

**Land North of
Gavray Drive,
Bicester,
Oxfordshire**

**Supplementary
Ecological Impact
Assessment**

Prepared by:
**The Environmental
Dimension Partnership**

On behalf of:
Gallagher Estates Ltd

October 2010

C_EDP124_25_211010_RR_rc

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Section 1 Introduction

- 1.1 Outline planning consent was granted at appeal in 2006 for a residentially-led development at land north of Gavray Drive, Bicester, Oxfordshire. The planning application was supported by a formal Environmental Impact Assessment (EIA). The Environmental Dimension Partnership (EDP) prepared the ecology Environmental Statement (ES) chapter for the EIA. An application is to be submitted shortly to Cherwell District Council (CDC) to extend the planning consent. This will be informed by a Supplementary Environmental Statement (SES). With respect to the SES, CDC has confirmed that "*the ecological survey information is now likely to be out of date and new survey work should inform the new ecological section*"¹.
- 1.2 EDP has been commissioned by Gallagher Estates Ltd to prepare an updated ecological impact assessment for the new application. Where pertinent and necessary, it updates the baseline information which informed the original ecology ES chapter and reviews and updates the original assessment of significance and consequences of the actual and potential ecological impacts arising from the proposed development at the site. The update assessment should be read particularly in conjunction with and in the context of:
- The original assessments undertaken as set out in Chapter 7 of the original *Environmental Statement* and *Environmental Statement Further Information - Ecology*;
 - The documentation submitted and considered at the appeal hearing in 2006 with respect to the original outline planning consent;
 - The information submitted and correspondence related to the discharge of conditions attached to the original outline consent, in particular the Ecology Construction Method Statement (ECMS) and Wildlife Management Plan (WMP); and
 - The information submitted and correspondence related to the Reserved Matters Application for infrastructure and drainage.
- 1.3 The updated assessment has been made with reference to the Institute of Ecology and Environmental Management's (IEEMs) *Ecological Impact Assessment Guidelines*².
- 1.4 Since receiving planning consent in 2006, significant work has been undertaken with respect to discharging planning conditions attached to the outline consent and progressing ecological matters associated with a reserved matters application for drainage and infrastructure. During the progression of these matters, discussions with ecological consultees³ and interested third parties⁴ have been ongoing.

¹ CDC Letter dated 19th April 2010

² IEEM (2006) *Ecological Impact Assessment Guidelines*

³ Natural England; Environment Agency; Oxfordshire County Council's ecologist; Buckinghamshire, Berkshire and Oxfordshire Wildlife Trust (BBOWT).

⁴ Dominic Woodfield

- 1.5 The ecological impact assessment has been made with reference to the development proposals set out in Chapter 2 and Development Framework Plan (Figure 102) of the original Environmental Statement.

Section 2 Methodology

Desk Study

- 2.1 Desk studies have previously been undertaken in 2002 and 2004. A further desk study has been completed in 2010 with records primarily collated for an area 5km radius centered on the site for international statutory designations and a 2km radius centred on the site for all other records. The key zones of influence are as per the original ecology ES chapter. In addition, records for marsh fritillary butterfly (MFB, *Euphydryas aurinia*) were requested within a 15km radius centred on the site. The available records were sought from the Thames Valley Environmental Records Centre (TVERC) and the Government's *MAGIC* website. Pertinent information from both sources has been incorporated into the relevant section of this update assessment with due acknowledgment.

Field Surveys

- 2.2 The original assessment and consent were informed by baseline information collated between 2002 and 2006. This information was set out in Chapter 7 of the original ES chapter and a Further Information submission made in December 2005 with respect to invertebrates, in particular MFB.
- 2.3 Since 2006, further field surveys have been completed which provide updated baseline information. These include the following:
- i. A walkover survey to identify any significant material changes to the habitats within the site was completed during Summer 2010. Any significant material changes were additionally noted during the course of the other detailed surveys completed during 2010. A further site visit completed on the 14th October 2010 was also undertaken prior to completing this update report;
 - ii. Update bat survey;
 - iii. Update great crested newt (*Triturus cristatus*) survey;
 - iv. Update reptile survey; and
 - v. Marsh fritillary butterfly monitoring surveys.
- 2.4 During the course of the surveys set out above, incidental records of other fauna (e.g. badger, *Meles meles*) were also recorded. No specific update surveys with respect to the following receptors were undertaken for the following reasons:
- i. Grassland: The baseline conditions with respect to this habitat were well established and discussed at length prior to the determination of the outline consent. Given the lack of ongoing management of the grassland habitat, it is considered that the only material change in this habitat type would have been a detrimental one both in extent and quality;
 - ii. Hedgerows: The baseline conditions with respect to this habitat were established at the outline consent stage. It is not considered that the

hedgerow resource has changed significantly since 2004 other than potentially detrimentally due to the ongoing expansion of scrub within the site;

- iii. Ponds: The condition of the ponds was assessed during the update great crested newt survey; and
 - iv. Water voles and otters: No works are proposed to the section of the Langford Brook within the site and therefore an update survey was not considered pertinent.
- 2.5 The methodologies of the surveys which have been undertaken are summarised below.

Bats

- 2.6 The original assessment was informed by bat surveys completed in 2002 and 2004. Since the original assessment, new survey guidance has been published⁵. As a result of the new guidance the level of survey effort has increased, particularly in the number of survey visits, the type of visit and the number of transects undertaken. An update bat survey has been completed with reference to the recently published guidelines.
- 2.7 Three evening surveys and one dawn activity survey were undertaken in June and July 2010. These surveys aimed to assess the extent to which bats use the habitats within the site. Four transect routes were devised covering all linear and other suitable features such as mature trees within the site. These transects were walked simultaneously to record levels of bat activity across the site within one evening/morning. During subsequent survey visits the direction of the transect routes were reversed or the route altered to reduce temporal bias in survey data. These routes were significantly influenced by the ability to transverse the site given the presence of dense scrub and bramble vegetation hindering access.
- 2.8 All evening and dawn activity surveys were led by a Natural England bat licence holder accompanied by three experienced assistants. Surveyors were equipped with bat detectors connected to digital recording devices to assist with species identification both in the field and through computer analysis of recorded echolocation calls.
- 2.9 Each survey commenced at sunset and continued between 2 and 3 hours afterwards. The weather conditions during the surveys were suitable for observing bat activity; which is summarised in **Appendix EDP 1**.

