The Ecology Consultancy

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River Park, Royal Mail Site, Twickenham

Badger Survey

Report for MacGregor Smith

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Contents

Executive Summary

- The Ecology Consultancy was commissioned by MacGregor Smith to undertake a badger survey of the River Park site comprising the Royal Mail sorting office and adjacent land at Twickenham, London.

- The badger survey was undertaken on 4th March 2011. During the survey all areas of suitable habitat that may be impacted by the proposed works were systematically examined for evidence of badger activity. However, the surveyors were unable to access part of the site during the survey.

- No evidence of setts or badger field signs were observed during the badger activity survey. There was, however, field signs of mammals that were using the woodland area to the west of the site including well-used runs, disused fox earths and push-unders along the southern fenceline.

- Recommendations include;
  - Should a badger sett or evidence of badgers (or any other protected species) be encountered at any time during the works, all works should cease immediately and ecological advice sought; and,
  - A watching brief is recommended during development works, in areas which had dense vegetation cover, in particular dense bramble scrub to the south of the woodland.
  - A brief description of suitable habitat enhancement and creation is provided.

1 Introduction

BACKGROUND

1.1 The Ecology Consultancy Ltd was commissioned by MacGregor Smith to undertake an ecological assessment of the River Park site comprising the Royal Mail sorting office and adjacent land at Twickenham, London. An initial Phase 1 habitat survey, desk-top study and protected species assessment (WSP, 2009) indicated that habitats suitable for badgers *Meles meles* were present and recommended a badger survey.

SCOPE OF THE REPORT

1.2 The aim of the study was to reasonably determine the value of the survey area for badgers by; recording evidence of foraging or commuting badgers within 30m of the proposed development; classifying each sett found as one of four categories (main, annexe, subsidiary and outlying) and noting the level of usage at each, and; mapping all land that falls within 30m of an active badger sett.

SITE CONTEXT AND STATUS

1.3 The River Park site comprising the Royal Mail sorting office and adjacent land at Twickenham is proposed for redevelopment including the creation of an eco-park along the River Crane. The site is currently comprised of warehouse buildings, hard standing, and various semi-natural habitat types including dense scrub, mature trees, woodland under-storey vegetation, and the River Crane.

1.4 The site, situated in the London Borough of Richmond upon Thames, is adjacent to the railway line to the south, London Road to the East, the River Crane to the north, and allotments to the west. See Appendix 1 for site context. The centre of the site is at National Grid Reference TQ157735 (approximately).

1.5 The 'eco-park', to be included in the development, will be informed by existing features of ecological value within the site, protected and notable species recorded adjacent to the site, and the local Biodiversity Action Plan. The local Biodiversity Action Plan for the London Borough of Richmond upon Thames sets out the framework for the protection, conservation and enhancement of wildlife within the Borough. It includes ancient parkland and veteran trees; broadleaved woodland; reedbeds; bats; song thrush; stag beetle; tower mustard; and water vole. These habitats and species will be considered in the design plans wherever possible.

LOCAL CONTEXT

1.6 Crane Park, which includes the site, is part of the Crane Corridor Site of Metropolitan Importance. Friends of the River Crane Environment (FORCE) have set out a vision, to improve the management of the existing Crane Park and its integration with local communities, and to extend the boundaries of the Park to provide a continuous accessible parkland link between Hounslow Heath in the west and Twickenham Station in the east. FORCE identify the site as falling within the eastern area of Crane Park, and it was recently included by Richmond Council in the Crane Valley Planning Guidelines, which have been adopted as a Supplementary Planning Document. This document identifies the provision of public access through Twickenham Junction Rough, the naturalisation of the River Crane and the improvement of associated green space as key aspirations, with planning gain from local development as one route for achieving them. (Rob Gray, April 2006).

1.7 Crane Park Island nature reserve, managed by the London Wildlife Trust, also falls within Crane Park and comprises good examples of the following habitat types: meadow; scrub; reedbed; willow carr; and woodland. Water vole and marsh marigold have been recorded within the nature reserve (Wildcrane, 2010).

2 Legislation and Planning

LEGISLATION

2.1 Badgers *Meles meles* receive protection under The Protection of Badgers Act 1992 which consolidates the previous Badger Acts of 1973 and 1991. The Act makes it an offence to:

- Wilfully kill, injure, take, or attempt to kill, injure or take a badger
- Cruelly ill-treat a badger, including use of tongs and digging
- Intentionally or recklessly damage, destroy or obstruct access to a badger sett[1] or any part thereof
- Intentionally or recklessly disturb[2] a badger when it is occupying a badger sett

2.2 *How is the legislation pertaining to badgers liable to affect development works?*
A Development Licence[3] will be required from Natural England for any development works liable to affect an active badger sett, or to disturb badgers whilst in the sett. Natural England have issued guidelines on what constitutes a licensable activity. N.B. there is no provision in law for the capture of badgers for development purposes and therefore it is not possible to obtain a licence to translocate badgers from one area to another.

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[1] A badger sett is defined in the legislation as *"any structure or place which displays signs indicating current use by a badger"*. This includes seasonally used setts. Natural England (2009) have issued guidance on what is likely to constitute current use of a badger sett: www.naturalengland.org.uk/Images/WMLG17_tcm6-11815.pdf

[2] For guidance on what constitutes disturbance and other licensing queries, see Natural England (2007) Badgers & Development: A Guide to Best Practice and Licensing. www.naturalengland.org.uk/Images/badgers-dev-guidance_tcm6-4057.pdf, Natural England (2009) Interpretation of 'Disturbance' in relation to badgers occupying a sett www.naturalengland.org.uk/Images/WMLG16_tcm6-11814.pdf, Scottish Natural Heritage (2002) Badgers & Development. www.snh.org.uk/publications/online/wildlife/badgersanddevelopment/default.asp and Countryside Council for Wales (undated) Badgers: A Guide for Developers. www.ccw.gov.uk.

PLANNING

2.3 Planning authorities are required to take account of protected species and habitat conservation when they consider planning applications. Planning Policy Statement 9 (PPS9), paragraph 124 reads:

"The likelihood of disturbing a badger sett, or adversely affecting badgers' foraging territory, or links between them, or significantly increasing the likelihood of road or rail casualties amongst badger population, are capable of being material considerations in planning decisions."

2.4 Natural England believes that all local development plans should contain policies for protected species, including badgers and their setts. Development should not be permitted unless it is possible to take steps to ensure the survival of the badgers in their existing range and at the same population status, with provision of adequate alternative habitats if setts and foraging areas are destroyed, (Natural England, 2007). Natural England (2007) also advises that before the planning application is determined, the local planning authority should request a detailed ecological survey/report and developers should be prepared to provide the following information:

- The numbers and status of badger setts and foraging areas that are affected by the proposal;
- the impact that the proposal is likely to have on badgers and what can be done in the way of mitigation;
- judgment on whether the impact is necessary or acceptable; and,
- a recommendation on whether a licence will be required.

CONSERVATION STATUS

2.5 The EC Habitats Directive (Article 1, sections (e) and (i)) offers a definition of conservation status for species: '*the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area'*.

2.6 The definition implies that two factors are paramount when assessing the conservation status of a species: (1) threat (a decline in abundance and/or distribution/range) and (2) rarity (limited abundance and/or distribution/range).

2.7 Badgers are a common species in the UK and thus do not hold high ecological value. They are not included on any threat list nationally or within London and do not appear

on the UK or London Borough of Richmond Upon Thames Biodiversity Action Plan (BAP) lists. The Institute of Ecology and Environmental Management (IEEM) (2006) states that badgers, as a common species, may be of "*insufficient biodiversity value to merit assessment within an Ecological Impact Assessment* (e.g. because they are below the defined threshold for biodiversity value) *other than the need to consider them within the context of the relevant legislation*". Therefore badgers are considered to have a favourable conservation status.

2.8 However, it should be remembered that a badger's legal protection and the associated obligations at planning, as outlined above, applies irrespective of their conservation status.

3 Methodology

OVERVIEW

3.1 The badger surveys included the compilation of existing desk study records and a detailed field survey of the parts of the site that could be accessed.

DESK STUDY

3.2 Existing records relating to the site and a surrounding 2km radius were compiled from the National Biodiversity Network (NBN) Gateway.

3.3 It is important to note that, even where data is held, a lack of records for a defined geographical area does not necessarily mean that there is a lack of ecological interest; the area may be simply under-recorded.

FIELD SURVEY

3.4 A survey of badger activity was undertaken by Victoria Forder on 4th March 2011 within the grounds of the old Royal Mail Delivery Office and woodland to the west. During the survey all areas of suitable habitat were systematically examined for evidence of badger activity. The surveyor recorded all badger field signs, including:

- *Setts*: several sett types may be present within a social group territory, ranging from a single hole to numerous interconnecting tunnels. These have been categorised according to Table 1 (below) into main, annexe, subsidiary and outlier (Wilson *et al*, 1997);
- *Dung pits and latrine sites*: badgers characteristically deposit dung in pits, which may be located along the boundaries and within the social group territory. These sites serve as means of inter- and intra-group communication. Several dung pits create a latrine. Dung pits and latrines are often used to mark setts or territorial boundaries;
- *Paths and runs*: well used routes between setts and/or foraging areas. Often used by generations of badgers;
- *Snuffle holes and other foraging signs*: areas of disturbed vegetation often formed by badgers foraging for ground dwelling invertebrates such as earthworms and larvae and subterranean roots and tubers. Snuffle holes are sometimes re-used as dung pits on territorial boundaries;
- *Hair*: often found among spoil and bedding outside sett entrances or snagged on fences, etc, alongside well-used runs; and,

- *Footprints*: easily distinguishable from other large mammal species, such as the fox *Vulpes vulpes* and domestic dog *Canis familiaris*. Often found along paths and runs or in spoil outside sett entrances.

3.5 Particular attention was paid to areas where the vegetation and/or the topography offered suitable sett sites. Where dense scrub precluded a thorough search of the area, a targeted examination of the perimeter of the scrub was made for runs or pathways, which may indicate the presence of a sett within the vegetation.

