include:

1. *"To promote sustainable development by:*
 - *ensuring that eco-towns achieve sustainability standards significantly above equivalent levels of development in existing towns and cities by setting out a range of challenging and stretching minimum standards for their development, in particular by:*
 - *providing a good quantity of green space of the highest quality in close proximity to the natural environment*
 - *offering opportunities for space within and around the dwellings*
 - *promoting healthy and sustainable environments through 'Active Design'¹ principles and healthy living choices*
 - *enabling opportunities for infrastructure that make best use of technologies in energy generation and conservation in ways that are not always practical or economic in other developments*
 - *delivering a locally appropriate mix of housing type and tenure to meet the needs of all income groups and household size, and*
 - *taking advantage of significant economies of scale and increases in land value to deliver new technology and infrastructure such as for transport, energy and community facilities.*
2. *To reduce the carbon footprint of development by:*
 - *ensuring that households and individuals in eco-towns are able to reduce their carbon footprint to a low level and achieve a more sustainable way of living."*

The north-west Bicester Eco-town is being developed by P3 Eco and A2 Dominion, and lies within the jurisdiction of Cherwell District Council (Cherwell DC). Part of the eco-town development comprises the Exemplar Site development. This is being brought forward as the first phase of the project and is proposed for the north-eastern edge of the Eco-town development area. This Scoping Report has been prepared in relation to this Exemplar Site development, therefore it does not relate to the full extent of the Eco-town site.

¹ Active Design – www.sportengland.org/planning_active_design

1.2 Need for an Environmental Impact Assessment (EIA)

EIA is a procedure for ensuring that the likely environmental effects of a new development are properly understood by the public and relevant competent authorities before a decision is made to grant planning consent. Under The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 as amended (hereafter, the EIA Regulations), the proposal is considered to be a “Schedule 2” development which will require a formal EIA due to its scale and proximity to sensitive areas. Each outline planning application will therefore be accompanied by an ES.

1.3 Purpose and Structure of this Document

While there is no statutory requirement to undertake or report on scoping of an EIA, it is considered that defining and agreeing the scope of the EIA is one of the most critical parts of the planning process in that it sets the context for the detailed assessment that follows and ensures that it conforms to the requirements of the EIA Regulations. Consequently, the objectives of the scoping process undertaken for the development and reported in this document are to:

- Identify the topics and issues that are proposed to be the focus of the EIA
- Eliminate any topics and issues not requiring further consideration and which would therefore not be taken further in the EIA
- Define the scope of the study for each of the topics and issues to be considered
- Identify the methodologies being followed for conducting baseline studies
- Identify the methodologies being followed for predicting environmental effects and for evaluating the significance and severity of environmental effects
- Identify the methods to be adopted for incorporation of mitigation and other environmentally driven modifications into the design, as it develops
- Identify consultees to be included in the data collection and the EIA process

Following this Introduction, the report is structured as follows:

- Chapter 2 briefly describes the site and its context, including project nature and purpose
- Chapter 3 outlines the main environmental topics to be considered, the key issues and the further data collection required. For each topic, a definition of the study area, summary of existing site description, potential impacts, potential mitigation measures, proposed methodologies and consultations have been included
- Chapter 4 provides a summary of the Scoping Report

Baseline information has been gathered through desk top studies, including websites and previous project reports. No primary data collection has currently been undertaken.

2 THE PROJECT

2.1 Site Description

The town of Bicester lies approximately 24km to the northeast of Oxford, and 28km to the southeast of Banbury. The M40 runs approximately 2km to the southwest, with Junction 9 providing access to the town via the A41.

Bicester is served by two railway stations; namely Bicester North and Bicester Town. Chiltern Railways operate services from Bicester North between Birmingham Snow Hill and London Marylebone. Branch line services to Oxford (via Islip) operate from Bicester Town. This lies to the south of the town and uses the old Varsity Line track between Oxford and Cambridge.

The eco-town site lies to the north west of Bicester, approximately 1.5km from the town centre, and comprises an area of approximately 413ha. The site, shown on Figure 2.1, currently comprises Grade 3 agricultural land and contains a number of farmhouses and other buildings, as well as a small area of employment land along Howes Lane. The railway line runs in a north west to south east direction through the middle of the site. The villages of Bucknell and Caversfield are located to the north and east of the site respectively.

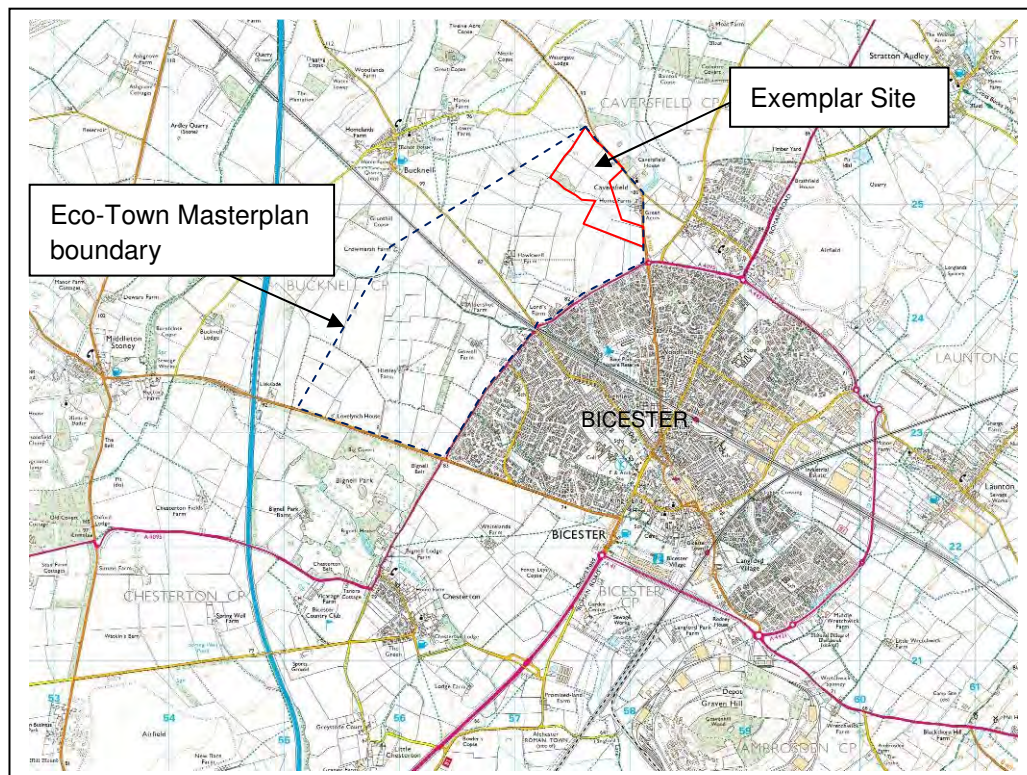


Figure 2.1: Site Location Plan

Figure 2.2 illustrates the site boundary for the Exemplar Site, comprising two main zones for development and a zone in between to allow a connection between the developments. This Site lies within the whole Eco-town site boundary, at its north-eastern edge, and lies due north of Bicester town. The Exemplar Site boundary runs alongside the B4100, and covers an area of approximately 33ha, of which 18.48ha lies within the two zones for development.

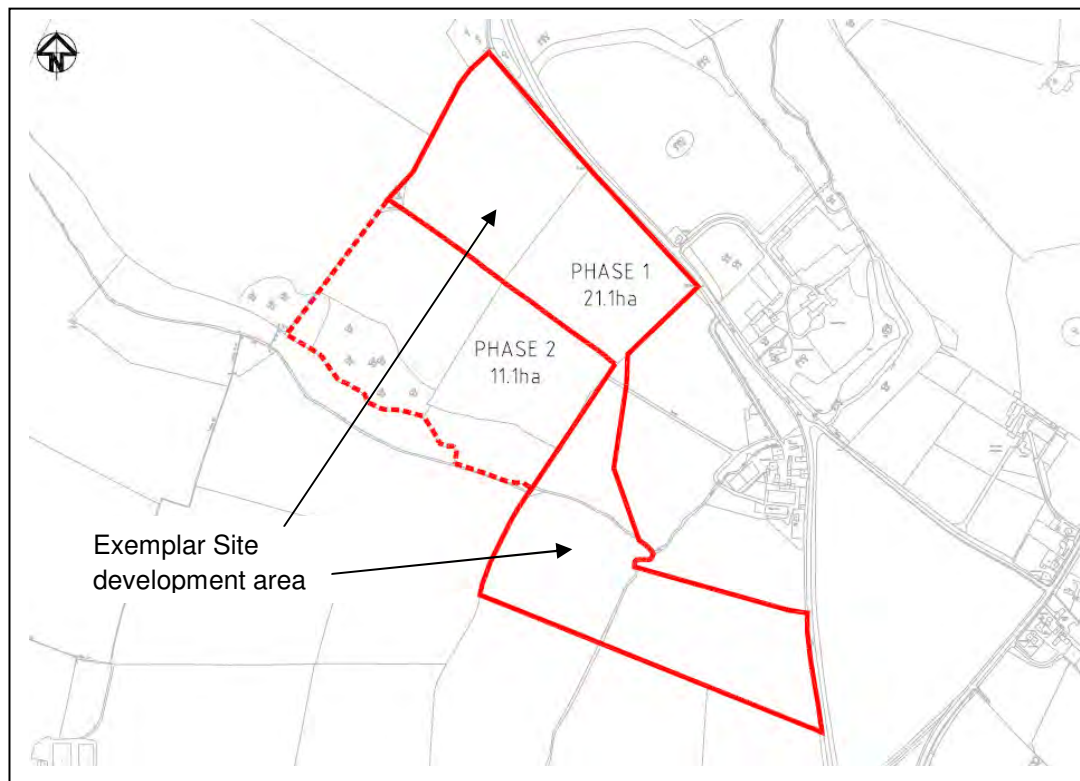


Figure 2.2: Exemplar Site Plan

2.2 Background to the Development

P3Eco Ltd, who have options to acquire land to the north west of Bicester, and have selected A2Dominion as its development partner for the promotion and implementation of the Exemplar Site scheme, and also as affordable housing partner in respect of the wider master plan proposals. The land at north west Bicester is identified in the Supplement to PPS1 entitled 'Eco-towns' (July 2009) as a location for a potential Eco-town.

P3Eco are promoting the overall site for a development comprising an Eco-town through the Cherwell Core Strategy DPD. Within the Core Strategy, Cherwell District Council have identified that an eco-development of 5,000 homes and jobs will be developed on land at north west Bicester, with 3,200 to be delivered in the period to December 2026.

This need is reflected in the emerging Core Strategy (at policy NWB1 of the Preferred Options Draft), which identifies land at north west of Bicester as a strategic site for the provision of an Eco-Development. The emerging policy also identifies that land at north west of Bicester is to:

- Provide a development of 5,000 homes
- Create a development that will be a zero carbon development as defined in the PPS
- Deliver a high quality local environment taking into account climate change adaptation
- Homes that achieve at least Level 4 of the Code for Sustainable Homes

- Access to one employment opportunity for each new dwelling within easy reach by walking, cycling and / or public transport
- Encouraging trips originating from the development to be made by means other than the car with potential to rise to 50%
- 40% of the total gross site area will be provided as green space of which half will be public open space

It is the Council's intention to identify the land at north west Bicester as a strategic location in the Core Strategy and thus obviate the need for a further allocation in the site allocations DPD or similar. The boundary of land that comprises the north west Bicester Eco-Development allocation is defined at Appendix "6" of the emerging Core Strategy.

The PPS1 supplement advises that it is for the local planning authority to decide whether it wishes to meet its strategic housing requirements by way of Eco-town or alternative means (para. ET3.1). Proposals for Eco-towns are to be brought forward through the preparation of the Core Strategy and related DPDs (para. ET4.1). However, where proposals are submitted in advance of the Core Strategy the policies set out in the Supplement are material (para. ET5.1).

Further, PPS3 requires Council's to identify land that is available, suitable and achievable. The purpose of this document is to respond to the emerging policy and demonstrate the deliverability of the site, having regard to paras. 54 and 69 of PPS3.

The Emerging Policy Requirement

The emerging Core Strategy sets out the Council's proposed development strategy for meeting the development needs of the Borough for the period to 2026. Bicester and Banbury are identified as the main centres for growth and development. The draft Core Strategy (February 2010) identifies the need to make provision for 13,400 new homes by March 2026 (policy H1).

The Vision for Bicester (chapter B.1) seeks to develop the town to become an important economic centre in its own right within the Central Oxfordshire sub-region and on the Oxford-Cambridge arc. Furthermore, the vision indicates that north west Bicester will contribute greatly to improving Bicester's profile by being a pioneering development, an economic driver and by delivering environmental gains (paragraphs B.13, B.14 and B.15). Furthermore, the emerging Core Strategy at paragraphs B.3 and B.4 indicates that by 2026 Bicester's town centre will have been redeveloped and environmental and highway improvements will have been made to Market Square. The detailed proposals for Bicester are to be addressed either through an Area Action Plan ('AAP') or a Supplementary Planning Document ('SPD').

The proposals for north west Bicester are consistent with this vision and policy objective.

Land to the north west of Bicester is identified at policy NWB1 to provide some 5,000 dwellings in total with 3,200 by December 2026 in an Eco-town, together with schools, local centres and facilities, a care home, B1 office accommodation, retail units and health care facilities along with other ancillary developments.

P3Eco and A2Dominion support the identification of land to the north west of Bicester for development and will continue to engage with the Council through the preparation of the Core Strategy and related policy framework.

The purpose of this brief is to set out the principles of the development of the Eco-town at north west Bicester, to help inform the preparation of the Core Strategy and related policy documents. The brief will inform the preparation of a masterplan for the site and related planning applications.

2.3 The Exemplar Site Proposals

The first phase of the Eco-town to be developed will be the Exemplar Site, which lies in the north-eastern area of the site. The Exemplar Site is shown on Figure 2.2, with two areas of key development, with a connection zone lying in between. The development proposals include provision for the following:

- Approximately 400 residential units
- A Care Home (Class C2)
- A primary school
- B1(a) office accommodation
- Retail units (class A1 – A5)
- Social and community facilities within class D with associated means of access
- Car parking
- Landscape
- Amenity space
- Service infrastructure

Currently, the Exemplar Site planning application is submitted in outline with all matters reserved, except for access. In addition, full planning permission will be sought for the residential development, means of access thereto, and associated car parking, landscape, amenity space and service infrastructure.

All such development shall accord with the Application Plans and Development Parameters Schedule.

2.4 Development Programme

The key planning and development milestones associated with the Exemplar Site and the wider Eco-town development have been set out in Table1 below:

Table 1: Development Programme

Milestone	Planned Programme
Submission of Exemplar Planning Application	November 2010
Update of Project Masterplan	February 2011
Planning Committee (Exemplar Site)	March 2011
Completion of Masterplan Work	August 2011

3 PROPOSED EIA SCOPE

3.1 EIA Approach

The EIA will be carried out in accordance with the legal requirements of the EIA Regulations, which implement EC Directive 85/337/EEC and its amendment 97/11/EC.

Several guideline documents have been used in defining the scope of the EIA and the assessment methodology to be used. The scoping exercise has also been based on experience of EIA for similar projects. In addition to observing the formal requirements of the EIA directives, and the EIA Regulations further formal guidance will inform the assessment. Examples include Environmental Impact Assessment: A Guide to Procedures (DCLG, 2000 and amendment 2001); Planning Policy Guidance (PPG) Notes and Planning Policy Statements (PPS); and Guidelines for Environmental Impact Assessment (IEMA, 2004).

In accordance with relevant guidelines, the EIA will incorporate the following elements:

The Baseline: Baseline environmental conditions, including those that are predicted to exist immediately prior to construction and operation of the development as well as those currently existing, will be identified through a number of means. They can be determined through the use of existing data or through undertaking additional surveys, studies and modelling. Each environmental discipline will identify resources and receptors that will need to be taken into account during the assessment process.

Assessment Scenarios: For all topics, assessments are made of the impacts with (Do-Something) and without (Do-Minimum) the proposed development. The Do-Minimum scenario represents a baseline against which the environmental effects of the development can be measured. This takes account of the likely future baseline conditions, allowing for planned future development that has not yet been implemented.

Spatial Scope: The area over which impacts could occur could be wider than the area of land directly taken by the proposals. It is inappropriate to define a single study area for the assessment, since the spatial scope varies depending on the topic under consideration. The study areas allow for the assessment of indirect as well as direct effects, including off-site works such as spoil disposal and routes for construction traffic.

Temporal Scope: In considering the environmental effects of the development, it is necessary to identify impacts that may occur during construction or operation. Construction extends from the commencement of site works to the date immediately prior to opening of the development. Operation extends from immediately after opening of the development for the remainder of its life. In addition, it is recognised that some environmental design measures would take time to become established and effective. The assessment therefore considers impacts in Year 1 (Opening Year) and in Year 15 (Design Year), where appropriate. It is also recognised that some effects would be of a permanent nature whereas others would be temporary.

Assessing Impacts: Impacts associated with the construction and operational stages of the proposed development will be identified during the course of the EIA process. These will be considered in terms of their nature, the physical extent of their influence and the magnitude of their effects. In considering the nature and significance of the impacts, the effects will be assessed on the basis of whether they will be:

- Direct or indirect
- Temporary, short, medium or long term
- Reversible or irreversible
- Beneficial or adverse

- Cumulative

Qualitative and quantitative techniques will be used to assess these impacts.

The EIA will also identify those elements of the development that have been introduced to mitigate potential adverse effects and will assess the significance of the impacts that remain after mitigation measures have been put in place (the “residual impacts”).

Determining Significance: Determining the severity of an effect and deciding whether or not it is significant, are important steps in the formal EIA process, and are necessary in order to satisfy statutory reporting requirements. In general, the severity of an impact reflects the importance or value of the affected resource or receptor, its sensitivity to change, and the magnitude of the predicted impact. The criteria for determining significance will vary from topic to topic but the general principle will be that higher magnitude impacts on important resources will be regarded as significant. Lower magnitude impacts on less important resources will not generally be regarded as significant.

Cumulative Impacts: Cumulative impacts result from the incremental impacts of the development when added to other past, present and reasonably foreseeable future actions. The impacts from a single development may not be significant on their own but when combined with other impacts and other developments, these effects could become significant.

Cumulative effects will be considered by describing and assessing the following:

- Interaction of impacts from the development with those from other plans or activities, including the various phases of the redevelopment of this site
- Interaction of different impacts of the development, which affect the same resource or receptor

Consultation: During the EIA process statutory and key non-statutory consultees have been, and will continue to be, engaged both as a part of the scoping process and during ES preparation. They will include: English Heritage, Natural England, the Environment Agency, and Cherwell District Council.

3.2 EIA Topics

With regard to the EIA guidelines, a number of EIA topics have been identified which are considered to warrant assessment. Our proposed approach to assessment for each of these topics is described in the Table 2 overleaf.

Table 2: EIA Topics and Scope

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
3.2.1 Air Quality	<p>The air quality study area comprises the whole Exemplar Site; this has been selected because it will be necessary to establish whether any future sensitive receptors (e.g. residents, schools and hospitals) are predicted to experience concentrations of pollutants above the Air Quality Strategy (AQS) objectives.</p> <p>Roads in the vicinity of the site and receptors on these routes will be included within this assessment; these may include routes along the A4095, the B4100 and the M40.</p>	<p>Currently, Cherwell DC has not declared any Air Quality Management Areas (AQMA) within their administrative boundary. The 2009 Updating and Screening Assessment did, however, identify monitored exceedances of the annual mean objective for NO₂ and has recommended a detailed assessment for three areas. This includes Queens Avenue within Bicester itself which is the only of the three areas in the vicinity of the development. The detailed assessment is not yet complete but contact will be maintained with Cherwell DC's Environmental Health Officer (EHO) to establish whether an AQMA will be established in Bicester. All other pollutants have been found not to exceed the relevant AQS objectives.</p> <p>Cherwell DC has one continuous automatic monitor but this is located in Banbury, a significant distance from Bicester. There are a number of NO₂ diffusion tube monitoring locations closer to the site. Further diffusion tubes have been commissioned in the vicinity of an exceedance at Queens Avenue in late 2009. It is expected that annual average results would be made available by late 2010.</p> <p>The monitoring data suggests that exceedances of the annual mean NO₂ objective have occurred at the Queens Avenue site for the last two years. Concentrations at the Market Square site have been consistently below the objective, showing the variation of concentrations within central</p>	<p>In order to establish baseline conditions in the vicinity of the site, it is recommended that a three month diffusion tube survey is carried out for the whole site. This is the minimum length of time required by Local Air Quality Management Technical Guidance (LAQM.TG) (2009). This should be undertaken to establish background concentrations in the area and to identify a current baseline along roads where future development may take place, and along roads that are potentially affected by changes in traffic flow that trigger the DMRB criteria. This will require data from the Transport Assessment to inform the necessary monitoring locations.</p>	<p>The development has the potential to impact air quality in two ways, dust and emissions from the construction phase, and operational emissions from traffic movements and on-site energy production.</p> <p>Construction impacts will primarily be related to dust emissions that can result in enhanced dust soiling and may, without adequate mitigation, temporarily affect amenity use and, potentially, commercial operations.. Exhaust emissions from on-site plant and from vehicles accessing the works may also affect local air quality.</p> <p>Operational impacts may be negative and/or positive and will arise from changes in exposure to traffic pollutants in response to new patterns of traffic flows on local road networks. This will give rise to local changes in concentrations of NO₂ and PM₁₀.</p>	<p>The main effect on air quality will be from the increase in traffic associated with the development. It will be important in terms of air quality and the overall sustainability of the site to implement sustainable travel measures, ensure the site is designed with travel minimisation in mind and ensure access to local transport facilities is facilitated. For example, there are proposals for a new rail link between Bicester and Oxford allowing direct links to London. It will be essential to minimise car travel to Bicester Town station by ensuring that fast and efficient public transport links are established between the Eco-Town and the station.</p> <p>Soft mitigation measures like siting sensitive receptors away from pollution sources such as busy roads and the Energy Centre should be taken account of in the master plan.</p>	<p>It is recommended that construction dust and emissions are assessed following the Best Practice Guidance issued by the London Councils, 'Control of dust and emissions from construction and demolition.' Although Bicester Eco-Town is not within the Greater London area, this guidance provides a good method of assessing the impacts and provides a summary of mitigation and control measures.</p> <p>Operational air quality impacts will be assessed utilising the guidance in the Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment. Section 3 Environmental Assessment Techniques Part 1 HA 207/07 and LAQM.TG (2009). The criteria defined in the DMRB air quality chapter will be used to identify those roads which are likely to be affected by the development.</p> <p>It is proposed that the assessment is undertaken using the DMRB screening model. If there is the risk of potential exceedances of the AQS objectives at receptors, detailed modelling using ADMS Roads will be undertaken. Assessments of the baseline year and the opening year should be undertaken with the latter including the 'do minimum' and 'do something' scenarios. This assessment will utilise data provided from the transport assessment.</p> <p>The significance criteria used will be those outlined in the Environmental Protection UK 'Development Control:</p>	<p>The Environmental Protection Officer (EPO) at Cherwell DC has been contacted with respect to baseline data collection. It will be necessary to continue to consult with the EPO throughout the EIA process.</p>

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
		Bicester. Tamarisk Gardens monitoring location is closest to the Exemplar Site; on the edge of Bicester with the diffusion tube located approximately 30 metres back from the A4095. This shows that at background locations away from roads, the concentrations are significantly below the annual mean objective for NO ₂ .				Planning for Air Quality (2010 update)'.	
3.2.2 Noise	<p>To assess the operational impact due to road traffic noise of the Exemplar Site the study area will extend out 2km from the boundary of the site in accordance with The Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 7. The effects upon traffic flows on every road within this study area will form the basis for the noise impact upon existing receptors from road traffic noise.</p> <p>In order to establish if the Exemplar Site would be suitable for residential use the extent of the study area would cover all of the land within the boundary of the site. This is to ensure that noise levels across the site would comply with Planning Policy Guidance Note 24: Noise (PPG 24).</p> <p>The study area for construction noise will be defined by the nearest sensitive receptors to the boundary of the sites. It is usual to include all sensitive receptors within 100m of the boundary. The study area will however change as different phases of the development are constructed.</p>	An aerial overview of the site indicates that road traffic noise from the A4095 and B4100 would be the dominant noise source across the site. There are no dominant sources of industrial noise in close proximity to the site.	<p>A full noise survey will need to be undertaken at the Exemplar Site and at selected sensitive receptors within the study area. The L_{Aeq,T}; L_{A90}; L_{A10}; L_{Amin} and L_{Amax} will be measured at all locations. It anticipated that measurements will be carried out at 4 locations for a period of 4 days. This would allow for data to be collected on a typical weekday, a Friday and a weekend.</p> <p>This will need to be confirmed in consultation with the EHO for Cherwell District Council.</p> <p>The above monitoring scenario is based on the assumption that outdoor noise kits can be placed at secure locations. Should it be found that monitoring locations are not secure, short duration attended measurements will need to be agreed with Cherwell District Council.</p>	<p>Potential increase in local ambient noise levels due to increases in traffic flows on surrounding road network.</p> <p>Operational noise impacts can also be expected from plant and equipment related to the commercial component of the development. These impacts would be assessed in terms of BS 4142.</p> <p>Background noise measurements will be taken at nearby residential receptors to assess the plant noise. It will also be assumed that once the Bicester Eco Town is occupied, background noise levels will be similar to those measured in adjacent residential areas. These noise levels will be used to recommend design noise limits for plant to be installed on site.</p> <p>Potential for construction noise to cause a nuisance for sensitive receptors in the vicinity of the site. The type and extent of noise impact will be dependent upon the contractor's chosen methods of working. Examples of potential noise sources include traffic noise from haulage vehicles, piling and movement of materials.</p> <p>Vibration levels from any piling on site will be discussed in a qualitative nature. At this stage</p>	<p>Across the site mitigation measures will be recommended to ensure that all residential dwellings will fall into noise exposure category A or B as defined in PPG 24. A number of measures can be introduced to control the source of, or limit exposure to, noise. Such measures will be proportionate and reasonable and may include one or more of the following:</p> <ul style="list-style-type: none"> ▪ Lay-out: If there are any proposed residential dwellings which will be close to existing roads, then site layout should be considered with non critical rooms (kitchens & bathrooms) designed to face the roads. The design of the site could also be utilised in order for buildings to act as noise screening for the development ▪ For the operational aspect of the development any increases of over 3dB due to road traffic noise which would occur 15 years after opening will be mitigated against if possible. Different forms of mitigation could include the use of noise barriers or the implementation of low noise surfacing on affected road links 	<p>The assessment of operational impacts from road traffic noise will be undertaken in accordance with DMRB Volume 11, Part 7, Section 3 – Noise and Vibration.</p> <p>The assessment of whether the proposed site would be suitable for residual use would be undertaken in accordance with Planning Policy Guidance Note 24 (PPG 24).</p> <p>PPG 24 guides local authorities in England on the use of their planning powers to minimise the adverse impact of noise. It outlines the considerations to be taken into account in determining planning applications both for noise-sensitive developments and for those activities which generate noise.</p>	No consultations have been undertaken to date. Pending is a response from Local Environmental Health Officer regarding the selection of noise monitoring locations.

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				in the planning process it is unlikely that sufficient information would be available to allow vibration levels to be predicted at identified receptors.	<ul style="list-style-type: none"> Noise control measures consistent with good working practices would be implemented during the construction phase. The noise control measures would be developed within a Construction Environmental Management Plan (CEMP), which would be prepared prior to construction commencing 		
3.2.3 Landscape and Visual Impact	The study area will be defined by the Zone of Visual Influence (ZVI) of the development, which is subject to detailed analysis. Given the relatively flat topography, vegetation cover and adjacent urban area, the ZVI is not anticipated to extend greater than approximately 1km beyond the site boundary.	The existing site is not covered by any landscape designations. Landscape Character is defined by the transition between Natural England National Character Areas 107 and 108, the 'Cotswolds' and 'Upper Thames Clay Vales', respectively. The site is largely made up of mixed farmland with landscape elements/features including copses, hedgerows and isolated properties/ farmsteads. There is an area of woodland located within the site boundary. Key visual receptors, within and adjacent to the site, potentially include local Public Rights of Way, residential properties at the northern edge of Bicester, and outlying small settlements/properties (such as Caversfield), including Listed Buildings (Home Farm and the Church of St. Lawrence at Caversfield - see 3.4 below).	Local Landscape Character and site landscape features/elements; Zone of Visual Influence, visual receptors, and representative viewpoints.	Potential loss of local landscape elements potentially resulting in impacts on landscape character. Potential disturbance to views resulting in impacts on visual amenity. Potential loss of woodland which would have an impact on landscape character and visual amenity.	Given the wooded character of the landscape, green infrastructure/structural planting proposals have the potential to offer mitigation (replacement for any vegetation removal, and response to settings of visual receptors), and positively contribute to local landscape character, potentially resulting in enhancement.	The assessment will be undertaken in accordance with 'Guidelines for Landscape and Visual Impact Assessment: 2 nd Edition', produced by the Landscape Institute and Institute of Environmental Management and Assessment (2002).	No consultation has been undertaken to date. Cherwell DC will be contacted regarding the selection of viewpoints.
3.2.4 Archaeology & Cultural Heritage	The study area for archaeology and built heritage will be 500m from the site boundary. It is considered that this will be a sufficiently large area to allow for a determination of the archaeological potential of the site. The study area for historic landscape will be defined by the Zone of Visual Influence of	The existing site does not contain any statutory designated sites. There are two listed buildings adjacent to the site boundary, the Grade II* St Lawrence's Church and the grade II Home Farmhouse, Caversfield Manor House is also located adjacent to the eastern boundary of the site.	Relevant cartographic sources will be analysed including OS maps and Tithe maps if available. A visit will be made to the Records Office and the relevant local Studies Library to gather data from appropriate textual sources which could include directories and local	The proposed development has the potential to impact upon as yet unknown archaeological remains within the site, possibly related to the two areas of known archaeology to the east and west. There is also the potential to	The archaeological potential will need to be fully evaluated and archaeological remains present conserved in the most appropriate manner either through considerate design avoiding the most sensitive areas or archaeological excavation and recording.	The assessment will be undertaken in accordance with PPS5 Planning for the Historic Environment (2010). Initially a Desk-based Assessment will be undertaken. The Desk-based Assessment will follow the standards set out in the IFA	To date initial consultation has been undertaken with, the Planning Archaeologist at Oxfordshire County Council who has recommended that the archaeological potential of the site will need to be assessed by a Desk-based Assessment and confirmed by evaluation prior to the

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	the development. This is anticipated to be larger than the archaeology and built heritage study area and will allow for a range of landscape features to be considered in the assessment.	<p>Whilst the manor house is not listed it is of historical significance. To the west of the site an enclosure has been identified on aerial photographs and to the east of the site the deserted medieval village of Caversfield has been recorded.</p> <p>The nearest Conservation Area and Scheduled Ancient Monuments are located approximately 2km away at RAF Bicester and are separated from the site by an area of settlement so are therefore unlikely to be affected.</p>	<p>history studies.</p> <p>A site walkover will be carried out to survey the site for evidence of archaeological assets and possible disturbance that may have affected any archaeological remains.</p> <p>Data will also be gathered on the historic landscape of the site and study area.</p>	impact upon the setting of the two listed buildings and the building of historic value adjacent to the site boundary.	<p>The impacts on the setting of the listed building can be minimised by preserving key lines of sight through considered design and planting. Sympathetic design of key structures within the new development could also help to complement the existing historic buildings.</p> <p>In order to determine the archaeological potential of the site, there could be geophysical survey and/or archaeological evaluation in line with the recommendations of the Planning Archaeologist at Oxfordshire County Council.</p>	Standards and Guidance for Desk-based Assessment (2008) and will comprise a full archaeological and historic baseline, the results of the site walkover survey and will make recommendations for any further work required to fully determine the archaeological potential of the site. The Desk-based Assessment and the results of any further fieldwork will then inform the Cultural Heritage chapter of the Environmental Statement (ES). The ES will follow the methodology laid out in the Highways Agency Design Manual for Roads and Bridges (2007) and any archaeological fieldwork carried out will follow the relevant IFA Standards and Guidance.	determination of any application for the site. Ongoing consultation will be carried out with the Planning Archaeologist regarding the archaeological potential of the site and consultation will be undertaken with the relevant Conservation Officer regarding the Listed Buildings.
3.2.5 Human Health	<p>The study area for the human health assessment is closely related to that used for other environmental topics as human health is a cross-cutting topic that influences and is influenced by a number of other environmental factors.</p> <p>To understand existing health status, a study area covering Cherwell DC will be used with a focus upon the ward in which the Exemplar Site is situated (Caversfield) and those within the immediate vicinity. This is to ensure that existing health patterns for the communities surrounding the site are characterised. Reference will also be made, where necessary, to trends reported for Oxfordshire to provide appropriate contextual information and comparative</p>	<p>The assessment of effects on human health will utilise baseline data collated for other environmental topics including:</p> <ul style="list-style-type: none"> ▪ Details about the demographic profile and the provision of community and social infrastructure within the socio-economic assessment ▪ Location of Public Rights of Way in the vicinity of the site ▪ Details of existing and potential areas of land contamination presented within the geology and soils assessment ▪ Existing air quality and noise issues presented as part of the air quality and noise and vibration assessments 	<p>Further statistics about the health status of those communities that could be affected including incidence of mortality from key diseases such as cancer, coronary heart disease and respiratory disease, as well as health conditions linked to lifestyles, including incidence of obesity and type II diabetes.</p> <p>Accessibility indicators which demonstrate the current accessibility of the public to facilities including primary schools, secondary schools, GPs, hospitals, further education, and the means of access available, e.g. walking, cycling, public transport, will be collated.</p> <p>Further details will be obtained about the provision and capacity of local healthcare</p>	<p>The following impacts from the development could affect human health and will be considered during the assessment:</p> <ul style="list-style-type: none"> ▪ Changes to noise and vibration ▪ Changes to air quality ▪ Generation of waste during construction and waste management techniques employed at the site ▪ Changes to the landscape and the built environment and the effects upon the ability to pursue healthy lifestyles ▪ Changes to the transport network ▪ Accessibility to community networks and facilities 	<p>Connections to nearby footpaths and bridleways should be provided as part of the scheme.</p> <p>There may be scope to provide a green connection/corridor to the Bure Park Nature Reserve in Bicester.</p> <p>Opportunities should be sought to maximise engagement and collaboration with local residents such that they feel engaged in the process and can actively contribute to the urban space that will be created. This could help contribute to a greater sense of belonging and place. Consultation events should consider the types of open space that are needed and the types of public art that could be incorporated into them to help create a sense of place and</p>	<p>A standalone Health Impact Assessment (HIA) is not being undertaken for this Scheme, rather the assessment of effects on human health is being integrated into the ES to ensure that the interrelationships between health and other environmental topics are considered holistically.</p> <p>The methods proposed within the Merseyside Guidelines for HIA³ will be used to guide the assessment of effects on human health although they will be adapted to reflect the integration of human health considerations into the ES. The assessment will use a broad definition of health which recognises that health is affected by more than simply the presence or absence of</p>	<p>No consultation has been undertaken to date. During the preparation of the assessment, consultation will be undertaken with the Decision Support Team of the Oxfordshire Primary Care Trust to obtain baseline data, to discuss the availability of healthcare facilities and to discuss potential opportunities for the design of the scheme.</p> <p>Consultation utilising focus groups and workshops specific to human health issues will not form a specific part of the EIA methodology. However, stakeholder events are to be held as part of the site design process and the information from these events will be used to inform the assessment where appropriate.</p>

³ Alex Scott-Samuel, Birley, Martin and Ardern, Kate (May 2001) The Merseyside Guidelines for Health Impact Assessment

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	<p>statistics.</p> <p>The assessment will utilise the results of other topics. These topics may use different study areas to that defined above and this will be acknowledged in the ES. The study area, therefore, will vary depending upon the health determinants being considered as part of the assessment.</p>	<ul style="list-style-type: none"> Existing green space infrastructure presented in both the socio-economic and landscape assessments <p>The health status of the population living in Cherwell district is generally good with life expectancy above the England average. Over the past ten years there have been health improvements with the rates of death from all causes combined and of early death from heart disease having improved.</p> <p>However, there are issues linked to rate of road injuries and death and rates of violent crime which are above the England average.</p> <p>Despite there being good levels of health overall, there are health inequalities with significant differences in health outcomes for those living in the most affluent wards to those residents who live in the more deprived communities.</p>	<p>facilities.</p> <p>Data will also be sourced from the South East Public Health Observatory and Cherwell DC as necessary.</p>		<p>ownership.</p> <p>The Exemplar Site needs to incorporate areas of open space that complement the requirements of the Cherwell Green Space Strategy. It also needs to provide opportunities for informal sport and recreation that could benefit health in the long-term and provide opportunities for meeting places amongst communities to promote social interaction. Issues including natural surveillance and perceptions of safety should also be integral to the design of areas of open space.</p> <p>The design of the Exemplar Site should ensure that cyclists and pedestrians are given priority over vehicular traffic.</p> <p>The design and facilities provided in the Eco-town need to meet the requirements of all sectors of society (the Public Health Strategy² cites a predicted 150% increase in the number of people aged over 85 between 2004 and 2029 in Cherwell).</p>	<p>disease and is influenced by a range of health determinants.</p> <p>The assessment will determine how the health determinants will be affected by the Exemplar Site which could result in a change in health outcomes. The following health determinants will be considered in the assessment:</p> <ul style="list-style-type: none"> Noise Air quality Landscape and the built environment Waste management Exposure to contamination Accessibility to community and social networks including health services Physical activity Transport Community networks Safety and security Community engagement and empowerment <p>The cross-cutting nature of the human health assessment will require the use of results presented in other environmental topics to determine the potential effects of the Exemplar Site on health outcomes.</p>	
3.2.6 Agriculture & Land Use	<p>The assessment will be based on the whole of the Exemplar Site. However, the potential impacts will need to be put into a regional and national context, in particular in relation to the loss of agricultural land.</p>	<p>The soils are mapped as belonging to the Aberford Series across the whole site. These are described as shallow, locally brashy well drained calcareous fine loamy soils over limestone. These soils are relatively freely draining, but are identified as having a high leaching potential and thus little ability to</p>	<p>Existing soil information has been collated through published soil maps and a Soils Site Report obtained from the National Soil Resources Institute. Agricultural Land Classification (ALC) maps have been obtained from the MAGIC website.</p> <p>Further soil and ALC information will be sought from</p>	<p>The site is approximately 33ha in area and therefore has the potential to affect a significant area of existing agricultural land, particularly if all or the majority of this is of Grade 3a land. This will, to some extent, depend on the availability of other BMV (Best and Most Versatile, i.e. land which falls into grades 1,2 and 3a) land.</p>	<p>There may be opportunities under the following headings:</p> <p>Soil handling and re-use</p> <p>The soil handling methodologies as set out in the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (DEFRA, 2009) should be followed. This should include the development of a Soil</p>	<p>There are no legislative requirements governing the assessment of agricultural matters, and the framework of any assessment is derived from a combination of EU and national agricultural and land use policies and measures. The key elements of these can be summarised as:</p> <ul style="list-style-type: none"> The conservation of the 	<p>Consultation with Natural England and the landowner(s) will be undertaken.</p>

² Oxfordshire Partnership (December 2007) Public Health Strategy for Oxfordshire

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		<p>retain non-adsorbed pesticides, which may therefore leach out of the soils and into surface or groundwater. It is not considered that the soils present any significant constraints with the exception of the high leaching potential and thus the need to ensure the protection of any groundwater resources.</p> <p>The land appears to be predominantly under arable production with some grazing. The ground appears to have a low topography. The land is shown as being Grade 3 (under the Agricultural Land Classification Scheme). Whilst Grade 3a land falls within the 'Best and Most Versatile' category (BMV) this distinction is not shown on published plans.</p> <p>There are no farm buildings within the site, although it is not known if there are any services, such as water pipes feeding watering troughs, across the site. There appears to be an access route into fields to the north-west of the site through the central part of the site.</p>	<p>Natural England, along with information on whether any of the land is within a Stewardship Agreement. If it is not possible to ascertain the ALC Grade (i.e. 3a or 3b) from available information an ALC survey will be required.</p> <p>The landowner will also be contacted in order to assess the potential for impacts on farm viability.</p>	<p>The impact on farm viability will depend on the overall size of the land holding, and whether the development will result in changes to how the surrounding land was accessed (such as resulting in longer travel times to and from fields outside the boundary).</p>	<p>Resources Plan. This can have significant benefits in terms of reducing the environmental impacts of transporting and disposing of surplus materials. This should be tied in with the Site Waste Management Plan.</p> <p>Use of Sustainable Drainage Systems (SUDS)</p> <p>Within the SUDS opportunities will be taken to maximise the use of soils won from site to both attenuate and treat flows during both the construction and operational phases.</p> <p>Local food production</p> <p>Opportunities to promote local food production, and to maximise the ability of the soils to support this, should be taken. Advice should be provided to home and allotment growers on how best to handle and care for the soil resource. This may go some way to mitigating for the overall loss of agricultural productivity across the site.</p> <p>Biodiversity</p> <p>Within the Soil Resources Plan specific soils should be identified for use in habitat creation areas. These soils have the potential (depending on nutrient status in particular) to support species-rich grassland and woodland communities and inclusion of such habitats would enhance the biodiversity of the site.</p>	<p>BMV resources of agricultural land</p> <ul style="list-style-type: none"> Retention of a competitive and sustainable agricultural industry The diversification of individual farm businesses into supplementary non-agricultural activities The more positive engagement of individual farm businesses with the delivery of environmental benefits <p>Current best practice and professional judgement will be used to define significant criteria in relation to both agricultural land and farming businesses.</p>	
3.2.7 Ecology	The assessment will be based on surveys that have been undertaken within the wider Ecotown site and targeted surveys within the exemplar site itself. Desk information will be obtained for land that is up to 5km from the Ecotown site boundary.	The Exemplar Site is comprised of arable land and semi-improved neutral grassland with boundary hedgerows. The majority of the hedgerows are species-rich, with some substantial features that appear to be ancient in origin. There is one	<p>The MAGIC and NBN websites have been reviewed and further desk study information will be obtained from Thames Valley Environmental Records Centre, the Hawk and Owl Trust, and Butterfly Conservation.</p> <p>Surveys that have been</p>	<p>The following impacts from the development could affect ecology and will be considered during the assessment:</p> <ul style="list-style-type: none"> Loss of arable land, thus the loss of habitat that is used by nesting farmland birds and foraging barn 	<p>A large part of the site would be retained as open space thus there is considerable scope to offset any impacts on terrestrial invertebrates, farmland birds, foraging barn owls and bats.</p> <p>Measures to protect and enhance the retained and newly created semi-natural</p>	The 'Guidelines for Ecological Impact Assessment in the United Kingdom' (IEEM 2006) will be followed with respect to the assessment of impacts.	<p>The consultees listed below have been consulted with respect to the scope of the Ecological Surveys and will continue to be consulted thorough out the assessment process:</p> <ul style="list-style-type: none"> Cherwell DC Biodiversity/Countryside

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	<p>The study area therefore comprises the Exemplar site and a wider area, as appropriate, for designated sites of nature conservation importance and for particular species and groups of conservation concern.</p>	<p>small block of semi-natural broad-leaved woodland within the site. Many of the canopy trees have been removed and the woodland is largely comprised of shrub species with a patchy ground flora. Game birds are reared in this woodland. There is a stream within the site and water quality within this watercourse appeared to be good.</p> <p>Ecological surveys are ongoing and thus the full survey results are not available. However, it is known that the site is used by farmland birds and may be of value to barn owls. It is likely that the site will support common species of reptiles (slow-worm, common lizard and grass snake). Surveys have revealed that great crested newts are present in the area, but not within or immediately adjacent to the Exemplar Site. The hedgerows, and potentially the grassland habitats, appear to be of value to terrestrial invertebrates, and butterflies in particular. The presence of white clawed crayfish has been confirmed within the watercourse close to the Exemplar Site, but survey work has yet to be undertaken within the site. There is a confirmed bat roost within the farm buildings close to the site and a large number of potential bat roost site in trees have also been identified. There are two large badger setts within the site. Both brown hare and hedgehog have been recorded on site.</p> <p>There is one Sites of Special Scientific Interest (SSSI) located within 2km of the Exemplar Site boundary. This</p>	<p>completed include: a Phase 1 Habitat Survey and surveys for great crested newts. Surveys that are in progress or will be undertaken include those for terrestrial invertebrates; white clawed crayfish; reptiles; breeding birds; dormice; bat emergence and activity surveys; water voles; otters, and botanical surveys of the hedgerows and grassland.</p>	<p>owls</p> <ul style="list-style-type: none"> Loss of semi-improved grassland that may be of value to terrestrial invertebrates, foraging bats and foraging barn owls Loss of open watercourse and/or fragmentation of the stream corridor with potential impacts on crayfish, otters, water voles and foraging bats Hedgerow loss and/or fragmentation of the hedgerow network with potential impacts on terrestrial invertebrates, dormice and foraging bats. Loss of trees that may support roosting bats The main badger sett will be retained, but there is the potential for the loss of badger setts or disturbance to badgers occupying the other large sett Lighting has the potential to affect wildlife using retained habitats, in particular invertebrates and foraging bats Loss of habitat that is used by reptiles, brown hare and hedgehogs <p>It is not envisaged that the development would have an effect on great crested newts.</p> <p>Dust, noise and visual disturbance during construction are unlikely to lead to significant effects on wildlife. However, this will be reassessed when the survey results are available.</p> <p>Once built, there is the potential that the residents and their pets could have adverse effects on wildlife present within the retained habitats.</p>	<p>habitats within the development would be secured through a biodiversity strategy. Opportunities will be sought within the development proposals to create habitats of value to wildlife within any green spaces or green networks.</p> <p>If further surveys reveal that the grassland habitat is of value consideration will be given to retaining the grassland habitat in situ or relocating species-rich turves to areas of open space. There may also be scope to enhance the plant species diversity of retained grassland habitats.</p> <p>Careful consideration will be given to the design of the bridge crossings to reduce the fragmentation effects of access roads.</p> <p>The fragmentation of the hedgerow network and loss of trees will be kept to a minimum to avoid/reduce impacts on protected species.</p> <p>Hedgerows and stream corridors would be retained with suitable buffer zones to maintain their value for wildlife. These features will be incorporated into green corridors that provide for the movement of wildlife across the site.</p> <p>Careful consideration will be given to the layout to avoid/reduce impacts on the large badger sett that could be affected by the proposal.</p> <p>Lighting will be designed with care to avoid impacts on invertebrates (if appropriate) and foraging bats.</p> <p>Measures to protect and enhance the retained and newly created semi-natural</p>		<p>Officer and Eco town Project Manager</p> <ul style="list-style-type: none"> Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust Conservation Officer Natural England's Lead Environmental Planning Officer ; Oxford County Council's Ecologist and Natural Environment Manager Environment Agency's Biodiversity and Planning Officers

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		is designated for its geological attributes and lies to the north of RAF Bicester: Stratton Audley Quarries SSSI.			habitats within development would be secured through a biodiversity strategy. Careful design will ensure that impacts associated with the new residents and their pets are reduced as far as possible. The implementation of standard mitigation techniques would prevent any negative effects on water quality during construction and thus avoid downstream impacts and in particular any impacts on the down stream riverine SSSI. The careful design of the SUDS would avoid any adverse effects on watercourses during the operational phase of the development.		
3.2.8 Socio-economics & Community	<p>Consideration of socio-economic and community effects will be focused within two defined spatial areas, both the Central Impact Zone (CIZ) and the Wider Impact Zone (WIZ).</p> <p>The CIZ is defined by the four electoral wards that form Bicester settlement (Bicester North, West, East, South and Bicester Town), plus the electoral ward of Cavershield within which the site is located. Potential impacts in this area will be more direct in nature and more significant in scale.</p> <p>The WIZ will consider the site in the wider region, focusing on the Local Authority area of Oxfordshire and the wider East Midlands region within which it sits. Potential impacts in this area are more indirect in nature and less significant in scale.</p> <p>Selection of these two spatial areas allows consideration of both local and regional potential impacts of the</p>	<p>The Exemplar Site is located just north west of Bicester town, adjacent to the B4100.</p> <p>Bicester is a rapidly expanding historic market town and now has a population of approximately 30,000. This represents growth of 50% since 1981. The growth of the town has been influenced by its location on the strategic road network close to junction 9 of the M40, where the A34 meets the A41.</p> <p>Bicester's economy is focused on defence activities at the Ministry of Development Bicester, storage and distribution, food processing, engineering and publishing. Its proximity to and close relationship with Oxford helps the town by creating opportunities for economic development. The draft Core Strategy for Cherwell DC, however, acknowledges that it can also make it competitively difficult to draw investment into</p>	<p>The following data collection is proposed as part of the assessment:</p> <ul style="list-style-type: none"> Further assessment of demographics and deprivation in this area focusing on the Index of Multiple Deprivation and ward level data for the five electoral wards that form the CIZ Further breakdown of employment and unemployment statistics including industry of employment Understanding the provision of existing community facilities and their capacity within the area Baseline data will be used from published sources including the Office of National Statistics, the Annual Business Inquiry, Annual Survey of House and Earning, and consideration for Cherwell 	<p>During the construction stage the following impacts have been identified:</p> <ul style="list-style-type: none"> The potential to generate direct and indirect employment The potential impact on accessing key services and amenities such as health facilities, care services, schools and transportation hubs The potential to inhibit local leisure and recreation provision <p>During the functional stage of the Exemplar Site the impacts are envisaged to include:</p> <ul style="list-style-type: none"> The contribution to housing supply in terms of affordability and variety The contribution to the broader amenity and open space provision for the Bicester area The contribution to community facility and service provision including 	<p>Potential mitigation measures will include a local employment and training strategy and a communications and consultation strategy to ensure the community is informed in advance of planned works and disruption.</p> <p>For the functional phase of the Exemplar Site, mitigation measures are likely to also include ensuring adequate provision of social and community infrastructure, a local employment and training strategy, provision of access routes and communication routes between the new and existing community, and development of a community integration strategy.</p>	<p>The methodology for assessing temporary (construction) socio-economic effects will be based on the standard English Partnerships methodology, supplemented by a qualitative assessment of secondary disruption effects from traffic and other primary construction impacts.</p> <p>The methodology for assessing the 'functional' effects of the exemplar site mixes both quantitative and qualitative assessments as follows:</p> <ul style="list-style-type: none"> Analysis of proposed land use and floor space provision to determine employment generation potential from the new development, coupled with an assessment of the likely effect on the employment availability for the existing economically active population Comparison of the provision of new social and community infrastructure 	<p>No consultation has been undertaken to date. During the preparation of the assessment, consultation will be undertaken with the following individuals or representatives of the socioeconomic themes:</p> <ul style="list-style-type: none"> Tourism Officer, Cherwell District Council Public Rights of Way Officer, Oxfordshire County Council Healthcare Officer, Oxfordshire Primary Care Trust Town Centre Manager, Bicester Town Council Local Constabulary, Banbury Constabulary Education Services, Oxfordshire County Council Leisure and Recreation Officer, Cherwell District Council Social Services, Oxfordshire County Council

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
	proposed development. The CIZ will be the focus for the consideration of impact to include an appreciation for community facility capacity and provision.	<p>the town and results in high levels of out-commuting. A 2006 Employment Land Review also highlights the Chilterns, M25 corridor and London as market influences.</p> <p>In terms of planned future development of the settlement, it is important to note the following significant developments:</p> <ul style="list-style-type: none"> Planning permission has been granted for a strategic housing site of 1,585 homes at south west Bicester, including a health village, sports provision, employment land, a hotel, a new secondary school, a community hall and a 'local centre' Permission has also been granted for another site of 500 homes at Gavray Drive, including a new primary school, open space and a local wildlife site Permission has also been granted for the redevelopment of the town centre including a Sainsbury's supermarket, other retail premises, a cinema, library and a new civic building Planning permission has also been given for a new business park comprising 60,000m² B1 employment space and hotel to the south of Bicester Village and east of the A41. Full development of this will however be subject to improvement to junction 9 of the M40 	<p>DC Annual Monitoring Reports. This will also be supplemented by consultations with representatives of key themes being considered</p> <ul style="list-style-type: none"> Some of the socioeconomic datasets gathered will also provide the evidence base for the Health Impact Assessment In terms of social nuisances resulting from either the construction or functional stages of the Exemplar Site, this will draw on the research findings of other disciplines including 'air quality', 'noise' and 'landscape and visual' themes 	<p>health care facilities, potential community meeting venues and accommodation for possible outreach projects</p> <ul style="list-style-type: none"> The impact on education facilities – primary, secondary and tertiary The potential impact on crime and anti-social behaviour. In this instance there is the potential to engage with a Police Crime Prevention Design Advisor The long-term contribution to local business capabilities and local economy The impact of the proposals on existing recreation sites and Public Rights of Way 		<p>with identified needs and existing under provision within the existing community</p> <ul style="list-style-type: none"> Consideration of cumulative effects, for example development of the Exemplar Site alongside other developments in the locality Recommendation of mitigation measure, where appropriate Assessment of residual effects following implementation of mitigation measures 	
3.2.9 Waste - Operation &	As Cherwell DC is the waste collection authority, the Study Area will comprise Cherwell District and any waste facilities	<p>Construction waste</p> <p>The existing site is largely undeveloped land. It is anticipated that there will be</p>	<p>Further data collection is proposed for the following:</p> <ul style="list-style-type: none"> Location of all treatment and disposal facilities for all 	<p>The following potential impacts have been identified:</p> <p>At a local level:</p> <ul style="list-style-type: none"> waste storage – potential 	<p>Construction waste</p> <p>Against the context of the previously mentioned requirements of PPS1, the Eco</p>	In order to assess the residual effects that the construction and operational waste produced by the new	Informal correspondence with the Head of Environmental Services at Cherwell District Council.

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
Construction	that will receive waste arising from the Construction and Excavation, and Operational phases, of the development.	<p>little or no demolition materials which would need to be considered for incorporation into the new-build phase of the project.</p> <p>It is anticipated that construction material waste likely to arise from the new-build phase will consist of hard and inert materials, soils and stones, plastics, packaging (wooden and plastic), insulation material, miscellaneous metals, canteen and office waste.</p> <p>PPS1 requires that Eco Towns ensure that no construction, demolition and excavation waste is sent to landfill, except for those types of waste where landfill is the least environmentally damaging option.</p> <p>Operational waste</p> <p>It is anticipated that types and quantities of waste generated during operation will be similar to those of Cherwell District and that recycling rates will be at least equivalent to Cherwell District.</p> <p>Cherwell DC recycling rates are already well above the UK average. According to WasteDataFlow approximately 59,000 tonnes of Municipal Waste was generated in Cherwell District in 2008/09 of which 29,000 tonnes was sent for recycling/composting/reuse. This equates to a recycling rate of 50%, compared to 42% in Oxfordshire and 38% in the country.</p> <p>PPS1 requires that Eco-towns are set targets for residual waste, recycling levels and landfill diversion which are more ambitious than those set</p>	<p>wastes generated during Construction and Excavation and Operational stages</p> <ul style="list-style-type: none"> Waste targets for Cherwell DC in the 2010 Waste Strategy (currently under review) Details of Cherwell DC waste and recycling collection systems (materials collected, receptacles provided, frequency of collection etc) Details of any new preferred treatment/disposal option for the region and implications on collections from new build developments Details of any proposed Energy from Waste facility within the development and impacts and/or integration with waste management in the surrounding region 	<p>impacts are visual amenity, odour, restricted personal access</p> <ul style="list-style-type: none"> collection vehicle access and manoeuvring – potential impacts are noise, odour and safety <p>At regional level: potential impacts are</p> <ul style="list-style-type: none"> not achieving recycling and waste avoidance targets the impacts of increased traffic movements through the region by the additional waste vehicles required to support the development. <p>Environmental impacts of waste within treatment/ disposal facilities will not be included within this EIA.</p>	<p>Town has the opportunity to deliver Best Practice construction waste minimisation and management in accordance with the WRAP (Waste and Resources Action Programme) definition.</p> <p>Operational waste</p> <p>Against the context of the existing high recycling rates in the District and the requirements of PPS1, there is opportunity to design a showcase waste management system at the Eco Town.</p> <p>The waste management system (including waste storage and collection) will be designed to mitigate against potential local impacts and achieve maximum recycling and landfill diversion, thus mitigating against the potential impact of not meeting targets.</p> <p>It is assumed that any impacts of operational waste within treatment and disposal facilities will be addressed in the facility EIAs and covered by their license/permit conditions.</p>	<p>development two separate criteria will be used. Construction and operational waste will be assessed separately. These are detailed below:</p> <p>Impact of waste destined for landfill: This will be determined by the level of waste likely to be diverted from landfill by the development. For each level of impact (Very High to Negligible) a % diversion range will be applied which will be determined by the types of waste forecast to arise from the development.</p> <p>Magnitude of potential effect: This will be determined by the residual effect that the development will have on the existing and future local waste management strategy.</p> <p>Both criteria detailed above will assess the relevant waste baselines. The assessment of effects will be made taking into consideration the residual effects of the development based on the construction and operational waste production and the implementation of the mitigation measures to be delivered by the project.</p>	<p>Formal consultation required to:</p> <p>Discuss waste management aspirations for the Eco Town;</p> <p>Determine a formal position with regards to any future waste facilities in the region and implications on waste management at the development;</p> <p>Determine the implications of a potential Waste to Energy Facility on waste management at the development.</p>

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
		out in the National Waste Strategy for 2007 which sets recycling/composting rates of at least 40% by 2010, 45% by 2015 and 50% by 2020.					
3.2.10 Flood risk & Hydrology	<p>The study area for the water environment consists of the site, along with the catchment area of the two tributaries to the Bure and the extents of Bure from the A4095 (the downstream boundary of the site) to the confluence upstream of Caversfield House. The tributaries of the Bure included within the study area are:</p> <ul style="list-style-type: none"> ▪ The stream flowing in a easterly direction from the north western boundary from its head to its confluence with the Bure at the A4095 ▪ The tributary that collects surface water runoff from Bucknell and flows in a southerly direction to converge with the Bure south of Home farm is included from the pond south of Bucknell to the confluence <p>The study area extends to the area immediately downstream of the A4095 to ensure that the flood risk posed to the site and elsewhere is not increased as a result of the development.</p>	<p>Surface water runoff across the site flows largely at greenfield rates to the Bure and its tributaries with the potential for localised ponding to occur in small low lying areas.</p> <p>The flood risk within the site is unconfirmed as the online EA flood maps are based upon coarse DTM and JFLOW modelling and are not considered suitable to delineate the flood plain to support a planning application. Therefore a hydraulic model will be constructed to confirm flood plain extents across the site. The EA maps cover the Bure (the onsite tributaries are too small to have previously been modelled) and indicate that the flood plain is constrained to the area immediately around the banks. It is considered likely that the hydraulic model of the Bure and its tributaries will largely confirm this.</p>	Topographical and channel surveys will be undertaken to inform the hydraulic model.	<p>The development could lead to degradation in water quality in the receptor during construction and operational phases of the development.</p> <p>Surface water runoff rates could be increased leading to an increase in flood risk elsewhere.</p> <p>Flooding of the development could occur should buildings be placed within the flood plain.</p>	<p>At this stage the potential impacts and the proposed mitigation or opportunities of enhancement are considered to be:</p> <ul style="list-style-type: none"> ▪ Flooding from increased surface water runoff: a conceptual drainage strategy utilising SUDS measures will be developed for the site to ensure that surface water runoff from the site is maintained at greenfield rates and water is not discharged to the surface water sewers where possible ▪ Flooding resulting from a reduction in floodplain: a hydraulic model will be constructed to delineate the floodplain, this will ensure that there is no loss of floodplain up to and including the 100 year event ▪ Biodiversity/Recreation: The water features within the site can be enhanced to provide increased values for biodiversity and recreation. This could be achieved through green corridors, channel maintenance, creation of a two stage channel ▪ The Ecotown will aspire to achieving water neutrality ▪ The development will aspire to meet the water consumption requirement of Level 5 of the code for sustainable homes ▪ No development will be located within Flood Zone 3 	<p>A standalone Flood Risk Assessment (FRA) will be undertaken for this Scheme, and will be appended to the ES.</p> <p>The ES will consider the impacts from the site upon the water quality and quantity regime both within the site and the receptor (River Bure) immediately downstream of the site.</p>	Consultation has begun with the Environment Agency, and consultation will be undertaken with the drainage engineers at Cherwell DC.

