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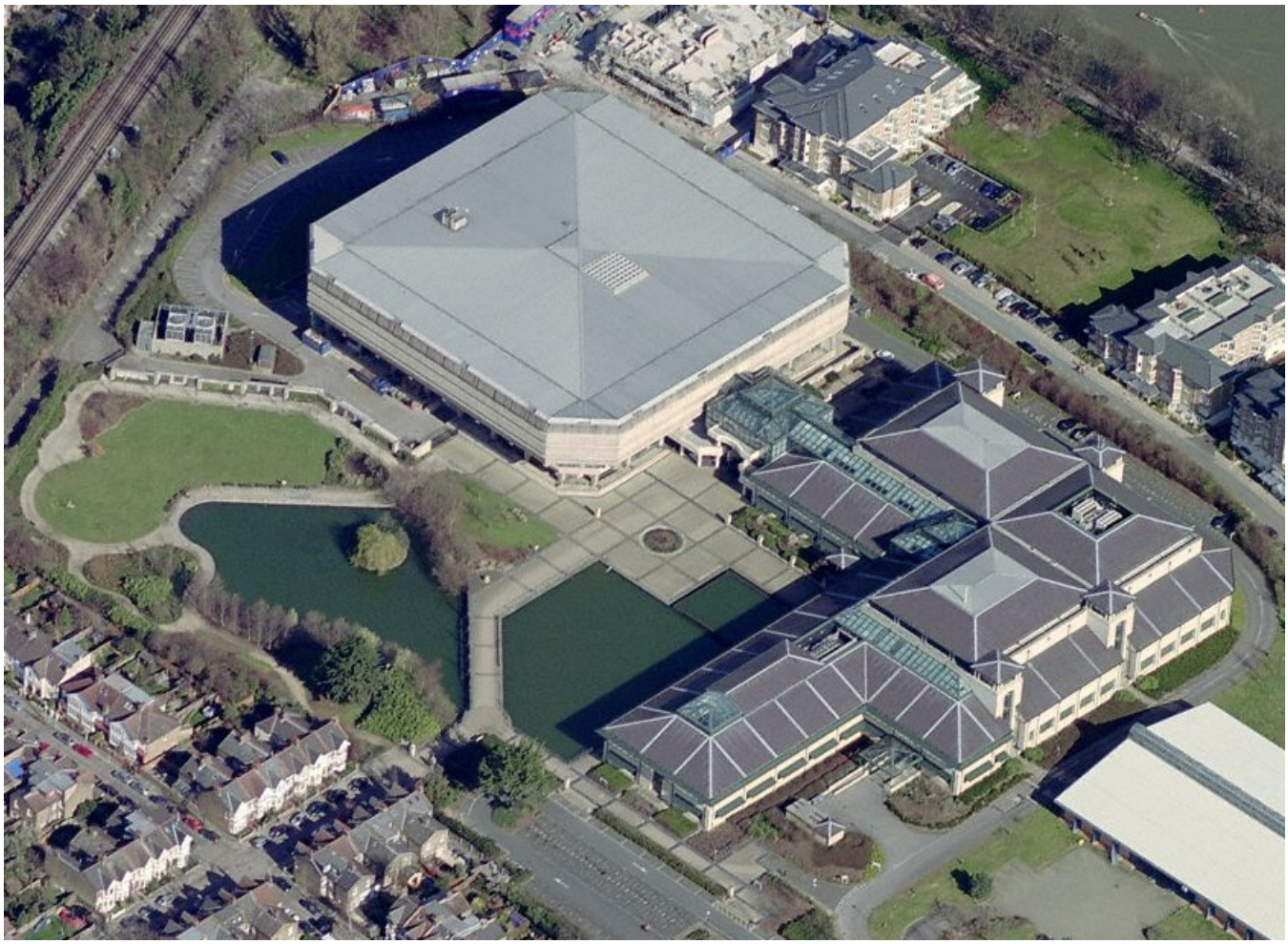
The National Archives

Biodiversity Action Plan



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1 Introduction

1.1 Background

In August 2010, Jacobs was commissioned by The National Archives to compile a Biodiversity Action Plan (BAP) for its site in Kew, Richmond, West London.

The requirement to produce a BAP has been driven by a combination of legislation and policy that places certain obligations on Government departments with regard to biodiversity, and a willingness and enthusiasm from The National Archives staff for recording, monitoring and enhancing biodiversity on their site.

This document has been written for the benefit of a non-technical audience and commences with an explanation of what biodiversity is and why biodiversity is relevant to The National Archives. A description of the baseline ecological conditions on the site has been provided and put into a local context by outlining the biodiversity and conservation objectives of the London Borough of Richmond upon Thames.

The remainder (Section 3 onwards) of the document describes how this BAP is designed to operate, the process behind the selection of the priority habitats and species that the BAP focuses upon, and the objectives that will be implemented over the five year period that this BAP covers.

So that the BAP can sustain itself, its objectives have been designed to be measurable or repeatable, attainable and relevant to regional and national conservation objectives. Finally, although a timetable of objectives over a five year period has been provided, this document should be treated as 'live' with the outcomes of achieved objectives influencing future objectives or inputs into the BAP.

1.2 What is biodiversity?

Biodiversity, or biological diversity, is the phrase used to describe all forms of plant and animal life – including the genetic and morphological variability within a species – and the range of habitats and ecosystems in which they inhabit. Biodiversity has been defined by the Convention on Biological Diversity, signed by the UK Government in 1992, as:

'The variability among living organisms from all sources, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species and of ecosystems.'

1.3 Biodiversity Action Plans

In 1992, the Convention on Biological Diversity was signed by 159 Government's at the Earth Summit in Rio de Janeiro and was the first treaty to provide a legal framework for the conservation of biodiversity. As a signatory of the Convention, in 1994 the UK Government produced a document titled *'Biodiversity: the UK Action Plan*' that described the measures that should be taken to conserve biodiversity in the United Kingdom. This document is known as the UK Biodiversity Action Plan[1].

To implement the newly created Biodiversity Action Plan (BAP), the UK Biodiversity Steering Group, also created in 1994, established a framework and criteria for identifying the species and habitats within the United Kingdom that are of conservation concern. Action plans were then created describing targets and objectives for protecting, conserving and enhancing these 'priority' species and habitats[2].

In addition to a national BAP, the system of selecting priority species and habitats and creating targeted objectives for their conservation was implemented at a county or borough level in the form of Local Biodiversity Action Plans (LBAP). By focussing on species and habitats of local significance, LBAPs aim to contribute towards national conservation objectives identified by the UK Biodiversity Action Plan.

More recently, private and public organisations, especially those with land-holdings or whose activities impact on ecosystems and habitats, have used site or company specific BAPs as an effective means of conserving biodiversity and achieving their environmental obligations[3].

1.4 Business and biodiversity

1.4.1 What is the relationship between business and biodiversity?

All companies can have an impact on biodiversity in the course of their business. Whilst not all business operations have the potential to result in a detrimental impact

[1] *Biodiversity: the UK Action Plan*. 1994
[2] www.ukbap.org.uk, 2010
[3] *Business and Biodiversity*. Earthwatch, 1998.

to biodiversity (such as the unsustainable exploitation of natural resources, destruction or damage to sensitive habitats or species, or emission of polluting substances), there are many business activities that could have a *positive* impact on biodiversity but are not being implemented. Such activities include the management of landholdings in a way which is sensitive to biodiversity, putting financial support into biodiversity conservation projects, and sourcing supplies from sustainable sources.

Businesses (or in the case of The National Archives, a Government Department) have the opportunity to officially declare their commitment to biodiversity by seeking to obtain a Biodiversity Benchmark: an award that provides national recognition for an organisation's commitment to biodiversity by demonstrating responsible land management with biodiversity at the core of the organisation's operations. By working towards attaining Biodiversity Benchmark status, an organisation would be meeting its legislative and policy obligations towards biodiversity, as discussed below.

In addition, the benefits of operating a business that is sensitive to biodiversity include an increase in staff satisfaction and morale and an improved relationship with regulators, customers and communities[4].

1.4.2 Obligations to biodiversity

In the UK, there is a framework of legislation and policy that places certain obligations on businesses and organisations with regard to biodiversity. The key pieces of legislation and policy are discussed below:

The Natural Environment and Rural Communities Act 2006

Section 40 of the Natural *Environment and Rural Communities Act (NERC) 2006* states that '*every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity*'. Section 40 goes on to state that *'conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat.'*

In this context, a 'public authority' includes a government department (i.e. the Ministry of Justice).

[4] *Business and Biodiversity*. Earthwatch, 1998.

The Countryside and Rights of Way Act 2000

Section 74 of the *Countryside and Rights of Way Act 2000* states that *'it is the duty of any Government department, in carrying out its functions, to have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biological diversity in accordance with the Convention'.*

In this section, 'conservation' relates to a living organism or type of habitat and includes the restoration or enhancement of a population or habitat.

Planning Policy

The requirement to protect and enhance biodiversity is also enforced through planning policy and more information relating to this is available in Appendix H.

1.5 The benefits of producing a Site Biodiversity Action Plan

Every piece of land, no matter how small or large, can help conserve and enhance local biodiversity. For companies with land holdings, the most effective means of managing biodiversity and addressing their statutory responsibilities is through a site Biodiversity Action Plan; this plan should also contribute towards the Local and UK BAP.

In addition to assisting companies in managing their land holdings to benefit biodiversity, the process of developing and implementing a site BAP can be a useful mechanism for raising employee awareness about biodiversity, gaining stakeholder trust and buy-in, providing training and motivation for staff to become involved in the process and demonstrating what a company is undertaking for the local environment and community[5].

[5] *Business and Biodiversity*. Earthwatch, 1998.

2 Baseline conditions

2.1 Biodiversity in Richmond

The London Borough of Richmond upon Thames is believed to support some of the most valuable biodiversity assets in London in terms of the total area of green space, the quality and diversity of parks, open spaces and conservation areas and the variety of different habitats and species that these support. Many of the habitats and species found within Richmond are important on a regional, national and international scale[6].

In 1996, the Richmond Biodiversity Group was formed. In 1999 the partnership drew together a list of the species and habitats believed to be priorities for conservation concern in the local area. Priorities were selected by considering a number of factors, including those which are considered nationally important, those which are particularly attractive to people, or those which are characteristic to Richmond. Based on this list, individual Species and Habitat Action Plans were produced; these form the bulk of the Richmond BAP[7]. Table 2.1 lists the priority habitats and species selected for inclusion in the Richmond BAP.

The aims of the Richmond BAP are:

- To conserve, and where possible, enhance Richmond's variety of habitats and species, in particular those which are of international or national importance, are in decline locally, are characteristic to Richmond, have particular public appeal, or which can raise the profile of biodiversity;

- To ensure that Richmond residents become aware of, and are given the opportunity to become involved in, conserving and enhancing the biodiversity around them; and,

- To raise awareness and increase stakeholder involvement in maintaining and where possible, enhancing species and habitats of importance.[8]

[6] *London Borough of Richmond upon Thames Biodiversity Action Plan*. Richmond Biodiversity Group.
[7] *London Borough of Richmond upon Thames Biodiversity Action Plan*. Richmond Biodiversity Group.
[8] *London Borough of Richmond upon Thames Biodiversity Action Plan*. Richmond Biodiversity Group.

Table 2.1. Richmond BAP Priority Habitats and Species

Habitats	Species	
Ancient parkland / veteran trees	Water vole	Bumble bee
Meadow	Great crested newt	Black poplar
Acid grassland	Stag beetle	Badgers
Broad-leaved woodland	Skylark	Reed warbler
Urban (gardens, allotments, churchyards and cemeteries)	Song thrush	Small copper butterfly
Reedbeds	Bats	Kingfisher
Rivers and streams	Bluebell	Dragonflies
Tidal Thames	Tower mustard	Pochard
Standing open water	Common frog / Common toad	Grey heron
Floodplain grazing marsh	Tawny owl	Great crested grebe
Hedgerows	Hedgehog	Cardinal click beetle
Purple moor grass / Rush pasture	Woodpeckers	Mistletoe
Urban wastelands	Knapweed	

2.2 Biodiversity at The National Archives

2.2.1 Ecological walkover survey

An ecological walkover survey was undertaken by an ecologist from Jacobs UK Ltd. on the 18th August 2010 in accordance with the guidelines provided in the *Handbook for Phase 1 Habitat Survey – a technique for environmental audit* (JNCC, 2003). All habitats within The National Archives site were mapped and the dominant plant species present in each habitat recorded. The survey also included an assessment of the habitats and features found within the site boundary for their potential to support legally protected and/or notable species.