Great Crested Newts

- 2.10 The original assessment was informed by great crested newt surveys completed in 2002 and 2004. An update great crested newt survey has been completed with reference to standard methodology⁶ during 2010. The aims of this update survey were to re-confirm great crested newt presence/absence and, if present, to re-assess the size of the population present within these ponds.

⁵ Bat Conservation Trust (2007) *Bat Surveys - Good Practice Guidelines*

⁶ English Nature (2001) *Great Crested Newt Mitigation Guidelines*

- 2.11 Six survey visits were completed by Natural England licensed great crested newt surveyors on the following dates: 6th, 9th, 10th, 24th, 26th and 28th May 2010. The timings of the 2010 survey are broadly consistent with the 2002 (visits completed between the 9th May and 14th June 2002). On each occasion, ponds P1 to P6 (as illustrated on Figure 7.1 of the original ES) were surveyed. In 2010, the feature referred to as the "channel" in the original ES chapter had become fully encroached by dense scrub and was therefore no longer possible to survey this feature or to accurately re-confirm great crested newt presence within this feature. The survey methodologies used included: bottle trapping, torching, netting and egg searching. In addition, an opportunistic search was conducted under naturally-occurring refugia where these were present. Due to the condition of the ponds surveyed, a number of limitations to survey were experienced, summarised below:
- i. Pond P3 completely dried out after the third survey visit, such that the full suite of surveys could not be completed; and
 - ii. Turbidity and vegetation (e.g. duckweed) proved a limitation to torching in some ponds.
- 2.12 The dates, times, environmental conditions and findings recorded during each survey visit are set out in **Appendix EDP 2** of this assessment.

Reptiles

- 2.13 The original assessment was informed by reptile surveys completed in 2002 and 2004. An update reptile survey has been completed during 2010. On the 10th May, one hundred and twenty eight 0.5m² refugia (1.0m X 0.5m) made of Coralline corrugated roofing material were placed in suitable habitat across the site. The number of refugia used is broadly comparable with the number set out in 2002 (100 refugia) and 2004 (145 refugia); however the size of the refugia used during the 2010 survey was larger. In addition the amount of potentially suitable habitat present on site had been reduced as a result of areas becoming less suitable or unsuitable over time as a result of scrub encroachment. Having been allowed to "bed-in" for seven working days, the refugia were surveyed sequentially⁷ for five days from 17th to 22nd May 2010 both in the morning and in the afternoon. The dates, timings, environmental conditions experienced and findings of the survey are set out in **Appendix EDP 3** of this assessment. Generally, the weather conditions were dry and warm for the whole sampling period.

Marsh Fritillary Butterfly

- 2.14 An annual MFB monitoring survey has been completed annually since 2006 to present. To date, five monitoring survey visits have been completed. The monitoring visits involved hand searching individual potential host plants of devil's-bit scabious (*Succisa pratensis*), for the presence of larval webs. The dates and weather conditions during and prior to each visit are set out in **Appendix EDP 4** of this assessment. During the survey, particular focus was given to field F7, where the MFBs were recorded during 2005. However all fields were thoroughly searched for the presence of the host plants and larval webs.

⁷ With the exception of the 19th May due to the weather being considered too hot to survey.

Ecological Impact Assessment Methodology

- 2.15 The update assessment was made with reference to the IEM's published guidance for ecological impact assessment.

Section 3 Baseline Conditions

Designated Sites

Statutory Designations

- 3.1 Statutorily designated sites include Special Areas of Conservation (SAC), Special Protection Areas (SPA), Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs). There are no new statutory international designations located within 5km or national statutory designations within 2km of the site.
- 3.2 During the progression of the reserved matters application, Natural England's consultation response to that application identified the need to consider two statutory designations outside the 5km search zone, namely: Wendlebury Meads and Mansmoor Closes SSSI and Otmoor SSSI. The key issue raised was the need to consider whether the proposed development would alter the water quality and flow within the Langford Brook to an extent where it would have a significant material effect on the nature conservation interests of the SSSIs. A summary of the SSSI designations is summarised below:
- Wendlebury Meads and Mansmoor Closes SSSI is located approximately 5.5km to the south of the site, measured as a straight-line distance from the closest point of the site to the closest point of the SSSI. The distance for any potential hydrological connection via watercourses between the site and SSSI will be significantly greater than the straight line distance. The SSSI lies close to the River Ray. The SSSI is designated primarily for its traditionally managed unimproved neutral grassland habitat. In accordance with the condition assessment completed by Natural England on the 1st August 2010, the whole SSSI was defined being in "favourable" condition; and
 - Otmoor SSSI is located approximately 7.5km to the south of the site, measured as a straight-line distance from the closest point of the site to the closest point of the SSSI. The distance for any potential hydrological connection via watercourses to between the site and SSSI will be significantly greater than the straight line distance. The SSSI is designated primarily due to its wetland habitat which includes species rich damp grassland.

Non-statutory Designations

- 3.3 At the time of the original assessment, non-statutory designations in Oxfordshire were known as County Wildlife Sites (CWSs). They are currently known as Local Wildlife Sites (LWSs). Within the area of search, no new LWSs have been designated since the original assessment was completed.

Habitats

- 3.4 The surveys completed during 2010 have identified the following significant material changes to the habitats within the site since 2004 (the following field

numbers should be read in conjunction with Figure 7.1 - *Habitat Features* which accompanied the original assessment):

- i. Fields 13a and 13b have reverted to arable production and were apparently ploughed at some point during September. These fields were last in arable use approximately 10 years ago;
 - ii. The extent of scrub and tree seedling encroachment has increased, particularly in fields F1, F2, F4, F5, F6, F7, F10 and F11 (in particular the northern section). In addition, the width of hedge lines has further increased through scrub expansion;
 - iii. The ponds have become further encroached by scrub or have silted up. In addition, a number of ponds experienced drying out over the late Spring/Summer 2010, all of which were dry by September 2010;
 - iv. It is considered that the areas of grassland have become increasingly rank since the 2004 survey as a result of the lack of appropriate management; and
 - v. There has been localised disturbance within fields F4 and F6 as a result of works undertaken apparently to restore fence lines along the base of the railway embankment which runs along the northern boundary of the site.
- 3.5 In light of the above, it is not considered that the value attributed to the key habitats set out in the original Environmental Statement has significantly increased and it is considered likely that in some circumstances their value has decreased particularly with respect to the grassland, hedgerow and pond habitats. Their value is therefore considered unchanged.