3.6 Holes attributed to badger were classified as well used, partially used or disused in line with the methodology given in the National Badger Survey (Cresswell et al., 1990; Wilson et al., 1997), as described in Table 1. The location and classification of setts and field signs were recorded and are presented on the Badger Activity Map (Appendix 1).

Table 1 - Conventions used in classifying badger setts (Wilson *et al.*, 1997)

Sett Type	Definition
Main	Several holes (average of 15) with large spoil heaps and obvious paths leading to and from the sett and between sett entrances. Normally the breeding sett and in continuous use.
Annex	Normally less than 150m from main sett and connected by well used pathways. May comprise several holes (6 holes on average), may not be in use all the time even if the main sett is very active.
Subsidiary	Usually at least 50m from main sett with no obvious paths connecting to main sett. Fewer holes (5 on average) and may only be used intermittently. 'Ownership' can often only be determined by bait-marking.
Outlier	Usually comprising one or two holes with little spoil at the entrance(s). No obvious paths connecting to other setts and may only be used sporadically. Often used by foxes and rabbits *Oryctolagus cuniculus* when not in use by badgers.

LIMITATIONS

3.7 The field surveys were undertaken during March 2011, which is an ideal time of the year to undertake badger surveys; the vegetation has died back, making setts easier to locate, whilst badgers are actively foraging and scent marking their territories.

3.8 Some areas within the survey site exhibited impenetrable dense bramble scrub (Appendix 2, Photograph 3), making it difficult to access and therefore accurately survey. Signs of badgers entering and exiting these areas were searched for (e.g. hairs snagged on thorns, runs entering the stands) to enable conclusions about their likely

usage and whether they possibly harboured a sett. However, overall it is believed that the objectives of the survey have been met.

3.9 During the survey, the western part of the site could not be accessed (areas 2 and 7, Plan 2, Appendix 1). As such, this area is excluded from survey and the presence of badgers here cannot be ruled out.

4 Survey Results

DESK STUDY

4.1 A search of the NBN Gateway revealed no field records of badgers within 2km of the River Park, Royal Mail Site, Twickenham.

FIELD SURVEY

4.2 No evidence of setts or badger field signs were observed during the badger activity survey undertaken by The Ecology Consultancy. However, there were the following field signs of mammals that were using the woodland area to the west of the site (please refer to the Mammal Activity Map in Appendix 4 for a graphical representation):

- Several obvious and well-used mammal pathways (Appendix 2, Photograph 4) were present along the southern boundary and through the centre of the woodland;
- Two disused (at the time of survey) fox earths (Appendix 2, Photograph 1) were identified on the bund along the southern extent of the site; and,
- Two holes in the fence and push-unders (Appendix 2, Photograph 2) were observed on the southern perimeter fence bordering the National Rail Land, in association with well-used mammal paths.

5 Conclusions and Recommendations

BADGER ACTIVITY WITHIN THE SURVEY AREA

5.1 No evidence of setts or badger field signs were observed during the badger activity survey undertaken by The Ecology Consultancy. However, , field signs of mammals were recorded within the woodland area to the west of the site including well-used runs, disused fox earths and push-unders along the southern fenceline.

OUTLINE OF POTENTIAL IMPLICATIONS TO DEVELOPMENT

5.2 Although not present at the time of survey, if a badger sett is discovered during development works this may represent a legal constraint to the proposed works.

RECOMMENDATIONS

5.3 Should a badger sett or evidence of badgers (or any other protected species) be encountered at any time during the works, all works should cease immediately and ecological advice sought.

5.4 A watching brief is recommended during development works, in areas which had dense vegetation cover, in particular dense bramble scrub to the south of the woodland, and access was therefore limited.

5.5 If badgers are present within the surrounding area, they could be encouraged onto the site by the creation of suitable habitats. Creation of new and enhancement of existing short-cut grassland habitats and planting of fruit and nut trees and shrubs could also be incorporated into the landscaping proposals. Badgers also require a sheltered woodland area for sett creation.

References

- Cresswell, P., Harris, S. & Jefferies, D.J. (1990). *The History, Distribution, Status and Habitat Requirements of the Badger in Britain.* Nature Conservancy Council, Peterborough, UK.

- Institute of Ecology and Environmental Management (IEEM) (2006). *Guidelines for Ecological impact assessment in the United Kingdom.*

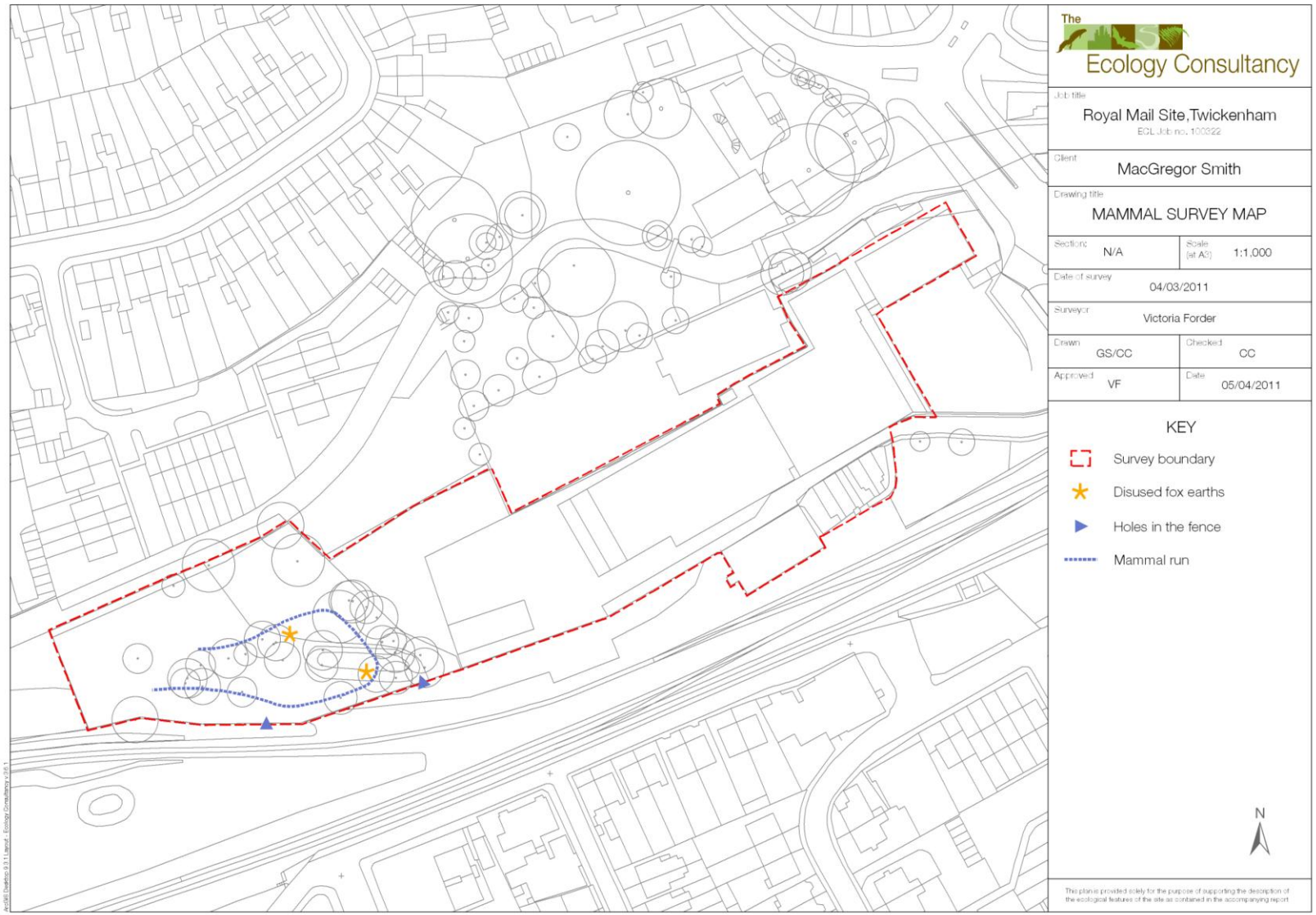
- Natural England (2007). *Badgers and Development: A Guide to Best Practice and Licensing.*

- Wilson, G.J., Harris, S. & McLaren, G. (1997). *Changes in the British Badger Population, 1988–97*. Peoples Trust for Endangered Species, London, UK.

- WSP (2009) *Phase 1 Habitat Survey, Royal Mail Depot, London Road, Twickenham.* Ref: 12269305/001. An unpublished report for the Royal Mail Group.

Appendix 1: Figures

Plan 1: Mammal activity map indicating evidence of mammal activity within the River Park, Royal Mail Site, Twickenham.



Plan 2: the site boundary, split into land access areas

Appendix 2: Photographs

Photograph 1

Old disused fox earth found along the southern extent of the site. Ivy partially covers the entrance hole.

Photograph 2

Large hole in the fence along the southern boundary, onto Network Rail land.

Photograph 3

Dense bramble to the west of the site which could not be fully accessed for survey.

Photograph 4

Well used mammal path that runs along the southern boundary and through the centre of the woodland.

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Contents

Executive Summary

- The Ecology Consultancy was commissioned by MacGregor Smith in 2010 to undertake a reptile survey of the River Park, Royal Mail Site, Twickenham.

- A desk study was undertaken and surveys to identify reptile presence or likely absence were carried out in June and July 2010, in all areas of suitable reptile habitat that may be directly impacted by the proposed works.

- No records of reptiles were obtained from within 2km of the site, and no evidence of reptiles was observed during the course of the seven survey visits. Precautionary recommendations are made in this report.

  Recommendations include;

  - Should reptiles (or any other protected species) be encountered at any time during the works, all works should cease immediately and ecological advice sought.
  - Following the completion of works at the River Park, Royal Mail Site, Twickenham, landscape and ecological mitigation proposals shall be implemented to improve the quality and extent of habitat and promote the occurrence of reptiles. Measures could include the provision of hibernacula in the locality of the site.

1 Introduction

BACKGROUND

1.1 The Ecology Consultancy was commissioned by MacGregor Smith to undertake a reptile survey of the River Park site comprising the Royal Mail sorting office and adjacent land at Twickenham, London. An initial Phase 1 habitat survey, desk-top study and protected species assessment (WSP, 2009) indicated that habitats suitable for reptiles were present and recommended a reptile survey.