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
					and where possible development will be avoided in Flood Zone 2.		
3.2.11 Contaminated Land	The Exemplar Site assessment will be undertaken as part of the wider Bicester Eco-Town assessment, which will focus on potential contaminants within, and in close proximity to the larger site boundary.	<p>The Exemplar Site comprises arable land and semi-improved neutral grassland with boundary hedgerows.</p> <p>There are no buildings or other structures within the site area although it is not known whether there are any services present e.g. water pipes feeding watering troughs.</p> <p>There is no historical evidence of any past industrial or commercial activity on site that may have led to significant contamination of the soil. As such, if contaminants are present, these are expected to be related to agricultural land use i.e. herbicides, pesticides, and fertilisers, which would be expected to impact groundwater and surface water more severely than the soil.</p> <p>The geology of the area is such that the estimated probability of a property being above the Radon Action Level is 3 to 5%.</p>	In order to prove or disprove the presence of contaminants within the soil and groundwater, it will be necessary to undertake an intrusive ground investigation comprising boreholes and machine-excavated trial pits. This will enable representative samples to be collected and sent for laboratory analysis.	<p>The risks to the development through contaminants potentially contained within soil and/or water beneath the site are considered at this time to be low.</p> <p>During construction, there is a risk of localised pollution of the soil, groundwater and surface water through spills/leaks from construction plant and storage containers. However, the eventual impact on the ground from a mainly residential development is expected to be minimal.</p>	<p>During construction, correct site management procedures will be followed.</p> <p>Additionally, due to the geology of the area, it will be necessary to incorporate basic radon protection measures in the construction of new dwellings and extensions.</p>	<p>A human health and controlled waters risk assessment will be undertaken once contamination testing results are received following an intrusive ground investigation.</p> <p>This will determine whether the development will be affected by contaminants already present on site, and will also help determine whether any special measures will be necessary during construction.</p>	No consultations have been undertaken to date. The contaminated land risk assessment will be based on factual data gathered through an intrusive ground investigation, with observations and recommendations made accordingly.

4 SUMMARY AND NEXT STEPS

4.1 Summary

Section 3 of this Scoping Report provides an outline of the existing site description and highlights potential impacts that may arise as a result of the Bicester Eco-Town Exemplar Site development. Following this initial desk-based review, it is proposed to consider the following environmental topics in the EIA for the eco-town:

- Air Quality
- Noise
- Landscape and Visual Impact
- Built Heritage and Archaeology
- Human Health
- Agriculture and Land Use
- Ecology
- Socio-Economics and Community
- Waste (Construction and Operation)
- Flood Risk and Hydrology
- Contaminated Land

Further data collection is required in order to inform the EIA. As part of this exercise, it is proposed to contact the following statutory and non-statutory organisations:

- Cherwell District Council
- Environment Agency
- English Heritage
- Natural England
- Oxfordshire County Council
- Local landfill operators
- Local waste management facilities
- Thames Valley Environmental Records Centre
- Parish Councils
- Oxfordshire Primary Care Trust
- Bicester Town Council
- Banbury Constabulary
- Three Valleys Water

4.2 Next Steps

This Scoping Report sets out our proposed approach to the Exemplar Site EIA, in terms of study areas, data collection, proposed methodologies and potential for mitigation and enhancement. The Report also sets out our proposed approach for consultation with Cherwell District Council

and relevant consultees. These consultees have been identified for each topic, and are summarised in Section 4.1 above.

Following receipt of comments regarding our proposals for the Exemplar Site, the EIA will be progressed, as agreed with Cherwell District Council. An Environmental Statement will be prepared and will be submitted with the Planning Application for the Site.

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Our Ref: 0506-UA001881-U31L-01
Your Ref: 10/00004/SCOP
Direct Line +44 (0)20 3014 9157

27th August 2010

Dear Sir or Madam

Bicester Eco-town Exemplar Site: Environmental Impact Assessment (EIA) Request for Screening and Scoping Opinion

We refer to our letter requesting an EIA screening and scoping opinion under the Town and Country Planning (Environmental Impact Assessment) Regulations 1999 (as amended), dated 2nd August 2010, ref 0504-UA001881-U31L-01, which was submitted on behalf of our clients, P3 Eco and A2 Dominion, relating to the above development.

Since the submission of the scoping / screening opinion request, further negotiations have been held in relation to the red line boundary of the exemplar development and the scale and form of development to be undertaken within that. It has been resolved that the exemplar scheme will relate to the top two fields, the central core and the fields to the south of Home Farm. As such the other two fields in the northern corner of the development are not forming part of the exemplar scheme. In relation to the EIA screening and scoping request, we have provided details of the updated project description overleaf. The red line of the application site is smaller than that which was originally screened and there is no material change in the type of development, the principle of development or the location of development. As such we consider that the confirmation of the detailed area does not require a further and revised screening / scoping request to be submitted.

We note that your scoping opinion, in line with the statutory 5 week response period, is due on Monday 6th September. Given the timescales for our application (provided in the original report ref 0501-UA001881-UA31R-01), we would be happy to receive your initial scoping response based on the original submission in accordance with the stated timescales, followed by your comments on any changes as a result of this letter at a later date.

If you have any queries, please do not hesitate to contact me on the direct dial provided above or by e-mail at caroline.soubry-smith@hyderconsulting.com.

Yours sincerely

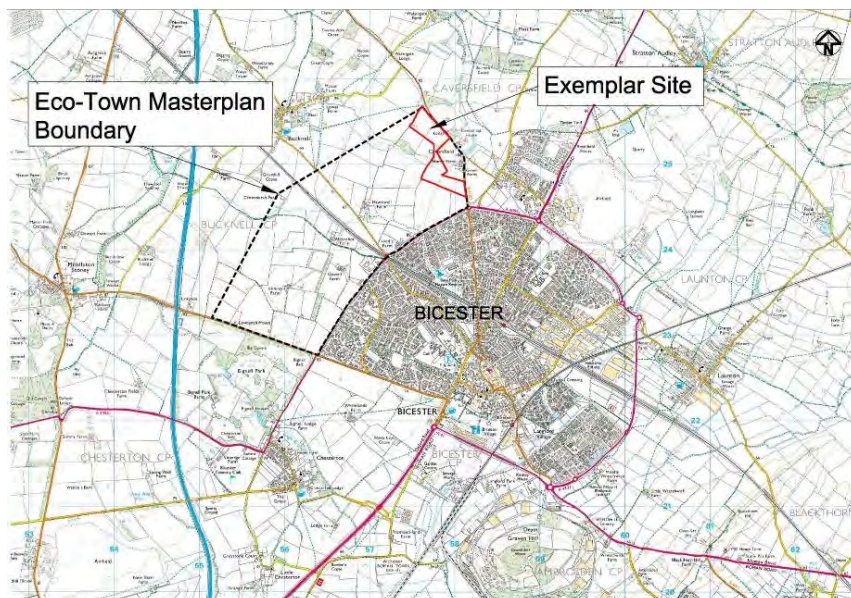
A handwritten signature in black ink, appearing to read "CSmith".

Caroline Soubry-Smith, Principal Environmental Consultant



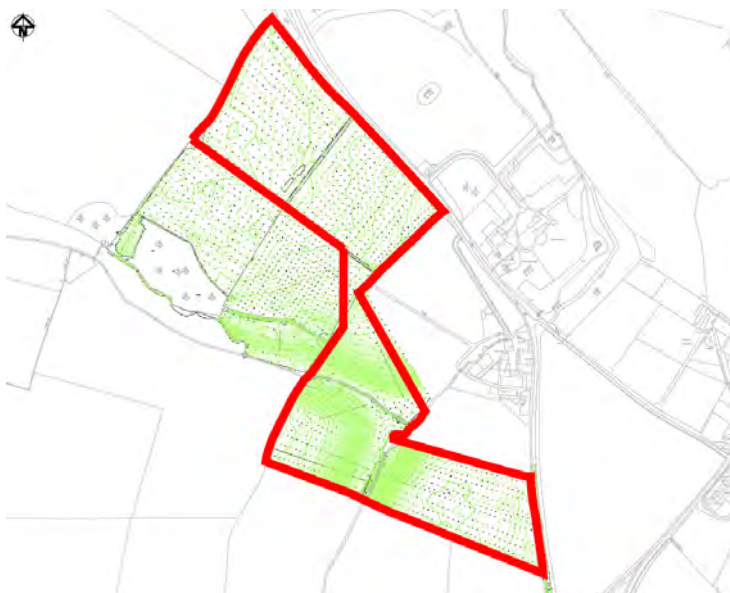
Amended text for Section 2.1: Site Description

Note: Paragraphs 1-3 remain unchanged



Amended Figure 2.1: Site Location Plan

Figure 2.2 illustrates the site boundary for the Exemplar Site, comprising two main zones for development and a zone in between to allow a connection between the developments. This Site lies within the whole Eco-town site boundary, at its north-eastern edge, and lies due north of Bicester town. The Exemplar Site boundary runs alongside the B4100, and covers an area of approximately 21 ha.



Amended Figure 2.2: Exemplar Site Plan

Amended text for Section 2.3: The Exemplar Site Proposals

The Exemplar site will be the first development on the whole site and lies in the north eastern area of the site. The Exemplar site is shown in Figure 2.2 with two areas of key development with a connecting zone lying in between. Land will be available for some or all of the following:

- Approximately 400 residential units
- A Care Home (Class C2)
- A primary school
- B1(a) office accommodation
- Retail units (class A1 – A5)
- Social and community facilities within class D with associated means of access
- Car parking
- Landscape
- Amenity space
- Service infrastructure

The Exemplar Site planning application will be submitted as a hybrid application comprising:

- Full planning permission will be sought for the residential development, means of access thereto, and associated car parking, landscape, amenity space and service infrastructure.
- Outline application for all non-residential uses, with consent being sought for access to those blocks.

All such development shall accord with the Application Plans and Development Parameters Schedule.

Amended text for Section 2.4: Development Programme

The key planning and development milestones associated with the Exemplar Site and the wider Eco-town development have been set out in Table 1 below:

Table 1: Development Programme

Milestone	Planned Programme
Submission of Exemplar Planning Application	5 th November 2010
Update of Project Masterplan	February 2011
Planning Committee (Exemplar Site)	March 2011
Submission of Masterplan Work	August 2011

Planning, Housing & Economy

John Hoad Strategic Director Planning, Housing and Economy



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Please ask for **Andrew Bowe**

Our ref **10/00005/SCOP**

Your ref **0504-UA001881-U31L-01**

Direct Dial **01295 221842** Fax **01295 221856** Email **andrew.bowe@cherwell-dc.gov.uk**

21st September 2010

Dear Ms Soubry-Smith

TOWN AND COUNTRY PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) (ENGLAND & WALES) REGULATIONS 1999 (AS AMENDED)

REQUEST FOR SCOPING OPINION

Application No: 10/00005/SCOP
Applicant's Name: P3Eco and A2 Dominion
Proposal: Scoping Opinion - Proposed Bicester Eco Development:
Exemplar Site
Location: Bicester Eco Town Exemplar site
Parish: Caversfield

Further to your letter dated 2nd August 2010 and the submitted attachments, I have consulted with relevant colleagues both in Cherwell District Council and Oxfordshire County Council, together with other statutory authorities and consultation bodies. Their responses are set out below, largely in full, and in some cases this may include matters that go beyond the site boundary. These responses constitute the Council's screening opinion.

The request for a scoping opinion relates to a proposed planning application for approximately 400 dwellings on 33 hectares of land adjacent to B4100. This is to be the first phase, as an Exemplar project, of the proposed North West Bicester Eco development identified in the Eco towns Planning Policy Statement.

The Environment Agency:

The Environment Agency (EA) welcomes the opportunity to comment on proposed content of the environmental statement set out in the scoping report. It is understood that an Environmental Impact Assessment (EIA) will be undertaken for the first phase of this development and will not cover the whole development site. Having reviewed the Scoping Report, the EA has provided comments on the following topics, not all of which are referred to in the scoping report:

- Ecology



- Waste, including sewage
- Flood Risk and Hydrology
- Contaminated Land
- Energy

Ecology

The outlined study proposals appear to be reasonable and the intention to identify any related information that is available up to five kilometres from the site boundary is supported. Only one watercourse has been identified under the site description but there are actually two and this should be amended. The EA agrees that the water quality of these rivers is generally good and can confirm this by providing the relevant data.

Given the sensitivities already identified within the exemplar site and wider area, the EA is pleased that additional surveys to those already undertaken will be carried out. It is essential however, that surveys are undertaken at the most appropriate time of year and therefore it may be necessary for some surveys to be updated at a later stage if necessary.

The EA generally agrees with the outlined potential impacts and mitigation options. The scoping report refers to the opportunity to enhance plant species which the EA supports. It is recommended that planting should incorporate local native species which are locally sourced. There should be an emphasis on providing rich habitat for mammals, reptiles and invertebrates which have been found on site or where there is potential to attract Biodiversity Action Plan (BAP) species into the area.

By way of mitigation and/or enhancement, the EA would like to see green corridors alongside the watercourses on site. The minimum buffer zone should be 15 metres measured from the top of the bank each side of the watercourses. This will offer good protection and an opportunity to enhance the habitat value. Maintaining a sizeable space between the riverbank and development is also important to manage risks of diffuse pollution which poses a risk of water quality deterioration. Under the Water Framework Directive (WFD), the UK must plan to ensure our surface, ground and coastal waters reach good ecological status by 2027. This development must not hinder that potential and where feasible take steps to ensure water quality is improved.

It is also essential that a proper and accountable regime is identified to ensure Green Infrastructure and other newly created habitat is managed and maintained in the long term. This includes land which is used for sustainable drainage features.

Waste

Again, the proposed scope of this chapter, in terms of construction and municipal waste, appears reasonable. The EA supports the proposal to limit the amount of construction waste to landfill and that a showcase waste management system is highlighted as an opportunity. The Waste, Water and Energy workstream group has recently met to discuss the waste strategy.

The existing recycling rate across Cherwell District is currently very good and is identified at 50%. This is likely to be nearer 58% which is above the 50% target of the 2007 Waste Strategy and the 55% 2020 target for Oxfordshire. However, it is generally agreed within the workstream that ambitious waste management and waste reduction targets should be set.

The report refers to "proposed energy from waste facility within the development" but later goes on to say that impacts of waste treatment and disposal and treatment will not be considered within the EIA. While the EA accepts that the operation of energy from waste facilities will be regulated under the Environmental Permitting Regulations 2010, a certain level of assessment of their environmental impact should be considered within the EIA if any facilities of this type are to be incorporated into the design of the scheme.

Flood risk and Hydrology

A relatively small proportion of land along both watercourses on site has been correctly identified as having flood risk associated with them. The Environment Agency's Flood Map currently shows the broad level of risk and the EA supports the intention to undertake a hydraulic model to more accurately determine the extent to which these watercourses may flood. The EA would need to have the opportunity to review this model and is already discussing the technicalities of this with you. The EA also supports the intention to extend the study area downstream of the site to ensure flood risk will not be increased as a result of this development.

The report proposes that a separate Flood Risk Assessment (FRA) will be produced and will be submitted as an appendix to the EIA. It also states that Sustainable Urban Drainage Systems (SUDS) will be incorporated into the scheme to maintain greenfield runoff rates. This is supported by the EA. However, the report only refers to producing a "conceptual" strategy. It is essential that sufficient detail is presented to ensure there is space for SUDS features and that this is not left for later consideration. This is particularly important for the housing element for which full planning approval is being sought. The EA is in the process of providing some more detailed guidance on the scope of the Flood Risk Assessment.

While this chapter may not be the most appropriate place to discuss and outline measures to address water resource and water consumption, the EA supports the presented opportunity to aspire to water neutrality. However, it stresses that the development will be required to meet the Code for Sustainable Homes (CSH) level 5 for water, which equates to water consumption of 80 litres per person per day. This is a requirement of the PPS1 supplement (EcoTown supplement paragraph ET 17.5 b) and has recently been clarified with you.

Water Resource is a topic area which the EA recommends is most appropriately considered within a Water Cycle Study.

Contaminated Land

The scope of this topic is acceptable. The EA supports the intention to carry out intrusive ground investigations to establish the presence, if any, of contaminated land and the proposed controlled waters risk assessment. If groundwater contamination is encountered the EA should be consulted on any proposed mitigation options prior to being finalised within the Environmental Statement (ES).

Energy Use and Sewage

Neither of these topics has been covered within the Scoping Report. Each application needs to demonstrate how it contributes to the overall achievement of Zero Carbon status as well as ensuring that all individual buildings are highly efficient through a combination of building fabric and the potential for renewable energy systems. This will have a significantly beneficial impact on the environment and should therefore be scoped into the EIA.

The planning application will also need to be supported by a Water Cycle Study (see above) that will ensure there is sufficient provision made for water infrastructure. This includes sewerage infrastructure. The Study will need to assess the options for how and where to treat the sewerage. It will need to take account of:

- The current infrastructure at Bicester Sewage Treatment Works (STW) and whether there is capacity to take additional flows from the site. Phosphorus loading is the biggest concern in this area.
- The study should work alongside the FRA to ensure the options reviewed would not cause flooding to sites downstream of any discharge.

- Timeframes and funding of options
- Point of discharge, if an on-site treatment option is pursued then it should seek to review the viability of discharging to Gagle Brook as well as Town Brook. Discharging to Gagle Brook is likely to remove any increased flood risk to Bicester from the increased flows due to treated effluent.
- Measures to ensure any required new infrastructure will be funded and delivered in line with the new development.

Highways Agency

The Highways Agency has confirmed that when a scoping report is submitted, the following information should be provided:

- Details of the development, such as location, access arrangements, use class, size or number of units, maximum number of parking spaces and any other relevant information.
- Proposed methodology for estimating the vehicular trip generation and distribution on the strategic road network, and resulting trip generation figures
- Proposed methodology for assessing the impact of trip generation on the strategic road network.

The Highways Agency's response refers to Guidance on Transport Assessments produced by the Department of Transport in 2007 and the initial appraisal consultation form published with the guidance. The Highways Agency has confirmed that it would be happy to assist in any data that it has pertaining to the junctions relevant to the proposed development.

Natural England

Case law¹ and guidance from the Office of the Deputy Prime Minister² has stressed the need for a full set of environmental information to be available for consideration prior to a decision being taken on whether or not to grant planning permission. Natural England therefore advises that the EIA should give full consideration to:

Sites of Special Scientific Interest (SSSIs).

The development site is close to the following designated nature conservation sites:

- Ardley Cutting and Quarry SSSI
- Ardley Trackways SSSI
- Stratton Audley Quarries SSSI
- Tingewick Meadows SSSI
- Long Herdon Meadow SSSI
- Arncott Bridge Meadows
- Wendlebury Meads and Mansmoor Closes SSSI
- Weston Fen SSSI
- Bestmoor SSSI
- Kirtlington Quarry SSSI

¹ Harrison, J in *R. v. Cornwall County Council ex parte Hardy* (2001)

² *Note on Environmental Impact Assessment Directive for Local Planning Authorities* (April 2004)

Further information on the SSSIs can be found at www.natureonthemap.org.uk or by request from Natural England. The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within these sites and should identify such mitigation measures as may be required in order to avoid, minimise or reduce any adverse significant effects.

Within the scoping report it states that there is just one SSSI within two kilometres (Stratton Audley Quarries SSSI), however, Ardley Cutting and Quarry SSSI is also within two kilometres of the exemplar site.

Within Table 2, under 3.2.1 Air Quality, it states that potential impacts on air quality come from construction, traffic movements and on-site energy production. Where a development includes energy production Natural England requests that the impact on the air quality is assessed for SSSI's within 10 kilometres of the site. This would include the full list of sites provided above.

Where traffic movements will be increased as a result of the development, Natural England requests that impacts on air quality is assessed for SSSIs within 200 metres of the roads experiencing increased traffic. Further information on air pollution and its impacts on species and habitats can be found on www.apis.ac.uk

The exemplar site is also hydrologically linked to designated sites downstream of the site such as Wendlebury Meads and Mansmoor Closes SSSI. Natural England asks that the impact of this development on the hydrological conditions, including water quality, at these SSSI's is assessed.

Landscape Character and Designated Areas

To ensure that the proposed scheme does not adversely affect the character of the surrounding countryside, Natural England recommends that consideration should be given to the following aspects in the environmental impact assessment:

- The potential impact of the scheme on the landscape character and visual amenity of the surrounding area.
- The detailed design of the proposed development should seek to respect and enhance local character and distinctiveness, and use appropriate materials and designs in all new built features.

Landscape and visual impacts

Natural England wishes to see details regarding local landscape character areas mapped at a scale appropriate to the development site and any relevant management plans or strategies pertaining to the area. The EIA should include assessments of visual effects on the surrounding area and landscape together with any physical effects on the development, such as changes in topography.

The EIA should include a full assessment of the potential impacts of the development on local landscape character using landscape assessment methodologies. Natural England strongly advocates the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2002. LCA provides a sound basis for guiding, informing and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character, as detailed proposals are developed. Guidance on LCA, published by the Countryside Agency and Scottish Natural Heritage, is available at:

http://www.countryside.gov.uk/LAR/Landscape/CC/landscape_character_assesment.asp

Table 2, section 3.2.3 Landscape and Visual Impact, proposes the use of the 'Guidelines for Landscape and Visual Impact Assessment: 2nd Edition' and this is supported by Natural England.

In order to foster high quality development that respects, maintains, or enhances, local landscape character and distinctiveness, Natural England encourages all new development to consider the character and distinctiveness of the area, with the design and outlay of all elements of a proposed development reflecting local design characteristics and wherever possible using local materials. The EIA process should detail the measures to be taken to ensure the building design will be of a high standard, as well as detail of layout alternatives together with justification of the selected option in terms of landscape impact and benefit.

Access and Recreation

Natural England encourages any proposal to incorporate measures to help encourage people to access the countryside for quiet enjoyment. Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways are to be encouraged. Links to other green networks or urban fringe areas should also be explored to help promote the creation of a wider green infrastructure.

Local Wildlife Sites

Natural England's records indicate that there are several Local Wildlife Sites in the area surrounding the proposed development site. Local Wildlife Sites are of county importance for wildlife. The Environmental Statement should therefore include an assessment of the likely impacts on the wildlife interests of the surrounding sites. The assessment should include proposals for mitigation of any impacts and if appropriate, compensation measures.

Species protected by the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010.

Natural England is pleased to see that surveys for protected species are either in progress or will be undertaken. If any protected species are found the Environmental Statement should include details of:

- The species concerned;
- The population level at the site affected by the proposal;
- The direct and indirect effects of the development upon that species;
- Full details of any mitigation or compensation that might be required and
- Whether the impact is acceptable and/or licensable.

In order to provide this information there may be a requirement for a survey at a particular time of year. Surveys should always be carried out by suitably qualified and where necessary, licensed, consultants.

The scoping report states in Table 3.2, Section 3.2.7 on Ecology, that surveys have been carried out and great crested newts are in the area but not within or immediately adjacent to the exemplar site. It also states the surveys that are in progress or will be undertaken. The great crested newt, dormouse and all species of bats are European protected species such that it is illegal to intentionally kill, injure or otherwise disturb them. If any of these species are found to be present you should also consult Natural England's Wildlife Management and Licensing Unit in Bristol (Tel. 0845 6014523) about licensing implications before any work can proceed.

Other features of nature conservation interest, for example, habitats and species identified within the UK and Oxfordshire Biodiversity Action Plans.

Natural England advises that habitat surveys are carried out on site to identify any important habitats present. In addition, ornithological, botanical and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present. The Environmental Statement should include details of:

- Any historical data for the site affected by the proposal (e.g. from previous surveys);
- Additional surveys carried out as part of this proposal;
- The habitats and species present;
- The status of these habitats and species (e.g. whether BAP priority habitat);
- The direct and indirect effects of the development upon those habitats and species;
- Full details of any mitigation or compensation that might be required.

The standards set out in the Eco Towns Planning Policy Statement (July 2009) state that eco towns should demonstrate a net gain in biodiversity and planning permission may not be granted for eco town proposals which have a significant effect on internationally designated nature conservation sites or Sites of Special Scientific Interest (paragraph ET16.1). The development should avoid adversely impacting the most important wildlife areas within the site, and should if possible provide opportunities for overall wildlife gain.

Cumulative and in-combination effects.

The EIA should include an impact assessment to identify, describe and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. To carry out the assessment of cumulative and in-combination effects, the following types of projects should be included (subject to the availability of information):

- a. Existing completed projects
- b. Approved but uncompleted projects
- c. Ongoing activities
- d. Plans or projects for which an application has been made and which are under consideration by the consenting authorities
- e. Plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.

Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust

Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT) welcomes the proposed assessment methodology for the ecology chapter which will be prepared following the IEEM 'Guidelines for Ecological Impact Assessment in the United Kingdom' (2006). Whilst some baseline data is presented in the scoping report, it is unclear whether a data search has been requested from the Thames Valley Environmental Records Centre. BBOWT suggest that this is included as part of the desktop study to inform the scope of the EIA.

In addition to considering protected species and designated sites, BBOWT recommend that the EIA should assess the presence of, and any impacts on, habitats and species of principal importance as listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. BBOWT also suggests that the EIA identifies opportunities to enhance biodiversity, in line with Eco towns PPS and the guidance in Planning Policy Statement 9 (PPS9); Biodiversity and Geological Conservation, which states: *'Plan policies and planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests.'*

The proposed site lies near to the Upper Cherwell Conservation Target Area. Conservation Target Areas (CTAs) identify the most important areas for wildlife conservation in Oxfordshire, where targeted conservation action will have the greatest benefit. BBOWT recommends that opportunities should be taken to secure biodiversity enhancements that will help achieve the

aims of the Upper Cherwell CTA, which include lowland meadow management and restoration and wet grassland restoration to improve the area for waders and wildfowl.

Oxfordshire County Council

The relevant officers of the County Council have been consulted and have the following comments:

Transport

The Scoping Report does not appear to include any details about Transport or Highway related issues. A Transport Assessment will be required for the Exemplar planning application as well as Transport Assessment for the application site as a whole.

Rights of Way

Public Rights of Way (PROW) should be included under the Transport/Highways assessment. Section 3.2.5: Human Health includes public rights of way but this is limited to the line of PROW in the vicinity of the site. The human health section should look at line of PROW. In addition it should assess the condition and levels of use of current PROW and green spaces. It should also assess how the development will make best use of PROW/green space and provide for mitigation, by extra provision and improvements to existing, to meet the needs of Eco development residents' and the aims of the Rights of Way Improvement Plan.

Archaeology

The County Archaeologist broadly supports the provisions for the Archaeological and Cultural Heritage section of the EIA set out in section 3.2.4 of Table 2 of the EIA scoping report. It is recommended that the measures set out in the report document for identifying the potential impact on this development on archaeological deposits and other aspects of the cultural heritage should be undertaken and included in the Environmental Statement.

Green Infrastructure, Landscape and Visual Impact, Ecology

See detailed comments in Annex 1

Socio-economic impacts

Section 3.2.5 refers to Human Health. In terms of data collection, the EIA should refer to data in the Joint Strategic Needs Assessment (JSNA); this report identifies current and future health and wellbeing needs in light of existing services, and informs future service planning taking into account evidence of effectiveness. It is available on the Oxfordshire Data Observatory website, www.oxfordshireobservatory.info, under Data > Themes > JSNA 2009.

Accessibility to day resource centres for older people, children's centres, special educational needs (SEN) facilities, adult learning, NHS dentists should be looked at. The mitigation/opportunities for enhancement should also include provision of community space where people can meet and where community health services, children's services and social services can be delivered to the new community. There will need to be consultation with the County Council (through the social and community infrastructure workstream) on the inclusion of space to deliver children's services and social services to older and disabled people as part of the scheme.

In Section 3.2.7: Ecology the Consultation column should refer to Oxfordshire (not Oxford) County Council.

In Section 3.2.8: Socio economics and community the study area should be based on the Bicester catchment area for local service delivery that is, including surrounding villages such as Upper Heyford. This will be important for considering the impacts of the proposal on provision of higher order services and facilities which cover a wide catchment area for example, secondary school and library provision. The existing site description should refer to Bicester Village as an important player in the local economy. The availability of employment space at Upper Heyford may have an impact.

The data collection column should refer to JSNA. In looking at the impacts of demands from the proposed exemplar development, it will be important to understand the timing of these new demands against the background of demands projected from already planned housing sites and the scale and timing of new community facilities, particularly schools which are planned as part of those housing sites.

In the functional stage of the exemplar, the potential impacts on services and facilities provided off-site should be considered, for example, library, secondary school, youth facility, fire and rescue. Mitigation measures should include improvements to off-site services and facilities provided off-site.

Consultation should take place with Oxfordshire County Council through the social and community infrastructure workstream. The impacts on County Council delivered services will not be limited to "education" and "social services". The County Council has statutory responsibility for a much wider range of services, the impacts of which will need to be considered.

In Section 3.2.9: Waste – operation and construction, consultation on issues related to energy and waste management should include the County Council through the Energy, Waste and Water workstream.

In Section 3.2.10: Flood Risk and hydrology, consultation relating to the development of SUDS should include Oxfordshire County Council in view of the County Council's new statutory responsibilities in relation to flooding.

The consultation list in Section 4.1 should refer to Thames Valley Police rather than Banbury Constabulary. Similarly, the reference to Three Valleys Water should be replaced with Thames Water.

Thames Water

Thames Water welcomes the opportunity to comment on the scoping document and its response is set out in the following paragraphs.

The provision of water and waste water infrastructure is essential to any development and Thames Water is aware of the potential for a Water Cycle Study to be undertaken for the Eco-development. While Thames Water accepts that work is ongoing to understand the water and waste water infrastructure needs, it makes the following observations in response to the scoping report:

- It is unclear at this stage what the net increase in demand on Thames Water infrastructure will be as a result of the proposed development.
- Thames Water is concerned that the network in this area may be unable to support the demand anticipated from this development.
- The developer needs to consider the net increase in water and waste water demand to serve the development and also any impact the development may have off site further down the network, if no/low water pressure and internal/external sewage flooding of property is to be avoided.

Thames Water has recommended that any EIA report should be expanded to consider the following.

- The proposed development's demand for water supply and network infrastructure both on and off site and can it be met
- The proposed development's demand for sewage treatment and network infrastructure both on and off site and can it be met
- The surface water drainage requirements and flood risk of the development both on and off site and can it be met

Please contact Thames Water's Developer Services department on 0845 850 2777 to obtain information on the above issues

English Heritage

English Heritage has been consulted and has the following comments. It is noted that Landscape and Visual Impact (3.2.3) and Archaeology and Cultural Heritage (3.2.4) are topics to be covered by the EIA. English Heritage is content that potential negative impacts upon the historic environment have been identified and mitigation/enhancement opportunities identified for the site and its immediate vicinity. Table 2 identifies the potential for impact upon the Grade II* listed St. Lawrence's Church and Grade II listed Home Farmhouse and the need for an assessment of archaeological potential.

Clearly, the Exemplar Site forms only a relatively small part of the proposed eco-town area. Nevertheless, it will contribute to the direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the proposals as a whole. There may be potential for some beneficial reuse of buildings of historic significance associated with the former RAF Bicester a little way to the east of the site. Opportunities may arise associated with the construction phase of the eco-town and over the longer term, for example, as a source of premises suitable for employment and community uses. This warrants being scoped into the assessment.

Cherwell District Council- Planning Policy (including Design and Conservation Officer comments)

The proposed development is the first phase of a larger development and therefore it is inextricably linked to the wider proposal, as is made clear in the first six pages of the Scoping Report. There will inevitably be interactions between the different phases of the larger development. For example, public transport routes, drainage, open space, employment, retail, community and education facilities are not mutually exclusive in their provision or in their use. The interaction between the different phases is an important element of the whole development as a sustainable community.

It is 'reasonably foreseeable' that the adjoining land will be developed (because without it we would not be considering this proposal). Circular 2/99 and the EIA Regulations both make it clear that the cumulative effects of development should be assessed. The cumulative effects include the effects of the whole scheme. The increase in potentially adverse impacts should arguably be assessed as part of the requirement to forecast and predict direct indirect and cumulative impacts (Schedule 4).

The impact assessment might identify mitigating actions that are contingent with delivery of the later phases i.e. advance screen planting, green corridors providing biodiversity linkages through the whole development and beyond to the countryside; or sustainable travel or energy choices that may only become available through the other phases (cycle links, bus stops, or decentralised energy sources where viability requires the larger scale development).

If such elements are recognised as 'positive' mitigations, the adverse impacts associated with the development as a whole should also be assessed (rather than the wider development just being selectively acknowledged).

On large developments it is normal practice for an outline application to be submitted for the whole scheme and these impacts assessed, to be followed by Reserved Matters applications. Paragraph 1.2 of the Scoping Report states that "*each outline application will therefore be accompanied by an ES*". Such an approach would require the submission of a number of environmental statements and the Council would seek a comprehensive outline application following the submission of the exemplar application.

It is also unclear whether development of the area defined as "phase 2" in Fig 2.2 is to be assessed or not. It is included within the site boundary but there is no indication as to the proposals.

The reference at paragraph 3.23 to established landscape character as having a "wooded character" is rather simplistic and should refer to a range of documents, including the Cherwell District Council (CDC) Landscape Character Assessment and also our Countryside Design Summary, which give finer grain landscape types and identify the site as falling into the Oxfordshire Estate Farmlands. The Oxfordshire Wildlife and Landscape study should also be considered. It is important that the established landscape character is fully understood before appropriate mitigation techniques are considered.

Transport is not mentioned and so it is not clear whether a separate transport assessment is to be carried out. This is an aspect of the proposals that will be important to local people and must be fully addressed.

The reference to impact on heritage assets is rather heavy on archaeology. PPS 5 now refers to designated and undesignated heritage assets so impacts on undesignated assets should be included. Impacts on setting and curtilage will also need to be assessed.

The overfly zone for Windrushers' Gliding Club at RAF Bicester needs to be taken into account. Care will need to be taken not to develop in locations that would prevent continued aviation use of the former RAF Bicester.

The main alternatives are required to be assessed. These need to be clearly set out in the Environmental Statement.

On air quality, it would be appropriate in this Eco Town to assess the emissions from buildings. The TCPA worksheets recommend that these are monitored.

On a minor point, there are a few locations where references from other documents (for example, reference to a brief, to demonstrating deliverability of the site, to informing the preparation of the Core Strategy and to Three Rivers Water) do not seem to have been edited out and this should be corrected.

Cherwell District Council - Biodiversity and Countryside Officer

The above officer has nothing substantial to add to the responses of BBOWT and Natural England to this scoping report but emphasises the following points:

- Bearing in mind some of the ecological surveys for protected species, and habitats and species of principle importance, have not yet been completed, it is important that the EIA does take into account the findings of all surveys;
- The impact on important wildlife sites (SSSIs, Local Wildlife Sites, Local Nature Reserves and Conservation Target Areas) close to the site should be comprehensively assessed;

- The development of a Biodiversity Strategy to ensure that a net gain in biodiversity is achieved is crucial;
- The connectivity within the site, and between the site and the surrounding countryside, particularly in terms of hedgerows and water courses, is vitally important.

Cherwell District Council - Environmental Protection Officer

Air Quality

The above officer has previously spoken with Hyder and confirmed that the proposed approach is acceptable in principle. A detailed assessment at Queens Avenue / Kings End, Bicester is being undertaken for nitrogen dioxide. This will be reported by the end of February 2011 and a lag time of approximately six weeks should be allowed from sample collection to receiving monitoring results. The "soft mitigation" measures outlined when developing the master plan are a sensible approach as a general principle. It is noted that the baseline monitoring period is only three months which is the minimum length of monitoring time required in LAQM.TG, 2009. This document does state that all surveys should ideally be carried out for a minimum of six consecutive months (three in summer and three in winter) to ensure they are representative of the whole year. A longer period of monitoring (six months) would therefore be preferred. It is accepted that the proposed three months of monitoring is likely to provide useful information for informing the environmental statement when period mean corrected against long term background data sets, but it is recommended that a longer period of monitoring is undertaken. From previous correspondence it is understood that there may be various time constraints on this project and that submitting an addendum to the ES is not a favourable / practicable approach.

Land contamination

The approach outlined in the scoping report i.e. assessing the risk from land contamination through intrusive ground investigation and subsequent chemical analysis is acceptable.

The above sections set out the local planning authority's response to the request for a screening opinion. Some comments have taken a while to be received and I therefore apologise for the delay in responding. Any further comments received will be forwarded. In the meantime I trust this information is of assistance to you in the formulation of the Environmental Statement and should be treated as the Council's formal scoping opinion made under the EIA Regulations 1999, Circular 02/99 and the Town and Country Planning (General Development Procedure) Order 1995.

Yours sincerely



John Hoad

Strategic Director, Planning, Housing and Economy

Ref	Date	Consultee	Contact Details	Topic	Comment	Response
1	06/09/2010	Environment Agency	Sarah Green, Planning Liaison Officer, Environment Agency, Red Kite House, Howbery Park, Crowmarsh Gifford, Oxon, Wallingford, OX10 8BD	Ecology	The outlined study proposals appear to be reasonable and we support the intention to identify any related information that is available up to 5km from the site boundary.	Noted
2	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Water/ Ecology	Only 1 watercourse has been identified under the site description but there are actually 2 and this should be amended.	This will be checked and inserted into the relevant EIA chapters.
3	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Water/ Ecology	We agree that the water quality of these rivers is generally good. We can and will provide relevant data to confirm this.	HCL to contact Environment Agency to obtain water quality information.
4	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Ecology	Given the sensitivities already identified within the first phase site, we are pleased that additional surveys to those already undertaken will be carried out. It is essential however, that surveys are undertaken at the most appropriate time of year and therefore it may be necessary for some surveys to be update at a later stage if necessary.	Surveys have been completed by Arup. All surveys were undertaken by qualified professionals and have been undertaken at the appropriate time of year. If any updates are required, HCL confirm they will be undertaken at the appropriate time of year in consultation with the relevant stakeholders.
5	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Ecology	We generally agree with the outlined potential impacts and mitigation options. The report refers to the opportunity to enhance plant species which we support and wish to recommend that planting should incorporate local native species which are locally sourced. There should be an emphasis on providing rich habitat for mammals, reptiles and invertebrates which have been found on site or where there is potential to attract BAP species into the area.	Noted. Environment Agency's recommendation for local native species which are locally sourced has been passed on to the design team.
6	06/09/2010	Environment Agency	Sarah Green, Planning Liaison Officer, Environment Agency, Red Kite House, Howbery Park, Crowmarsh Gifford, Oxon, Wallingford, OX10 8BD	Ecology	The outlined study proposals appear to be reasonable and we support the intention to identify any related information that is available up to 5km from the site boundary.	Noted
7	06/09/2010	Environment Agency	Sarah Green, Planning Liaison Officer, Environment Agency, Red Kite House, Howbery Park, Crowmarsh Gifford, Oxon, Wallingford, OX10 8BD	Ecology	The outlined study proposals appear to be reasonable and we support the intention to identify any related information that is available up to 5km from the site boundary.	Noted
8	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Ecology	It is also essential that a proper and accountable regime is identified to ensure Green Infrastructure and other newly created habitat is managed and maintained in the long term. This includes land which is used for sustainable drainage features.	Noted. Long term maintenance / management has been considered by the design team, when making recommendations.
9	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Waste	The proposed scope of this chapter in terms of construction and municipal waste appears reasonable.	Noted.
10	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Waste	We support the proposal to limit the amount of construction waste to landfill and that a showcase waste management system is highlighted as an opportunity. The Waste Water and Energy workstream have recently met to discuss the waste strategy. The existing recycling rate across Cherwell is currently very good and is identified at 50%. This is likely to be nearer 58% which is above the 50% target of the 2007 Waste Strategy and the 55% 2020 target for Oxfordshire. However, it is generally agreed within this workstream that we should still set ambitious waste management and waste reduction targets.	Noted. Under PPS1 all planning applications must be accompanied by a Sustainable Waste and Resources Plan (SWRP) which sets targets for operational waste. The SWRP for the Exemplar site sets an ambitious initial recycling/composting target of 70%, which was agreed by the Waste Water and Energy work stream.
11	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Waste	The report refers to "proposed energy from waste facility within the development" but later goes on to say that impacts of waste treatment and disposal and treatment will not be considered within the EIA. While we accept that the operation of energy from waste facilities will be regulated under the Environmental Permitting Regulations 2010, a certain level of assessment of their environmental impact should be considered within the EIA if any facilities of this type be incorporated into the design of the scheme.	Should an Energy from Waste Facility (i.e. anaerobic digestion) be considered, this would certainly be the case. However an Energy SWOT analysis has been carried out which concluded that organic quantities generated at the site would be insufficient. With reference to the report saying 'impacts of waste treatment and disposal and treatment will not be considered within the EIA', we refer here to the impacts of waste which is removed off site to a licensed operator (along with all Cherwell District's MSW) for treatment/disposal: we do not intend to include potential impacts of these facilities within this EIA.

Ref	Date	Consultee	Contact Details	Topic	Comment	Response
12	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Flood Risk and Hydrology	A relatively small proportion of land along both watercourses on site has been correctly identified as having flood risk associated with them. Our Flood Map currently shows the broad level of risk and we support the intention to undertake a hydraulic model to more accurately determine the extent to which these watercourses may flood. We would need to have the opportunity to review this model and we are already discussing the technicalities of this with Hyder.	Noted. HCL to continue liaising with Environment Agency.
13	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Flood Risk and Hydrology	We also support the intention to extend the study area downstream of the site to ensure flood risk will not be increased as a result of this development.	Noted.
14	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Flood Risk and Hydrology	The report proposes that a separate Flood Risk Assessment will be produced and will be submitted as an appendix to the EIA. It also states that SUDs will be incorporated into the scheme to maintain Greenfield runoff rates. This we support.	Noted.
15	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Flood Risk and Hydrology	The report only refers to producing a "conceptual" strategy. It is essential that sufficient detail is presented to ensure there is space for SUDs features and that this is not left for later consideration. This is particularly important for the housing element for which full planning approval is being sought. We are in the process of providing some more detailed guidance on the scope of the Flood Risk Assessment.	SuDS features have been included in the Drainage Strategy.
16	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Flood Risk and Hydrology	While this chapter may not be the most appropriate place to discuss and outline measures to address water resource and water consumption, we support the presented opportunity to aspire to water neutrality. However, we must stress that the development <u>will</u> be required to meet CSH level 5 for water, which equates to water consumption of 80 litres per person per day. This is a requirement of the PPS1 supplement (EcoTown supplement paragraph ET 17.5 b). This has recently been clarified with Hyder.	Noted
17	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Flood Risk and Hydrology	Water Resource is a topic area which we recommend is most appropriately considered within a Water Cycle Study.	Noted.
18	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Contaminated Land	The scope of this topic is acceptable.	Noted.
19	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Contaminated Land	We support the intention to carry out intrusive ground investigations to establish the presence, if any, of contaminated land and the proposed controlled waters risk assessment. If groundwater contamination is encountered we would like to be consulted on any proposed mitigation options prior to being finalised within the ES.	Noted.
20	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Energy Use and Sewage	Neither of these topics has been covered within the Scoping Report.	Noted.
21	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Energy Use and Sewage	Each application needs to demonstrate how it contributes to the overall achievement of Zero Carbon status as well as ensuring that all individual buildings are highly efficient through a combination of building fabric and the potential for renewable energy systems. This will have a significantly beneficial impact on the environment and should therefore be scoped in to the EIA.	These will be discussed in the Sustainability document accompanying the planning application.
22	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Energy Use and Sewage	The planning application will also need to be supported by a Water Cycle Study that will ensure there is sufficient provision made for water infrastructure. This includes sewerage infrastructure.	Noted. A Water Cycle Study has been prepared.
23	06/09/2010	Environment Agency	Sarah Green DD: 01491 828485 sarah.green@environment-agency.gov.uk	Energy Use and Sewage	The study will need to assess the options for how and where to treat the sewerage. It will need to take account of: 1. the current infrastructure at Bicester STW and whether there is capacity to take additional flows from the site. Phosphorus loading is the biggest concern in this area; 2. The study should work alongside the FRA to ensure the options reviewed would not cause flooding to sites downstream of any discharge; 3. Timeframes and funding of options; 4. Point of discharge, if an on-site treatment option is pursued then it should seek to review the viability of discharging to Gagle Brook as well as Town Brook. Discharging to Gagle Brook is likely to remove any increased flood risk to Bicester from the increased flows due to treated effluent; 5. Measures to ensure any required new infrastructure will be funded and delivered in line with the new development.	Noted. A Water Cycle Study has been prepared. Consultation with Thames Water is ongoing.

Ref	Date	Consultee	Contact Details	Topic	Comment	Response
24	26/08/2010	Natural England	Mrs Charlotte Frizzell, Senior Environmental Planning Advisor, Western Area Government Team, South East Region, Natural England	Ecology	<p>The development site is close to the following designated nature conservation sites:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Ardley Cutting and Quarry SSSI <input type="checkbox"/> Ardley Trackways SSSI <input type="checkbox"/> Stratton Audley Quarries SSSI <input type="checkbox"/> Tingewick Meadows SSSI <input type="checkbox"/> Long Herdon Meadow SSSI <input type="checkbox"/> Arncliffe Bridge Meadows SSSI <input type="checkbox"/> Wendlebury Meads and Mansmoor Closes SSSI <input type="checkbox"/> Weston Fen SSSI <input type="checkbox"/> Bestmoor SSSI <input type="checkbox"/> Kirtlington Quarry SSSI <p>Further information on the SSSI's can be found at www.natureonthemap.org.uk or by request from this office. The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within these sites and should identify such mitigation measures as may be required in order to avoid, minimise or reduce any adverse significant effects.</p>	Noted. Information has been passed on to ecology team.
25	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Ecology	Within the scoping report it states that there is just one SSSI within 2km (Stratton Audley Quarries SSSI), however Ardley Cutting and Quarry SSSI is also within 2km of the exemplar site.	Noted. This has been reviewed and amended within the ES chapter.
26	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Ecology	Within Table 2, under 3.2.1 Air Quality, it states that potential impacts on air quality come from construction, traffic movements and on-site energy production. Where a development includes energy production Natural England requests that the impact on the air quality is assessed for SSSI's within 10km of the site. This would include the full list provided above.	Noted. These sites are included in the ES.
27	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Ecology/ Air Quality	Where traffic movements will be increased as a result of the development Natural England requests that impacts on air quality is assessed for SSSIs within 200m of the roads experiencing increased traffic. Further information on air pollution and its impacts on species and habitats can be found on www.apis.ac.uk .	Noted.
28	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Ecology/ Water Quality	The exemplar site is also hydrologically linked to designated sites downstream of the site such as Wendlebury Meads and Mansmoor Closes SSSI. Natural England asks that the impact of this development on the hydrological conditions, including water quality, at these SSSI's is assessed.	Noted.
29	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Landscape Character	<p>To ensure that the proposed scheme does not adversely affect the character of the surrounding countryside, we recommend that consideration should be given to the following aspects in the environmental impact assessment:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The potential impact of the scheme on the landscape character and visual amenity of the surrounding area. <input type="checkbox"/> The detailed design of the proposed improvements should seek to respect and enhance local character and distinctiveness, and use appropriate materials and designs in all new built features. 	Noted.
30	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Landscape and Visual Impacts	Natural England would wish to see details regarding local landscape character areas mapped at a scale appropriate to the development site and any relevant management plans or strategies pertaining to the area. The EIA should include assessments of visual effects on the surrounding area and landscape together with any physical effects on the development, such as changes in topography.	Noted. Local landscape character areas will be included as part of the ES. The EIA also includes assessments of visual effects on the surrounding area and landscape.
31	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Landscape and Visual Impacts	<p>The EIA should include a full assessment of the potential impacts of the development on local landscape character using landscape assessment methodologies. We strongly advocate the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2002. LCA provides a sound basis for guiding, informing and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character, as detailed proposals are developed. Guidance on LCA, published by the Countryside Agency and Scottish Natural Heritage, is available at: http://www.countryside.gov.uk/LAR/Landscape/CC/landscape_character_assessment.asp</p>	Noted. Good practice guidelines will be applied when undertaking the landscape assessment.
32	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Landscape and Visual Impacts	Natural England notes that table 2, section 3.2.3 Landscape and Visual Impact proposes the use of the 'Guidelines for Landscape and Visual Impact Assessment: 2nd Edition' and we support this.	Noted.

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33	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Landscape and Visual Impacts	In order to foster high quality development that respects, maintains, or enhances, local landscape character and distinctiveness, Natural England would encourage all new development to consider the character and distinctiveness of the area, with the design and outlay of all elements of a proposed development reflecting local design characteristics and wherever possible using local materials. The Environment Impact Assessment process should detail the measures to be taken to ensure the building design will be of a high standard, as well as detail of layout alternatives together with justification of the selected option in terms of landscape impact and benefit.	Noted. This has formed part of the Exemplar design and mitigation.
34	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Access and Recreation	Natural England would encourage any proposal to incorporate measures to help encourage people to access the countryside for quiet enjoyment. Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways are to be encouraged. Links to other green networks or urban fringe areas should also be explored to help promote the creation of a wider green infrastructure.	Noted. This has been addressed through the design process, and assessed in the ES under the socioeconomics and health impact assessments.
35	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Ecology	Our records indicate that there are several Local Wildlife Sites in the area surrounding the development site. Local Wildlife Sites are of county importance for wildlife. The Environmental Statement should therefore include an assessment of the likely impacts on the wildlife interests of the surrounding sites. The assessment should include proposals for mitigation of any impacts and if appropriate, compensation measures.	Noted.
36	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Ecology	We are pleased to see that surveys for protected species are either in progress or will be undertaken. If any protected species are found the Environmental Statement should include details of: <input type="checkbox"/> The species concerned; <input type="checkbox"/> The population level at the site affected by the proposal; <input type="checkbox"/> The direct and indirect effects of the development upon that species; <input type="checkbox"/> Full details of any mitigation or compensation that might be required; <input type="checkbox"/> Whether the impact is acceptable and/or licensable.	Noted.
37	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Ecology	The scoping report states in Table 3.2, Section 3.2.7 on Ecology, that surveys have been carried out and great crested newts are in the area but not within or immediately adjacent to the exemplar site. It also states the surveys that are in progress or will be undertaken. In order to provide this information there may be a requirement for a survey at a particular time of year. Surveys should always be carried out by suitably qualified and where necessary, licensed, consultants. The great crested newt, dormouse and all species of bats are European protected species such that it is illegal to intentionally kill, injure or otherwise disturb them. If any of these species are found to be present you should also consult Natural England's Wildlife Management and Licensing Unit in Bristol (Tel. 0845 6014523) about licensing implications before any work can proceed.	Noted. Surveys have been undertaken by suitably qualified and licenced (if required) consultants. All surveys are undertaken at the appropriate time of year.
38	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Ecology	Natural England advises that habitat surveys that are carried out on site identify any important habitats present. In addition, ornithological, botanical and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present. The Environmental Statement should include details of: <input type="checkbox"/> Any historical data for the site affected by the proposal (e.g. from previous surveys); <input type="checkbox"/> Additional surveys carried out as part of this proposal; <input type="checkbox"/> The habitats and species present; <input type="checkbox"/> The status of these habitats and species (e.g. whether BAP priority habitat); <input type="checkbox"/> The direct and indirect effects of the development upon those habitats and species; <input type="checkbox"/> Full details of any mitigation or compensation that might be required.	Noted. Ecology surveys have been undertaken by Arup. The ES includes the relevant information and assessment.
					The standards set out in the Eco Towns Planning Policy Statement (July 2009) state that eco towns should demonstrate a net gain in biodiversity and planning permission may not be granted for eco town proposals which have a significant effect on internationally designated nature conservation sites or Sites of Special Scientific Interest (paragraph ET16.1). The development should avoid adversely impacting the most important wildlife areas within the site, and should if possible provide opportunities for overall wildlife gain.	Noted.

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39	28/08/2010	Natural England	Mrs Charlotte Frizzell 0300 060 1925 charlotte.frizzell@naturalengland.org.uk	Cumulative and In-combination effects	The EIA should include an impact assessment to identify, describe and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. To carry out the assessment of cumulative and in-combination effects, the following types of projects should be included. (Subject to the availability of information): a. Existing completed projects; b. Approved but uncompleted projects; c. Ongoing activities; d. Plans or projects for which an application has been made and which are under consideration by the consenting authorities; e. Plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.	Noted.
40	01/09/2010	Oxfordshire CC	Linda Currie, Team Leader, Strategic Planning Consultations, Oxfordshire County Council. 01865 810432 linda.currie@oxfordshire.gov.uk	Transport	The Scoping Report does not appear to include any details about Transport or Highway related issues. A Transport Assessment will be required for the Exemplar planning application as well as Transport Assessment for the application site as a whole.	Transport Assessment will be completed separately. A Traffic and Transport chapter has been included in the ES.
41	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Public Rights of Way	Public Rights of Way (PROW) should be included under the Transport/Highways assessment.	Noted. It has been considered within the Socioeconomic and Human Health assessments within the ES.
42	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Human Health (PROW)	Section 3.25 includes public rights of way but this is limited to the line of PROW in the vicinity of the site. The EIA could go further with the 'human health' side of things and look at the line of PROW, plus the condition and levels of use of current PROW and greenspaces and then see how the development could make best use of these and provide for mitigation, by extra provision and improvements to existing, to meet the needs of Eco-town residents and the aims of the Rights of Way Improvement Plan.	The line of the PROW has been considered as part of the socio-economic and human health assessment. Where data has been readily available from the County Council regarding the current use of PROW and greenspaces then this information has been utilised. However, new primary data has not been collated for this assessment and is considered to be outside the scope of this assessment.
43	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Cultural Heritage	The County Archaeologist broadly supports the provisions for the Archaeological and Cultural Heritage section of the EIA set out in section 3.2.4 in Table 2 of the EIA scoping report. Should an Environmental Impact Assessment be required on this application then we would recommend that the measures set out in this document for identifying the potential impact on this development on archaeological deposits and other aspects of the cultural heritage should be undertaken and included in the ES.	Noted. Cultural heritage has been included as part of the ES. This includes assessing potential impacts on archaeology and built heritage assets.
44	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Section 3.2.5 Data collection – the EIA should refer to data in the Joint Strategic Needs Assessment (JSNA); this report identifies current and future health and wellbeing needs in light of existing services, and informs future service planning taking into account evidence of effectiveness. It is available on the Oxfordshire Data Observatory website, www.oxfordshireobservatory.info, under Data > Themes > JSNA 2009.	Noted.
45	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Accessibility to day resource centres for older people, childrens centres, SEN facilities, adult learning, NHS dentists should be looked at.	Oxfordshire CC has been contacted to determine the availability of this data. There is not the scope to undertake our own raw data collection on this issue. Liaison with Social and Community Infrastructure Workstream undertaken
46	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Mitigation /opportunities for enhancement – these should also include provision of community space where people can meet and where community health services, children's services and social services can be delivered to the new community.	The extent to which the EIA can refer to specific community infrastructure was dependent on the evidence base gathered by the Social and Community Infrastructure Workstream. Liaison with Social and Community Infrastructure Workstream undertaken.
47	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Consultation - there will need to be consultation with the County Council (through the social and community infrastructure work stream) on the inclusion of space to deliver childrens services and social services to older and disabled people as part of the scheme.	Consultation envisaged through the Social and Community Infrastructure Workstream. Liaison with Social and Community Infrastructure Workstream undertaken.
48	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Section 3.2.7: Consultation column should refer to Oxfordshire (not Oxford) County Council	Noted and amended.

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49	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Section 3.2.8: Study area – the local area should be based on the Bicester catchment area for local service delivery ie including surrounding villages such as Upper Heyford . This will be important for considering the impacts of the proposal on provision of higher order services and facilities which cover a wide catchment area eg secondary school, library provision	Our baseline data collection has focused around the electoral wards that form the Bicester settlement, plus Caversfield ward (within which the exemplar site/whole site is located) which has been defined as the 'Central Impact Zone'. Ref 49 refers to the need to extend the study area to incorporate some other outlying villages that are not within the Caversfield ward – Upper Heyford mentioned. For those included within the Caversfield ward site visits have been undertaken and these are accounted for within the baseline socio-economic datasets: Bucknall, Ardley, Caversfield, Bainton and Stoke Lyne. Broad reference has been made to the villages reliant on Bicester services but are outside the Central Impact Zone. This assessment stage will similarly refer to the potential impacts on these outlying villages.
50	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Site description – Bicester Village is an important player in the local economy. The availability of employment space at Upper heyford may have an impact	Noted. Bicester Village and wider employment demand/supply have been referred to in the socio-economic impact.
51	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Data collection – refer to JSNA. In looking at the impacts of demands from the exemplar development, it will be important to understand the timing of these new demands against the background of demands projected from already planned housing sites and the scale and timing of new community facilities, particularly schools which are planned as part of those housing sites	Consultation through the Social and Community Infrastructure Workstream and other pre-application discussions. The EIA will however reference other development considerations and the general interaction of the exemplar site with other schemes.
52	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Potential impacts: In the functional stage of the exemplar, the impacts on services and facilities provided off-site should be considered eg library, secondary school, youth facility, fire and rescue.	Consultation through the Social and Community Infrastructure Workstream. Liaison with Social and Community Infrastructure Workstream undertaken
53	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Mitigation measures: This should include improvements to off-site services and facilities provided off-site	Consultation on community infrastructure and services will have been undertaken as part of the Social and Community Infrastructure Workstream. Liaison with Social and Community Infrastructure Workstream undertaken. Off-site mitigation provision does not necessarily fall within the remit of this ES.
54	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Consultation: with Oxfordshire County Council through the social and community infrastructure workstream. The impacts on County delivered services will not be limited to "education" and "social services". The County Council has statutory responsibility for a much wider range of services, the impacts on which will need to be considered	Noted. A much broader assessment of impact has been undertaken, based on identified potential impact domains: local demographics, housing, employment, the local economy, community facilities and services, crime, tourism and its integration with other local development proposals.
55	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Section 3.2.9: Consultation on issues related to energy and waste management should include the County Council through the Energy, Waste and Water workstream.	Noted. Referenced as part of a range of secondary impacts in addition to impacts such as social nuisances such as poor air quality, noise etc.
56	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Water/ Flood Risk	Section 3.2.10: Consultation re development of SUDs should include the County Council in view of the Council's new statutory responsibilities re flooding.	Noted.
57	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Socio-Economics	Section 4.1 Consultation list should include Thames Valley Police rather than Banbury Constabulary ?	Noted. Using Thames Valley Crime statistics.
58	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	The EIA should consider the potential impacts of the exemplar site within the context of the entire eco town development and the existing town of Bicester. Green Infrastructure should be an over-arching theme for the development design and should incorporate landscape, ecology and hydrology elements. Outputs from the Green Infrastructure workstream should inform the EIA process. Over arching GI objectives should be used to inform the EIA process; See Annex 1 response from Oxfordshire CC.	Noted - forms part of Exemplar design, which has been described/summarised in ES mitigation sections.
59	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	This chapter should involve close liaison with the consultants writing the ecology and flood risk & hydrology chapters, as proposed mitigation strategies and compensation/ enhancement measures may affect the resulting development design. Outputs from the Green Infrastructure workstream should inform the Landscape and Visual Impact chapter.	Landscape, ecology, water/flood risk have liaised closely in formulation of green infrastructure proposals.

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60	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	This chapter should cover the following: Elements of the development and its construction relevant to landscape and visual impact; Planning context; Assessment methodology; Baseline conditions; Identification and evaluation of likely significant effects (inc cumulative); Mitigation and enhancement; and long-term management and monitoring.	Noted. Chapter complies with these requirements.
61	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	Oxfordshire County Council documents relevant to this chapter include the following: o Oxfordshire Wildlife and Landscape Study (Middleton Stoney Wooded Estate landscape type), available from http://owls.oxfordshire.gov.uk and see appendix I; o Conservation Target Areas Report (Tusmore and Shellswell Park CTA and Ray CTA), available from http://www.oxfordshire.gov.uk/naturalenvironment and see appendix II; o Rights of Way Improvement Plan, available from http://www.oxfordshire.gov.uk/countryside	Noted.
62	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	The Hyder Consulting scoping report makes no reference to the OWLS study or the 1995 Cherwell District Landscape Assessment so does not currently have a robust information base relating to landscape character.	Scoping report provided an overview only - further level of detail has been included in ES.
63	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	Landscape Character Assessment (LCA) should be carried out based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2002.	Noted. Our landscape team have followed good practice guidance.
64	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	The LCA should be considered within the context of Cherwell District Landscape Assessment and the Oxfordshire Wildlife and Landscape Study (accessible from http://owls.oxfordshire.gov.uk/). In particular, the biodiversity, forces for change, and landscape strategy elements of OWLS should be used. The Bicester Eco town exemplar site is within the OWLS Wooded Estate landscape type and Middleton Stoney local character area; further details are included in appendix I.	Noted.
65	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	It is recognised that OWLS has been undertaken at a county level. For a development of this size we would therefore expect to see local studies which refine this broad-scale information, provide better detail on the local landscape, and landscape guidelines specifically for the development.	Noted. Local landscape character areas have been included as part of the ES. The EIA also includes assessments of visual effects on the surrounding area and landscape.
66	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	Mitigation and Enhancement: Landscape planting schemes for enhancement and mitigation should be agreed in discussion with the ecological and hydrological consultants and be in line with the outputs from the Green Infrastructure work-stream. Planting schemes should also follow guidance from the Oxfordshire Wildlife and Landscape Study (OWLS) to ensure they are appropriate to the area.	Noted. Landscape team have liaised with ecology and water teams.
67	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	Green Infrastructure and Masterplanning: Landscape is a key component of green infrastructure and the results of the landscape character assessment should be used to influence the green infrastructure principles and master-planning process for the site.	Noted. Landscape team has provided inputs into the wider Masterplan.
68	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	Provision should be made for the long term management of any public green space, particularly for areas for which mitigation or compensation/enhancement measures have been proposed.	Noted. Landscape/ecology teams have formulated heads of terms, which are summarised in ES mitigation / enhancement sections
69	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	The EIA should include head of terms for a management plan with the full management plan to be submitted prior to the completion of the development. The costs of implementing the plan may need to be secured through a S106 agreement. This sum should cover the costs of annual monitoring and an annual review of the management plan for the entire site, in addition to the management work itself.	Noted. Landscape/ecology teams have formulated heads of terms, which are summarised in ES mitigation / enhancement sections
70	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape and Visual Impacts	Responsibility for carrying out the review of the management plan and the management work itself will need to be taken by an individual or group of individuals, as agreed by the developer and Cherwell District Council in discussion with the relevant nature conservation bodies.	Noted
71	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology and Landscape	A single plan for management and monitoring of both biodiversity and landscape elements of the development would be sensible to minimise resource expenditure and ensure cohesion between landscape and biodiversity requirements. This could be achieved using a green infrastructure management and monitoring scheme.	A Green Infrastructure Plan has been prepared.
72	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	This chapter should involve close liaison with the consultants writing the landscape & visual impact and flood risk & hydrology chapters, as proposed mitigation strategies and compensation/enhancement measures may affect the resulting development design. Outputs from the Green Infrastructure workstream should inform the Ecology chapter.	Noted.
73	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	See comment 60 (Landscape and visual impact) for list of elements ecology chapter should cover.	Noted. Ecology team reviewed this list.