Eight habitat types were recorded during the survey; parkland, species poor semi-improved grassland, amenity grassland, standing water, introduced shrubs, hedgerows, buildings and bare ground.

No evidence of protected species was observed during the survey and the on site habitats were considered to be sub-optimal for the majority of protected species, although all areas of scrub, hedgerows and trees have the potential for use by nesting birds.

The site supports suitable foraging habitat for badgers *(Meles meles)* and both buildings have features that could allow bats access into the roof spaces. Anecdotal records from The National Archives staff also suggest that badgers and bats may be active on the site.

The ecological report concluded that the site supports, or has potential to support, habitat for Biodiversity Action Plan Species[9] including common frog *(Rana temporaria)*, common toad *(Bufo bufo)*, hedgehog *(Erinaceus europaeus)*, song thrush *(Turdus philomelos)*, stag beetle *(Lucanus cervus)*, bumble bee *(Bombus spp)* and dragonflies *(Anispotera spp)*[10].

The ecological walkover survey report is provided in Appendix A.

[9] Taken from species listed on the London BAP and LB Richmond upon Thames BAP.
[10] *Ecological Walkover Survey Report.* Jacobs UK Ltd. November 2010.

2.2.2 Ecological Data Search

Ecological data of The National Archives site and surrounding land to a 2km radius was obtained from Greenspace Information for Greater London, the open space and biodiversity records centre. The full data search results are provided in Appendix B.

Designated wildlife sites

The results of the desk-based search show that there is one site with a national statutory designation (Syon Park Site of Special Scientific Interest (SSSI)), and two Local Nature Reserves within the 2km search area. None of these designated sites are located within close proximity to The National Archives and will not be influenced by any activities within The National Archives landholding.

There are 16 non-statutory Sites of Nature Conservation Importance within 2km of The National Archives site, although only two are located within close proximity: the River Thames and Tidal Tributaries Site of Metropolitan Importance (SMI) and Occupation Lane, Kew Railway Bridge Site of Borough Grade II Importance (SBI).

The River Thames SMI is designated as it supports a variety of fish and bird species and acts as an important wildlife corridor. The proximity of The National Archives site to the River Thames means that there is potential for birds commuting along the river to utilise the habitats on site.

Occupation Lane, Kew Railway Bridge SBI is a tiny plot of woodland, railside land and road verge designated as a reserve for the rare two-lipped doorsnail *(Balea biplicata)*. The designated area of railside land is located immediately adjacent to The National Archives site. Given the close proximity of the snail population, there is potential to encourage this species onto The National Archives site, provided that suitable habitat conditions are present.

Species

51 legally protected species and/or species that are listed on the National or London Biodiversity Action Plan have been recorded within 2km of the site, although none of these records are from within The National Archives landholding itself. However, anecdotal records of BAP species have been provided by The National Archives staff, as discussed below.

2.2.3 Other records

Since 2009, staff at The National Archives have been recording the species observed on the site. The list collated includes birds, mammals and invertebrates and is provided in Appendix C along with the conservation and protection status of each species, where appropriate. Of the species on this list, the song thrush, house sparrow *(Passer domesticus)* and starling *(Sturnus vulgaris)* are listed as priorities on the Local or National BAP.

2.2.4 Existing biodiversity management

The following initiatives and biodiversity enhancements have been implemented, or are proposed, by The National Archives staff:

- Erection of bird and bat boxes;
- Creation of log piles;
- Installation of bee and invertebrate tubes;
- Nesting rafts on the ponds;
- Involvement in the RSPB House Sparrow Project; and,
- Erection of signage informing staff and visitors of on-site biodiversity initiatives.

In addition, the potential to adopt the following biodiversity enhancements are under consideration but have yet to be implemented:

- Creation of a wild flower area and leaving areas of grassland to grow long;
- Introducing planting to encourage pollinating insects;
- Appropriate management of hedges to enhance biodiversity value; and,
- Habitat enhancements in the existing ponds.

2.2.5 Known limitations for biodiversity management on the site

It is noted that bat and birds boxes cannot be erected on the main buildings on the site as future development of the buildings may be compromised by protected species presence. Additionally, green or brown roofs cannot be installed due to the risk of water ingress damaging sensitive documents.

Aside from the above, no specific limitations have been identified that would significantly restrict the implementation of reasonable Biodiversity Action Plan objectives at The National Archives site.

3 The National Archives Biodiversity Action Plan

3.1 Aim

The aim of The National Archives Biodiversity Action Plan (TNABAP) is to:

- *Conserve and enhance biodiversity within The National Archives site at Kew;*
- *Promote biodiversity issues with staff and visitors; and,*
- *Contribute towards local and national biodiversity objectives.*

3.2 Selection of Priority Habitats and Species for the TNABAP

The current list of UKBAP priority species and habitats was published in August 2007 following a 2-year review of the BAP process and priorities. The list now contains 1150 species and 65 habitats that have been listed as priorities for conservation action under the UK BAP[11]. The London Borough of Richmond upon Thames BAP has reduced this list to just 38 species and habitats that are considered a priority locally[12], as shown in Table 2.1.

So that The National Archives Biodiversity Action Plan (TNABAP) can contribute towards local, regional and national biodiversity objectives, the priority habitats and species listed on the TNABAP overlap with those that have been listed on the London and London Borough of Richmond upon Thames BAPs.

Given the small size of The National Archives site and the restricted habitats that it supports, the TNABAP focuses on just two species and three habitats. The selection of the species and habitats has been influenced by the results of the ecological walkover survey, data search, and the site records collated by The National Archives staff. Based on this information, a shortlist of species and habitats was produced; the 'target' species and habitats were then selected based on the application of the following criteria:

- A legal obligation exists to protect the species or habitat;
- the habitat or species is already present on the site but its status or distribution could be improved with targeted management; and,

[11] www.ukbap.org.uk, 2010

[12] *London Borough of Richmond upon Thames Biodiversity Action Plan*. Richmond Biodiversity Group.

- the species has not previously been recorded on the site but there is potential for on site habitat enhancements to contribute towards the local abundance and conservation status of the species concerned.

3.2.1 The National Archives Priority Habitats

Based on the criteria discussed above, the following habitats have been selected for inclusion in the TNABAP:

Ponds
Hedgerows
Urban (gardens, buildings and amenity space)

3.2.2 The National Archives Priority Species

Specific actions have been assigned to individual species only when their needs are beyond the means of the actions outlined in the Habitat Action Plans (so for example, an action plan for common frog and common toad has not been proposed as the objectives of a Species Action Plan for these species would be addressed by an over arching Habitat Action Plan for ponds). Based on the criteria discussed above, the following species have been selected for inclusion in the TNABAP:

Stag beetle
Bats

4 Implementation

4.1 Personnel

To ensure that the objectives of the TNABAP are implemented, it is recommended that a member of The National Archives staff be appointed to act as 'lead' for delivery of biodiversity related initiatives. A dedicated lead is considered necessary in order to coordinate the implementation of the BAP, monitor its progress, and measure and record tangible outputs. An individual lead is also important so that staff, volunteers and partners involved in the TNABAP have a known point of contact through which to direct queries, ideas or site records.

As implementing this BAP will be additional to the professional responsibilities of the lead member of staff (i.e. they still have their day job to do), the creation of an official biodiversity committee or Steering Group may be an appropriate way to share the responsibility and to keep up the momentum of achieving the TNABAP objectives.

As several of the objectives on the TNABAP relate to changes in grounds maintenance regimes and/or alterations to the current landscaping design of The National Archives site, it is also recommended that a member of the Estates team be included on any biodiversity committee or Steering Group, or that they are closely involved in any decision making and planning.

Whilst most of the targets and objectives of the TNABAP have been designed to be achievable, some may require specialist input from ecologists or experienced practitioners, for example undertaking pond surveys. In these instances, the services of ecological professionals and/or expert conservation groups (e.g. the Wildlife Trusts, local bat groups etc) should be sought. A list of appropriate organisations can be found in Appendix D.

4.2 Technical support

As discussed above, the objectives of the TNABAP have been designed so that they can be implemented by staff with a non-ecological background. However, although enthusiasm and willingness to enhance the biodiversity value of the site will achieve a lot, it is acknowledged that the staff implementing the TNABAP may not be experienced environmental practitioners. As such, a series of guidance notes have been produced to support the more 'technical' TNABAP objectives; these guidance

notes provide background information and advice to make implementation of the objectives more achievable. The guidance notes are provided in Appendix E.

A drawing outlining the locations on the site were specific enhancement measures could be implemented is also provided by Figure 2 in Appendix F.

4.3 Monitoring and review

Monitoring and review of the TNABAP will be the responsibility of the BAP 'lead'. It is recommended that the BAP and its objectives be reviewed every 12 months so that progress can be tracked and monitored, and adequate preparation made prior to implementation of the next set of objectives.

The life of the TNABAP is 5 years and a comprehensive review of the objectives, successes and failures should be undertaken at the end of this period; new objectives should then be set for completion over the next 5 years.

The TNABAP should be viewed as a flexible document and can be added to with additional objectives as the lead or Steering Group sees fit. Equally, the target dates by which to achieve the objectives are also flexible (although all should ideally be completed by the end of 2015) and projects should be brought forward or delayed to coincide with available funding, resource or opportunity. Where objectives have not been met or are not achievable, the TNABAP should be amended accordingly by revising the target date or replacing the objective with another action that would benefit a priority or target species on the TNABAP, LBAP or UKBAP.

4.4 Reporting

An annual report should be compiled describing the successes, failures and actions achieved under the TNABAP, as well as plans for the forthcoming year. The report should be made available to all The National Archives staff and visitors to promote the biodiversity initiatives and achievements, and to drive better performance through feedback and reviews.

Details relating to the TNABAP and the objectives that have been completed could also be reported on The National Archives website, or as a regular article in a newsletter.

Records of BAP or legally protected species obtained during site surveys throughout the year should be sent to the Local Biological Records Centre. The information submitted must include the name of the species, the name of the recorder, and the date and location that the record was taken. The contact details of the Local Biological Records Centre are provided in Appendix D.

4.5 Biodiversity Action Reporting System (BARS)

BARS is the UK's Biodiversity Action Plan reporting system. It includes national, local and company Biodiversity Action Plans and the Biodiversity Strategies and Action Plans of all four UK countries. BARS is the information system that supports the planning, monitoring and reporting of BAPs and enables everyone involved in BAP implementation to enter action plans and record progress towards targets and actions; this information can be searched by members of the public to learn about BAP activities underway[13].

To set the TNABAP in the wider context, and to promote the biodiversity aspirations of The National Archives, consideration should be given to registering with BARS.

[13] www.ukbap-reporting.org.uk

5 The National Archives Habitat Action Plan – Ponds

5.1 Aims

- *To enhance the aquatic habitat of the ponds on The National Archives site and achieve a net increase in the number of pond specialist species present;*
- *Survey, record and monitor the presence and abundance of aquatic species in The National Archives ponds; and,*
- *Undertake appropriate management of The National Archives ponds for the benefits of biodiversity.*

5.2 Introduction

Ponds support a wide range of plants and animals and are one of the most important freshwater habitats found in the UK. The biodiversity found within a pond can range from microscopic algae and protozoans, invertebrates, amphibians, fish and birds, as well as a variety of aquatic plants.

Ponds are still common almost everywhere in the UK, but the number of ponds has dropped enormously in the last 100 years, with nearly one million ponds being lost since the beginning of the 20th Century. Currently there are approximately 400,000 bodies of standing water in Britain although many are poorly managed or affected by pollution[14].

With a decline in ponds in the countryside, garden and ornamental ponds can make a valuable contribution to local biodiversity. However, whilst all ponds have the potential to support wildlife, not all are managed in a way that is sympathetic to biodiversity and so their full potential is seldom met.

5.3 Current status

The National Archives site supports two artificial ponds. Both ponds have concrete sides and are immediately adjacent to areas of hardstanding and short amenity grassland. No macrophyte vegetation (submerged, floating or emergent) is present in either pond although Pond 2 (refer to Figure 1, Appendix A) supports a small island with dense shrubs and a weeping willow *(Salix x sepulcralis)* tree. The banks

[14] www.pondconservation.org.uk, 2010

of Pond 2 also support mature trees including alder *(Alnus glutinosa)*, silver birch *(Betula pendula)*, goat willow *(Salix caprea)* and grey willow *(Salix cinerea)*. Pond 1 has experienced an algal bloom during recent years.