SCOPE OF THE REPORT

1.2 This report describes the objectives, methodologies and findings of the reptile survey. As no reptiles were found during the surveys and due to access restrictions, precautionary recommendations are discussed.

SITE CONTEXT AND STATUS

1.3 The River Park site comprising the Royal Mail sorting office and adjacent land at Twickenham (the site) is proposed for redevelopment including the creation of an eco-park along the River Crane. The site is currently comprised of warehouse buildings, hard standing, and various semi-natural habitat types including dense scrub, mature trees, woodland under-storey vegetation, and the River Crane.

1.4 The site, situated in the London Borough of Richmond upon Thames, is adjacent to the railway line to the south, London Road to the East, the River Crane to the north, and allotments to the west. See Figure 1 for site context. The centre of the site is at National Grid Reference TQ157735 (approximately).

1.5 The 'eco-park', to be included in the development, will be informed by existing features of ecological value within the site, protected and notable species recorded adjacent to the site, and the local Biodiversity Action Plan. The local Biodiversity Action Plan for the London Borough of Richmond upon Thames sets out the framework for the protection, conservation and enhancement of wildlife within the Borough. It includes plans for ancient parkland and veteran trees; broadleaved woodland; reedbeds; bats; song thrush; stag beetle; tower mustard; and water vole. These habitats and species will be considered in the design plans wherever possible.

LOCAL CONTEXT

1.6 Crane Park, which includes the site, is part of the Crane Corridor Site of Metropolitan Importance. Friends of the River Crane Environment (FORCE) have set out a vision,

to improve the management of the existing Crane Park and its integration with local communities, and to extend the boundaries of the Park to provide a continuous accessible parkland link between Hounslow Heath in the west and Twickenham Station in the east. FORCE identify the site as falling within the eastern area of Crane Park, and it was recently included by Richmond Council in the Crane Valley Planning Guidelines, which have been adopted as a Supplementary Planning Document. This document identifies the provision of public access through Twickenham Junction Rough, the naturalisation of the River Crane and the improvement of associated green space as key aspirations, with planning gain from local development as one route for achieving them. (Rob Gray, April 2006).

1.7 Crane Park Island nature reserve, managed by the London Wildlife Trust, also falls within Crane Park and comprises good examples of the following habitat types: meadow; scrub; reedbed; willow carr; and woodland. Water vole and marsh marigold have been recorded within the nature reserve (Wildcrane, 2010).

2 Legislation

2.1 All reptiles native to the UK are listed under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). The four most commonly encountered species of reptile; the adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara* and slow-worm *Anguis fragilis* are protected under Section 9(1) and 9(5) of the Act which makes it an offence to:

- Intentionally kill, injure or take a reptile,

2.2 An offence under the Wildlife and Countryside Act 1981 with regard to reptiles can lead to fines of up to £5000, confiscation of machinery, and/or six months imprisonment for each offence. Harm to more than one animal may be taken as separate offences. Both individuals and companies may be liable for offences.

2.3 There are no licensing provisions within the Act for development activities affecting these species. However, developers are expected to take adequate precautions to avoid breaches of the legislation, including undertaking adequate surveys and mitigation to avoid or minimise the risk of killing or injuring reptiles.

2.4 All common reptiles were added to the UK Biodiversity Action Plans (UKBAP) as priority species in September 2007. A Widespread Reptile Species Action Plan (SAP) was produced by the Herpetological Conservation Trust (HCT) in 2008. The main aims of the Widespread Reptile SAP are: maintain and increase the range of the species (10km squares); maintain the range of the species (vice counties); and, maintain and increase the number of occupied sites. Slow worms, common lizards, grass snakes and adders (the more common reptile species) are also listed as priority species in the London BAP. London has its own 'micro-climate', several degrees warmer than the surrounding countryside, making it attractive to reptiles. Slow worm, adder, grass snake and common lizard are threatened in London by a lack of understanding and persecution (LBAP, accessed in April 2011).

3 Methodology

OVERVIEW

3.1 The reptile assessment included the compilation of existing desk study records and a detailed field survey undertaken in appropriate weather conditions.

DESK STUDY

3.2 Existing records relating to the site and a surrounding 2km radius were compiled from the National Biodiversity Network (NBN) Gateway.

3.3 It is important to note that, even where data is held, a lack of records for a defined geographical area does not necessarily mean that there is a lack of ecological interest; the area may be simply under-recorded.

FIELD SURVEY

3.4 Surveys to establish the presence/likely absence of reptiles and to enable relative population class size estimation, were undertaken in all areas of suitable reptile habitat that may be directly impacted by the proposed works. All surveys took place in June and July 2010, and were completed in suitable weather conditions by experienced surveyors. These surveys were carried out following best practice guidance in the JNCC Herpetofauna Workers Manual (Gent & Gibson, 2003) and Froglife (1999).

3.5 The reptile survey involved the placement and checking of artificial refugia (heavy-grade bitumen roofing felt) together with direct observation to determine whether reptiles were present or likely to be absent. The refugia were cut to a size of approx 500mm x 1000mm. This material warms up in the sun and attracts reptiles to bask on or under it. 15 refugia were placed around the site on 8th June 2010, in locations where the habitat was considered suitable for reptiles (see Appendix 1 for reptile felt locations).

3.6 Suitable habitat for reptiles includes areas of rough grassland, scrub or woodland edge habitat which can be used for basking whilst also providing a source of invertebrate prey and shelter. South facing aspects provide particularly favourable basking opportunities.

3.7 The refugia were left in place for one week to allow any reptiles present to habituate to them. A total of seven survey visits were then undertaken between 17th June and 26th July 2010 to check the refugia for the presence of reptiles. The visits were carried out under suitable weather conditions. Prior to the checking of the artificial refugia, each area of suitable reptile habitat was walked to try and 'spot' basking common lizards. This species will often sit on top of grass tussocks, debris and felts and will quickly move from sight upon disturbance. Common lizards are often very territorial and will often reuse favourite basking sites (Beebe & Griffiths, 2000) therefore once these sites are known, spotting can become a relatively successful method of lizard recording.

3.8 Optimal weather conditions for reptile surveying are when temperatures are between 10 and 18ºC with intermittent or hazy sunshine and little or no wind (Beebe & Griffiths, 2000). Sunny spells between rain showers provide windows of opportunity for reptiles to bask and therefore provide good opportunities for finding them. Very bright sunny days are often poor for surveying as the animals will reach their optimum temperature very quickly and, therefore, spend less time basking before moving off into vegetation, where they are less visible.

LIMITATIONS

3.9 The accuracy of reptile surveys is often weather dependant, with reptiles preferring sunny conditions with a relatively low air temperature and little wind. The months of April, May and September are important, but reptiles are often active throughout summer. Generally surveying is recommended in temperatures of between 10° and 18° C (Beebe & Griffiths, 2000). However, each species responds to temperature differently; adders tend to bask in temperatures up to 16° C, lizards up to temperatures of 18° C and grass snakes up to 20° C (Gent & Gibson, 2003).

3.10 All of the surveys were undertaken between June and July in temperatures above 18ºC. However, reptiles are active throughout the summer, even in warmer temperatures than those recommended, and adders are considered very unlikely to be present. Therefore, overall it is considered that the objectives of the surveys have been met.

3.11 The western half of the site (Areas 2 & 7, Plan 2) and area to the north of the River Crane (Area 5) could not be surveyed for reptiles between April and September 2010 due to access restrictions. Although the majority of the western part of the site

comprises dense scrub (unsuitable habitat for reptiles), there remains some suitable habitat within this area and to the south of the River for reptiles. However, the majority of suitable habitats within the site were surveyed and the findings are likely to represent the status through the entire site. Plan 1 in appendix 1 shows the location of reptile felts in the areas of the site surveyed.

4 Results

DESK STUDY

4.1 A search of the NBN Gateway revealed no field records of reptiles within 2km of the River Park, Royal Mail Site, Twickenham.

FIELD SURVEY

4.2 No evidence of reptiles was recorded on site during the course of the seven survey visits. The full survey results are presented in Table 1.

Table 1: Reptile survey results

Date	Start time	Temp (°C)	Weather conditions	No. Seen
17/06/10	PM			None
23/06/10	PM	18.5	0% cloud cover, sunny	None
30/06/10	PM	20	60% cloud cover, cloudy and sunny	None
07/07/10	PM	20	80% cloud cover, cloudy but warm	None
15/07/10	PM	20	50% cloud cover, sunny and cloudy	None
22/07/10	PM	20	60% cloud cover, sunny and cloudy	None
26/07/10	PM	19	Cloudy, no breeze	None

5 Conclusions and Recommendations

CONCLUSIONS

5.1 As the desk study revealed no records of reptiles within 2km of the site, and no reptiles were recorded during the seven surveys undertaken, the results indicate that reptiles are unlikely to be present on the site, or are only present in very low, undetectable numbers (particularly as some parts of the site could not be surveyed).

POTENTIAL IMPLICATIONS TO DEVELOPMENT

5.2 All reptiles are protected against killing or injury. Although unlikely to be present, if animals are found within the River Park, Royal Mail Site, Twickenham, they would represent a legal constraint to the proposed works (see 5.3 below).

RECOMMENDATIONS

Reptiles

5.3 Should reptiles (or any other protected species) be encountered at any time during the works, all works should cease immediately and ecological advice sought.

5.4 Following the completion of works at the River Park, Royal Mail Site, Twickenham, landscape and ecological mitigation proposals should be implemented to enhance the habitat and encourage reptiles. Measures could include creation of 'natural areas' comprising long grassland and low scattered scrub, and the provision of hibernacula in the locality of the site. Reptiles also favour south or west-facing slopes and grass snakes often live close to aquatic environments with compost heaps or similar features for egg-laying.