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74	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	Planning policies, legislation and other documents relevant to this chapter include the following: Habitat Regs 2010; CROW Act 2000; WCA 1981; Badger Act 1992; PPS9; o Oxfordshire Biodiversity Action Plan, available from http://www.oncf.org.uk/biodiversity/biodiversity.html ; o Oxfordshire Wildlife and Landscape Study (Middleton Stoney Wooded Estate/lands landscape type), available from http://owls.oxfordshire.gov.uk and appendix I; o Local Wildlife Sites Project, project information available from http://www.bbowl.org.uk , information on location of sites and citations available from http://www.tverc.org/ ; o Biodiversity and Planning in Oxfordshire guidance available from http://www.oxfordshire.gov.uk/naturalenvironment ; o Conservation Target Areas Report (Tusmore and Shellswell Park CTA and Ray CTA), available from http://www.oxfordshire.gov.uk/naturalenvironment and appendix II; o Rights of Way Improvement Plan, available from http://www.oxfordshire.gov.uk/countryside	Noted. Information was provided to ecology team.
75	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	The EIA should identify protected or priority species, designated sites, important habitats or other biodiversity features on or adjacent to the development site. Desk study information is available from the Thames Valley Environmental Records Centre (http://www.tverc.org/).	Noted. Ecology team identified these assets. Information on Records Centre was passed on to ecology team.
76	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	Desk study – In addition to obtaining records from TVERC, the Hawk and Owl Trust and Butterfly Conservation, Arup should also contact the local bat group, the local badger group and Banbury Ornithological Society for their records.	Noted.
77	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	Ardley Cutting & Quarry SSSI (unit 2) is located just outside of the development site boundary.	Noted. The SSSI has been included in the EIA chapter.
78	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	The site is close to the Tusmore and Shellswell Park Conservation Target Area and Ray Conservation Target Area and the development should help meet the targets of these CTAs. Further information is provided in appendix II.	Noted.
79	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	Surveys – In addition to the surveys mentioned in the scoping report, winter surveys for brown hairstreak eggs should be carried out. There are badger setts on the site and whether the development could have a significant impact or not will depend on the exact location of housing and whether the setts close to houses are main setts or outliers and whether the other setts on site are used by the same clan of badgers or not, and where the main setts are in relation to the foraging areas. Bait-marking would be needed to determine this.	Noted.
80	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	If any protected species are found, a mitigation strategy will need to be prepared and submitted in discussion with Natural England and Oxfordshire County Council and it may be necessary for the applicant to obtain a licence from Natural England. Mitigation strategies for any other protected species, species of conservation concern, rare and notable species or UK BAP species that could be potentially impacted by the development will be needed.	Noted.
81	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	Any impacts of the development which cannot be minimized to a negligible level through mitigation will need to be compensated for. This could be via on and/or off site enhancement of existing biodiversity resources and/or the creation of new habitat. The type of compensatory habitat should be appropriate to the surrounding habitat and species present in the area. The biodiversity strategy and guidelines outlined on the OWLS website and the CTA project can be used as guidance for the enhancement of ecological areas and their future management.	Noted.
82	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	The development should result in a net enhancement in biodiversity.	Noted.
83	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	Ecology is a key component of green infrastructure and the results of ecological surveys should be used to influence the green infrastructure principles and master-planning process for the site.	Noted. Ecology team have inputted into the masterplan development.
84	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	See Annex 1 of Oxfordshire CC comments for Green Infrastructure biodiversity principles	Ecology team reviewed Green Infrastructure biodiversity principles in Annex 1
85	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	Provision should be made for the long term management of any public green space, particularly for areas for which mitigation or compensation/enhancement measures have been proposed.	Noted. Ecology chapter includes mitigation and enhancement recommendations.
86	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	The EIA should include head of terms for a management plan with the full management plan to be submitted prior to the completion of the development. The costs of implementing the plan may need to be secured through a S106 agreement. This sum should cover the costs of annual monitoring and an annual review of the management plan for the entire site, in addition to the management work itself.	Noted.

Ref	Date	Consultee	Contact Details	Topic	Comment	Response
87	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	Responsibility for carrying out the review of the management plan and the management work itself will need to be taken by an individual or group of individuals, as agreed by the developer and Cherwell District Council in discussion with the relevant nature conservation bodies.	Noted.
88	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	Continuous monitoring will be needed to determine the actual impacts of the development on the biodiversity of the site. Monitoring should also provide information on the success of the mitigation strategies implemented for the protected species and feed into the management plan to allow it to be altered as necessary	Noted.
89	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Ecology	A single plan for management and monitoring of both biodiversity and landscape elements of the development would be sensible to minimise resource expenditure and ensure cohesion between landscape and biodiversity requirements. This could be achieved using a green infrastructure management and monitoring scheme.	Noted.
90	01/09/2010	Oxfordshire CC	Linda Currie 01865 810432 linda.currie@oxfordshire.gov.uk	Landscape/Ecology	See Annex 1 of Oxfordshire CC comments for Appendices containing additional Landscape and Ecology information.	Landscape and Ecology teams reviewed Annex 1 - additional comments
91	26/08/2010	Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust	BBOWT, The Lodge, 1 Armstrong Road, Littlemore, Oxford, OX4 4XT	Ecology	Key points that will need to be included in the EIA are as follows: • Survey to identify protected species, and habitats and species of importance (as listed under Section 41 of the NERC Act 2006)principle; • Identification of any indirect impacts of development at this site on biodiversity in the wider area, including hydrological impacts, air pollution impacts and potential damage to sensitive sites through increased recreational pressure; • Identification of opportunities for biodiversity enhancements, to allow development of a Biodiversity Strategy that will achieve a net gain in biodiversity	Noted and reviewed/included.
92	26/08/2010	Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust	Rebecca Micklem, Conservation Officer (Oxon); beccymicklem@bbowt.org.uk	Ecology	Data collection to inform the EIA should include a data search to identify designated sites, protected species, and species and habitats of principal importance (as listed under Section 41 of the NERC 2006). I note that reference is made (in the third column of the table provided on page 16 of the scoping report) to the presence of a single SSSI within 2km of the site, Stratton Audley Quarries. This site is in fact designated SSSI for it's geological interest but also receives Local Wildlife Site status for its ecological importance. I am concerned that other SSSIs in the area appear to have been overlooked. These include Ardley Cutting and Quarry SSSI which lies within 1.5 km, to the north west of the site. The EIA will also need to identify Local Wildlife Sites and Local Nature Reserves in the area and assess any likely impacts on these sites.	Noted. SSSIs reviewed and correctly included in the EIA chapter.
93	26/08/2010	Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust	Rebecca Micklem, Conservation Officer (Oxon); beccymicklem@bbowt.org.uk	Ecology	In developing mitigation, we recommend that off-site mitigation for some impacts (e.g. farmland birds) is taken into consideration in the EIA. In developing proposals to retain ecological features, such as hedgerows, on site we recommend that consideration is given to the likely impact on these features during occupation of the development and the need for ongoing nature conservation management of such features.	Noted. Ecology team have taken this request into consideration when developing mitigation measures.
94	26/08/2010	Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust	Rebecca Micklem, Conservation Officer (Oxon); beccymicklem@bbowt.org.uk	Ecology	The exemplar site will need to demonstrate a net gain in biodiversity in line with the guidance in eco-town PPS (ET 16.1). The EIA should identify areas with potential for delivery of biodiversity enhancements. We welcome recognition within the Agriculture and Landuse section of the report, that a Soil Resources Plan should be used to identify areas of soils suitable for habitat creation. In relation particularly to the exemplar site application, it is essential that habitat connectivity is achieved with existing and future habitats to be created within the wider site.	Noted.
95	26/08/2010	Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust	Rebecca Micklem, Conservation Officer (Oxon); beccymicklem@bbowt.org.uk	Ecology	Whilst a separate process to the EIA, the Council should be aware that there is also a requirement within the Eco-town PPS that a strategy for conserving and enhancing local biodiversity is produced to accompany planning applications for eco-towns.	Noted.
96	26/08/2010	Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust	Rebecca Micklem, Conservation Officer (Oxon); beccymicklem@bbowt.org.uk	Ecology	Additional comments made to Arup ecologists in May 2010	Ecology team reviewed additional comments made by BBO Wildlife Trust in May 2010.
97	20/09/2010	English Heritage	Steve Williams, Regional Planner; 01483 252052; steve.williams@english-heritage.org.uk	Cultural Heritage	English Heritage has been consulted and has the following comments. It is noted that Landscape and Visual Impact (3.2.3) and Archaeology and Cultural Heritage (3.2.4) are topics to be covered by the EIA. English Heritage is content that potential negative impacts upon the historic environment have been identified and mitigation/enhancement opportunities identified for the site and its immediate vicinity. Table 2 identifies the potential for impact upon the Grade II* listed St. Lawrence's Church and Grade II listed Home Farmhouse and the need for an assessment of archaeological potential.	Noted.

Ref	Date	Consultee	Contact Details	Topic	Comment	Response
98	20/09/2010	English Heritage	Steve Williams, Regional Planner; 01483 252052; steve.williams@english-heritage.org.uk	Cultural Heritage	Clearly, the Exemplar Site forms only a relatively small part of the proposed eco-town area. Nevertheless, it will contribute to the direct, indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects of the proposals as a whole. There may be potential for some beneficial reuse of buildings of historic significance associated with the former RAF Bicester a little way to the east of the site. Opportunities may arise associated with the construction phase of the eco-town and over the longer term, for example, as a source of premises suitable for employment and community uses. This warrants being scoped into the assessment.	Noted, however the former RAF Bicester site is outside of the development area so it may be outside the scope of the assessment to recommend reuse of the historical buildings associated with it.
99	24/09/2010	Thames Water	Thames Water Developer Services 0845 850 2777	Water	The provision of water and waste water infrastructure is essential to any development and Thames Water is aware of the potential for a Water Cycle Study to be undertaken for the Eco-development.	A Water Cycle Study has been prepared.
100	24/09/2010	Thames Water	Thames Water Developer Services 0845 850 2777	Water	While Thames Water accepts that work is ongoing to understand the water and waste water infrastructure needs, it makes the following observations in response to the scoping report: <ul style="list-style-type: none"> • It is unclear at this stage what the net increase in demand on Thames Water infrastructure will be as a result of the proposed development. • Thames Water is concerned that the network in this area may be unable to support the demand anticipated from this development. • The developer needs to consider the net increase in water and waste water demand to serve the development and also any impact the development may have off site further down the network, if no/low water pressure and internal/external sewage flooding of property is to be avoided. 	Noted. Liaison with Thames Water is ongoing.
101	24/09/2010	Thames Water	Thames Water Developer Services 0845 850 2777	Water	Thames Water has recommended that any EIA report should be expanded to consider the following. <ul style="list-style-type: none"> • The proposed development's demand for water supply and network infrastructure both on and off site and can it be met • The proposed development's demand for sewage treatment and network infrastructure both on and off site and can it be met • The surface water drainage requirements and flood risk of the development both on and off site and can it be met 	Noted. Liaison with Thames Water is ongoing.
102	24/09/2010	Thames Water	Thames Water Developer Services 0845 850 2777	Water	Please contact Thames Water's Developer Services department on 0845 850 2777 to obtain information on the above issues	Noted. Liaison with Thames Water is ongoing.
103	24/09/2010	Highways Agency		Transport	The Highways Agency has confirmed that when a scoping report is submitted, the following information should be provided: <ul style="list-style-type: none"> • Details of the development, such as location, access arrangements, use class, size or number of units, maximum number of parking spaces and any other relevant information. • Proposed methodology for estimating the vehicular trip generation and distribution on the strategic road network, and resulting trip generation figures • Proposed methodology for assessing the impact of trip generation on the strategic road network. 	Noted. Traffic and Transport chapter and Transport Assessment includes this information.
104	24/09/2010	Highways Agency		Transport	The Highways Agency's response refers to Guidance on Transport Assessments produced by the Department of Transport in 2007 and the initial appraisal consultation form published with the guidance. The Highways Agency has confirmed that it would be happy to assist in any data that it has pertaining to the junctions relevant to the proposed development	Noted.
105	24/09/2010	Cherwell District Council	Cherwell DC Planning Policy, Design & Conservation Officers	General	The proposed development is the first phase of a larger development and therefore it is inextricably linked to the wider proposal, as is made clear in the first six pages of the Scoping Report. There will inevitably be interactions between the different phases of the larger development. For example, public transport routes, drainage, open space, employment, retail, community and education facilities are not mutually exclusive in their provision or in their use. The interaction between the different phases is an important element of the whole development as a sustainable community.	Noted.
106	24/09/2010	Cherwell District Council	Cherwell DC Planning Policy, Design & Conservation Officers	Cumulative	It is 'reasonably foreseeable' that the adjoining land will be developed (because without it we would not be considering this proposal). Circular 2/99 and the EIA Regulations both make it clear that the cumulative effects of development should be assessed. The cumulative effects include the effects of the whole scheme. The increase in potentially adverse impacts should arguably be assessed as part of the requirement to forecast and predict direct indirect and cumulative impacts (Schedule 4).	Noted. Cumulative Effects chapter includes the effects of the NW Bicester eco-development with the Exemplar.

Ref	Date	Consultee	Contact Details	Topic	Comment	Response
107	24/09/2010	Cherwell District Council	Cherwell DC Planning Policy, Design & Conservation Officers	Ecology, landscape, sust	The impact assessment might identify mitigating actions that are contingent with delivery of the later phases i.e. advance screen planting, green corridors providing biodiversity linkages through the whole development and beyond to the countryside; or sustainable travel or energy choices that may only become available through the other phases (cycle links, bus stops, or decentralised energy sources where viability requires the larger scale development). If such elements are recognised as 'positive' mitigations, the adverse impacts associated with the development as a whole should also be assessed (rather than the wider development just being selectively acknowledged).	Noted by all topics.
108	24/09/2010	Cherwell District Council	Cherwell DC Planning Policy, Design & Conservation Officers	General	On large developments it is normal practice for an outline application to be submitted for the whole scheme and these impacts assessed, to be followed by Reserved Matters applications. Paragraph 1.2 of the Scoping Report states that "each outline application will therefore be accompanied by an ES". Such an approach would require the submission of a number of environmental statements and the Council would seek a comprehensive outline application following the submission of the exemplar application.	Noted.
109	24/09/2010	Cherwell District Council	Cherwell DC Planning Policy, Design & Conservation Officers	General	It is also unclear whether development of the area defined as "phase 2" in Fig 2.2 is to be assessed or not. It is included within the site boundary but there is no indication as to the proposals.	Noted. Site boundary updated.
110	24/09/2010	Cherwell District Council	Cherwell DC Planning Policy, Design & Conservation Officers	Landscape	The reference at paragraph 3.23 to established landscape character as having a "wooded character" is rather simplistic and should refer to a range of documents, including the Cherwell District Council (CDC) Landscape Character Assessment and also our Countryside Design Summary, which give finer grain landscape types and identify the site as falling into the Oxfordshire Estate Farmlands. The Oxfordshire Wildlife and Landscape study should also be considered. It is important that the established landscape character is fully understood before appropriate mitigation techniques are considered.	Scoping report provided overview only - further level of detail has been included in ES.
111	24/09/2010	Cherwell District Council	Cherwell DC Planning Policy, Design & Conservation Officers	Transport	Transport is not mentioned and so it is not clear whether a separate transport assessment is to be carried out. This is an aspect of the proposals that will be important to local people and must be fully addressed.	A separate Transport Assessment is being carried out for the development. A Traffic and Transport chapter summarises this assessment in the ES.
112	24/09/2010	Cherwell District Council	Cherwell DC Planning Policy, Design & Conservation Officers	Cultural Heritage	The reference to impact on heritage assets is rather heavy on archaeology. PPS 5 now refers to designated and undesignated heritage assets so impacts on undesignated assets should be included. Impacts on setting and curtilage will also need to be assessed.	Noted. Undesignated assets such as Caversfield House have been considered and setting of all assets has been included.
113	24/09/2010	Cherwell District Council	Cherwell DC Planning Policy, Design & Conservation Officers	Design	The overfly zone for Windrushers' Gliding Club at RAF Bicester needs to be taken into account. Care will need to be taken not to develop in locations that would prevent continued aviation use of the former RAF Bicester.	Comment has been passed on to the wider design team.
114	24/09/2010	Cherwell District Council	Cherwell DC Planning Policy, Design & Conservation Officers	General	The main alternatives are required to be assessed. These need to be clearly set out in the Environmental Statement.	Noted. Alternatives have been discussed in the ES.
115	24/09/2010	Cherwell District Council	Cherwell DC Planning Policy, Design & Conservation Officers	Air Quality	On air quality, it would be appropriate in this Eco Town to assess the emissions from buildings. The TCPA worksheets recommend that these are monitored.	The TCPA sheet for energy requires assessment from on site energy generation. The Energy Centre has been included as part of the ES.
116	24/09/2010	Cherwell District Council	Cherwell DC Planning Policy, Design & Conservation Officers	General	On a minor point, there are a few locations where references from other documents (for example, reference to a brief, to demonstrating deliverability of the site, to informing the preparation of the Core Strategy and to Three Rivers Water) do not seem to have been edited out and this should be corrected.	Noted. This will not be replicated in the ES.
117	24/09/2010	Cherwell District Council	Cherwell DC Biodiversity and Conservation Officer	Ecology	The above officer has nothing substantial to add to the responses of BBOWT and Natural England to this scoping report but emphasises the following points: <ul style="list-style-type: none"> • Bearing in mind some of the ecological surveys for protected species, and habitats and species of principle importance, have not yet been completed, it is important that the EIA does take into account the findings of all surveys; • The impact on important wildlife sites (SSSIs, Local Wildlife Sites, Local Nature Reserves and Conservation Target Areas) close to the site should be comprehensively assessed; • The development of a Biodiversity Strategy to ensure that a net gain in biodiversity is achieved is crucial; • The connectivity within the site, and between the site and the surrounding countryside, particularly in terms of hedgerows and water courses, is vitally important. 	Noted and included.
118	24/09/2010	Cherwell District Council	Cherwell DC Environmental Protection Officer	Air Quality	The above officer has previously spoken with Hyder and confirmed that the proposed approach is acceptable in principle.	Noted.

Ref	Date	Consultee	Contact Details	Topic	Comment	Response
119	24/09/2010	Cherwell District Council	Cherwell DC Environmental Protection Officer	Air Quality	A detailed assessment at Queens Avenue / Kings End, Bicester is being undertaken for nitrogen dioxide. This will be reported by the end of February 2011 and a lag time of approximately six weeks should be allowed from sample collection to receiving monitoring results.	Noted.
120	24/09/2010	Cherwell District Council	Cherwell DC Environmental Protection Officer	Air Quality	The "soft mitigation" measures outlined when developing the master plan are a sensible approach as a general principle.	Noted.
121	24/09/2010	Cherwell District Council	Cherwell DC Environmental Protection Officer	Air Quality	It is noted that the baseline monitoring period is only three months which is the minimum length of monitoring time required in LAQM.TG, 2009. This document does state that all surveys should ideally be carried out for a minimum of six consecutive months (three in summer and three in winter) to ensure they are representative of the whole year. A longer period of monitoring (six months) would therefore be preferred. It is accepted that the proposed three months of monitoring is likely to provide useful information for informing the environmental statement when period mean corrected against long term background data sets, but it is recommended that a longer period of monitoring is undertaken.	Previously discussed this with the EPO at Cherwell DC. The programme for the project only allows 3 months monitoring to be considered for the Exemplar site. However, it was agreed that 6 months monitoring around the whole site would be carried out.
122	24/09/2010	Cherwell District Council	Cherwell DC Environmental Protection Officer	Air Quality	From previous correspondence it is understood that there may be various time constraints on this project and that submitting an addendum to the ES is not a favourable / practicable approach.	Three months monitoring results will not be available until late November. An addendum to the Exemplar ES will be needed in order to meet the requirements of the EPO as listed in their comment above. It's unavoidable unless the EPO changes their requirement.
123	24/09/2010	Cherwell District Council	Cherwell DC Environmental Protection Officer	Contaminated Land	The approach outlined in the scoping report i.e. assessing the risk from land contamination through intrusive ground investigation and subsequent chemical analysis is acceptable.	Noted.
124	24/09/2010	Cherwell District Council	John Hoad, Cherwell DC Strategic Director of Planning, Housing and Economy	General	The above sections set out the local planning authority's response to the request for a screening opinion. Some comments have taken a while to be received and I therefore apologise for the delay in responding. Any further comments received will be forwarded. In the meantime I trust this information is of assistance to you in the formulation of the Environmental Statement and should be treated as the Council's formal scoping opinion made under the EIA Regulations 1999, Circular 02/99 and the Town and Country Planning (General Development Procedure) Order 1995.	Noted.
ADDITIONAL BACKGROUND COMMENTS FROM CONSULTÉES (BUT NOT INCLUDED IN FORMAL SCOPING OPINION)						
A1	20/09/2010	English Heritage	Steve Williams, Regional Planner; 01483 252052; steve.williams@english-heritage.org.uk	Cultural Heritage	We welcome recognition that the north west Bicester eco-development, as distinct from an eco-town, will not be a standalone new settlement and that its success will very much depend upon symbiosis with the existing town and its communities.	Noted.
A2	20/09/2010	English Heritage	Steve Williams, Regional Planner; 01483 252052; steve.williams@english-heritage.org.uk	Cultural Heritage	Although the development area as a whole is relatively unconstrained by nationally significant heritage assets (two Grade II listed barns at Hinley Farm and the Grade II listed Home Farmhouse within the site; and the Grade II* Church of St. Lawrence, Caversfield just outside the boundary), it will be important to consider impacts (positive and negative), upon the wider area including the historic town centre and other significant heritage assets such as RAF Bicester.	Noted, however RAF Bicester and the town centre of Bicester lies outside the study area as defined in the Scoping report and therefore considering it in the assessment would constitute additional work outside of the original scope. We do not feel that from a heritage point of view there will be any impact on the town centre due to it being separated from the development by the large residential development of northern Bicester.
A3	20/09/2010	English Heritage	Steve Williams, Regional Planner; 01483 252052; steve.williams@english-heritage.org.uk	Cultural Heritage	Locally significant landscape features within and around the site such as hedgerows, tree lines and field patterns will have an important contribution to make to help in the creation of a sustainable and distinctive new community	Noted. The landscape, heritage and ecology teams are working closely with the design team to create a sustainable and distinctive community.
A4	20/09/2010	English Heritage	Steve Williams, Regional Planner; 01483 252052; steve.williams@english-heritage.org.uk	Cultural Heritage	The masterplanning framework introduces the concept of a 'collage of villages', with local centres/hubs based upon four existing farmsteads. The Exemplar site occupies a relatively small part of the eco-development area, but in terms of the historic environment, it has the potential to impact upon the setting of Home Farmhouse and the Church of St. Lawrence, although neither are actually within the Exemplar boundary. The Halcrow's Concept Study of February 2009 noted the need for sympathetic design in proximity to the listed buildings as a priority. This will clearly need to be picked up as more detailed design work is progressed. One of the difficulties in responding to this Exemplar consultation is that it represents such a small part of the whole proposal, while so much remains to be revealed about the remainder, not least areas actually abutting the site.	Noted. The landscape and heritage teams are working closely with the design team to develop sympathetic design in proximity to listed buildings.

Ref	Date	Consultee	Contact Details	Topic	Comment	Response
A5	20/09/2010	English Heritage	Steve Williams, Regional Planner; 01483 252052; steve.williams@english-heritage.org.uk	Cultural Heritage	The latest Exemplar layout illustrates an extensive area of undeveloped land to the south and west of Home Farm. This would provide some spatial separation and relief to the two listed buildings mentioned, but the area is actually outside the Exemplar site boundary and may therefore give a false impression of openness in the vicinity of the farmstead, which after all, is trailed as one of the four foci of development around which a new community is planned to grow	Noted. The area of undeveloped land will remain in the ownership of Home Farm. It is a buffer zone providing spatial separation for the listed buildings and for the receptors.
A6	20/09/2010	English Heritage	Steve Williams, Regional Planner; 01483 252052; steve.williams@english-heritage.org.uk	Cultural Heritage	The Exemplar Project Vision refers to development being designed to respect the constraints of the site, but this is qualified in parenthesis by reference to ecological and technical. For the avoidance of doubt, and having regard to the potential for impact upon heritage assets referred to above, we suggest the reference should be to 'environmental' rather than just 'ecological', or 'ecological, heritage and technical'.	Noted. This will be acknowledged in the ES.
A7	20/09/2010	English Heritage	Steve Williams, Regional Planner; 01483 252052; steve.williams@english-heritage.org.uk	Cultural Heritage	The Vision also refers to 'respect' for adjoining countryside and 'the existing Bicester'. More could be made of this, along the lines that it is one of the positive attributes of the exercise that local character and distinctiveness should positively inform the outcomes	Noted.
A8	20/09/2010	English Heritage	Steve Williams, Regional Planner; 01483 252052; steve.williams@english-heritage.org.uk	Cultural Heritage	English Heritage advocates historic characterisation as an integrated understanding of place. It leads to an understanding of how places have evolved and are currently perceived which helps to manage this change. It is particularly effective when carried out as early on in the process as possible. Historic characterisation helps to establish sensitivities of a place and its capacity for development or change; helps to define opportunities for new development and informs its design; establishes the heritage values and significance of a place for different stakeholders and can assist coordination with community neighbourhood aspirations. It would assist us to know the extent to which specific characterisation work has been undertaken and is being used to inform further development of the masterplan.	As part of the ES the Heritage chapter will be considering the Historic landscape within the Exemplar site and the surrounding study area using available cartographic and written sources. However as English Heritage are probably aware no Historic Landscape Characterisation has been carried out for Oxfordshire. To carry out one as part of this project would be beyond our scope of work.

APPENDIX 7A

Arup (2010) Phase 1 Habitat Survey

A2 Dominion

Bicester Eco town

Phase 1 Habitat Survey

A2 Dominion

Bicester Eco Town

Phase 1 Habitat Survey

July 2010

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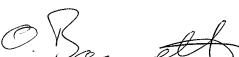

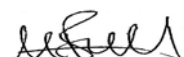
This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party

Job number 212606 - 00

Job title	Bicester Eco Town	Job number
		212606 - 00
Document title	Phase 1 Habitat Survey	File reference
		R01

Document ref

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			Prepared by	Checked by	Approved by
		Name	Oliver Barnett	James Brock	Michael Bull
		Signature			
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		Description	Re-Issue		
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		Signature			
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		Name			
		Signature			

Issue Document Verification with Document



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1 Introduction

1.1 Background

Arup was commissioned by A2 Dominion to carry out an ecological appraisal of the proposed Bicester Eco Town development in Oxfordshire. The development site is located within a belt of mixed-use farmland which lies to the north west of Bicester, between the town and the nearby village of Bucknell (Central OS Grid Ref: SP 565 247)

This report details the findings of Phase 1 Habitat Surveys which were undertaken across the whole site during the spring of 2010.

The purpose of Phase 1 Habitat Surveys is to map key habitats and plant species assemblages, and identify the presence and/or potential for protected species. This report presents an initial assessment of the ecological significance of the features currently present on site, and the likelihood that the area supports species of conservation interest which may be affected by the proposed development.

As an initial assessment, the Phase 1 Habitat Survey provides recommendations for further surveys, if needed, and where relevant, possible mitigation and site enhancements that may be necessary under legislative and current policy parameters. It is intended that this information will be used to inform an Environmental Impact Assessment (EIA).

1.2 Aims and Objectives

The Phase 1 Habitat Surveys set out to:

- Provide information on the type, location, extent and distribution of habitats present on the site.
- Provide an evaluation of the likely ecological value of the site, and the presence of species protected by law or otherwise of nature conservation importance, or of habitats or features able to support such species.
- Assess the implications of the findings in relation to the proposed development and, where appropriate, suggest suitable mitigation and/or enhancement works to maintain legislative compliance.
- Advise on any further survey work that may be required to ensure legal compliance or to inform the detailed design process further.

1.3 Report Structure

Following this introduction, Chapter 2 describes UK policy, guidance and legislation with respect to ecology and biodiversity. Chapter 3 covers survey methodologies utilised to assess the ecological interest of the site. Chapter 4 presents the results and Chapter 5 an appraisal of the survey findings; Chapter 6 recommends further work and consideration of mitigation and enhancement measures where necessary.

2 Policies, Guidance and Legislation

2.1 General

The interpretations of the findings of this survey and the subsequent recommendations have been produced in accordance with relevant legislation and best practice guidance. They also take into account Planning Policy Statement 9 (PPS9) and other nature conservation policies within local and regional planning policy documents.

Legislation relating to ecological resources that are relevant to this report and the recommendations provided include the following:

- **Wildlife and Countryside Act, 1981 (as amended).** This Legislation still comprises the primary means of protecting wildlife in the UK and provides the mechanism by which a number of international directives are implemented in the UK.
- **Conservation (Natural Habitats &c.) Regulations, 1994.** This Act provides protection for European protected species and their habitats, such as bats and great crested newts.
- **Countryside and Rights of Way (CROW) Act, 2000.** The CROW Act strengthened the details of The Wildlife and Countryside Act in relation to Sites of Special Scientific Interest (SSSI) and threatened species.
- **Natural Environment and Rural Communities (NERC) Act, 2006.** This Act puts an obligation on public authorities to have regard to the conservation of species and habitats of principal importance for the purpose of conserving biodiversity.

2.1.1 Planning Policy Statement 9 (PPS9)

This sets out the Government's planning policies on the protection of biodiversity and geological conservation through the planning system. The policies may also be material to decisions on individual planning applications for Eco-towns.

2.1.2 Planning Policy Statement on Eco-towns

The Planning Policy Statement (PPS) on Eco-towns is a supplement to PPS1 which sets out the governments overarching planning policies on the delivery of sustainable development through the planning system. It states that Eco-towns should demonstrate a net gain in local biodiversity and that planning permission may not be granted for eco town proposals which have a significant adverse effect on internationally designated nature conservation sites or Sites of Special Scientific Interest.

The PPS on Eco-towns also states that planning applications for these developments should also contain a strategy for conserving and enhancing local biodiversity. This should be based on up-to date information about the biodiversity of the area including proposals for the management of local ecosystems and, where appropriate, the restoration of degraded habitats or the creation of replacement habitats.

2.1.3 Biodiversity Positive: Eco-towns biodiversity worksheet

This worksheet highlights the aim to develop and promote eco-towns as Exemplars of sustainable development. It provides guidance in support of the Planning Policy Statement (PPS) on Eco-towns and sets out the requisite steps necessary to ensure the overall impact of these developments on biodiversity is both positive and sustained.

2.1.4 Biodiversity Action Plans (BAPs)

The UK Biodiversity Action Plan (UK BAP) was produced in accordance with the 1992 UN Convention on Biological Diversity. It describes the UK's biological resources and commits a detailed plan for the protection of these resources, focusing on key habitats and species considered to be of particular significance to nature conservation within a UK context. While local councils and planning officers must have due regard for species and habitats on the UK BAP, they must also have due regard for the specific targets of county or borough local BAPs (LBAP) where these have been produced.

3 Methodology

Field surveys of the proposal site were undertaken by experienced Arup ecologists during the spring of 2010. This report details the findings of these preliminary surveys; the interpretation draws on information relating to the surrounding area in to provide context for the survey findings and facilitate a more robust and informed assessment.

3.1 Desk Study

A desk study was conducted within a 5km radius of the central grid reference for the site. This utilised the on-line research tools Nature on the Map¹, and the Multi Agency Geographic Information for the Countryside website MAGIC². The search focussed on statutory sites designated for nature conservation within the vicinity of the proposed development area. Additional data on distributions of notable and protected species and non-statutory local sites for nature conservation were sourced from Thames Valley Environmental Records Centre.

UK Biodiversity Action Plans (UK BAPs) and the Biodiversity in Oxfordshire website³ (the local biodiversity action plans (LBAPs) were consulted for details of species of note that could be expected to occur in the area.

This contextual information can assist in determining which species are likely to be affected by the proposed development, and has helped to focus the field survey in identifying signs of notable species that could be expected to occur in the vicinity.

3.2 Field Survey

Surveys of the proposed development site were undertaken by experienced Arup ecologists in accordance with the standard methodology as defined by the Joint Nature Conservancy Council's Handbook for Phase 1 Habitat Survey (2003)⁴. The extent of each area of homogenous vegetation was mapped in the field, noting the dominant vegetation communities present, in order to produce a Phase 1 Habitat Map of the site.

Evidence of protected species, or the potential to support protected species, was also noted and presented within mapped target notes. The habitat mapping and target note locations are presented in Figure 1, and target note descriptions provided in Appendix A

Based on the habitats present at and around the site and on professional judgement informed by the findings of the desk study, the protected and notable species most likely to be present at the site were considered to be amphibians, reptiles, badger, brown hare, white-clawed crayfish, bat, dormice, water vole, otter and birds. Therefore searches for signs of these species, including footprints, scratch marks, feeding stations, burrows, setts, spraint, droppings, foraging signs, staining, nesting or roosting places (including old bird's nests) were searched for at the time of the survey. Any man-made or natural refugia were inspected and, where possible, lifted to search for sheltering wildlife such as reptiles and amphibians.

Further assessment was made based on our understanding of the habitat types present and with consideration to the site's position within the wider landscape. This allowed for determination of the site's potential to support protected species, species of high nature conservation value, and important habitats which the proposed development may impact upon.

3.3 Limitations

The Phase 1 habitat surveys were conducted during the Spring of 2010. This is generally outside of the recommended survey window for some species, particularly flowering plants. However, professional judgment allowed for an assessment of the likely value of the site,

¹ www.natureonthemap.org.uk

² www.magic.gov.uk

³ <http://www.oxfordshire.gov.uk/>

⁴ JNCC. 2003. *Handbook for Phase 1 Habitat Survey*. Joint Nature Conservation Committee, Peterborough.

and of the habitats present to support such species, and provides sufficiently robust conclusions for the purposes of this report.

The findings presented in this report represent those of the period within which the surveys were undertaken only. Variations in these conditions can be expected to occur as a result of seasonal factors, population dispersal and changes in habitats over time.

It should also be noted that fauna may travel over wide areas and can have large home ranges and so can be overlooked within surveys. Species which are absent at the time of survey may also return to or colonise a site anew at any time in the future.

4 Results and Appraisal

4.1 Desk Study

4.1.1 Statutory Designated Sites

Three statutory designated sites for nature conservation exist within the 5km search radius from the centre of the proposed development site (See Table 1). These are all Sites of Special Scientific Interest (SSSI) and are represented, courtesy of Thames Valley Environmental Records Centre, in Figure 1, below.

Table 1: Statutory Designated Sites within 5km of the Centre of the Proposed Development Site

Site name	Status	Condition	Location relative to the Proposal Site
Ardley Trackways	SSSI	Favourable	Approximately 1km south west of the proposal site
Ardley Cutting & Quarry	SSSI	Unfavourable recovering	Partially located within the proposal site
Straton Audley Quarries	SSSI	Destroyed	Approximately 3km north east of the proposal site

The Ardley Cutting & Quarry SSSI extends along the south facing embankment of the railway line into the proposed development site where it abuts the field boundaries of Crowmarsh Farm in Bucknell.

Ardley Trackways is the next closest designated site to the proposed development. It can be found approximately 1km away from the south-western extent of the site.

Straton Audley Quarries SSSI is found 1km to the north east of Bicester town (~3km from the proposed development). However, being disused, the quarries have flooded and the SSSI area itself is now submerged. Hence the area has now been classified by Natural England as 'destroyed'.

4.1.2 Non-Statutory Designated Sites

Information on non-statutory designated sites for nature conservation which lie within 5km of the proposal have been provided by Thames Valley Environmental Records Centre. These are represented along with the three designated sites detailed above, in Figure 1. Further details relating to these non-statutory designated sites are provided in Table 2.

Table 2: Non-statutory Designated Sites within 5km of the Centre of the Proposed Development Site

Site name	Status	Location relative to the Proposal Site
Stoke Bushes	Local Wildlife Site/ Woodland Trust Reserve	North
Stoke Little Wood	Local Wildlife Site	North
Twelve Acre Copse	Local Wildlife Site	North
Upper Heyford Airfield	Local Wildlife Site	North-West
Trow Pool	Local Wildlife Site	West
Sratton Audley Quarries	Local Wildlife Site	East
Gavray Drive Meadows	Local Wildlife Site	South-East
Bicester Wetland Reserve	Local Wildlife Site	South-East
Graven Hill	Local Wildlife Site	South-East
Bure Park	Local Nature Reserve	East

Ardley Fields Quarry	Local Geological Site	North-West
Ardley Fields Quarry (North)	Local Geological Site	North-West

Figure 1: Statutory and non-statutory designated sites within 5km of the proposed Bicester Eco-town development (Supplied by Thames Valley Environmental Records Centre).



4.1.3 Protected or Notable Species

There are records of some 38 species protected under EU or UK legislation, or both, and a further 51 UKBAP species from within 5km of the proposal site. These include great crested newt, otter, water vole, badger, white-clawed crayfish, common lizard, barn owl and 16 other bird species. The records suggest that the site, and those habitats immediately surrounding the proposed Eco-town development, support a broad and diverse assemblage of species which collectively provide an excellent representation of those one might expect to find within the wider landscape. The records of protected species are summarised below in Table 3. A more extensive list made available by Thames Valley Environmental Records Centre which details all species records, including priority UKBAP species, can be found in **Appendix C** of this document.

Table 3: Protected species recorded within 5km of the site

Common Name	Scientific Name	Number of Records	Date of Most Recent Record	Location Relative to Site	Protection or Notable Status
Rough marsh-mallow	<i>Althaea hirsuta</i>	1	19-Jul-90	SP547250 Trow Pool	Schedule 8 (W&C Act 1981)
Plymouth Pear	<i>Pyrus cordata</i>	1	15-May-07	SP55452776 Stoke Wood	Schedule 8 (W&C Act 1981)
Meadow Clary	<i>Salvia pratensis</i>	8	2005	2005 SP536250 Ardley Lay-by	Schedule 8 (W&C Act 1981)
Bluebell	<i>Hyacinthoides non-scripta</i>	19	15-May-07	SP55452776 Stoke Wood	Schedule 8 (W&C Act 1981) Section 13 Part 2
Wood White	<i>Leptidea sinapis</i>	1	04-Jun-91	SP585263 Cotmore Covert & Bainton Copse	Schedule 5, parts 5(a) and (b) (W&C Act 1981)
Brown Hairstreak	<i>Thecla betulae</i>	7	27-Oct-05	SP60132201 Gavray Drive Meadows	Schedule 5, parts 5(a) and (b) (W&C Act 1981)
Small Blue	<i>Cupido minimus</i>	27	20-Aug-02	SP599252 Stratton Audley Quarry	Schedule 5, parts 5(a) and (b) (W&C Act 1981)
Adonis Blue	<i>Lysandra bellargus</i>	1	1990	SP5226	Schedule 5, parts 5(a) and (b) (W&C Act 1981)
White clawed Crayfish	<i>Austropotamobius pallipes</i>	1	28-June-94	SP58712148 A41 Bicester (Langford Brook)	Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)

Great Crested Newt	<i>Triturus cristatus</i>	17	07-April-09	SP59872520 Stratton Audley Quarry	Schedule 5 - all parts (W&C Act 1981); H & S Dir (An 2)
Smooth Newt	<i>Lissotriton vulgaris</i>	14	07-April-09	SP59872520 Stratton Audley Quarry	Schedule 5, parts 5(a) and (b) (W&C Act 1981)
Common Toad	<i>Bufo bufo</i>	5	19-June-08	SP54722499 Trow Pool	Schedule 5, parts 5(a) and (b) (W&C Act 1981)
Common Frog	<i>Rana temporaria</i>	10	31/07/2008	SP605246 Stratton Audley Quarry	Schedule 5, parts 5(a) and (b) (W&C Act 1981)
Viviparous Lizard	<i>Lacerta vivipara</i>	1	2002	SP57652360 Bicester, 132 Barry Avenue	Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)
Grass Snake	<i>Natrix natrix</i>	9	21-Aug-03	SP559214 Orchard Rise, Chesterton	Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)
Bittern	<i>Botaurus stellaris</i>	2	2001	SP577209 Bicester Wetland Reserve	Schedule 1 (W&C Act 1981); Birds Dir (An 1)
Garganey	<i>Anas querquedula</i>	1	23-May-83	SP525230 Middleton Park (Ecological Area)	Schedule 1 (W&C Act 1981)
Red Kite	<i>Milvus milvus</i>	3	22-Feb-04	SP5720 22-Feb-04 SP5720	Schedule 1 (W&C Act 1981); Birds Dir (An 1)
Merlin	<i>Falco columbarius</i>	4	20-Apr-03	SP5720 Bicester	Schedule 1 (W&C Act 1981)
Hobby	<i>Falco subbuteo</i>	3	30-May-04	SP5620 Record Confidential	Schedule 1 (W&C Act 1981)
Peregrine	<i>Falco peregrinus</i>	1	2003	SP577209 Bicester Wetland Reserve	Schedule 1 (W&C Act 1981); Birds Dir (An 1)
Little Ringed Plover	<i>Charadrius dubius</i>	5	2004	SP577209 Bicester Wetland Reserve	Schedule 1 (W&C Act 1981)
Black-Tailed Godwit	<i>Limosa limosa</i>	2	2004	SP577209 Bicester Wetland Reserve	Schedule 1 (W&C Act 1981)
Greenshank	<i>Tringa nebularia</i>	2	2000	SP577209 Bicester Wetland	Schedule 1 (W&C Act

				Reserve	1981)
Green Sandpiper	<i>Tringa ochropus</i>	6	15-Feb-04	SP5720 Bicester Golf Club	Schedule 1 (W&C Act 1981)
Barn Owl	<i>Tyto alba</i>	10	19-Jun-05	SP588283 Hethe Brede	Schedule 1 (W&C Act 1981)
Kingfisher	<i>Alcedo atthis</i>	10	31-July-08	SP602250 Stratton Audley Quarry	Schedule 1 (W&C Act 1981); Birds Dir (An 1)
Hoopoe	<i>Upupa epops</i>	4	17-May-99	SP5327 Ardley Field Quarry	Schedule 1 (W&C Act 1981)
Fieldfare	<i>Turdus pilaris</i>	2	07-Mar-04	SP5929 Hethe	Schedule 1 (W&C Act 1981)
Redwing	<i>Turdus iliacus</i>	1	07-Mar-04	SP5929 Hethe	Schedule 1 (W&C Act 1981)
Firecrest	<i>Regulus ignicapillus</i>	1	23-Jan-98	SP5720 Confidential	Schedule 1 (W&C Act 1981)
Brambling	<i>Fringilla montifringilla</i>	1	07-Mar-04	SP5929 Hethe	Schedule 1 (W&C Act 1981)
Natterer's Bat	<i>Myotis nattereri</i>	1	09-Oct-93	SP595259 Bicester	Schedule 5 - all parts (W&C Act 1981); H & S Dir (An 4, 5)
Pipistrelle bat	<i>Pipistrellus pipistrellus</i>	4	29-Dec-99	SP609258 Bicester	Schedule 5 - all parts (W&C Act 1981); H & S Dir (An 4, 5)
Brown Long-eared bat	<i>Plecotus auritus</i>	3	05-June-96	SP535233 Middleton Stoney	Schedule 5 - all parts (W&C Act 1981); H & S Dir (An 4, 5)
Water Vole	<i>Arvicola terrestris</i>	8	30-June-03	SP580230 Bicester	Schedule 5, parts 4(a) and (b) (W&C Act 1981)
Badger	<i>Meles meles</i>	17	31-July-08	SP602250 Stratton Audley Quarry	Badger Act 1992
Otter	<i>Lutra lutra</i>	1	19-June-08	SP546924 Trow Pool	Schedule 5 - all parts (W&C Act 1981); H & S Dir (An 2)

Key: WCA – Wildlife & Countryside Act 1981 (as amended); H & S Dir (An 2) - Species listed in Annex 2 of the EC Habitats Directive; H & S Dir (An 4, 5) – Species listed in Annexes 4/5 of the EC Habitats Directive

4.2 Field Survey

The Phase 1 Habitat Survey Map is provided in the **Figures** section at the end of the report and habitat descriptions, together with details of characteristic and/or constant species, are provided below.

Observations made over the course of the Phase 1 surveys were recorded as Target Notes. These are detailed in Figures 2a through to 2d which collectively represent the entire proposed development area and its immediate surrounds. **Appendix A** lists the Target Notes with associated detailed descriptions.

4.2.1 Habitats

Although the site directly abuts a large residential development which currently represents the north-western extent of Bicester town, it retains an entirely rural character and is used almost exclusively for common agricultural purposes. That said, the site is bisected by a major railway line (see **Figures**), though the railway embankments only add to the diversity of habitats present within the boundaries of the proposed development.

The majority of the southern half of the site is composed of arable fields demarcated by a network of mature and established hedgerows, some of which obscure dry ditches. A small proportion of these fields have narrow field margins which have been left un-ploughed to the benefit of invertebrates and ground nesting birds. Gowell Farm, in the south-eastern corner of the proposed development, is unoccupied. The old farm buildings and immediate surroundings effectively represent a brown field site, though this area should by no means be overlooked when considering features and habitats of ecological value. There are also some semi-improved pastures and occasional belts of over-mature, unmanaged orchard.

There are three ponds within the southern half of the proposed development (or south of the railway line). One can be found on Crowmarsh Farm, due south of Bucknell village. This pond is fed by one of two streams which flow through the site; one is located within the grounds of Gowell Farm; and, a third pond appears to have been recently created and can be found south-east of Himley Farm.

The stream which feeds into Crowmarsh Farm pond continues its path in an easterly direction toward the railway line. Much of this stretch of the stream is bordered by lush riparian vegetation.

The northern half of the site (north of the railway line) is more diverse in terms of the habitats represented therein. There is a greater extent of riparian habitat than is found within the southern half of the site. Much of this habitat borders the second stream which flows through the site from Bucknell Village towards Home Farm, in the north east corner of the proposed development area. Two pastures which lie adjacent to the northern bank of this stream are of notable interest; though semi-improved they still appear to retain reasonably diverse botanical communities which, in the past, may have represented British National Vegetation Classification community MG4 (Mesotrophic Grassland community No. 4).

As with the southern half of the site, the arable fields, and improved/semi-improved pastures north of the railway line, are delineated by a network of potentially species-rich hedgerows. Some of these are mature and well established whilst others have gaps and can be considered defunct. There are also several stretches of hedgerow which appear to have been planted out within the last ten to fifteen years.

A large number of mature and semi mature trees can be found which border the fields and associated ditch lines north of the railway line. The species represented include oak, horse chestnut, willow and ash. There are also occasional parcels of broadleaved woodland, the most significant of which can be found ~500m west of Caversfield in the north east of the site and is dominated by ash, elder and a large number of standing dead elms.

There is small network of ponds which loosely congregate around the north western boundary of the proposed development area, east of Bucknell village. Several more can be found amongst the pastures of Home Farm in the north west of the site.

4.2.2 Habitat Descriptions

4.2.2.1 Arable land

A large proportion of the land within the boundaries of the proposal site is currently in use for arable agriculture. A variety of crops were recorded during the surveys including legume, wheat and oil-seed rape. A number of these fields have areas of set-aside or field margins. The intensity of the planting and land-usage varied between landowners

The margins supported grasses and arable weeds including false-oat grass, (*Arrhenatherum elatius*), couch grass (*Elytrigia repens*), nettle (*Urtica dioica*), pineappleweed (*Matricaria discoidea*), scented mayweed (*Tripleurospermum odoratum*) and scarlet pimpernel, (*Anagallis arvensis*).

4.2.2.2 Amenity Grassland

Areas of amenity grassland exist amongst the farms and private properties within the proposal site. These are less diverse, in terms of the species present, than other grasslands on site such as those recorded along the streams and ancient hedgerows. A number of these areas of amenity grasslands are connected to defunct orchards and structured landscaping.

Species recorded within this habitat included perennial rye-grass (*Lolium perenne*), daisy, (*Bellis perennis*), ribwort plantain (*Plantago lanceolata*) and germander speedwell (*Veronica chamaedrys*).

4.2.2.3 Buildings

The proposal site boundary incorporates a number of farms; this includes at least six farm houses and associated outbuildings. The buildings vary in structure, composition and condition and many have features suitable for bats and birds.

4.2.2.4 Broadleaved Plantation Woodland

Across the proposal site there are many areas of plantation woodland. These are almost entirely broadleaved with only occasional individual conifer species present. They vary in age and maturity and have generally been planted in association with other habitat creation schemes, such as the water bodies on Home Farm in the north of the site; or otherwise alongside field boundaries.

The species recorded within this habitat include hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), ash (*Fraxinus excelsior*), silver birch (*Betula penula*), and occasionally shrub species such as gorse (*Ulex europeaus*).

Generally the shrub layer is either absent or undeveloped and largely consists of hawthorn or elder (*Sambucus nigra*).

Ground flora appears to be largely represented by species on which the woodland was planted – mostly improved grassland or arable field margin species such as false oat-grass (*Arrhenatherum elatius*), cock's-foot (*Dactylis glomerata*), nettle and cleavers (*Galium urbanum*).

4.2.2.5 Broadleaved Semi-natural Woodland

There are two main areas of semi-natural woodland remaining within the proposed development area. These are Grunthill Copse and a small area of partially felled woodland near Caversfield.

The woodland at Caversfield has had most of the canopy species felled. From the evidence of trunks laying on the woodland floor and the remaining stumps it is apparent that this woodland once had a canopy of ash (*Fraxinus excelsior*). The canopy recorded during surveys appears to have developed from the shrub flora and consists predominantly of hawthorn, elm (*Ulmus* spp.), elder (*Sambucus nigra*) and some remnant ash. The hawthorn re-growth provides a shrub layer along with some dense patches of bramble (*Rubus fruticosus*). The ground flora consists largely of dog's mercury (*Mercurialis perennis*), nettle and, occasionally, wood dock (*Rumex sanguineus*).

Grunthill Copse can be found in the west of the site, south of the railway line on the track to Crowmarsh Farm and pool. Historic replanting includes a number of poplar (*Populus* spp.) in

the south of the wooded area. The shrub layer consists largely of hawthorn and bramble; the ground flora included species such as ground ivy (*Glechoma hederacea*), lords and ladies (*Arum maculatum*) and garlic mustard (*Alliaria petiolata*).

Both woodlands are currently used by gamekeepers to provide cover for pheasants and consequently the grounds flora is occasionally sparse.

4.2.2.6 Defunct Species Poor Hedgerow

Across the site there are occasional sections of species poor hedgerow which are no longer stock-proof and now defunct. Generally these remnants of old hedgerows are little more than sporadic sections of linear scrub. Where the line of a hedgerow has become indistinct it has been classified and marked on the Phase 1 Map as scrub. However, where bramble, honeysuckle (*Lonicera periclymenum*), and arable field margins remain represent the line between occasional stands of hawthorn and blackthorn (*Prunus spinosa*) the habitat has been recorded as defunct hedgerow.

The defunct hedgerows are generally dominated by hawthorn, blackthorn and, less frequently, field maple (*Acer campestre*).

Ground flora within these hedgerows was generally of limited diversity and consisted largely of species including nettle, colt's-foot (*Tussilago farfara*), cleavers and ground ivy (*Glechoma hederacea*).

4.2.2.7 Defunct Species Rich Hedgerow

Generally the hedgerows on site recorded as representing this habitat type have become spindly through lack of management and no longer maintain a constant dense form. However, they still clearly demarcate a field boundaries.

Species recorded within this habitat type include field maple, hawthorn, elder, blackthorn, ash, wild privet (*Ligustrum ovalifolium*) and wych elm (*Ulmus glabra*).

The ground floras recorded were limited in diversity and, as above, consisted largely of improved grassland species such as nettle, garlic mustard, hedge woundwort (*Stachys sylvatica*), cleavers and ground ivy.

4.2.2.8 Dense Scrub

This habitat type is used within this Phase 1 Habitat Survey to describe the scrub recorded in overgrown areas of private garden. Typical species included apple (*Malus* spp.), hawthorn, buddleia (*Buddleia davidii*), bramble, nettle, blackthorn, honeysuckle and traveller's-joy (*Clematis vitalba*).

4.2.2.9 Improved Grassland

This habitat exists across areas which have been intensively grazed or otherwise re-sown to provide silage pasture. The botanical structure and diversity of these grasslands are limited. The dominant species include perennial rye-grass (*Lolium perenne*) and timothy (*Phleum pratense*). Forbs such as dandelion (*Taraxacum officinale*) are also present.

4.2.2.10 Intact Species Poor Hedgerow

There is only a limited occurrence of this habitat type across the site; it is confined mostly to areas where intensive land management and flailing has reduced the structure and diversity of the hedgerows. The dominant species is hawthorn. Blackthorn and elm are only occasionally present.

Ground flora was limited in diversity and consisted largely of improved grassland species including false oat-grass (*Arrhenatherum elatius*), nettle, cock's-foot (*Dactylis glomerata*), cleavers and ground ivy.

4.2.2.11 Intact Species Rich Hedgerow

The majority of the hedgerows within the proposal site are both intact and species rich. Favourable management both historically and recently have ensured a well-developed structure with high species diversity. Generally these hedgerows are at least two to three metres thick, two to three metres tall and, where not demarcating grazed fields, have a one to two metre grass verge/arable field boundary. As a consequence, ancient woodland

indicator species, detailed below, are recorded regularly, as are grassland species indicative of historically diverse neutral grasslands.

Species recorded within the hedgerows include hawthorn, wych elm, apple, ash, oak (*Quercus* spp.), wild privet (*Ligustrum vulgare*), sycamore (*Acer pseudoplatanus*), midland hawthorn (*Crataegus laevigata*), field rose (*Rosa arvensis*) and blackthorn. Several hedgerows support wayfaring-tree (*Viburnum lantana*), dogwood (*Cornus sanguinea*) and elder. Climbing species such as honeysuckle, black bryony (*Tamus communis*), white bryony (*Bryonia alba*) and ivy (*Hedera helix*) were also recorded in abundance.

Hedgerow trees within and across the site are predominantly ash and field maple, however a number of sycamore and oak were also recorded.

Ground flora within these well-structured hedgerows includes lords and ladies, dog's mercury, red campion (*Silene dioica*), hedge woundwort (*Stachys sylvatica*), creeping buttercup (*Ranunculus repens*), garlic mustard and ground ivy.

4.2.2.12 Marshy Grassland

This habitat only represented within a single narrow belt of semi-improved grassland in the north east of the site. Anecdotal evidence suggests that it developed after a bore-hole was sunk in the field and a localised change in hydrology resulting from over-flow from the pump. The main feature of this area of grassland is the deeper, rank sward that supports brooklime (*Veronica beccabunga*). At the time of survey the area was poached after an apparent period of cattle grazing.

4.2.2.13 Running Water

The site is bisected by two principal watercourses, both of which flow in an easterly direction before joining in a confluence along the eastern boundary of the site and then pass into Bicester. The upper reaches of these watercourses are winterbournes. Possibly as a consequence of this these sections appear to dry out in mid to late spring when the water table drops. The winterbournes have a series of online ponds, most of which also dry out during the summer.

The lower reaches of these watercourses, where water flows for most of the year, support large communities of aquatic, marginal and emergent plant species. Most prevalent of these are water parsnip (*Berula erecta*) and fool's watercress (*Apium nodiflorum*). Marginal and emergent species include reed sweetgrass (*Glyceria maxima*), common reed (*Phragmites australis*), bittersweet (*Solanum dulcamara*), meadowsweet (*Filipendula ulmaria*) and marsh marigold (*Caltha palustris*).

At the time of the surveys the watercourses appeared clean and free of indicators of localised pollution. Banks of small bivalves were occasionally recorded within the watercourses.

4.2.2.14 Scattered Broadleaved Trees

This habitat type describes the mature broadleaved trees recorded standing within fields isolated from other vegetation structures across the site. Their isolated nature is likely to be a result the removal of hedgerows within which they would have originally stood.

These trees are generally mature ash or oak.

4.2.2.15 Scattered Scrub

There is only a limited representation of this habitat across the site. Where it has been recorded it consists predominantly of hawthorn and blackthorn.

4.2.2.16 Semi-improved Neutral Grassland

The remaining pasture within the site is predominantly recorded within the north-eastern area. There are two types of semi-improved grassland within this area; the first is represented by those fields that have been intensively grazed over the last twenty years or so. Although the sward diversity has been reduced within these fields, there are still species present suggestive of historically higher levels of diversity. The second form of semi-improved grassland is represented by those fields supporting a botanical assemblages indicative of hay meadow communities.

Species present within the swards of these grasslands are predominantly grasses such as annual meadow grass (*Poa annua*), common bent (*Agrostis capillaris*), red fescue (*Festuca rubra*), yorkshire fog (*Holcus lanatus*), sweet vernal-grass (*Anthoxanthum odoratum*) with more competitive species such as cock's-foot and false oat-grass (*Arrhenatherum elatius*). Occasionally, and particularly within the narrow fields alongside the watercourses, the sward will include species such as crested dog's-tail (*Cynosurus cristatus*) and meadow foxtail (*Alopecurus pratensis*).

Forbs recorded within these grasslands include lady's bedstow (*Galium verum*), creeping cinquefoil (*Potentilla reptans*), ribwort plantain (*Plantago lanceolata*), red clover (*Trifolium pratense*), common mouse-ear (*Cerastium fontanum*), meadow buttercup (*Ranunculus acris*), common sorrel (*Rumex acetosa*), sheep sorrel (*Rumex acetosella*) and yellow rattle (*Rhinanthus minor*).

4.2.2.17 Standing Water

Across the site there are ten waterbodies, three of which are likely to regularly dry out during the summer months.

Two of the ponds that dry out are online ponds on the winterbourne that rises in the north-west of the site in Bucknell village. The third is also online of the same winterbourne and is further east towards Caversfield. Of the six remaining ponds, four are associated with private gardens and landscaped areas, one is a field pond near Hawkeswell Farm, and the sixth lies immediately south of Crowmarsh Farm.

The field pond at Hawkeswell Farm is relatively small, but supports pond water-starwort (*Callitriche stagnalis*) and pond water-crowfoot (*Ranunculus peltatus*).

The pond at Crowmarsh Farm appears to be fed by two means; by stream (although this is a winterbourne which is likely to dries out over the summer months) and by spring. The pond levels are artificially high, due to the presence of a retaining wall that supports a farm track along the eastern bank of the pond. The pond itself has a deep silt bottom and supports a diverse flora including fennel-leaved pondweed and opposite-leaved pondweed (*Groenlandia densa*). The margins of the pond, particularly the northern banks, are heavily vegetated with water mint (*Mentha aquatic*), common spike rush (*Eleocharis palustris*) and brooklime (*Veronica beccabunga*).

4.2.2.18 Swamp

This habitat is extremely limited in extent within the proposed development site and is represented by small areas of developing, nascent reed-bed. One such area exists as a linear feature along the stream flowing east from Crowmarsh Pond. Another exists in a low-lying damp area adjacent to the bottom of the railway embankment at Rickett's Farm further along this same watercourse. There is also an area of swamp vegetation consisting mostly of planted bog plants within a landscaped pond in the north of the site, on the western bounds of Bucknell village.

4.2.2.19 Tall Ruderal

This vegetation has developed within fields predominantly around Gowell's Farm, along the eastern edge of the site. The fields now consist predominantly of nettle and hogweed (*Heracleum sphondylium*) with some patches of bramble. Other locations where areas of homogenous vegetation exist have also been recorded and mapped. Species recorded include field poppy (*Papaver rhoeas*), prickly lettuce (*Lactuca serriola*), broadleaved dock (*Rumex obtusifolius*), spear thistle (*Cirsium vulgare*) and great willowherb (*Epilobium hirsutum*).

5 Discussion

The habitats recorded across the proposal site are valuable in terms of local and national biodiversity action plans, as ecological corridors and for the maintenance of protected species populations. The habitats are considered further in Section 5.1. Protected species likely to be present on site are considered in section 5.2.