Species

Bats

- 3.6 The following should be read in conjunction with **Bat Transect Results Plans (EDP124/52, EDP124/53, EDP124/54 and EDP124/55)** which show the distribution of bat species across the site and illustrate the transect routes walked.
- 3.7 Since the 2002 and 2004 surveys the Bat Conservation Trust (BCT) has published their *Bat Surveys Good Practice Guidelines* which has led to a requirement for an increase in bat survey effort. Consequently, the survey effort employed during the 2010 surveys has been significantly increased such that the results of the 2002 and 2004 are not directly comparable with those of the 2010 surveys.
- 3.8 During 2010, common pipistrelle (*Pipistrellus pipistrellus*) bats were the most frequently encountered species and were recorded widely across the site. Common pipistrelle bats make up approximately 73% of the total bat encounters. No distinct preference for particular sections of the site is notable from the survey results.
- 3.9 During the current survey, soprano pipistrelle (*Pipistrellus pygmaeus*) bats were also recorded across the site but not as widely as the common pipistrelle bats. Soprano pipistrelle bats recorded during the surveys make up a much smaller percentage (approximately 8%) of the total bat encounters. An apparent

preference for the western and eastern ends of the site and the site periphery is notable from the survey results.

- 3.10 With respect to *Myotis* species, due to the difficulties in identifying species of this genus to species level based on their echolocation calls no attempt is made to differentiate which species of *Myotis* bat were recorded within the site. *Myotis* sp. make up approximately 9% of the total bat encounters. A preference for the north eastern corner of the site is apparent from the survey results with a small number of encounters elsewhere where within the site. This more than likely reflects the complex/sheltered structure of the habitats on site as this species adapted to exploit cluttered environments.
- 3.11 Noctule bats make up approximately 8% of the total bat encounters during 2010 and were recorded widely across the site. Due to the height at which this species forage it is difficult to relate or attribute this activity to specific features on the ground.
- 3.12 Four encounters with long-eared bat species (*Plecotus* sp.) were recorded on the 21st and 22nd July 2010 survey visits and were all recorded in the eastern end of the site, within dense and structurally complex habitat present within this section. It is likely that this species is more widespread across the site than this as their quiet echolocation calls are often not detected by bat detectors. Long-eared sp. make up approximately 2% of the total bat encounters.
- 3.13 During the 2002 surveys it was noted that brief contact with a serotine bat was recorded and the conclusion drawn that this species could also be using the site. This species was not recorded during the 2010 surveys.
- 3.14 In terms of comparison (as far as possible given the change in methodologies over the intervening period) between the 2002, 2004 and current survey information, overall bat activity within the site was low-moderate during the 2010 which broadly compares with the results of the previous surveys, bearing in mind survey effort has increased and thus total number of bat encounters will also increase. In addition it should be noted that the habitat within the site has also altered somewhat since the previous surveys as detailed above.
- 3.15 The species encountered during the 2010 surveys are similar to those recorded during the surveys within previous years. The main differences being that serotine bat was not recorded during the 2010 surveys but had been recorded in 2002, whilst long-eared bat was recorded during the 2010 surveys but had not been recorded during the surveys in previous years. **Table 1** below summarises the species encountered during the 2002, 2004 and 2010 surveys.

	2002	2004	2010
Common pipistrelle	✓	✓	✓
Soprano pipistrelle	✓	✓	✓
<i>Myotis</i> sp.	✓	✓	✓
Noctule	✓	x	✓
Serotine	✓	x	x
Long-eared sp.	x	x	✓

Table 1 - Species encountered during the 2002, 2004 and 2010 surveys.

- 3.16 The 2002 survey makes reference to brief contact with serotine bats during one of the newt surveys (surveyors had no bat detection equipment and identification

was based on size, shape and flight patterns). In addition, during the bat surveys serotine bat was recorded, albeit, at some distance from the sampling point. The absence of serotine bat during the 2010 does not suggest a significant change as the findings of the 2002 survey suggest at best low levels of use by this species.

- 3.17 With respect to the long-eared species recorded during the dusk and dawn surveys on 21st and 22nd July 2010, the quiet echolocation calls of this species often result in this species not being recorded/recorded on fewer occasions than would be expected based on their conservation status (common and widespread⁸). It is possible that this species has a wider distribution on site than indicated by the survey results.

Great Crested Newts

- 3.18 The findings of the 2010 survey are set out in **Appendix EDP 2** and a summary of the data compared to the previous survey in 2002 and 2004 is summarised in **Table 2**, below.

Pond	Great Crested Newt			Smooth Newt			Palmate Newt		
	2002	2004	2010	2002	2004	2010	2002	2004	2010
P1	0	1	1	1	7	9	0	0	1
P2	2	1	2	1	3	1	0	0	0
P3	2	10	0	3	5	0	0	0	0
P4	3	9	5	9	12	3	0	0	0
P5	0	1	1	35	10	21	0	0	0
P6	4	3	6	8	9	18	1	0	1
Channel	4	1	N/S	4	2	N/S	?2	0	N/S

Table 2 - Comparison of the 2002, 2004 and 2010 Surveys

- 3.19 Compared with the other two sampling periods (2002 and 2004) the overall population of great crested newts seems comparable to the 2002 survey. Pond 3, found to be productive for great crested newts in previous sampling sessions has become less suitable for great crested newts in 2010 however, and dried up during surveys undertaken. In addition, Pond 5 became too shallow to adequately survey, whilst the Channel sampled in 2002 and 2004 was inaccessible in 2010 due to scrub invasion such that no survey could be undertaken.
- 3.20 The lack of activity management, particularly for the land to the east of Langford Brook, has likely increased terrestrial habitat suitability for great crested newts. However, the aquatic habitats are becoming less suitable for great crested newts.
- 3.21 In terms of the overall population, individually the ponds support a "small"⁹ population of great crested newts, however collectively the site is likely to support a population intermediate between a "small" and "medium" size class. Therefore there has not been a significant positive change in the population of great crested newts within the site during the intervening period and there is evidence that although the terrestrial habitat quality is stable, the lack of management of the aquatic habitats has resulted in their natural deterioration.

⁸ The State of the UK's Bats, National Bat Monitoring Trends 2008. Bat Conservation Trust, London

⁹ English Nature (2001) *Great Crested Newt Mitigation Guidelines*

Reptiles

- 3.22 Only common lizard (*Lacerta vivipara*) was found during the survey and, contrary to the findings of the surveys completed in 2002 and 2004, no grass snakes (*Natrix natrix*) were recorded. Of the 128 refugia checked on each occasion, the maximum count of common lizards found during any particular visit was nine and the average count was three.
- 3.23 Common lizards recorded throughout the surveys were found mostly within the field margins. They were concentrated on the eastern part of the site in Fields F1, F5, F8, F9, F11 and F12. No common lizards or other reptiles were found to the west of the Langford Brook.