6 References

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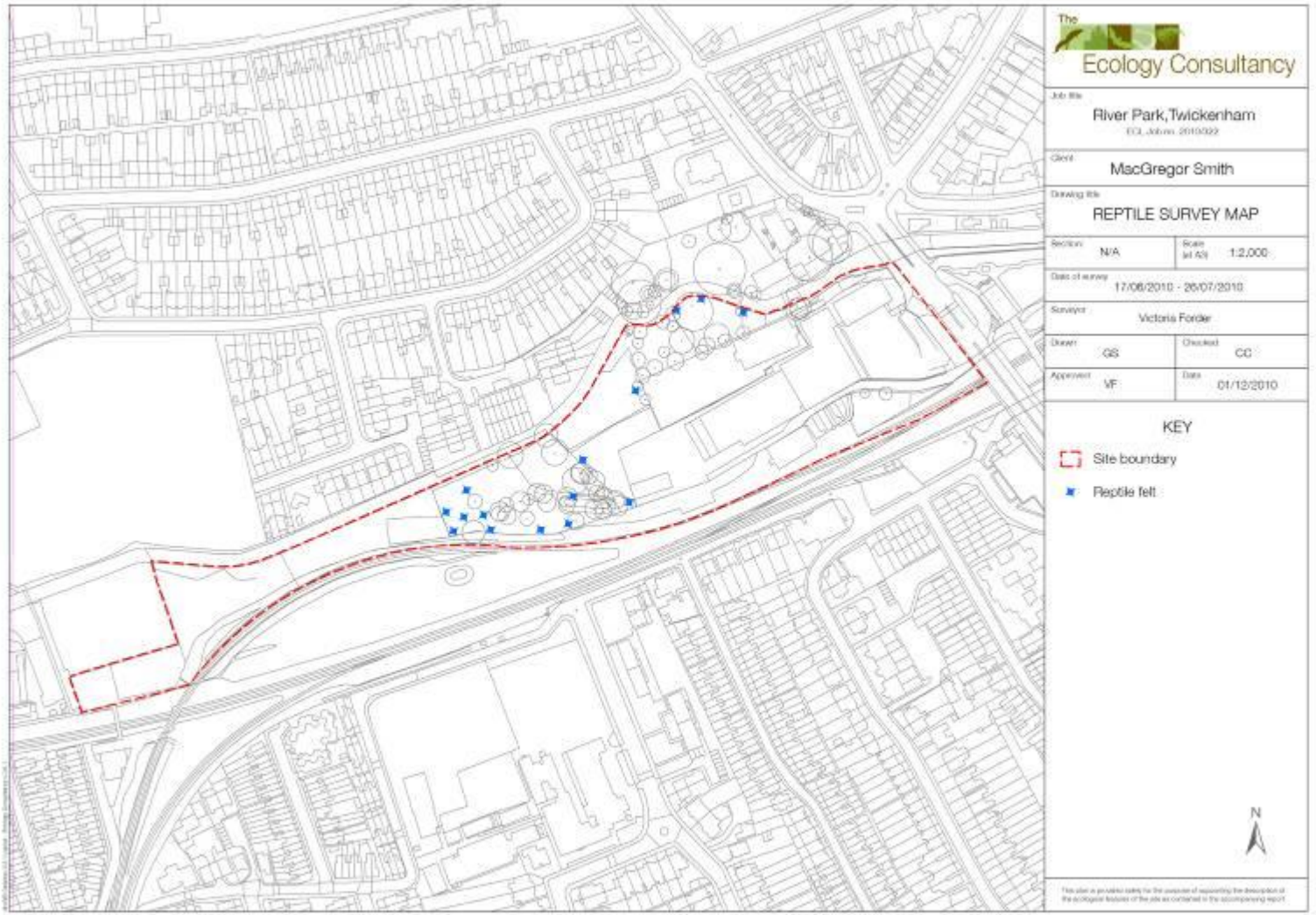
Appendix 1: Figures

Plan 1: Reptile survey map indicating location of artificial refugia



Plan 2: The site boundary and land access areas

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Twickenham Riverside, MacGregor Smith **Interim breeding bird survey report** Job number 100322	The Ecology Consultancy 6-8 Cole Street London SE1 4YH **T**. 020 7378 1914 **F**. 020 7403 3159 **M**. 075 9018 2862 **W**. http://www.ecologyconsultancy.co.uk/
Date: 11th April 2011	ECL Ref: 10322 MacGregorSmith RoyalMailSiteTwickenham Interim bird survey report FINAL.doc
Report produced by: Phil Saunders & Julie Powell	Reviewed by: John Newton

Survey methodology

Ecology Consultancy was commissioned to carry out surveys to formulate a list of birds utilising the Twickenham Riverside site opposite Twickenham Station (see Figure 1 for site boundary). Two breeding bird surveys were undertaken in May 2010; one on the 07th and one on the 28th. However, only part of the site could be accessed for surveys (Area 2 and the adjacent allotments in Area 7 could not be accessed; see Figure 1) and due to the specific seasonal nature of breeding and foraging/pre-migration bird surveys, The Ecology Consultancy was asked to postpone further surveys until late Summer and Autumn 2011. A late summer/early autumn visit to site would gain a fuller understanding of its use as a post-breeding/pre-migration resource The areas that could not be accessed for survey are assessed as likely to support the most interesting assemblage of birds.

Survey results

The two breeding bird survey visits undertaken by Ecology Consultancy in May 2010 recorded the following species, which are potentially breeding on site (see Table 1 for details):

- Ring-necked parakeet;
- Woodpigeon;
- Collared dove;
- Blackcap;
- Blue tit;
- Great tit;
- Long-tailed tit;
- Wren;
- Dunnock;
- Robin;
- Blackbird;
- Song thrush;
- Magpie;
- Carrion crow; and,
- Greenfinch.

Table 1: Full breeding bird survey results (notable species are highlighted in yellow)

Survey 1 - 7/5/10, 5am, 12c, 50% cloud cover	**Area**	1	2	3	4	5	6	7
Species								
Dunnock		0	1	1	0	0	1	0
Robin		0	3	0	2	1	0	1
Magpie		0	3	0	1	1	0	0
Blackbird		0	2	0	2	0	1	1
Wren		0	3	0	2	0	0	1
Blue Tit		0	0	0	3	0	0	0
Great Tit		0	0	0	2	0	0	0
Crow		0	1	0	1	0	0	0
Ring Necked Parakeets		0	0	0	0	0	0	4
Wood Pigeon		0	3	1	2	1	0	2
Long Tailed Tit		0	0	0	0	0	0	0
Collared Dove		0	1	0	1	0	0	0
Song thrush		0	0	0	0	1	0	0
Blackcap		0	1	0	0	0	0	1
Greenfinch		0	0	0	0	0	0	0

Survey 2 28/5/10 5am 15c 20% cloud cover	**Area**	1	2	3	4	5	6	7
Species								
Dunnock		0	0	1	1	0	0	2
Robin		0	1	0	2	0	1	1
Magpie		0	1	0	0	1	1	0
Blackbird		0	3	0	2	3	1	1
Wren		0	2	0	4	0	0	2
Blue Tit		0	0	0	2	0	0	1

Great Tit	0	2	0	1	0	0	0
Crow	0	0	0	1	1	0	1
Ring Necked Parakeets	0	3	0	0	0	0	0
Wood Pigeon	0	7	0	1	0	0	4
Long Tailed Tit	0	3	0	0	0	0	0
Collared Dove	0	0	0	1	0	0	0
Song thrush	0	0	0	0	0	0	1
Blackcap	0	0	0	0	0	0	2
Greenfinch	0	0	0	0	0	0	2

Figure 1: The site boundary, split into areas (Areas 2 and 7 could not be surveyed)

Discussion

The surveys recorded only species that are on the green-list on the British Trust for Ornithology (BTO)/Royal Society for the Protection of Birds (RSPB) Birds of Conservation Concern (BoCC) List,) and a small number of amber-list species (some of the more common species). Green list species are those that occur regularly in the UK but do not qualify under the red or amber list criteria. Amber list species are those that:

- Are categorized as species of European Conservation Concern (SPEC 1, 2 or 3)
- Whose populations have experienced a severe decline in the UK between 1800 and 1995 but with substantial recent recovery (>50% in last 25 years).
- Whose breeding populations have declined moderately (25-49%) over the last 25 years or the entire period used for assessments since the first BoCC review, starting in 1969 ("longer-term").
- Whose non-breeding populations have declined moderately (25-49%) over the last 25 years or the longer-term.
- Whose breeding ranges have contracted moderately (25-49%) as measured by number of 10 km squares occupied by breeding birds, over 25 years or the longer-term.
- Has a UK breeding population of <300 pairs, or non-breeding population of <900 individuals.
- Has at least 10% of the UK breeding or non-breeding population found in 10 or fewer sites.
- Has at least 20% of the European breeding or non-breeding population found in the UK.

The assemblage of birds recorded is typical of the habitat types found within the survey area. However, if surveys were undertaken in habitats on the remainder of the site, the species list is considered likely to increase, and may include less common bird species (more amber- and some red-list or Schedule 1 species). The species list recorded to date is unlikely to represent those present on the remainder of the site.

In addition to the statutory protection afforded all breeding birds, both dunnock and song thrush are subject to non-statutory nature conservation designations. Both are Priority species on the UK Biodiversity Action Plan (BAP) and song thrush is also a Priority species on the Local (London) BAP. Additionally, song thrush is on the Red List of Birds of Conservation Concern (BoCC) List, whilst dunnock is Amber-listed. These designations are indicative of the long/short-term population declines noted in the two species and, although not directly affording any enhanced level of statutory protection, they may form material considerations during the planning process.

None of the remaining species are listed on the UK or LBAP, and all are Green-listed (Least Concern) on the BTO/RSPB BoCC List. Furthermore, all of these species (including song thrush and dunnock) are typical of woodland and scrub habitats within the south-eastern UK and it is considered likely that any impact upon them through the River Crane development can potentially be mitigated through the careful retention and/or creation of suitable on-site habitat post-construction.

Legislation

With certain exceptions, all birds, their nests and eggs are protected under Sections 1-8 of the Wildlife and Countryside Act 1981 (as amended). Among other things, this makes it an offence to:

- Intentionally kill, injure or take any wild bird;
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built;
- Intentionally take or destroy an egg of any wild bird;
- Sell, offer or expose for sale, have in his possession or transport for the purpose of sale any wild bird (dead or alive) or bird egg or part thereof.