5.1 Habitats

The habitats and features of significance found across the site include:

- Hedgerows
- Running Water
- Standing Water
- Swamp
- Broadleaved Semi-natural Woodland
- Semi-improved Grassland

Individually they are of merit and require further assessment. Together, they provide a locally unique and valuable mosaic of structured habitats and associations. The narrow fields and hedgerow patterns alongside the streams are indicative of early field enclosures and include many of the semi-improved grasslands and associated ponds on site. The intrinsic value of these habitats includes their important functions as ecological corridors, the support they provide to local biodiversity and their historic context with the landscape.

Several habitats recorded on site are either UK BAP or Local, Oxfordshire, BAP habitats; these are detailed in Table 4.

Table 4: Local and National status of habitats recorded at the proposal site

Habitat recorded during survey	UK BAP Priority Habitat	LBAP Priority Habitat
Broadleaved Semi-natural Woodland	Lowland Mixed Deciduous Woodland	Lowland Mixed Deciduous Woodland
Swamp	Reedbeds	Reedbed
Semi-improved Neutral Grassland	Lowland Meadows	Lowland Meadows
Intact Species-rich Hedgerow Intact Species-poor Hedgerow Defunct Species-rich Hedgerow Defunct Species-poor Hedgerow	Hedgerows	
Standing Water	Eutrophic Standing Waters	Eutrophic Standing Water
Standing Water	Ponds	
Running Water	Rivers	

In terms of ecological value the habitats collectively afford foraging, cover, roosting and nesting habitats as well as opportunities for sett building. Potential exists for a large number of UK and European protected species to be present on site. During the Phase 1 Surveys direct observations were made of badgers, common lizard and a large number of bird species including local BAP species such as skylark (*Alauda arvensis*) and yellowhammer (*Emberiza citrinella*).

5.2 Species

The site has potential for a number of protected species as well as UK and Local BAP species. These species or species groups are considered individually below. The habitats and features of potential suitability to them are identified in Figures 2a through to 2d and in the associated Target Notes detailed in **Appendix A**.

Detail on the various articles of legislation that afford protection to those species detailed below can be found in **Appendix B**.

5.2.1 Protected Species

Bats: There are numerous features including mature trees, trees with bat boxes, farm buildings and derelict farm structures which all have good potential for supporting bat roosts. Coupled with this the network of hedgerows, field margins and small patches of woodland on site offer ample opportunity for populations of invertebrates, including the prey species of bats, to exist and thrive. Hence, the presence of bat roosts on site is considered to be high.

Birds: The site offers a variety of habitats of potential suitability to an equally diverse assemblage of bird species. A large number of bird species were observed during the course of the Phase 1 surveys and it is considered likely that many more species frequent the site over the course of each year. Nesting opportunities for birds are similarly common across the site.

An appreciation of which species use the site and the habitats and locations of greatest value to their continued favourable population status with the area will be fundamental in assessing the potential impacts of the proposed development on this species group.

Badgers: Two large badger setts were identified within the site boundaries over the course of the Phase 1 surveys. It is not yet known whether these represent main or outlier setts, but the initial observations suggest that the number of individuals living within the proposed development area, at least to the east of the site, is relatively high. Much of the remainder of the site offers suitable foraging habitat, which benefits from low levels of human disturbance, and there are several locations where main, annex or outlier setts might be located.

Great crested newts: There are several ponds, ditch lines and waterbodies within the proposed development site, or otherwise within 500m of the proposed development boundaries, which offer suitable breeding habitat for great crested newts (See Figs 2a to 2d). Many of these are connected to or surrounded by terrestrial habitat which is also of high suitability to great crested newts. However, observations made over the course of the Phase 1 surveys suggest that some are ephemeral in nature, and only likely to hold water during the winter months.

Water voles: Habitats of medium to high suitability for water voles exist at various locations across the site. These include ponds, ditches and stone bed streams. The habitats which are likely to be of greatest value to water voles are the two small streams which flow across the site in a roughly west to east orientation. One of these streams originates at Crowmarsh Farm (see Fig 1), is culverted under the railway line which bisects the site, flows just south of Hawkwell farm and on into Bicester Town. The second stream appears to originate in Bucknell village, close to the north-west boundary of the proposed development. From here it flows through Lower Farm and on to Home Farm, which represents the north east extent of the site. At this point the stream joins an existing ditch line which flows in a southerly direction for approximately 800m before converging with the first stream a short way into the existing residential development in west Bicester. At many locations, though not all, the streams are well vegetated by plant species favoured by water voles and the flow of water appears to be both reasonable and consistent throughout the year.

Several ponds exist within the boundaries of the proposed development. However, over the course of the survey period it became apparent that only a handful of these hold water throughout the year. Hence, it is only these ponds, identified in Figures 2a to 2d, which are considered suitable for water voles.

Various other ditch lines exist across the site but are considered to be less favourable to water voles. For example, there are several ditch lines which separate the arable fields of the southern portion of the site. However, many of these appear to be dry for the majority of the year and are shaded-out by dense hedgerows.

Otters: The ditches and watercourses that flow across the site are not considered to be significant enough to represent habitat of high potential value to otters. That said, the watercourses may contain crayfish, a prey species of otters, and hence may be used for occasional foraging or as corridors for dispersal. The site may therefore represent an important habitat affording otters opportunities to reach other more favourable sites and enhancing connectivity across the wider landscape. This suggestion should be considered further in light of detailed survey data.

Crayfish: The two streams which bisect the site in a west to east orientation (detailed above) offer habitat of medium to high potential value to crayfish. Attention with regard to this species should be focused on those stretches of the streams where the flow of water is consistent throughout the year and there isn't excessive over-shading or vegetative growth across the main water channel.

Reptiles: There are various habitats across the site with good potential for supporting breeding populations of three reptile species; slow worm, grass snake and common lizard. These include, but are in way limited to, the railway embankments, riparian habitats and a large pile of natural stone which has been left in the corner of one of the pastures on Home Farm.

Invertebrates: The north-west section of site is littered with log piles, some of which are quite considerable in size and constructed from substantial oak trunks. The site as a whole also has a large amount of standing dead timber; there are many young elm trees which appear to have been killed by Dutch Elms' disease. Log piles and standing dead trees are excellent habitats for a large number of invertebrate species and it is likely that together they support a diverse assemblage of invertebrates within the proposed development site.

The streams which flow through the site appear to have sedimentary limestone beds. Consequently, we would expect stretches of the streams which exhibit other optimal characteristics to support an abundance of aquatic insect larvae and crustaceans owing the nutrient rich nature of the waters. Further opportunities for invertebrates exist amongst the more botanically diverse of the pastures and meadows found in the north-west sector of the site. Though these all appear to have all improved to some extent, some are still likely to be of reasonable, if not significant, value to butterflies and certain species of day-flying moths.

Dormice: The site is criss-crossed with a network of hedgerows, some of which appear to have been planted out recent years. However, others are very well established and, owing to the apparent diversity of woody species present, offer potentially suitable habitat for dormice. Although some of the more mature hedges have become defunct in places, the network of hedgerows provides connectivity across the site and landscape as a whole. This would be expected to promote the dispersal of dormice and facilitate colonisation of new areas, thus elevating the likelihood of their presence of site.

The patches of woodland on site are likely to be less suitable for dormice due to a lack of typically suitable habitat; hazel, beech and sweet chestnut with associated thick undergrowth.

5.2.2 Biodiversity Action Plan Species

UK and LBAP species that are also potentially present on site are detailed in Table 5. Table 5 does not comprehensively list all BAP species potentially present on site as many of these have already been considered in this report. The LBAP does list many bird and invertebrate species; these are discussed in Section 5.2.1 above.

Table 5: Biodiversity Action Plan species potentially present on site

Common Name	Scientific Name	Status
Hedgehog	<i>Erinaceus europaeus</i>	UKBAP Species, LBAP Species
Brown Hare	<i>Lepus europaeus</i>	UKBAP Species, LBAP Species
Harvest Mouse	<i>Micromys minutus</i>	UKBAP Species, LBAP Species
Polecat	<i>Mustela putorius</i>	UKBAP Species, LBAP Species
Common Toad	<i>Bufo bufo</i>	UKBAP Species, LBAP Species

Biodiversity Action Plan species are afforded protection through the Natural Environment and Rural Communities Act 2006, whereby public authorities are to have regard to a duty to conserve species of importance to biodiversity.

PPS9 highlights the need for local authorities to give due regard to biodiversity. It suggests that “Development proposals provide many good opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where necessary.” A full appreciation of the protected species that are present on site, as will be provided by the extended surveys recommended above, will inform the design and implementation of a meaningful ecological mitigation and enhancement package. This is likely to have a positive influence on the determination of the planning application and will help in meeting relevant planning obligations set by the local authority.

More specifically, the Planning Policy Statement on Eco-towns states that such developments should demonstrate a net gain in local biodiversity and that associated planning applications for should contain a strategy for conserving and enhancing local biodiversity which is based upon up-to date information on biodiversity of the area. The protected species surveys recommended in this report will provide the necessary baseline information enabling these significant challenges to be met. They will also inform the requisite proposals for management of the local ecosystems and, where appropriate, restoration of degraded habitats or the creation of replacement habitats.

6 Recommendations

The Phase 1 surveys described in this report suggest that the site is of high ecological value; there is strong potential for a large number of protected species to exist within the proposed development area and the site itself is well connected to the wider landscape, promoting the persistence of local species at favourable population levels. To fully assess the ecological value of the site and to inform the planning process for the proposed Eco-town, it is recommended that a number of protected species and habitat surveys are undertaken. If the planning application is successful then the data gained from these surveys will reduce the risk of delays to the construction programme and will ensure legal and policy compliance.

The habitat surveys recommended are as follows:

1. Hedgerows: a targeted survey of the hedgerows across the site is recommended to ensure a comprehensive assessment is made of the diversity value of these corridors.
2. Ponds: several waterbodies on site appear to be worthy of further assessment in terms of invertebrates, amphibians and aquatic plant species.
3. Botanical Survey: targeted botanical surveys should be undertaken focussing upon those areas of grassland and woodland likely to support notable or locally scarce plant species.

The extended Phase 2 protected species surveys recommended are as follows (the habitats and features referred to below are detailed in Figures 2a to 2d with associated Target Notes listed and described in Appendix A:

1. Bats: A series of bat emergence surveys should be carried out in line with standard guidance at each of the potential roosts identified (28 in total). An appropriate number of transect surveys should also be undertaken across the site focussing on linear features (e.g. mature hedgerows, woodland edges and corridors of riparian habitat) as well as likely commuting corridors and areas of potential foraging habitat. Together, these surveys will allow for the mapping of bat roosts within the boundaries of the proposed development and will provide us with an understanding of those other habitats and features of value to bats in the locality.
2. Nesting Birds: The site presents a wealth of opportunities for nesting and foraging birds in the form of hedgerows, mature trees, barns and derelict farm buildings scrub, pasture and numerous other features and habitats. Consequently, both wintering and breeding bird surveys should be commissioned to determine which species utilise the site and what value the site has to birds in terms of their long-term persistence in the area.
3. Badgers: This species is already known to occupy the site since two active setts were recorded during the course of the Phase 1 field surveys. However, further dedicated badger surveys will be necessary to map the locations and determine the status of all setts across the site, and to enable an understanding of the extent to which badger use different areas of the site.

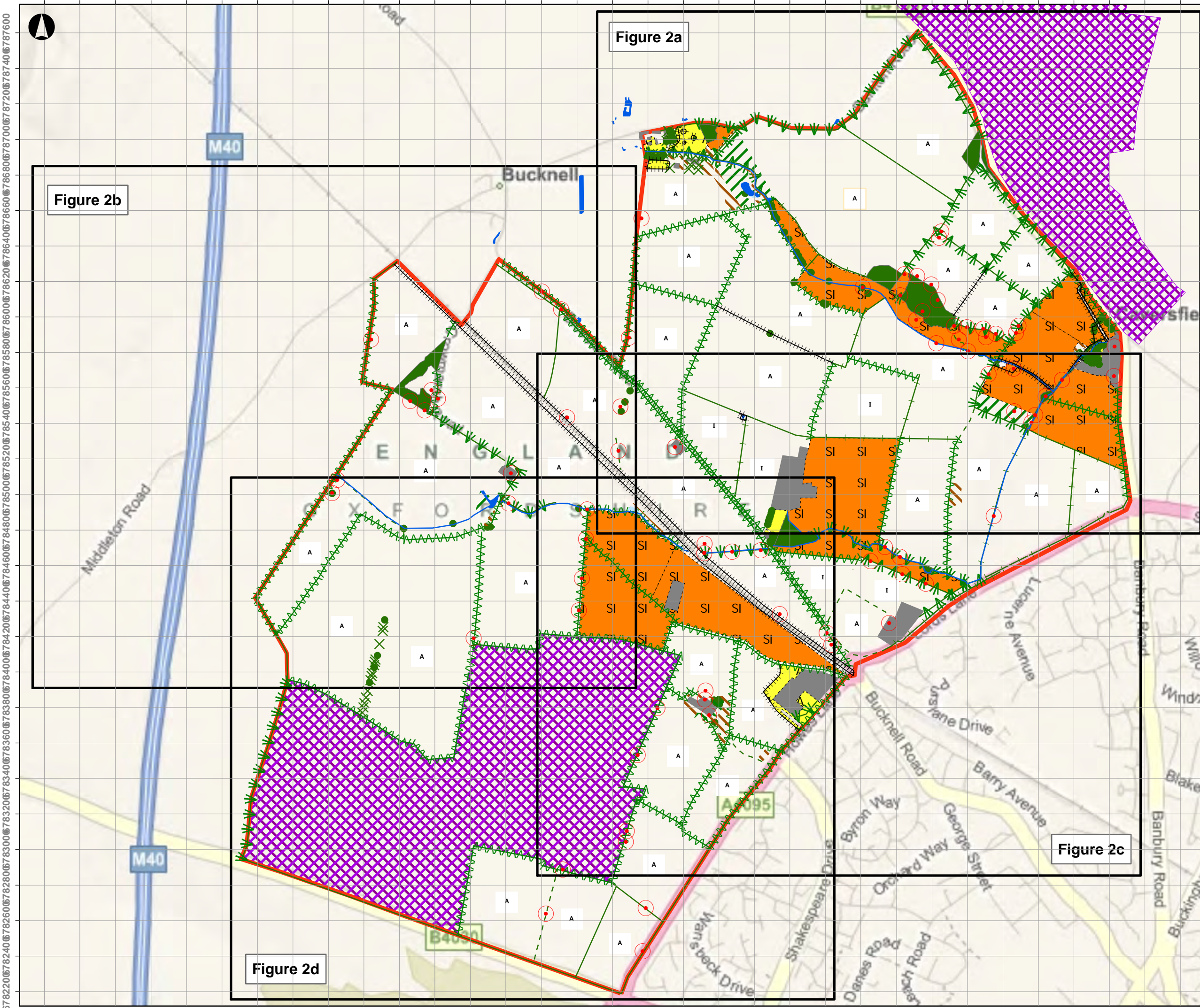
A badger bait marking study will also be necessary to determine how many badger clans there are within the proposed development boundaries and the extent of their respective territories.

4. Great crested newts: Several ponds have been identified within the proposed development site as having potential for supporting breeding populations of great crested newts (GCN) and other amphibian species. These and all other ponds and waterbodies within 500m of the proposed development boundaries should be Habitat Suitability Index (HIS) scored. Those with HIS scores indicative of potential for GCN will then need to be surveyed to inform the planning process. The resulting data will also allow for design of an appropriate mitigation package, should the planning application prove successful.

5. Otters and water voles; Surveys should be undertaken along those watercourses flowing through the site which have been identified as being of likely value to otters and water voles. With respect to otters, the surveys should also focus on features which might be used as holts and hovers.
6. Reptiles: There are numerous habitats and features across the site likely to support breeding populations of reptiles. A representative selection of the most suitable reptile habitats on site should be surveyed, in line with standard survey guidelines, to determine which species are present and to gauge their population sizes.
7. Invertebrates: Surveys for red data list and biodiversity action plan species should be undertaken within each of the habitats on site which afford good opportunities for invertebrates. Particular attention should be given to the considerable dead wood habitats on site as well as the belts of riparian vegetation, aquatic environments, and meadows.
8. Dormice: Many of the hedgerows across the site are potentially suitable for dormice. In general the hedgerow network is well connected and hence, if dormice are present in the wider area, it is likely the species will have colonised or sustained populations amongst those favourable habitats within the proposed development area. Consequently, a series of dormouse surveys should be undertaken, in line with standard practice, focussing on those hedgerows and woodland features of greatest suitability to the species.
9. White-clawed crayfish: Surveys will need to be carried out along the two stone-bed streams which flow through the site to determine the presence/absence of white-clawed crayfish and advise on mitigation measures which may be necessary prior to the construction phase.

FIGURES





A

Arable

I

Improved Grassland

Target Note

Fence

Running Water

Standing Water

Swamp

Scattered Scrub

Dense Scrub

Tall Ruderal

Broad-leaved Woodland

Broad-leaved Plantation Woodland

Broad-leaved Scattered Trees

Native Species-rich Intact Hedgerow

Native Species-rich Intact Hedgerow with Trees

Native Species-rich Defunct Hedgerow

Species-poor Intact Hedgerow

Species-poor Intact Hedgerow with Trees

Species-poor Defunct Hedgerow

Semi-improved Neutral Grassland

Marshy Grassland

Amenity Grassland

S

Spoil Pile

Buildings

Site Boundary

No Access Permitted

P1	23-06-10	TS	OB	PJ
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Issue	Date	By	Chkd	Appd
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Client

A2 Dominion

Job Title

Bicester Eco-town

Drawing Title

Phase 1 Habitat Survey Map

Keyplan

Scale at A3

1:20,000

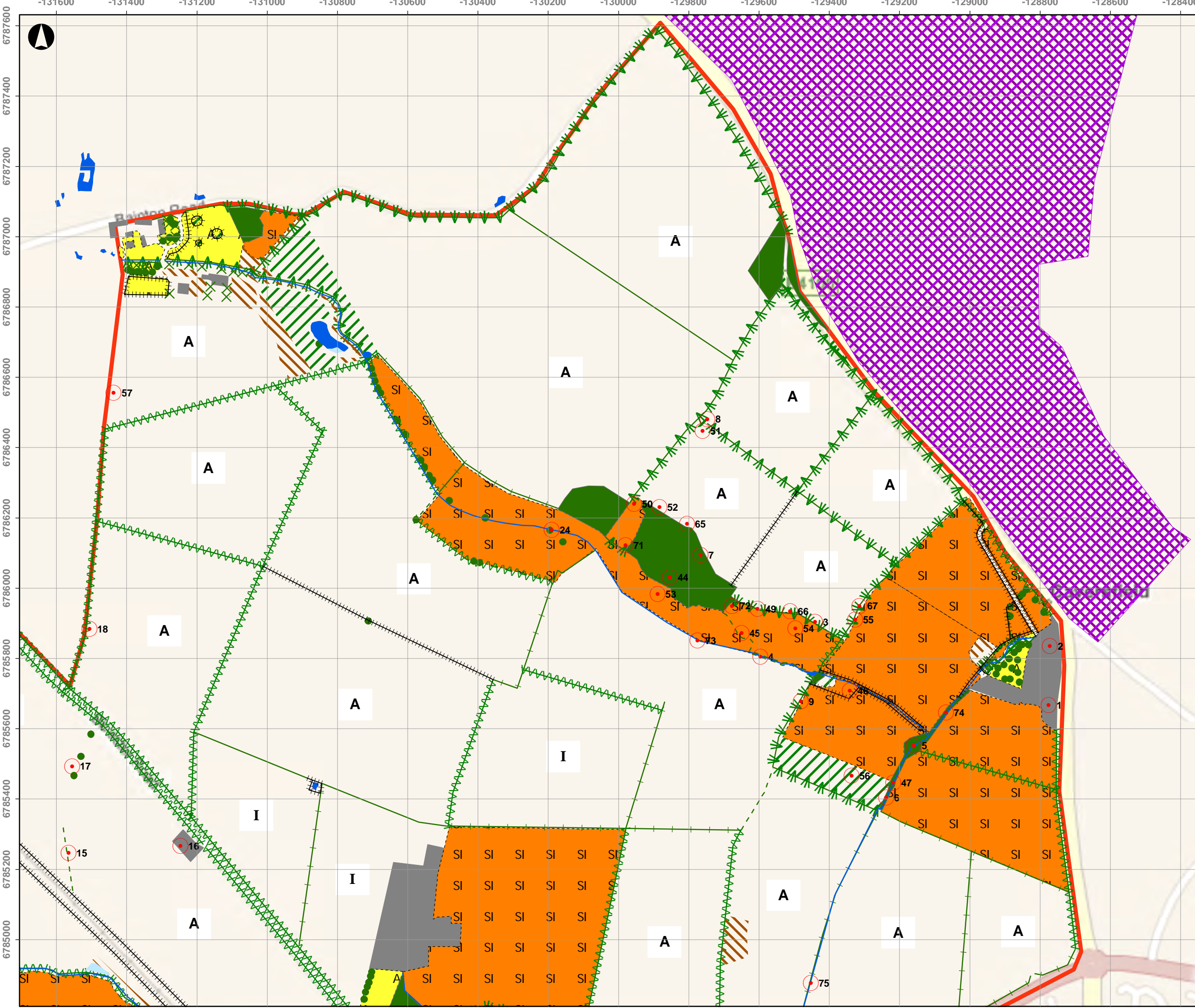
Drawing Status

Issue

Job No	Drawing No	Issue
212606-00	Figure 2	P1

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- A Arable
- I Improved Grassland
- Target Note
- Fence
- Running Water
- Standing Water
- Swamp
- Scattered Scrub
- Dense Scrub
- Tall Ruderal
- Broad-leaved Woodland
- Broad-leaved Plantation Woodland
- Broad-leaved Scattered Trees
- Native Species-rich Intact Hedgerow
- Native Species-rich Intact Hedgerow with Trees
- Native Species-rich Defunct Hedgerow
- Species-poor Intact Hedgerow
- Species-poor Intact Hedgerow with Trees
- Species-poor Defunct Hedgerow
- Semi-improved Neutral Grassland
- Marshy Grassland
- Amenity Grassland
- Spoil Pile
- Buildings
- Site Boundary
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Client

A2 Dominion

Job Title

Bicester Eco-town

Drawing Title

Phase 1 Habitat Survey Map

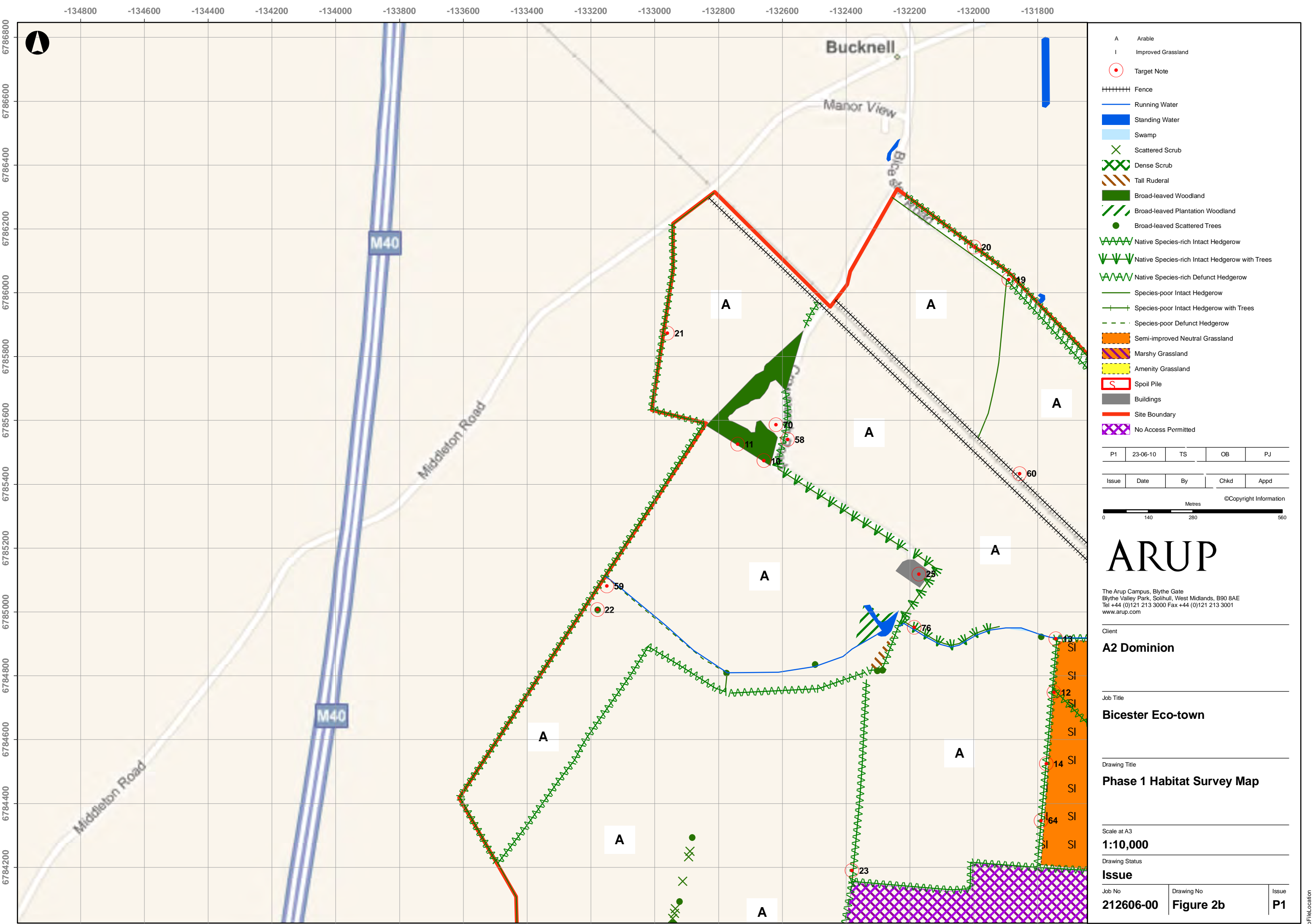
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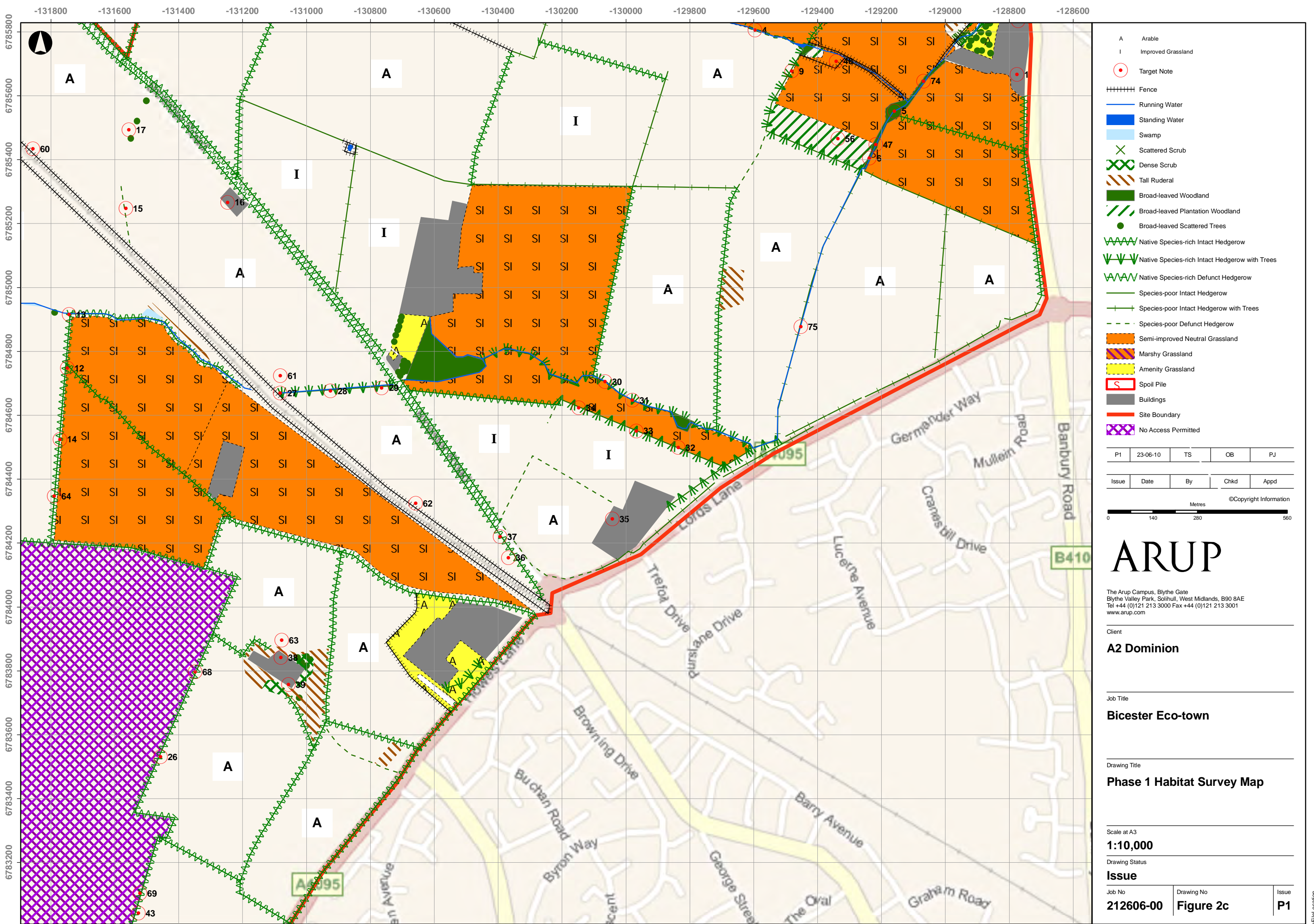
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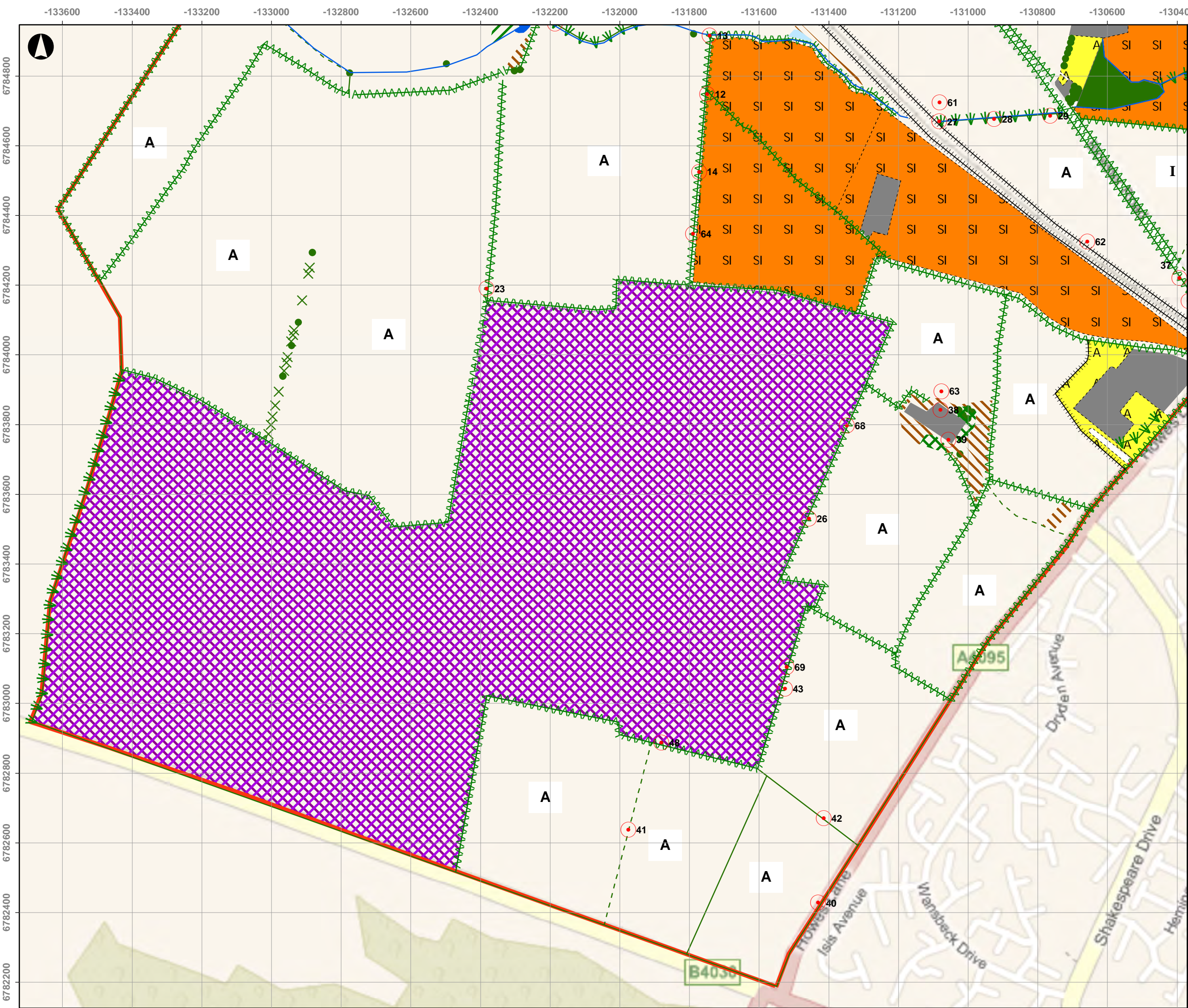
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212606-00	Figure 2a	P1







- A Arable
- I Improved Grassland
- Target Note
- Fence
- Running Water
- Standing Water
- Swamp
- Scattered Scrub
- Dense Scrub
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Client

A2 Dominion

Job Title

Bicester Eco-town

Drawing Title

Phase 1 Habitat Survey Map

Scale at A3

1:10,000

Drawing Status

Issue

Job No	Drawing No	Issue
212606-00	Figure 2d	P1

oFileLocation

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Appendix A

Target Notes

A1 Target Notes

Target Note Number (TN #)	Comment/Description
TN 1	Modern farm house and units (Home Farm) – bat roost potential
TN 2	Farm units and converted barns (Home Farm) - bat roost potential
TN 3	2 × mature horse chestnut trees with cracks/fissures (one tree has a hollow trunk) – bat roost potential
TN 4	Mature oak with owl box - bat roost potential
TN 5	Grey poplar with 2 × bat boxes and log pile at base of tree - bat roost potential
TN 6	Mature ash with owl box and mature willow with bird boxes - bat roost potential
TN 7	Mature oak with little owl box - bat roost potential
TN 8	Dead ash - bat roost potential
TN 9	Dead oak - bat roost potential
TN 10	Dead ash - bat roost potential
TN 11	Mature oak & dead ash - bat roost potential
TN 12	Mature ash - bat roost potential
TN 13	3 × mature ash with ivy cover - bat roost potential
TN 14	Mature ash - bat roost potential
TN 15	Mature ash - bat roost potential
TN 16	Mature ash with ivy cover and adjacent farm units - bat roost potential
TN 17	Mature ash - bat roost potential
TN 18	Mature oak - bat roost potential
TN 19	Mature oak - bat roost potential
TN 20	Mature oak - bat roost potential
TN 21	Rotten oak with hollow trunk - bat roost potential
TN 22	Large mature ash that is isolated - bat roost potential
TN 23	Mature ash - bat roost potential
TN 24	Mature ash with ivy cover - bat roost potential
TN 25	Farm units and buildings - bat roost potential
TN 26	Old mature ash - bat roost potential
TN 27	3 × mature ash with ivy cover - bat roost potential
TN 28	2 × mature ash with ivy cover - bat roost potential
TN 29	2 × mature ash with ivy cover and willow - bat roost potential
TN 30	Mature ash - bat roost potential
TN 31	Mature ash - bat roost potential
TN 32	Mature ash - bat roost potential
TN 33	Mature ash - bat roost potential
TN 34	Mature ash - bat roost potential

Target Note Number (TN #)	Comment/Description
TN 35	Bricked farm out buildings - bat roost potential
TN 36	Mature oak with ivy cover - bat roost potential
TN 37	Mature ash with ivy cover - bat roost potential
TN 38	Derelict farm house and barns - bat roost potential
TN 39	Mature oak - bat roost potential
TN 40	Mature oak - bat roost potential
TN 41	Mature oak with thick ivy cover - bat roost potential
TN 42	Mature oak - bat roost potential
TN 43	Ancient ash pollard - bat roost potential
TN 44	Badger sett in woodlands
TN 45	Badger sett in hedgerow
TN 46	Badger sett in grassland
TN 47	Badger sett in woodland along stream
TN 48	Badger sett in bank
TN 49	Suitable foraging and basking habitat for reptiles
TN 50	Log pile - suitable refugia and basking location for reptiles
TN 51	Suitable foraging and basking habitat for reptiles
TN 52	Suitable foraging and basking habitat for reptiles
TN 53	Suitable foraging and basking habitat for reptiles
TN 54	Suitable foraging and basking habitat for reptiles
TN 55	Suitable foraging and basking habitat for reptiles
TN 56	Suitable foraging and basking habitat for reptiles
TN 57	Suitable foraging and basking habitat for reptiles
TN 58	Suitable foraging and basking habitat for reptiles
TN 59	Suitable foraging and basking habitat for reptiles
TN 60	Suitable foraging and basking habitat for reptiles
TN 61	Suitable foraging and basking habitat for reptiles
TN 62	Suitable foraging and basking habitat for reptiles
TN 63	Suitable foraging and basking habitat for reptiles
TN 64	Suitable foraging and basking habitat for reptiles
TN 65	Woodland edge suitable for dormouse
TN 66	Hedgerow suitable for dormouse
TN 67	Hedgerow suitable for dormouse
TN 68	Hedgerow suitable for dormouse
TN 69	Hedgerow suitable for dormouse
TN 70	Brown hare sighting
TN 71	Log pile - invertebrate survey

Target Note Number (TN #)	Comment/Description
TN 72	Log pile - invertebrate survey
TN 73	Ditch suitable for water voles
TN 74	Watercourse suitable for crayfish and water voles
TN 75	Watercourse suitable for crayfish and water voles
TN 76	Watercourse suitable for crayfish, water voles and aquatic invertebrates

Appendix B

**Protected Species
Legislation**

B1 Protected Species Legislation

The various items of legislation relevant to the species groups discussed within this report are described in the paragraphs below:

6.1.1 Bats

All species of British bat (*Vespertilionidae* and *Rhinolophidae*) are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and receive full protection under Section 9. Bats are also identified as European protected species on Schedule 2 of the Conservation (Natural Habitats, etc.) Regulations 1994, which confers full protection under Regulation 39. Protection was further extended by the CRow Act 2000. Under the above legislation it is an offence to:

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

It is also an offence to set and use articles capable of catching, injuring or killing bats (for example a trap or poison), or knowingly cause or permit such an action.

Bats are listed as priority species in the UK Biodiversity Action Plan and as species of principal importance for the conservation of biological diversity in England under Section 74 of the CRow Act 2000.

6.1.2 Great Crested Newts

The great crested newt (*Triturus cristatus*) is listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and is afforded full protection under Section 9. The great crested newt is also listed as a European protected species on Schedule 2 of the Conservation (Natural habitats, etc.) Regulations 1994 which gives it full protection under Regulation 39. Protection was extended by the Countryside and Rights of Way Act 2000 (the CRow Act). Under the above legislation it is an offence to:

- kill, injure or take an individual great crested newt;
- possess any part of an individual great crested newt either alive or dead;
- intentionally or recklessly damage, destroy or obstruct access to any place or structure used by great crested newts for shelter, rest, protection or breeding;
- intentionally or recklessly disturb great crested newts while they are using any place of shelter or protection; or
- sell or attempt to sell any individual great crested newt.

The great crested newt is listed as a priority species in the UK Biodiversity Action Plan and as species of principal importance for the conservation of biological diversity in England under Section 74 of the Countryside and Rights of Way (CRow) Act 2000.

6.1.3 Reptiles

Common lizard (*Lacerta vivipara*), grass snake (*Natrix natrix*), slow-worm (*Anguis fragilis*), and adder (*Vipera berus*) are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), in respect of Section 9(5) and part of Section 9(1). This protection was extended by the Countryside and Rights of Way (CRow) Act 2000. Under the legislation it is an offence to:

- intentionally or deliberately kill or injure any individual of these species; or
- sell or attempt to sell any part of these species either alive or dead.

6.1.4 Birds

All species of bird are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended). Protection was extended by the Countryside and Rights of Way (CROW) Act 2000. Under the above legislation it is an offence to intentionally:

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- take or destroy an egg of any wild bird.

Certain species are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and receive protection under Sections 1(4) and 1(5). The protection was extended by the Countryside and Rights of Way (CROW) Act 2000. There are special penalties where the offences listed above are committed for any Schedule 1 species and it is also an offence to intentionally or recklessly:

- disturb any such bird when it is building its nest or while it is in or near a nest containing dependant young; or
- disturb the dependant young of any such bird.

6.1.5 Otters

The otter is protected under a wide range of international legislation including Annex II and IV of the EC habitats directive EC/92/43; Appendix II of the Bern Convention; The Wild Mammals Protection Bill 1996 and Schedule 5 of the Wildlife and Countryside Act 1981. Consequently, it is an offence to either intentionally or recklessly kill, injure or knowingly disturb any otter, damage or destroy an otter holt, or take an otter from the wild.

The Countryside and Rights of Way Act 2000 (CROW) places legal emphasis on developers to survey for otters prior to applying for planning permission.

As a protected species, the otter is covered in the UK by the ODPM Planning Policy Statement, PPS9. PPS9 requires that the presence of this species is given material consideration when determining planning applications.

6.1.6 Water Voles

The water vole, *Arvicola terrestris*, is a species of priority conservation concern because of its declining status in the UK. In 1998 it received legal protection under Schedule 5 of the Wildlife and Countryside Act 1981. This amendment (Section 9 (part 4)) afforded protection to the water voles' places of shelter, though the animals themselves received no protection.

However, on the 6th April 2008 the species received an increased level of protection, becoming fully covered by the provisions of section 9 of the Wildlife and Countryside Act 1981 (as amended). Consequently, it is now an offence to:

- Intentionally kill, injure or take water voles.
- Possess or control live or dead water voles or derivatives.
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection.
- Intentionally or recklessly disturb water voles whilst occupying a structure or place used for that purpose.
- Sell water voles or offer or expose for sale or transport for sale.
- Publish or cause to be published any advertisement which conveys the buying or selling of water voles.

Where a proposed development requires planning permission it should be anticipated that the local planning authority will give regard to the need to conserve water voles before reaching their planning decision, as is required by section 40 of the Natural Environment and Rural Communities Act 2006. Due to their protected status water voles are a material planning consideration (as detailed in PPS9), so planning authorities should ensure

adequate information is available on water voles at the potential impacts on their long term population status before determining a planning application.

6.1.7 Badgers

The badger, *Meles meles*, is protected under the Protection of Badgers Act 1992. This makes it illegal to kill, injure, take, possess, or cruelly ill-treat a badger or attempt to do so, to damage or destroy a sett, to obstruct access to a badger sett (or any entrance), or to disturb a badger when it is occupying a sett (English Nature 1999). Licences can be obtained from Natural England in order for development works that would result in disturbance or destruction of a sett to be legally undertaken.

Badgers are additionally afforded protection under Section 11 (Schedule 6, paras 11 & 12) of the Wildlife and Countryside Act 1981 (as amended). This legislation relates to the methods used in capturing and killing badgers, prohibiting for example, the use of snares and traps.

6.1.8 Hazel Dormouse

The hazel dormouse is protected under the Wildlife & Countryside Act 1981 (as amended) and the Conservation (Natural Habitats &c.) Regulations 1994 (as amended). Together, these two pieces of legislation make it an offence to capture, disturb, injure or kill dormice, or otherwise damage or destroy their breeding sites and resting places.

If an activity is likely to result in an offence (such as destroying an area of known breeding habitat), there are several options to proceed lawfully:

- Avoid carrying it out.
- Follow good practice guidance on methods or timing to reduce the chance of committing an offence.
- Obtain a licence to allow otherwise unlawful activities.

A licence application would need to demonstrate the following:

- The authorised activities will be undertaken for a specified purpose (e.g. commonly over-riding public interest or conservation)
- No satisfactory alternative exists.
- The activities will not compromise the conservation status of the species. Some activities will require the design and implementation of an ecological mitigation package, such as a habitat creation scheme, to offset damage or destruction of suitable habitats and thus meet this final objective. Licensing is a common requirement associated with land-use change or development.

6.1.9 Crayfish

The white-clawed crayfish, *Austropotamobius pallipes*, is the only native crayfish species of UK inland waters. The species is suffering a dramatic decline both nationally and internationally and consequently receives protection through the Wildlife & Countryside Act 1981 (as amended).

The species is also listed on Annex II of the European Habitats Directive (92/43/EEC) and is scheduled as a Priority Species within the UK Biodiversity Action Plan.

Together, these pieces of legislation make it an offence to:

Sell, kill, injure, take from the wild, offer for sale, possess or transport for the purpose of sale any live or dead white clawed crayfish, or part thereof.

With regard to planning applications, authorities are legally required to consider the species and the conservation of its favoured habitats. Consequently, relevant ecological surveys are normally required before planning permission can be granted. Development activities likely to contravene the above detailed legislation will require the developer to obtain a licence from Natural England, as set out in Section 16(3) of the Wildlife & Countryside Act 1981. Licence applications are likely to require a comprehensive ecological mitigation package for the species.

Appendix C

**Legally Protected &
Notable/Rare Species
Records**

Legally Protected & Notable/Rare Species Records

Bicester Eco Town 5 km Search Area

Common Name	Scientific Name	Abundance	Sex/ Stage	Date	Grid Ref	Grid Ref Qualifier	Master Site	Sub-Site/Locality	UK Legislation	European Legislation	Global Red List Species	UK Red List Species	UKBAP and NERC Act 2006 Species	Notable Inverts.	2009 BOCC Status	Nat. Rare/ Scarce Plants
a moss	Aloina rigida			01 NOV 1984 - 30 MAR 1985	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve								Scarce (Mo)
a moss	Brachythecium mildeanum			02-Dec-82	SP538273		Ardley Quarry and Cuttings SSSI	Quarry								Scarce (Mo)
a moss	Brachythecium mildeanum			01 NOV 1984 - 30 MAR 1985	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve								Scarce (Mo)
Good King Henry	Chenopodium bonus-henricus			-1987	SP568206		Bowler's Copse, North Meadow					post2001:VU				
Good King Henry	Chenopodium bonus-henricus			-1987	SP561218		Gagle Brook Flood Plain, Chesterton					post2001:VU				
Night-flowering Catchfly	Silene noctiflora			-1986	SP547250		Trow Pool					post2001:VU				
Night-flowering Catchfly	Silene noctiflora			Oct-78	SP547250		Trow Pool					post2001:VU				
Large-leaved Lime	Tilia platyphyllos			-1979	SP518231		Middleton Park (Ecological Area)	Gold Barn Wood, Middleton Park								Scarce (VP)
Rough Marsh-mallow	Althaea hirsuta			19-Jul-90	SP547250		Trow Pool		Schedule 8 (W&C Act 1981)							
Plymouth Pear	Pyrus cordata	Present		15-May-07	SP55452776		Stoke Wood		Schedule 8 (W&C Act 1981)			post2001:VU	Priority Sp.			Rare (VP)
Sainfoin	Onobrychis viciifolia			-1984	SP538273		Ardley Quarry and Cuttings SSSI					post2001:NT				
Sainfoin	Onobrychis viciifolia			05-May-78	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve				post2001:NT				
Sainfoin	Onobrychis viciifolia			22-Jun-83	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				post2001:NT				
Sainfoin	Onobrychis viciifolia			04-Jul-83	SP544263		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				post2001:NT				
Sainfoin	Onobrychis viciifolia			04-Jul-83	SP554255		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				post2001:NT				
Dwarf Spurge	Euphorbia exigua			-1984	SP538273		Ardley Quarry and Cuttings SSSI					post2001:NT				
Dwarf Spurge	Euphorbia exigua			19-Jun-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				post2001:NT				
Dwarf Spurge	Euphorbia exigua			-1986	SP571287		Stoke Lyne Marshy Grassland	Stoke Lyne Marshy Grassland				post2001:NT				
Dwarf Spurge	Euphorbia exigua			-1986	SP547250		Trow Pool					post2001:NT				
Dwarf Spurge	Euphorbia exigua			Oct-78	SP547250		Trow Pool					post2001:NT				
Dwarf Spurge	Euphorbia exigua			03/07/2000	SP525269		Upper Heyford Airfield					post2001:NT				
Allseed	Radiola linoides			-1984	SP538273		Ardley Quarry and Cuttings SSSI					post2001:NT				
Shepherd's-needle	Scandix pecten-veneris			1987	SP597234		Bicester					post2001:CR	Priority Sp.			
Shepherd's-needle	Scandix pecten-veneris			23-May-88	SP597234		Bicester					post2001:CR	Priority Sp.			
Shepherd's-needle	Scandix pecten-veneris			23-May-87	SP597234			Manor Cottages, oxon tetrad 5822				post2001:CR	Priority Sp.			
Field Gromwell	Lithospermum arvense			1983	SP565276		Stoke Little Wood					post2001:EN				
Field Gromwell	Lithospermum arvense			27-Jun-79	SP522255		The Gorse and Heath	THE HEATH (EAST)				post2001:EN				
Cat-mint	Nepeta cataria			-1984	SP538273		Ardley Quarry and Cuttings SSSI					post2001:VU				
Cat-mint	Nepeta cataria			05-May-78	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve				post2001:VU				
Basil Thyme	Clinopodium acinos			12-Jul-94	SP535249		Ardley Lay-by					post2001:VU	Priority Sp.			
Basil Thyme	Clinopodium acinos			-1984	SP538273		Ardley Quarry and Cuttings SSSI					post2001:VU	Priority Sp.			
Basil Thyme	Clinopodium acinos			05-May-78	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve				post2001:VU	Priority Sp.			
Basil Thyme	Clinopodium acinos			22-Jun-83	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				post2001:VU	Priority Sp.			
Basil Thyme	Clinopodium acinos			04-Jul-83	SP544263		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				post2001:VU	Priority Sp.			
Basil Thyme	Clinopodium acinos			23-Jul-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				post2001:VU	Priority Sp.			
Basil Thyme	Clinopodium acinos			12-Jul-88	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				post2001:VU	Priority Sp.			
Basil Thyme	Clinopodium acinos			03/07/2000	SP525269		Upper Heyford Airfield					post2001:VU	Priority Sp.			
Round-leaved Mint	Mentha suaveolens			-1984	SP538273		Ardley Quarry and Cuttings SSSI					post2001:DD				Scarce (VP)
Meadow Clary	Salvia pratensis	2		1985	SP535250		Ardley Lay-by		Schedule 8 (W&C Act 1981)			post2001:NT				Scarce (VP)
Meadow Clary	Salvia pratensis			1985	SP536253		Ardley Lay-by		Schedule 8 (W&C Act 1981)			post2001:NT				Scarce (VP)
Meadow Clary	Salvia pratensis			1987	SP535249		Ardley Lay-by		Schedule 8 (W&C Act 1981)			post2001:NT				Scarce (VP)
Meadow Clary	Salvia pratensis	5	Species	2005	SP536250		Ardley Lay-by		Schedule 8 (W&C Act 1981)			post2001:NT				Scarce (VP)
Meadow Clary	Salvia pratensis	4		Jul-87	SP536251		Ardley Lay-by		Schedule 8 (W&C Act 1981)			post2001:NT				Scarce (VP)
Meadow Clary	Salvia pratensis			10-Jul-94	SP535249		Ardley Lay-by		Schedule 8 (W&C Act 1981)			post2001:NT				Scarce (VP)
Meadow Clary	Salvia pratensis	6		01-Jul-95	SP535249		Ardley Lay-by		Schedule 8 (W&C Act 1981)			post2001:NT				Scarce (VP)

Legally Protected & Notable/Rare Species Records

Bicester Eco Town 5 km Search Area

Common Name	Scientific Name	Abundance	Sex/ Stage	Date	Grid Ref	Grid Ref Qualifier	Master Site	Sub-Site/Locality	UK Legislation	European Legislation	Global Red List Species	UK Red List Species	UKBAP and NERC Act 2006 Species	Notable Inverts.	2009 BOCC Status	Nat. Rare/ Scarce Plants
Meadow Clary	Salvia pratensis			-1984	SP537253		Verge of Middleton Stoney/Ardley Rd		Schedule 8 (W&C Act 1981)			post2001:NT				Scarce (VP)
Narrow-fruited Corns salad	Valerianella dentata			05/09/2000	SP521252		The Gorse and Heath					post2001:EN				
Corn Chamomile	Anthemis arvensis			-1986	SP547250		Trow Pool					post2001:EN				
Corn Chamomile	Anthemis arvensis			Oct-78	SP547250		Trow Pool					post2001:EN				
Stinking Chamomile	Anthemis cotula			-1984	SP538273		Ardley Quarry and Cuttings SSSI					post2001:VU				
Stinking Chamomile	Anthemis cotula			05-May-78	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve				post2001:VU				
Stinking Chamomile	Anthemis cotula			1983	SP565276		Stoke Little Wood					post2001:VU				
Galingale	Cyperus longus	Present	Species	21/06/2006-09/07/2007	SP598253							post2001:NT				Scarce (VP)
Wood Barley	Hordelymus europaeus			-1984	SP538273		Ardley Quarry and Cuttings SSSI									Scarce (VP)
Bluebell	Hyacinthoides non-scripta			-1984	SP538273		Ardley Quarry and Cuttings SSSI		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			05-May-78	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve	W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			1990	SP562213		Chesterton Churchyard		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta	locally abundant		28-Apr-87	SP588204		Graven Hill		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			14/06/2002	SP588204		Graven Hill		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			13-Apr-88	SP526274		Kennel Copse		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			12/06/2001	SP526274		Kennel Copse	east of road	W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			12/06/2001	SP526274		Kennel Copse	west of road	W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			-1979	SP518231		Middleton Park (Ecological Area)	Gold Barn Wood, Middleton Park	W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			-1981	SP567295		Stoke Bushes		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			14-Jun-00	SP567295		Stoke Bushes		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			-1981	SP565276		Stoke Little Wood		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			14/05/2003	SP565276		Stoke Little Wood		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			14-May-03	SP565276		Stoke Little Wood		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			-1986	SP555278		Stoke Wood		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			27-Jun-90	SP553280		Stoke Wood		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta	Abundant		15-May-07	SP55452776		Stoke Wood		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			-1986	SP548282		Sycamore Grove, Ardley		W&C Act 1981, Schedule 8, Section 13 Part 2							
Bluebell	Hyacinthoides non-scripta			-1986	SP568266		Twelve Acre Copse		W&C Act 1981, Schedule 8, Section 13 Part 2							
Greater Butterfly-orchid	Platanthera chlorantha			-1981	SP567295		Stoke Bushes					post2001:NT				
Greater Butterfly-orchid	Platanthera chlorantha			12/06/2001	SP567295		Stoke Bushes					post2001:NT				
Green-winged Orchid	Orchis morio			19-Jun-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				post2001:NT				

Legally Protected & Notable/Rare Species Records

Bicester Eco Town 5 km Search Area

Common Name	Scientific Name	Abundance	Sex/ Stage	Date	Grid Ref	Grid Ref Qualifier	Master Site	Sub-Site/Locality	UK Legislation	European Legislation	Global Red List Species	UK Red List Species	UKBAP and NERC Act 2006 Species	Notable Inverts.	2009 BOCC Status	Nat. Rare/ Scarce Plants
a leafhopper	Macropsis mendax			08-Aug-86	SP603251		Stratton Audley Quarry							Nationally Notable B		
a leafhopper	Psammotettix nodosus			11-Sep-01	SP599278		Fringford Pingo					Pre94:Insu				
a ground beetle	Bembidion quadripustulatum			14-Jun-00	SP579210		Bicester Sewage Farm Reserve						Priority Sp.	Nationally Notable B		
a ground beetle	Bembidion gilvipes			01-Mar-00	SP538273		Ardley Quarry and Cuttings SSSI	Quarry						Nationally Notable B		
a ground beetle	Bembidion gilvipes			01-Mar-00	SP538273		Ardley Quarry and Cuttings SSSI	Quarry						Nationally Notable B		
a ground beetle	Bembidion gilvipes			01-Mar-00	SP538274		Ardley Quarry and Cuttings SSSI							Nationally Notable B		
a ground beetle	Bembidion gilvipes			16-Jan-03	SP5922		Gavray Drive complex	feld 12, Gavray Drive complex						Nationally Notable B		
a ground beetle	Bembidion gilvipes			16-Jan-03	SP598222		Gavray Drive complex	field 11, Gavray Drive complex						Nationally Notable B		
a ground beetle	Bembidion clarki			28-May-87	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve						Nationally Notable B		
a ground beetle	Bembidion clarki			03-Dec-88	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve						Nationally Notable B		
a ground beetle	Bembidion clarki			01-Mar-00	SP538273		Ardley Quarry and Cuttings SSSI	Quarry						Nationally Notable B		
a ground beetle	Bembidion clarki			01-Mar-00	SP538273		Ardley Quarry and Cuttings SSSI	Quarry						Nationally Notable B		
a ground beetle	Bembidion clarki			01-Mar-00	SP538274		Ardley Quarry and Cuttings SSSI							Nationally Notable B		
a ground beetle	Bembidion clarki			13-Mar-00	SP598251		Stratton Audley Quarry							Nationally Notable B		
a ground beetle	Bembidion clarki			14-Mar-00	SP598251		Stratton Audley Quarry							Nationally Notable B		
a ground beetle	Pterostichus anthracinus			12-Mar-93	SP538273		Ardley Quarry and Cuttings SSSI	Quarry						Nationally Notable B		
a ground beetle	Pterostichus anthracinus	2	male	13-Mar-93	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve						Nationally Notable B		
a ground beetle	Pterostichus anthracinus			27-Jul-88	SP603251		Stratton Audley Quarry							Nationally Notable B		
a ground beetle	Harpalus ardosiacus			12-Nov-99	SP548262		Ardley Fields Quarry	Ardley Fields Quarry North Quarry						Nationally Notable B		
a ground beetle	Harpalus azureus			27-Jul-88	SP603251		Stratton Audley Quarry							Nationally Notable B		
a ground beetle	Harpalus schaubergerianus			30-Nov-86	SP543264		Ardley Fields Quarry							Nationally Notable B		
a ground beetle	Harpalus schaubergerianus			28-Apr-87	SP543264		Ardley Fields Quarry							Nationally Notable B		
a ground beetle	Harpalus schaubergerianus			28-May-87	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve						Nationally Notable B		
a ground beetle	Acupalpus consputus			28-May-87	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve						Nationally Notable B		
a ground beetle	Acupalpus consputus			20-Jun-87	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve						Nationally Notable B		
a ground beetle	Lebia chlorocephala			01-Mar-00	SP538273		Ardley Quarry and Cuttings SSSI	Quarry						Nationally Notable B		
a ground beetle	Lebia chlorocephala			01-Mar-00	SP538273		Ardley Quarry and Cuttings SSSI	Quarry						Nationally Notable B		
a ground beetle	Lebia chlorocephala			26-Feb-91	SP599252		Stratton Audley Quarry							Nationally Notable B		
Bombardier Beetle	Brachinus crepitans	21-100	adult	27-Jul-88	SP603251		Stratton Audley Quarry							Nationally Notable B		
Bombardier Beetle	Brachinus crepitans			18-Aug-88	SP603251		Stratton Audley Quarry							Nationally Notable B		

Legally Protected & Notable/Rare Species Records

Bicester Eco Town 5 km Search Area

Common Name	Scientific Name	Abundance	Sex/ Stage	Date	Grid Ref	Grid Ref Qualifier	Master Site	Sub-Site/Locality	UK Legislation	European Legislation	Global Red List Species	UK Red List Species	UKBAP and NERC Act 2006 Species	Notable Inverts.	2009 BOCC Status	Nat. Rare/ Scarce Plants
a crawling water beetle	Haliplus furcatus			1990 - 1999	SP599278		Fringford Pingo					Pre94:EN				
a water beetle	Scarodytes halensis			May-85	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve						Nationally Notable B		
a whirligig	Gyrinus natator			28-Apr-85	SP538273		Ardley Quarry and Cuttings SSSI	Quarry				Pre94:EN				
a whirligig	Gyrinus natator			May-85	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve				Pre94:EN				
a scavenger water beetle	Hydrochus angustatus			06-Oct-88	SP572258		Bucknell ram pond							Nationally Notable B		
a scavenger water beetle	Helophorus nanus			1990 - 1999	SP599278		Fringford Pingo							Nationally Notable B		
a scavenger water beetle	Berosus affinis			12-Nov-99	SP548262		Ardley Fields Quarry	Ardley Fields Quarry North Quarry						Nationally Notable B		
a rove beetle	Philonthus fumarius			16-Jan-03	SP5922		Gavray Drive complex	Field no number, Gavray Drive complex						Nationally Notable B		
a rove beetle	Sepedophilus pedicularius			16-Jan-03	SP598222		Gavray Drive complex	Field 11, Gavray Drive complex						Nationally Notable		
a rove beetle	Sepedophilus pedicularius			16-Jan-03	SP6022		Gavray Drive complex	Field 5, Gavray Drive complex						Nationally Notable		
a rove beetle	Haploglossa picipennis			14-Mar-00	SP602251		Stratton Audley Quarry							Nationally Notable		
a long-toed water beetle	Dryops similaris			13-Jan-02	SP599278		Fringford Pingo					Pre94:NR				
a jewel beetle	Agrilus laticornis			27-Jun-90	SP555277		Stoke Wood							Nationally Notable B		
a leaf beetle	Cryptocephalus aureolus			02-Jun-04	SP599252		Stratton Audley Quarry	Tetrad 5824						Nationally Notable B		
a leaf beetle	Cryptocephalus aureolus			02-Jun-04	SP599252		Stratton Audley Quarry	Tetrad 5824						Nationally Notable B		
a leaf beetle	Cryptocephalus aureolus			02-Jun-04	SP602251		Stratton Audley Quarry							Nationally Notable B		
Flax Flea Beetle	Longitarsus parvulus			01-Mar-00	SP538273		Ardley Quarry and Cuttings SSSI	Quarry						Nationally Notable A		
a leaf beetle	Psylliodes luteola			29-Aug-86	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				Pre94:Insu				
a weevil	Ceutorhynchus campestris			02-Jun-04	SP602251		Stratton Audley Quarry							Nationally Notable B		
a weevil	Ceutorhynchus campestris			02-Jun-04	SP602251		Stratton Audley Quarry							Nationally Notable B		
Ghost Moth	Hepialus humuli			06-Jun-04	SP6024		Bicester airfield	explosives dump area, Bicester airfield					Priority Sp.			
Dingy Skipper	Erynnis tages			1985	SP538273		Ardley Quarry and Cuttings SSSI	Quarry					Priority Sp.			
Dingy Skipper	Erynnis tages			1985	SP538273		Ardley Quarry and Cuttings SSSI	Quarry					Priority Sp.			
Dingy Skipper	Erynnis tages	1		1990	SP5226		Ardley Quarry and Cuttings SSSI	Ardley Quarry					Priority Sp.			
Dingy Skipper	Erynnis tages			22-Jun-83	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Dingy Skipper	Erynnis tages			May-85	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve					Priority Sp.			
Dingy Skipper	Erynnis tages			03-Jun-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Dingy Skipper	Erynnis tages	2-9		15-May-92	SP538274		Ardley Quarry and Cuttings SSSI	Ardley Quarry N R					Priority Sp.			
Dingy Skipper	Erynnis tages	1		16-May-92	SP5327		Ardley Quarry and Cuttings SSSI	Ardley Quarry Reserve					Priority Sp.			
Dingy Skipper	Erynnis tages			02-May-90	SP5226								Priority Sp.			
Dingy Skipper	Erynnis tages			02-May-90	SP5226								Priority Sp.			
Dingy Skipper	Erynnis tages			19-May-90	SP5226								Priority Sp.			
Dingy Skipper	Erynnis tages			19-May-90	SP5226								Priority Sp.			
Dingy Skipper	Erynnis tages			31-May-90	SP5226								Priority Sp.			
Dingy Skipper	Erynnis tages			31-May-90	SP5226								Priority Sp.			
Grizzled Skipper	Pyrgus malvae	6	Adult	25-Apr-02	SP53762725		Ardley Quarry						Priority Sp.			
Grizzled Skipper	Pyrgus malvae			1978	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve					Priority Sp.			
Grizzled Skipper	Pyrgus malvae			1985	SP538273		Ardley Quarry and Cuttings SSSI	Quarry					Priority Sp.			