The source of water for the ponds is unknown although the water levels are periodically topped up with mains water.

A detailed wildlife survey of the ponds has not been undertaken although common species of waterfowl, coot *(Fulica atra)*, moorhen *(Gallinula chloropus)*, and a grey heron *(Ardea cinerea)* are known to frequent the site.

5.4 Current factors affecting the habitat

5.4.1 Adjacent land use and management

The habitats surrounding a pond can have a significant influence on its value as a resource for wildlife. The adjacent habitats and land use are of particular importance in urban settings when biodiversity is pressurised by issues such as habitat fragmentation and inappropriate management practices[15].

At the site scale, the biodiversity value of the ponds at The National Archives would be influenced by their close proximity to areas of hardstanding and short amenity grassland which can inhibit the movement of amphibians between ponds, as well as providing unfavourable conditions for sheltering or hibernating. The presence of such habitats can also reduce the abundance of invertebrates on a site – these are important prey items for aquatic animals such as amphibians and dragonflies.

At the local scale, the potential of the ponds to recruit aquatic species is likely to be reduced by the relative isolation of The National Archives site from other ponds by an absence of habitat links and barriers to dispersal presented by the River Thames and extensive areas of urban development.

Run-off from the application of garden herbicides, pesticides and fertilisers, or pollutants from nearby road drains may also have a negative impact on the ponds by increasing nutrient levels, encouraging algal blooms, and decreasing the diversity of aquatic flora.

[15] Garden Ponds Habitat Action Plan, www.wildlifetrust.org.uk, 2000

5.4.2 Pond design

The size, shape and materials used to construct an ornamental pond can affect the quality of the habitat that it provides.

Larger ponds have the potential for supporting a greater number and diversity of species although the size is often influenced by the surrounding land use (especially when located in garden or park environments). Ponds with shallow sloping edges allow amphibians to display and egress whilst shelves provide depth variation for different plant species[16].

At The National Archives site, the ponds are a good size and have the potential to support a range of aquatic plants and animals. However, the hard edges, vertical sides and absence of shallow margins are likely to hamper vegetation growth and succession and restrict the potential for use by invertebrates and breeding amphibians.

5.4.3 Pond management

The use of mains water to top up the ponds during the summer months may increase the level of nutrients and contribute towards the growth of algal blooms. This can have a detrimental impact to the aquatic environment by blocking out sunlight to submerged plants, thus inhibiting their growth.

5.5 Current action

5.5.1 Legal status

Ponds are not afforded specific legal protection although individual waterbodies could receive full protection if they support species listed on Annex II of the *Conservation of Habitats and Species Regulations 2010* (e.g. great crested newts *(Triturus cristatus)*), or species that receive 'full' protection under Schedule 5 of the *Wildilfe and Countryside Act 1981* (as amended) (e.g. water vole *(Arvicola terrestris)*).

5.5.2 Mechanisms targeting the habitat

UK Biodiversity Action Plan

Ponds are a priority habitat on the UK Biodiversity Action Plan although the ponds at The National Archives do not meet the criteria outlined in the Pond UKBAP and so

[16] Garden Ponds Habitat Action Plan, www.wildlifetrust.org.uk, 2000

the objectives of the TNABAP would not contribute towards the national targets. However, the proposed enhancements may contribute towards the conservation objectives for the common toad, a UKBAP priority species.

Local Biodiversity Action Plans

Standing open water is listed as a priority habitat on the London BAP and the Richomond upon Thames BAP. Although a Habitat Action Plan for Richmond has not yet been produced for this habitat, it is likely that any management recommendations would focus on the larger waterbodies in the Borough, such as canals, reservoirs and lakes. However, some overlap with conservation objectives affecting ponds could be expected.

The objectives of The National Archives Ponds Habitat Action Plan may contribute towards conservation of the following priority habitats and species listed on the London and/or London Borough of Richmond upon Thames BAPs:

- Standing open water;
- great crested newt;
- common frog/common toad; and
- dragonflies.

The London Wildlife Trust

The London Wildlife Trust list ponds as one of their target habitats and are encouraging London residents to create garden ponds as part of their 'Garden for a Living London' initiative[17].

5.6 Target species

Common frog	Common toad	Smooth newt
Dragonflies	Freshwater invertebrates	Moorhen
Coot	Bats	

[17] www.wildlondon.org.uk

5.7 Objectives, actions and targets

Objective 1: To improve the aquatic habitat of the ponds on The National Archives site for the benefit of amphibians and invertebrates.

Action no.	Action description	Target date
HAP P1.1	Introduce 500m^2 of aquatic planting in Pond 1 and Pond 2, including marginal, submerged, floating and rooting species.	2015
HAP P1.2	Install 3 ramps or create shallow sloping areas in Pond 2 to allow aquatic plants to colonise and grow and for amphibians' to egress.	2012
HAP P1.3	Encourage grassland to grow to a height of 30cm in areas immediately adjacent to Pond 2 for the benefit of amphibians and invertebrates. Maintain grass at this height by lightly strimming between September and March.	Ongoing
HAP P1.4	Create two new pond side refugia for the benefit of sheltering and hibernating amphibians.	2012 and 2013

Objective 2: Ensure appropriate management of the aquatic habitat.

Action no.	Action description	Target date
HAP P2.1	Control algal growth with barley straw bales.	Ongoing
HAP P2.2	Avoid topping up water levels with tap water.	Ongoing
HAP P2.3	Periodically cut back marginal vegetation.	Ongoing

Objective 3: Monitoring[18]

Action no.	Action description	Target date
HAP P3.1	Survey both ponds using standard survey methodologies and criteria and make a record of the species and abundance of any amphibians, aquatic invertebrates and breeding birds present. (This survey could be undertaken in conjunction with HAP U3.3 and/or a local charity conservation organisation).	2011

[18] Monitoring is required to address gaps in baseline information, to assess the effectiveness of Objectives 1 and 2, and to inform future objectives for the HAP.

Action no.	Action description	Target date
HAP P3.2	Survey both ponds using standard survey methodologies (as used for HAP P3.1) and criteria and compare the species and abundance of any amphibians, aquatic invertebrates and breeding birds present and compare with the results of the 2011 survey.	2015
HAP P3.3	Encourage staff and public participation in pond surveys and monitoring.	Ongoing

6 The National Archives Habitat Action Plan – Hedgerows

6.1 Aims

- *To avoid a net loss of hedgerows on The National Archives site;*
- *To encourage the correct management of hedgerows; and,*
- *To encourage the planting of new hedgerows with appropriate species.*

6.2 Introduction

A hedgerow is a row of shrubs or bushes which forms a boundary. Species-rich hedgerows may be taken as those which contain 5 or more native woody species on average in a 30 metre length, or those with fewer woody species but a rich basal flora.

Hedgerows, even those that have been recently planted, are important habitat features in both the countryside and urban areas. Hedges are a primary habitat for at least 47 extant species of conservation concern in the UK, including 13 globally threatened or rapidly declining ones, more than for most other key UK habitats. They are especially important for butterflies and moths, farmland birds, bats and dormice. Indeed, hedgerows are the most significant wildlife habitat over large stretches of lowland UK and are an essential refuge for a many woodland and farmland plants and animals[19].

Even if not a species-rich specimen, hedgerows can act as wildlife corridors for many species, including reptiles and amphibians, allowing dispersal and movement between other habitats.

In urban areas many hedgerows are of relatively recent origin, having been planted along the boundaries of gardens, parks or open space around schools and other institutions. In urban environments, the value of hedgerows as corridors and a feeding resource for wildlife can be high.

[19] www.ukbap.org.uk, 2010

6.3 Current status

Much of The National Archives site boundary consists of well established hedgerows supporting a mixture of native species, including hawthorn *(Crataegus monogyna)*, ash *(Fraxinus excelsior)*, dogwood *(Cornus sanguinea)*, beech *(Fagus sylvatica),* hazel *(Corylus avellana)*, rose *(Rosa sp)*, English elm *(Ulmus procera)* and sycamore *(Acer pseudoplatanus)*.

As the only well established and mature habitat on the site, the existing boundary hedgerows and associated areas of scrub are likely to be the most valuable habitat for biodiversity at The National Archives site and are likely to be of value for nesting and foraging birds, small mammals and invertebrates. For this reason, it is important to establish an appropriate management plan to conserve and where possible enhance the value of the hedgerows.

6.4 Current factors affecting the habitat

Whilst the boundary hedgerows at The National Archives are currently well managed, it is important that the maintenance regime is not altered in a way that would detriment their value as a habitat as has happened to many urban hedgerows, which have a number of factors affecting them, including:

- Erosion of hedgerows by removal through development or the encroachment of urban artefacts (e.g. pavements, concrete, lighting columns etc);
- too frequent and badly timed cutting leading to poor habitat conditions including a build up of woody material and a reduction in berry producing capability;
- felling of hedgerow trees without encouraging replacements; and,
- neglect (no cutting or laying) leading to hedgerows changing into lines of trees and the development of gaps. This reflects modern high labour costs and loss of traditional skills.

6.5 Current action

6.5.1 Legal status

The Hedgerows Regulations 1997 affords protection to ‘important’ hedgerows based on their ecological, landscape, archaeological and historic importance. However, the hedgerows at The National Archives site do not fall within the criteria of the *Hedgerows Regulations 1997* and so are not afforded specific legal protection.

Although not all hedgerows are afforded specific legal protection, individual hedges would receive legal protection if they are proven to be used as a place of shelter or protection by species listed on Annex II of the *Conservation of Habitats and Species Regulations 2010* (e.g. great crested newts *(Triturus cristatus)* or dormice *(Muscardinus avellanarius)*). As all nesting birds, their chicks, eggs and nests receive legal protection under the *Wildlife and Countryside Act 1981* (as amended), restrictions may apply to hedgerow maintenance works if the activity is likely to result in an offence.

6.5.2 Local Planning Policy

Hedgerows are afforded partial protection through local planning policy contained within the London Borough of Richmond upon Thames Unitary Development Plan (UDP).

Policy ENV 19 (Nature Conservation and Development Proposals) of the UDP states:

'Although the principal use of a site may be for housing or other development, schemes should be designed to retain natural features on site, e.g. trees or other vegetation…old field boundaries including hedges…The Council will endeavour to keep the diversity of indigenous species…The Council may also, in appropriate cases, refer to the Local Biodiversity Action Plan and require site management agreements to support indigenous species and habitats considered seriously at risk.'[20]

6.5.3 Mechanisms targeting the habitat

UK Biodiversity Action Plan

Ancient and/or species rich hedgerows are listed as a priority habitat on the UK BAP. Whilst the UK BAP is likely to focus on countryside hedgerows, it does include 'recently planted species-rich hedges'[21]. As such, the objectives of The National Archive BAP would contribute towards the overall objectives of the UK BAP.

[20] www.richmond.gov.uk. Unitary Development Plan, 2005
[21] www.ukbap.org.uk, 2010

6.6 Target species

House sparrow	Song thrush	Amphibians
Butterflies	Bats	Hedgehog
	Two-lipped door snail	

6.7 Objectives, actions and targets

Objective 1: Avoid net loss of hedgerows or hedgerow trees on The National Archives site.

Action no.	Action description	Target date
HAP H1.1	Map and measure all hedgerows within The National Archives site (consider use of GIS to achieve this) to establish a baseline measurement. Ensure the total length of on-site hedgerow does not drop below this length.	2012
HAP H1.2	Plan and design all future site operations and development activity to avoid loss or shortening of hedgerows.	Ongoing

Objective 2: Increase the net length of hedgerows on The National Archives site.

Action no.	Action description	Target date
HAP H2.1	Create 100m of new native species-rich hedgerow.	2015

Objective 3: Manage all existing site hedgerows to maximise their biodiversity value.

Action no.	Action description	Target date
HAP H3.1	Aim to cut mature hedges every third year to encourage growth and a strong annual production of fruit and flowers.	Ongoing
HAP H3.2	Avoid cutting all mature hedgerows in the same year, or cut on a rotational basis, trimming only a proportion each year.	Ongoing
HAP H3.3	Avoid hedge cutting during the bird nesting season, between March and August. For best results for biodiversity, schedule hedge cutting for January or February.	Ongoing

Action no.	Action description	Target date
HAP H3.4	Allow leaf litter to accumulate at the base of hedgerows and in areas of scrub for the benefit of two-lipped door snail and hibernating hedgehogs.	Ongoing

7 The National Archives Habitat Action Plan – Urban (Gardens, buildings and amenity space)

7.1 Aims

- *To enhance the existing habitats at The National Archives site by implementing appropriate management techniques;*
- *To create new habitats for the benefit of biodiversity*;
- *Contribute towards urban biodiversity initiatives; and,*
- *Raise awareness of biodiversity related issues in the urban environment.*

7.2 Introduction

Urban gardens and amenity space can be defined as formally managed landscapes consisting of extensively mown grassland, shrubberies, flower beds and formal water features.