Certain species of bird, for example the barn owl, black redstart, hobby, bittern and kingfisher receive additional special protection under Schedule 1 of the Act and Annex 1 of the European Community Directive on the Conservation of Wild Birds (79/409/EEC). This affords them protection against:

- Intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young;
- Intentional or reckless disturbance of dependent young of such a bird.

To avoid contravention of the Wildlife and Countryside Act 1981 (as amended), works should be planned to avoid the possibility of killing or injuring any wild bird, or damaging or destroying their nests. The most effective way to reduce the likelihood of nest destruction in particular is to undertake work outside the main bird nesting season which typically runs from March to August. Where this is not feasible, it will be necessary to have any areas of suitable habitat thoroughly checked for nests prior to vegetation clearance.

Those species of bird listed on Schedule 1 are additionally protected against disturbance during the nesting season. Thus, it will be necessary to ensure that no potentially disturbing works are undertaken in the vicinity of the nest. The most effective way to avoid disturbance is to postpone works until the young have fledged. If this is not feasible, it may be possible to maintain an appropriate buffer zone or standoff around the nest.

The Ecology Consultancy

River Park, Royal Mail Site, Twickenham / Bat Assessment / Report for MacGregor Smith

The Ecology Consultancy

River Park, Royal Mail Site, Twickenham

Bat Assessment

Report for MacGregor Smith

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Contents

Executive Summary

- The Ecology Consultancy was commissioned by MacGregor Smith in March 2010 to carry out a bat assessment of the buildings within the proposed development site at the Royal Mail sorting office in Twickenham, in the London Borough of Richmond. The survey was undertaken to assess the presence or likely absence of bat roosts within buildings at the site.

- The proposed development involves demolition of the existing buildings and site clearance to make way for a new 'eco park' development. These works could potentially impact on bats if they were confirmed to be using any of the buildings as a roost site.

- This report details the findings of a bat assessment that was carried out by The Ecology Consultancy in March and July 2010. The bat assessment comprised an external building assessment, and two evening bat emergence surveys. Details of a data search commissioned by WSP as part of a Phase 1 Habitat Survey and Protected Species Assessment for the site (WSP 2009) are also included. The surveys were carried out to support a planning application and to identify the potential significance of the proposals on bats.

- A data search provided records for sightings of nine bat species within a five kilometre radius of the site: Daubenton's bat *Myotis daubentonii*, Natterer's bat *M. nattereri*, noctule *Nyctalus noctula,* Leisler's bat *N. leisleri*, serotine *Eptesicus serotinus,* Nathusius' pipistrelle *Pipistrellus nathusii*, common pipistrelle *P. pipistrellus*, soprano pipistrelle *P. pygmaeus* and brown long-eared bat *Plecotus auritus*.

- An external inspection of the buildings within the Royal Mail Twickenham development site was carried out on the 31st March 2010. Buildings within the site were considered to offer low to negligible bat roosting opportunities. No bats or bat droppings were found during the assessment to confirm the presence of a bat roost(s).

- Although the buildings present only limited bat roost potential, further precautionary bat surveys were recommended as the site is adjacent to the River Crane, an important habitat for bats.

- Evening bat emergence surveys were carried out on 22nd and 26th July 2010. No bats were seen to emerge from the buildings to confirm the presence of a bat roost. Brown long-eared bats were recorded foraging over vegetation in the southern section of the

site during both surveys. This is a notable finding as brown long-eared bats are a light-sensitive species not commonly recorded in urban surroundings in London. Low numbers of commuting and foraging soprano and common pipistrelle bats were recorded during both surveys, with most activity recorded in the southern section of the site.

- The survey results suggest that the southern section of the site was of most value to foraging and commuting bats. This is likely to be due to the darker, sheltered conditions within this part of the site, and the presence of semi-natural vegetation in the area.

- Precautionary measures that should be undertaken if works are delayed for more than a year, and in the unlikely event that bats are found during the works, are described in Paragraphs 5.7 and 5.8.

- Recommendations to maintain the continued use of the site by commuting and foraging bats and suggested habitat enhancements to improve the value of the site for bats post-redevelopment are described in Paragraphs 5.9 to 5.23.

1 Introduction

BACKGROUND

1.1 The Ecology Consultancy was commissioned by MacGregor Smith in March 2010 to carry out a bat assessment of buildings within the proposed development site at the Royal Mail sorting office, Twickenham, in the London Borough of Richmond. The building inspection and emergence surveys were undertaken to assess the presence or likely absence of bat roosts within buildings on the site.

SCOPE OF THE REPORT

1.2 This report details the methodology, results and conclusions of a bat assessment carried out by The Ecology Consultancy in March and July 2010. The bat assessment comprised an external building assessment, and two evening bat emergence surveys. These surveys were carried out to support a planning application for the site.

1.3 The surveys were based on the *Bat Conservation Trust - Bat Survey Good Practice Guidelines* (BCT 2007).

1.4 Any potentially significant ecological constraints that may affect the proposals are discussed. Recommended precautionary measures that should be followed prior to and during demolition and construction works are described. Recommendations for mitigation and enhancements that could be incorporated in the redevelopment are also discussed.

SITE CONTEXT AND STATUS

1.5 The River Park site comprising the Royal Mail sorting office and adjacent land at Twickenham is proposed for redevelopment and includes the creation of an eco-park along the River Crane. The site is currently comprised of warehouse buildings, hard standing, and various semi-natural habitat types including dense scrub, mature trees, woodland under-storey vegetation, and the River Crane.

1.6 The site is in the London Borough of Richmond and is bounded by the railway line to the south, London Road to the East, the River Crane to the north, and allotments to the west. The centre of the site is at grid reference TQ157735 (approximately).

1.7 The 'eco-park', to be included in the development, will be created around existing features of ecological value within the site, protected and notable species recorded adjacent to the site, and the local Biodiversity Action Plan. The local Biodiversity

Action Plan for the London Borough of Richmond upon Thames sets out the framework for the protection, conservation and enhancement of wildlife within the Borough. It includes ancient parkland and veteran trees, broadleaved woodland, reed-beds, bats, song thrush, stag beetle, tower mustard and water vole. These habitats and species will be considered in the design plans wherever possible.

1.8 There are no statutory nature conservation designations associated with the proposed development site. The nearest statutory nature conservation site is Ham Lands Local Nature Reserve (LNR), approximately 0.6 kilometres south-east of the site. The site comprises restored gravel pits, old water meadows and a belt of woodland.

1.9 Crane Park, which includes the site, is part of the Crane Corridor Site of Metropolitan Importance (SMI). Friends of the River Crane Environment (FORCE) have set out a vision, to improve the management of the existing Crane Park and its integration with local communities, and to extend the boundaries of the Park to provide a continuous accessible parkland link between Hounslow Heath in the west and Twickenham Station in the east. FORCE identifies the site as falling within the eastern area of Crane Park, and it was recently included by Richmond Council in the Crane Valley Planning Guidelines, which have been adopted as a Supplementary Planning Document. This document identifies the provision of public access through Twickenham Junction Rough, the naturalisation of the River Crane and the improvement of associated green space as key aspirations, with planning gain from local development as one route for achieving them. (Rob Gray, April 2006).

1.10 Crane Park Island nature reserve, managed by the London Wildlife Trust, also falls within Crane Park and comprises good examples of the following habitat types: meadow; scrub; reed bed; willow carr; and woodland. Habitats within the Crane Corridor and Twickenham Junction Rough offer suitable bat roosting and foraging habitat adjacent to the Royal Mail Twickenham development site and the Crane Corridor provides connectivity between the application site and suitable bat roosting and foraging opportunities in the locality.

PROPOSAL

1.11 The proposed development involves demolition of the existing buildings and site clearance to make way for a new ‘eco park’ development. No other details are available at this time.

2 Legislation

BATS

2.1 All species of bat are fully protected under The Conservation of Habitats and Species Regulations 2010 through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or taking (capture) of Schedule 2 species (e.g. bats)
- Deliberate disturbance of bat species as:

  a) To impair their ability:

  (i) To survive, breed, or reproduce, or to rear or nurture young;

  (ii) To hibernate or migrate

  b) To affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

2.2 Bats are also currently protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance whilst occupying a place of shelter or protection;
- Intentional or reckless obstruction of access to any place of shelter or protection;

2.3 A European Protected Species Mitigation (EPSM) Licence issued by the relevant countryside agency (e.g. Natural England) will be required for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

2.4 Although there is no case law to date, the legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded *de facto* protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost.

3 Methodology

OVERVIEW

3.1 The bat assessment included the compilation of existing desk study records and a detailed field survey including a building inspection and emergence surveys.

DESK STUDY

3.2 A data search within a five kilometre radius of the site was undertaken by WSP as part of a Phase 1 Habitat Survey and Protected Species Assessment for the site carried out in December 2009 (WSP 2009). The information regarding present and historical bat records was obtained from London Bat Group.

BAT ASSESSMENT

Building assessment

3.3 An external inspection of the buildings within the site was carried out on the 31st March 2010 to assess the potential for the buildings to support a bat roost(s).

3.4 Bat field signs – droppings, feeding remains such as moth wings, scratch marks around suitable crevices and urine and fur oil stains - were searched for on the exterior of the buildings (exterior walls, window sills etc.) and potential bat access points into the buildings were also identified.

3.5 The building assessment was carried out from ground level, using close focusing binoculars, a high power torch, endoscope and inspection mirrors (as required).

3.6 The survey methodology was based on the *Bat Conservation Trust - Bat Survey Good Practice Guidelines* (2007).

EVENING BAT EMERGENCE SURVEYS

3.5 Evening bat emergence surveys of buildings were carried out on 22nd and 26th July 2010.

3.7 The surveys followed the *Bat Conservation Trust - Bat Survey Good Practice Guidelines* (BCT 2007) and a licensed bat ecologist (Licence No: 20083423) was in attendance during the first survey, and successive surveys were conducted by experienced bat workers.