Marsh Fritillary Butterfly

- 3.24 Following an apparent sighting of a MFB on the 30th May 2005, a further six visits were completed to the site between the 2nd June 2005 and 3rd July 2005. No further adult MFB's were identified during these further visits. A larval web survey completed on the 26th August 2005 identified a single larval web on a food plant located in Field F7.
- 3.25 Following on from the 2005 survey work and in advance of the appeal inquiry, further work was undertaken to inform the context of the MFB records. This information was set out in an *Environmental Statement Further Information - Ecology* submission prepared by EDP and dated 16th December 2005.
- 3.26 The five annual monitoring visits which have been completed between 2006 and 2010 have not identified any further MFB larval webs. In addition, no additional records of this species have been identified within a 15km radius of the site during the course of the update desk study. It is therefore considered that this species is no longer present within the site. In addition, the habitat quality for this species within the site is in decline, particularly in light of scrub encroachment as a result of the lack of any habitat management on site.

Other Species Matters

- 3.27 The update desk study completed during 2010 has identified the following pertinent records having been made since the original assessment in 2004:
- Several records of brown hairstreak butterfly (*Thecla betulae*) recorded from the site between 2005 and 2008; and
 - Records of black hairstreak butterfly (*Satyrrium pruni*) recorded from the site between 2005 and 2006;
- 3.28 The presence of brown hairstreak was known at the time of determining the outline planning application and both species have been subsequently considered with respect to the measures and prescriptions set out in both the Ecology Construction Method Statement (ECMS) and Wildlife Management Plan (WMP).

Section 4 Potential Impacts

- 4.1 The update assessment of potential impacts has been made with reference to the development proposals set out in Chapter 2 and Development Framework Plan (Figure 102) of the original Environmental Statement.
- 4.2 Since the original assessment was completed, a significant amount of further work has been undertaken to develop and provide detail to previously outline proposals in order to discharge conditions attached to the outline consent and to inform a Reserved Matters Application which has been submitted in relation to drainage and infrastructure.
- 4.3 Since receipt of outline planning consent, a full and detailed Ecology Construction Method Statement (ECMS) and Wildlife Management Plan (WMP) have been prepared in liaison with the key-ecological consultees. Given that such detailed matters have been progressed, it is considered that increased confidence can be gained in relation to the significance or otherwise of potential and actual impacts which may arise as a result of the construction and operation of the proposed development.

Designated Sites

Statutory Designations

- 4.4 The original assessment did not anticipate that the proposed development would have any potential impacts on Ardley Cutting and Quarry SSSI, Ancorr Bridge Meadows SSSI or Stratton Audley Quarries SSSI. It is considered that this assessment is still valid.
- 4.5 During the progression of the reserved matters application, Natural England's consultation response to that application identified the need to consider two statutory designations outside the 5km search zone, namely: Wendlebury Meadows and Mansmoor Closes SSSI and Otmoor SSSI. The key issue raised was the need to consider whether the proposed development would alter the water quality and flow within the Langford Brook to an extent where it would have a significant material effect on the nature conservation interests of the SSSIs.
- 4.6 As a result of the further information provided in relation to the RMA, it is not considered that the proposed development will result in any significant changes in water quality and flow within Langford Brook subject to the detailed drainage proposals being approved as proposed and the nature of any imported fill material is controlled through condition. It is therefore not considered that the proposed development will significantly alter the water quality and flow within Langford Brook to an extent where it would have a significant material effect on the nature conservation interests of the SSSIs.

Non-statutory Designations

- 4.7 The original assessment did not anticipate that the proposed development would have any potential impacts on Graven Hill LWS, Meadow South West of Launton CWS or Meadows North West of Blackthorn Hill. It is considered that this assessment is still valid.

4.8 With respect to the Gavray Drive Meadows LWS, the following impacts were considered within the original assessment:

- Loss of habitat;
- Fragmentation of habitat;
- Disturbance of habitat;
- Smothering of vegetation (within the LWS) by construction dust;
- Increased recreational pressure; and
- Loss of grassland due to natural processes.

4.9 It is considered that the original assessments completed in relation to these actual and potential impacts remain valid, however as a result of the detailed work completed since the original outline consent has been achieved there is greater certainty and clarity that these impacts can be addressed through avoidance, mitigation, compensation and enhancement measures which have, by this stage, been set out in detail in the ECMS and EMP. The impact on the LWS as a result of the outline planning proposals were also given significant scrutiny during the determination of the original outline planning application at appeal.

4.10 During the progression of the RMA, matters were raised in relation to the hydrological impact of those detailed proposals on the retained LWS. These matters are currently being addressed through work to prepare a schematic model and water budget. The findings of this work will then inform the scope, location and design of sustainable urban drainage feature(s) which can then be incorporated into the detailed design of the proposals to avoid any significant changes in the hydrological conditions within the retained LWS as a result of the implementation of the proposals.

Habitats

4.11 It is considered that the original assessments completed in relation to actual and potential impacts on grassland (other than that covered by the retained LWS), hedgerows and trees; and ponds, remain valid, however as a result of the detailed work completed since the original outline consent has been achieved there is greater certainty and clarity that these impacts can be addressed through avoidance, mitigation, compensation and enhancement measures which have, by this stage, been set out in detail in the ECMS and EMP. In addition, it is considered that the implementation of measures set out in the EMP in particular will assist in reversing the continued gradual adverse changes to certain habitats such as the hedgerows and ponds.

Species

Badgers, Water Voles and Otters

4.12 The original assessment did not anticipate that the proposed development would have any potential impacts these species. It is considered that this assessment is still valid.

Reptiles

4.13 It is considered that the original assessments completed in relation to actual and potential impacts on reptiles remain valid, irrespective of the fact that grass snake

was not observed during the most recent update survey. Detailed measures for reptiles to address these impacts and to ensure their continued presence within the site have been set out in the ECMS and WMP, including a detailed strategy for the capture and translocation of reptiles from the development footprint in advance of the construction works.

Amphibians

- 4.14 It is considered that the original assessments completed in relation to actual and potential impacts on amphibians, in particular great crested newts, remain valid. Detailed measures for amphibians to address these impacts and to ensure their continued presence within the site have been set out in the ECMS and WMP, including a detailed method statement which Natural England confirmed was technically sufficient in 2007.