A sample of aerial photographs analysed by the London Ecology Unit in 1992 suggests that amenity space comprises 8% (12,500ha) of London's total land area[22]. When combined with other urban habitats such as private gardens, allotments, churchyards and cemeteries, this figure rises to 20% of London's land area[23].

Although much of these urban habitats do not make a significant contribution towards London's biodiversity, some support a wealth of important species, for example the national priority species the song thrush and stag beetle[24]. The value and contribution of these habitats to local biodiversity should therefore not be underestimated, especially as most people 'experience' wildlife in such habitats and so conservation initiatives in these areas can be an effective way of engaging people with biodiversity related issues.

[22] *The London Biodiversity Audit, Volume 1 of the London Biodiversity Action Plan*. London Biodiversity Partnership.
[23] *London Borough of Richmond upon Thames Biodiversity Action Plan*. Richmond Biodiversity Group.
[24] *London Borough of Richmond upon Thames Biodiversity Action Plan*. Richmond Biodiversity Group.

7.3 Current status

The National Archives site is managed as an amenity space for staff and visitors. The site supports a variety of semi-mature scattered trees, ornamental shrub borders and areas of shortly mown amenity grassland.

Whilst the ornamental shrubbery and formal areas of planting may provide feeding opportunities for invertebrates and birds, the structure and management of the habitats present at The National Archives site is not achieving its potential to support a variety of biodiversity.

7.4 Current factors affecting the habitat

Factors affecting the biodiversity value of urban gardens and amenity space, including at The National Archives site include:

- Inappropriate management techniques, notably frequent and intensive mowing, pruning and 'over tidying';
- vegetation is often non-native and ornamental in nature or utilitarian (particularly rye-grass based grassland); and,
- areas of a site managed for biodiversity are often considered untidy or unkempt thus managing areas in this way is generally avoided; education of staff and visitors is therefore important to promote wildlife management of urban gardens and amenity space.

7.5 Current action

7.5.1 Legal and policy status

Unless an urban site is deemed to be of national or international conservation value, there is no legal framework to protect such sites. An element of protection is afforded through local and national planning policy that aims to conserve open green space, trees and features of ecological interest. Tree Preservation Orders may also be used to protect trees of landscape, amenity or ecological value in urban areas.

7.5.2 Mechanisms targeting the habitat

Local Biodiversity Action Plans

The London Biodiversity Partnership has selected parks and urban green spaces as a priority habitat on the London Biodiversity Action Plan. The key objectives of the Habitat Action Plan include the encouragement of good conservation practice in parks and open spaces across London and to raise awareness of the importance of these areas in the conservation of London's biodiversity.

The London BAP also has a Habitat Action Plan for private gardens with key objectives being to highlight and protect the overall resource for wildlife provided by private gardens in London, and to improve private gardens as habitat for a range of local wildlife.

The London Borough of Richmond upon Thames BAP also lists urban habitats (including gardens, allotments, churchyards and cemeteries) as a priority for protection.

Whilst The National Archives site is neither a public park or open space, nor a private garden (in the sense that it is not part of a dwelling), the on-site habitats and management practices are consistent with public parks and private gardens. Biodiversity enhancements at The National Archives would therefore contribute towards the objectives of the London BAP.

Wildlife gardening

The London Borough of Richmond upon Thames has launched an initiative called 'wildlife gardening' that is designed to encourage residents to manage their private gardens in a way that would benefit biodiversity[25]. Many of the recommendations provided via this initiative could be implemented with success at The National Archives site.

[25] *Wildlife Gardening*. www.richmond.gov.uk. October 2010.

7.6 Target species

Song thrush	Stag beetle	Hedgehog
Butterflies	Bats	Amphibians
	Two-lipped door snail	

7.7 Objectives, actions and targets

Objective 1: Enhance the biodiversity value of grassland habitat

Action no.	Action description	Target date
HAP U1.1	Identify areas of grassland to be managed as wildlife areas and implement appropriate mowing regimes to benefit biodiversity.	Ongoing
HAP U1.2	Sow at least one of the designated grassland wildlife areas with a native wildflower seed mix.	2011

Objective 2: Enhance biodiversity value of ornamental planting

Action no.	Action description	Target date
HAP U2.1	Identify areas of ornamental planting of low biodiversity interest and replace with species or habitats of greater value.	2013
HAP U2.2	Avoid use of pesticides, especially molliscicides, for the benefit of two-lipped door snail, song thrush, amphibians and other snail eating species.	Ongoing

Objective 3: Promote biodiversity with staff and visitors

Action no.	Action description	Target date
HAP U3.1	Encourage staff and visitors to record wildlife on the site and provide records of any LBAP species to the Local Biological Records Centre and/or regional species recorder. Increase the number of participants annually.	Ongoing
HAP U3.2	Raise awareness of wildlife gardening to staff and visitors.	Ongoing

Action no.	Action description	Target date
HAP U3.3	Carry out an annual species survey ('Bioblitz') of the site using staff volunteers and local wildlife organisations. Report the results to staff, visitors and the Local Biological Records Centre. (Could be implemented in conjunction with SAPs SB3 and B3, and HAPs P3.1 and P3.2)	Annually
HAP U3.4	Contribute annually towards a local or national species survey or conservation initiative.	Annually
HAP U3.5	Provide a bird feeding station in a location that can be viewed by staff and visitors. Keep fully stocked and monitor all year around. Consider providing interpretation describing urban garden birds, their conservation status and issues such as wildlife gardening.	Ongoing

Objective 4: Enhance the built environment for biodiversity

Action no.	Action description	Target date
HAP U4.1	Identify suitable buildings and structures for artificial bird nesting and bat roosting features (such as bat and bird nest boxes, bat tubes, bat bricks and bat access tiles) and install as appropriate.	2011
HAP U4.2	Identify bare brick structures (such as walls, pillars and buildings) or other suitable areas (such as between car parking bays) for the creation of living walls. Plant with native climbing species of biodiversity value.	2015
HAP U4.3	Reduce the total area of paving or hardstanding within The National Archives boundary and replace with a species rich habitat.	2015

8 The National Archives Species Action Plan – Stag beetle

8.1 Aims

- *Provide suitable habitats for stag beetles within The National Archives site;*
- *Increase public awareness of the importance of stag beetles and their dead wood habitat.*

8.2 Introduction

Stag beetles are Britain's largest ground beetle measuring between 5 and 8cm in length. The male beetle is recognisable by its large antler shaped mandibles – used to fight other males – which provide the species with its common name. Stag beetles rely on dead wood to lay their eggs and for larvae to develop with logs and rotting tree stumps favoured, although 'artificial' wood is also utilised, especially sunken fence posts. Recent surveys have indicated that the population of stag beetles is declining, with its distribution now restricted mainly to the south-east. London is a particular stronghold, accounting for 30% of the national records[26] [27].

8.3 Current status

The stag beetle has been recorded in most areas of London although parts of Richmond appear to be key areas for this species[28] with several stag beetle records within 500m of The National Archives site[29].

8.4 Current factors affecting the species

The following factors are considered to be key influences in the decline of stag beetles:

- Reduction of dead wood through intensive management and 'tidying up';
- loss of habitat to urban development;
- killing or injury caused by road traffic or intentional persecution; and,
- predation, particularly by corvids.

[26] www.wildlondon.org.uk
[27] *Richmond upon Thames Species Action Plan. Stag beetle.* www.richmond.gov.uk.
[28] *Richmond upon Thames Species Action Plan. Stag beetle.* www.richmond.gov.uk.
[29] *An Ecological Data Search for the National Archives, Kew.* GiGL. 2010

8.5 Current action

8.5.1 Legal status

The stag beetle is listed under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) but only to prevent trade in the species.

Stag beetles are also listed under Appendix III of the Bern Convention on the *Conservation of European Wildlife and Natural Habitats 1979* and Appendix II of the *Conservation of Habitats and Species Regulations 2010*. The latter requires the UK to designate sites as Special Areas of Conservation specifically to protect the stag beetle.

8.5.2 Mechanisms targeting the species

Biodiversity Action Plans

The stag beetle is a priority species on the UK, London and London Borough of Richmond upon Thames BAPs. The main objective of the London BAP is to conserve and enhance the nationally significant population of stag beetles in London through a series of initiatives including habitat enhancement, public awareness raising and scientific research[30].

Advice

Several leaflets and information packs have been produced to promote stag beetle and dead wood conservation. References for these guidance notes are provided in the bibliography.

8.6 Objectives, actions and targets

Action no.	Action description	Target date
SAP SB1	Implement sympathetic management techniques for stag beetles, including retention of dead wood.	Ongoing
SAP SB2	Create two new log piles or stag beetle nest boxes.	2012 and 2013
SAP SB3	Collate all incidental stag beetle records for The National Archives site and send to the Local Biological Records Centre and London Wildlife Trust. (Consider implementing in conjunction with HAP U3.3).	Ongoing

[30] www.ukbap-reporting.org.uk

Action no.	Action description	Target date
SAP SB4	Promote stag beetle and dead wood conservation with staff and visitors and encourage participants to send their records to the Local Biological Records Centre and London Wildlife Trust.	Annually

9 The National Archives Species Action Plan – Bats

9.1 Aims

- *To encourage use of The National Archives site by bats;*
- *To provide additional roosting features for bats; and,*
- *To monitor the use of The National Archives site by bats.*

9.2 Introduction

Bats are the only true flying mammals, are long-lived, intelligent and have a complex social life. Although they're often thought of as flying mice, they are not closely related to mice but form a special group of their own: the Chiroptera.

There are 17 species of bat breeding in Britain, each with its own lifestyle and habitat requirements. Bats use a wide variety of roosts, including buildings of all sorts, trees and underground places, many of which are used only seasonally as the roosting requirements of bats vary throughout the year. During the summer, females of all species gather in colonies to give birth and rear their young; these maternity roosts are often in places warmed by the sun. During the winter bats hibernate, often in places that are sheltered from extremes of temperature.

As well as suitable sites for roosting, bats also need suitable food resources. All species eat insects, or similar small invertebrates, though they hunt them in a variety of ways and a variety of habitats. However, the highest densities of bats occur where insects are most plentiful with wetland areas and woodland edges being particularly important habitats[31].

9.3 Current status

At least six bat species are known to breed in Richmond-upon-Thames. Common pipistrelle *(Pipistrellus pipistrellus)* and soprano pipistrelle *(Pipistrellus pygmaeus)* are by far the most widespread, while the Noctule *(Nyctalus noctula)*, Brown long-eared bat *(Plecotus auritus)* and Daubenton's bat *(Myotis daubentonii)* are more localised but regularly recorded. Much rarer species include the Serotine *(Eptesicus serotinus)*, Nathusius' pipistrelle *(Pipistrellus nathusii)* and Leisler's *(Nyctalus*

[31] *Bat Mitigation Guidelines*. English Nature. 2004.

leisleri) and Natterer's bats *(Myotis nattereri).* However, London's bat populations are considered to be undergoing significant declines[32].

The presence of bat roosts and bat activity has a strong correlation with the proximity to waterbodies and riparian habitat. As The National Archives site is located immediately adjacent to the River Thames, there is potential for bats to be active within the vicinity.

Given the design and structural integrity of both the existing buildings on The National Archives site, the potential for bats to roost under/behind external features of either structure is considered to be low, although both buildings have features that could allow bats access into the roof spaces.

Although the site does not support any trees that are considered suitable for roosting bats, the boundary hedgerows have the potential to be used by commuting and/or foraging bats[33].

9.4 Current factors affecting the species

Bats in Britain are facing a number of pressures with the main issues outlined below:

- Loss of and disturbance to roost sites, notably traditional maternity roosts, as a result of development;
- loss of feeding habitats through changes in land use; and,
- disturbance to commuting routes through the loss of flight line corridors and the introduction of artificial lighting.