Legally Protected & Notable/Rare Species Records

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Grizzled Skipper	Pyrgus malvae			1985	SP538273		Ardley Quarry and Cuttings SSSI	Quarry					Priority Sp.			
Grizzled Skipper	Pyrgus malvae	1		1990	SP5226		Ardley Quarry and Cuttings SSSI	Ardley Quarry					Priority Sp.			
Grizzled Skipper	Pyrgus malvae			May-85	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve					Priority Sp.			
Grizzled Skipper	Pyrgus malvae			03-Jun-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Grizzled Skipper	Pyrgus malvae			19-Jun-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Grizzled Skipper	Pyrgus malvae	1		28-Apr-91	SP536274		Ardley Quarry and Cuttings SSSI	Ardley Quarry					Priority Sp.			
Grizzled Skipper	Pyrgus malvae			08-Jul-91	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve					Priority Sp.			
Grizzled Skipper	Pyrgus malvae	2-9		15-May-92	SP538274		Ardley Quarry and Cuttings SSSI	Ardley Quarry N R					Priority Sp.			
Grizzled Skipper	Pyrgus malvae	1		16-May-92	SP5327		Ardley Quarry and Cuttings SSSI	Ardley Quarry Reserve					Priority Sp.			
Grizzled Skipper	Pyrgus malvae	Present	Adult	14/06/2002	SP588204		Graven Hill						Priority Sp.			
Grizzled Skipper	Pyrgus malvae			02-May-90	SP5226								Priority Sp.			
Grizzled Skipper	Pyrgus malvae			02-May-90	SP5226								Priority Sp.			
Grizzled Skipper	Pyrgus malvae			25-May-90	SP5226								Priority Sp.			
Grizzled Skipper	Pyrgus malvae			25-May-90	SP5226								Priority Sp.			
Grizzled Skipper	Pyrgus malvae			31-May-90	SP5226								Priority Sp.			
Grizzled Skipper	Pyrgus malvae			31-May-90	SP5226								Priority Sp.			
Grizzled Skipper	Pyrgus malvae	1		05-Jul-91	SP5226			Bicester; Railway Path					Priority Sp.			
Grizzled Skipper	Pyrgus malvae			17-May-98	SP5327			Ardley Wood					Priority Sp.			
Grizzled Skipper	Pyrgus malvae			28-May-90	SP5622								Priority Sp.			
Grizzled Skipper	Pyrgus malvae			28-May-90	SP5622								Priority Sp.			
Grizzled Skipper	Pyrgus malvae	1		18-May-97	SP5723			Bicester N W					Priority Sp.			
Wood White	Leptidea sinapis	1		04-Jun-91	SP585263		Cotmore Covert & Bainton Copse +Ext	Cotmore Cover, Cotmore Covert & Bainton Copse +Ext	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Brown Hairstreak	Thecla betulae	2	Egg	27-Oct-05	SP59942226		Gavray Drive Meadows	Middle of northern boundary of Field 7	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Brown Hairstreak	Thecla betulae	1	Egg	27-Oct-05	SP59992199		Gavray Drive Meadows	Middle of northern boundary of Field 1	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Brown Hairstreak	Thecla betulae	1	Egg	27-Oct-05	SP60002204		Gavray Drive Meadows	Northern boundary of Field 2	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Brown Hairstreak	Thecla betulae	1	Egg	27-Oct-05	SP60052216		Gavray Drive Meadows	Middle of northern boundary of Field 3	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Brown Hairstreak	Thecla betulae	4	Egg	27-Oct-05	SP60092222		Gavray Drive Meadows	NE corner of Field 5	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Brown Hairstreak	Thecla betulae	1	Egg	27-Oct-05	SP60132201		Gavray Drive Meadows	Middle of western boundary of Field 17	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Brown Hairstreak	Thecla betulae	1	Egg	27-Oct-05	SP60242206		Gavray Drive Meadows	Middle of northern boundary of Field 17	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
White Letter Hairstreak	Satyrrium w-album	2-9		27-Jul-97	SP5622			Whitelands Farm					Priority Sp.			
Small Blue	Cupido minimus			1985	SP538273		Ardley Quarry and Cuttings SSSI	Quarry	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			1985	SP538273		Ardley Quarry and Cuttings SSSI	Quarry	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus	10-29		1990	SP5226		Ardley Quarry and Cuttings SSSI	Ardley Quarry	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			22-Jun-83	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			04-Jul-83	SP544263		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			04-Jul-83	SP554255		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			26-Jul-84	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			30-Jun-86	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			12-Jul-88	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			

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Small Blue	Cupido minimus			29-Jun-90	SP5226				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			29-Jun-90	SP5226				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			26-Jul-90	SP5226				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			30-Aug-90	SP5226				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			06-Sep-90	SP5226				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus	2-9		16-Aug-91	SP5226			Bicester Railway Path	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus	10-29		28-May-90	SP5622				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus	10-29		28-May-90	SP5622				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			01-Jun-90	SP5622				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			01-Jun-90	SP5622				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			24-Jul-90	SP5622				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			27-Jul-90	SP5622				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			01-Aug-90	SP5622				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus			13-Aug-90	SP5622				Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus	Present	Adult	20/08/2002	SP599252		Stratton Audley Quarry	Tetrad 5824	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus	Present	Adult	20/08/2002	SP602251		Stratton Audley Quarry		Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus	Present	Adult	20/08/2002	SP602251		Stratton Audley Quarry	north west, Stratton Audley Quarry	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Small Blue	Cupido minimus	Present	Adult	20/08/2002	SP602251		Stratton Audley Quarry	South	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Adonis Blue	Lysandra bellargus			1990	SP5226				Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
White Admiral	Limenitis camilla	1		31-Jul-07	SP55452776		Stoke Wood						Priority Sp.			
Wall	Lasiommata megera			1985	SP538273		Ardley Quarry and Cuttings SSSI	Quarry					Priority Sp.			
Wall	Lasiommata megera			1985	SP538273		Ardley Quarry and Cuttings SSSI	Quarry					Priority Sp.			
Wall	Lasiommata megera	10-29		1990	SP5226		Ardley Quarry and Cuttings SSSI	Ardley Quarry					Priority Sp.			
Wall	Lasiommata megera			22-Jun-83	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Wall	Lasiommata megera			Jun-85	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve					Priority Sp.			
Wall	Lasiommata megera			03-Jun-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Wall	Lasiommata megera			02-May-90	SP5226								Priority Sp.			
Wall	Lasiommata megera			02-May-90	SP5226								Priority Sp.			
Wall	Lasiommata megera	1		07-Aug-91	SP5226			Bicester Railway Path					Priority Sp.			
Wall	Lasiommata megera	2-9		16-Aug-91	SP5226			Bicester Railway Path					Priority Sp.			
Wall	Lasiommata megera			01-Aug-90	SP5622								Priority Sp.			
Wall	Lasiommata megera			13-Aug-90	SP5622								Priority Sp.			
Wall	Lasiommata megera			22-Aug-90	SP580212								Priority Sp.			
Wall	Lasiommata megera			01-Jun-85	SP565276		Stoke Little Wood						Priority Sp.			
Wall	Lasiommata megera			10-Aug-83	SP599252		Stratton Audley Quarry						Priority Sp.			
Wall	Lasiommata megera			10-Aug-83	SP603251		Stratton Audley Quarry						Priority Sp.			
Wall	Lasiommata megera		adult	02-Jun-04	SP602251		Stratton Audley Quarry	SW detached part					Priority Sp.			
Wall	Lasiommata megera			19-Jul-90	SP547250		Trow Pool						Priority Sp.			
Wall	Lasiommata megera	1		1994	SP601245		Whitecross Green Wood						Priority Sp.			

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Small Heath	Coenonympha pamphilus			04-Jul-83	SP543264		Ardley Fields Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus			03-Jun-85	SP543264		Ardley Fields Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus			07-Jul-86	SP543264		Ardley Fields Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus			1985	SP538273		Ardley Quarry and Cuttings SSSI	Quarry					Priority Sp.			
Small Heath	Coenonympha pamphilus			1985	SP538273		Ardley Quarry and Cuttings SSSI	Quarry					Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		1990	SP5226		Ardley Quarry and Cuttings SSSI	Ardley Quarry					Priority Sp.			
Small Heath	Coenonympha pamphilus			22-Jun-83	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Small Heath	Coenonympha pamphilus			04-Jul-83	SP544263		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Small Heath	Coenonympha pamphilus			04-Jul-83	SP554255		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Small Heath	Coenonympha pamphilus			26-Jul-84	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Small Heath	Coenonympha pamphilus			Jun-85	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve					Priority Sp.			
Small Heath	Coenonympha pamphilus			03-Jun-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Small Heath	Coenonympha pamphilus			19-Jun-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Small Heath	Coenonympha pamphilus			23-Jul-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Small Heath	Coenonympha pamphilus			30-Jun-86	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Small Heath	Coenonympha pamphilus			07-Jul-86	SP538273		Ardley Quarry and Cuttings SSSI	Quarry					Priority Sp.			
Small Heath	Coenonympha pamphilus			12-Jul-88	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Small Heath	Coenonympha pamphilus			08-Jul-91	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve					Priority Sp.			
Small Heath	Coenonympha pamphilus	Present	Adult	26/06/2002	SP598222		Gavray Drive Meadows	Gavray Drive western fields					Priority Sp.			
Small Heath	Coenonympha pamphilus			08-Jul-91	SP526274		Kennel Copse						Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		1997	SP603228		Launton Churchyard						Priority Sp.			
Small Heath	Coenonympha pamphilus			19-May-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus			19-May-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		25-May-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		25-May-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		07-Jun-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		07-Jun-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus			13-Jun-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus			13-Jun-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus			14-Jun-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus			14-Jun-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		29-Jun-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		29-Jun-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		03-Jul-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		03-Jul-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus			12-Jul-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus			12-Jul-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus			23-Jul-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus			26-Jul-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		15-Aug-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		30-Aug-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus			06-Sep-90	SP5226								Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		06-Apr-91	SP5226			Bicester; Railway Path					Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		04-Jun-91	SP5226			Bicester; Railway Path					Priority Sp.			
Small Heath	Coenonympha pamphilus	30-99		21-Jun-91	SP5226			Bicester; Railway Path					Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		28-Jun-91	SP5226			Bicester; Railway Path					Priority Sp.			
Small Heath	Coenonympha pamphilus	1		05-Jul-91	SP5226			Bicester; Railway Path					Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		19-Jul-91	SP5226			Bicester Railway Path					Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		26-Jul-91	SP5226			Bicester Railway Path					Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		02-Aug-91	SP5226			Bicester Railway Path					Priority Sp.			
Small Heath	Coenonympha pamphilus	1		20-Jul-92	SP5226			Ardley					Priority Sp.			
Small Heath	Coenonympha pamphilus			24-Jul-98	SP5226			Chilgrove Drive - N					Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		22-May-92	SP5422			Near M40					Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		03-Jun-92	SP5422			Chesterton & Bucknell Parish					Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		10-Aug-92	SP547233			Bucknell					Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		19-Aug-93	SP547233			B4030					Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		26-Aug-93	SP548220			A4098					Priority Sp.			
Small Heath	Coenonympha pamphilus	1		28-May-90	SP5622								Priority Sp.			

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Small Heath	Coenonympha pamphilus	1		28-May-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		01-Jun-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		01-Jun-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus			15-Jun-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus			15-Jun-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus			28-Jun-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus			28-Jun-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus			30-Jun-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus			30-Jun-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus			24-Jul-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus			27-Jul-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus			01-Aug-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus	10-29		13-Aug-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus			07-Sep-90	SP5622								Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		18-May-97	SP5723			Bicester N W, oxon tetrad 5622					Priority Sp.			
Small Heath	Coenonympha pamphilus	1		10-Aug-97	SP5722			Bicester - S W, oxon tetrad 5622					Priority Sp.			
Small Heath	Coenonympha pamphilus			21-Jun-98	SP5629			Stoke Bushes, oxon tetrad 5628					Priority Sp.			
Small Heath	Coenonympha pamphilus	1		06-Jul-97	SP5823			Bicester N, oxon tetrad 5822					Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		1991	SP5826			Fringford, oxon tetrad 5826					Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		05-Jul-91	SP601219			Oxon tetrad 6020					Priority Sp.			
Small Heath	Coenonympha pamphilus	2-9		05-Jul-91	SP601221			Oxon tetrad 6020					Priority Sp.			
Small Heath	Coenonympha pamphilus			08-Jul-81	SP603251		Stratton Audley Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus			08-Jul-91	SP599252		Stratton Audley Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus	Present	Adult	20/08/2002	SP602251		Stratton Audley Quarry	north west, Stratton Audley Quarry					Priority Sp.			
Small Heath	Coenonympha pamphilus	Present	Adult	20/08/2002	SP599252		Stratton Audley Quarry	Tetrad 5824					Priority Sp.			
Small Heath	Coenonympha pamphilus		adult	20-Aug-02	SP602251		Stratton Audley Quarry	north west, Stratton Audley Quarry					Priority Sp.			
Small Heath	Coenonympha pamphilus	present; 9	Adult; Species	29/05/2003	SP602251		Stratton Audley Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus	present	Species	11/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus	present	Adult	13/06/2003	SP602251		Stratton Audley Quarry	south quarry					Priority Sp.			
Small Heath	Coenonympha pamphilus	present; 30	Adult; Species	17/06/2003	SP602251		Stratton Audley Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus	present	Species	20/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus			07-Jul-03	SP602251		Stratton Audley Quarry	west quarry, Stratton Audley Quarry					Priority Sp.			
Small Heath	Coenonympha pamphilus	present; 3	Adult; Species	16/07/2003	SP602251		Stratton Audley Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus	2	Species	05/08/2003	SP602250		Stratton Audley Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus	present; 34	Adult; Species	06/08/2003	SP602251		Stratton Audley Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus	present; 57	Adult; Species	27/08/2003	SP602251		Stratton Audley Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus	present; 12	Adult; Species	15/09/2003	SP602251		Stratton Audley Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus		adult	02-Jun-04	SP599252		Stratton Audley Quarry	Tetrad 5824					Priority Sp.			
Small Heath	Coenonympha pamphilus		adult	02-Jun-04	SP602251		Stratton Audley Quarry						Priority Sp.			
Small Heath	Coenonympha pamphilus		adult	02-Jun-04	SP602251		Stratton Audley Quarry	SW detached part, Stratton Audley Quarry					Priority Sp.			
Small Heath	Coenonympha pamphilus	1	Species	31/07/2008	SP605246		Stratton Audley Quarry	Southern section					Priority Sp.			
Small Heath	Coenonympha pamphilus	present	Species	27-Sep-06	SP59902537		Stratton Audley Quarry (NW corner)						Priority Sp.			
Small Heath	Coenonympha pamphilus			30-Jun-86	SP547250		Trow Pool						Priority Sp.			
Lackey	Malacosoma neustria		larva	28-Apr-85	SP538273		Ardley Quarry and Cuttings SSSI	Quarry					Priority Sp.			
Lackey	Malacosoma neustria			May-85	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve					Priority Sp.			
Shaded Broad-Bar	Scotopteryx chenopodiata	1	Adult	16/07/02-17/07/02	SP53762725		Ardley Quarry						Priority Sp.			
Shaded Broad-bar	Scotopteryx chenopodiata			26-Jul-84	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			

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Shaded Broad-bar	Scotopteryx chenopodiata			23-Jul-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Shaded Broad-bar	Scotopteryx chenopodiata			29-Aug-86	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Small Phoenix	Ecliptopera silaceata			06-Jun-04	SP6024		Bicester airfield	explosives dump area, Bicester airfield					Priority Sp.			
White Ermine	Spilosoma lubricipeda			06-Jun-04	SP6024		Bicester airfield	explosives dump area, Bicester airfield					Priority Sp.			
White Ermine	Spilosoma lubricipeda			30-Jun-86	SP547250		Trow Pool						Priority Sp.			
Buff Ermine	Spilosoma luteum			06-Jun-04	SP6024		Bicester airfield	explosives dump area, Bicester airfield					Priority Sp.			
Cinnabar	Tyria jacobaeae		adult	02-Jun-04	SP534221		A4095/A43 Junction near Oxford Lodge						Priority Sp.			
Cinnabar	Tyria jacobaeae			1978	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve					Priority Sp.			
Cinnabar	Tyria jacobaeae			May-85	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve					Priority Sp.			
Cinnabar	Tyria jacobaeae		larva	23-Jul-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Cinnabar	Tyria jacobaeae		larva	12-Jul-88	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Cinnabar	Tyria jacobaeae		immature male	20-Jul-83	SP516242		Aves Ditch	Tetrad 5024 section					Priority Sp.			
Cinnabar	Tyria jacobaeae			06-Jun-04	SP6024		Bicester airfield	explosives dump area, Bicester airfield					Priority Sp.			
Cinnabar	Tyria jacobaeae	Present	Adult	24/06/2002	SP602220		Gavray Drive Meadows	Gavray Drive field 22 (renamed field 17)					Priority Sp.			
Cinnabar	Tyria jacobaeae		adult	02-Jun-04	SP599252		Stratton Audley Quarry	Tetrad 5824					Priority Sp.			
Cinnabar	Tyria jacobaeae	present	Species	31/07/2008	SP605246		Stratton Audley Quarry	Southern section					Priority Sp.			
Cinnabar	Tyria jacobaeae			30-Jun-86	SP547250		Trow Pool						Priority Sp.			
Small Square-Spot	Diarsia rubi	1	Individual	16/07/02-17/07/02	SP53762725		Ardley Quarry						Priority Sp.			
Small Square-spot	Diarsia rubi			06-Jun-04	SP6024		Bicester airfield	explosives dump area, Bicester airfield					Priority Sp.			
Shoulder-striped Wainscot	Mythimna comma			06-Jun-04	SP6024		Bicester airfield	explosives dump area, Bicester airfield					Priority Sp.			
Grey Dagger	Acronicta psi			03-Jun-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Knotgrass	Acronicta rumicis			06-Jun-04	SP6024		Bicester airfield	explosives dump area, Bicester airfield					Priority Sp.			
Dusky Brocade	Apamea remissa			06-Jun-04	SP6024		Bicester airfield	explosives dump area, Bicester airfield					Priority Sp.			
Large Nutmeg	Apamea anceps			06-Jun-04	SP6024		Bicester airfield	explosives dump area, Bicester airfield					Priority Sp.			
Rosy Rustic	Hydraecia micacea	1	Individual	29/08/02-30/08/02	SP53762725		Ardley Quarry						Priority Sp.			
Mottled Rustic	Caradrina morpheus			06-Jun-04	SP6024		Bicester airfield	explosives dump area, Bicester airfield					Priority Sp.			
Four-spotted	Tyta luctuosa			22-Jun-83	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				Pre94:VU	Priority Sp.			
Four-spotted	Tyta luctuosa			04-Jul-83	SP544263		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				Pre94:VU	Priority Sp.			
Four-spotted	Tyta luctuosa			04-Jul-83	SP554255		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				Pre94:VU	Priority Sp.			
Four-spotted	Tyta luctuosa			26-Jul-84	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				Pre94:VU	Priority Sp.			
Four-spotted	Tyta luctuosa			03-Jun-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				Pre94:VU	Priority Sp.			
Four-spotted	Tyta luctuosa			19-Jun-85	SP534274		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings				Pre94:VU	Priority Sp.			
Volucella inanis	Volucella inanis	1	Species	04/08/2008	SP54722499		Trow Pool							Nationally Notable		
Volucella inanis	Volucella inanis	3	Species	22/08/2008	SP54722499		Trow Pool							Nationally Notable		
The Small Tiphia	Tiphia minuta			2003	SP602251		Stratton Audley Quarry							Nationally Notable B		
The Small Tiphia	Tiphia minuta			07-Jul-03	SP602251		Stratton Audley Quarry							Nationally Notable B		

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The Small Tiphia	Tiphia minuta			07/07/2003	SP602251		Stratton Audley Quarry							Nationally Notable B		
a solitary bee	Andrena varians			2003	SP602251		Stratton Audley Quarry							Nationally Notable B		
a solitary bee	Andrena varians			20-Apr-03	SP602251		Stratton Audley Quarry							Nationally Notable B		
a solitary bee	Andrena varians			20/04/2003	SP602251		Stratton Audley Quarry							Nationally Notable B		
a solitary bee	Halictus confusus			2003	SP602251		Stratton Audley Quarry					Pre94:NR				
a solitary bee	Halictus confusus			2003	SP602251		Stratton Audley Quarry					Pre94:NR				
Yellow Footed Mining Bee	Lasioglossum xanthopum			2003	SP602251		Stratton Audley Quarry							Nationally Notable B		
Yellow Footed Mining Bee	Lasioglossum xanthopum			13-Jun-03	SP602251		Stratton Audley Quarry							Nationally Notable B		
a solitary bee	Lasioglossum malachurus			2003	SP602251		Stratton Audley Quarry							Nationally Notable B		
a solitary bee	Lasioglossum malachurus			07-Jul-03	SP602251		Stratton Audley Quarry							Nationally Notable B		
a solitary bee	Lasioglossum pauxillum			2003	SP602251		Stratton Audley Quarry							Nationally Notable A		
a solitary bee	Lasioglossum pauxillum			16-May-03	SP602251		Stratton Audley Quarry							Nationally Notable A		
a solitary bee	Lasioglossum pauxillum			16/05/2003	SP602251		Stratton Audley Quarry							Nationally Notable A		
a solitary bee	Lasioglossum leucopum			2003	SP602251		Stratton Audley Quarry					Pre94:NR				
a solitary bee	Lasioglossum leucopum			16-May-03	SP602251		Stratton Audley Quarry					Pre94:NR				
a solitary bee	Sphecodes crassus			2003	SP602251		Stratton Audley Quarry							Nationally Notable B		
a solitary bee	Sphecodes crassus			13-Jun-03	SP602251		Stratton Audley Quarry							Nationally Notable B		
Sphecodes crassus	Sphecodes crassus			13/06/2003	SP602251		Stratton Audley Quarry							Nationally Notable B		
Two Coloured Mason Bee	Osmia bicolor			2003	SP602251		Stratton Audley Quarry							Nationally Notable B		
Two Coloured Mason Bee	Osmia bicolor			13-Jun-03	SP602251		Stratton Audley Quarry							Nationally Notable B		
Two Coloured Mason Bee	Osmia bicolor			13/06/2003	SP602251		Stratton Audley Quarry							Nationally Notable B		
Freshwater Crayfish	Austropotamobius pallipes	Present	Species	28/06/1994	SP58712148			A41 BICESTER (LANGFORD BROOK)	Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)		post94:VU		Priority Sp.			
Eel	Anguilla anguilla			23-May-83	SP525230		Middleton Park (Ecological Area)							Priority Sp.		
Great Crested Newt	Triturus cristatus			04-Jul-83	SP543264		Ardley Fields Quarry		Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus	2	Egg	20-Apr-04	SP53762725		Ardley Quarry		Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus			2001	SP538273		Ardley Quarry and Cuttings SSSI	Quarry	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus	21	male	11-Apr-03	SP601223			Bicester	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus	14	female	11-Apr-03	SP601223			Bicester	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus	69	male	28-Apr-03	SP601223			Bicester	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus	29	female	28-Apr-03	SP601223			Bicester	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus	26	female	04-May-03	SP601223			Bicester	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus	51	male	04-May-03	SP601223			Bicester	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			

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Great Crested Newt	Triturus cristatus	15	female	21-May-03	SP601223			Bicester	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus	26	male	21-May-03	SP601223			Bicester	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus			20-Mar-88	SP599252		Stratton Audley Quarry		Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus			20-Mar-88	SP603251		Stratton Audley Quarry		Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus		immature	19-Jun-92	SP599252		Stratton Audley Quarry		Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus	1	Female	07/04/2009	SP59912525		Stratton Audley Quarry		Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus	1	Male	07/04/2009	SP59872520		Stratton Audley Quarry		Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Great Crested Newt	Triturus cristatus			1996	SP59972220			Unipart Development Site	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Smooth Newt	Triturus vulgaris			2001	SP538273		Ardley Quarry and Cuttings SSSI	Quarry	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Smooth Newt	Triturus vulgaris			May-85	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Smooth Newt	Triturus vulgaris			May-85	SP538273		Ardley Quarry and Cuttings SSSI	Quarry	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Smooth Newt	Triturus vulgaris			08-Jul-91	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Common newt	Triturus vulgaris	Minimum of	Adult	01-Apr-02	SP60692255		Ditch, Sherwood Close, Launton		Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Smooth Newt	Triturus vulgaris			May-04	SP534235		Middleton Park (Ecological Area)		Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Smooth Newt	Triturus vulgaris	6	adult	11-Apr-03	SP601223			Bicester, Oxon tetrad 6022	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Smooth Newt	Triturus vulgaris	4	adult	28-Apr-03	SP601223			Bicester, Oxon tetrad 6022	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Smooth Newt	Triturus vulgaris	16	adult	04-May-03	SP601223			Bicester, Oxon tetrad 6022	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Smooth Newt	Triturus vulgaris	25	adult	21-May-03	SP601223			Bicester, Oxon tetrad 6022	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Smooth Newt	Triturus vulgaris			26-Feb-91	SP603251		Stratton Audley Quarry		Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Smooth Newt	Triturus vulgaris	2	Female	07/04/2009	SP59912525		Stratton Audley Quarry		Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Smooth Newt	Triturus vulgaris	1	Male	07/04/2009	SP59872520		Stratton Audley Quarry		Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Smooth Newt	Triturus vulgaris	2	Female	07/04/2009	SP59872520		Stratton Audley Quarry		Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Common Toad	Bufo bufo	9	adult	11-Apr-03	SP601223			Bicester, Oxon tetrad 6022	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Common Toad	Bufo bufo	15	adult	28-Apr-03	SP601223			Bicester, Oxon tetrad 6022	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Common Toad	Bufo bufo	11	adult	04-May-03	SP601223			Bicester, Oxon tetrad 6022	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Common Toad	Bufo bufo	6	adult	21-May-03	SP601223			Bicester, Oxon tetrad 6022	Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Common Toad	Bufo bufo	Present	Juvenile	19/06/2008	SP54722499		Trow Pool		Schedule 5, parts 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Common Frog	Rana temporaria			2001	SP538273		Ardley Quarry and Cuttings SSSI	Quarry	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Common Frog	Rana temporaria	1 adult	Adult	01-Apr-02	SP60692255		Ditch and pond, Sherwood Close, Launton		Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Common Frog	Rana temporaria			23-May-83	SP525230		Middleton Park (Ecological Area)		Schedule 5, parts 5(a) and (b) (W&C Act 1981)							

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Common Frog	Rana temporaria	6	adult	11-Apr-03	SP601223			Bicester, Oxon tetrad 6022	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Common Frog	Rana temporaria	11	adult	28-Apr-03	SP601223			Bicester, Oxon tetrad 6022	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Common Frog	Rana temporaria	18	adult	04-May-03	SP601223			Bicester, Oxon tetrad 6022	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Common Frog	Rana temporaria	22	adult	21-May-03	SP601223			Bicester, Oxon tetrad 6022	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Common Frog	Rana temporaria	2	Species	31/07/2008	SP605246		Stratton Audley Quarry	Southern section	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Common Frog	Rana temporaria	1	Species	31/07/2008	SP605246		Stratton Audley Quarry	Southern section: fishing lake and surrounds	Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Common Frog	Rana temporaria	1	Presence	19/06/2008	SP54722499		Trow Pool		Schedule 5, parts 5(a) and (b) (W&C Act 1981)							
Viviparous Lizard	Lacerta vivipara	c. 20		2002	SP57652360		Bicester, 132, Barry Avenue		Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Grass Snake	Natrix natrix			1978	SP538273		Ardley Quarry and Cuttings SSSI	Quarry	Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Grass Snake	Natrix natrix	1		Summer 1994	SP561215		Barnside, Alchester Rd, Chesterton		Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Grass Snake	Natrix natrix	1		Summer 2000	SP561222		Bignell Park, Chesterton		Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Grass Snake	Natrix natrix	1	Juvenile	Summer 1995	SP562232		Himley Farm, Bicester		Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Grass Snake	Natrix natrix	1	Adult	Summer 2003	SP561237		Himley Farm, Bicester		Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Grass Snake	Natrix natrix	2		21-Aug-03	SP559214		Orchard Rise, Chesterton?		Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Grass Snake	Natrix natrix			28-Jul-87	SP572210		Roman Road by Hayfield		Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Grass Snake	Natrix natrix		adult	08-Jul-81	SP603251		Stratton Audley Quarry		Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Grass Snake	Natrix natrix			08-Jul-91	SP602251		Stratton Audley Quarry		Schedule 5, parts 1, 5(a) and (b) (W&C Act 1981)				Priority Sp.			
Little Grebe	Tachybaptus ruficollis		in bud	03-Jun-85	SP543264		Ardley Fields Quarry								Amber List	
Little Grebe	Tachybaptus ruficollis	29	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Little Grebe	Tachybaptus ruficollis	4	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Little Grebe	Tachybaptus ruficollis	30	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Little Grebe	Tachybaptus ruficollis	39	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Little Grebe	Tachybaptus ruficollis	42	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Little Grebe*	Tachybaptus ruficollis	1		26-May-04	SP5720	Record	Bicester: Bicester Golf Club								Amber List	
Little Grebe*	Tachybaptus ruficollis	1	Pair	15-Mar-00	SP5721	Record	Bicester: Bicester Wetland Reserve								Amber List	
Little Grebe	Tachybaptus ruficollis		proved breeding	20-Jul-83	SP519230		Middleton Park (Ecological Area)								Amber List	
Little Grebe	Tachybaptus ruficollis			15-Sep-82	SP603251		Stratton Audley Quarry								Amber List	
Little Grebe	Tachybaptus ruficollis			23-Sep-87	SP603251		Stratton Audley Quarry								Amber List	
Little Grebe	Tachybaptus ruficollis			26/06/2003	SP547250		Trow Pool								Amber List	
Little Grebe	Tachybaptus ruficollis	Present	Species	17-Jul-04	SP547249		Trow Pool								Amber List	
Little Grebe	Tachybaptus ruficollis	1	Species	04/07/2008	SP54722499		Trow Pool								Amber List	
Little Grebe	Tachybaptus ruficollis	4	Species	13/06/2008-18/07/2008	SP54722499		Trow Pool								Amber List	
Bittern	Botaurus stellaris	1	Species	2000	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)	Birds Dir (An 1)			Priority Sp.		Red List	
Bittern	Botaurus stellaris	1	Species	2001	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)	Birds Dir (An 1)			Priority Sp.		Red List	
Little Egret	Egretta garzetta	4	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Little Egret	Egretta garzetta	3	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Greylag Goose	Anser anser	1	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Greylag Goose	Anser anser			23-May-83	SP525230		Middleton Park (Ecological Area)								Amber List	

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Common Name	Scientific Name	Abundance	Sex/ Stage	Date	Grid Ref	Grid Ref Qualifier	Master Site	Sub-Site/Locality	UK Legislation	European Legislation	Global Red List Species	UK Red List Species	UKBAP and NERC Act 2006 Species	Notable Inverts.	2009 BOCC Status	Nat. Rare/ Scarce Plants
Wigeon	Anas penelope	5	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Wigeon	Anas penelope	11	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Wigeon	Anas penelope	5	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Wigeon	Anas penelope	8	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Gadwall	Anas strepera	11	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Gadwall	Anas strepera	17	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Gadwall	Anas strepera	21	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Gadwall	Anas strepera	36	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Gadwall	Anas strepera	36	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Teal	Anas crecca	30	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Teal	Anas crecca	27	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Teal	Anas crecca	41	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Teal	Anas crecca	41	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Teal	Anas crecca	1	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Mallard	Anas platyrhynchos	3	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Mallard	Anas platyrhynchos	1	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Mallard	Anas platyrhynchos	2	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Mallard	Anas platyrhynchos	5	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Mallard	Anas platyrhynchos	4	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Mallard	Anas platyrhynchos		proved breeding	14-Jun-01	SP599278		Fringford Pingo								Amber List	
Mallard	Anas platyrhynchos		Breeding confirmed	30-Apr-02	SP599278		Fringford Pingo								Amber List	
Mallard	Anas platyrhynchos			-1987	SP561218		Gagle Brook Flood Plain, Chesterton								Amber List	
Mallard	Anas platyrhynchos			01-Dec-78	SP518232		Middleton Park (Ecological Area)	Middleton Park Lake							Amber List	
Mallard	Anas platyrhynchos			23-May-83	SP525230		Middleton Park (Ecological Area)								Amber List	
Mallard	Anas platyrhynchos		proved breeding	20-Jul-83	SP519230		Middleton Park (Ecological Area)								Amber List	
Mallard*	Anas platyrhynchos	200		05-May-03	SP5728	Record	Stoke Lyne								Amber List	
Mallard	Anas platyrhynchos	present	Species	11/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Mallard	Anas platyrhynchos	5; 1	Juvenile; Female	20/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Mallard	Anas platyrhynchos	present	Species	05/08/2003	SP602250		Stratton Audley Quarry								Amber List	
Mallard	Anas platyrhynchos		proved breeding	02-Jun-04	SP602251		Stratton Audley Quarry	SW detached part, Stratton Audley Quarry							Amber List	
Mallard	Anas platyrhynchos	Present	Species	31/07/2008	SP602250		Stratton Audley Quarry								Amber List	
Mallard	Anas platyrhynchos	Present	Species	17-Jul-04	SP547249		Trow Pool								Amber List	
Mallard	Anas platyrhynchos	2; 1	Juvenile; Female	17/06/2008	SP54662494		Trow Pool	southern pool and surrounding habitat							Amber List	
Mallard	Anas platyrhynchos	2; >1	Juvenile; Species	04/07/2008	SP54722499		Trow Pool								Amber List	
Mallard	Anas platyrhynchos	present	Species	04/08/2008	SP54722499		Trow Pool								Amber List	
Mallard	Anas platyrhynchos	present	Species	22/08/2008	SP54722499		Trow Pool								Amber List	
Mallard	Anas platyrhynchos	3	Species	13/06/2008-18/07/2008	SP54722499		Trow Pool								Amber List	
Pintail	Anas acuta	1	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Pintail	Anas acuta	3	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Pintail	Anas acuta	1	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Garganey	Anas querquedula			23-May-83	SP525230		Middleton Park (Ecological Area)		Schedule 1 (W&C Act 1981)						Amber List	
Shoveler	Anas clypeata	7	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Shoveler	Anas clypeata	10	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Shoveler	Anas clypeata	24	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Shoveler	Anas clypeata	16	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Shoveler	Anas clypeata	27	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Pochard	Aythya ferina	2	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Tufted Duck	Aythya fuligula	6	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Tufted Duck	Aythya fuligula	3	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Tufted Duck	Aythya fuligula	4	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	

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Tufted Duck	Aythya fuligula	14	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Tufted Duck*	Aythya fuligula	1		15-Jun-04	SP5720	Record	Bicester: Bicester Golf Club								Amber List	
Tufted Duck	Aythya fuligula		proved breeding	20-Jul-83	SP519230		Middleton Park (Ecological Area)								Amber List	
Tufted Duck	Aythya fuligula			15-Sep-82	SP603251		Stratton Audley Quarry								Amber List	
Red Kite*	Milvus milvus	1		22-Feb-04	SP5720	1km Square Record	Bicester: Bicester Golf Club		Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Red Kite*	Milvus milvus	1		26-May-03	SP5527	1km Square Record	Stoke Lyne		Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Red Kite	Milvus milvus	1	Species	04/08/2008	SP54722499		Trow Pool		Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Kestrel	Falco tinnunculus	3	Juvenile	27-Jun-04	SP579263		Bainton								Amber List	
Kestrel*	Falco tinnunculus	1		15-Nov-03	SP5720	Record	Bicester								Amber List	
Kestrel	Falco tinnunculus	3	Juvenile	20-Jun-04	SP552269		Bucknell								Amber List	
Kestrel	Falco tinnunculus	2	Juvenile	29-May-05	SP552269		Bucknell								Amber List	
Kestrel	Falco tinnunculus	4	Juvenile	20-Jun-04	SP568272		Caversfield								Amber List	
Kestrel	Falco tinnunculus	4	Juvenile	20-Jun-04	SP587260		Caversfield								Amber List	
Kestrel	Falco tinnunculus	5	Juvenile	05-Jun-05	SP585287		Caversfield								Amber List	
Kestrel	Falco tinnunculus	5	Species	12-Jun-05	SP568272		Caversfield								Amber List	
Kestrel	Falco tinnunculus	5	Juvenile	26-Jun-05	SP578250		Caversfield								Amber List	
Kestrel	Falco tinnunculus	4	Juvenile	06-Jun-04	SP547208		Chesterton								Amber List	
Kestrel	Falco tinnunculus	5	Juvenile	06-Jun-04	SP551266		Chesterton								Amber List	
Kestrel	Falco tinnunculus	4	Juvenile	29-May-05	SP537213		Chesterton								Amber List	
Kestrel	Falco tinnunculus	4	Juvenile	29-May-05	SP547208		Chesterton								Amber List	
Kestrel	Falco tinnunculus	4	Juvenile	19-Jun-05	SP551266		Chesterton								Amber List	
Kestrel	Falco tinnunculus	2	Species	19/08/2002	SP59702225		Gavray Drive Meadows	field 9 (renamed field 11)							Amber List	
Kestrel	Falco tinnunculus	4	Juvenile	19-Jun-05	SP585286		Hethe Brede								Amber List	
Kestrel	Falco tinnunculus			-1986	SP561267		Manor Farm Scrub								Amber List	
Kestrel	Falco tinnunculus		proved breeding	20-Jul-83	SP519230		Middleton Park (Ecological Area)								Amber List	
Kestrel	Falco tinnunculus	4	Juvenile	20-Jun-04	SP547226		Middleton Stoney								Amber List	
Kestrel	Falco tinnunculus	4	Juvenile	04-Jul-04	SP535226		Middleton Stoney								Amber List	
Kestrel	Falco tinnunculus	6	Juvenile	29-May-05	SP547226		Middleton Stoney								Amber List	
Kestrel	Falco tinnunculus	4	Juvenile	19-Jun-05	SP535226		Middleton Stoney								Amber List	
Kestrel	Falco tinnunculus			15-Sep-82	SP603251		Stratton Audley Quarry								Amber List	
Kestrel	Falco tinnunculus			23-Sep-87	SP603251		Stratton Audley Quarry								Amber List	
Kestrel	Falco tinnunculus	1	Species	11/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Kestrel	Falco tinnunculus	1	Species	20/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Kestrel	Falco tinnunculus	1	Species	31/07/2008	SP601250		Stratton Audley Quarry	Northern section							Amber List	
Kestrel	Falco tinnunculus	1	Species	31/07/2008	SP602250		Stratton Audley Quarry								Amber List	
Kestrel	Falco tinnunculus	1	Species	04/08/2008	SP54722499		Trow Pool								Amber List	
Merlin*	Falco columbarius	1		09-Mar-00	SP5720	Record	Bicester		Schedule 1 (W&C Act 1981)						Amber List	
Merlin*	Falco columbarius	1		20-Apr-03	SP5720	Record	Bicester		Schedule 1 (W&C Act 1981)						Amber List	
Merlin	Falco columbarius	1	Species	2003	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)						Amber List	
Merlin*	Falco columbarius	1		08-Dec-00	SP5527	Record	Stoke Lyne		Schedule 1 (W&C Act 1981)						Amber List	
Hobby	Falco subbuteo	1	Species	2001	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)							
Hobby*	Falco subbuteo	1		30-May-04	SP5620	Record	Confidential		Schedule 1 (W&C Act 1981)							
Hobby	Falco subbuteo			23-May-83	SP525230		Middleton Park (Ecological Area)		Schedule 1 (W&C Act 1981)							
Peregrine	Falco peregrinus	4	Species	2003	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)	Birds Dir (An 1)						
Grey Partridge	Perdix perdix		proved breeding	04-Jul-83	SP554255		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.		Red List	
Grey Partridge*	Perdix perdix	1		05-May-03	SP5828	Record	Hethe						Priority Sp.		Red List	
Grey Partridge*	Perdix perdix	1		26-May-03	SP5929	Record	Hethe						Priority Sp.		Red List	
Grey Partridge*	Perdix perdix	1		26-May-03	SP5929	Record	Hethe						Priority Sp.		Red List	
Grey Partridge	Perdix perdix	2	Species	11/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.		Red List	
Grey Partridge	Perdix perdix	Present	Species	31/07/2008	SP602250		Stratton Audley Quarry						Priority Sp.		Red List	

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Little Ringed Plover	Charadrius dubius	1	Species	2003	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)							
Little Ringed Plover	Charadrius dubius	3	Species	2004	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)							
Little Ringed Plover	Charadrius dubius	3		15-May-96	SP602251		Stratton Audley Quarry		Schedule 1 (W&C Act 1981)							
Little Ringed Plover	Charadrius dubius	2	Species	11/06/2003	SP602250		Stratton Audley Quarry		Schedule 1 (W&C Act 1981)							
Little Ringed Plover	Charadrius dubius	1	Species	31/07/2008	SP602250		Stratton Audley Quarry		Schedule 1 (W&C Act 1981)							
Golden Plover	Pluvialis apricaria	1	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Golden Plover	Pluvialis apricaria	1	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Golden Plover	Pluvialis apricaria	3	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Golden Plover*	Pluvialis apricaria	63		10-Oct-03	SP600268		Stratton Audley								Amber List	
Lapwing*	Vanellus vanellus	300		23-Feb-01	SP578217		Bicester						Priority Sp.		Red List	
Lapwing	Vanellus vanellus	1	Species	2000	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Lapwing	Vanellus vanellus	6	Species	2001	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Lapwing	Vanellus vanellus	1	Species	2002	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Lapwing	Vanellus vanellus	2	Species	2003	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Lapwing	Vanellus vanellus	8	Species	2004	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Lapwing*	Vanellus vanellus	4		05-May-03	SP5828	Record	Hethe						Priority Sp.		Red List	
Lapwing*	Vanellus vanellus	2		14-May-04	SP5929	Record	Hethe						Priority Sp.		Red List	
Lapwing*	Vanellus vanellus	6		05-May-03	SP5728	Record	Stoke Lyne						Priority Sp.		Red List	
Lapwing*	Vanellus vanellus	6		26-May-03	SP5527	Record	Stoke Lyne						Priority Sp.		Red List	
Lapwing	Vanellus vanellus	2	Species	04/08/2008	SP54722499		Trow Pool						Priority Sp.		Red List	
Lapwing	Vanellus vanellus	Present	Species	09/07/2007	SP598253								Priority Sp.		Red List	
Jack Snipe	Lymnocyptes minimus	1	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Jack Snipe	Lymnocyptes minimus	2	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Jack Snipe	Lymnocyptes minimus	3	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Jack Snipe	Lymnocyptes minimus	5	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Snipe	Gallinago gallinago	1		12-Nov-99	SP548262		Ardley Fields Quarry	Ardley Fields Quarry North Quarry							Amber List	
Snipe	Gallinago gallinago	40	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Snipe	Gallinago gallinago	21	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Snipe	Gallinago gallinago	26	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Snipe	Gallinago gallinago	1	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Snipe	Gallinago gallinago	44	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Snipe	Gallinago gallinago			23-May-83	SP525230		Middleton Park (Ecological Area)								Amber List	
Snipe	Gallinago gallinago			15-Sep-82	SP603251		Stratton Audley Quarry								Amber List	
Snipe	Gallinago gallinago	1	Species	31/07/2008	SP601250		Stratton Audley Quarry	Northern section							Amber List	
Woodcock	Scolopax rusticola			23-May-83	SP525230		Middleton Park (Ecological Area)								Amber List	
Woodcock*	Scolopax rusticola	1		18-Mar-99	SP522253		Middleton Stoney: The Heath								Amber List	
Black-Tailed Godwit	Limosa limosa	1	Species	2004	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)						Red List	
Black-tailed Godwit	Limosa limosa			23-May-83	SP525230		Middleton Park (Ecological Area)		Schedule 1 (W&C Act 1981)						Red List	
Curlew	Numenius arquata	1	Species	2004	SP577209		Bicester Wetland Reserve						Priority Sp.		Amber List	
Curlew*	Numenius arquata	1		16-May-04	SP5720	Record	Bicester: Bicester Golf Club						Priority Sp.		Amber List	
Redshank	Tringa totanus	1	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Redshank	Tringa totanus	1	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Greenshank	Tringa nebularia	1	Species	2000	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)							
Greenshank*	Tringa nebularia	2		02-Oct-98	SP5721	Record	Bicester: Bicester Sewage Farm		Schedule 1 (W&C Act 1981)							
Green Sandpiper	Tringa ochropus	13	Species	2000	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)						Amber List	
Green Sandpiper	Tringa ochropus	6	Species	2001	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)						Amber List	
Green Sandpiper	Tringa ochropus	5	Species	2002	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)						Amber List	
Green Sandpiper	Tringa ochropus	13	Species	2003	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)						Amber List	
Green Sandpiper	Tringa ochropus	39	Species	2004	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)						Amber List	
Green Sandpiper*	Tringa ochropus	1		15-Feb-04	SP5720	Record	Bicester: Bicester Golf Club		Schedule 1 (W&C Act 1981)						Amber List	
Common Sandpiper	Actitis hypoleucos	1	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	

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Common Sandpiper	Actitis hypoleucos	2	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Common Sandpiper	Actitis hypoleucos	3	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Common Sandpiper	Actitis hypoleucos	2	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Common Sandpiper	Actitis hypoleucos	5	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Common Sandpiper	Actitis hypoleucos	1	Species	31/07/2008	SP602250		Stratton Audley Quarry								Amber List	
Black-Headed Gull	Larus ridibundus	Present	Species	17-Jul-04	SP547249		Trow Pool								Amber List	
Lesser Black-Backed Gull	Larus fuscus	present	Species	05/08/2003	SP602250		Stratton Audley Quarry								Amber List	
Lesser Black-Backed Gull	Larus fuscus	Present	Species	17-Jul-04	SP547249		Trow Pool								Amber List	
Lesser Black-Backed Gull	Larus fuscus	present	Species	22/08/2008	SP54722499		Trow Pool								Amber List	
Herring Gull	Larus argentatus			23-May-83	SP525230		Middleton Park (Ecological Area)								Red List	
Common Tern	Sterna hirundo	1	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Common Tern*	Sterna hirundo	1		10-Jul-04	SP5720	Record	Bicester: Bicester Golf Club								Amber List	
Common Tern	Sterna hirundo	Present	Breeding	09/07/2007	SP598253										Amber List	
Black Tern	Chlidonias niger	3		15-May-96	SP602251		Stratton Audley Quarry								Amber List	
Stock Dove*	Columba oenas	6		26-May-03	SP5929	Record	Hethe								Amber List	
Stock Dove	Columba oenas	8	Species	11/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Stock Dove	Columba oenas	1	Species	20/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Stock Dove	Columba oenas	Present	Species	31/07/2008	SP602250		Stratton Audley Quarry								Amber List	
Stock Dove	Columba oenas	Present	Species	17-Jul-04	SP547249		Trow Pool								Amber List	
Turtle Dove*	Streptopelia turtur			01-Jun-98	SP5925	Record	Bicester: Bicester Quarry						Priority Sp.		Red List	
Turtle Dove*	Streptopelia turtur	1		15-Mar-00	SP5525	Record	Bucknell						Priority Sp.		Red List	
Turtle Dove*	Streptopelia turtur			08-Jun-98	SP5424	Record	Bucknell: Trow Pool						Priority Sp.		Red List	
Turtle Dove	Streptopelia turtur			30-Jun-86	SP547250		Trow Pool						Priority Sp.		Red List	
Turtle Dove	Streptopelia turtur			19-Jul-90	SP547250		Trow Pool						Priority Sp.		Red List	
Cuckoo*	Cuculus canorus	1		30-May-03	SP5720	Record	Bicester						Priority Sp.		Red List	
Cuckoo*	Cuculus canorus	1		18-May-04	SP5720	Record	Bicester						Priority Sp.		Red List	
Cuckoo	Cuculus canorus	1	Species	2004	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Barn Owl	Tyto alba	1	Species	2003	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)						Amber List	
Barn Owl	Tyto alba	3	Juvenile	20-Jun-04	SP568272		Caversfield		Schedule 1 (W&C Act 1981)						Amber List	
Barn Owl	Tyto alba	3	Juvenile	12-Jun-05	SP568272		Caversfield		Schedule 1 (W&C Act 1981)						Amber List	
Barn Owl	Tyto alba	3	Juvenile	29-May-05	SP537212		Chesterton		Schedule 1 (W&C Act 1981)						Amber List	
Barn Owl*	Tyto alba	1		13-Jun-98	SP5622	Record	Confidential		Schedule 1 (W&C Act 1981)						Amber List	
Barn Owl*	Tyto alba	1		22-Nov-99	SP5521	Record	Confidential		Schedule 1 (W&C Act 1981)						Amber List	
Barn Owl*	Tyto alba	1		08-Feb-00	SP5423	Record	Confidential		Schedule 1 (W&C Act 1981)						Amber List	
Barn Owl*	Tyto alba	1		26-May-03	SP5828	Record	Confidential		Schedule 1 (W&C Act 1981)						Amber List	
Barn Owl*	Tyto alba	1		24-Jan-04	SP5428	Record	Confidential		Schedule 1 (W&C Act 1981)						Amber List	
Barn Owl	Tyto alba	4	Juvenile	19-Jun-05	SP588283		Hethe Brede		Schedule 1 (W&C Act 1981)						Amber List	
Swift	Apus apus	1	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Swift	Apus apus	3	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Swift*	Apus apus	6		14-May-04	SP5929	Record	Hethe								Amber List	
Swift	Apus apus			23-May-83	SP525230		Middleton Park (Ecological Area)								Amber List	
Swift	Apus apus	present	Species	11/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Swift	Apus apus	1	Species	20/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Swift	Apus apus	Present	Species	17-Jul-04	SP547249		Trow Pool								Amber List	
Swift	Apus apus	1	Species	13/06/2008-18/07/2008	SP54722499		Trow Pool								Amber List	
Swift	Apus apus	Present	Nest	01/05/2008-31/08/2008	SP55782162			17 Bignell View, Chesterton							Amber List	
Swift	Apus apus	Present	Nest	01/05/2008-31/08/2008	SP58202231			7 Cemetery Road, Bicester							Amber List	
Swift	Apus apus	Present	Nest	01/05/2008-31/08/2008	SP565258			Farmhouse at east end of Bucknell							Amber List	

Legally Protected & Notable/Rare Species Records

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Swift	Apus apus	Present	Nest	01/05/2008-31/08/2008	SP584223			Henley House, Causeway, Bicester							Amber List	
Swift	Apus apus	Present	Nest	01/05/2008-31/08/2008	SP580225			Kings End, Bicester							Amber List	
Kingfisher	Alcedo atthis			14/08/2003	SP60202345		Bicester Airfield	area 17 Stream	Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Kingfisher	Alcedo atthis			14-Aug-03	SP601235		Bicester airfield	area 17, Bicester airfield	Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Kingfisher	Alcedo atthis	5	Species	2000	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Kingfisher	Alcedo atthis	5	Species	2001	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Kingfisher	Alcedo atthis	4	Species	2002	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Kingfisher	Alcedo atthis	6	Species	2003	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Kingfisher	Alcedo atthis	10	Species	2004	SP577209		Bicester Wetland Reserve		Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Kingfisher	Alcedo atthis			03-Sep-81	SP60402215			Launton station pond, oxon tetrad 6022	Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Kingfisher	Alcedo atthis			-1986	SP571287		Stoke Lyne Marshy Grassland	Stoke Lyne Marshy Grassland	Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Kingfisher	Alcedo atthis	1	Species	31/07/2008	SP602250		Stratton Audley Quarry		Schedule 1 (W&C Act 1981)	Birds Dir (An 1)					Amber List	
Hoopoe*	Upupa epops	1		11-May-99	SP5327	Record	Ardley: Ardley Field Quarry		Schedule 1 (W&C Act 1981)							
Hoopoe*	Upupa epops	1		17-May-99	SP5327	Record	Ardley: Ardley Field Quarry		Schedule 1 (W&C Act 1981)							
Hoopoe	Upupa epops			20-Nov-80	SP588204		Graven Hill	Royal ordnance base, Graven Hill	Schedule 1 (W&C Act 1981)							
Hoopoe*	Upupa epops	1		04-May-99	SP5529	Record	Hethe		Schedule 1 (W&C Act 1981)							
Green Woodpecker	Picus viridis	6	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Green Woodpecker	Picus viridis	8	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Green Woodpecker	Picus viridis	15	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Green Woodpecker	Picus viridis	18	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Green Woodpecker	Picus viridis	10	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Green Woodpecker	Picus viridis			16-Jan-03	SP5922		Gavray Drive complex	feld 6, Gavray Drive complex							Amber List	
Green Woodpecker	Picus viridis			28-Apr-87	SP588204		Graven Hill								Amber List	
Green Woodpecker	Picus viridis			-1981	SP567295		Stoke Bushes								Amber List	
Green Woodpecker	Picus viridis			20/08/2002	SP602251		Stratton Audley Quarry	South							Amber List	
Green Woodpecker	Picus viridis			20/08/2002	SP602251		Stratton Audley Quarry								Amber List	
Green Woodpecker	Picus viridis			20-Aug-02	SP602251		Stratton Audley Quarry	south, Stratton Audley Quarry							Amber List	
Green Woodpecker	Picus viridis			20-Aug-02	SP602251		Stratton Audley Quarry								Amber List	
Green Woodpecker	Picus viridis	1	Species	05/08/2003	SP602250		Stratton Audley Quarry								Amber List	
Green Woodpecker	Picus viridis			02-Jun-04	SP602251		Stratton Audley Quarry	SW detached part, Stratton Audley Quarry							Amber List	
Green Woodpecker	Picus viridis			31/07/2008	SP601250		Stratton Audley Quarry	Northern section							Amber List	
Green Woodpecker	Picus viridis	Present; Present	Male; Female	31/07/2008	SP602250		Stratton Audley Quarry								Amber List	

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Green Woodpecker	Picus viridis			-1986	SP548282		Sycamore Grove, Ardley								Amber List	
Lesser Spotted Woodpecker	Dendrocopos minor			-1986	SP548282		Sycamore Grove, Ardley						Priority Sp.		Red List	
Skylark*	Alauda arvensis	3		05-May-03	SP5828	Record	Hethe						Priority Sp.		Red List	
Skylark	Alauda arvensis			20/08/2002	SP602251		Stratton Audley Quarry	north west, Stratton Audley Quarry					Priority Sp.		Red List	
Skylark	Alauda arvensis			20/08/2002	SP599252		Stratton Audley Quarry	Tetrad 5824					Priority Sp.		Red List	
Skylark	Alauda arvensis			20-Aug-02	SP599252		Stratton Audley Quarry	Tetrad 5824					Priority Sp.		Red List	
Skylark	Alauda arvensis			20-Aug-02	SP602251		Stratton Audley Quarry	north west, Stratton Audley Quarry					Priority Sp.		Red List	
Skylark	Alauda arvensis	2	Species	11/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.		Red List	
Skylark	Alauda arvensis	4	Species	20/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.		Red List	
Skylark	Alauda arvensis	5	Species	31/07/2008	SP601250		Stratton Audley Quarry	Northern section					Priority Sp.		Red List	
Skylark	Alauda arvensis	1	Species	13/06/2008-18/07/2008	SP54722499		Trow Pool						Priority Sp.		Red List	
Sand Martin	Riparia riparia	1	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Sand Martin	Riparia riparia	1	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Sand Martin	Riparia riparia	1	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Sand Martin	Riparia riparia	2	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Sand Martin	Riparia riparia	3	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Sand Martin*	Riparia riparia	2		03-Jul-04	SP5720	Record	Bicester: Bicester Golf Club								Amber List	
Sand Martin	Riparia riparia	1	Species	20/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Swallow*	Hirundo rustica	1		28-Mar-01	SP5720	Record	Bicester								Amber List	
Swallow*	Hirundo rustica	2	Adult	10-Jul-04	SP5720	Record	Bicester: Bicester Golf Club								Amber List	
Swallow*	Hirundo rustica	4	Juvenile	10-Jul-04	SP5720	Record	Bicester: Bicester Golf Club								Amber List	
Swallow	Hirundo rustica	present	Species	11/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Swallow	Hirundo rustica	Present	Species	31/07/2008	SP602250		Stratton Audley Quarry								Amber List	
House Martin	Delichon urbica	1	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
House Martin	Delichon urbica	4	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
House Martin*	Delichon urbica	60		15-May-04	SP5720	Record	Bicester: Bicester Golf Club								Amber List	
House Martin	Delichon urbica		proved breeding	20-Jul-83	SP519241		Middleton Park (Ecological Area)								Amber List	
Yellow Wagtail	Motacilla flava		in bud	03-Jun-85	SP543264		Ardley Fields Quarry						Priority Sp.		Red List	
Yellow Wagtail	Motacilla flava	2	Species	2000	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Yellow Wagtail	Motacilla flava	2	Species	2001	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Yellow Wagtail	Motacilla flava	1	Species	2002	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Yellow Wagtail	Motacilla flava	3	Species	2003	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Yellow Wagtail	Motacilla flava	1	Species	2004	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Grey Wagtail	Motacilla cinerea	10	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Grey Wagtail	Motacilla cinerea	17	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Grey Wagtail	Motacilla cinerea	9	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Grey Wagtail	Motacilla cinerea	18	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Grey Wagtail	Motacilla cinerea	14	Species	2004	SP577209		Bicester Wetland Reserve								Amber List	
Grey Wagtail	Motacilla cinerea	1	Species	13/06/2008-18/07/2008	SP54722499		Trow Pool								Amber List	
Dunnock	Prunella modularis			26/06/2002	SP598222		Gavray Drive Meadows	Gavray Drive western fields					Priority Sp.		Amber List	
Dunnock	Prunella modularis	present	Species	11/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.		Amber List	
Dunnock	Prunella modularis	present	Species	20/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.		Amber List	
Dunnock	Prunella modularis	Present	Species	31/07/2008	SP602250		Stratton Audley Quarry						Priority Sp.		Amber List	
Dunnock	Prunella modularis	1	Species	04/08/2008	SP54722499		Trow Pool						Priority Sp.		Amber List	
Dunnock	Prunella modularis	3	Species	13/06/2008-18/07/2008	SP54722499		Trow Pool						Priority Sp.		Amber List	
Wheatear*	Oenanthe oenanthe	1		26-May-03	SP5929	Record	Hethe								Amber List	
Fieldfare*	Turdus pilaris	c.50		04-Apr-99	SP558221		Chesterton: Bignell House		Schedule 1 (W&C Act 1981)						Red List	
Fieldfare*	Turdus pilaris	50		07-Mar-04	SP5929	Record	Hethe		Schedule 1 (W&C Act 1981)						Red List	
Song Thrush	Turdus philomelos			26/06/2002	SP598222		Gavray Drive Meadows	Gavray Drive western fields					Priority Sp.		Red List	
Song Thrush	Turdus philomelos	3	Species	13/06/2008-18/07/2008	SP54722499		Trow Pool						Priority Sp.		Red List	
Redwing*	Turdus iliacus	50		07-Mar-04	SP5929	Record	Hethe		Schedule 1 (W&C Act 1981)						Red List	
Mistle Thrush	Turdus viscivorus			-1987	SP561218		Gagle Brook Flood Plain, Chesterton								Amber List	