Bats

- 4.15 It is considered that the original assessments completed in relation to actual and potential impacts on bats remain valid. Detailed measures for bats to address these impacts and to ensure their continued presence within the site have been set out in the ECMS and WMP. In relation to trees, a detailed Arboricultural Implications Assessment (AIA) and Arboricultural Method Statement (AMS) have also been produced in the relation to the recent RMA.

Birds

- 4.16 It is considered that the original assessments completed in relation to actual and potential impacts on birds remain valid. Detailed measures for birds to address these impacts have been set out in the ECMS and WMP.

Marsh Fritillary Butterfly

- 4.17 The impact assessment of the outline proposals on this species is no longer considered valid given that this species has not been recorded at this site since 2005. It is therefore not considered that the avoidance, mitigation, compensation and enhancement measures proposed in the original assessment specifically for this species, as set out in the *Environmental Statement Further Information - Ecology*, are necessary.

Other Invertebrates

- 4.18 It is considered that the original assessments completed in relation to actual and potential impacts on invertebrates, other than MFB, remain valid. Detailed measures for invertebrates have been set out in the ECMS and WMP.

Residual Impacts

- 4.19 Given that significant detailed work has been completed since the original outline planning consent was granted, there is increased confidence that the residual impacts of the proposed development on the designations, habitats and species set out above will either be not adversely significant or beneficial.

Section 5 Conclusions

- 5.1 EDP was commissioned by Gallagher Estates to prepare an update ecological impact assessment for an application to seek an extension to the existing outline planning consent which was achieved in 2006.
- 5.2 In order to inform the update ecological assessment and were pertinent, EDP has updated certain elements of the baseline data during 2010, namely: desk study, walkover survey, bat survey, reptile survey and amphibian survey. In addition, it draws upon five years of annual monitoring data collated with respect to Marsh Fritillary Butterfly (MFB).
- 5.3 Based on the updated baseline information, it is concluded that with respect to designated sites, habitats and most species, the original assessment remains valid. In addition, there is an increased certainty, as a result of the additional survey work undertaken in the intervening period, that significant adverse impacts can be avoided, mitigated and/or compensated as necessary and that enhancement measures can be delivered in the long-term. The only element where the assessment is no longer valid relates to MFB and, given that this species has not been recorded present within the site for over five years, the assessment and measures proposed for this species are no longer considered necessary.
- 5.4 Given the measures proposed and the survey work concluded in the interim period since outline consent was achieved, the assessment is confident that no significant adverse residual impacts will arise but that the proposals are still capable of delivering beneficial impacts relating to the biodiversity value of the site.

Appendix EDP 1

Dates, Times and Environmental Conditions during 2010 Bat Survey

	Temp (°C)	Cloud Cover (%)	Precipitation	Wind (kmph)	Lux Level
Evening Activity Transect 24th June 2010					
Start	23.0	70	None	8	248
Mid	20.0	80	None	0	0
Finish	16.1	80	None	3	0
Evening Activity Transect 8th July 2010					
Start	21.4	70	None	0	158
Mid	18.1	50	None	0	0
Finish	15.4	0	None	0	0
Evening Activity Transect 21st July 2010					
Start	21.0	40	None	>1.8	-
Mid	19.0	40	Light	>1.6	-
Finish	18.0	40	None	>1.7	-
Dawn Activity Transect 22nd July 2010					
Start	17.0	40	None	>1.6	-
Mid	16.5	40	None	>1.8	-
Finish	16.0	40	None	>1.7	-

Weather Conditions for the Evening and Dawn Activity Surveys

Appendix EDP 2
Dates, Times and Environmental Conditions during
2010 Great Crested Newt Survey

Date: 6th May 2010		Pond 1	Pond 2	Pond 3	Pond 4	Pond 5	Pond 6
Start Time (Evening)		18.35	18.45	19.35	20.42	20.07	19.20
Finish Time (Morning)		09.30	10.15	10.35	10.40	10.53	10.20
Air Temp (°C)	Min.	10	10	8	10	9	10
	Max.	-	-	-	-	-	-
Water Temp (°C)	Min.	9	10	Dried up	10	10	10
	Max	10	-	10	-	-	-
Water pH		6.0	6.0	6.0	6.0	6.0	6.0
Turbidity (Rate 0-5)		5	1 but tea coloured	4	4	2	5
Vegetation Cover (%)		60%	80%	70%	30%	40%	80%
Torching Results (Include information on all amphibian sp.)		0 Very shallow - need to remove vegetation	0 Murky	0	0 Lots of Lemna	0 Shallow	0
Trapping Results (Include information on all amphibian sp.)		0	Female GCN x1	0	Female smooth x 2 Male smooth x 1	0	0
No. Traps out		9	5	7	5	11	9
No. Traps in		9	5	7	5	11	9
Netting Results (Include information on all amphibian sp.)		1 male smooth newt 1 female palmate newt 2 female smooth newts	0	0	0	0 Shallow	0 Shallow
Eggs/Larvae Found? (Include information on all amphibian sp.)		0	0	0	0	0	0
Other Notes (Fish, fowl and other pertinent info)							Frogs and tadpoles

Date: 10th May 2010

Pond Reference		Pond 1	Pond 2	Pond 3	Pond 4	Pond 5	Pond 6
Start Time (Evening)		19:00	17:45	18:10	18:45	18:25	17:30
Finish Time (Morning)		10:00	10:20	10:35	11:00	11:25	11:45
Air Temp (°C)	pm	12	12	12	12	10	14
	am	19	12	12	14	15.5	13.5
Water Temp (°C)	pm	12	9	9	10	12	13
	am	9.5	8	10	10	11	12.5
Water pH		As in visit 1	As in visit 1	As in visit 1	As in visit 1	As in visit 1	As in visit 1
Turbidity (Rate 0-5)		As in visit 1	As in visit 1	As in visit 1	As in visit 1	As in visit 1	As in visit 1
Vegetation Cover (%)		As in visit 1	As in visit 1	As in visit 1	As in visit 1	As in visit 1	As in visit 1
Torching Results (Include information on all amphibian sp.)		None	None	None	None	None	None
Trapping Results (Include information on all amphibian sp.)		GCN female x1 Smooth male x2 Smooth female x2	None	None	Smooth female x1	GCN female x1 Smooth male x18 Smooth female x3	GCN male x3 GCN female x2 Smooth male x8
No. Traps out		9	10	8	6	13	8
No. Traps in		9	10	8	6	13	8
Netting Results (Include information on all amphibian sp.)		N/A	N/A	N/A	N/A	N/A	N/A
Eggs/Larvae Found? (Include information on all amphibian sp.)		None	None	None	None	None	None
Other Notes (Fish, fowl and other pertinent info)							