9.5 Current action

9.5.1 Legal status

All species of British bat and their roosts receive legal protection under the *Wildlife and Countryside Act 1981* (as amended) and the *Conservation of Habitats and Species Regulations 2010*. The combined effect of this legislation makes it an offence to intentionally kill, injure or handle a bat, to possess a bat (whether live or dead), disturb a roosting bat, or sell or offer a bat for sale without a licence. It is also an offence to damage, destroy or obstruct access to any place used by bats for shelter, whether they are present or not.

[32] *London Borough of Richmond upon Thames Biodiversity Action Plan*. Richmond Biodiversity Group.
[33] *Ecological Walkover Survey Report*. Jacobs UK Ltd. November 2010.

9.5.2 Policy status

As a legally protected species, the potential presence of bats is a material consideration when a planning authority is determining a planning application where impacts upon bats or their roosts are likely to arise[34]. Where an impact to bats is anticipated, the Local Planning Authority must ensure that adequate mitigation is implemented to ensure the favourable conservation status of the bat species concerned is not affected by the proposed planning application.

9.5.3 Mechanisms targeting bats

Biodiversity Action Plans

Bats are a priority species on the UK, London and London Borough of Richmond upon Thames BAPs. The main objectives of the London BAP is to reverse the current population declines in London's bats and to redress Londoners' misconceptions about bats and secure their status as culturally valued animals[35].

Conservation initiatives

Bat conservation in the UK is coordinated by the Bat Conservation Trust (BCT) and implemented regionally by a series of local or regional bat groups. The range of work undertaken allows the BCT it to keep track of UK bat populations, influence and inform policy, and engage professionals, such as builders, landowners and woodland managers, in conserving bats[36].

9.6 Objectives, actions and targets

Action no.	Action description	Target date
SAP B1	Identify potential locations for roost creation opportunities including trees, buildings and other structures. Install a minimum of 6 appropriate bat boxes or roost features.	2012
SAP B2	Minimise light spill from external lighting, especially in proximity to dark corridors, boundary hedgerows and trees.	2013

[34] Para 98, ODPM Circular 06/2005
[35] www.ukbap-reporting.org.uk
[36] www.bats.org.uk

Action no.	Action description	Target date
SAP B3	Survey The National Archives site and monitor the bat boxes (once installed) as part of the National Bat Monitoring Programme or a London Bat Group survey. Submit results to London Bat Group and the Local Biological Records Centre. Encourage staff or visitor participation. (Consider implanting in conjunction with HAP U3.3).	Annually

10 Awards and Certifications – Biodiversity Benchmark

10.1 Background

The Biodiversity Benchmark is an award run by the Wildlife Trusts that recognises continual biodiversity improvements. The award is based on a management process which enables any organisation that owns or manages land to assess its impact on the natural world, improve its contribution to the environment and demonstrate its commitment to biodiversity.

Whilst environmental management systems such as ISO 14001 (the International Standard for environmental management) or EMAS (The Eco-Management and Audit Scheme) are widely used, the Biodiversity Benchmark focuses on the management of land for the benefit of wildlife, people and the participating organisations themselves, in support of the UK Biodiversity Action Plan (BAP).

The Biodiversity Benchmark provides national recognition for an organisation's commitment to biodiversity and demonstrates responsible land management with biodiversity at the core of the organisation's operations.

Biodiversity Benchmark awards are issued for three categories: single site, multiple sites and whole organisation. The 'single site' award would be applicable to The National Archives.[37]

Many of the requirements to achieve the Biodiversity Benchmark will be accomplished through the successful implementation of the TNABAP and it is suggested that an application for the Biodiversity Benchmark should be considered as a final objective of this Biodiversity Action Plan.

Action no.	Action description	Target date
BB1.1	Review the requirements of achieving the Biodiversity Benchmark status that are not addressed by the TNABAP and seek to implement.	Ongoing
BB1.2	Achieve Biodiversity Benchmark status.	2015

Full details relating to the criteria that must be fulfilled to achieve the Biodiversity Benchmark are provided in Appendix G.

11 Target Timetable

ACTION	TARGET DATES				
	2011	2012	2013	2014	2015
HAP P1.1					
HAP P1.2					
HAP P1.3					
HAP P1.4					
HAP P2.1					
HAP P2.2					
HAP P2.3					
HAP P3.1*					
HAP P3.2*					
HAP P3.3					
HAP H1.1					
HAP H1.2					
HAP H2.1					
HAP H3.1					
HAP H3.2					
HAP H3.3					
HAP H3.4					
HAP U1.1					
HAP U1.2					
HAP U2.1					
HAP U2.2					
HAP U3.1					
HAP U3.2					
HAP U3.3					
HAP U3.4					
HAP U3.5					
HAP U4.1					
HAP U4.2					
HAP U4.3					
SAP SB1					
SAP SB2					
SAP SB3*					
SAP SB4					
SAP B1					
SAP B2					
SAP B3*					
BB 1.1					
BB 1.2					

* Denotes targets that could be combined with HAP U3.3.

[37] *Biodiversity Benchmark*. www.wildlifetrusts.org

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- Statutory Instrument. *Natural Environment and Rural Communities Act 2006.*
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Appendix A Ecological walkover survey

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National Archives

Ecological Walkover Survey Report

February 2011

Final version

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1 Introduction

1.1 Background

Jacobs Engineering UK Ltd. has been commissioned to undertake an Extended Phase 1 Habitat Survey of the National Archives site in Kew, London Borough of Richmond upon Thames. The survey is required to map the habitats found on the site as well as to assess the potential presence of legally protected species and any other notable habitats and species. The results of this survey will be used to inform the production of a site Biodiversity Action Plan (BAP) which will be produced separately to this report.

1.2 Site description

The National Archives site is located in Kew, London Borough of Richmond upon Thames, at Ordnance Survey grid reference TQ195772. The site is bounded by the River Thames to the north and east, a railway line to the west and residential housing to the south. The site is well maintained and supports two large buildings, areas of hardstanding, ornamental shrubs, short grassland and ponds; the majority of the site is fully accessible to the public and National Archives staff.

2 Methodology

2.1 Field survey

An Extended Phase 1 Habitat survey was undertaken by a suitably qualified and experienced ecologist on the 18th August 2010 in accordance with the guidelines provided in the *Handbook for Phase 1 Habitat Survey – a technique for environmental audit* (JNCC, 2003). All habitats within the National Archives site were mapped and the dominant plant species present in each habitat recorded. Target note descriptions were also recorded for features of nature conservation importance.

The survey also included an assessment of the habitats and features found within the site boundary for their potential to support legally protected and/or notable species and habitats.

2.2 Bat inspection

An internal and external inspection of the two main buildings (Q1 and Q2) on the site was undertaken to identify the potential for and/or presence or likely absence of bats. The external inspection involved a visual assessment of each building from the roof and ground level (using close-focussing binoculars) to identify the presence of features that could be utilised by bats, including:

- cracks and gaps in damaged brickwork;
- gaps below hanging tiles, roof slates, weatherboarding or soffit boxes;
- air vents, drainage pipes and other cavities.

Each inspection also aimed to identify evidence that indicates bat presence in the buildings, notably:

- droppings;
- feeding remains;
- urine or fur staining;
- live bats; and,

- bat carcasses.

The general suitability of all potential roost features and adjacent habitats for bats was also assessed and recorded during the survey.

2.3 Constraints

The survey was undertaken during calm, dry weather conditions with scattered cloud and a maximum temperature of 22° Celsius.

Late August is a sub-optimal period for undertaking a Phase 1 Habitat Survey as many species of flora have finished flowering and may not be evident at this time of the year. However, due to the types of habitat found on the site, the timing of the survey is not considered to be a significant constraint and is not thought to have influenced the validity of the survey results.

Full access to each of the buildings was available and a thorough bat inspection was possible from the roof (building Q2 only), ground level and inside the buildings.

3 Results

3.1 Extended Phase 1 Habitat Survey

A habitat map and target notes describing the habitats recorded on site are provided in Appendix A.

Eight habitat types were recorded during the survey; parkland, species poor semi-improved grassland, amenity grassland, standing water, introduced shrubs, hedgerows, buildings and bare ground. A description of each habitat is provided below.

Parkland

The site supports a variety of scattered trees that are both semi-natural and plantation in origin. The majority of trees present are semi-mature and have been planted in association with ornamental shrub borders, boundary hedgerows and areas of amenity grassland. Of the species present, cherry *(Prunus sp),* whitebeam *(Sorbus aria)*, ash *(Fraxinus excelsior)* and sycamore *(Acer pseudoplatanus)* are abundant. Semi-mature horse chestnut *(Aesculus hippocastanum)*, English oak *(Quercus robur)* and *Acacia* trees are also occasional.

The margins of Pond 2 (see below) support semi-mature tree species comprising alder *(Alnus glutinosa)*, silver birch *(Betula pendula)*, goat willow *(Salix caprea)* and grey willow *(Salix cinerea)*.

Two cedar (*Cedrus sp.)* trees located near to the site entrance close to the southern boundary are the only fully mature trees on the site and are of local landscape value. Images 9 and 10 in Appendix B show these trees.

Species poor semi-improved grassland

All areas of grassland on the site were shortly mown at the time of survey. Although the grassland was generally managed as amenity space, the presence of herbs (although restricted in abundance and diversity) indicates that the majority of grassland can be classified as species poor semi-improved, as opposed to the less valuable ‘amenity’ grassland classification.

The dominant grass species in these areas is perennial rye grass *(Lolium perenne)* although the herbs yarrow *(Achillea millefolium)*, ribwort plantain *(Plantago lanceolata)*, daisy *(Bellis perennis)* and dandelion *(Taraxacum officinale ag.)* are abundant. The species mugwort *(Artemisia vulgaris)*, bird's-foot trefoil *(Lotus corniculatus)*, red clover *(Trifolium pratense)*, black medic *(Medicago lupulina)*, nettle *(Urtica dioica)* and charlock *(Sinapis arvensis)* are all occasional.

Images 2, 3 and 7 in Appendix B show some of the areas of grassland found on the site.

Amenity grassland

An area of short mown amenity grassland is located to the west of Pond 2. The area is set aside for use as a picnic site and also supports a number of young plantation trees.

Standing water

Two artificial ponds connected by a weir are present within the site. The source of water for the ponds was not confirmed during the survey although site staff indicated that the water levels were periodically topped up with mains water. Both ponds have concrete sides and are immediately adjacent to areas of hardstanding. No macrophyte vegetation (submerged, floating or emergent) was present in either pond although Pond 2 (refer to Figure 1) supports a small island with dense shrubs and a weeping willow *(Salix x sepulcralis)* tree. The banks of Pond 2 also support mature trees including alder, silver birch, goat willow and grey willow. A large algal bloom was present in Pond 1 at the time of survey.

During the survey, a single grey heron *(Ardea cinerea)* was observed on Pond 1 with coot *(Fulica atra)*, moorhen *(Gallinula chloropus)* and mallard *(Anas platyrhynchos)* recorded on Pond 2. Several coot or moorhen chicks were also present.

Photographs of the ponds and adjacent habitats are provided in Appendix B.

Introduced shrubs

The site supports extensive areas of ornamental shrubbery, notably alongside the main buildings, carparks and access roads. Species present include cotoneaster *(Cotoneaster sp)*, bamboo, yew *(Taxus baccata)*, dogwood *(Cornus sp)*, hebe *(Hebe sp)*, firethorn *(Pyracantha sp)* and privet *(Ligustrum sp)*.

Hedgerows

Much of the site boundary consists of well established hedgerows supporting a mixture of native species, including hawthorn *(Crataegus monogyna)*, ash, dogwood *(Cornus sanguinea)*, beech *(Fagus sylvatica),* hazel *(Corylus avellana)*, rose *(Rosa sp)*, English elm *(Ulmus procera)* and sycamore.

Buildings and bare ground

The site is dominated by two large buildings (Q1 and Q2) with several carparks, access roads, paving and footpaths making up the remaining 'hard' areas. A detailed description of the buildings is provided in section 3.2 below.

3.2 Bat inspection

3.2.1 Building description

The site supports two main buildings (Q1 and Q2), both located within 200m of the River Thames.

Building Q1 is a large, square, four storey, concrete building constructed in the 1970s, with a flat aluminium sheet roof (which was installed during the 1990s) and a large roof space. The building is in good structural condition.

Building Q2 is a modern glass and concrete building supporting a variety of roofs including pitched, hipped and mono-pitch styles. The roof material comprises a mixture of corrugated aluminium sheets, glass and tightly fitting slate tiles. No roof space is present, although the top floor (accessible via external walkways) is used as a plant room. The building is in good structural condition.