3.8 The evening bat emergence surveys commenced at least 15 minutes before sunset and lasted for at least 1.5 hours after sunset. Two surveyors were employed for each survey to ensure adequate coverage of the buildings and for health and safety reasons. Each surveyor was equipped with a BatBox Duet heterodyne and frequency division bat detector and a hand held recorder (Edirol R-09). Recordings made were analysed using BatSound Software and interpreted according to Russ (2004).

3.9 During the surveys Surveyor 1 was located in the north of the site and walked a transect observing the eastern, northern and western elevations of the buildings. Surveyor 2 was situated in the southern part of the site near the River Crane, and followed a transect that allowed views of the southern elevations of both buildings and the western elevation of Riverside House (Building 1). Listening station stops of approximately five minutes were made at regular intervals along the transect route.

LIMITATIONS

3.10 Only some of the site could be surveyed; areas 2 and 7 could not be accessed during the survey (see Plan 1, Appendix 1). As such, bat activity across this part of the site was not assessed.

3.11 Both emergence bat surveys were carried out in July and therefore may not provide an accurate representation of the use of the survey area by bats throughout the rest of the year.

3.12 There was a brief period of very light rain during the second survey, but this did not appear to have a significant impact on the level of bat activity during the remaining survey.

4 Survey results

DATA SEARCH

4.1 The results of the data search included records for a total of nine species of bats: Daubenton's *Myotis daubentonii*, Natterer's *M. nattereri*, noctule *Nyctalus noctula,* Leisler's *N. leisleri*, serotine *Eptesicus serotinus,* Nathusius' pipistrelle *Pipistrellus nathusii*, common pipistrelle *P. pipistrellus*, soprano pipistrelle *P. pygmaeus* and brown long-eared *Plecotus auritus* (WSP, 2009).

BUILDING ASSESSMENT

4.2 The Royal Mail site comprised a series of single-storey and two-storey buildings and areas of hard standing which provided offices, warehouse space, and parking for the Royal Mail sorting office. Buildings are described individually below (see Appendix 1, Plan 1 for location of buildings). Photographs taken during the survey are presented in Appendix 2 and are referenced within the descriptive text.

Building 1 (and ancillary buildings)

4.3 This was a two-storey modern brick building with a shallow pitched roof covered with asbestos panels (Appendix 2, Photograph 1). The building did not appear to support a separate roof void. The age of the building and the pattern of the brickwork suggested the building was constructed with a cavity wall. The exterior of the building was partially rendered. Windows were metal framed and fascias and soffits were constructed of wood and asbestos.

4.4 Potential bat roosting opportunities included:

- gaps between the brickwork and the fascia boards and damaged areas of fascia board that could offer space for crevice dwelling bat species (Appendix 2, Photograph 2 & 3);
- holes in the brickwork created for services and/or pipework which could offer access for bats to the cavity wall and/or space for a single crevice dwelling bat (Appendix 2, Photograph 4);
- small gaps between soffit panels that could potentially provide access for bats to the interior of the soffit box (Appendix 2, Photograph 5).

4.5 A storage building situated immediately north of Building 1 was a single-storey brick structure with a flat roof, covered with bitumen felt and wooden fascias (Appendix 2,

Photograph 6). Minor damage to the fascias was evident, but overall the building offered limited bat roosting opportunities. A small outbuilding, built against the boundary wall to the east of Building 1, had a mono-pitched roof covered with bitumen roofing shingles (Appendix 2, Photograph 7). This structure was well-sealed with no obvious access points for bats and no cavities of potential value to crevice dwelling bat species.

4.6 No bat droppings were found immediately beneath any of the features within buildings to confirm use by roosting bats. Overall Building 1 and its ancillary buildings were assessed as having low potential to support roosting bats.

Building 2

4.7 This was a two-storey modern brick building with a shallow pitched roof covered with corrugated asbestos panels (Appendix 2, Photograph 8). The building did not appear to support a separate roof void and the pattern of the brickwork suggested it did not have a cavity wall. Fascias were a mixture of wood and metal, and windows were metal-framed throughout.

4.8 The building appeared structurally sound, and windows and fascias were fitted flush to the brickwork. No bat field signs were discovered on the exterior of the building to confirm use by roosting bats. Due to the lack of suitable roosting opportunities this building was assessed as having negligible potential to support roosting bats.

Building 3

4.9 This was a single-storey building with a double-pitched roof covered with corrugated asbestos panels (Appendix 2, Photograph 9). The building did not have a separate roof void and the apex of each roof pitch supported glazed ridge 'roof lights'. The gable end walls were clad with corrugated PVC panels sealed with metal fascias. All windows were covered by metal security grilles.

4.10 The building appeared structurally sound and potential bat roosting opportunities were limited to gaps under corrugated roofing sheets. Cobwebs were noted over many of these gaps suggesting they had not been occupied by bats in recent times. No bat field signs were discovered during the external inspection to confirm use by roosting bats, and overall this building was assessed as having negligible potential to support roosting bats.

Building 4

4.11 This was a two-storey warehouse building with a pitched roof covered with PVC panels (Appendix 2, Photograph 10). The building did not have a separate roof void. The exterior of the building was clad with PVC panels sealed with metal flashing and fascias. Windows were metal-framed throughout. The rear of the building provided a covered parking area.

4.12 The building appeared structurally sound and was constructed of materials of limited value to roosting bats. No bat field signs were discovered during the external inspection to confirm use by roosting bats and overall this building was assessed as having negligible potential to support roosting bats.

Building 5

4.13 This was a single storey warehouse building constructed of brick and breezeblock with a glazed 'north light' roof (Appendix 2, Photograph 11). The building did not have a separate roof void. The exterior of the building was rendered and the gable ends were clad with corrugated asbestos panels. The western end of the north-facing elevation provided a covered storage area.

4.14 The building was in a poor state of repair, and a number of the north light windows on the roof were broken, and the asbestos cladding on the gable ends was damaged (Appendix 2, Photograph 11 & 12). These features provided access for bats to the interior of the building or to the space between the asbestos cladding and the brickwork. The interior of the building was unlikely to be suitable for roosting bats due to daylight conditions provided by the glazed north light roof. No bat field signs were discovered on the exterior of the building during the inspection to confirm use by roosting bats and overall this building was assessed as having low to negligible potential to support roosting bats.

EVENING BAT EMERGENCE SURVEYS

4.15 The Bat Conservation Trust - *Bat Survey Good Practice Guidelines* (BCT 2007) provide a planning and development trigger list where bats are considered likely to be present. The trigger list states that where development proposals involve demolition/modification of buildings 'within 400 metres of rivers, streams, canals, lakes, or within 200 metres of ponds and other aquatic habitats', that bat surveys should be submitted. Due to the proximity of the site to the Rivers Crane and Thames, precautionary bat surveys were recommended despite the limited bat roost potential of the buildings.

4.16 Two evening bat emergence surveys were carried out at the Goat Wharf proposed development site on 22nd and 26th July 2010. The results of these surveys are shown in Appendix 3 and Appendix 1, Plan 2 and 3.

Survey 1

4.17 The evening bat emergence survey on 22nd July 2010 commenced at 20:45. Sunset was recorded at 21:01. The weather conditions at the start of the survey were 18.1°C, dry and calm with 40% cloud cover. There had been heavy showers prior to the survey commencing.

4.18 No bats were seen to emerge from the buildings. The first bat recorded on site was a soprano pipistrelle at 21:41 (40 minutes after sunset). The bat was seen flying between Buildings 1 and 2. Pipistrelle species typically emerge between 0 and 30 minutes after sunset, therefore this record was outside the typical emergence period for this species and the bat was likely to have arrived from a roost off-site.

4.19 A second soprano pipistrelle bat was then seen feeding around roof height between Buildings 1 and 2. Throughout the survey, bat activity was concentrated in the area between Buildings 1 and 2 and around the butterfly bush *Buddleia davidii* and tall ruderal herbs to the south of Building 2. The majority of records during the survey were for soprano pipistrelle bats, with occasional common pipistrelle bats also recorded. At 22:11 a brown long-eared bat was briefly seen flying in the vicinity of the tall ruderals south of Building 2. A single noctule was recorded commuting over the site at 22:30 but was not seen.

Survey 2

4.20 The evening bat emergence survey on 26th July 2010 commenced at 20:42. Sunset was recorded at 20:58. The weather conditions at the start of the survey were 20.8°C, dry and calm with 100% cloud cover. There was a brief period of light rain towards the end of the survey.

4.21 No bats were seen to emerge from the buildings during the survey. The first bat recorded on site was a soprano pipistrelle at 21:30 (32 minutes after sunset). The bat was first seen flying over vegetation south of Building 2 and then within the covered car parking area. It was joined by a second bat of the same species and was seen feeding at roof height between Buildings 1 and 2.

4.22 Bat activity recorded during the second survey largely corresponded with the findings of the first survey. The majority of records were for soprano pipistrelle bats,

and activity was concentrated in the area between Buildings 1 and 2, and over vegetation to the south of Building 2. A single commuting noctule was recorded at 21:42. A brief record for a brown long-eared bat was recorded at 22:08, and then at 22:20 and 22.23 a brown long-eared bat was seen feeding by the butterfly bush and ruderal plants south of Building 2.

5 Conclusions and recommendations

CONCLUSIONS

5.1 The desk study has revealed the presence of bats in the wider landscape (within 5km of the site). However, none of the records referred to bats within the site itself. The site is situated adjacent to the River Crane and close to the River Thames and the open spaces of Petersham Meadows, Marble Hill Park, Bushy Park and Richmond Park. These areas comprise high-quality habitat for invertebrates and veteran trees, suitable for both foraging and roosting bats. Although the site is within close proximity to these areas, it supports habitats of relatively low to negligible value to bats.

5.2 No evidence of bats was identified during the initial building assessment at the Royal Mail site, Twickenham, and buildings within the site were considered to offer low to negligible bat roosting opportunities. No activity to suggest the presence of a bat roost was detected during either of the two evening bat emergence surveys. Any potential impacts on roosting bats associated with the proposed redevelopment of the site are therefore assessed to be negligible.

5.3 Precautionary mitigation measures that should be followed during the demolition and/or if works are delayed, are described in Paragraphs 5.6 and 5.7 below.