Date: 26th May 2010						
Pond Reference	Pond 1	Pond 2	Pond 3	Pond 4	Pond 5 (ditch)	Pond 6
Start Time (Evening)	22:45	23:15	-	22:15	21:45	21:15
Finish Time (Morning)	10:50	11:10	-	10:20	10:00	09:30
Air Temp (°C)	12 am	12 16	-	12 13.5	12 16	12 11
Water Temp (°C)	- 15	- 12.5	-	- 14.5	- 14.5	- 12.5
Water pH	As in visit 1	As in visit 1	-	As in visit 1	As in visit 1	As in visit 1
Turbidity (Rate 0-5)	As in visit 1	As in visit 1	-	As in visit 1	As in visit 1	As in visit 1
Vegetation Cover (%)	As in visit 1	As in visit 1	-	As in visit 1	As in visit 1	As in visit 1
Torching Results (Include information on all amphibian sp.)	None	None	DRY	None	None	None
Trapping Results (Include information on all amphibian sp.)	None	GCN female x2 Smooth female x1	DRY	GCN female x1	None	GCN male x1 GCN female x2 Smooth male x12 Smooth female x6
No. Traps out	7	9	0	6	12	11
No. Traps in	7	9	0	6	12	11
Netting Results (Include information on all amphibian sp.)	N/A	N/A	N/A	N/A	N/A	N/A
Eggs/Larvae Found? (Include information on all amphibian sp.)	None	None	N/A	None	None	None
Other Notes (Fish, fowl and other pertinent info)	Number of bottle traps reduced as water too shallow.				Black anaerobic sediments.	

Date: 28th May 2010						
Pond Reference	Pond 1	Pond 2	Pond 3	Pond 4	Pond 5 (ditch)	Pond 6
Start Time (Evening)	22:45	23:15	-	22:15	21:45	21:15
Finish Time (Morning)	10:50	11:10	-	10:20	10:00	09:30
Air Temp (°C)	12	12	-	12	12	12
Water Temp (°C)	13	13	-	14	-	12.5
Water pH	12	10.5	-	-	-	11
Turbidity (Rate 0-5)	5	2-3	2	0-1	2	4
Vegetation Cover (%)						
Torching Results (Include information on all amphibian sp.)	None	GCN female x1	DRY	Smooth male x1 Smooth/palmate female x1	None	Smooth/palmate female x1
Trapping Results (Include information on all amphibian sp.)	None	None	DRY	GCN male x1 Smooth male x1 Smooth female x1	None	GCN male x1 Smooth male x3 Palmate female x1
No. Traps out	7	10	0	6	12	10
No. Traps in	7	10	0	6	12	10
Netting Results (Include information on all amphibian sp.)	N/A	N/A	N/A	N/A	N/A	N/A
Eggs/Larvae Found? (Include information on all amphibian sp.)	None	None	N/A	None	None	None
Other Notes (Fish, fowl and other pertinent info)						

Appendix EDP 3

Dates, Times and Environmental Conditions during 2010 Reptile Survey

	Day 1	Day 2	Day 3	Day 4	Day 5
Start time AM	09.30	09.30	12.30	07.30	08.15
End time AM	12.15	12.15	14.45	10.00	10.45
Start time PM	12.30	12.30	16.15	10.15	12.00
End time PM	15.15	15.30	18.00	12.45	14.30
Temperature range air °C AM	17.0-21.6	17.3-22.7	22.5-26.5	16.5-24.3	18.2-26.6
Temperature range air °C PM	15.7-21.7	18.8-21.2	21.3-23.8	25.4-28.8	24.7-27.8
Temperature range refugia °C AM	No data	No data	20.7-27.8	15.5-24.3	16.0-28.1
Temperature range refugia °C PM	No data	No data	21.5-24.2	21.0-34.4	31.3-47.8

Appendix EDP 4

Dates and Weather Conditions during Marsh Fritillary Butterfly
Annual Monitoring Surveys

Year	Date	Summary of weather conditions
2006	11 th & 12 th September	Warm, dry and sunny, air temperature 20°C
2007	11 th & 12 th September	Warm, dry and sunny, air temperature 18-21°C
2008	17 th September	Warm, humid and overcast with some light rain, air temperature 18°C
2009	22 nd September	Warm, dry and overcast but bright, air temperature 19°C
2010	27 th September	Mild, damp and overcast with some light drizzle, air temperature 12°C

Plans

Bat Transect Results 24th June 2010
(EDP124/52 13 October 2010 GS/JM)

Bat Transect Results 8th July 2010
(EDP124/53 13 October 2010 GS/JM)

Bat Transect Results 21st July 2010
(EDP124/54 13 October 2010 GS/JM)

Bat Transect Results 22nd July 2010
(EDP124/55 13 October 2010 GS/JM)

Site boundary



Bats Recorded (heard not seen)

- Common pipistrelle
- Soprano pipistrelle
- Myotis Sp.
- Noctule



Bat flight lines (one chevron per bat)

- Common pipistrelle
- Soprano pipistrelle
- Myotis Sp.