Images 7, 11 and 12 in Appendix B show both buildings.

3.2.2 External inspection

No evidence of bat presence (such as droppings or urine/fur staining) was observed during the external inspections.

Both buildings were found to be in good structural condition and neither supported extensive features that were considered suitable for roosting bats, such as weatherboarding, hanging tiles, or damaged and slipped roof tiles. Where potential roost features where observed, such as soffit boxes, barge boards, lead flashing and roof tiles, these were found to be tightly fitting and well sealed with limited access points that could be used by bats. However, gaps between the concrete facing of building Q1 could potentially be utilised by crevice dwelling bats if deep enough.

A series of louvre air vents above the fourth floor windows of building Q1 have the potential to be used by bats to access the roof space. Potential bat access points into the plant rooms of Building Q2 also exist via gaps between the external door ventilation grilles. Photographs of these features are shown in Images 13 and 14 of Appendix B.

Given the design and structural integrity of both buildings, the likelihood of bats roosting under/behind external features of either building is considered to be low.

3.2.3 Internal inspection

The roof space of building Q1 consists of a single large void with wooden sarking supported by timber beams, steel girders and concrete posts. The beams and sarking were generally tight fitting with few gaps and crevices, although some gaps between overlapping beams were observed. The roof space was well maintained and uncluttered and no evidence of bat presence (such as droppings, feeding remains, bats or staining) was observed in the areas surveyed.

The plant rooms of building Q2 consist of large rooms with concrete walls, aluminium panel ceilings with steel roof supports and beams. Each room houses machinery and pipework and is subject to moderate levels of noise disturbance. Potential roost spaces occur in gaps between steel girders and the ceiling, as well as between aluminium panelling and the walls. No evidence of bat presence (such

as droppings, feeding remains, bats or staining) was observed in the areas surveyed.

Images 15 and 16 show the internal features of both roof spaces.

3.3 Other species

No evidence of other protected species was observed during the survey, although all areas of scrub, hedgerows and trees have the potential for use by nesting birds.

Both ponds on the site are considered to be sub-optimal to support great crested newts *(Triturus cristatus)* due to the absence of macrophytes, the quality of terrestrial habitat and the apparent isolation of the site from other suitable waterbodies. However, the ponds could be utilised by breeding common frog (*Rana temporaria)* or common toad *(Bufo bufo)*.

The site is also considered to offer negligible potential to support other protected species such as dormice *(Muscardinus avellanarius)*, reptiles, water voles *(Arvicola terrestris)* and otters *(Lutra lutra)* due to sub-optimal on-site habitats. However, the site does support suitable foraging habitat for badgers *(Meles meles)*, especially given its proximity to a nearby railway line – a habitat feature often associated with this species. Anecdotal records from National Archives staff also suggest that badgers may be active within the vicinity.

The areas of ornamental planting and boundary scrub and hedgerows are likely to provide a feeding resource for invertebrates. The hedgerows and areas of grassland could also potentially be used by sheltering and foraging hedgehogs *(Erinaceus europaeus)*, a UK Biodiversity Action Plan species.

4 Discussion and recommendations

4.1 Habitats

The National Archives site is a small area of land located in a predominantly urban setting. Whilst the site is dominated by two buildings and areas of hardstanding, there are a variety of landscaped and ornamental habitats within the remaining available land, including grassland, trees, hedgerows, ponds and scrub. Additionally, although the site is located within an urban area, its proximity to the linear habitats of the River Thames and adjacent railway line, as well as open green space associated with the nearby Kew Gardens and residential properties, means that the site has the potential to contribute towards the biodiversity resource of the local area.

Of the habitats found on site, grassland areas are amongst the most abundant. At the time of survey, all areas of grassland were closely mown and supported a low diversity of herb and grass species. As such, the areas of grassland in their current condition are considered to be of low ecological value. However, the biodiversity value of these areas can easily be enhanced by sowing an appropriate wildflower seed mix and/or adopting a more sympathetic mowing regime that allows areas of grassland to grow 'wild' throughout much of the year.

Outline recommendation 1: Grassland enhancements

- Allocate areas of grassland that will be managed for biodiversity.
- Cut these areas of grassland twice a year, once before April and once after August. Light strimming can be used to control excess growth; in this instance try to create a variety of sward heights.
- Aim to leave some areas of grassland uncut throughout the entire year, especially in corners of the site or in close proximity to hedges and scrub.
- Consider sowing a native meadow grassland seed mixture (MG5 *Centaurea nigra-Cynosurus cristatus* grassland mixture would be suitable).

Target species: invertebrates (including butterflies, grasshoppers and crickets), small mammals, amphibians, ground foraging birds.

The two ponds recorded during the survey represent large areas of habitat within the site. However, whilst aquatic habitats have great potential to be of high biodiversity value, the on-site ponds provide limited opportunities for wildlife owing to the complete absence of vegetation and the 'hard' habitats immediately adjacent to them. Pond 1 also supported an algal bloom which indicates low levels of oxygenation, perhaps due to the absence of aquatic vegetation. As such, the ponds in their current condition are considered to be of low ecological value.

Outline recommendation 2: Pond enhancements

- Encourage or introduce native and non-aggressive aquatic plant growth. Aim to create a mosaic of vegetation and habitat types including submerged, emergent, floating and rooting plants.
- Remove the dense scrub on the island and replace with flowering tall ruderal species. Consider creating a log pile here.
- Create a shallow sloping area, to allow easy access and egress for waterfowl and amphibians.
- Create a 'wild' area alongside Pond 2 for the benefit of amphibians. Consider creating a log pile here.
- Maintain a clean water supply and avoid topping up with tapped water (due to presence of chlorine).
- Use bales of barley straw to control algae growth.

Target species: invertebrates (notably aquatic invertebrates, dragonflies and damselflies), amphibians, waterfowl.

Many of the habitats recorded during the survey are young or newly established (such as the many trees and areas of ornamental shrubbery) and so at present do not achieve their full biodiversity potential; however, this potential and their value to biodiversity will increase as these habitats mature and establish themselves; this is particularly applicable to the on-site trees. To compensate for the limited nesting features in the young trees (such as natural holes, woodpecker holes, splits and cracks etc), National Archives staff have erected a number of bird boxes. A log pile has also been created for the benefit of dead wood dependent invertebrates and sheltering small mammals. The continuation of these simple habitat enhancement measures should be encouraged.

Of the habitats recorded on site, it is the boundary hedgerows and areas of scrub that offer the most value for biodiversity in their current condition. The entire site boundary consists of a well established hedgerow or belts of scrub comprising a mixture of native woody species. This habitat is likely to be of value for nesting and foraging birds, small mammals and invertebrates. If the hedgerows are currently managed as part of a grounds maintenance regime, cutting should preferably take place every third year on a rotational cycle so that all hedgerows are not cut in the same year; this will ensure flowers and fruit will remain available to birds, small mammals and invertebrates. If cutting must be undertaken annually, consideration should be given to cutting the hedge at a higher level than the previous year so that the hedge can grow taller. Hedgerow maintenance should ideally be scheduled to take place during January and February after most of the berries have been eaten but before the bird nesting season.

Much of the site is dominated by two large buildings that offer limited potential for biodiversity due to their age, design and structural integrity. As the buildings occupy such a large footprint within the site, their potential for biodiversity should be maximised.

Outline recommendation 3: Building enhancements

- Erect bird boxes, swift bricks and bat boxes, bricks and tubes onto suitable external walls. Each box, brick or tube should be erected at the appropriate elevation and aspect for the target species.
- Grow native climbing plants, such as ivy (*Hedera helix)*, traveller's-joy *(Clematis vitalva)*, bittersweet *(Solanum dulcamara)* and white bryony *(Bryonia dioica)* up bare external walls.

Target species: nesting and foraging birds, invertebrates.

4.2 Legally protected and notable species

Bats

No evidence of bat presence was observed during the survey and given the design and structural integrity of both buildings, the potential for bats to roost under/behind external features of either structure is considered to be low.

However, the presence of bat roosts and bat activity has a strong correlation with the proximity to waterbodies and riparian habitat. As the National Archives site is located immediately adjacent to the River Thames, and as potential access points are present in each building that could allow bats access into the roof space and/or plant rooms, there is potential for bats to use internal parts of the buildings for roosting.

Although the site does not support any trees that are considered suitable for roosting bats, the boundary hedgerows have the potential to be used by commuting and/or foraging bats and National Archives staff have provided anecdotal records of pipistrelle bats foraging close to the building.

To enhance the site for bats, consideration should be given to erecting bat boxes onto buildings and mature trees. Additional measures that would enhance the value of the site for bats include the creation of areas of rough grassland and the improvement of the pond habitats; both of these enhancements would encourage invertebrates which are the prey items for bats. The dimming or removal of permanent bright external lighting, especially in close proximity to trees and boundary hedgerows, may also encourage bats onto the site.

Other protected and notable species

At the time of survey, the habitats recorded on site were considered to offer limited value for other legally protected species, although a single grey heron – a species listed on the London Borough of Richmond Biodiversity Action Plan (BAP) – was recorded on Pond 1.

The site does (or could easily) support suitable habitat for Biodiversity Action Plan Species[1] including common frog, common toad, hedgehog, song thrush *(Turdus philomelos)*, stag beetle *(Lucanus cervus)*, bumble bee *(Bombus spp)* and dragonflies *(Anispotera spp)*. The enhancement of the on-site habitats for these target species should be encouraged and should form a central part of a future National Archives Biodiversity Action Plan.

[1] Taken from species listed on the London BAP and LB Richmond upon Thames BAP.

However, in the interim, implementation of the outline recommendations described above, in combination with the current habitat enhancements (including creation of log piles, hedgehog houses, nest boxes etc) being initiated by National Archives staff, will help provide habitats suitable for a range of biodiversity and potentially those listed on the London BAP and London Borough of Richmond upon Thames BAP.

4.3 Biodiversity Action Plan

The results of this survey and site assessment will inform the production of a National Archives Biodiversity Action Plan for the site at Kew. The BAP will seek to enhance the biodiversity value of the site for target species and habitats, notably those listed on other local, regional and national BAPs. The proposed BAP will form the basis of any detailed biodiversity management recommendations for this site.

5 Conclusion

An Extended Phase 1 Habitat survey and internal and external bat inspection was undertaken by a suitably qualified and experienced ecologist on the 18th August 2010.

Eight habitat types were recorded during the survey, these comprised of parkland, species poor semi-improved grassland, amenity grassland, standing water, introduced shrubs, hedgerows, buildings and bare ground. The majority of the site is accessible to the public and is subject to regular maintenance.

No evidence of bat presence in buildings Q1 or Q2 was identified during the survey and the potential for bats to roost under/behind external features of either building is considered to be low. However, potential access points that would allow bats access into the roof space of building Q1 and the plant rooms of building Q2 were observed.

The site is considered to offer low potential to support other legally protected species and the majority of habitats found on site are of limited ecological value (in their current condition). Outline recommendations have been provided that will enhance the biodiversity value of the on-site habitats, notably for species listed on the London BAP and London Borough of Richmond upon Thames BAP.

The results of this survey will be used to inform the production of a National Archives BAP for this site. The proposed BAP will form the basis of any detailed biodiversity management recommendations for this site.

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Appendix A Phase 1 Habitat Survey map and target notes

Target note	Description
1	Pond 1 with link via weir to Pond 2. Algal bloom throughout most of pond. No emergent or aquatic vegetation. Surrounded by hardstanding. Could be significantly improved with planting and control of algae. Grey heron.
2	Young whitebeam trees. Bare ground below trees – could be improved with grassland seeding. Nest box and insect box erected on nearby external wall.
3	Grassland and trees to north of Pond 2. Grass could be enhanced, especially given proximity to pond. Nest boxes on nearby trees. Alder, silver birch, goat willow along pond banks.
4	Pond 2. Concrete sides with some overhanging trees. Island densely planted with ornamental shrubs and weeping willow. No aquatic vegetation. Sweetener flow via weir connection with Pond 1. Could be greatly enhanced. Coot, moorhen, mallard. Chicks.
5	Amenity grassland picnic area. Newly planted trees.
6	Mature cedar tree *(Cedrus deodara)* in small area of amenity grassland. Low bat potential.
7	Mature cedar tree. Low bat potential.
8	Log pile.
9	Ventilation grilles. Potential access points into roof space for bats.