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Grasshopper Warbler	Locustella naevia			28-Apr-87	SP588204		Graven Hill						Priority Sp.		Red List	
Whitethroat	Sylvia communis	1	Species	2000	SP577209		Bicester Wetland Reserve								Amber List	
Whitethroat	Sylvia communis	1	Species	2001	SP577209		Bicester Wetland Reserve								Amber List	
Whitethroat	Sylvia communis	1	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Whitethroat	Sylvia communis			26/06/2002	SP598222		Gavray Drive Meadows	Gavray Drive western fields							Amber List	
Whitethroat	Sylvia communis	3	Species	11/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Whitethroat	Sylvia communis	present	Species	20/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Willow Warbler	Phylloscopus trochilus	2	Species	2002	SP577209		Bicester Wetland Reserve								Amber List	
Willow Warbler	Phylloscopus trochilus	1	Species	2003	SP577209		Bicester Wetland Reserve								Amber List	
Willow Warbler	Phylloscopus trochilus			28-Apr-87	SP588204		Graven Hill								Amber List	
Willow Warbler	Phylloscopus trochilus	20	Species	11/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Willow Warbler	Phylloscopus trochilus	present	Species	20/06/2003	SP602250		Stratton Audley Quarry								Amber List	
Willow Warbler	Phylloscopus trochilus	1	Species	05/08/2003	SP602250		Stratton Audley Quarry								Amber List	
Willow Warbler	Phylloscopus trochilus	present	Singing/Callin g	17/06/2008	SP54662494		Trow Pool	southern pool and surrounding habitat							Amber List	
Firecrest*	Regulus ignicapillus	1		23-Jan-98	SP5720	Record	Confidential		Schedule 1 (W&C Act 1981)						Amber List	
Spotted Flycatcher*	Muscicapa striata	2		26-May-03	SP5929	1km Square Record	Hethe						Priority Sp.		Red List	
Marsh Tit	Parus palustris	1	Species	2003	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Marsh Tit	Parus palustris			-1981	SP567295		Stoke Bushes						Priority Sp.		Red List	
Marsh Tit	Parus palustris	present	Species	05/08/2003	SP602250		Stratton Audley Quarry						Priority Sp.		Red List	
Willow Tit	Parus montanus	2	Species	2001	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Willow Tit	Parus montanus	1	Species	2002	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Willow Tit	Parus montanus	1	Species	2003	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Starling*	Sturnus vulgaris	500		13-Sep-04	SP5720	Record	Bicester						Priority Sp.		Red List	
Starling	Sturnus vulgaris	50	Species	27-Sep-06	SP59902537		Stratton Audley Quarry (NW corner)						Priority Sp.		Red List	
House Sparrow*	Passer domesticus	30		13-Sep-04	SP5720	Record	Bicester						Priority Sp.		Red List	
Tree Sparrow*	Passer montanus	4		05-May-03	SP5828	Record	Hethe						Priority Sp.		Red List	
Tree Sparrow*	Passer montanus	3		26-May-03	SP5828	Record	Hethe						Priority Sp.		Red List	
Tree Sparrow*	Passer montanus	1		26-May-03	SP5929	Record	Hethe						Priority Sp.		Red List	
Tree Sparrow*	Passer montanus	1		26-May-03	SP5929	Record	Hethe						Priority Sp.		Red List	
Tree Sparrow*	Passer montanus	3		07-Mar-04	SP5929	Record	Hethe						Priority Sp.		Red List	
Brambling*	Fringilla montifringilla	3		07-Mar-04	SP5929	Record	Hethe		Schedule 1 (W&C Act 1981)						Red List	
Linnet	Carduelis cannabina	1	Species	2002	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Linnet	Carduelis cannabina			-1987	SP562220		Bignell Lodge Farm Meadow						Priority Sp.		Red List	
Linnet	Carduelis cannabina			-1987	SP561218		Gagle Brook Flood Plain, Chesterton						Priority Sp.		Red List	
Linnet*	Carduelis cannabina	4		05-May-03	SP5828	Record	Hethe						Priority Sp.		Red List	
Linnet*	Carduelis cannabina	6		14-May-04	SP5929	Record	Hethe						Priority Sp.		Red List	
Linnet	Carduelis cannabina			23-May-83	SP525230		Middleton Park (Ecological Area)						Priority Sp.		Red List	
Linnet*	Carduelis cannabina	2		05-May-03	SP5728	Record	Stoke Lyne						Priority Sp.		Red List	
Linnet	Carduelis cannabina	present	Species	11/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.		Red List	
Linnet	Carduelis cannabina	present	Species	20/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.		Red List	
Linnet	Carduelis cannabina	present	Species	05/08/2003	SP602250		Stratton Audley Quarry						Priority Sp.		Red List	
Linnet	Carduelis cannabina	present	Species	31/07/2008	SP605246		Stratton Audley Quarry	Southern section					Priority Sp.		Red List	
Linnet	Carduelis cannabina	Present	Species	31/07/2008	SP602250		Stratton Audley Quarry						Priority Sp.		Red List	
Twite	Carduelis flavirostris	1	Species	2000	SP577209		Bicester Wetland Reserve						Priority Sp.		Red List	
Bullfinch	Pyrrhula pyrrhula	1	Species	11/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.		Amber List	
Bullfinch	Pyrrhula pyrrhula			02-Jun-04	SP602251		Stratton Audley Quarry						Priority Sp.		Amber List	
Bullfinch	Pyrrhula pyrrhula	present	Species	31/07/2008	SP605246		Stratton Audley Quarry	Southern section: fishing lake and surrounds					Priority Sp.		Amber List	
Bullfinch	Pyrrhula pyrrhula	Present	Species	31/07/2008	SP602250		Stratton Audley Quarry						Priority Sp.		Amber List	
Bullfinch	Pyrrhula pyrrhula	2	Species	13/06/2008-18/07/2008	SP54722499		Trow Pool						Priority Sp.		Amber List	
Yellowhammer	Emberiza citrinella			23-May-83	SP525230		Middleton Park (Ecological Area)						Priority Sp.		Red List	
Yellowhammer	Emberiza citrinella			02-Jun-04	SP527280			Fritwell minor road					Priority Sp.		Red List	
Yellowhammer	Emberiza citrinella			28-Jul-87	SP572210		Roman Road by Hayfield						Priority Sp.		Red List	
Yellowhammer	Emberiza citrinella			-1981	SP567295		Stoke Bushes						Priority Sp.		Red List	
Yellowhammer*	Emberiza citrinella	10		05-May-03	SP5728	Record	Stoke Lyne						Priority Sp.		Red List	

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Yellowhammer*	Emberiza citrinella	3		26-May-03	SP5527	Record	Stoke Lyne						Priority Sp.		Red List	
Yellowhammer	Emberiza citrinella			-1986	SP571287		Stoke Lyne Marshy Grassland	Stoke Lyne Marshy Grassland					Priority Sp.		Red List	
Yellowhammer	Emberiza citrinella	8	Species	11/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.		Red List	
Yellowhammer	Emberiza citrinella	Present	Species	17-Jul-04	SP547249		Trow Pool						Priority Sp.		Red List	
Yellowhammer	Emberiza citrinella	present	Singing/Callin g	17/06/2008	SP54662494		Trow Pool	southern pool and surrounding habitat					Priority Sp.		Red List	
Yellowhammer	Emberiza citrinella	1	Species	04/07/2008	SP54722499		Trow Pool						Priority Sp.		Red List	
Yellowhammer	Emberiza citrinella	2	Species	13/06/2008-18/07/2008	SP54722499		Trow Pool						Priority Sp.		Red List	
Yellowhammer	Emberiza citrinella	Present	Species	09/07/2007	SP537275								Priority Sp.		Red List	
Reed Bunting	Emberiza schoeniclus	13	Species	2000	SP577209		Bicester Wetland Reserve						Priority Sp.		Amber List	
Reed Bunting	Emberiza schoeniclus	10	Species	2001	SP577209		Bicester Wetland Reserve						Priority Sp.		Amber List	
Reed Bunting	Emberiza schoeniclus	13	Species	2002	SP577209		Bicester Wetland Reserve						Priority Sp.		Amber List	
Reed Bunting	Emberiza schoeniclus	14	Species	2003	SP577209		Bicester Wetland Reserve						Priority Sp.		Amber List	
Reed Bunting	Emberiza schoeniclus	10	Species	2004	SP577209		Bicester Wetland Reserve						Priority Sp.		Amber List	
Reed Bunting*	Emberiza schoeniclus	1		03-Jan-04	SP5720	Record	Bicester: Bicester Golf Club						Priority Sp.		Amber List	
Reed Bunting*	Emberiza schoeniclus	2		07-Mar-04	SP5929	Record	Hethe						Priority Sp.		Amber List	
Reed Bunting*	Emberiza schoeniclus	4		14-May-04	SP5929	Record	Hethe						Priority Sp.		Amber List	
Reed Bunting*	Emberiza schoeniclus	2		26-May-03	SP5527	Record	Stoke Lyne						Priority Sp.		Amber List	
Reed Bunting	Emberiza schoeniclus	8	Species	11/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.		Amber List	
Reed Bunting	Emberiza schoeniclus			02-Jun-04	SP602251		Stratton Audley Quarry	SW detached part, Stratton Audley Quarry					Priority Sp.		Amber List	
Reed Bunting	Emberiza schoeniclus	Present	Species	31/07/2008	SP602250		Stratton Audley Quarry						Priority Sp.		Amber List	
Corn Bunting*	Miliaria calandra	1		05-May-03	SP5929	Record	Hethe						Priority Sp.		Red List	
Corn Bunting*	Miliaria calandra	1	Male	05-May-03	SP5929	Record	Hethe						Priority Sp.		Red List	
Corn Bunting*	Miliaria calandra	4		26-May-03	SP5929	Record	Hethe						Priority Sp.		Red List	
Corn Bunting*	Miliaria calandra	4		26-May-03	SP5929	Record	Hethe						Priority Sp.		Red List	
Corn Bunting*	Miliaria calandra	1		14-May-04	SP5929	Record	Hethe						Priority Sp.		Red List	
Corn Bunting	Miliaria calandra			02-Jun-04	SP527280			Fritwell minor road					Priority Sp.		Red List	
Hedgehog	Erinaceus europaeus			03-Jun-85	SP543264		Ardley Fields Quarry						Priority Sp.			
Hedgehog	Erinaceus europaeus	1		14-May-06	SP592226			100m SW of bridge over Bicester Ring Rd, between Gavray Drive & Railway					Priority Sp.			
Chiroptera	Chiroptera	Present	Flying	19/06/2008	SP54662494		Trow Pool	Southern pool	Schedule 5 - all parts (W&C Act 1981)	H & S Dir						
Natterer's Bat	Myotis nattereri			09-Oct-93	SP595259			Bicester, oxon tetrad 5824	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 4,5)						
Pipistrelle	Pipistrellus pipistrellus			08-Aug-95	SP560216			Chesterton	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 4,5)						
Pipistrelle	Pipistrellus pipistrellus			13-Jan-93	SP604228			Launton, Oxon tetrad 6022	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 4,5)						
Pipistrelle	Pipistrellus pipistrellus			29-Dec-99	SP609258				Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 4,5)						
Pipistrelle	Pipistrellus pipistrellus			25-Jul-96	SP607261			Stratton Audley, Oxon tetrad 6026	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 4,5)						
Brown Long-eared Bat	Plecotus auritus			05-Aug-87	SP561257		Bucknell Churchyard		Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 4,5)			Priority Sp.			
Brown Long-eared Bat	Plecotus auritus			05-Aug-87	SP561257		Bucknell Churchyard		Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 4,5)			Priority Sp.			
Brown Long-eared Bat	Plecotus auritus			05-Jun-96	SP535233			Middleton Stoney	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 4,5)			Priority Sp.			
Brown Hare	Lepus capensis			04-Jul-83	SP554255		Ardley Quarry and Cuttings SSSI	Fritwell Railway Cuttings					Priority Sp.			
Brown Hare	Lepus capensis			-1986	SP554262		Digging Copse & the Plantation						Priority Sp.			
Brown Hare	Lepus capensis			14-Jun-01	SP599278		Fringford Pingo						Priority Sp.			
Brown Hare	Lepus capensis			23-May-83	SP525230		Middleton Park (Ecological Area)						Priority Sp.			
Brown Hare	Lepus capensis			20-Jul-83	SP519230		Middleton Park (Ecological Area)						Priority Sp.			
Brown Hare	Lepus capensis			13-Mar-00	SP544221								Priority Sp.			
Brown Hare	Lepus europaeus	present	Species	11/06/2003	SP602250		Stratton Audley Quarry						Priority Sp.			
Brown Hare	Lepus capensis	2	adult	02-Jun-04	SP602251		Stratton Audley Quarry						Priority Sp.			

Common Name	Scientific Name	Abundance	Sex/ Stage	Date	Grid Ref	Grid Ref Qualifier	Master Site	Sub-Site/Locality	UK Legislation	European Legislation	Global Red List Species	UK Red List Species	UKBAP and NERC Act 2006 Species	Notable Inverts.	2009 BOCC Status	Nat. Rare/ Scarce Plants
Water Vole	Arvicola terrestris			Aug-78	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve	Schedule 5, parts 4(a) and (b) (W&C Act 1981)				Priority Sp.			
Water Vole	Arvicola terrestris			01 Jun 2003 - 30 Jun 2003	SP580230		Bicester		Schedule 5, parts 4(a) and (b) (W&C Act 1981)				Priority Sp.			
Water Vole	Arvicola terrestris			23-May-83	SP525230		Middleton Park (Ecological Area)		Schedule 5, parts 4(a) and (b) (W&C Act 1981)				Priority Sp.			
Water Vole	Arvicola terrestris			08-Apr-99	SP580236		Ray Catchment		Schedule 5, parts 4(a) and (b) (W&C Act 1981)				Priority Sp.			
Water Vole	Arvicola terrestris			29-Sep-99	SP579236		Ray Catchment		Schedule 5, parts 4(a) and (b) (W&C Act 1981)				Priority Sp.			
Water Vole	Arvicola terrestris			01 Feb 2000 - 29 Feb 2000	SP595226		Ray Catchment		Schedule 5, parts 4(a) and (b) (W&C Act 1981)				Priority Sp.			
Water Vole	Arvicola terrestris			01 Jun 1995 - 30 Jun 1995	SP576239		Ray Catchment		Schedule 5, parts 4(a) and (b) (W&C Act 1981)				Priority Sp.			
Water Vole	Arvicola terrestris			01 Sep 2003 - 30 Sep 2003	SP581228		River Bure, Bicester		Schedule 5, parts 4(a) and (b) (W&C Act 1981)				Priority Sp.			
Polecat	Mustela putorius		dead on road	May-00	SP533228			A43T					Priority Sp.			
Polecat	Mustela putorius		dead on road	14-Apr-03	SP543275			Ardley					Priority Sp.			
Polecat	Mustela putorius		dead on road	27-Aug-01	SP604273			A421, Oxon tetrad 6026					Priority Sp.			
Badger	Meles meles		Sett	Apr-85	SP538273		Ardley Quarry and Cuttings SSSI	Quarry	Badger Act 1992							
Badger	Meles meles			May-85	SP538273		Ardley Quarry and Cuttings SSSI	Ardley Quarry and Cutting BBOWT Reserve	Badger Act 1992							
Badger	Meles meles			May-85	SP538273		Ardley Quarry and Cuttings SSSI	Quarry	Badger Act 1992							
Badger	Meles meles	Present		24-May-05	SP564274		B4100, by Stoke Little Wood		Badger Act 1992							
Badger	Meles meles	Present		04-Jul-05	SP564274		B4100, by Stoke Little Wood		Badger Act 1992							
Badger	Meles meles	Present		02-Mar-05	SP564273		B4100, Nr. Swift's House Fm		Badger Act 1992							
Badger	Meles meles		dead on road	06-Mar-01	SP537249			north of Middleton Stoney	Badger Act 1992							
Badger	Meles meles		Badger Sett	01-Jan-83	SP520260			Ardley Old Quarry	Badger Act 1992							
Badger	Meles meles		dead on road	14-Apr-04	SP558198			A34	Badger Act 1992							
Badger	Meles meles		dead on road	06-Feb-97	SP549232				Badger Act 1992							
Badger	Meles meles		dead on road	31-Mar-04	SP575215			A41	Badger Act 1992							
Badger	Meles meles		dead on road	09-Nov-06	SP598259			A421, oxon tetrad 5824	Badger Act 1992							
Badger	Meles meles		Badger Sett	02-Oct-94	SP605275			near Waterloo Farm, Oxon tetrad 6026	Badger Act 1992							
Badger	Meles meles		dead on road	23-Jun-01	SP605273			A421, oxon tetrad 6026	Badger Act 1992							
Badger	Meles meles		dead on road	05-Sep-02	SP606273				Badger Act 1992							
Badger	Meles meles		dead on road	05-Sep-02	SP607274				Badger Act 1992							
Badger	Meles meles	Present		13-Aug-05	SP594241		Skimmingdish Lane, Bicester		Badger Act 1992							
Badger	Meles meles	Present	Signs	31/07/2008	SP602250		Stratton Audley Quarry		Badger Act 1992							
Otter	Lutra lutra	1	sprints	19/06/2008	SP5463924900		Trow Pool	Southern pool	Schedule 5 - all parts (W&C Act 1981)	H & S Dir (An 2)			Priority Sp.			
Lasioglossum (Dialictus) leucopus	Lasioglossum leucopus			16/05/2003	SP602251		Stratton Audley Quarry					Pre94:NR				
Lasioglossum (Evylaeus) malachurum	Lasioglossum (Evylaeus) malachurum			07/07/2003	SP602251		Stratton Audley Quarry							Nationally Notable B		

Statement concerning Oxfordshire Bird Records

The majority of bird records , except those in the north of the county, have been provided by the Oxford Ornithological Society. Such records are denoted by an asterix next to their common name. Please note that:

- a. Not all species are subject to the same degree of recording; the absence of records of a species in a given geographical area does not necessarily indicate absence of that species.
- b. Not all parts of the county are subject to the same degree of recording; the absence of records for a given area does not necessarily indicate the absence of bird species.
- c. Records of species regarded as sensitive have been provided with reduced information about location. Any requests for more precise information about the location of such "confidential" sites should be addressed directly to OOS.

Statement about Grid References

The following types of grid references are provided:

Six figure grid references. Many of these will have an assigned relatively central grid reference for a site though with small sites the assigned grid reference for a site could be close to the edge. The record may have come from anywhere within the site. Where additional location information is provided the reference may be more accurate or central to a subsite within the larger site. Where the location is not site based the grid reference should be within 100 metres of the location.

Four figure grid references. Generally these are 1km records often with some location information to give an idea of which part of the 1km square the record was found. Sometimes this information can be quite accurate. Where a large site is referred to the location should be in that part of the 1km square that is within the site. In some cases these may be tetrad records with grid reference referring to a 2km x 2km square. This includes some confidential records from Oxford Ornithological Society. Other tetrad data is rarely included.

Eight and ten figure grid references: These are generally accurately worked out to the location where the species was found. However for small and thin sites eight figure grid references may be used as a central grid reference for a site

TVERC intends to start tagging data to qualify these grid references but at present only a limited amount of qualification is provided.

APPENDIX 7B

Arup (2010) Hedgerow Survey

A2 Dominion
Bicester Eco-Town
Hedgerow Survey




ISSUE | October 2010

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Document Verification

ARUP

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Appendices

Appendix A

Hedgerow Survey Drawing

Appendix B

HEGS Survey Recording Sheets

Appendix C

Local Hedgerow Survey Recording Sheets

1 Introduction

1.1 Background

Arup have been commissioned by A2 Dominion to carry out a suite of protected species and habitat surveys for the proposed Bicester Exemplar Eco-Town development in Oxfordshire. The aim of this study is to obtain information on the condition of the Hedgerows that may be affected by the proposed works through survey, to identify which, if any, are important under the Hedgerow Regulations 1997 and to identify any implications that the redevelopment may have on these features.

The proposed development is located within a belt of predominantly grazing farmland which lies to the north west of Bicester (centred on National Grid Reference: SP 577 251); the boundary of the exemplar site is shown in Appendix A. At present the proposed development area consists of a matrix of farmland with up to 10 grazed fields separated by many high quality species rich hedgerows. A distinct lowland area with an ephemeral stream runs east to west through the south and central areas of the site, and midway flows into a second ephemeral stream running north to south through the site.

At present the farmland within the development area is being managed in a relatively sensitive manner with regards to biodiversity. This includes areas set aside for badger setts, numerous bird boxes, including barn owl (*Tyto alba*) and kestrel (*Falco tinnunculus*) and the provision of bat boxes. Hedgerows have been maintained to produce a wide, continuous and mostly species rich structure and are playing an important part for biodiversity on the site.

This report details the findings of the study and provides relevant recommendations to ensure legal compliance during the works.

1.2 Ecology and Legislation

1.2.1 Generic Legislation

This report and its recommendations have been produced in accordance with relevant legislation and best practice guidance. They also take into account Planning Policy Statement 9 (PPS9) and other nature conservation policies within local and regional planning policy documents.

Legislation relating to ecological resources that are relevant to this appraisal includes the following:

- ***Wildlife and Countryside Act, 1981 (as amended)***. This Legislation still comprises the primary means of protecting wildlife in the UK and provides the mechanism by which a number of international directives are implemented in the UK.
- ***Conservation (Natural Habitats &c.) Regulations, 1994***. This Act provides protection for European protected species such as bats and great crested newts.

- **Countryside and Rights of Way (CROW) Act, 2000.** The CROW Act strengthened the details of The Wildlife and Countryside Act in relation to Sites of Special Scientific Interest (SSSI) and threatened species.
- **Natural Environment and Rural Communities (NERC) Act, 2006.** This Act puts an obligation on public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity.
- **Planning Policy Statement 9 (PPS9).** This sets out the Government's planning policies on the protection of biodiversity and geological conservation through the planning system. The policies set out in PPS9 may also be material to decisions on individual planning applications.

The key principles of the PPS9 are stated as:

“Regional planning bodies and local planning authorities should adhere to the following key principles to ensure that the potential impacts of planning decisions on biodiversity and geological conservation are fully considered.....

(vi) the aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests. Where granting planning permission would result in significant harm to those interests, local planning authorities will need to be satisfied that the development cannot reasonably be located on any alternative sites that would result in less or no harm. In the absence of any such alternatives, local planning authorities should ensure that, before planning permission is granted, adequate mitigation measures are put in place. Where a planning decision would result in significant harm to biodiversity and geological interests which cannot be prevented or adequately mitigated against, appropriate compensation measures should be sought. If that significant harm cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused.”

In addition, PPS9 states:

“Development proposals provide many good opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where necessary.”

In respect of species protection, PPS9 states:

“.....planning authorities should ensure that these species are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. Planning authorities should refuse permission where harm to the species or their habitats would result unless the need for, and benefits of, the development clearly outweigh that harm”.

1.2.2 Specific Legislation

The Countryside and Rights of Way Act 2000 (CRoW) and the Natural Environments and Rural Communities Act (2006) places a duty the Highways Agency to have regard to the purposes of conserving biological diversity as defined by the Convention on Biological Diversity 1992; this includes promoting the conservation, enhancement and restoration of priority habitats such as species-

rich ancient hedgerows. Article 10 of the 1992 Habitats Directive (carried forward in Regulation 37 of the Conservation (Natural Habitats, &c.) Regulations 1994) encourages the management of linear features, such as hedgerows to aid the ‘migration, dispersal and genetic exchange of wild species’.

The Hedgerows Regulations 1997 outlines the criteria for determining “important” hedgerows. A hedgerow must have existed for 30 years or more and should satisfy at least one of the criteria listed below.

- Includes at least 7 woody species, on average, in a 30m length;
- At least 6 woody species, on average, in a 30m length and has at least 3 associated features (listed separately within the Regulations);
- At least 6 woody species, on average, in a 30m length, including a Black-poplar tree, or Large-leaved Lime, or Small-leaved Lime, or Wild Service-tree; or
- At least 5 woody species, on average, in a 30m length and has at least 4 associated features (listed separately within the Regulations).

Associated features include parallel hedges (within 15m), ditches and supporting walls/banks.

Further criteria to be considered in the identification of important hedgerows include archaeological and historical criteria as well as ecological criteria.

1.2.3 Eco-Town guidance

In addition to a range of legislation described above in section 1.2.1, a wealth of policy and other guidance is available to govern and direct development proposals in their responsibilities with regard to ecology and biodiversity. These include the recently-published governmental guidance that specifically sets out how to deal with eco-town proposals (Biodiversity Positive: Eco-towns Biodiversity Worksheet, TCPA, 2009). The key points of this (referred to as the principal objectives for an Eco-town Biodiversity Strategy) are as follows:

- **Protecting and enhancing the best of biodiversity:** key habitat areas supporting characteristic and uncommon species should be sustained, where conservation is the main priority.
- **Mitigating the impact of development and securing net biodiversity gain:** the inclusion of supplementary habitat areas that fulfil other green infrastructure functions and support more widespread and common species.
- **Integrating biodiversity within the built environment:** the incorporation of a high degree of permeability for wildlife within built areas and structures.
- **Increasing biodiversity’s resilience and ability to adapt to climate change:** ensuring a robust connectivity of habitats that facilitates the wider movement and migration of species.

This provides a clear steer for the design of an eco-town proposal, such that the avoidance of key habitat areas must be the priority, followed by the retention and creation of a matrix of secondary habitats both within and outside of the built area, and that all of the above are robustly connected to facilitate future wildlife

movements and dispersals. Other key elements of the approach include making provisions for management, funding and accountability, to ensure success.

All eco-town proposals should include an Eco-Town Biodiversity Strategy (ETBS) to be developed in tandem with the masterplan for the site. This will provide the framework for delivering net biodiversity gain, setting out what is to be achieved and the steps that are needed to achieve it and, most importantly, how biodiversity will be increased and enhanced in advance of and alongside development, rather than at the end of the development process. It should include specific measurable targets for net biodiversity gain, reflecting local priorities for biodiversity (and contributing to national and regional targets as appropriate) and it should take account of the challenges posed by climate change.

1.2.4 Biodiversity Targets

The UK Biodiversity Action Plan (UK BAP) was produced in accordance with the 1992 UN Convention on Biological Diversity. It describes the UK's biological resources and commits a detailed plan for the protection of these resources, focusing on key habitats and species considered to be of particular significance to nature conservation within a UK context.

The conservation priorities that will be most appropriate to the Bicester eco-town proposal are those listed within the UK and (at the lower tier) Oxfordshire Biodiversity Action Plans (BAPs). These list a number of key habitats and species that form the priorities for conservation in those areas and serve as an existing framework within which the Eco-town can work and provide positive contributions to nature conservation at both local and national scales.

Hedgerows are a national biodiversity action plan priority habitat.

1.3 Aims and Objectives

The aim of this study is to obtain information on the condition of the Hedgerows that may be affected by the proposed works through survey, to identify which, if any, are important under the Hedgerow Regulations 1997.

1.4 Report Content and Layout

The methodology of the survey undertaken is detailed in Section 2; the results of the survey are summarised in Section 3 and Section 4 contains the discussion and recommendations. Appendix A contains the survey drawing and Appendices B & C examples of the survey recording sheets.

2 Methodology

2.1 Selection Criteria for Hedgerow Survey

The Phase 1 Habitat survey report for the Proposed Development site (Arup, 2010¹) identified a network of diverse and relatively species rich hedgerows across the site. The criteria for selection for further assessment were decided considering any potential impacts to the area on a landscape scale. The impacts to connectivity and the value of hedgerows in terms of linkages throughout the Proposed Development site were considered paramount over any possible impacts to individual species rich hedgerows, the value of all of such hedgerows in terms of record of diversity was identified within the Phase 1 Habitat Report.

Given the limited extent of the exemplar site and the relatively high diversity of all the hedgerows present, all the hedgerows across the site were surveyed.

The hedgerows surveyed are represented in the Hedgerow Survey Drawing in Appendix A.

2.2 Field Survey

The survey methodology followed the local hedgerow survey (a standardised procedure) as detailed in the Hedgerow Survey Handbook (Bickmore, 2002) and a second assessment was made on site to permit the categorization of each hedgerow using the Hedgerow Evaluation and Grading System (HEGS). The completed Local Hedgerow Survey and Hedgerow Evaluation and Grading System (HEGS) sheets can be found in Appendix B & C. The former collects data to inform the determination of hedgerow importance as detailed in the Environment Act 1995 and the Hedgerow Regulations 1997; the latter allows a hedgerow to be categorised according to its significance to wildlife. The two methodologies and details of interpretation are outlined below:

2.2.1 Local Hedgerow Survey

The Hedgerows Regulations 1997 outlines the criteria for determining “important” hedgerows. These criteria include archaeological and historical criteria as well as ecological criteria. The supplementary form from the Hedgerow Survey Handbook (Bickmore 2002) ensures the survey conforms to the plant species criteria in the 1997 Regulations; the aim of the survey being to assess a hedgerow according to its plant species diversity and ecological importance.

- the length of each hedgerow was calculated prior to the survey from Ordnance Survey 1:2,500 maps;
- for every 100m of hedge the central 30m section was surveyed, with a maximum of three 30m sections per hedgerow;

¹ Bicester Eco-town

- in each 30m section, the presence of woody (tree and shrub) species and woodland² (herbaceous) species within one metre, in any direction, of the outermost edges of the hedgerow was recorded;
- for the whole hedgerow, the number of standard (mature) trees was recorded; and,
- other data gathered for the whole hedgerow included hedge height, width, structure, management, information on ditches and banks associated with the hedge, whether gaps formed less than 10% of the hedge and adjacent land use and connections.

2.2.2 HEGS Assessment

Hedgerows can also be categorised as to their ecological importance using the Hedgerow Evaluation and Grading System (HEGS; Clements & Tofts 1992). This allows a hedgerow to be categorised according to their significance for wildlife. Hedgerows are graded on a scale of 1-4 (high value to low value) to reflect their ecological value based on the hedgerow structure, connectivity, species diversity and associated features. To grade a hedgerow:

- the height, width, length and structure of the average cross-section of each hedgerow was assessed;
- the number, age and species of standard trees was recorded per 100m;
- percentage gaps and the number of end connections (a value of 1 per hedgerow or other linear feature; 2 for woodland) was determined;
- a full species list was compiled of the hedge canopy and whether the hedge is native species dominant;
- associated features such as the presence of a hedge-bank, lynchet, ditch and or grass verge were noted; and,
- a species list prepared of ground flora and notes of any notable species.

2.2.3 Notable Plant Species

Notable plant species (species of nature conservation importance) were identified during the survey if they were:

- UK and Local Biodiversity Action Plan (BAP) species;
- afforded legal protection by being listed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended); and/or,
- listed as Critically Endangered, Endangered, Vulnerable or Near Threatened in The Vascular Plant Red Data List for Great Britain (Cheffings *et al* 2005).

² Including ancient woodland indicator species.

3 Results and Discussion

3.1 Results

The survey site mainly comprises grazing land with a small area of broadleaved plantation woodland. A total of 19 hedgerows were surveyed; an evaluation of all hedgerows is provided in Table 3.1. Table 3.2 has a summary of species and features. The location of the survey site and the hedgerows surveyed are shown in Appendix A.

Table 3.1 Hedgerow evaluation according to the modified HEGS system and the ecological criteria of the Hedgerow Regulations 1997

Hedgerow	HEGS Grade	HEGS Value	Important Hedgerow (Hedgerow Regulations)
1	1	Very High	Important
2	-1	High – Very High	Important
3	1	Very High	Important
4	-1	High – Very High	Important
5	-2	Moderate – High	Important
6	-1	High – Very High	Important
7	2	High	-
8	1	Very High	Important
9	-2	Moderate – High	-
10	+1	Very High	Important
11	1	Very High	Important
12	-2	Moderate – High	-
13	2	High	-
14	-1	High – Very High	Important
15	-1	High – Very High	Important
16	1	Very High	Important
17	+2	High – Very High	-
18	1	Very High	Important
19	-1	High – Very High	-

No notable plant species were recorded during the hedgerow survey within the exemplar site.

Table 3.2 Hedgerow species and structure summary

Hedgerow	Woody Species in 30 metre Sample	Ground/Climbing Flora	Gaps	Associated Features
1	Hawthorn <i>Crataegus monogyna</i> , Blackthorn <i>Prunus spinosa</i> , Elm <i>Ulmus</i> sp., Elder <i>Sambucus nigra</i> , Ash <i>Fraxinus excelsior</i> , Dogwood <i>Cornus sanguinea</i> , Hazel <i>Corylus avellana</i> , Wayfaring Tree <i>Viburnum lantana</i> , Wild Privet <i>Ligustrum vulgare</i> , Rose <i>Rosa</i> sp., Apple <i>Malus</i> sp.	Dog's Mercury <i>Mercurialis perennis</i> , Cleavers <i>Galium urbanum</i> , Black Bryony <i>Tamus communis</i> , Bramble <i>Rubus fruticosus</i> , White Dead Nettle <i>Lamium album</i> , Garlic Mustard <i>Alliaria petiolata</i> , Ground Ivy <i>Glechoma hederacea</i>	0%	Historic Parish Boundary
2	Hawthorn <i>Crataegus monogyna</i> , Blackthorn <i>Prunus spinosa</i> , Elm <i>Ulmus</i> sp., Field Maple <i>Acer campestre</i> , Horse Chestnut <i>Aesculus hippocastanum</i> , Wild Privet <i>Ligustrum vulgare</i> , Rose <i>Rosa</i> sp., Apple <i>Malus</i> sp.	Dog's Mercury <i>Mercurialis perennis</i> , Cleavers <i>Galium urbanum</i> , White Dead Nettle <i>Lamium album</i> , Garlic Mustard <i>Alliaria petiolata</i> , Ground Ivy <i>Glechoma hederacea</i>	0%	-
3	Hawthorn <i>Crataegus monogyna</i> , Blackthorn <i>Prunus spinosa</i> , Elm <i>Ulmus</i> sp., Field Maple <i>Acer campestre</i> , Elder <i>Sambucus nigra</i> , Hazel <i>Corylus avellana</i> , Wayfaring Tree <i>Viburnum lantana</i> , Wild Privet <i>Ligustrum vulgare</i> , Rose <i>Rosa</i> sp., Apple <i>Malus</i> sp.	Cleavers <i>Galium urbanum</i> , Bramble <i>Rubus fruticosus</i> , White Dead Nettle <i>Lamium album</i> , Garlic Mustard <i>Alliaria petiolata</i> , Ground Ivy <i>Glechoma hederacea</i> , Ivy <i>Hedera helix</i>	0%	-
4	Hawthorn <i>Crataegus monogyna</i> , Blackthorn <i>Prunus spinosa</i> , Elder <i>Sambucus nigra</i> , Wild Privet <i>Ligustrum vulgare</i> , Rose <i>Rosa</i> sp., Field Maple <i>Acer campestre</i> , Apple <i>Malus</i> sp.	Ground Ivy <i>Glechoma hederacea</i> , Honeysuckle <i>Lonicera periclymenum</i> , White Campion <i>Silene latifolia</i> , Garlic Mustard <i>Alliaria petiolata</i> , Dog's Mercury <i>Mercurialis perennis</i> , Bramble <i>Rubus fruticosus</i> , Ivy <i>Hedera helix</i>	0%	-
5	Hawthorn <i>Crataegus monogyna</i> , Blackthorn <i>Prunus spinosa</i> , Elm <i>Ulmus</i> sp., Elder <i>Sambucus nigra</i> , Guelder Rose <i>Viburnum opulus</i> , Field Maple <i>Acer campestre</i> , Dog Rose <i>Rosa canina</i>	Ground Ivy <i>Glechoma hederacea</i> , Dog's Mercury <i>Mercurialis perennis</i> , Bramble <i>Rubus fruticosus</i> , White Dead Nettle <i>Lamium album</i>	0%	-
6	Hawthorn <i>Crataegus monogyna</i> , Blackthorn <i>Prunus spinosa</i> , Elm <i>Ulmus</i> sp., Midland Hawthorn <i>Crataegus laevigata</i> , Elder <i>Sambucus nigra</i> , Wild Privet <i>Ligustrum vulgare</i> , Apple <i>Malus</i> sp., Rose <i>Rosa</i> sp.	Lesser Celandine <i>Ranunculus ficaria</i> , Cleavers <i>Galium aparine</i> , Ivy <i>Hedera helix</i> , White Dead Nettle <i>Lamium album</i> , Ground Ivy <i>Glechoma hederacea</i> , Bramble <i>Rubus fruticosus</i> , Lords and Ladies <i>Arum maculatum</i> , Garlic Mustard <i>Alliaria petiolata</i>	0%	-

Hedgerow	Woody Species in 30 metre Sample	Ground/Climbing Flora	Gaps	Associated Features
7	Hawthorn <i>Crataegus monogyna</i> , Blackthorn <i>Prunus spinosa</i> , Elder <i>Sambucus nigra</i> , Field Maple <i>Acer campestre</i> , Elm <i>Ulmus</i> sp., Apple <i>Malus</i> sp.	Cleavers <i>Galium aparine</i> , White Dead Nettle <i>Lamium album</i>	0%	-
8	Wild Privet <i>Ligustrum vulgare</i> , Blackthorn <i>Prunus spinosa</i> , Field Maple <i>Acer campestre</i> , Dogwood <i>Cornus sanguinea</i> , Hawthorn <i>Crataegus monogyna</i> , Ash <i>Fraxinus excelsior</i> , Elder <i>Sambucus nigra</i> , Wayfaring Tree <i>Viburnum lantana</i> , Apple <i>Malus</i> sp., Elm <i>Ulmus</i> sp., Rose <i>Rosa</i> sp.	Dog's Mercury <i>Mercurialis perennis</i> , Cleavers <i>Galium aparine</i> , Garlic Mustard <i>Alliaria petiolata</i> , Ground Ivy <i>Glechoma hederacea</i> , Bramble <i>Rubus fruticosus</i> , Lords and Ladies <i>Arum maculatum</i> , White Dead Nettle <i>Lamium album</i>	0%	Historic Parish Boundary
9	Elm <i>Ulmus</i> sp., Hawthorn <i>Crataegus monogyna</i> , Elder <i>Sambucus nigra</i> , Wild Privet <i>Ligustrum ovalifolium</i>	Cleavers <i>Galium aparine</i> , Lesser Celandine <i>Ranunculus ficaria</i> , Bittersweet <i>Solanum dulcamara</i> , Ivy <i>Hedera helix</i> , Lords and Ladies <i>Arum maculatum</i> , Bramble <i>Rubus fruticosus</i> , Great Willowherb <i>Epilobium hirsutum</i>	0%	-
10	Wild Privet <i>Ligustrum vulgare</i> , Elm <i>Ulmus</i> sp., Elder <i>Sambucus nigra</i> , Blackthorn <i>Prunus spinosa</i> , Wayfaring Tree <i>Viburnum lantana</i> , Field Maple <i>Acer campestre</i> , Hawthorn <i>Crataegus monogyna</i> , Beech <i>Fagus sylvatica</i> , Rose <i>Rosa</i> sp., Apple <i>Malus</i> sp.	Garlic Mustard <i>Alliaria petiolata</i> , Cleavers <i>Galium aparine</i> , Bramble <i>Rubus fruticosus</i>	0%	-
11	Elder <i>Sambucus nigra</i> , Rose <i>Rosa</i> sp., Hawthorn <i>Crataegus monogyna</i> , Blackthorn <i>Prunus spinosa</i> , Elm <i>Ulmus</i> sp., Apple <i>Malus</i> sp., Field Maple <i>Acer campestre</i> , Wayfaring Tree <i>Viburnum lantana</i>	Cleavers <i>Galium aparine</i> , Ground Ivy <i>Glechoma hederacea</i> , Lords and Ladies <i>Arum maculatum</i> , White Dead Nettle <i>Lamium album</i> , Ivy <i>Hedera helix</i> , Garlic Mustard <i>Alliaria petiolata</i> , Dog's Mercury <i>Mercurialis perennis</i> , Black Bryony <i>Tamus communis</i> , Bramble <i>Rubus fruticosus</i> , Lady's Bedstraw <i>Galium verum</i> , Yarrow <i>Achillea millefolium</i>	0%	Mediaeval Field Boundary
12	Elder <i>Sambucus nigra</i> , Blackthorn <i>Prunus spinosa</i> , Hawthorn <i>Crataegus monogyna</i> , Midland Hawthorn <i>Crataegus laevigata</i> , Rose <i>Rosa</i> sp.	Dog's Mercury <i>Mercurialis perennis</i> , Cleavers <i>Galium aparine</i> , Ground Ivy <i>Glechoma hederacea</i> , Lords and Ladies <i>Arum maculatum</i> , Garlic Mustard <i>Alliaria petiolata</i> , Wood Sage <i>Teucrium scorodonia</i>	≤10%	-

Hedgerow	Woody Species in 30 metre Sample	Ground/Climbing Flora	Gaps	Associated Features
13	Blackthorn <i>Prunus spinosa</i> , Hawthorn <i>Crataegus monogyna</i> , Field Maple <i>Acer campestre</i> , Elder <i>Sambucus nigra</i> , Rose <i>Rosa</i> sp., Elm <i>Ulmus</i> sp.	Ground Ivy <i>Glechoma hederacea</i> , Nettle <i>Urtica dioica</i>	0%	-
14	Elm <i>Ulmus</i> sp., Elder <i>Sambucus nigra</i> , Hawthorn <i>Crataegus monogyna</i> , Ash <i>Fraxinus excelsior</i> , Rose <i>Rosa</i> sp., Blackthorn <i>Prunus spinosa</i> , Field Maple <i>Acer campestre</i>	Cleavers <i>Galium aparine</i> , White Dead Nettle <i>Lamium album</i> , Bramble <i>Rubus fruticosus</i> , Garlic Mustard <i>Alliaria petiolata</i> , Ivy <i>Hedera helix</i> , Lords and Ladies <i>Arum maculatum</i> , Ground Ivy <i>Glechoma hederacea</i> , Dog Violet <i>Viola riviniana</i>	0%	-
15	Elm <i>Ulmus</i> sp., Elder <i>Sambucus nigra</i> , Rose <i>Rosa</i> sp., Hawthorn <i>Crataegus monogyna</i> , Blackthorn <i>Prunus spinosa</i> , Field Maple <i>Acer campestre</i>	Cleavers <i>Galium aparine</i> , Ground Ivy <i>Glechoma hederacea</i> , Bramble <i>Rubus fruticosus</i> , White Dead Nettle <i>Lamium album</i> , Black Bryony <i>Tamus communis</i> , Ivy <i>Hedera helix</i> , Lords and Ladies <i>Arum maculatum</i>	0%	-
16	Blackthorn <i>Prunus spinosa</i> , Elder <i>Sambucus nigra</i> , Willow <i>Salix</i> sp., Hawthorn <i>Crataegus monogyna</i> , Field Maple <i>Acer campestre</i> , Rose <i>Rosa</i> sp., Elm <i>Ulmus</i> sp., Wayfaring Tree <i>Viburnum lantana</i> , Apple <i>Malus</i> sp.	Ivy <i>Hedera helix</i> , Cleavers <i>Galium aparine</i> , Bramble <i>Rubus fruticosus</i> , Lords and Ladies <i>Arum maculatum</i> , Garlic Mustard <i>Alliaria petiolata</i> , Ground Ivy <i>Glechoma hederacea</i> , Wood Avens <i>Geum urbanum</i> , Black Bryony <i>Tamus communis</i> , White Dead Nettle <i>Lamium album</i>	0%	-
17	Blackthorn <i>Prunus spinosa</i> , Hawthorn <i>Crataegus monogyna</i> , Elder <i>Sambucus nigra</i> , Ash <i>Fraxinus excelsior</i>	Bramble <i>Rubus fruticosus</i> , Black Bryony <i>Tamus communis</i> , Ground Ivy <i>Glechoma hederacea</i>	0%	-
18	Snowberry <i>Symphoricarpos alba</i> , Elm <i>Ulmus</i> sp., Elder <i>Sambucus nigra</i> , Hawthorn <i>Crataegus monogyna</i> , Wayfaring Tree <i>Viburnum lantana</i> , Field Maple <i>Acer campestre</i> , Blackthorn <i>Prunus spinosa</i> , Rose <i>Rosa</i> sp., Ash <i>Fraxinus excelsior</i> , Wild Privet <i>Ligustrum vulgare</i>	Ivy <i>Hedera helix</i> , Cleavers <i>Galium aparine</i> , Ox-eye Daisy <i>Leucanthemum vulgare</i> , Lords and Ladies <i>Arum maculatum</i> , Bramble <i>Rubus fruticosus</i> , White Dead Nettle <i>Lamium album</i>	0%	-
19	Hawthorn <i>Crataegus monogyna</i> , Elder <i>Sambucus nigra</i> , Elm <i>Ulmus</i> sp., Apple <i>Malus</i> sp., Blackthorn <i>Prunus spinosa</i> , Rose <i>Rosa</i> sp.	Cleavers <i>Galium aparine</i> , Broad-leaved Dock <i>Rumex obtusifolius</i> , White Dead Nettle <i>Lamium album</i> , Ground Ivy <i>Glechoma hederacea</i> , Lords and Ladies <i>Arum maculatum</i>	≤10%	-

3.2 Discussion

The two different methods of grading a hedgerow (The Hedgerow Regulations 1997 and HEGS) differ in the emphasis they place on species-richness. The Hedgerow Regulations 1997 will identify species-richness, but in contrast, the HEGS method places more emphasis on the structural and connective features of a hedgerow and the intrinsic importance to wildlife as a whole, whether as a species-rich hedgerow or by providing good nesting habitat for birds or cover and corridors of movement for other animals. The use of both of these two evaluation methods allows for a better appreciation of a hedgerow's overall ecological importance.

The hedgerows around the boundary as well as many of the sub-dividing hedgerows within the western section of the exemplar site are species rich (7 woody species or more). The hedgerows along the western boundary lie on an historic parish boundary; hedgerows 11 and 12 are probably on mediaeval field boundaries and are therefore likely to be important in a historical context as well as being valuable ecologically. Thirteen of the 19 hedgerows surveyed are classifiably Important Hedgerows (Hedgerow Regulations, 1997).

All of the hedgerows present within the exemplar site are of high or very high ecological value. The hedgerows have been managed sensitively, are generally between 2 – 4 metres wide and 2 – 4 metres tall, and are botanically diverse.

The hedgerows within the site provide cover, hibernation and foraging habitat for a variety of protected terrestrial mammals, reptiles and amphibians as well as providing nesting habitat for locally and nationally important bird species. The following protected, UKBAP and LBAP species that utilise hedgerows as a landscape feature and intrinsically as breeding/foraging habitat, have been recorded on site:

- Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Noctule *Nyctalus noctula*, Leisler's Bat *Nyctalus leisleri*, Brown Long-eared *Plecotus auritus*, a Myotis species *Myotis* sp.;
- Common Lizard *Zootoca vivipara*, Grass Snake *Natrix natrix*;
- Badger *Meles meles*, Hedgehog *Erinaceus europeus* and;
- Dunnock *Prunella modularis*, Yellowhammer *Emberiza citrinella*, Song Thrush *Turdus philomelos*.

The hedgerows are the main landscape features that provide for these species and any impacts to hedgerows will be detrimental to the conservation status of these species which is directly contrary to Eco-Town policy, local and national planning policy and UK and EU law.

Within the grazed land context present at this site, hedgerows such as these are key features within the landscape, ecologically and historically.

4 Conclusions and Recommendations

The hedgerows within the exemplar site are considered to be of high ecological value:

- 70% of the hedgerows are Important under the classification of the Hedgerow Regulations (1997);
- all hedgerows present are of high or very high value (HEGS); and,
- all hedgerows present within the exemplar site are UKBAP priority habitat.

To ensure that the tenets of the Eco-Town development policies (protection, enhancement and net-gain of biodiversity) are considered, the following recommendations are made:

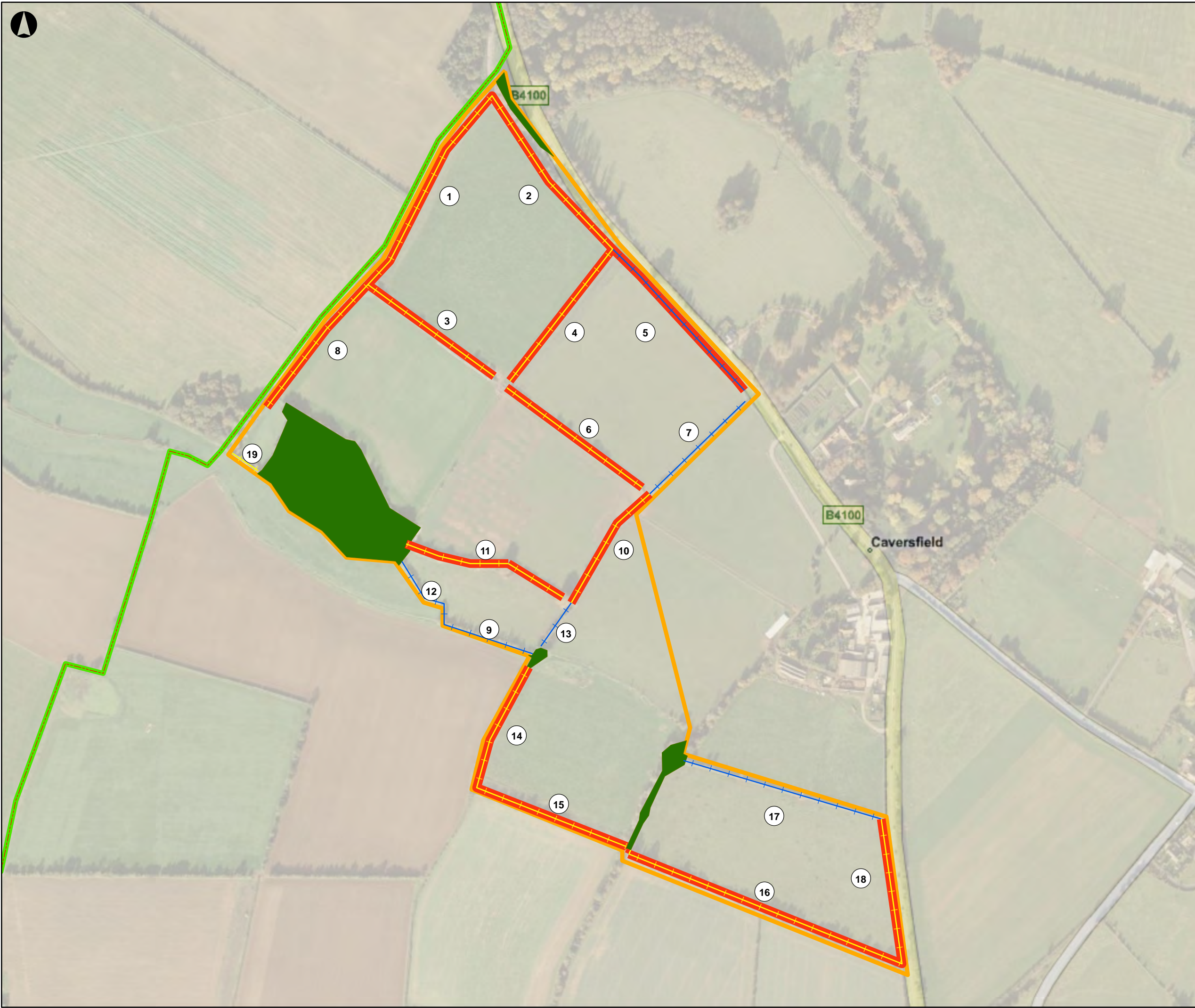
- All hedgerows will be avoided by proposals and works. A buffer of at least 10 metres will be retained either side of these hedgerows, that can be managed sensitively for biodiversity and not for amenity, to ensure that the roles and functions of the hedgerow network within the site are retained. Given the intrinsic and fundamental value of these hedgerows, as well as the importance of these features to local and national BAP priority species, it is an imperative that every consideration is made with regards their retention and sensitive incorporation into the design.
- A management plan should be drawn up to ensure that appropriate maintenance will retain the value of the hedgerows throughout the site. The plan should include planting up gaps in hedgerows, hedge-laying sections where appropriate, sensitive management regimes of the grassland margins around the hedgerows.
- If the design proposals do not consider the ecological features of the site and it is not possible to avoid impacts to the hedgerows, then it is imperative that they are translocated and enhanced as essential mitigation. To ensure that mitigation proposals provide for protection, enhancement and overall a net biodiversity gain, it is recommended that any sections of hedgerow should be extended once translocated and associated habitats, woodland and grassland, developed to provide appropriate offsetting for the removal of corridors throughout the site. Consideration should also be given to how to replace the lost corridor within the design for the exemplar site taking into account the populations of UKBAP and LBAP species present on site that will be using the corridor.