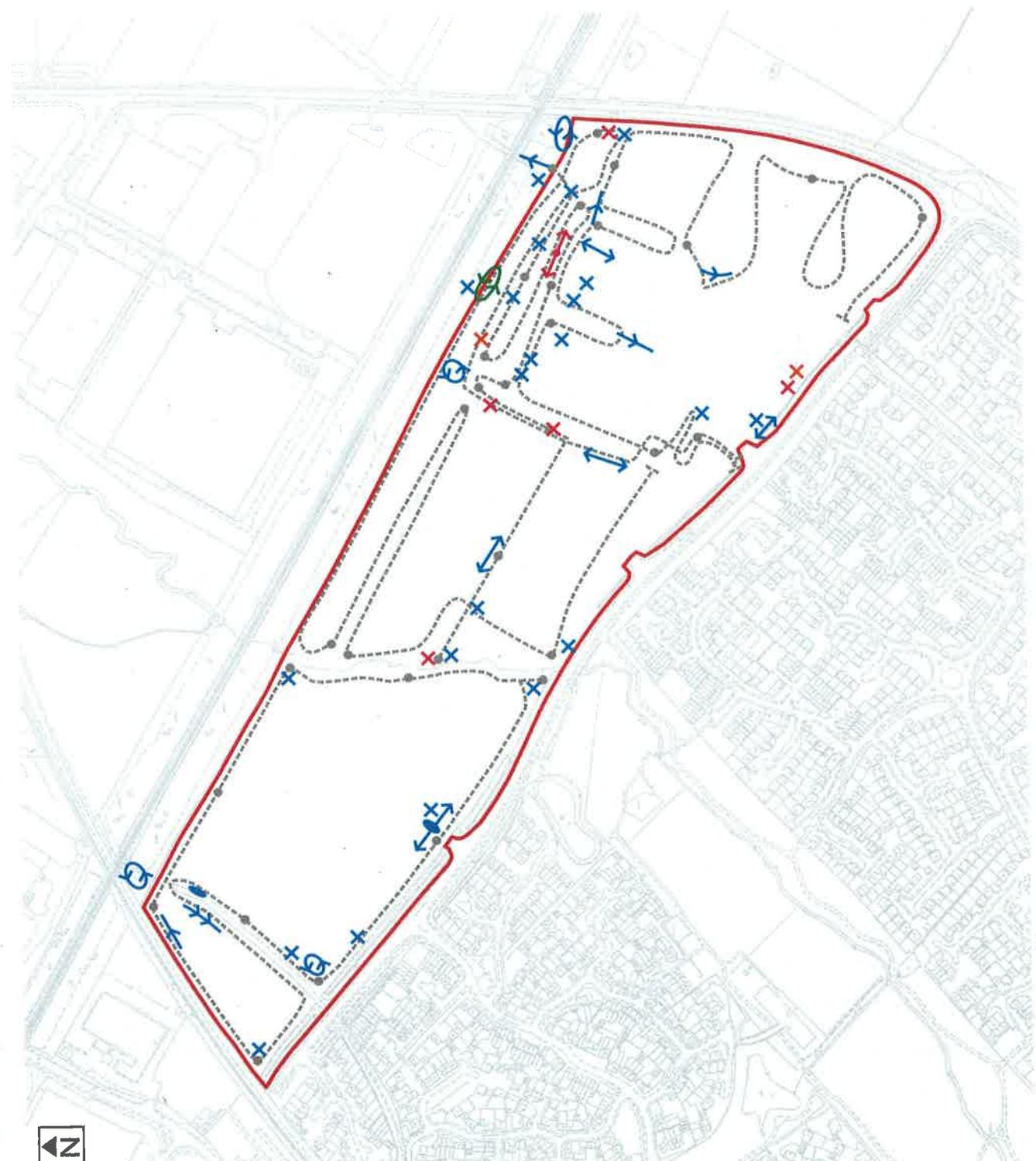


Bat foraging

- Common pipistrelle
- Myotis Sp.



Transect route



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GALLAGHER ESTATES LTD

project title

**LAND NORTH OF GAVRAY DRIVE,
BICESTER, OXFORDSHIRE**

drawing title

**BAT TRANSECT RESULTS
24TH JUNE 2010**

date	13 OCTOBER 2010
scale	SEE SCALE BAR
drawing number	EDP 124/52
drawn by	GS
checked	JM

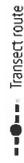


Bats Recorded (heard not seen)

- ✕ Common pipistrelle
- ✕ Soprano pipistrelle
- ✕ Pipistrelle Sp.
- ✕ Myotis Sp.
- ✕ Noctule

Bat flight lines (one chevron per bar)

- Common pipistrelle
- Soprano pipistrelle
- Pipistrelle Sp.
- Myotis Sp.
- Noctule



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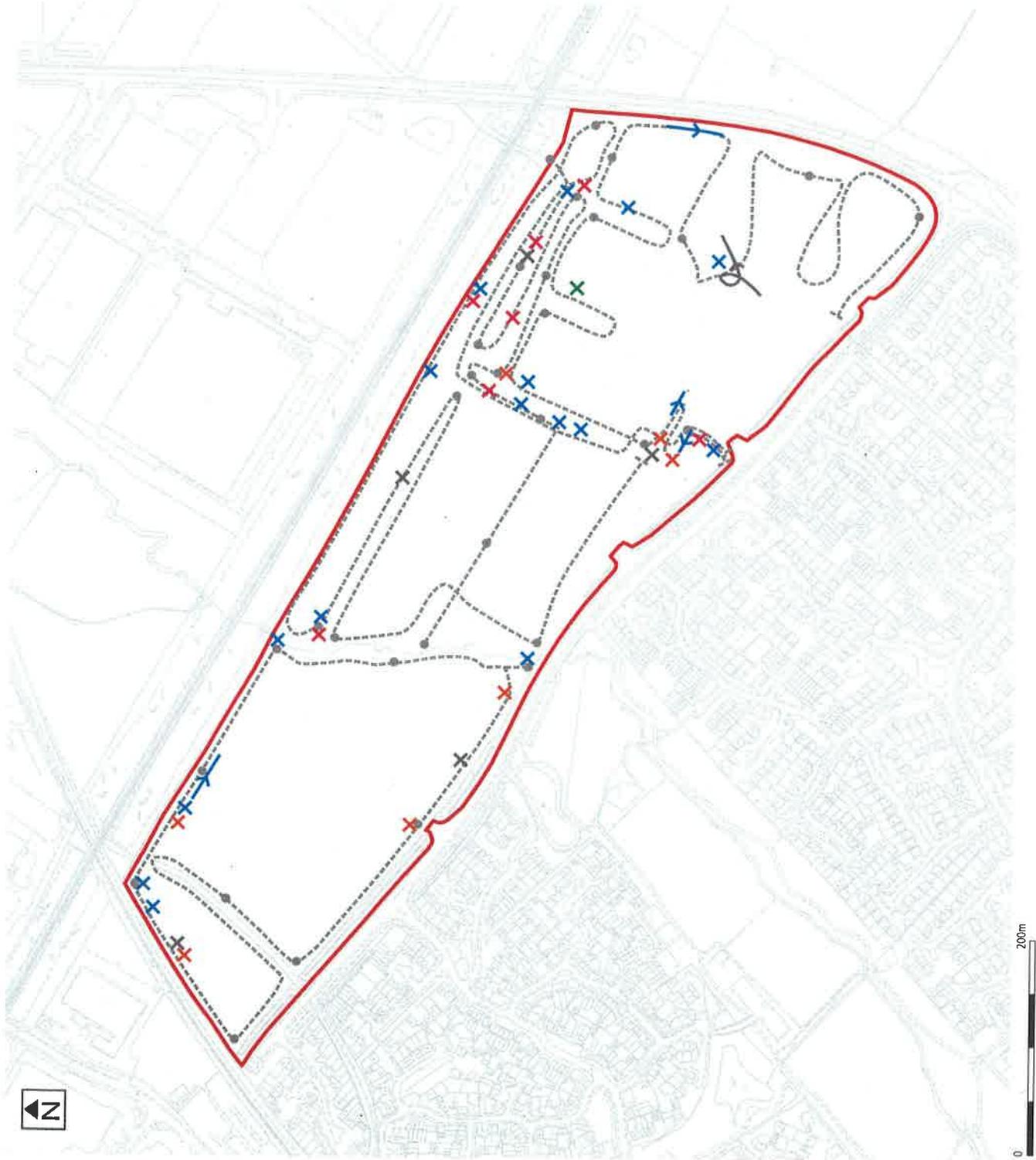
project title