Legend

- Study area boundary
- Target notes
- Tree
- Species rich intact hedge
- Wall
- Broad-leaved plantation
- Dense/continuous scrub
- SI — Poor semi-improved grassland
- Standing water
- Hard standing
- A — Amenity grassland
- Introduced shrub
- Buildings

N

Grid Reference: TQ195 772

Rev	Rev. Date	Purpose of revision	Drawn	Checked	Approved
0	Nov 10	Revision One	LB	NC	WB

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Scale	1:1,000 @ A3	DO NOT SCALE
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Appendix B Site photographs

Image 1. Southern corner of building Q2 and ornamental planting.

Image 2. Short grassland and trees in north western car park.

Image 3. Typical area of short grassland and trees.

Image 4. Pond 1.

Image 5. Pond 2.

Image 6. Island on Pond 2.

Image 7. Building Q2 and amenity grassland viewed from the south west.

Image 8. Log pile in shrubbery along western boundary.

Image 9. Cedar tree in car park to east of site entrance.

Image 10. Cedar tree to north of site entrance.

Image 11. Building Q1.

Image 12. Building Q2.

Image 13. Louvre air vents around the top of building Q1.

Image 14. Louvre ventilation panels on plant room doors of building Q2.

Image 15. Internal view of plant rooms.

Image 16. Internal view of Q1 roof space.

Appendix B Ecological data search results

Refer to document 'An Ecological Data Search for The National Archives, Kew' provided by Greenspace Information for Greater London (GiGL) (8 November 2010). Report reference 10/496.

Appendix C Species records, conservation status and protection

Incidental Species records of species observed by The National Archives staff during 2009 and 2010.

Species (common name)	Species (scientific name)	Protected or conservation status[38] [39]
Birds		
Sparrowhawk	*Accipiter nisus*	Green[40]
Long-tailed tit	*Aegithalos caudatus*	Green
Kingfisher	*Alcedo atthis*	Amber Schedule 1, Part 1, Wildlife and Countryside Act 1981
Egyptian goose	*Alopochen aegyptiacus*	No status
Mallard	*Ana platyrhynchos*	Amber
Greylag goose	*Anser anser*	Amber
Swift	*Apus apus*	Amber
Grey heron	*Ardea cinerea*	Green
Tufted duck	*Aythya fuligula*	Amber
Canada goose	*Branta Canadensis*	No status
Goldfinch	*Carduelis carduelis*	Green
Greenfinch	*Carduelis chloris*	Green
Stock dove	*Columba oenas*	Amber
Wood pigeon	*Columba palumbus*	Green
Carrion crow	*Corvus corone corone*	Green
House martin	*Delichon urbica*	Amber
Robin	*Erithacus rebecula*	Green
Chaffinch	*Fringilla coelebs*	Green
Coot	*Fulica atra*	Green
Moorhen	*Gallinula chloropus*	Green
Black-headed gull	*Larus ridibundus*	Amber
Grey wagtail	*Motacilla cinerea*	Amber
Blue tit	*Parus caeruleus*	Green
House sparrow	*Passer domesticus*	Red Bap Priority London Bap Priority National
Cormorant	*Phalacrocorax carbo*	Green
Pheasant	*Phasianus colchicus*	No status
Chiffchaff	*Phylloscopus collybita*	Green
Willow warbler	*Phylloscopus trochilus*	Amber
Green woodpecker	*Picus viridis*	Amber
Great tit	*Prus major*	Green
Ring-necked parakeet	*Psittacula krameri*	No status
Common tern	*Sterna hirundo*	Amber
Starling	*Sturnus vulgaris*	Red BAP Priority London
Wren	*Troglodytes troglodytes*	Green

[38] All nesting birds, their eggs, chicks and nests receive legal protection under the Wildlife and Countryside Act 1981 (as amended).

[39] Conservation Designations for UK Taxa. http://www.jncc.gov.uk/page-3408

[40] The conservation status of 247 regularly occurring birds in the UK has been reviewed by the leading governmental and non-governmental conservation organisations. This resulted in each species being placed on one of three lists: Red, Amber or Green. http://blx1.bto.org/birdfacts/helptexts/status.htm

Species (common name)	Species (scientific name)	Protected or conservation status[38 39]
Birds		
Redwing	*Turdus iliacus*	Red Schedule 1, Part 1, Wildlife and Countryside Act 1981
Blackbird	*Turdus merula*	Green
Song thrush	*Turdus philomelos*	Red BAP Priority London
Mammals		
Bats	*Chiroptera spp*	Schedule 2, Conservation of Habitats and Species Regulations 2010. Schedule 5, Wildlife and Countryside Act 1981 (as amended). BAP Priority UK, London, LB Kingston upon Thames
Brown rat	Rattus norvegicus	
Grey squirrel	Sciurus carolinensis	
Red fox	Vulpes vulpes	
Invertebrates		
Rusty tussock moth (caterpillar)		
Hawthorn shieldbug	Acanthosoma haemorrhoidale	
Ashy mining bee	*Andrena cineraria*	Scottish BAP
Hairy-footed flower bee	Anthophora plumipes	
Tree bumblebee	Bombus hypnorum	
White-tailed bumblebee	*Bombus lucorum*	
Bee fly	*Bomylius major*	
Ruby-tailed wasp	*Chrisis sp*	
Rosemary leaf beetle	*Chrysolina americana*	
7-spot ladybird	*Coccinella 7-punctata*	
A springtail	*Dicyrtomina ornate*	
Common blue damselfly	*Enallagma cyathigerum*	Red listing based on 2001 IUCN guidelines (Least Concern) The Odonata Red Data List for Great Britain - 2008 (Taxa which are neither threatened nor near threatened)
A springtail	*Entombrya intermedia*	
Marmalade hoverfly	*Episyrphus balteatus*	
A hoverfly	*Eristalis pertinax*	
Harlequin ladybird	*Harmonia axyridis*	
Shieldbug sp	*Heteroptera sp*	
A mirid bug	*Heterotoma planicornis*	
Blue-tailed damselfly	*Ischnura elegans*	Red listing based on 2001 IUCN guidelines (Least Concern) The Odonata Red Data List for Great Britain - 2008 (Taxa which are neither threatened nor near threatened)
A leafhopper	*Issus coleoptraus*	
Poplar hawk-moth	*Laothoe populi*	
Speckled bush cricket (nymph)	*Leptophyes punctatissima*	Scottish BAP
Cuckoo bee	*Melecta albifrons*	

Species (common name)	Species (scientific name)	Protected or conservation status[38 39]
Birds		
A hoverfly	*Myathropa florea*	
Common blue butterfly	*Polyommatus icarus*	
Zebra spider	*Salticus scenicus*	
Ruddy darter dragonfly	*Sympetrum sanguineum*	Red listing based on 2001 IUCN guidelines (Least Concern) The Odonata Red Data List for Great Britain - 2008 (Taxa which are neither threatened nor near threatened)
Bush cricket (nymph) sp	*Tettigoniidae sp*	
Red velvet mite	*Trombidium sp*	
Molluscs		
White-lipped snail	*Cepaea hortensis*	

Appendix D Contacts of relevant conservation organisations

Area of expertise	**Bats**
Organisation	**London Bat Group**
Email	Enquiries@londonbats.org.uk
Website	www.londonbats.org.uk

Area of expertise	**Invertebrates**
Name	**Colin Plant**
Organisation	**London Natural History Society**
Email	Cpauk1@ntlworld.com
Website	www.lnhs.org.uk

Area of expertise	**Birds**
Name	**Steve Spooner**
Organisation	**London Natural History Society**
Email	sjspooner@ntlworld.com
Website	www.lnhs.org.uk

Area of expertise	**Amphibians and reptiles**
Organisation	**Surrey Amphibian and Reptile Group**
Email	secretary@surrey-arg.org.uk
Website	www.surrey-arg.org.uk/SARG/11000-Links/SARG2Information.shtml

Area of expertise	**Local Biological Records Centre**
Organisation	**Greenspace Information for Greater London (GiGL)**
Email	enquiries@gigl.org.uk
Website	www.gigl.org.uk

Organisation	**London Wildlife Trust**
Email	enquiries@wildlondon.org.uk
Website	www.wildlondon.org.uk

Organisation	**Pond Conservation**
Email	info@pondconservation.org.uk
Website	www.pondconservation.org.uk

Organisation	**Biodiversity Action Reporting System (BARS)**
Email	info@ukbap-reporting.org.uk
Website	www.ukbap-reporting.org.uk

Area of expertise	**Biodiversity Benchmark**
Organisation	**The Wildlife Trusts**
Email	bb@wildlifetrusts.org
Website	www.wildlifetrusts.org

Area of expertise	**Invertebrates**
Organisation	**Buglife**
Email	info@buglife.org.uk
Website	www.buglife.org.uk

Technical Guidance Note – Ponds

Recommended pond plants

Submerged
Hornwort *(Ceratophyllum demersum)*
Water starwort *(Callitriche stagnalis)*
Curled pondweed *(Potamogeton crispus)*
Water crowfoot *(Ranunculus aquatilis)*
Water milfoil *(Myriophyllum spicatum)*

Floating
Frogbit *(Hydrocharis morsus-ranae)*
Broad-leaved pondweed *(Potamogeton natans)*
Fringed waterlily *(Nymphoides peltata)*

Emergents
Amphibious bistort *(Persicaria amphibia)*
Arrowhead *(Sagittaria sagittifolia)*
Water mint *(Mentha aquatica)*
Flowering rush *(Butomus umbellatus)*
Water plantain *(Alisma plantago-aquatica)*
Water forget-me-not *(Myosotis scorpiodes)*
Brooklime *(Veronica beccabunga)*
Bogbean *(Menyanthes trifoliate)*
Water soldier *(Stratiotes aloides)*

Marginal bog plants
Yellow flag iris *(Iris pseudacorus)*
Lady's smock *(Cardamine pratensis)*
Marsh marigold *(Caltha palustris)*
Purple loosestrife *(Lythrum salicaria)*
Ragged robin *(Lychnis flos-cuculi)*
Bugle *(Ajuga repens)*
Marsh woundwort *(Stachys palustris)*
Creeping Jenny *(Lysimachia nummularia)*
Gipsywort *(Lycopus europaeus)*

JACOBS

Technical guidance note - Hedgerows

General hedgerow maintenance

Tall, thick bushy hedgerows are more valuable for wildlife than low, thin hedges. A variety of hedgerow shapes and sizes will also support the greatest diversity of wildlife. Hedgerows need to be cut to keep them thick and bushy although annual cutting is not always required.

- only cut each hedge every 2 years; this reduces maintenance and labour costs, creates a bushier hedge for wildlife and allows flower and berry production in the intervening years.
- hedges with slow growing species, such as hawthorn, can be cut on a 3 year cycle.
- do not cut back to the same height repeatedly, raising the cutting height each time will avoid placing the hedge under stress and allow it to regenerate more vigorously.
- cut hedges to a variety of shapes and sizes.
- leaving 1-2 metre (or wider) verges of tall grass by hedges provides good habitat for invertebrates, amphibians, ground foraging birds and hedeghogs.
- hedges can be trimmed from September to February but try and cut as late in the winter as possible so wildlife can take advantage of the nuts and berries produced in the autumn.

Species list and density for hedgerow planting

Hawthorn *(Crataegus monogyna)* 70%
Hazel *(Corylus avellana)* 10%
Guelder rose *(Viburnum opulus)* 10%
Dog rose *Rosa canina)* 5%
Field maple *(Acer campestre)* 5%

All whips should be sourced from south-east England.

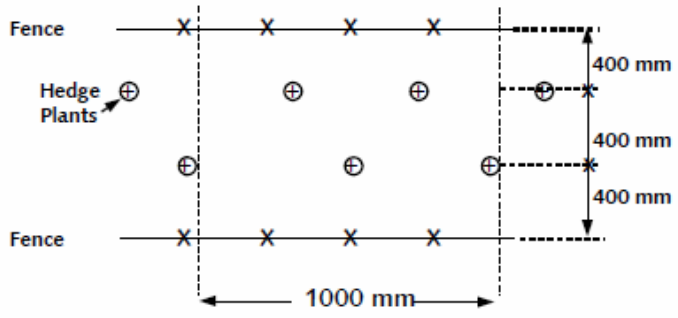
Planting specification

All plants should be of British provenance, preferably the south-east of England, and should confirm to BS 3936-1:1992 *'Nursery stock. Specification for trees and shrubs.'*

Hedging should be planted in two, staggered rows at a density of not less than 5 per meter (see diagram 1), with approximately 450mm between plants in the same row, and 300-400mm between rows. The interplant whips/transplants should be planted within this pattern in groups of 2/3.