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Appendix A

Hedgerow Survey Drawing

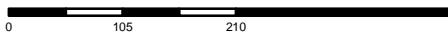


- Legend**
- Very High HEGS Value
 - High HEGS Value
 - Important Hedgerows
 - Semi-natural Broadleaved Woodland
 - Historic Civic Boundary
 - Exemplar Boundary

P1	22-07-10	JB	AB	MB
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Issue	Date	By	Chkd	Appd
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Client

A2 Dominion

Job Title

**Bicester Eco-town
(Exemplar Site)**

Drawing Title

**Hedgerow Survey
Important and Valuable Hedgerows**

Scale at A3

1:7,000

Drawing Status

Issue

Job No	Drawing No	Issue
213225-00	Appendix A	P1

Appendix B

HEGS Survey Recording Sheets

HEDGE RECORD AND EVALUATION SHEET

HEDGE NO. :

1 Recently laid or coppiced ☐ YES ☐ NO (if yes, score 7 and ignore criteria 2 to 4 below)

SCORE -> 1 2 3 4

2	Height (exclude bank)	0-1m	1-2m	2-4m	4m+
3	Width	0-1m	1-2m	2-3m	3m+
4	Average Cross-Section				

5 STANDARD TREES
Species present:

No. of trees present

6 Length: m7 Standards/100m nil <1 1 ≤ 3 3 ≤ 5 >5STRUCTURAL SCORE 8 Percentage Gaps 9 No. of End Connections nil 10%+ 10-0% 1 2 3 4+CONNECTIVITY SCORE

10 HEDGE CANOPY SPECIES
Species present:

Combined total of tree and shrub species:

11 Native Species Dominant nil 1-2 spp mixed12 Total No. of Tree & Shrub Spp. 1-4 5-7 8-9 10+DIVERSITY SCORE 13 Hedgebank/Lynchet nil 0-½m ½-1m 1m+14 Ditch No ditch Ditch15 Grass Verge (2m+ wide) nil on 1 side on 2 sidesASSOCIATED FEATURES SCORE

16 NOTES
Ground flora & Climbers:

17 Notable Species present Pop nig Tit cor Pyr cor Sor tor Tit pls other

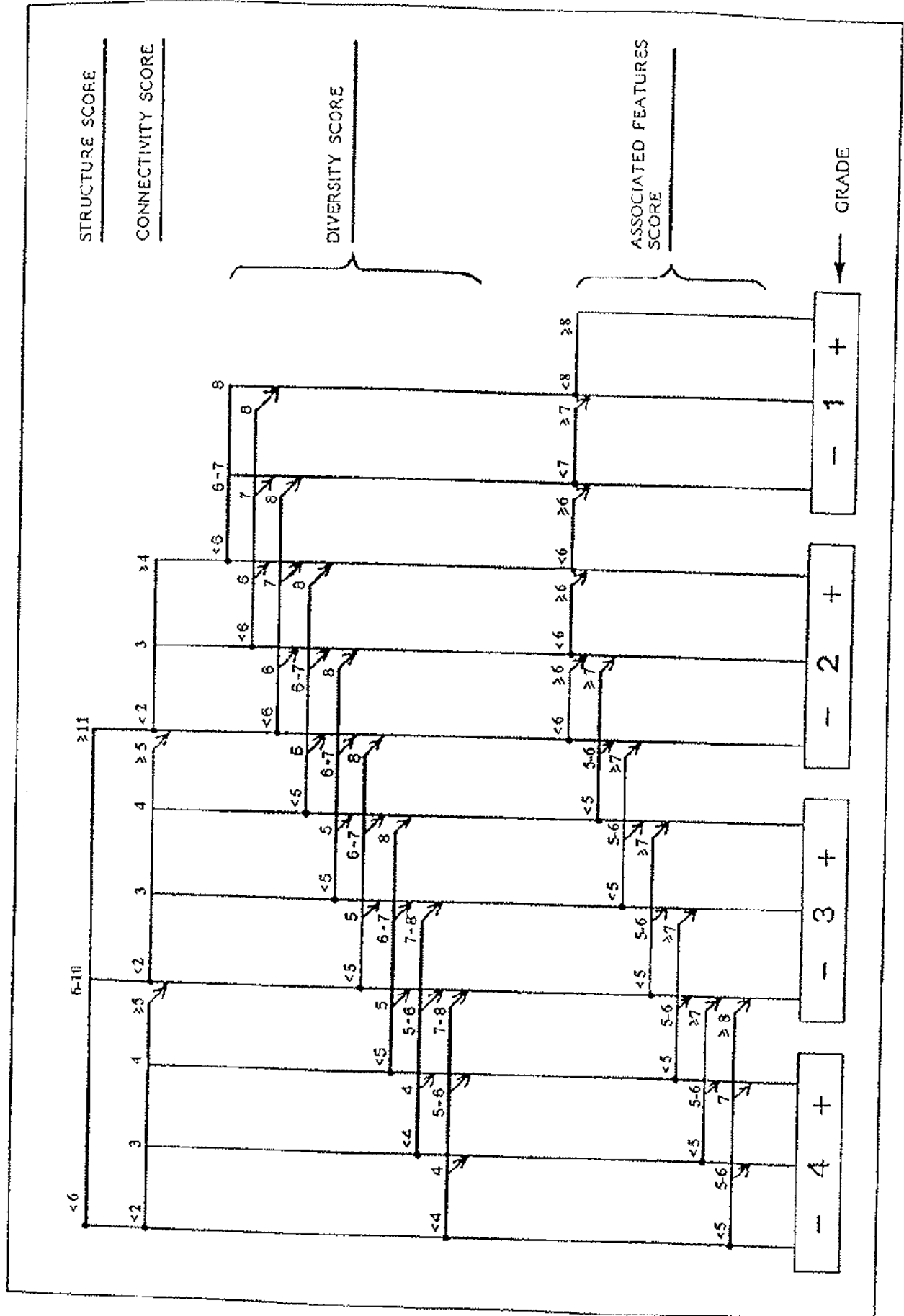
Yes (NS) No

new hedge
track/roadsideold laid
fence/wallunmanaged
parish boundarycut/trimmed
garden boundary

Site:

Date:

Surveyor:



Appendix C

Local Hedgerow Survey Recording Sheets

LOCAL HEDGEROW SURVEY: FIELD SURVEY FORM

DATE: __ / __ / __

GRID REF: __ __ / __ __ / __ __

HEDGE No: ____ / ____ / ____

SURVEYOR(S)

SIDE SURVEYED: N / E / S / W

1. HEDGE CONTEXT (length between end points)

TYPE		ADJACENT LAND USE						CONNECTIONS					
		Side A			Side B *			End C			End D		
Arable	Cereal / Root / Other	C	R	O	C	R	O	C	R	O	C	R	O
Grassland	Improved / Semi-improved / Unimproved	I	S	U	I	S	U	I	S	U	I	S	U
	livestock (Cattle / Sheep / Other)	C	S	O	C	S	O	C	S	O	C	S	O
Woodland	broadleaved (Mature / Immature)	M	I		M	I		M	I		M	I	
	conifer (Mature / Immature)	M	I		M	I		M	I		M	I	
	mixed (Mature / Immature)	M	I		M	I		M	I		M	I	
Route	rail / road – please state (M / A / B / C / U)												
	Track – please state (BR / Boat / Other)												
	public footpath												
Water	River / Stream	R	S		R	S		R	S		R	S	
	Lake / Pond	L	P		L	P		L	P		L	P	
Built-up / Garden	Built-up / Garden	B	G		B	G		B	G		B	G	
Heathland	heathland												
Other (state)													
Hedge	Established / New							E	N		E	N	
	Trimmed / Overgrown							T	O		T	O	
	hedgebank												
Fence	Wire / Netting							W	N		W	N	
	Post & Rail							P	R		P	R	
	Wall												
	Other												
HEDGEROW TREES (total number)		0		1 – 5		over 5							

* Where visible

N.B. More than 1 category can apply for each column

2. ASSOCIATED FEATURES per 30m

Typical cross section of hedge banks where present (please circle one)



a) Half bank



b) Lynchett



c) Hedge bank

d) Other (sketch)

Bank height	under 0.5m	0.5 - 1m	1.1 - 1.5m	1.6m +
Bank type	earth		stonefaced	
Bank management	none	fenced off	grazed	mown / cut

OTHER FEATURES		Side A			Side B*		
Ditch / stream	width at base	under 0.5m	0.5 - 1m	over 1m	under 0.5m	0.5 - 1m	over 1m
		internal		external	internal		external
		wet		dry	wet		dry
Verge / headland	width	under 1m	1 - 2m	over 2m	under 1m	1 - 2m	over 2m
	management	grazed	cut	uncut	grazed	cut	uncut
Fence	height	under 0.6m	0.6 - 1.2m	over 1.2m	under 0.6m	0.6 - 1.2m	over 1.2m
	type	post & rail	netting	wire strand	post & rail	netting	wire strand
	other fence (state)						
Other (state)							

* Where visible

3. HEDGE STRUCTURE / MANAGEMENT per 30m

Average height (excluding bank)	0.1 - 1m	1.1 - 2m	2.1 - 4m	4.1m +			
Average width at base (excluding bank)	0.1 - 1m	1.1 - 2m	2.1 - 4m	4.1m +			
Intergrity (S ignificant or M inor)	stock-proof	leggy		gaps		wind shaped	
		S	M	S	M	S	M
Signs of recent management	none			recent (under 2yrs)		old (2 - 10yrs)	
Type of recent management	flailed/trimmed	coppiced		laid		weed control	
Older management features (over 10yrs)	coppice stools	pollarded trees		laid			

Typical cross section of type of hedge



a) Clipped and dense



b) Mechanically cut



c) Unclipped



d) Overgrown and leggy



e) Overgrown plus outgrowth

f) Other (sketch)

LOCAL HEDGEROW SURVEY: SUPPLEMENT – Hedgerow Regulations (1997)

DATE: __ / __ / __

GRID REF: __ __ / __ __ / __ __

HEDGE No: ____ / ____ / ____

SHRUB LAYER (WOODY SPECIES) per 30m							
Species	Section of hedge			Species	Section of hedge		
	Up to 100m	100 - 200m	Over 200m		Up to 100m	100 - 200m	Over 200m
Alder (<i>A. glutinosa</i>)				Hawthorn, midland (<i>C. laevigata</i>)			
Apple, crab (<i>M. sylvestris</i>)				Hazel (<i>C. avellana</i>)			
Ash (<i>F. excelsior</i>)				Holly (<i>I. aquifolium</i>)			
Aspen (<i>P. tremula</i>)				Hornbeam (<i>C. betulas</i>)			
Beech (<i>F. sylvatica</i>)				Juniper (<i>J. communis</i>)			
Birch, downy (<i>B. pubescens</i>)				Lime, large-leaved (<i>T. platyphyllos</i>)			
Birch, silver (<i>B. pendula</i>)				Lime, small-leaved (<i>T. cordata</i>)			
Black-poplar (<i>P. nigra</i> -ssp <i>betulaefolia</i>)				Maple, field (<i>A. campestre</i>)			
Blackthorn (<i>P. spinosa</i>)				Mezereum (<i>D. mezereum</i>)			
Box (<i>B. sempervirens</i>)				Oak, pendunculate (<i>Q. robur</i>)			
Broom (<i>C. scoparius</i>)				Oak, sessile (<i>Q. petraea</i>)			
Buckthorn (<i>R. cathartica</i>)				Pear, Plymouth (<i>P. cordata</i>)			
Buckthorn, alder (<i>F. alnus</i>)				Pear, wild (<i>P. pyraeaster</i>)			
Butcher's-broom (<i>R. aculeatus</i>)				Poplar, grey (<i>Populus x canescens</i>)			
Cherry, bird (<i>P. padus</i>)				Poplar, white (<i>P. alba</i>)			
Cherry, wild (<i>P. avium</i>)				Privet, wild (<i>L. vulgare</i>)			
Cotoneaster, wild (<i>C. integer</i>)				Rose (<i>Rosa</i> spp.)			
Currant, downy (<i>R. spicatum</i>)				Rowan (<i>S. aucuparia</i>)			
Currant, mountain (<i>R. alpinum</i>)				Sea-buckthorn (<i>H. rhamnoides</i>)			
Dogwood (<i>C. sanguinea</i>)				Service tree, wild (<i>S. torminalis</i>)			
Elder (<i>S. nigra</i>)				Spindle (<i>E. europaeus</i>)			
Elm (<i>Ulmus</i> spp.)				Spurge-laurel (<i>D. laureola</i>)			
Gooseberry (<i>R. uva-crispa</i>)				Walnut (<i>J. regia</i>)			
Gorse (<i>U. europaeus</i>)				Wayfaring-tree (<i>V. lantana</i>)			
Gorse, dwarf (<i>U. minor</i>)				Whitebeam (<i>Sorbus</i> spp.)			
Gorse, western (<i>U. gallii</i>)				Willow (<i>Salix</i> spp.)			
Guelder rose (<i>V. opulus</i>)				Yew (<i>T. baccata</i>)			
Hawthorn (<i>C. monogyna</i>)							

GROUND FLORA (WOODLAND SPECIES)

Any 3 spp occurring within 1m of each other on outer most edge of hedgerow

Species		Species	
Barren strawberry (<i>P. sterilis</i>)		Narrow buckler fern (<i>D. carthusiana</i>)	
Bluebell (<i>H. non-scriptus</i>)		Nettle-leaved bell-flower (<i>C. trachelium</i>)	
Broad buckler fern (<i>D. dilatata</i>)		Oxlip (<i>P. elatior</i>)	
Broad-leaved helleborine (<i>E. helleborine</i>)		Pignut (<i>C. majus</i>)	
Bugle (<i>A. reptans</i>)		Primrose (<i>P. vulgaris</i>)	
Common cow-wheat (<i>M. pratense</i>)		Ramsons (<i>A. ursinum</i>)	
Common dog violet (<i>V. riviniana</i>)		Sanicle (<i>S. europaea</i>)	
Common polypody (<i>P. vulgare</i>)		Scaly male-fern (<i>D. affinis</i>)	
Dog's mercury (<i>M. perennis</i>)		Small cow-wheat (<i>M. sylvaticum</i>)	
Early dog violet (<i>V. reichenbachiana</i>)		Soft shield fern (<i>P. setiferum</i>)	
Early purple orchid (<i>O. mascula</i>)		Sweet violet (<i>V. odorata</i>)	
Enchanter's nightshade (<i>C. lutetiana</i>)		Toothwort (<i>L. squamaria</i>)	
Giant fescue (<i>F. gigantea</i>)		Tormentil (<i>P. erecta</i>)	
Goldilocks buttercup (<i>R. auricomus</i>)		Wild strawberry (<i>F. vesca</i>)	
Great bell-flower (<i>C. lutiifolia</i>)		Wood anemone (<i>A. nemorosa</i>)	
Greater wood-rush (<i>L. sylvatica</i>)		Wood avens/Herb bennet (<i>G. urbanum</i>)	
Hairy brome (<i>B. ramosus</i>)		Wood false-brome (<i>B. sylvaticum</i>)	
Hairy wood-rush (<i>L. pilosa</i>)		Wood horsetail (<i>E. sylvaticum</i>)	
Hard fern (<i>B. spicant</i>)		Wood meadow-grass (<i>P. nemoralis</i>)	
Hard shield fern (<i>P. aculeatum</i>)		Wood melick (<i>M. uniflora</i>)	
Harebell (<i>C. rotundifolia</i>)		Wood millet (<i>M. effusum</i>)	
Hart's tongue (<i>A. scolopendrium</i>)		Wood sage (<i>T. scorodonia</i>)	
Heath bedstraw (<i>G. saxatile</i>)		Wood sedge (<i>C. sylvatica</i>)	
Herb-Paris (<i>P. quadrifolia</i>)		Wood sorrel (<i>O. acetosella</i>)	
Herb-Robert (<i>G. robertianum</i>)		Wood speedwell (<i>V. montana</i>)	
Lady fern (<i>A. filix-femina</i>)		Wood spurge (<i>E. amygdaloides</i>)	
Lords-and-ladies (<i>A. maculatum</i>)		Woodruff (<i>G. odoratum</i>)	
Male fern (<i>D. filix-mas</i>)		Yellow archangel (<i>L. galeobdolon</i>)	
Moschatel (<i>A. moschatellina</i>)		Yellow pimpernel (<i>L. nemorum</i>)	

For whole hedge:

Actual number of standard trees (multi stemmed trees
with diameter of >15cm at 1.3m, single stemmed trees
diameter of >20cm at 1.3m)Trees

Does ditch extend over half the length?Yes / No

Does bank or wall extend over half the length?Yes / No

Do gaps form less than 10% of the length?Yes / No

APPENDIX 7C

Arup (2010) Vegetation Survey

A2 Dominion
Bicester Eco-town
Exemplar Site
Vegetation Survey

J/213000/213225-00

Issue | September 2010

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Document Verification

ARUP

Job title		Bicester Eco-town Exemplar Site		Job number 213225-00	
Document title		Vegetation Survey		File reference	
Document ref		J/213000/213225-00			
Revision	Date	Filename	Vegetation Report.docx		
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			Prepared by	Checked by	Approved by
		Name	Stephen Carter	Austin Brown	Michael Bull
		Signature			
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		Name	Stephen Carter	Austin Brown	Michael Bull
		Signature			
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Sample Site Data

1 Introduction

1.1 Background

Arup has been commissioned by A2 Dominion to carry out a suite of protected species and habitat surveys for the proposed Bicester eco-town development in Oxfordshire. This report describes the findings of a vegetation survey and the implications for development at the Exemplar Site (hereinafter referred to as the site).

The site is located within a belt of predominantly grazing farmland, with associated activities such as hay making west of Home Farm and to the north west of Bicester (SP 577 251); the red line area is shown in **Figure 1**.

At present the farmland within the development area is being managed in a relatively sensitive manner with regards to biodiversity. This includes areas set aside for badger setts, numerous bird boxes, including barn owl (*Tyto alba*) and kestrel (*Falco tinnunculus*), and the provision of bat boxes. Hedgerows have been maintained to produce a wide, continuous and mostly species rich structure and are playing an important part for biodiversity on the site.

1.2 Ecology and Legislation

The recommendations provided in this report take into account government guidance associated with eco-town development, biodiversity targets, legislation and planning policies that relate to nature conservation.

1.2.1 Generic Legislation

This report and its recommendations have been produced in accordance with relevant legislation and best practice guidance. They also take into account Planning Policy Statement 9 (PPS9) and other nature conservation policies within local and regional planning policy documents.

Legislation relating to ecological resources that are relevant to this appraisal includes the following:

- ***Wildlife and Countryside Act, 1981 (as amended)***. This Legislation still comprises the primary means of protecting wildlife in the UK and provides the mechanism by which a number of international directives are implemented in the UK.
- ***Conservation (Natural Habitats &c.) Regulations, 1994***. This Act provides protection for European protected species such as bats, great crested newts and the hazel dormouse.
- ***Countryside and Rights of Way (CROW) Act, 2000***. The CROW Act strengthened the details of The Wildlife and Countryside Act in relation to Sites of Special Scientific Interest (SSSI) and threatened species.

- ***Natural Environment and Rural Communities (NERC) Act, 2006.*** This Act puts an obligation on public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity.
- ***Planning Policy Statement 9 (PPS9).*** This sets out the Government's planning policies on the protection of biodiversity and geological conservation through the planning system. The policies set out in PPS9 may also be material to decisions on individual planning applications.

The key principles of the PPS9 are stated as:

“Regional planning bodies and local planning authorities should adhere to the following key principles to ensure that the potential impacts of planning decisions on biodiversity and geological conservation are fully considered.....

(vi) the aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests. Where granting planning permission would result in significant harm to those interests, local planning authorities will need to be satisfied that the development cannot reasonably be located on any alternative sites that would result in less or no harm. In the absence of any such alternatives, local planning authorities should ensure that, before planning permission is granted, adequate mitigation measures are put in place. Where a planning decision would result in significant harm to biodiversity and geological interests which cannot be prevented or adequately mitigated against, appropriate compensation measures should be sought. If that significant harm cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused.”

In addition, PPS9 states:

“Development proposals provide many good opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where necessary.”

In respect of species protection, PPS9 states:

“.....planning authorities should ensure that these species are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. Planning authorities should refuse permission where harm to the species or their habitats would result unless the need for, and benefits of, the development clearly outweigh that harm”.

1.2.2 Species Legislation

In the UK, all wild plants are subject to protection from intentional uprooting without the landowners permission, through the provisions of the Wildlife and Countryside Act 1981 (as amended). Some rare plant species are afforded protection from picking, uprooting, destruction or sale because they are listed on Schedule 8 of the Wildlife & Countryside Act 1981 (as amended) and or Schedule 4 of The Conservation of Habitats and Species Regulations 2010.

1.2.3 Eco-town Guidance

In addition to a range of legislation described above in section 1.2.1, a wealth of policy and other guidance is available to govern and direct development proposals in their responsibilities with regard to ecology and biodiversity. These include the recently-published governmental guidance that specifically sets out how to deal with eco-town proposals (Biodiversity Positive: Eco-towns Biodiversity Worksheet, TCPA, 2009). The key points of this (referred to as the principal objectives for an Eco-town Biodiversity Strategy) are as follows:

- **Protecting and enhancing the best of biodiversity:** key habitat areas supporting characteristic and uncommon species should be sustained, where conservation is the main priority.
- **Mitigating the impact of development and securing net biodiversity gain:** the inclusion of supplementary habitat areas that fulfil other green infrastructure functions and support more widespread and common species.
- **Integrating biodiversity within the built environment:** the incorporation of a high degree of permeability for wildlife within built areas and structures.
- **Increasing biodiversity's resilience and ability to adapt to climate change:** ensuring a robust connectivity of habitats that facilitates the wider movement and migration of species.

This provides a clear steer for the design of an eco-town proposal, such that the avoidance of key habitat areas must be the priority, followed by the retention and creation of a matrix of secondary habitats both within and outside of the built area, and that all of the above are robustly connected to facilitate future wildlife movements and dispersals. Other key elements of the approach include making provisions for management, funding and accountability, to ensure success.

All eco-town proposals should include an ETBS to be developed in tandem with the masterplan for the site. This will provide the framework for delivering net biodiversity gain, setting out what is to be achieved and the steps that are needed to achieve it and, most importantly, how biodiversity will be increased and enhanced in advance of and alongside development, rather than at the end of the development process. It should include specific measurable targets for net biodiversity gain, reflecting local priorities for biodiversity (and contributing to national and regional targets as appropriate) and it should take account of the challenges posed by climate change.

1.2.4 Biodiversity Action Plans

The UK Biodiversity Action Plan (UK BAP) was produced in accordance with the 1992 UN Convention on Biological Diversity. It describes the UK's biological resources and commits a detailed plan for the protection of these resources, focusing on key habitats and species considered to be of particular significance to nature conservation within a UK context.

The conservation priorities that will be most appropriate to the Bicester eco-town proposal are those listed within the UK BAP and (at the lower tier) Oxfordshire Local Biodiversity Action Plan (LBAP). These list a number of key habitats and species that form the priorities for conservation in those areas and serve as an

existing framework within which the eco-town can function and provide positive contributions to nature conservation at both local and national scales.

1.3 Aim and Objectives

The Phase 1 Habitat Survey (Arup, 2010) reported that semi-improved neutral grassland and broad-leaved semi-natural woodland to be of most ecological value because they are UK BAP priority listed habitats to occur within the more extensive Masterplan Area.

The aim of the vegetation survey was to survey in more detail the grassland and woodland habitats at the site.

The objectives of this report are to:

- describe the plant communities present at the site;
- evaluate plant communities present at the site;
- report any protected or otherwise notable plants present at the site; and,
- recommend appropriate mitigation and compensation measures to balance the requirements of the proposed development.

1.4 Report Content and Layout

Following this introduction, Chapter 2 describes the methodology utilised to describe and evaluate vegetation present at the site. Chapter 3 describes and discusses the vegetation survey findings. The conclusions and recommendations are provided in Chapter 4. A list of references is provided in Chapter 5.

2 Methodology

2.1 Desk Study

Records of protected and otherwise notable plants were requested from the Thames Valley Environmental Records Centre (TVERC) within a 5km radius of the site.

Aerial photographs and the Phase 1 Habitat Survey report were reviewed to determine the location of grassland and woodland habitats to survey in more detail.

2.2 Field Survey

An ecologist experienced in identifying plants and sampling vegetation in accordance with the National Vegetation Classification (NVC) methodology (Rodwell, 1991 and 1992) undertook a walkover survey of grassland and woodland habitats at the site on 28th July 2010.

The woodland at the site was considered to be of more ecological value than the grassland habitats which have mainly been improved for agriculture. Therefore, the woodland was subject to a more detailed NVC survey.

Five quadrats were used to sample an area of homogeneous vegetation within the woodland. Each quadrat comprised a selected canopy area, within which understorey, field layer and ground layer area was located to record plant using the following standard areas:

- 50m × 50m for the canopy;
- 10m × 10m for the understorey;
- 4m × 4m for the field layer; and,
- 1m × 1m for the ground layer.

Within each quadrat the relative plant cover of each species was assessed by eye of all the live and above-ground parts of the plant and then assigned a score according to the DOMIN scale as indicated in **Table 1**.

Plant species names follow standard nomenclature (Stace, 2010 and Atherton *et al*, 2010).

Other details of the sampled vegetation were also recorded: stand area, sample area, vegetation layer cover and mean height, slope, aspect, altitude and soil description (see **Appendix A**).

Table 1. DOMIN scale used for assessing plant cover-abundance

DOMIN Scale	Plant Cover (%)
10	91 to 100
9	76 to 90
8	51 to 75
7	34 to 50
6	26 to 33
5	11 to 25
4	4 to 10
3	Many individuals
2	Several individuals
1	Few individuals

2.3 Data Analysis

The computer programme MATCH was used to analyse the sample data. MATCH mathematically compares the sample data with the constancy profiles for all the NVC plant communities/sub-communities and produces a list of similarity coefficients which outputs a list of possible plant communities/sub-communities.

2.4 Assumptions and Limitations

No account can be made of the absence of protected or otherwise notable vernal flowering species because they were not evident and therefore not recorded. However, this risk was minimised because the experienced ecologist who undertook the survey used professional judgement to determine whether any unrecorded protected and otherwise notable plant species are likely to naturally occur at the site.

The determination of conservation status is based on policy as published at the time of the assessment. No allowance has been made for unforeseen policy changes that may occur in the future.

3 Results and Discussion

3.1 Desk Study

No protected or otherwise notable plant species have been recorded at or adjacent to the site from records supplied by TVERC.

3.2 Field Survey

3.2.1 Grassland

There are several moderately nutrient enriched grassland habitat types at the site, which can be categorised as follows:

- unmanged rough grassland;
- re-seeded arable leys; and,
- semi-improved grassland.

The location of the aforementioned grassland habitats is highlighted on **Figure 1**.

3.2.1.1 Unmanaged Rough Grassland

A belt of unmanaged rough grassland occurs adjacent to the stream that flows west to east across the central part of the site. Barbed wire fencing excludes cattle from grazing the vegetation and consequently a sward approximately 1m tall of low floristic diversity has established.

The dominant plant species is false oat-grass *Arrhenatherum elatius* and the vegetation is most characteristic of the NVC plant community MG1 *Arrhenatherum elatius* grassland.

At the site, the MG1 vegetation is of low intrinsic ecological value, but it does support a range of invertebrates and vertebrates. No protected or otherwise notable plant species were recorded or expected to be present within this plant community type.

3.2.1.2 Re-seeded Arable Leys

Within the northern part of the site re-seeded arable leys have recently been established. The leys have low floristic diversity and are grazed by cattle.

The dominant plant species are perennial ryegrass *Lolium perenne* and clovers *Trifolium* spp. and the vegetation is most characteristic of the NVC plant community MG7 *Lolium perenne* leys and related grasslands.

At the site, the MG7 vegetation is of low intrinsic ecological value and no protected or otherwise notable plant species were recorded or expected to be present within this plant community type.

3.2.1.3 Species-poor Semi-improved grassland

The grasslands within the southern part of the site have lower floristic diversity than compared to other parts of the more extensive Masterplan Area. Low floristic diversity is related to the extent to which the grasslands have been improved for cattle grazing.

The vegetation shows some resemblance between NVC plant communities MG5 *Cynosurus cristatus* - *Centaurea nigra* and MG6 *Lolium perenne* - *Cynosurus cristatus* grasslands.

At the site, the MG5/MG6 grassland is, as a consequence of management, of low floristic diversity and hence of lower ecological value than if managed to enhance its biodiversity potential. No protected or otherwise notable plant species were recorded or expected to be present within this plant community type.

3.2.2 Woodland

3.2.2.1 Broad-leaved Semi-natural Woodland

Broad-leaved woodland is located in the western corner of the site and to the west of Home Farm (see **Figure 1**). The woodland has had most of the former canopy trees removed. There are a few remaining canopy trees, stumps and felled trunks which indicate that the wood was originally dominated by ash *Fraxinus excelsior*. Subsequently, the woodland has been re-planted mainly with native broad-leaved species, but also with Norway maple *Acer platanoides* and Scots pine *Pinus sylvestris* which are not naturally characteristic of ash woodland.

The quadrat locations are highlighted in **Figure 2**. Analysis of the sample data indicates that the vegetation is most similar to W8d *Fraxinus excelsior* – *Acer campestre* – *Mercurialis perennis* woodland *Hedera helix* sub-community. The MATCH co-efficient for W8d is 44.5.

The woodland is characteristic of the W8d plant sub-community because the canopy appears to be dominated by ash and less diverse than the other associated W8 sub-communities. Also, where the field layer has not recently been disturbed there is a continuous carpet of ivy *Hedera helix* agg.

W8 woodlands are widespread over damp base-rich soils in typically warm and dry areas of southern lowland Britain, becoming progressively sparser towards the north-west because of smaller exposures of calcareous rocks/superficials and the cooler and wetter prevailing climate.

The W8 woodland at the site is of moderate intrinsic ecological value and supports a wide range of invertebrates and vertebrates. No protected or otherwise notable plant species were recorded or expected to be present within this plant community type.

4 Conclusions and Recommendations

The W8 woodland at the site, which is a UK BAP priority habitat, is of moderate ecological value and therefore in accordance with policy and best practice, impacts to it should be avoided. If this is not possible, appropriate mitigation and/or compensation measures proportionate to the ecological impact would need to be implemented. In addition, measures to enhance the woodland to ensure biodiversity gain and compliance with government policy regarding eco-town development would need to be implemented.

It is recommended that a buffer zone is created around the woodland to minimise impacts from development and to enhance its' biodiversity potential. The woodland could be enhanced by maximising the amount of edge habitat along tracks and clearings in order to attract a wider range of wildlife. Tree species that are not naturally characteristic of W8 woodland, such as Norway maple and Scots pine, could be removed to facilitate the growth of ash standards and their future expansion within the canopy.

It is also recommended that hedgerows are planted with native species characteristic to the local area to connect with the woodland in order to facilitate wildlife dispersal across the site.

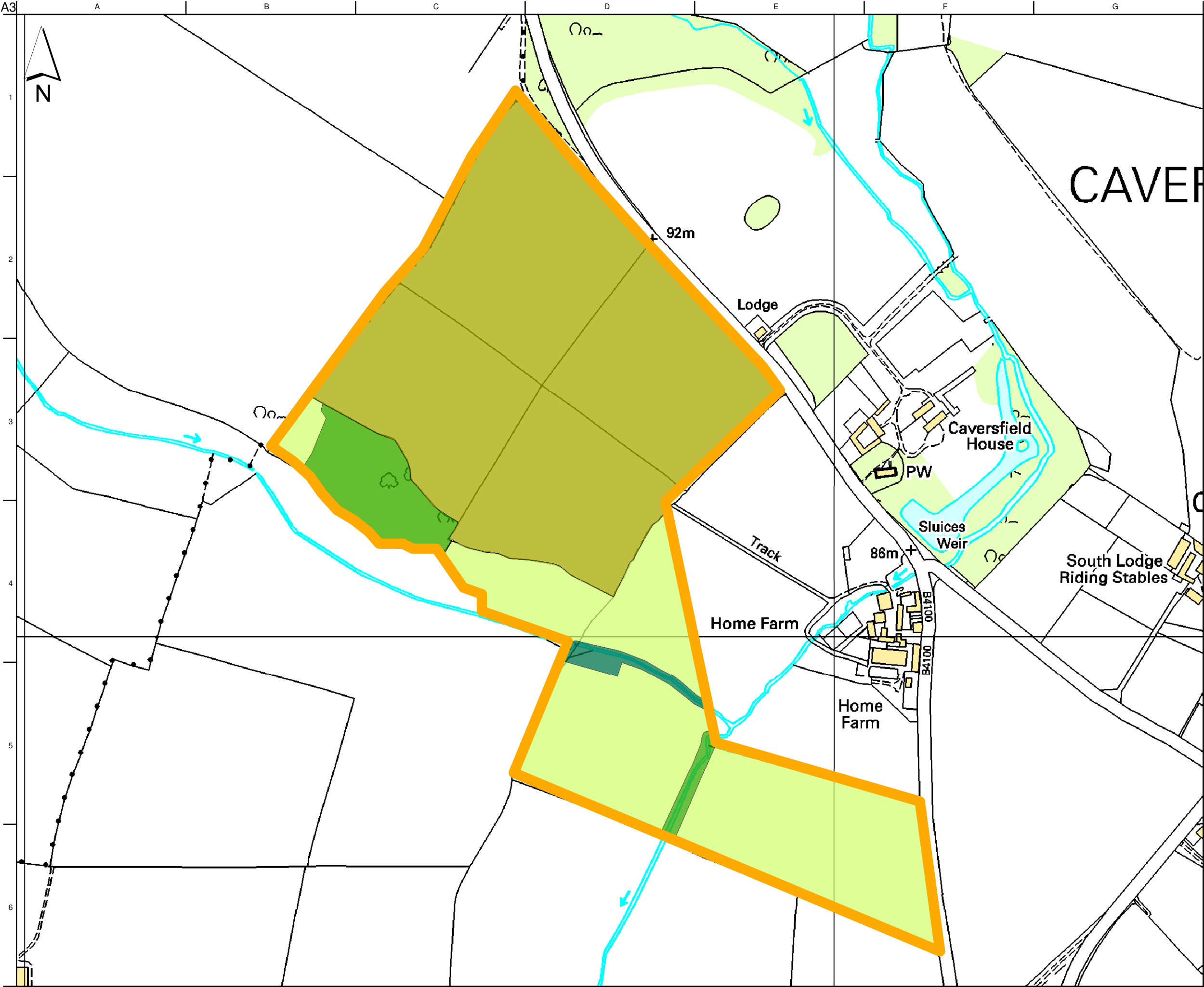
Implementation of the aforementioned recommendations would help ensure that the proposed development complies with eco-town guidance and also contribute to the UK BAP and Oxfordshire LBAP objectives.

5 References

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Figures

Figure 1 Habitat Location Map



Legend

- Exemplar Site Boundary
- Broad-leaved Semi-natural Woodland
- Re-seeded Arable Leys
- Species-poor Semi-improved Grassland
- Unmanaged Rough Grassland

-	21-09-2010	DMc	SC	AB
Issue	Date	By	Chkd	Appd

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A2 Dominion

Job Title
Bicester Eco-town Exemplar Site Vegetation Survey

Drawing Title
Habitat Location Map

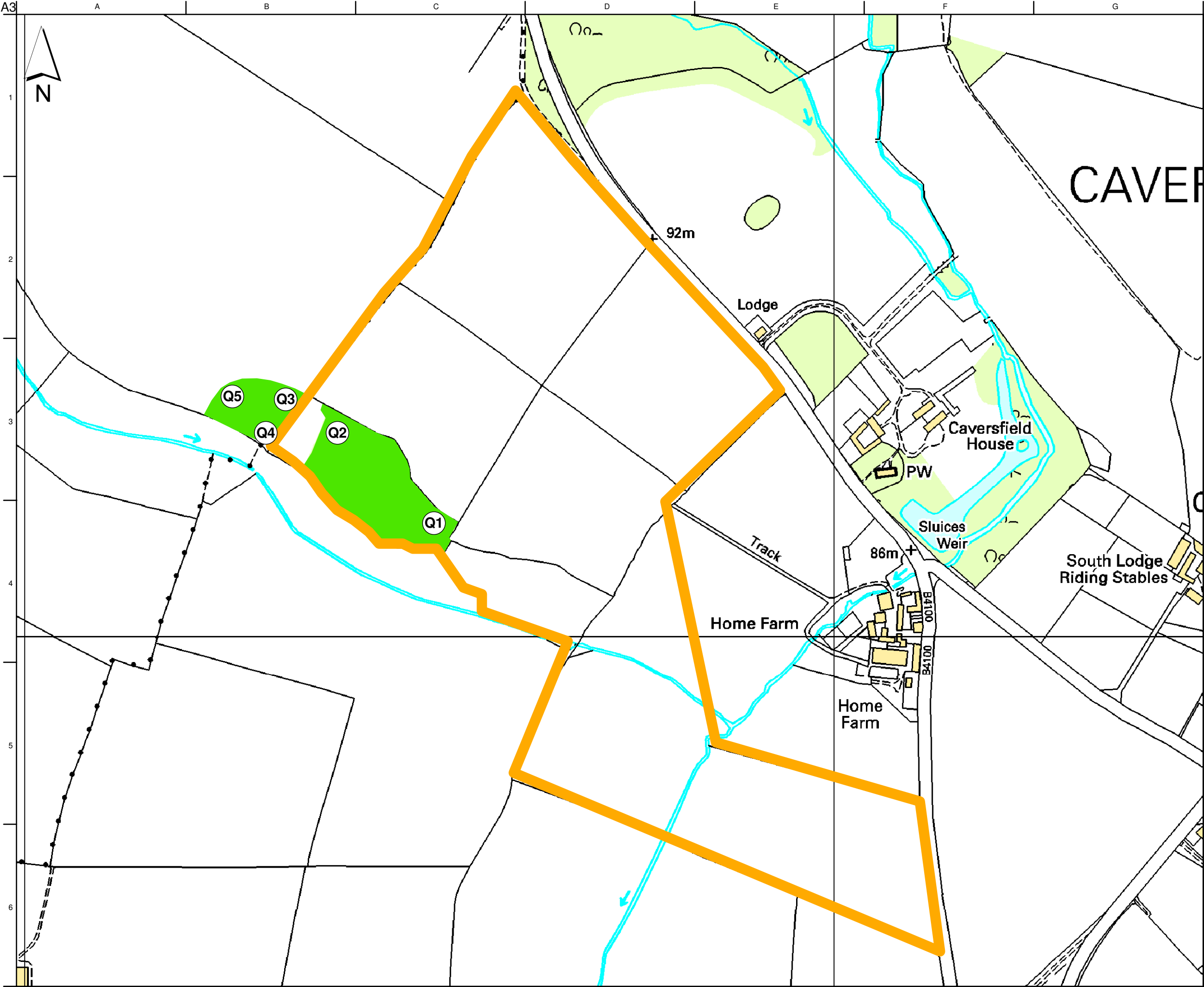
Scale at A3
1:4,500

Discipline
Ecology

Drawing Status
Draft

Job No 213225-00	Drawing No Figure 1	Issue -
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Figure 2 Sample Site Location Map



Legend

Exemplar Site Boundary

Woodland Sample Site

Q1

Quadrat Number

-	21-09-2010	DMc	SC	AB
Issue	Date	By	Chkd	Appd

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Job Title

Bicester Eco-town Exemplar Site
Vegetation Survey

Drawing Title

Sample Site Location Map

Scale at A3

1:4,500

Discipline

Ecology

Drawing Status

Draft

Job No

213225-00

Drawing No

Figure 2

Issue

-

A1 Sample Site Data

Survey Date: 28 th July 2010						Description of Sample Site: Replanted wood with some remaining ash in the canopy, stumps and felled trunks. Sparse leaf litter and few areas of bare ground due to extensive moss cover					
Altitude: 90m						Slope: Level					
Aspect: None						Soil: Silty-clay					
Stand Area: 300m × 80m						Sample Area: Canopy 50 x 50m, understorey 10 x 10m, field layer 4m x 4m and ground layer 1m x 1m					
Layers (Mean Height) Canopy 20m Understorey 8m Field 1m Ground 50mm						Layers (Cover) Canopy 40% Understorey 70% Field 50% Ground 80%					
Plant Species	Quadrat Number					Plant Species	Quadrat Number				
	1	2	3	4	5		1	2	3	4	5
Canopy						<i>Viola riviniana/reichenbachiana</i>			2		
<i>Acer campestre</i>			3	6		Ground Layer					
<i>Fraxinus excelsior</i>	5	5	5	4	5	<i>Hypnum cupressiforme</i>	2	2		1	
Understorey						<i>Thamnobryum alopecurum</i>	6	8	4	6	2
<i>Acer campestre</i>				2	4						
<i>Corylus avellana</i>		2									
<i>Crataegus monogyna</i>	5	8			5						
<i>Sambucus nigra</i>	7	3	7	4	3						
<i>Ulmus procera</i>		2									
Field Layer											
<i>Alliaria petiolata</i>					2						
<i>Anthriscus sylvestris</i>		5	6	6	7						
<i>Arctium lappa</i>	1										
<i>Arum maculatum</i>	2	2	2	2	2						
<i>Bromopsis ramosa</i>				2	3						
<i>Dryopteris dilatata</i>			1								
<i>Fraxinus excelsior</i>	2	4	2								
<i>Geum urbanum</i>	2										
<i>Glechoma hederacea</i>	3		3		2						
<i>Hedera helix</i>			4	7	8						
<i>Mercurialis perennis</i>	7	5	5	3	4						
<i>Rosa canina</i>					1						
<i>Rubus fruticosus</i> agg.	2										
<i>Sambucus nigra</i>			2								
<i>Stachys sylvatica</i>					2						
<i>Tamus communis</i>					1						
<i>Urtica dioica</i>	5	4	5	2	3						

APPENDIX 7D

Arup (2010) Crayfish Survey

A2 Dominion
Bicester Eco-Town
Crayfish Survey


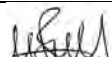

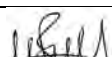
ISSUE | September 2010

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Document Verification

ARUP

Job title		Bicester Eco-Town		Job number	
				213225-00	
Document title		Crayfish Survey		File reference	
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Revision	Date	Filename	Crayfish Survey Report Draft 1.docx		
Draft 1	20/09/10	Description	First draft		
			Prepared by	Checked by	Approved by
		Name	Megan Hooper	Austin Brown	Michael Bull
		Signature			
Issue	30/09/10	Filename	Crayfish_Survey_Report_Exemplar_Issue.docx		
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		Name	Megan Hooper	Austin Brown	Michael Bull
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
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1 Introduction

1.1 Background

Arup has been commissioned by A2 Dominion to carry out a suite of protected species and habitat surveys for the proposed Bicester Exemplar Eco-Town development in Oxfordshire. This specific report is in respect of crayfish.

The proposed development is located within a belt of predominantly grazing farmland which lies to the north west of Bicester. (SP 577 251); the red line area is shown in Figure 1. At present the proposed development area consists of a matrix of farmland with up to 10 grazed fields separated by many high quality species rich hedgerows. A distinct lowland area with an ephemeral stream runs east to west through the south and central areas of the site, and midway flows into a second ephemeral stream running north to south throughout the site.

At present the farmland within the development area is being managed in a relatively sensitive manner with regards to biodiversity. This includes areas set aside for badger setts, numerous bird boxes, including barn owl (*Tyto alba*) and kestrel (*Falco tinnunculus*) and the provision of bat boxes. Hedgerows have been maintained to produce a wide, continuous and mostly species rich structure and are playing an important part for biodiversity on the site.

1.2 Ecology and Legislation

1.2.1 Generic Legislation

This report and its recommendations have been produced in accordance with relevant legislation and best practice guidance. They also take into account Planning Policy Statement 9 (PPS9) and other nature conservation policies within local and regional planning policy documents.

Legislation relating to ecological resources that are relevant to this appraisal includes the following:

- ***Wildlife and Countryside Act, 1981 (as amended)***. This Legislation still comprises the primary means of protecting wildlife in the UK and provides the mechanism by which a number of international directives are implemented in the UK.
- ***Conservation (Natural Habitats &c.) Regulations, 1994***. This Act provides protection for European protected species such as bats and great crested newts.
- ***Countryside and Rights of Way (CROW) Act, 2000***. The CROW Act strengthened the details of The Wildlife and Countryside Act in relation to Sites of Special Scientific Interest (SSSI) and threatened species.
- ***Natural Environment and Rural Communities (NERC) Act, 2006***. This Act puts an obligation on public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity.

- **Planning Policy Statement 9 (PPS9).** This sets out the Government's planning policies on the protection of biodiversity and geological conservation through the planning system. The policies set out in PPS9 may also be material to decisions on individual planning applications.

The key principles of the PPS9 are stated as:

“Regional planning bodies and local planning authorities should adhere to the following key principles to ensure that the potential impacts of planning decisions on biodiversity and geological conservation are fully considered.....

(vi) the aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests. Where granting planning permission would result in significant harm to those interests, local planning authorities will need to be satisfied that the development cannot reasonably be located on any alternative sites that would result in less or no harm. In the absence of any such alternatives, local planning authorities should ensure that, before planning permission is granted, adequate mitigation measures are put in place. Where a planning decision would result in significant harm to biodiversity and geological interests which cannot be prevented or adequately mitigated against, appropriate compensation measures should be sought. If that significant harm cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused.”

In addition, PPS9 states:

“Development proposals provide many good opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where necessary.”

In respect of species protection, PPS9 states:

“.....planning authorities should ensure that these species are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. Planning authorities should refuse permission where harm to the species or their habitats would result unless the need for, and benefits of, the development clearly outweigh that harm”.

1.2.2 Species Legislation

- **Wildlife and Countryside Act 1981** - It is an offence to take or sell white-clawed crayfish *Austropotamobius pallipes*. Natural England issues licences to take white-clawed crayfish for the purpose of crayfish surveys where white-clawed crayfish may be present. These are issued to suitably qualified individuals.

Under Section 16(3) of the WCA 1981, Natural England may issue a Conservation Licence to allow works that may affect white-clawed crayfish, such as works to a river bank and bed. This is subject to those works contributing to the conservation of the population.

It is an offence under Schedule 9 of the WCA 1981 to release non-native crayfish such as the American signal crayfish *Pacifastacus leniusculus* to any watercourse

or waterbody. Individuals caught during engineering works or survey cannot be returned to the wild. Measures to control the spread of crayfish plague are also required during works where present.

- ***Water Resources Act 1991 and National Crayfish Byelaws 2005***

To undertake crayfish trapping on a watercourse, consent is required from the Environment Agency. The consent is to use fishing instruments (other than rod and line) and/or remove crayfish from inland waters under the National Crayfish Byelaws 2005 (England) and Section 210, Schedule 25 of the Water Resources Act 1991. The Environment Agency provides tags that must be attached to each trap during the survey.

- ***EC Directive Conservation of Natural Habitats & Flora (92/43/EEC)***

The Conservation of Natural Habitats and Flora Directive (92/43/EEC), also known as the Habitats Directive, has been translated into UK law through The Conservation of Habitats and Species Regulations 2010, also known as The Habitats and Species Regulations 2010. They offer protection to a number of plant and animal species throughout Europe via the designation of Special Areas of Conservation (SACs).

The white-clawed crayfish is listed under Annex II and Annex V of The Habitats and Species Regulations 2010. This requires that sites are designated as SACs to protect white-clawed crayfish where they are present. In this case the site has not been designated an SAC.

- ***UK Biodiversity Action Plan (UKBAP)***

The white-clawed crayfish is listed on the UK BAP due to its decline in the UK. The existence of the UK Biodiversity Action Plan (UKBAP), published in 1994, arises from the UK Government's commitment to biodiversity made at the 1992 Earth Summit in direct response to the resulting Convention on Biological Diversity. To implement the UKBAP, the UK Biodiversity Group has produced a list of Habitat Action Plans and Species Action Plans (HAPs and SAPs).

1.2.3 Eco-Town guidance

In addition to a range of legislation described above in section 1.2.1, a wealth of policy and other guidance is available to govern and direct development proposals in their responsibilities with regard to ecology and biodiversity. These include the recently-published governmental guidance that specifically sets out how to deal with eco-town proposals (Biodiversity Positive: Eco-towns Biodiversity Worksheet, TCPA, 2009). The key points of this (referred to as the principal objectives for an Eco-town Biodiversity Strategy) are as follows:

- **Protecting and enhancing the best of biodiversity:** key habitat areas supporting characteristic and uncommon species should be sustained, where conservation is the main priority.
- **Mitigating the impact of development and securing net biodiversity gain:** the inclusion of supplementary habitat areas that fulfil other green infrastructure functions and support more widespread and common species.
- **Integrating biodiversity within the built environment:** the incorporation of a high degree of permeability for wildlife within built areas and structures.

- **Increasing biodiversity's resilience and ability to adapt to climate change:** ensuring a robust connectivity of habitats that facilitates the wider movement and migration of species.

This provides a clear steer for the design of an eco-town proposal, such that the avoidance of key habitat areas must be the priority, followed by the retention and creation of a matrix of secondary habitats both within and outside of the built area, and that all of the above are robustly connected to facilitate future wildlife movements and dispersals. Other key elements of the approach include making provisions for management, funding and accountability, to ensure success.

All eco-town proposals should include an Eco-Town Biodiversity Strategy (ETBS) to be developed in tandem with the masterplan for the site. This will provide the framework for delivering net biodiversity gain, setting out what is to be achieved and the steps that are needed to achieve it and, most importantly, how biodiversity will be increased and enhanced in advance of and alongside development, rather than at the end of the development process. It should include specific measurable targets for net biodiversity gain, reflecting local priorities for biodiversity (and contributing to national and regional targets as appropriate) and it should take account of the challenges posed by climate change.

1.2.4 Biodiversity Targets

The UK Biodiversity Action Plan (UK BAP) was produced in accordance with the 1992 UN Convention on Biological Diversity. It describes the UK's biological resources and commits a detailed plan for the protection of these resources, focusing on key habitats and species considered to be of particular significance to nature conservation within a UK context.

The conservation priorities that will be most appropriate to the Bicester eco-town proposal are those listed within the UK and (at the lower tier) Oxfordshire Biodiversity Action Plans (BAPs). These list a number of key habitats and species that form the priorities for conservation in those areas and serve as an existing framework within which the Eco-town can work and provide positive contributions to nature conservation at both local and national scales.

1.3 Aims and Objectives

The aims and objective of the crayfish survey are to:

- assess the suitability of the watercourses and waterbodies within the development areas for crayfish;
- determine the presence/likely absence of crayfish within suitable watercourses and waterbodies within the proposed development areas; and
- outline mitigation measures during works in the event that crayfish are present on the site.

1.4 Report Content and Layout

Firstly, the desk based and field survey methodology is presented in Section 2 followed by the results and discussion in Section 3. The final conclusions and recommendations in Section 4 provide recommendations for the type of

mitigation that will be required during works to these watercourses to protect biodiversity.

2 Methodology

2.1 Desk Study

Existing data for white-clawed crayfish and American signal crayfish was obtained from the NBN Gateway.

2.2 Field Survey

The crayfish survey season is considered to be between May to October inclusive with the optimal time for survey between July and September inclusive (Peay, 2003). The season is dependent on suitable habitat conditions for survey and the avoidance of the crayfish breeding season. The watercourses that were surveyed are shown on Figure 2.

The habitat was assessed for its suitability to support white-clawed crayfish based on the habitat descriptions in Holdich (2003) and Peay (2003). The survey was undertaken on 5th August. The following information was recorded:

- Water clarity.
- Bed substrate and materials suitable for refuge.
- Potential food supply.
- Siltation.
- Observed presence of crayfish and fish.
- Any negative indicators e.g. pollution inputs.

These details were also recorded during the trapping survey and torchlight survey visits to ensure that any changes in conditions had been monitored.

2.2.1 Survey Limitations

The findings presented in this report represent those at the time of survey and reporting. Variations in these conditions will take place as a result of seasonal factors, and with the general passage of time.

It should also be noted that fauna may travel over wide areas and can have large home ranges and so can be overlooked within surveys. Species which are absent at the time of survey may also return to or colonise a site anew at any future time.

3 Results and Discussion

3.1 Desk Study

White-clawed crayfish have been observed within Langford Brook to the south of Bicester in 1994 and 1997. However, American signal crayfish have been recorded in Langford Brook in 2009 (NBN Gateway).

American signal crayfish have also been found in the ponds in Bucknell. The data for this record was not certain but it could have been before 1978 (NBN Gateway). More recent records for American signal crayfish for the River Cherwell have been recorded near Bucknell in 2000 and 2002.

A dead American signal crayfish was found on the bank next to Crowmarsh Pond (to the west of the survey area) during a survey for riparian mammals in July 2010 (Arup, 2010).

3.2 Field Survey

The results of the habitat suitability assessment are shown in Figure 2. No historic crayfish burrows were observed along this section. The watercourse is dry within the Exemplar site. As a result, the watercourses are not considered to be suitable to support a breeding population of crayfish.

Connecting watercourses and waterbodies to this section had some suitability to support crayfish.

3.3 Discussion

The watercourses within the Exemplar site were dry at the time of the survey and would not allow a breeding population of crayfish to establish at this location. However, when flows return over winter and into spring the source of the water may pass through waterbodies and watercourses that have suitability for crayfish. It is known that American signal crayfish are present in the wider area although they have not been confirmed to be present within connecting waterbodies and watercourses. Therefore, it is possible that individual American signal crayfish if present may be washed downstream into this section from time to time. Due to the presence of American signal crayfish in the area it is highly unlikely that white-clawed crayfish are present in connecting watercourses and waterbodies.

4 Conclusions and Recommendations

The watercourses within the Exemplar site are considered to be unsuitable to support a breeding population of crayfish. However, it is possible that individual American signal crayfish, if present upstream of these dry sections, may be washed downstream into these sections from time to time. Due to the presence of American signal crayfish in the area it is highly unlikely that white-clawed crayfish are present in connecting watercourses and waterbodies. Therefore, the risk of the protected white-clawed crayfish being present is very low.

American signal crayfish are not protected rather they are an undesirable alien invasive species that carry crayfish plague and predate on our native white-clawed crayfish. As a precaution it should be assumed that there is a risk of American signal crayfish and crayfish plague being transferred between watercourses and sites while the watercourses are wet within the Exemplar site.

A method statement for the works should be prepared in advance of works to prevent the spread of American signal crayfish and crayfish plague. All contractors should be informed of their responsibilities in relation to this species to include the following:

- Requirements for disinfection of site vehicles, equipment and personal clothing where contact has been made with any mud, vegetation and water in or near to watercourses within the development site when damp or wet.
- Instructions on the euthanasia and disposal of American signal crayfish that may be removed from the watercourse and/or waterbody during works.
- A protocol for briefing staff on the presence of American signal crayfish and their responsibility to prevent the spread of this species and the crayfish plague.
- Emergency contact details for a licenced crayfish surveyor to be used in the event that crayfish are found during works and there is a lack of certainty as to the identification of this species.

5 References

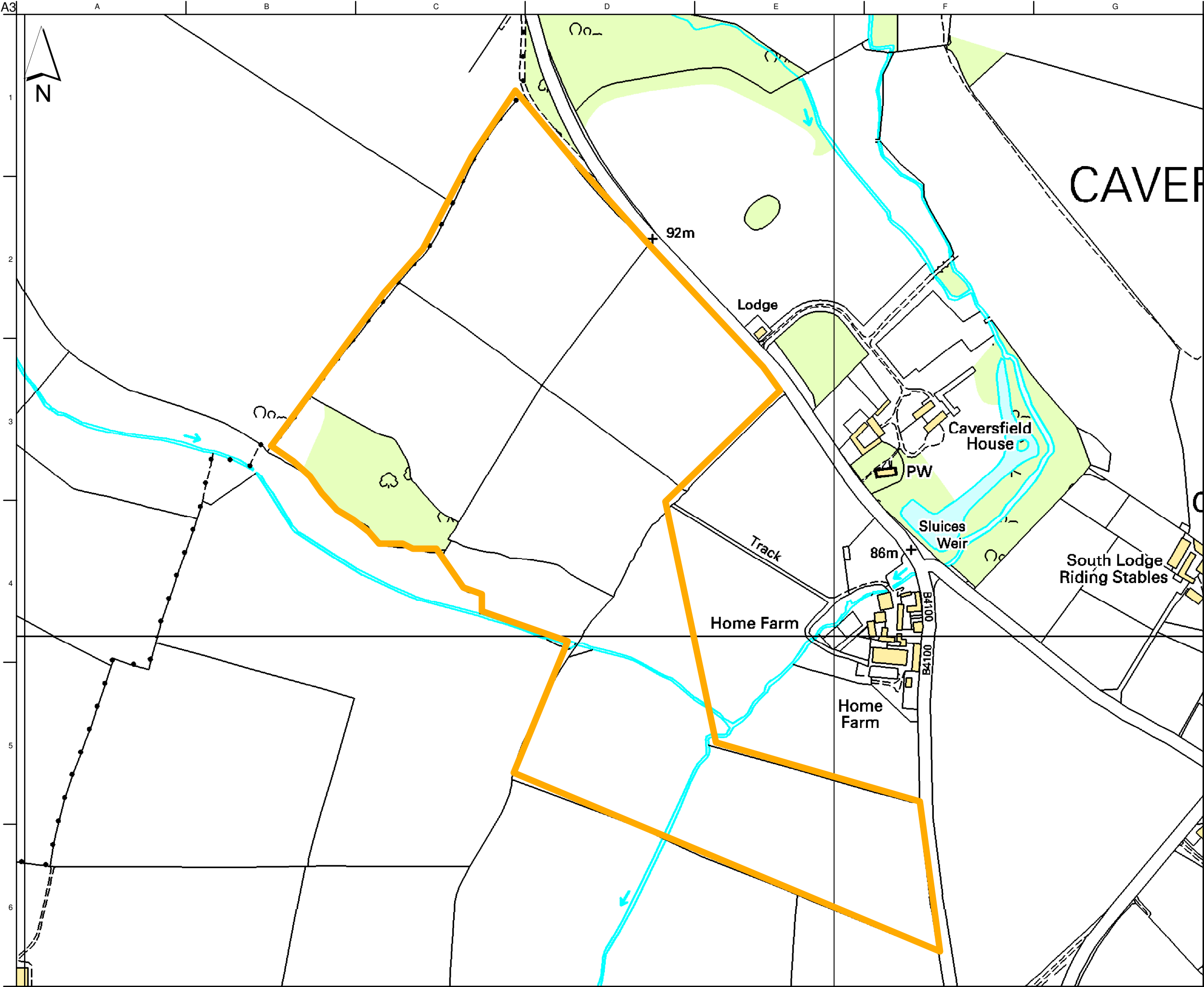
Holdich, D. (2003). Ecology of the White-clawed Crayfish. *Conserving Natura 2000 Rivers Ecology Series No. 1*. English Nature, Peterborough.

Peay, S. (2003). Monitoring the White-clawed Crayfish *Austropotamobius pallipes*. *Conserving Natura 2000 Rivers Monitoring Series No. 1*, English Nature, Peterborough.

Peay, S. (2000). *Guidance on works affecting white-clawed crayfish. Report FIN/CON/139*. English Nature, Peterborough.

A1 Figures

A1.1 Figure 1: Site Area



Legend

Exemplar Site Boundary

-	22-09-2010	AE	SC	AB
Issue	Date	By	Chkd	Appd

ARUP
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London W1T 4BQ
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Client
A2 Dominion

Job Title
Bicester Eco-town

Drawing Title
Site Overview

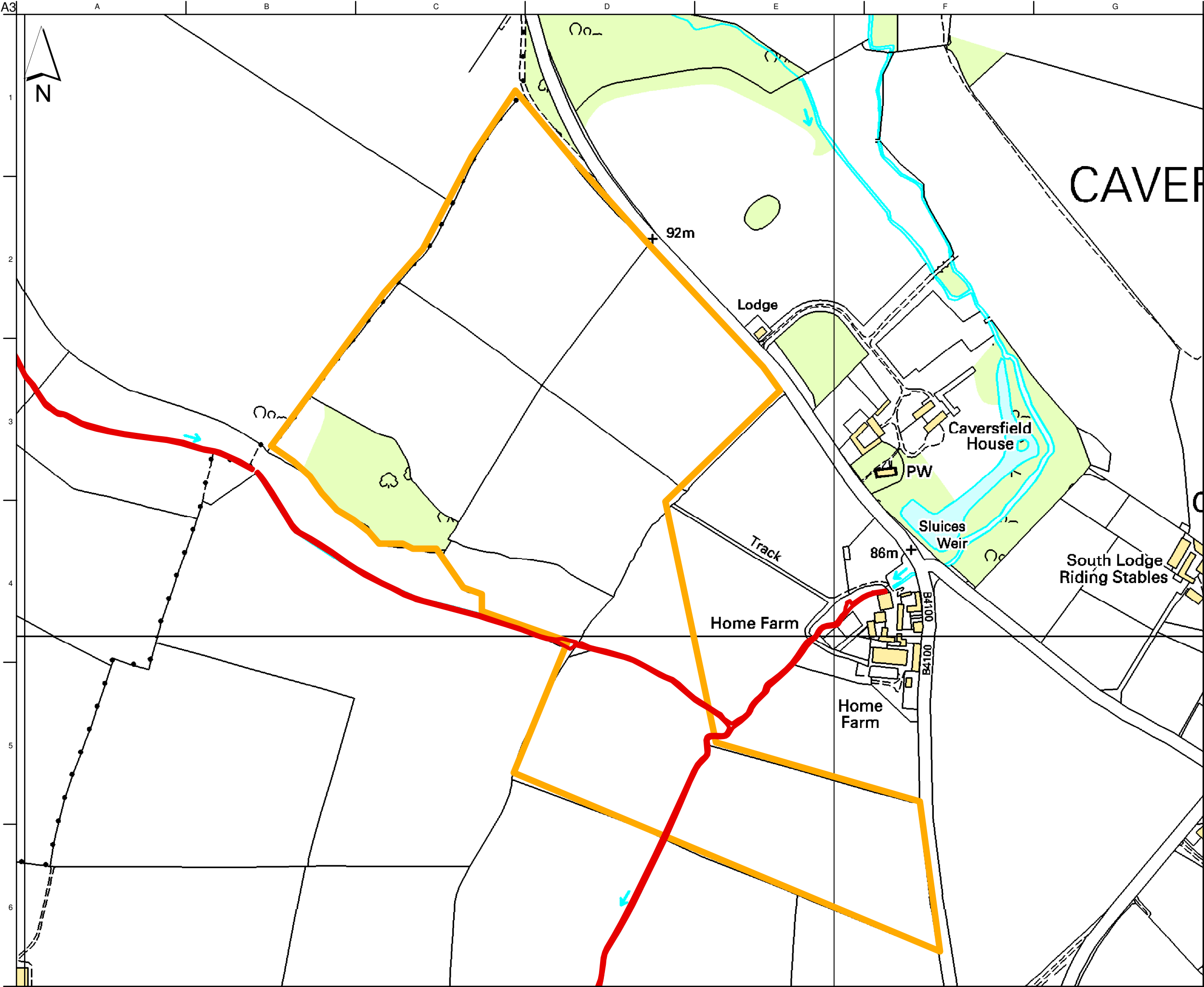
Scale at A3
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Discipline
Ecology

Drawing Status
Draft

Job No 213225-00	Drawing No Figure 1	Issue -
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A1.2 Figure 2: Crayfish Survey Areas



Legend

- Damp/Dry watercourse
- Wet watercourse
- Exemplar Site Boundary

-	24-09-2010	AE	SC	AB
Issue	Date	By	Chkd	Appd

ARUP
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Client
A2 Dominion

Job Title
Bicester Eco-town

Drawing Title
Crayfish Survey Areas

Scale at A3
1:4,500

Discipline
Ecology

Drawing Status
Draft

Job No 213225-00	Drawing No Figure 2	Issue -
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APPENDIX 7E

Arup (2010) Great Crested Newt Survey

A2 Dominion
Bicester Eco-Town
Great Crested Newt Survey

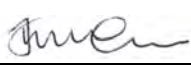


Issue | November 2010

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Document Verification

ARUP

Job title		Bicester Eco-Town		Job number 213225-00	
Document title		Great Crested Newt Survey		File reference	
Document ref		J/213000/213225-00			
Revision	Date	Filename	Bicester Exemplar Great Crested Newt Survey Report Draft 1.docx		
Draft 1	31/08/10	Description	First draft		
			Prepared by	Checked by	Approved by
		Name	James Brock	Austin Brown	Michael Bull
		Signature			
Draft 2	29/09/10	Filename	Bicester Exemplar Great Crested Newt Survey Report Draft 2.docx		
		Description	Incorporating checkers comments		
			Prepared by	Checked by	Approved by
		Name	James Brock	Austin Brown	Michael Bull
		Signature			
Issue	04/11/10	Filename	Bicester Exemplar Great Crested Newt Survey Report		
		Description	Incorporating reviewers comments		
			Prepared by	Checked by	Approved by
		Name	James Brock	Austin Brown	Michael Bull
		Signature			
		Filename			
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Appendices

Appendix A

Great Crested Newt Survey Drawing

Appendix B

Great Crested Newt Survey Recording Sheet

Appendix C

Great Crested Newt Survey Weather Data

1 Introduction

1.1 Background

Arup have been commissioned by A2 Dominion to carry out a suite of protected species and habitat surveys for the proposed Bicester Exemplar Eco-Town development in Oxfordshire. This study was undertaken to obtain information on the presence/absence of populations of Great Crested Newts that may be affected by the proposed works.

The proposed development is located within a belt of predominantly grazing farmland which lies to the north west of Bicester. (SP 577 251); the boundary of the exemplar site is shown in Appendix A. At present the proposed development area consists of a matrix of farmland with up to 10 grazed fields separated by many high quality species rich hedgerows. A distinct lowland area with an ephemeral stream runs east to west through the south and central areas of the site, and midway flows into a second ephemeral stream running north to south through the site.

At present the farmland within the development area is being managed in a relatively sensitive manner with regards to biodiversity. This includes areas set aside for badger setts, numerous bird boxes, including barn owl (*Tyto alba*) and kestrel (*Falco tinnunculus*) and the provision of bat boxes. Hedgerows have been maintained to produce a wide, continuous and mostly species rich structure and are playing an important part for biodiversity on the site.

This report details the findings of the study and provides relevant recommendations to ensure legal compliance during the works.

1.2 Ecology and Legislation

1.2.1 Generic Legislation

This report and its recommendations have been produced in accordance with relevant legislation and best practice guidance. They also take into account Planning Policy Statement 9 (PPS9) and other nature conservation policies within local and regional planning policy documents.

Legislation relating to ecological resources that are relevant to this appraisal includes the following:

- ***Wildlife and Countryside Act, 1981 (as amended).*** This Legislation still comprises the primary means of protecting wildlife in the UK and provides the mechanism by which a number of international directives are implemented in the UK.
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In addition, PPS9 states:

“Development proposals provide many good opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where necessary.”

In respect of species protection, PPS9 states:

“.....planning authorities should ensure that these species are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. Planning authorities should refuse permission where harm to the species or their habitats would result unless the need for, and benefits of, the development clearly outweigh that harm”.

1.2.2 Specific Legislation

Great Crested Newt is afforded legal protection by the provisions of The Wildlife & Countryside Act 1981 (as amended) and The Conservation (Natural Habitats etc) Regulations 1994. As such, without a licence from Natural England, it would constitute an offence to intentionally, deliberately or recklessly:

- kill, injure or capture a Great Crested Newt;
- damage, destroy or obstruct access to any breeding site or resting place of a Great Crested Newt;
- disturb a Great Crested Newt while it is occupying a structure or place that it uses for shelter or protection.

1.2.3 Eco-Town guidance

In addition to a range of legislation described above in section 1.2.1, a wealth of policy and other guidance is available to govern and direct development proposals in their

responsibilities with regard to ecology and biodiversity. These include the recently-published governmental guidance that specifically sets out how to deal with eco-town proposals (Biodiversity Positive: Eco-towns Biodiversity Worksheet, TCPA, 2009). The key points of this (referred to as the principal objectives for an Eco-town Biodiversity Strategy) are as follows:

- **Protecting and enhancing the best of biodiversity:** key habitat areas supporting characteristic and uncommon species should be sustained, where conservation is the main priority.
- **Mitigating the impact of development and securing net biodiversity gain:** the inclusion of supplementary habitat areas that fulfil other green infrastructure functions and support more widespread and common species.
- **Integrating biodiversity within the built environment:** the incorporation of a high degree of permeability for wildlife within built areas and structures.
- **Increasing biodiversity's resilience and ability to adapt to climate change:** ensuring a robust connectivity of habitats that facilitates the wider movement and migration of species.