5.4 Bat activity recorded during the surveys was concentrated in habitat south of Building 2 and the area between the two buildings. The area south of Building 2 was the darkest and least disturbed part of the site, and it also contained the greatest extent of semi-natural vegetation within the site. This section of the site supported foraging brown long-eared bats, a light-sensitive species not commonly recorded in urban surroundings in London. The area was also used by foraging pipistrelle bats throughout both surveys.

5.5 The space between the two buildings offered a sheltered foraging area that was subject to minimal light spill from adjacent artificial lighting. This part of the site was used by foraging soprano pipistrelle bats, particularly during the early part of the emergence surveys.

5.6 Recommendations to maintain the continued use of the site by commuting and foraging bats and suggested habitat enhancements to improve the value of the site for bats post-redevelopment are described in Paragraphs 5.8 to 5.22.

RECOMMENDATIONS

Precautionary measures

5.7 As a precaution, it is recommended that in the unlikely event that bats are discovered during demolition/construction activities, works should stop immediately and should not continue until a licensed bat ecologist and/or Natural England has been informed and provided advice on how best to proceed.

5.8 Bats are highly mobile animals that use a number of roost sites within and between years. If demolition works are delayed and a significant amount of time lapses between the time of the bat surveys and the commencement of works (more than one year), the possibility of bats moving into the buildings within the site in future cannot be dismissed and further surveys may be required.

MITIGATION AND ENHANCEMENTS

5.9 The survey results suggest that the southern section of the site currently offers a commuting route and foraging site for low numbers of bats. This is likely to be due to the darker, sheltered conditions within in this part of the site and the presence of shrubs and tall ruderal plants in this area. A record for brown long-eared bat in this part of the site is of local significance as this species is uncommon in urbanised areas due to its sensitivity to artificial light.

5.10 To maintain the continued use of the site by commuting and foraging bats, it is recommended that, where possible, the habitat and lighting conditions within the southern section of the site are retained or replicated within the site post-redevelopment. Butterfly bush and tall ruderal plants in this part of the site will be lost as part of the redevelopment. To maintain and enhance bat commuting and foraging opportunities in this part of the site, planting of tree or shrub species, or climbing plants should be considered as part of the design plans, for instance within the courtyard. Examples of suitable tree and shrub species are detailed in Paragraphs 5.13 to 5.14.

5.11 During the survey, bats were observed foraging at roof height between the two buildings. Where possible the provision of green roofs should be considered within the development proposals as this would enhance the value of the site for foraging bats. Recommendations with respect to green roofs are discussed in Paragraph 5.15

5.12 It is recommended that any new lighting proposals for the site should seek to keep lighting to a minimum post-redevelopment. In particular in the southern part of the

site where the existing darkened habitat is likely to have contributed to the higher levels of bat foraging and commuting activity. Lighting near river corridors can be particularly harmful to bats as this habitat represents a high quality resource for bats. Lighting can deter bats from using such areas, thereby reducing important foraging and commuting habitat available to bats. Suggested measures to minimise the potential impacts of lighting on bats are discussed in Paragraphs 5.16 to 5.21.

5.13 Soprano pipistrelle, brown long-eared bat and noctule are UK and London BAP Priority Species and common pipistrelle is London BAP Priority Species. Key actions described in the BAP include proposals to increase the number of roost sites and improve the quality of bat feeding sites across London. Where possible, habitat enhancements to improve the value of the site for roosting bats post-redevelopment should be considered within the design plans. Suggestions for enhancing the bat roosting potential of the site are detailed in Paragraph 5.22.

Bat foraging and commuting habitat

5.14 As much of the more important foraging and commuting resources as possible should be conserved or enhanced for bats. These include the riverside habitats and the wooded copse. Any new planting schemes should ideally comprise native plant species that will attract insects and provide a potential food source for bats throughout the bat activity period (spring to autumn). Suitable tree and shrub species include silver birch *Betula pendula*, hazel *Corylus avellana*, oak *Quercus spp*, alder *Alnus glutinosa*, honeysuckle *Lonicera periclymenum*, dog rose *Rosa canina*, guelder-rose *Viburnum opulus*, hawthorn *Crataegus monogyna* and elder *Sambucus nigra* (JNCC 2001; BCT Undated). Ideally any new planting schemes should seek to create a gradation of vegetation types that includes native trees and shrubs and tall grasses and herb species. A graded plating scheme along the southern boundary of the site would provide a suitably diverse and sheltered habitat for insects and should maximise the value of these habitats for foraging bats.

5.15 Living walls could be considered within the design plans, for instance along the boundary walls of the courtyard. These are simply external walls covered in climbing plants supported on a trellis attached several centimetres from the wall. Recommended plant species include ivy *Hedera helix*, Virginia creeper *Parthenocissus sp*, clematis *Clematis sp.*, honeysuckle *Lonicera sp.*, wisteria *Wisteria sp*, passion-flower *Passiflora sp*, and jasmine *Jasminium sp.*, since many of these plants are night-scented and typically support a high insect diversity (JNCC 2001; BCT Undated).

5.16 The provision of green roofs could also be considered within the design plans for the new buildings, since these will provide additional on–site bat commuting and foraging habitat. Extensive green roofs can be created using recycled aggregate. These can be left to colonise naturally or they can be seeded with an annual wildflower mix or local seed source that includes species such as white campion *Silene latifolia*, ox-eye daisy *Leucanthemum vulgare*, mallow *Malva sylvestris*, knapweed *Centaurea nigra*, yarrow *Achillea millefolium*, scabious *Scabiosa columbaria*, and cornflower *Centaurea cyanus*. Alternatively the roof could be planted with low growing herbs such as lavender *Lavandula sp*, chives *Allium schoenoprasum*, wild marjoram *Origanum vulgare*, thyme *Thymus spp* and wild basil *Clinopodium vulgare* (www.livingroofs.org; Gedge & Little 2008). These plants typically support high insect numbers and will provide additional food sources for bats as well as sheltering of any artificial bat roost sites.

Lighting

5.17 Research has found that bats are sensitive to artificial lighting and that excessive lighting can delay bats from emerging, thus shortening the time available for foraging, as well as causing bats to move away from suitable foraging grounds or roost sites to alternative dark areas (Jones 2000).

5.18 Currently the northern section of the site is subject to light spill from adjacent street lighting along the High Street and Goat Wharf. There was no artificial lighting in the southern part of the site and the majority of bat activity was recorded in the darkest part of the site south of Building 2.

5.19 It is recommended that any new lighting proposals for the site should seek to keep lighting to a minimum, and ideally some parts of the site should be kept dark during key periods of bat activity (0 to 1.5 hours after sunset and1.5 hours before sunrise). If possible the southern boundary along the Thames should be kept dark or subject to minimal light spillage.

5.20 Lighting that is required for security or safety reasons should use a lamp of no greater than 2000 lumes (150 Watts) and should comprise sensor activated low pressure sodium or mercury lamps (Jones 2000; BCT 2009).

5.21 Lighting should be directed to where it is needed with minimal light spillage. This can be achieved by limiting the height of the lighting columns and by using as steep a downward angle as possible and/or a shield or hood that directs the light below the horizontal plane (Jones 2000; BCT 2009).

5.22 Artificial lighting should not directly illuminate any potential bat roosting features or habitats of value to foraging or commuting bats (Jones 2000; BCT 2009).

Artificial bat roost sites

5.23 The following are suggestions for enhancing the bat roost potential of any buildings that will be constructed within the proposed development site:

- Bat bricks or bat tubes (e.g. Schwegler woodcrete Brick Box Type 27 for bats or 1FR Bat Tubes) could be installed within the new buildings to provide artificial roost sites for crevice dwelling bat species such as *Pipistrellus* sp. The new Schwegler 1FQ bat roost box has been designed specifically to be fitted on the external walls of buildings and requires no maintenance or cleaning.
- New buildings could include hanging tiles and/or weather boarding, with bat access on their exterior walls to provide crevice spaces that could be used by bats.
- Bat boxes such as Schwegler summer bat boxes (e.g. 1FF, 1FS, 2F and 2FN) could be installed onto mature trees that are retained within the redevelopment plans.

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- Gedge, D & Little, J. (2008) The DIY guide to green and living roofs.
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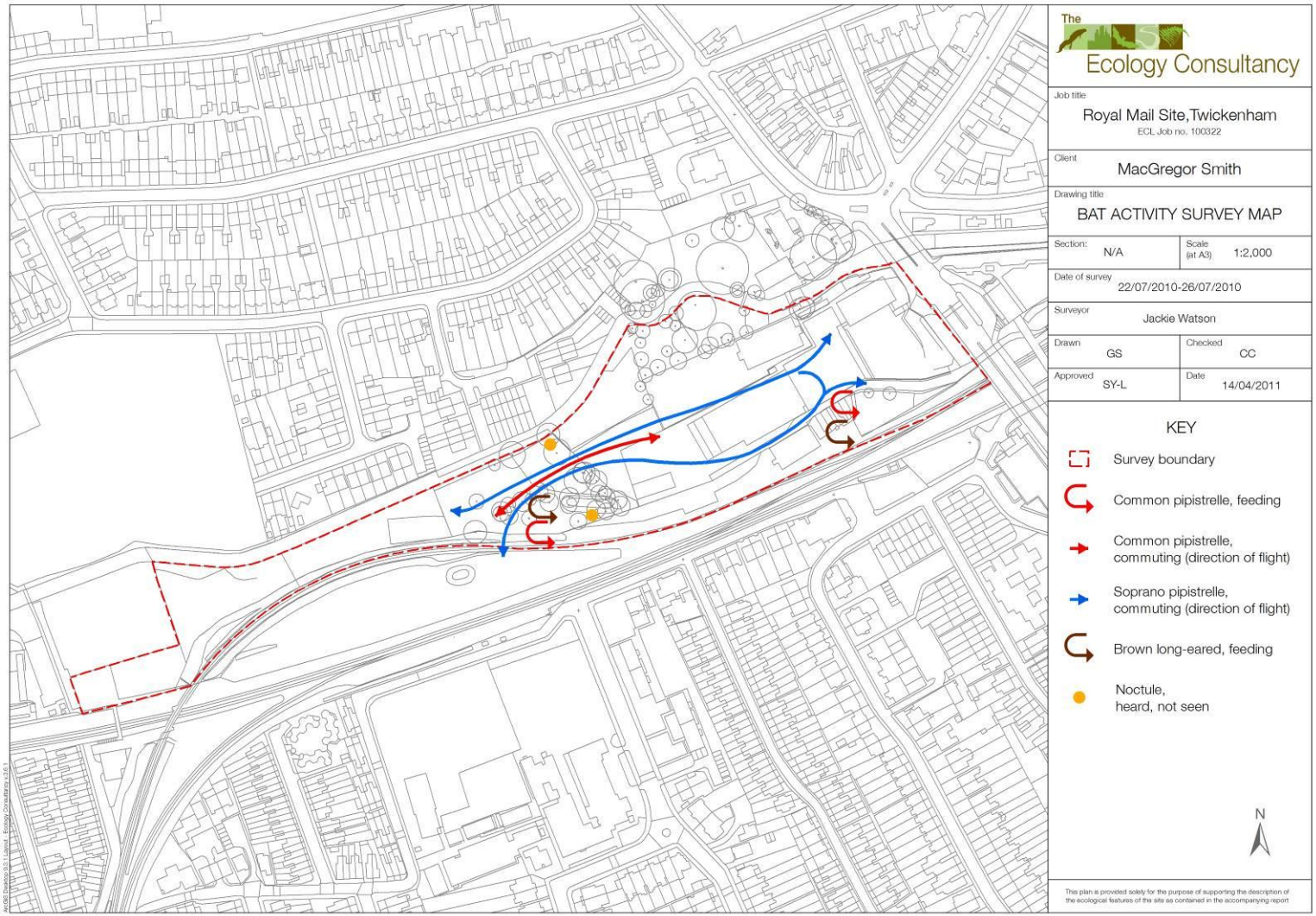
Appendix 1: Plans