**LAND NORTH OF GAVRAY DRIVE,
BICESTER, OXFORDSHIRE**

drawing title

**BAT TRANSECT RESULTS
8TH JULY 2010**

date	13 OCTOBER 2010
scale	SEE SCALE BAR
drawing number	EDP 124/53
drawn by	GS
checked	JM



Site boundary



Bats recorded (heard not seen)

- Common pipistrelle (blue X)
- Soprano pipistrelle (green X)
- Myotis Sp. (red X)
- Noctule (orange X)
- Long-eared Sp. (black X)

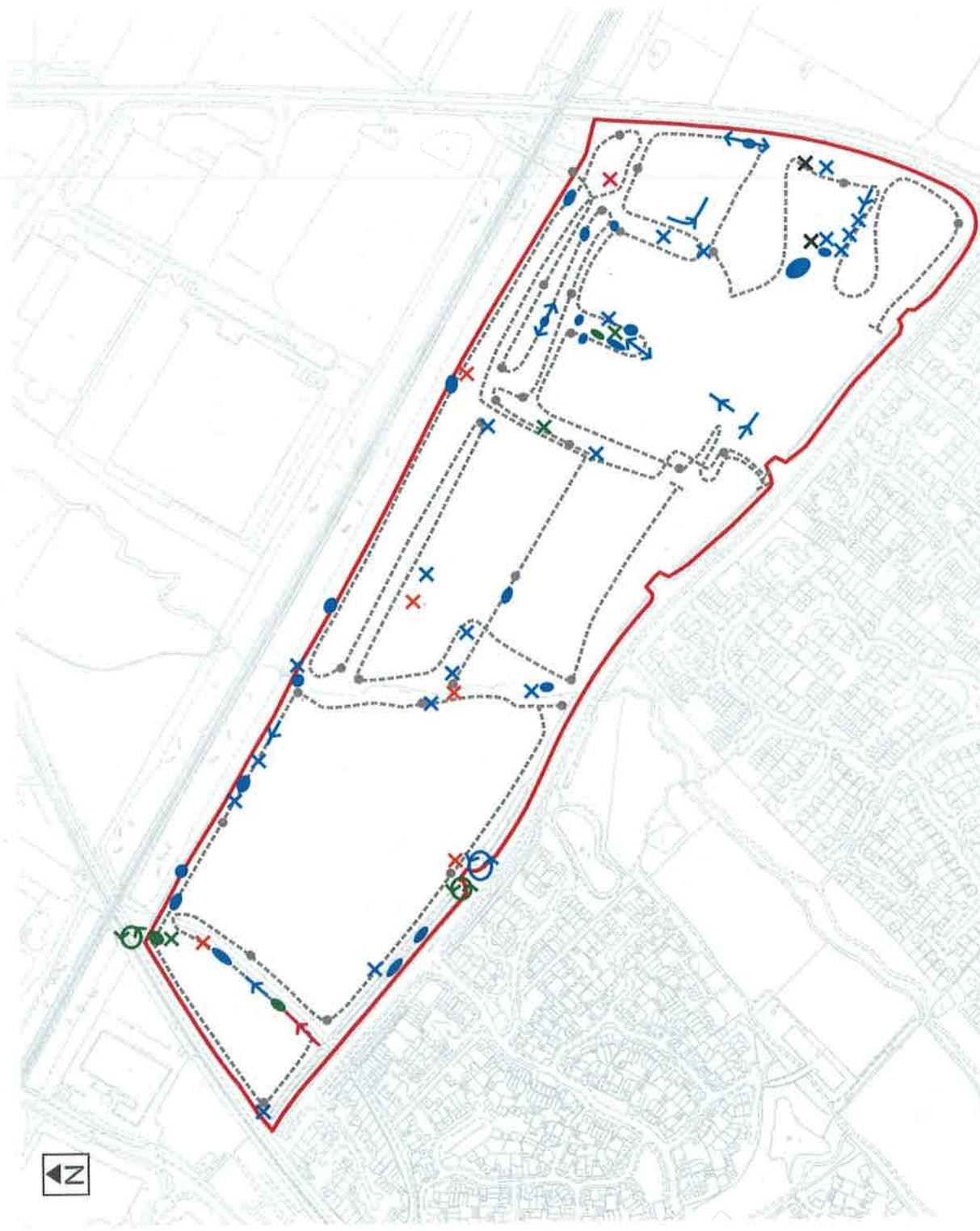
Bat flight lines (one chevron per bat)

- Common pipistrelle (blue chevron)
- Soprano pipistrelle (green chevron)
- Myotis Sp. (red chevron)

Bat foraging

- Common pipistrelle (blue circle)
- Soprano pipistrelle (green circle)

Transect route (dashed line with dots)



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project title

**LAND NORTH OF GAVRAY DRIVE,
 BICESTER, OXFORDSHIRE**

drawing title

**BAT TRANSECT RESULTS
 21ST JULY 2010**

date	13 OCTOBER, 2010
scale	SEE SCALE BAR
drawing number	EDP 124/54
drawn by	GS
checked	JM



Site boundary

Bats Recorded (heard not seen)

- Common pipistrelle (blue X)
- Soprano pipistrelle (green X)
- Myotis Sp. (red X)
- Noctule (black X)
- Long-eared Sp. (black X)

Bat flight lines (one cherron per bat)



Common pipistrelle

Bat foraging

- Common pipistrelle (blue oval)
- Soprano pipistrelle (green oval)
- Myotis Sp. (red oval)
- Long-eared Sp. (black oval)



Transect route



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GALLAGHER ESTATES LTD

Project title

**LAND NORTH OF GAVRAY DRIVE,
BICESTER, OXFORDSHIRE**

Drawing title

**BAT TRANSECT FINDINGS
22ND JULY 2010**

date	13 OCTOBER 2010
scale	SEE SCALE BAR
drawing number	EDP 124/55
drawn by	GS
checked	JM