This provides a clear steer for the design of an eco-town proposal, such that the avoidance of key habitat areas must be the priority, followed by the retention and creation of a matrix of secondary habitats both within and outside of the built area, and that all of the above are robustly connected to facilitate future wildlife movements and dispersals. Other key elements of the approach include making provisions for management, funding and accountability, to ensure success.

All eco-town proposals should include an Eco-Town Biodiversity Strategy (ETBS) to be developed in tandem with the masterplan for the site. This will provide the framework for delivering net biodiversity gain, setting out what is to be achieved and the steps that are needed to achieve it and, most importantly, how biodiversity will be increased and enhanced in advance of and alongside development, rather than at the end of the development process. It should include specific measurable targets for net biodiversity gain, reflecting local priorities for biodiversity (and contributing to national and regional targets as appropriate) and it should take account of the challenges posed by climate change.

1.2.4 Biodiversity Targets

The UK Biodiversity Action Plan (UK BAP) was produced in accordance with the 1992 UN Convention on Biological Diversity. It describes the UK's biological resources and commits a detailed plan for the protection of these resources, focusing on key habitats and species considered to be of particular significance to nature conservation within a UK context.

The conservation priorities that will be most appropriate to the Bicester eco-town proposal are those listed within the UK and (at the lower tier) Oxfordshire Biodiversity Action Plans (BAPs). These list a number of key habitats and species that form the priorities for conservation in those areas and serve as an existing framework within which the Eco-town can work and provide positive contributions to nature conservation at both local and national scales.

The Great Crested Newt is also listed as a Priority Species on the UK Biodiversity Action Plan (UKBAP). The Great Crested Newt is also included on the Biodiversity in Oxfordshire Local Biodiversity Action Plan (LBAP). The LBAP objectives and targets for the Great Crested Newt include the creation and enhancement of ponds and surrounding terrestrial habitat.

1.3 Aims and Objectives

The aim of this study is to obtain information on the presence/absence of populations of Great Crested Newts that may be affected by the proposed works, and to identify any implications that the development may have on this species.

1.4 Report Content and Layout

The methodology of the survey undertaken is detailed in Section 2; the results of the survey are summarised in Section 3 and Section 4 contains the discussion and recommendations. Appendix A contains the survey drawing. Appendix A contains the survey drawing and Appendices B & C an example of the survey recording sheets and the weather data.

2 Methodology

2.1 Desk Study

Thames Valley Environmental Records Centre, the biological recording centre for the Oxfordshire area, were contacted for past records of amphibians within 500 m of the boundary of the proposal site.

2.2 Field Survey

2.2.1 Survey Area

Where access was permitted, all ponds within 500 metres of the boundary of the proposed development were subject to assessment and survey. Four ponds were assessed for their suitability for Great Crested Newts, of which 3 were subject to full surveys as described below.

Surveys were carried out by five experienced ecologists who possess Great Crested Newt survey licences. A Survey Map showing the locations of all ponds is provided in Appendix A.

2.2.2 Survey Methodology

Surveys were conducted between 10th and 25th of May 2010.

The ponds were surveyed using four of the following techniques, where deemed suitable:

- bottle trapping;
- sweep netting;
- egg searching;
- torching; and,
- refugia search.

These techniques were used in combination to maximise the chances of detecting amphibians (particularly Great Crested Newts). Each survey visit comprised four of the five survey techniques, where a particular method was deemed suitable for certain water bodies, in accordance with standard guidance (English Nature, 2001).

2.2.3 Bottle Trapping

This method is considered to be the most effective technique for determining presence and assisting with making adult population assessments. It involves setting bottle traps, made from 2 litre plastic drinks bottles, along the pond/ditch margins. A total of 15 traps were set at the 3 waterbodies, just before dusk, and were left overnight with an air bubble in them, and retrieved soon after sunrise the following morning.

2.2.4 Sweep Netting

A net with a 2mm × 4mm mesh was used during the day to survey waterbodies at a rate of approximately 15 minutes netting per 50m of shoreline. Netting allows the detection of both adults and juveniles (all amphibians) although it is the least effective of all the methods, due in part to the disturbance it can cause. It is best used to determine presence/absence rather than population size and can be more effective for larvae in late summer, although care must be taken not to damage the gills.

2.2.5 Egg Searching

Margins of the waterbodies were searched for amphibian eggs in order to confirm the presence of breeding adults. Adult female newts lay their eggs on submerged vegetation and sometimes debris. The distinctive eggs are often laid on the leaves of aquatic plants, which are then folded over eggs and held in place with an adhesive substance. It is believed that by covering the eggs, this confers some degree of protection from predation and damage. The search for eggs was undertaken with care, trying not to damage or disturb the pond and surrounding vegetation unnecessarily.

2.2.6 Torching

After dusk, torches were used to shine light into the waterbodies during darkness to see what amphibians were present. If the water is clear, this method can be used for detecting presence, and for assessing adult population estimates. The perimeter of the pond/ditch was walked (as far as safe access permitted), and all adults observed were counted.

2.2.7 Refuge Search

Where present, natural and artificial refugia surrounding the waterbodies were also checked for the presence of newts. Artificial refugia include pieces of corrugated iron, wooden boards and roofing felt. Natural refugia include logs, debris, bark, moss, stones/rocks etc. Juveniles and adults can be detected using this method; however it is usually most effective as an additional method, to supplement other surveys such as bottle trapping. All refugia were replaced in the same position once checked, and artificial refugia were removed once the survey is completed.

2.3 Limitations

Not all waterbodies were accessible due to access restrictions placed on the survey by land owners who were unhappy with either the project or the communications that they had received from the client.

The findings presented in this report represent those at the time of survey and reporting. Variations in these conditions will take place as a result of seasonal factors, and with the general passage of time.

It should also be noted that fauna may travel over wide areas and can have large home ranges and so can be overlooked within surveys. Species which are absent at the time of survey may also return to or colonise a site anew at any future time.

3 Results and Discussion

3.1 Desk Study

Thames Valley Environmental Records Centre provided past records of Great Crested Newts from within 500 metres of the site; no records exist for this area.

3.2 Field Survey

3.2.1 Pond Suitability

Four ponds were identified through desk-study review of aerial photographs, the Phase 1 Habitat Survey (Arup, 2010), Ordnance Survey maps, and from speaking with land-owners, all ponds within 500 metres of the exemplar site were considered. All water bodies identified from OS maps and aerial photographs that lay east of the B4100 were de-selected due to a lack of willingness on the part of the land-owners to provide access to surveyors.

Each waterbody was visited to assess the suitability of the ponds for Great Crested Newts; each pond was assessed using the pond HSI scoring system (Oldham *et al*, 2000). Only 3 ponds were considered suitable for surveying. Table 2 details the reasons for deselecting ponds; the Pond numbers correlate to those shown in Fig 1 contained in Appendix A.

Table 2: Details of all ponds within 500 metres of the Proposed Development site and, where necessary, the reasons for de-selection from the Great Crested Newt survey

Pond Number	Location (NGR)	Description	HSI Scores	Survey Required?
1	SP580250	Small pond, immediately offline from the small brook to the rear (north-west) of Home Farm. Deep, open water with marginal vegetation, surrounded by scrub, trees and a small section of lawn.	0.51 (below average)	Yes
2	SP580250	Small pond, online the small brook to the rear (north-west) of Home Farm. Shallow water with dense emergent vegetation, surrounded by scrub, trees and a small section of lawn.	0.59 (below average)	Yes
3	SP576249	Small pond, online the winterbourne from Bucknell. Marginal and emergent vegetation and bound to the south by a defunct hedgerow and to the north by grazing pasture.	0.54 (below average)	This pond was entirely dried out by the 10 th May 2010 - Unsuitable
4	SP571258	Spring-fed pond within woodland adjacent to Bainton Road, east of Bucknell. Open water with marginal and emergent vegetation.	0.47 (poor)	Yes

3.2.2 Habitat Characteristics

All the waterbodies surveyed lie outside the exemplar site boundary; Pond 4 lies 500 metres north of the north-western boundary and 1 and 2 within 200 metres of the boundary adjacent to Home Farm.

Ponds 1 and 2 lie adjacent to the small winterbourne that flows from Caversfield south towards Bicester around Home Farm. Pond 1 is separated from the water course by a

wooded bank and is set in a deep depression within an area of lawn and ruderal vegetation; it has some marginal vegetation including reed sweet grass *Glyceria maxima* and lesser reedmace *Typha latifolia*. Pond 2 is immediately to the south of Pond 1 and is online the water course. It is densely vegetated with reed sweet grass with occasional water forget-me-not *Myosotis scorpioides* and water mint *Mentha aquatica*.

EP4 lies immediately north of Bainton Road, behind the hedgerow lining the lane, within an area of woodland. The pond is relatively shallow and is dominated by wavy bitter-cress *Cardamine flexuosa* with some water mint and water forget-me-not. The invasive, non-native aquatic plant New Zealand pygmy weed *Crassula helmsii* was recorded at this pond.

3.2.3 Weather Conditions

Suitable weather conditions for recording amphibians prevailed during the surveys and the weather on each of the survey visits is detailed in Appendix C.

3.2.4 Amphibian Field Records

No amphibian species were recorded from the 3 waterbodies that were surveyed within 500 metres of the exemplar site.

3.3 Discussion

The water-bodies surveyed were small, averaging 40 metres squared. All ponds have areas of open water and support a range of marginal plant species that provide egg-laying habitat. However, whilst ponds 1 and 2 lie alongside each other, pond 4 is 1.9 kilometres away; ponds are therefore considered too infrequent within the landscape to provide optimal breeding habitat for GCN. Pond 4 dried out early on in the summer therefore this pond is not suitable breeding habitat.

A large fish pond is present within the grounds of Caversfield House, and in discussions with various landowners it was ascertained that there are further ponds to the north of Caversfield House, however the current owners of this property did not agree to surveys being undertaken on their land. The fish pond is unsuitable for GCN as the fish would feed on the eggs and immature newt life stages (efts); the other ponds potentially present are at least 700 metres from ponds 1 and 2, and up to 1.8 kilometres from 4. Should there be populations of GCN within the ponds north of Caversfield then these are at such a distance from the waterbodies around the exemplar site that any population expansion at that locality would not result in the utilisation of the ponds around the exemplar site by any hypothetical population.

Several ponds are located within and around the village of Bucknell at a frequency that provides a greater suitability for GCN and therefore it is considered possible that this species would be present in this area; it is possible that, should this species be recorded present in Bucknell that a large population may create a source of GCN that could utilise the ponds around the exemplar site, however it is considered unlikely that any small population would remain viable with the limited breeding habitat available.

4 Conclusions and Recommendations

The survey results are limited due to the restrictions on accessing all water-bodies within 500 metres of the exemplar site. Whilst the survey results suggest that there are currently no breeding populations of Great Crested Newt within 500 metres of the exemplar site, this is not a complete picture of the potential amphibian populations around the site.

Of the ponds surveyed, number 3 and 4 both dried out before the end of the breeding season and are therefore unsuitable for Great Crested Newt. With only two, small potential breeding ponds within 500 metres of this site the site is considered sub-optimal for Great Crested Newts.

Given the condition and types of ponds present on site, it is considered unlikely that should a possible population adjacent to the site expand in size and range that the ponds within the exemplar site (taking into consideration fluctuating water levels of water bodies and water courses throughout the area, and habitat linkages) could support a viable population of Great Crested Newt, however they would likely support other amphibian species.

The intent of the policies with regards the design of Eco-Towns focus on the enhancement of biodiversity within the development and the net increase of biodiversity value within the site. Therefore, to increase the value of the site for amphibians, the following landscaping and habitat management options are recommended:

- a number of ponds are created within the development of varying types to provide for different amphibian species;
- all extant ponds to be protected along with at least a 10m margin of habitat that is not managed for amenity purposes;
- all ponds are to be linked by structured vegetation such as hedgerows and associated grassland margins, the latter not managed for amenity purposes;
- the hedgerows, ditches and winterbournes present throughout the site should be protected along with a suitable margin to ensure the continuity of presence of ecological corridors to permit fluctuating amphibian populations within the locality move into the site; and,
- management of the habitats within development should be sensitive to the likely presence of amphibian species within grasslands, hedgerows and woodland.

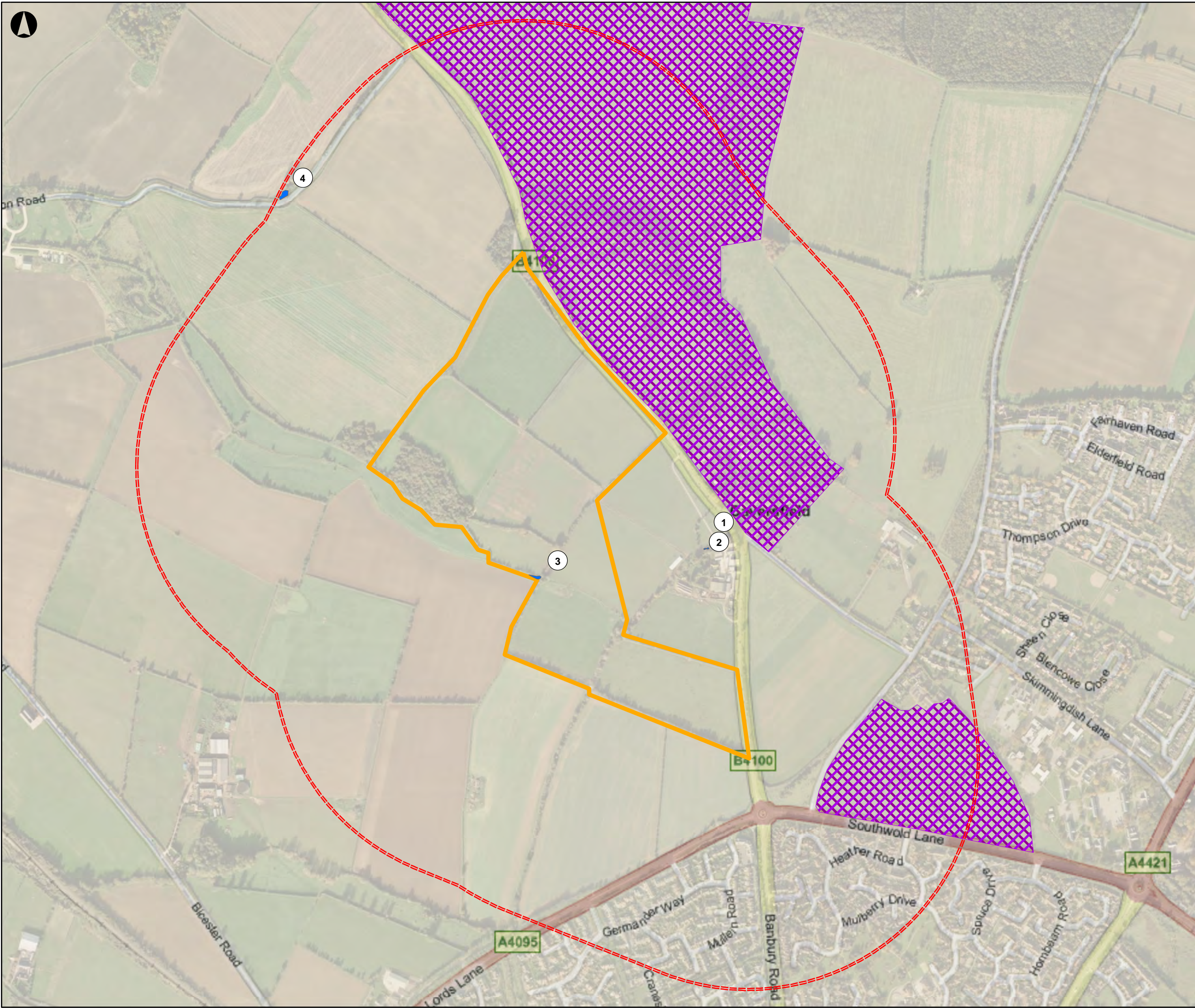
It is also recommended that further amphibian survey works are undertaken to ensure that the waterbodies within the land to the east of the B4100 are correctly and appropriately assessed for the presence of protected amphibian species.

References

- [1] Arnold, N. & Ovenden, D. (2002). A Field Guide to the Reptiles and Amphibians of Britain and Europe. Collins, London.
- [2] English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough.
- [3] Oldham, R. S.; Keeble, J.; Swan, M. J. S. & Jeffcote, M. (2000). *Evaluating the suitability of habitat for the great crested newt* (*Triturus cristatus*). The Herpetological Journal, Volume 10, Number 4.
- [4] JNCC (1998). Herpetofauna Workers' Manual. Joint Nature Conservation Committee, Peterborough.

Appendix A

Great Crested Newt Survey Drawing



Legend

Ponds Surveyed

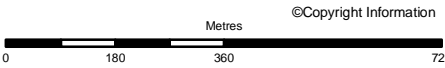
500m Buffer around Exemplar Site

No Access Permitted

Exemplar Boundary

P1	22-07-10	JB	NW	PJ
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Issue	Date	By	Chkd	Appd
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Client

A2 Dominion

Job Title

Bicester Eco-town
(Exemplar Site)

Drawing Title

Great Crested Newt Survey
Surveyed Ponds

Scale at A3

1:12,500

Drawing Status

Issue	Job No	Drawing No	Issue
	213225-00	Appendix A	P1

Appendix B

Great Crested Newt Survey Recording Sheet

Pond No:	Location:	NGR:	Recorders:	Dates:	Visit No:

Species	Netting	Egg /Spawn Search ✓/✗	Refuge	Torching	Bottle Trapping No. Set: Time in: Time Out:	Visual Day	Visual Night
Date of Survey Method:							
Survey Method Used or Feasibility (Yes/No/Reason)							
Positive Result (✓) Negative Result (✗)							
GCN MAD							
GCN FAD							
GCN Ind AD							
GCN Juv							
GCN Eft							
GCN Egg							
SN MAD							
SN FAD							
SN Ind AD							
SN Juv							
SN/PN Eft							
SN/PN Egg							
PN MAD							
PN FAD							
PN Ind AD							
AN							
CF MAD							
CF FAD							
CF Ind AD							
CF Pair (m+f)							
CF Juv							
CF Tad							
*CF Spawn		*					
CT MAD							
CT FAD							
CT Ind AD							
CT Pair (m+f)							
CT Juv							
CT Tad							
CT Spawn							
GF							

Weather

Morning – Date:

Air Temp Max:		Air Temp Min:		Water Temp:	
Sun (Circle)	None	Hazy	Rare	Occasional	Bright
	Very Hot	Hot	Warm	Mild	None
Wet Weather (circle)	None	Drizzle	Light	Moderate	Heavy
	Short Showers	Long Showers	Persistent	Hail	Snow
Wind (circle)	None	Light	Moderate	Strong	Beau/Speed:
	Rare Gusts	Occasional Gusts	Frequent Gusts	Persistent	Wind Dir:
Cloud	Type:	Cloud Cover %:		Oktas:	
		None	Low	Mid Cloud	High Cloud
Other Weather Conditions:	Frost	Icy	Fog	Lightning	Thunder

Afternoon – Date:

Air Temp Max:		Air Temp Min:		Water Temp:	
Sun (Circle)	None	Hazy	Rare	Occasional	Bright
	Very Hot	Hot	Warm	Mild	None
Wet Weather (circle)	None	Drizzle	Light	Moderate	Heavy
	Short Showers	Long Showers	Persistent	Hail	Snow
Wind (circle)	None	Light	Moderate	Strong	Beau/Speed:
	Rare Gusts	Occasional Gusts	Frequent Gusts	Persistent	Wind Dir:
Cloud	Type:	Cloud Cover %:		Oktas:	
		None	Low	Mid Cloud	High Cloud
Other Weather Conditions:	Frost	Icy	Fog	Lightning	Thunder

Night time – Date:

Air Temp Max:		Air Temp Min:		Water Temp:	
Moonlight	None	Occasional	Bright	Waxing/Waning	Full
Wet Weather (circle)	None	Drizzle	Light	Moderate	Heavy
	Short Showers	Long Showers	Persistent	Hail	Snow
Wind (circle)	None	Light	Moderate	Strong	Beau/Speed:
	Rare Gusts	Occasional Gusts	Frequent Gusts	Persistent	Wind Dir:
Cloud	Type:	Cloud Cover %:		Oktas:	
		None	Low	Mid Cloud	High Cloud
Other Weather Conditions:	Frost	Icy	Fog	Lightning	Thunder

Other Notes:

Appendix C

Great Crested Newt Survey Weather Data

C1 Weather Data

Date	10 th – 11 th May 2010		
Air Temp Max	6	Wind	Light
Air Temp Min	4	Cloud	8/8
Precipitation	None	Other	-

Date	11 th – 12 th May 2010		
Air Temp Max	6	Wind	Light
Air Temp Min	4	Cloud	4/8
Precipitation	None	Other	-

Date	17 th – 18 th May 2010		
Air Temp Max	14	Wind	Light
Air Temp Min	12	Cloud	2/8
Precipitation	None	Other	-

Date	24 th – 25 th May 2010		
Air Temp Max	20	Wind	-
Air Temp Min	18	Cloud	0/8
Precipitation	None	Other	-

APPENDIX 7F

Arup (2010) Reptile Survey

A2 Dominion
Bicester Eco-Town
Reptile Survey



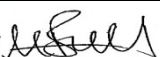
ISSUE | September 2010

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Document Verification

ARUP

Job title		Bicester Eco-Town		Job number 213225-00	
Document title		Reptile Survey		File reference	
Document ref		J/213000/213225-00			
Revision	Date	Filename			
Draft 1	31/08/10	Description	First draft		
			Prepared by	Checked by	Approved by
		Name	Austin Brown	Andrew Barron	Michael Bull
		Signature			
Issue	28/09/10	Filename	Protected species - Reptile report - issue.docx		
		Description	Minor changes		
			Prepared by	Checked by	Approved by
		Name	Austin Brown	Andrew Barron	Michael Bull
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
Issue Document Verification with Document					<input checked="" type="checkbox"/>

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1 Introduction

1.1 Background

Arup has been commissioned by A2 Dominion to carry out a suite of protected species and habitat surveys for the proposed Bicester Exemplar Eco-Town development in Oxfordshire. This report is in respect of reptiles.

The proposed development is located within a belt of predominantly grazing farmland, with associated activities such as hay making, which lies to the north west of Bicester. (SP 577 251); The red line area is shown in Figure 1. At present the proposed development area consists of a matrix of farmland with up to 10 grazed fields separated by many high quality species rich hedgerows. A distinct lowland area with an ephemeral stream runs east to west through the south and central areas of the site, and midway flows into a second ephemeral stream running north to south through the site.

At present the farmland within the development area is being managed in a relatively sensitive manner with regards to biodiversity. This includes areas set aside for badger setts, numerous bird boxes, including barn owl (*Tyto alba*) and kestrel (*Falco tinnunculus*), and the provision of bat boxes. Hedgerows have been maintained to produce a wide, continuous and mostly species rich structure and are playing an important part for biodiversity on the site.

1.2 Ecology and Legislation

1.2.1 Generic Legislation

This report and its recommendations have been produced in accordance with relevant legislation and best practice guidance. It also takes into account Planning Policy Statement 9 (PPS9) and other nature conservation policies within local and regional planning policy documents.

Legislation relating to ecological resources that are relevant to this appraisal includes the following:

- ***Wildlife and Countryside Act, 1981 (as amended)***. This Legislation still forms the primary means of protecting wildlife in the UK and provides the mechanism by which a number of international directives are implemented in the UK.
- ***Conservation (Natural Habitats &c.) Regulations, 1994***. This Act provides protection for European protected species such as bats, great crested newts and the hazel dormouse.
- ***Countryside and Rights of Way (CROW) Act, 2000***. The CROW Act strengthened the details of The Wildlife and Countryside Act in relation to Sites of Special Scientific Interest (SSSI) and threatened species.

- **Natural Environment and Rural Communities (NERC) Act, 2006.** This Act puts an obligation on public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity.
- **Planning Policy Statement 9 (PPS9).** This sets out the Government's planning policies on the protection of biodiversity and geological conservation through the planning system. The policies set out in PPS9 may also be material to decisions on individual planning applications.

The key principles of the PPS9 are stated as:

“Regional planning bodies and local planning authorities should adhere to the following key principles to ensure that the potential impacts of planning decisions on biodiversity and geological conservation are fully considered.....

(vi) the aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests. Where granting planning permission would result in significant harm to those interests, local planning authorities will need to be satisfied that the development cannot reasonably be located on any alternative sites that would result in less or no harm. In the absence of any such alternatives, local planning authorities should ensure that, before planning permission is granted, adequate mitigation measures are put in place. Where a planning decision would result in significant harm to biodiversity and geological interests which cannot be prevented or adequately mitigated against, appropriate compensation measures should be sought. If that significant harm cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused.”

In addition, PPS9 states:

“Development proposals provide many good opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where necessary.”

In respect of species protection, PPS9 states:

“.....planning authorities should ensure that these species are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. Planning authorities should refuse permission where harm to the species or their habitats would result unless the need for, and benefits of, the development clearly outweigh that harm”.

1.2.2 Species Legislation

Common lizard (*Zootoca vivipara*), grass snake (*Natrix natrix*), slow-worm (*Anguis fragilis*), and adder (*Vipera berus*) are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), in respect of Section 9(5) and part of Section 9(1). This protection was extended by the Countryside and Rights of Way (CROW) Act 2000. Under the legislation it is an offence to:

- Intentionally or deliberately kill or injure any individual of these species;
or

- Sell or attempt to sell any part of these species either alive or dead.

1.2.3 Eco-Town guidance

In addition to a range of legislation described above in section 1.2.1, a wealth of policy and other guidance is available to govern and direct development proposals in their responsibilities with regard to ecology and biodiversity. These include the recently-published governmental guidance that specifically sets out how to deal with Eco-Town proposals (Biodiversity Positive: Eco-towns Biodiversity Worksheet, TCPA, 2009). The key points of this guidance (referred to as the principal objectives for an Eco-Town Biodiversity Strategy) are as follows:

- **Protecting and enhancing the best of biodiversity:** key habitat areas supporting characteristic and uncommon species should be sustained, where conservation is the main priority.
- **Mitigating the impact of development and securing net biodiversity gain:** the inclusion of supplementary habitat areas that fulfil other green infrastructure functions and support more widespread and common species.
- **Integrating biodiversity within the built environment:** the incorporation of a high degree of permeability for wildlife within built areas and structures.
- **Increasing biodiversity's resilience and ability to adapt to climate change:** ensuring a robust connectivity of habitats that facilitates the wider movement and migration of species.

This provides a clear steer for the design of an Eco-Town proposal, such that the avoidance of key habitat areas must be the priority, followed by the retention and creation of a matrix of secondary habitats both within and outside of the built area, and that all of the above are robustly connected to facilitate future wildlife movements and dispersals. Other key elements of the approach include making provisions for management, funding and accountability, to ensure success.

All Eco-Town proposals should include an Eco-Town Biodiversity Strategy (ETBS) to be developed in tandem with the masterplan for the site. This will provide the framework for delivering net biodiversity gain, setting out what is to be achieved and the steps that are needed to achieve it and, most importantly, how biodiversity will be increased and enhanced in advance of and alongside development, rather than at the end of the development process. It should include specific measurable targets for net biodiversity gain, reflecting local priorities for biodiversity (and contributing to national and regional targets as appropriate) and it should take account of the challenges posed by climate change.

1.2.4 Biodiversity Targets

The UK Biodiversity Action Plan (UK BAP) was produced in accordance with the 1992 UN Convention on Biological Diversity. It describes the UK's biological resources and commits a detailed plan for the protection of these resources, focusing on key habitats and species considered to be of particular significance to nature conservation within a UK context.

The conservation priorities that will be most appropriate to the Bicester Eco-Town proposal are those listed within the UK and (at the lower tier) Oxfordshire Biodiversity Action Plans (BAPs). These list a number of key habitats and

species that form the priorities for conservation in those areas and serve as an existing framework within which the Eco-Town can work and provide positive contributions to nature conservation at both local and national scales.

1.3 Aims and Objectives

These surveys aim to establish the likely presence or absence of reptiles at the Exemplar site and the suitability of the site for these species regardless of presence. The report will offer mitigation and enhancements for these species where needed.

1.4 Limitations

The findings presented in this report represent those at the time of survey and reporting. Variations in these conditions will take place as a result of seasonal factors, and with the general passage of time.

It should also be noted that fauna may travel over wide areas and can have large home ranges and so can be overlooked within surveys. Species which are absent at the time of survey may also return to or colonise a site anew at any future time.

1.5 Report Content and Layout

Following this introduction, Chapter 2 covers survey methodologies, chapter 3 presents the results and discussion and chapter 4 covers conclusions and recommendations.

2 Methodology

2.1 Desk Study

A desk study was conducted within a 5km radius of the site. This used on-line research tools including Nature on the Map (www.natureonthemap.org.uk) and the National Biodiversity Network Gateway (www.nbn.org.uk). The search looked for local occurrences of reptiles. Additional data were sourced from Thames Valley Environmental Records Centre.

UK Biodiversity Action Plans (UK BAPs) and Local Biodiversity Action Plans (LBAPs) were reviewed for relevant information. These plans list priority species and habitats for the country and its regions, and are the UK government's response to fulfilling its obligations to the Convention of Biological Diversity (CBD).

2.2 Field Survey

The accepted survey method for all species of British reptile (Gent and Gibson 2000)¹ involves the use of artificial refugia, such as corrugated metal and roofing felt sheets. These sheets tend to warm up faster than the surrounding habitat and provide a relatively warm, damp and secure habitat away from many predators, thus allowing the safe assimilation of heat that these species require. Reptiles will therefore use refugia in preference to the surrounding habitat (except during high temperatures), making refugia an excellent survey tool in helping to determine the density and distribution of reptiles in an area. The effectiveness of a refugia survey is dependent on the time of year; April, May, and September being the three key months, and the weather; with overcast days with sunny spells and temperatures not higher than 19°C being ideal.

Such refugia are recommended to be checked on at least seven separate visits for presence /absence surveys (Froglife 1999)²; however, not all survey visits should be on consecutive days, as too similar weather conditions may skew survey data. Each survey visit should consist of up to three rounds; however, this is highly dependent upon the size of the site and changing weather conditions on the day. For a rough population estimate, a minimum of ten survey visits should be used.

Ten survey visits³ were made at the Exemplar site during suitable weather conditions. A total of 52 refugia were set over distinct areas on the site (Figure 2). Survey dates are shown in Table 1.

¹ Gent, A.H., & Gibson, S.D., eds. 1998. Herpetofauna workers' manual. Joint Nature Conservation Committee, Peterborough.

² FROGLIFE. 1999. Reptile Survey: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10.

³ Please note that whilst ten dedicated survey visits were made, many of the reptile mats were also checked on an ad hoc basis during the course of other protected species surveys.

3 Results and Discussion

3.1 Desk Study

Results from the local biological records centre and NBN show numerous historical grass snake (*Natrix natrix*) records within 5 km of the site, and one of common lizard (*Zootoca vivipara*) within 1km of the site. Grass snakes have been reported at Home Farm (Pers comm. farm owners).

3.2 Field Survey

Field surveys recorded two instances of common lizard within the north-east of the site and a single grass snake on the northern perimeter of the site's main wooded copse (see Figure 2 for locations). Table 1 below shows survey results. Please see Appendix 1 for full results and weather

Table 1 Reptile survey results

Reptile survey number	date undertaken	Results
Tin Set up	07 May	NA
1	17 May	No reptiles seen
2	18 May	No reptiles seen
3	20 May	No reptiles seen
4	25 May	No reptiles seen
5	26 May	2 common lizards on NE boundary of site
6	28 May	No reptiles seen
7	03 June	No reptiles seen
8	02 Sept	No reptiles seen
9	06 Sept	1 grass snake on northern boundary of main copse.
10	07 Sept	No reptiles seen

3.3 Discussion

Due to the landscape nature of the Exemplar site, that of grazing lands, there are few areas of suitable reptile habitat and hence there is only a limited potential for these species. Surveys found common lizards and a grass snake along boundary features, which is in line with what would be expected. It is likely that reptiles will use any of the hedgerow or woodland boundary features on site, particularly those receiving full sun.

4 Conclusions and Recommendations

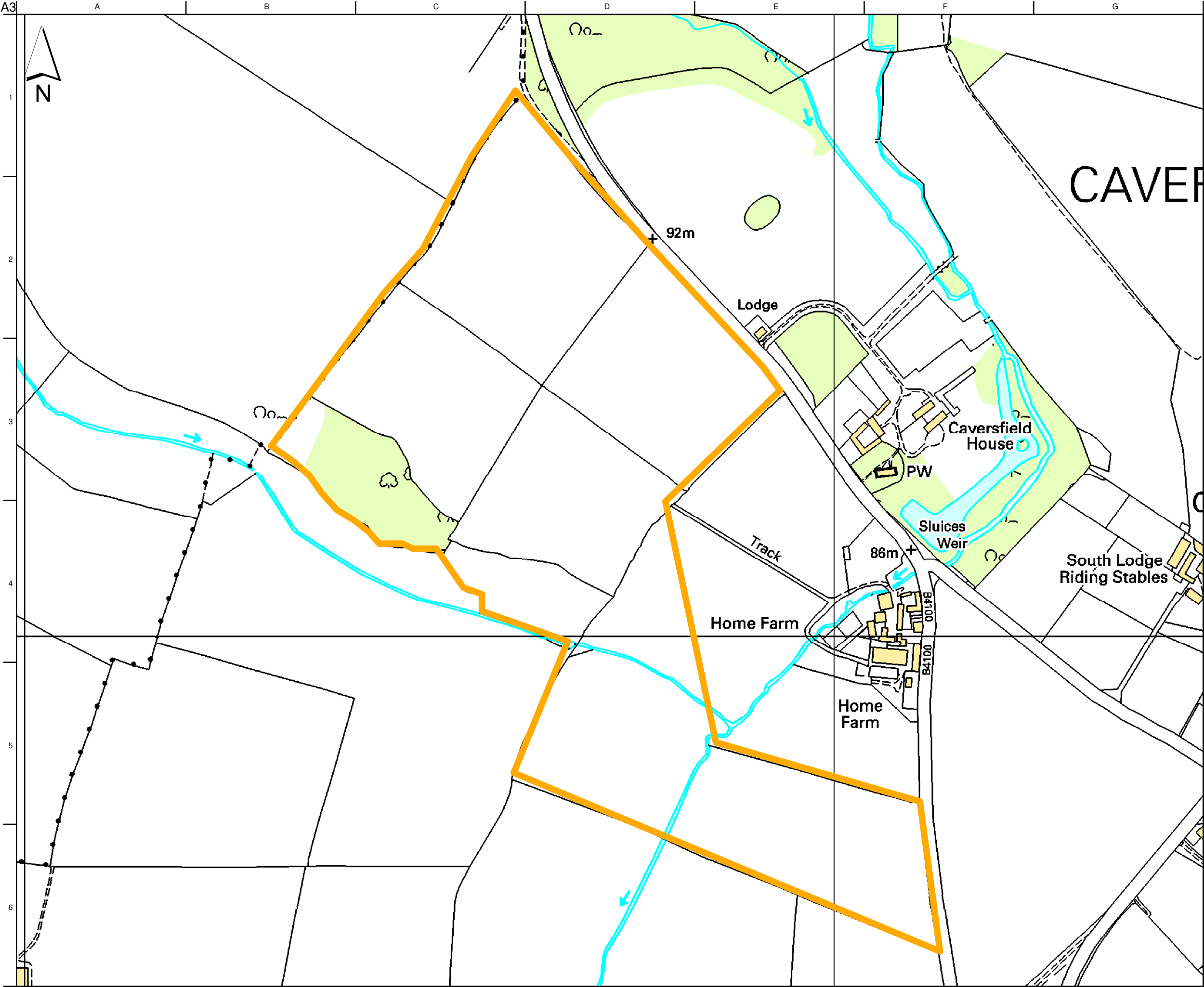
Due to the limited areas of reptile habitat that the boundary features provide (i.e. the hedgerows, woodland edges and stream banks) they become a focus for reptiles and hence become a crucial feature for them. For the reptile population on site to be maintained at a positive conservation status these boundary features should be preserved and should be enhanced with a buffer zone.

To recognise the targets and aspirations set by Eco-Town legislation, and associated governmental and borough targets, the following recommendations are made:

1. Maintain on-site connectivity as is afforded at present by the boundary features⁴.
2. All boundary features should incorporate a buffer zone at least 10 meters wide and preferably more.
3. New reptile habitat should be created, as at present the low population, due to the lack of suitable habitats, is more vulnerable to external perturbations and hence local extinctions. Any new habitats should always be connected to existing habitats so as to create a larger interconnected habitat.
4. Increase the connectivity of reptile habitats to the wider landscape; this could be achieved by planting more hedgerows and incorporating rough grassland buffer areas.

⁴ These will include hedgerows, woodland edges and stream banks.

Figures



Legend

Exemplar Site Boundary

-	22-09-2010	AE	SC	AB
Issue	Date	By	Chkd	Appd

ARUP
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Client
A2 Dominion

Job Title
Bicester Eco-town

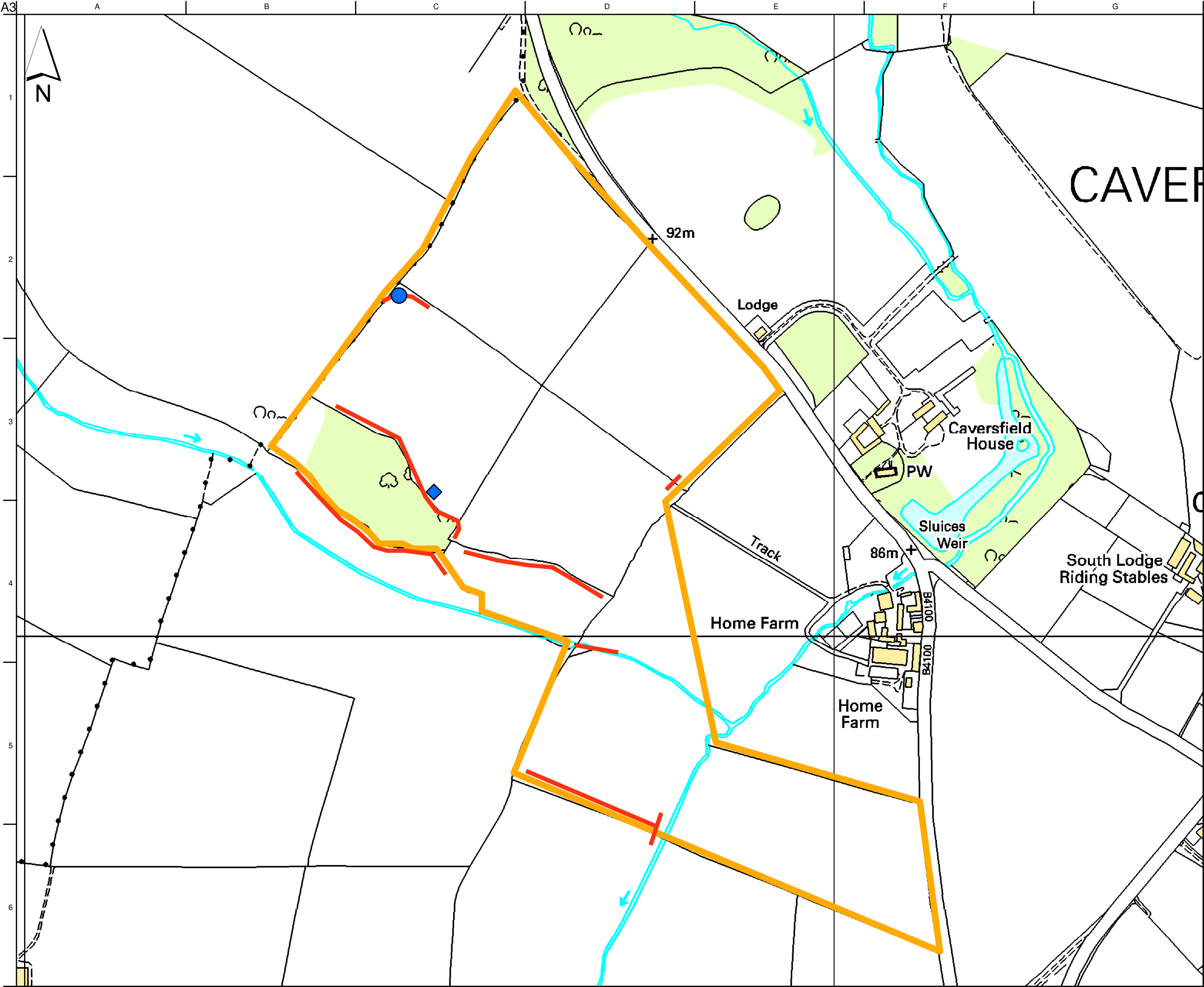
Drawing Title
Site Overview

Scale at A3
1:4,500

Discipline
Ecology

Drawing Status
Draft

Job No 213225-00	Drawing No Figure 1	Issue -
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Legend

- Common Lizard Sightings
- Grass Snake Sightings
- Reptile_Survey_Areas
- Exemplar Site Boundary

-	22-09-2010	AE	SC	AB
Issue	Date	By	Chkd	Appd

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Client
A2 Dominion

Job Title
Bicester Eco-town

Drawing Title
Reptile Survey Locations
and Sightings

Scale at A3
1:4,500

Discipline
Ecology

Drawing Status
Draft

Job No 213225-00	Drawing No Figure 2	Issue -
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A2 Survey Data

Date	Visit #		Results		Weather		
		Round #		Temp	Precipitation	Cloud	Wind
17/05/10	1	1	No reptiles observed.	12°C	None	3 oct	Light
		2	No reptiles observed	15°C	None	5 oct	Light
18/05/10	2	1	No reptiles observed	15°C	None	1oct	Light
		2	No reptiles observed	17°C	None	1oct	Light
20/05/10	3	1	No reptiles observed	16°C	None	4 oct	Moderate
		2	No reptiles observed	17°C	None	5 oct	Moderate
25/05/10	4	1	No reptiles observed	18°C	None	3 oct	Light
26/05/10	5	1	2 adult common lizards, NE site boundary	13°C	None	5 oct	Light
		2	No reptiles observed	15°C	None	5 oct	Light
28/05/10	6	1	No reptiles observed	16°C	None	4 oct	Light
		2	No reptiles observed	18°C	None	3 oct	Light
03/06/10	7	1	No reptiles observed	15°C	None	4 oct	Moderate

		2	No reptiles observed	16°C	None	5 oct	Moderate
02/09/10	8	1	No reptiles observed	17°C	None	4 oct	Still
		2	No reptiles observed	18°C	None	4 oct	Still
06/09/10	9	1	One adult grass snake (female) by main copse northern boundary	15°C	None	2 oct	Light
07/09/10	10	1	No reptiles observed	14°C	None	5 oct	Light
		2	No reptiles observed	18°C	None	3 oct	Light

APPENDIX 7G

Arup (2010) Breeding Bird Survey

A2 Dominion
Bicester Eco-town
Exemplar Site
Breeding Bird Survey

J/213000/213225-00

Issue | September 2010

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Document Verification

ARUP

Job title		Bicester Eco-Town Exemplar Site		Job number 213225-00	
Document title		Breeding Bird Survey		File reference	
Document ref		J/213000/213225-00			
Revision	Date	Filename	Breeding Bird Report.docx		
Draft 1	14/09/10	Description	First draft		
			Prepared by	Checked by	Approved by
		Name	Stephen Carter	Austin Brown	Michael Bull
		Signature			
Draft 2	28/09/10	Filename	Breeding Bird Report Draft 2.docx		
		Description	Including checkers comments		
			Prepared by	Checked by	Approved by
		Name			
		Signature			
Issue	28/09/10	Filename	Breeding Bird Report Issue.docx		
		Description	Including approvers comments		
			Prepared by	Checked by	Approved by
		Name	S.H. Carter	PK	Michael Bull
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			

Issue Document Verification with Document

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1 Introduction

1.1 Background

Arup has been commissioned by A2 Dominion to carry out a suite of protected species and habitat surveys for the proposed Bicester eco-town development in Oxfordshire. This report describes the findings of a breeding bird survey (including barn owls) and the implications for development at the Exemplar Site (hereinafter referred to as the site).

The site is located within a belt predominantly grazing farmland, with associated activities such as hay making west of Home Farm and to the north west of Bicester (SP 577 251); the red line area is shown in **Figure 1**.

The main habitat types at the site comprise re-seeded arable leys, semi-improved neutral grassland (of varying floristic diversity that relates to the extent of improvement for cattle grazing), species-rich hedgerows and re-planted broad-leaved woodland. A shelterbelt of native broad-leaved trees has recently been planted along the southern site boundary. An ephemeral stream flows west to east across the central part of the site and midway flows into a second ephemeral stream that drains north to south. A belt of marginal vegetation and tall grasses occur adjacent to the streams.

1.2 Ecology and Legislation

The recommendations provided in this report take into account government guidance associated with eco-town development, biodiversity targets, legislation and planning policies that relate to nature conservation.

1.2.1 Generic Legislation

This report and its recommendations have been produced in accordance with relevant legislation and best practice guidance. They also take into account Planning Policy Statement 9 (PPS9) and other nature conservation policies within local and regional planning policy documents.

Legislation relating to ecological resources that are relevant to this appraisal includes the following:

- ***Wildlife and Countryside Act, 1981 (as amended)***. This Legislation still comprises the primary means of protecting wildlife in the UK and provides the mechanism by which a number of international directives are implemented in the UK.
- ***Conservation (Natural Habitats &c.) Regulations, 1994***. This Act provides protection for European protected species such as bats, great crested newts and the hazel dormouse.
- ***Countryside and Rights of Way (CROW) Act, 2000***. The CROW Act strengthened the details of The Wildlife and Countryside Act in relation to Sites of Special Scientific Interest (SSSI) and threatened species.

- ***Natural Environment and Rural Communities (NERC) Act, 2006.*** This Act puts an obligation on public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity.
- ***Planning Policy Statement 9 (PPS9).*** This sets out the Government's planning policies on the protection of biodiversity and geological conservation through the planning system. The policies set out in PPS9 may also be material to decisions on individual planning applications.

The key principles of the PPS9 are stated as:

“Regional planning bodies and local planning authorities should adhere to the following key principles to ensure that the potential impacts of planning decisions on biodiversity and geological conservation are fully considered.....

(vi) the aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests. Where granting planning permission would result in significant harm to those interests, local planning authorities will need to be satisfied that the development cannot reasonably be located on any alternative sites that would result in less or no harm. In the absence of any such alternatives, local planning authorities should ensure that, before planning permission is granted, adequate mitigation measures are put in place. Where a planning decision would result in significant harm to biodiversity and geological interests which cannot be prevented or adequately mitigated against, appropriate compensation measures should be sought. If that significant harm cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused.”

In addition, PPS9 states:

“Development proposals provide many good opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where necessary.”

In respect of species protection, PPS9 states:

“.....planning authorities should ensure that these species are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. Planning authorities should refuse permission where harm to the species or their habitats would result unless the need for, and benefits of, the development clearly outweigh that harm”.

1.2.2 Species Legislation

All wild birds (defined as species which are resident or are visitors to United Kingdom, but generally not game birds) are afforded legal protection by the Wildlife and Countryside Act 1981 (as amended). As far as planning and development is concerned, it is an offence to intentionally:

- kill;
- injure or take any wild bird or to take; or,
- damage or to destroy its nest, young or eggs.

Some species, such as barn owl, are listed on Schedule 1 of the Act and protected by additional penalties because of their rarity.

The protection afforded to wild birds through the provisions of Wildlife and Countryside 1981 (as amended) was extended by the Countryside and Rights of Way (CROW) Act 2000 and it is also an offence to recklessly:

- disturb any such bird when it is building its nest or while it is in or near a nest containing dependant young; or,
- disturb the dependant young of any such bird.

1.2.3 Eco-town Guidance

In addition to a range of legislation described above in section 1.2.1, a wealth of policy and other guidance is available to govern and direct development proposals in their responsibilities with regard to ecology and biodiversity. These include the recently-published governmental guidance that specifically sets out how to deal with eco-town proposals (Biodiversity Positive: Eco-towns Biodiversity Worksheet, TCPA, 2009). The key points of this (referred to as the principal objectives for an Eco-town Biodiversity Strategy) are as follows:

- **Protecting and enhancing the best of biodiversity:** key habitat areas supporting characteristic and uncommon species should be sustained, where conservation is the main priority.
- **Mitigating the impact of development and securing net biodiversity gain:** the inclusion of supplementary habitat areas that fulfil other green infrastructure functions and support more widespread and common species.
- **Integrating biodiversity within the built environment:** the incorporation of a high degree of permeability for wildlife within built areas and structures.
- **Increasing biodiversity's resilience and ability to adapt to climate change:** ensuring a robust connectivity of habitats that facilitates the wider movement and migration of species.

This provides a clear steer for the design of an eco-town proposal, such that the avoidance of key habitat areas must be the priority, followed by the retention and creation of a matrix of secondary habitats both within and outside of the built area, and that all of the above are robustly connected to facilitate future wildlife movements and dispersals. Other key elements of the approach include making provisions for management, funding and accountability, to ensure success.

All eco-town proposals should include an ETBS to be developed in tandem with the masterplan for the site. This will provide the framework for delivering net biodiversity gain, setting out what is to be achieved and the steps that are needed to achieve it and, most importantly, how biodiversity will be increased and enhanced in advance of and alongside development, rather than at the end of the development process. It should include specific measurable targets for net biodiversity gain, reflecting local priorities for biodiversity (and contributing to national and regional targets as appropriate) and it should take account of the challenges posed by climate change.

1.2.4 Biodiversity Action Plans

The UK Biodiversity Action Plan (UK BAP) was produced in accordance with the 1992 UN Convention on Biological Diversity. It describes the UK's biological resources and commits a detailed plan for the protection of these resources, focusing on key habitats and species considered to be of particular significance to nature conservation within a UK context.

The conservation priorities that will be most appropriate to the Bicester eco-town proposal are those listed within the UK BAP and (at the lower tier) Oxfordshire Local Biodiversity Action Plan (LBAP). These list a number of key habitats and species that form the priorities for conservation in those areas and serve as an existing framework within which the eco-town can function and provide positive contributions to nature conservation at both local and national scales.

1.3 Aim and Objectives

The Phase 1 Habitat Survey (Arup, 2010) identified the need for a breeding bird survey to be undertaken at the site.

The aim of the breeding bird survey was to determine the ornithological value of the site when most species would be expected to nest.

The objectives of this study are to:

- determine the species and number of breeding territories at the site;
- evaluate the survey findings and to state whether any legally protected or otherwise notable species nest at the site;
- describe habitat features which support notable breeding bird species; and,
- recommend appropriate mitigation and compensation measures to balance the requirements of the proposed development.

1.4 Report Content and Layout

Following this introduction, Chapter 2 describes the methodology utilised to determine the presence of breeding bird territories at the site. Chapter 3 describes and discusses the breeding bird survey findings. The conclusions and recommendations are provided in Chapter 4. A list of references is provided in Chapter 5.

2 Methodology

2.1 Desk Study

Records of protected or otherwise notable birds were requested from the Thames Valley Environmental Records Centre (TVERC) within a 5km radius of the site.

Records of protected and otherwise notable bird records were also obtained from:

- Trevor Easterbrook of the Banbury Ornithological Society (BOS);
- Vince Cartwright of the Oxfordshire branch of the Barn Owl Conservation Network (BOCN); and the,
- Oxford Ornithological Society (OOS).

Reference is made to the general status of bird species recorded in Oxfordshire and listed on the OOS website (<http://www.oos.org.uk/oxonlist.php>[09/10]).

2.2 Field Survey

An ecologist experienced in recording breeding bird activity undertook three survey visits between 25th May and 21st July 2010. The survey period allowed for the detection of summer migrant arrivals to be recorded, as well as those species present year-round.

All survey work was carried out in conditions suitable for surveying breeding birds (avoiding heavy rain, fog or strong wind) and at the optimal time for recording activity (between 4 hours after sunrise and 4 hours before sunset).

The survey broadly followed standard methodology for recording breeding birds (Marchant, 1983). During each visit the surveyor slowly walked around field boundaries and habitat features within the proposal site boundary. A pair of 10x42 binoculars was used to observe signs of breeding activity. The identity and location of all birds seen or heard were recorded onto large scale maps using standard British Trust for Ornithology species codes.

The following signs of bird breeding activity were also recorded:

Possible Breeding

- observed in suitable nesting habitat
- singing male

Probable Breeding

- pair in suitable nesting habitat
- courtship and display
- visiting a probable nest site
- agitated behaviour

Confirmed Breeding

- used nest or eggshells
- recently fledged young
- adults entering or leaving an occupied nest
- adults carrying faecal sac of food for young
- nest containing eggs
- nest with young

Upon completion of the survey visits, all data was transferred to a master map, to highlight the location of an occupied nest site or centre of breeding territory. When the same species was recorded in the same vicinity on two or more visits this was taken to constitute a breeding territory.

2.3 Evaluation

The species recorded at the site were evaluated according to their nature conservation status. In this study, bird species with British breeding populations of <10,000 pairs or ≥10,000 pairs (Baker *et al*, 2006) that are included on either the UK Biodiversity Action Plan Priority Species List or the Birds of Conservation Concern (RSPB, 2009) Red or Amber List are considered notable:

- <1,000 pairs - national value;
- 1,000 to 9,999 pairs - regional value;
- 10,000 to 99,999 pairs - county value;
- 100,000 to 499,999 pairs - district value; and,
- ≥500,000 pairs - parish value.

2.4 Assumptions and Limitations

No account can be taken for the presence or absence of a bird species on any particular survey visit, since they may travel extensively throughout their breeding territory. However, professional judgement allows for the likely presence of these species to be predicted with sufficient certainty so as to not significantly limit the validity of these findings.

3 Results and Discussion

3.1 Desk Study

Data on protected or otherwise notable bird species that have been reported by TVERC, OOS or BOS within 1km of the site a boundary are summarised in **Table 1**.

Table 1: Protected or otherwise notable species nest locations recorded within 1km of the site boundary.

Species Name	Scientific Name	Most Recent Date	Location and Approximate Distance from the Site
Grey Partridge	<i>Perdix perdix</i>	2009	1km west
Kestrel	<i>Falco tinnunculus</i>	2009	On the south-western site boundary (occupied during 2010)
Kestrel	<i>Falco tinnunculus</i>	2008	500m north-west
Hobby	<i>Falco subbuteo</i>	2009	300m north-east (occupied during 2010)
Barn Owl	<i>Tyto alba</i>	2009	On the western site boundary (occupied during 2010)
Barn Owl	<i>Tyto alba</i>	2009	200m north-east (occupied during 2010)
Barn Owl	<i>Tyto alba</i>	2009	250m west
Barn Owl	<i>Tyto alba</i>	2009	700m north-west
Corn Bunting	<i>Miliaria calandra</i>	2007	1km west

3.2 Field Survey

A total of 19 bird species occupied a breeding territory and probably nested at the site. Details of the estimated number of breeding bird territories are provided in **Table 2** and their locations highlighted on **Figure 1**.

Table 2. Breeding bird territories recorded at the site.

Species Name	Scientific Name	Conservation Designation	Estimated Number of Breeding Territories	Breeding Status
Blackbird	<i>Turdus merula</i>	None	10	Confirmed
Barn Owl	<i>Tyto alba</i>	Schedule 1 and Amber List species	1	Confirmed
Blue Tit	<i>Parus caeruleus</i>	None	4	Probable
Chaffinch	<i>Fringilla coelebs</i>	None	8	Confirmed
Dunnock	<i>Prunella modularis</i>	UK BAP Priority and Amber List species	3	Probable
Goldfinch	<i>Carduelis carduelis</i>	None	1	Confirmed
Greenfinch	<i>Carduelis chloris</i>	None	2	Confirmed
Great Tit	<i>Parus major</i>	None	5	Confirmed
Jay	<i>Garrulus glandarius</i>	None	1	Probable
Kestrel	<i>Falco tinnunculus</i>	Amber List species	1	Confirmed
Long-tailed Tit	<i>Aegithalos caudatus</i>	None	1	Confirmed
Lesser Whitethroat	<i>Sylvia curruca</i>	None	1	Possible
Robin	<i>Erithacus rubecula</i>	None	9	Probable
Sparrowhawk	<i>Accipiter nisus</i>	None	1	Confirmed
Song Thrush	<i>Turdus philomelos</i>	UK BAP Priority and Red List species	1	Probable
Whitethroat	<i>Sylvia communis</i>	None	1	Probable
Wood Pigeon	<i>Columba palumbus</i>	None	16	Confirmed
Wren	<i>Troglodytes troglodytes</i>	None	6	Confirmed
Yellowhammer	<i>Emberiza citrinella</i>	UK BAP Priority and Red List species	4	Confirmed

Other bird species recorded flying over and/or not nesting at the site were: red kite, buzzard, hobby, swift, swallow, house martin, pied wagtail, magpie, jackdaw, rook, carrion crow and starling.

3.2.1 Birds of County Value

The barn owl population in Britain is estimated to be 4,000 breeding pairs and is regarded as an uncommon resident and breeding species in Oxfordshire (OOS, 2010). Barn owl is afforded special protection because it is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Barn owl is also an

Amber List species. A pair of barn owls nested in a pole box in the central part of the site. Barn owls were recorded foraging over the grasslands within and adjacent the site. The barn owl breeding territory at the site is of county value. If the site supported more than one breeding pair, then the barn owl population would be of regional value.

3.2.2 Birds of District Value

The kestrel population in Britain is estimated to be 35,400 breeding pairs. Kestrel is an Amber List species. A pair of kestrels nested in a pole box along the southern site boundary. Kestrels were recorded foraging over the grasslands/field margins within and adjacent the site. The kestrel breeding territory at the site is of county value. If the site supported more than one breeding pair, then the kestrel population would be of county value.

3.2.3 Birds of Parish Value

The yellowhammer population in Britain is estimated to be 792,000 breeding pairs. Yellowhammer is a UK BAP Priority, Oxfordshire LBAP and Red List species. Four yellowhammer breeding territory is centred on mature hedgerows near arable land. The four yellowhammer breeding territories are of parish value.

The song thrush population in Britain is estimated to be 1,030,000 breeding pairs. Song thrush is a UK BAP Priority, Oxfordshire LBAP and Red List species. A song thrush breeding territory is centred on the mature hedgerow and trees at the northern corner of the site. The song thrush breeding territory is of parish value.

The dunnoek population in Britain is estimated to be 2,060,000 breeding pairs. Dunnock is a UK BAP Priority, Oxfordshire LBAP and Amber List species. Three dunnoek breeding territories were located in dense hedgerow scrub. The three dunnoek breeding territories are of parish value.

4 Conclusions and Recommendations

Of the 19 bird species which established breeding territories at the site, five species are of nature conservation importance: barn owl, kestrel, yellowhammer, song thrush and dunnock. Of these, barn owl is the only species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and hence subject to the provisions of special protection.

In order for the proposed eco-town to be compliant with legislation, policy and best practice, impacts (such as the loss of bird nest sites, places of shelter, foraging habitat etc) to the aforementioned species should be avoided. If this is not possible, appropriate mitigation and/or compensation measures to ensure a favourable local population status of affected bird species would need to be implemented. In addition, measures to create and/or enhance bird breeding habitat to ensure biodiversity gain would also need to be implemented.

It is recommended that the following measures are implemented:

- installation of a nest box and creation of rough grassland to provide foraging habitat for barn owl;
- installation of a nest box and creation of rough grassland to provide foraging habitat for kestrels;
- creation of hedgerows with native species characteristic to the local area, such as hawthorn and blackthorn, to provide nest sites for yellowhammer, song thrush, dunnock and other birds;
- creation of rough grassland adjacent to hedgerows in order to provide suitable foraging habitat for yellowhammer and other buntings and finches;
- supplementary planting of native trees and shrubs such as ash, field maple, goat willow, blackthorn and hawthorn, to provide breeding and foraging habitat for range of bird species;
- enhancement of the watercourses and creation of shallow ponds to attract a more diverse range of bird species to the site; and,
- installation of house martin, swift, spotted flycatcher and house sparrow in suitable locations on proposed buildings.

Site clearance is best undertaken during the winter when most bird species are less sensitive to disturbance, rather than during their breeding season (which for most species is typically between March and July inclusive), where legislation exists to protect occupied nests, eggs and young.

If the site works need to occur during the bird breeding season, then it is recommended that a watching brief is carried out by a suitably experienced ecologist to ensure that bird nests are not damaged or destroyed, and therefore to confirm that the works are legally compliant. If a bird nest were found to be in use, all work will need to stop whilst measures to be taken to minimise disturbance to nesting birds and hence avoid a possible legal infringement, which also has potential to be a programme risk.

Implementation of the aforementioned recommendations would help ensure that the proposed development complies with eco-town guidance and also contribute to the UK BAP and Oxfordshire LBAP objectives.

5 References

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Figures