Plan 1: Existing site plan (adapted from ECL Phase 1 habitat plan) showing building and tree numbers. Refer to Section 4 for detailed description.

Plan 2: Bat activity map



Appendix 2: Photographs

Photograph 1

Building 1 – main building

The exterior of the building offered features of low potential for roosting bats.

Photograph 2

Building 1 – main building

Gaps between the fascia and the brickwork offered limited potential for crevice dwelling bat species.

Photograph 3

Small gaps between soffit panels could potential provide access for bats into the soffit box.

Photograph 4

Building 1 – main building

A hole in the brickwork provided potential access for bats to the cavity wall and/or a cavity for a single crevice dwelling bat.

Photograph 5

Building 1 – main building

Photograph 6

Ancillary building

This building was assessed to be of limited value to bats.

Photograph 7

Building 1 – ancillary building

This building was well sealed and was considered of negligible value to roosting bats.

Photograph 8

Building 2

The building appeared structurally sound and a lack of suitable roosting opportunities rendered this building as having negligible potential to support roosting bats.

Photograph 9

Building 3

This building offered limited bat roosting opportunities and was assessed as having negligible potential to support roosting bats.

Photograph 10

Building 4

The building was constructed of materials of limited value to roosting bats.

Photograph 11

Building 5

This warehouse building was in a poor state of repair and had a partially glazed roof making the interior largely unsuitable for roosting bats due to daylight conditions.

Photograph 12

Building 5

Damage to the asbestos cladding on the gable ends provided potential access for bats to space between the cladding and the brickwork.

Appendix 3: Bat Survey Results

Table 1: Results of the dusk bat survey 22nd July 2010.

Sunset: 21.01 **Start time**: 20.45 **End**: 22.32

Weather conditions: 18.1°C, 40% cloud cover, dry, calm

Surveyor 1 – walked a transect to the north, west and east of Buildings 1 and 2		
Time	Species	Comments
21.48	Soprano pipistrelle	Faint record, heard by Lleylandii, not seen
21.54 to 21.57	Soprano pipistrelle	Bat seen and heard feeding between Building 1 and 2. Intermittent records for 3 minutes
21.58	Soprano pipistrelle	Second bat arrived in area between Building 1 and 2 feeding for 1 minute, then 1 bat headed off in southerly direction towards Thames, then back to same area
22.00	Soprano pipistrelle x 2	Social calls heard from bats feeding at roof height
22.02	Soprano pipistrelle	Faint record, heard not seen by Thames west of Building 1
22.05 to 22.08	Soprano pipistrelle	Two bats continuously feeding between Building 1 and 2
22.09	Soprano pipistrelle	Brief record, heard not seen by Thames west of Building 1
22.12	Soprano pipistrelle	Commuting bat heard by western elevation of Building 1, not seen
22.13	Common pipistrelle	Commuting bat heard by western elevation of Building 1, not seen
22.15	Soprano pipistrelle	Feeding near north-west corner of covered car park of Building 2
22.17	Soprano pipistrelle	Feeding over the car park section of Building 2
22.20 to 22.23	Soprano pipistrelle x 2	Feeding between Buildings 1 and 2 and social calling
22.28	Soprano pipistrelle	Commuting and brief feeding heard by western elevation of Building 1, not seen
22.30	Noctule	Faint pass, bat heard but not seen

Surveyor 2 – located south of Buildings 1 and 2		
Time	Species	Comments
21.41	Soprano pipistrelle	Brief record heard by Building 2, bat not seen
21.42	Soprano pipistrelle	Brief pass over butterfly bush south of Building 2
21.43	Soprano pipistrelle	Brief record heard by Building 2, bat not seen

Surveyor 2 – located south of Buildings 1 and 2		
Time	Species	Comments
21.52	Soprano pipistrelle	Feeding bat, not seen
21.56	Soprano pipistrelle	Bat seen feeding between building 1 and 2 at roof height
21.57	Common pipistrelle	Feeding over butterfly bush south of Building 2
21.58	Soprano pipistrelle	Feeding in circles over area south of Building 2
21.58	Common pipistrelle & soprano pipistrelle	Feeding over tall ruderal herbs south of Building 2
21.59 to 22.04	Soprano pipistrelle	Feeding over butterfly bush south of Building 2, intermittent records for 5 minutes
22.07	Common pipistrelle	Brief pass south of Building 2, not seen
22.08	Soprano pipistrelle	Brief pass south of Building 2, not seen
22.09	Soprano pipistrelle	Feeding over butterfly bush south of Building 2
22.11	Brown long-eared	Seen flying by butterfly bush south of Building 2, not echolocating
22.11	Soprano pipistrelle	Flew from tall ruderal patch towards Thames
22.12	Common pipistrelle	Feeding over tall ruderal patch south of Building 2
22.14	Soprano pipistrelle	Commuting bat, not seen
22.18	Soprano pipistrelle	Commuting bat, not seen
22.24	Soprano pipistrelle	Commuting bat, not seen
22.30	Noctule	Commuting pass heard, bat not seen
22.30	Common pipistrelle	Commuting bat, not seen
22.31	Soprano pipistrelle	Commuting bat, not seen

Table 2 : Results of the dusk bat survey 26th July 2010.

Sunset: 20.58 **Start time**: 20.42 **End**: 22.30

Weather conditions: 20.8°C, 100% cloud cover, dry, calm

Surveyor 1 – walked a transect to the north, west and east of Buildings 1 and 2		
Time	Species	Comments
21.30 to 21.39	Soprano pipistrelle	Seen feeding over Building 2 and within covered car park area
21.39	Soprano pipistrelle	Second bat arrived in area and then both bats seen feeding between Building 1 and 2
21.39 to 21.45	Soprano pipistrelle x 2	Bats flying and feeding between Building 1 and 2 and briefly feeding over conifers
21.47 to 21.48	Soprano pipistrelle	One bat seen feeding between Building 1 and 2
21.49 to 21.52	Soprano pipistrelle x 2	2 bats feeding between Building 1 and 2, calls recorded intermittently for 3 minutes
21.58 to 22.02	Soprano pipistrelle	Feeding by butterfly bush south of Building 2

Surveyor 2 – located south of Buildings 1 and 2		
Time	Species	Comments
21.32	Soprano pipistrelle x 2	Bats seen circling between Building 1 and 2
21.35 to 21.37	Soprano pipistrelle x 2	Feeding between Building 1 and 2 at roof height
21.40 to 21.45	Soprano pipistrelle x 2	Feeding between Building 1 and 2 at roof height, and moving down to feed over butterfly bush south of Building 2
21.42	Noctule	Commuting bat heard, not seen
21.46	Soprano pipistrelle	Flew from direction of Building 2 along eastern and then southern elevation of Building 1
21.49	Soprano pipistrelle	Bat seen feeding between building 1 and 2 at roof height
21.53	Soprano pipistrelle	Bat flew along southern elevation of Building 2 then headed north towards High Street
21.55	Common pipistrelle	Feeding above butterfly bush
21.57	Soprano pipistrelle	Flew from direction of Building 2 along eastern and then southern elevation of Building 1, towards Thames
21.59	Soprano pipistrelle	Feeding between buildings
22.01	Soprano pipistrelle	Flew from direction of Thames past Building 1 heading in a northerly direction towards Building 2

Surveyor 2 – located south of Buildings 1 and 2		
Time	Species	Comments
22.06	Soprano pipistrelle	Pass heard, not seen at south-west corner of Building 1
22.08	Brown long-eared	Brief pass heard, not seen at south-east corner of Building 1
22.08	Soprano pipistrelle	Heard not seen, at south-east corner of Building 1
22.11	Common pipistrelle	Heard feeding south of Building 2, not seen
22.12 to 22.16	Soprano pipistrelle	Intermittent passes and feeding activity in area south of Building 2
22.17	Soprano pipistrelle x 2	Seen feeding over tall ruderal patch south of Building 2
22.19	Soprano pipistrelle	Feeding bat heard, not seen
22.20	Brown long-eared	Seen flying over butterfly bush towards ruderal patch
22.23	Brown long-eared	Feeding in circles near to butterfly bush south of Building 2
22.28	Soprano pipistrelle	Pass heard, not seen in area south of Building 2

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