Diagram 1- Planview

Planting & Fencing pattern



Technical guidance note – Urban (Gardens, buildings and amenity space)

Appropriate grassland species mix

Species mix: MG5 *Centaurea nigra-Cynosurus cristatus*:

Common Bent *(Agrostis capillaris)*
Sweet Vernal-grass *(Anthoxanthum odoratum)*
Black Knapweed *(Centaurea nigra)*
Crested Dog's-tail *(Cynosurus cristatus)*
Cock's-foot *(Dactylis glomerata)*
Red Fescue *(Festuca rubra)*
Yorkshire-fog *(Holcus lanatus)*
Common Bird's-foot Trefoil *(Lotus corniculatus)*
Ribwort Plantain *(Plantago lanceolata)*
Red Clover *(Trifolium pratense)*
White Clover *(Trifolium repens)*

Climbing species suitable for 'living walls'

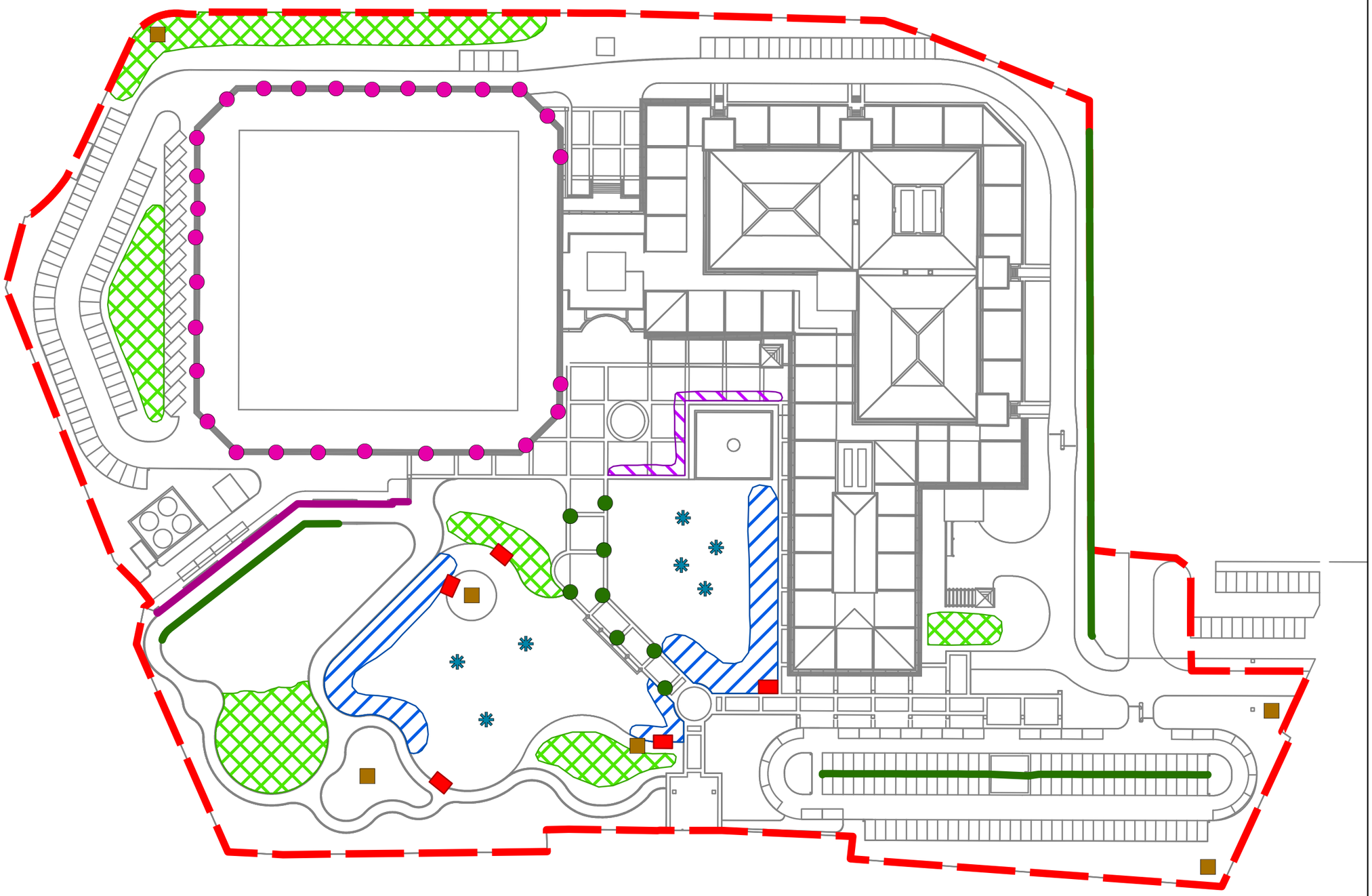
Hop *(Humulus lupulus)*
White bryony *(Bryonia dioica)*
Bittersweet *(Solanum dulcamara)*
Black bryony *(Tamus communis)*
Ivy *(Hedera helix)*
Dog rose *(Rosa canina)*
Honeysuckle *(Lonicera periclymenum)*

Relevant Conservation initiatives

- **The Cockney Sparrow Project**. London Wildlife Trust. www.wildlondon.org.uk/Projects/TheCockneySparrowProject.aspx.
- **The London Stag Beetle Project.** London Wildlife Trust. www.wildlondon.org.uk/Projects/TheStagBeetleProject.aspx
- **Count Bat Project.** Bat Conservation Trust. www.bats.org.uk/pages/count_bat_project.html.
- **Green City Bats.** Bat Conservation Trust. www.bats.org.uk/pages/green_city_bats.html.
- **Corporate Initiatives.** Bat Conservation Trust. www.bats.org.uk/pages/corporate_opportunities.html.
- **National Bat Monitoring Project.** Bat Conservation Trust. http://www.bats.org.uk/pages/nbmp.html.
- **London Bat Group surveys.** www.londonbats.org.uk
- **The Big Pond Dip.** Pond Conservation. www.pondconservation.org.uk/bigponddip/bigponddip2010.

Technical guidance note – Bats	
Recommended bat boxes	
 **Schwegler 2F** bat box. Good for smaller bats. Suitable for trees.	 **Schwegler 2F DFP** bat box. General purpose box favoured by Daubenton's and Nathusius' pipistrelle bats. Suitable for trees.
 **Schwegler 1FW Bat Hibernation Box.** Large box suitable for hibernating bats but needs to be erected away from public areas.	 **Schwegler 1FF bat box.** Suitable for trees or buildings.

Appendix F Potential locations for biodiversity enhancement



Legend

- Study area boundary
- Amphibian ramps
- Bank re-profiling and/or marginal planting
- Grassland enhancement
- New planting
- Hedgerow planting
- Wall planting (Northern side)
- Pillar planting with climbers
- Floating and/or submerged aquatic plants
- Log pile / refugia
- Potted trees / shrubs

N

Grid Reference: TQ195 772

Rev	Rev. Date	Purpose of revision	Drawn	Checked	Approved
0	Nov 10	Revision One	LHB	WB	PG

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Client
The National Archives

Project
The National Archives
Biodiversity Action Plan

Drawing title
Figure 2
Potential Locations for
Biodiversity Enhancements

Drawing status

Scale	1:1,000 @ A3	DO NOT SCALE
Jacobs No.	J24106CL	
Client No.		

Drawing number
J24106CL/TheNationalArchives/Ecology/002

Rev
0

Biodiversity Benchmark Requirements

1 COMMIT

1.1 Policy

Your organisation has a biodiversity policy in relation to its *landholdings (5.12)* which is:

a. a statement of your organisation's commitment to
   i. compliance with legal requirements relevant to *biodiversity (5.2)*;
   ii. biodiversity protection and *enhancement (5.4)*;
b. documented, implemented, maintained and communicated;
c. signed by the person with appropriate authority within your organisation;
d. publicly available.

1.2 Partnerships

In relation to its landholdings, your organisation identifies, engages with and involves external partners in order to help define and fulfil its policy commitments and *objectives (5.6)* and *targets (5.8)*.

1.3 Performance

In relation to its landholdings, your organisation is able to show continual biodiversity protection and enhancement.

2 PLAN

2.1 Surveys

Ecological surveys (5.9) are conducted by an *independent (5.11)* and competent person to establish the status and potential of biodiversity within the scope of the management system.

2.2 Legislation and other Requirements

Your organisation:

a. is aware and understands the implications of all legal and other requirements relating to your landholdings and *biodiversity impacts (5.5)*;
b. documents legal and other requirements showing the relationship to biodiversity impacts and keeps the information up to date. Other requirements include relevant local *Biodiversity Action Plans (5.3)*;
c. periodically assesses compliance with legal and other requirements and documents the findings.

2.3 Assessment of Impact

Your organisation assesses, at appropriate levels, the impacts upon biodiversity within your landholdings in the United Kingdom to determine their significance. The *assessment (5.1)* is documented and kept up to date.

Your organisation also identifies, assesses and records:

a. potential negative impacts in order to prevent their occurrence and
b. potential positive impacts in order to encourage their improvement.

2.4 Objectives and Targets

Your organisation sets *biodiversity objectives (5.6)* and *targets (5.8)* to deliver your policy commitments.

Objectives and targets are:

a. based on the significant impacts as determined by the assessment;
b. reviewed periodically and revised to reflect up-to-date knowledge and changes in your organisation's position in relation to biodiversity issues;
c. documented.

2.5 Action Plans

Your organisation establishes, implements and maintains action plans to achieve your objectives and targets.

3 DO

3.1 Biodiversity Management System

Your organisation implements effective management system(s) to ensure conformance with policy commitments, delivery of objectives and targets and the requirements of this Biodiversity Benchmark.

3.2 Responsibilities and Resources

Responsibilities for biodiversity within your organisation are appropriately assigned. Your organisation provides adequate resources to deliver policy commitments and objectives and targets.

A specific management representative(s) is appointed by someone with appropriate authority within your organisation. The representative has defined responsibilities and authority for:

a. ensuring that a biodiversity management system is established, implemented and maintained in accordance with the requirements of this Biodiversity Benchmark and
b. reporting to Management Review on the performance of the biodiversity management system including recommendations for improvement.

3.3 Training and Competence

Your organisation is able to show that any people working for or on your behalf that may cause a significant impact on biodiversity are competent to deliver your commitments to biodiversity and the requirements of this Biodiversity Benchmark.

3.4 Communication

Your organisation establishes, implements and maintains internal and external communication processes to ensure that:

a. all relevant staff are aware and understand biodiversity issues;
b. responsibilities are communicated effectively to employees;
c. reports on your *biodiversity performance (5.7)* are provided to an external audience, which includes your partners;
d. the contents of any reporting are appropriate to your organisation's significant *biodiversity impacts (5.5)*;
e. the principles of biodiversity are promoted to a wider audience.

3.5 Documentation

Your organisation's biodiversity management system documentation:

a. defines the scope;
b. describes the main elements of the management system and their interaction;
c. provides appropriate reference to related documents;
d. is available and controlled to allow effective delivery of your policy commitments.

4 CHECK

4.1 Measurement and Monitoring

Your organisation establishes implements and maintains a means for measuring and monitoring biodiversity in order to ensure conformance with policy commitments. Outcomes are recorded.

Your organisation periodically monitors and records progress of objectives and targets and action plan(s) to ensure *biodiversity enhancement (5.4)* and protection.

4.2 Identifying and Dealing with Problems

Your organisation establishes, implements and maintains a means to find and deal with problems, which may either adversely affect the commitments to biodiversity or undermine the requirements of the Biodiversity Benchmark.

Your organisation investigates, where appropriate, a problem(s), takes *remedial action(s) (5.13)* and identifies and records the outcome(s).

4.3 Internal Audit

Your organisation periodically audits the biodiversity management system to determine

a. whether or not the requirements of the Biodiversity Benchmark are being met and
b. is properly implemented and maintained.

Audit findings are documented and considered as a part of management review.

4.4 Management Review

In conjunction with your partners, the people with appropriate authority within your organisation periodically review all the requirements of this Biodiversity Benchmark to ensure delivery of policy commitments. The review is documented.

5 Terms & Definitions

5.1 Assessment: an evaluation of habitats and species data against legal and other requirements and relevant Biodiversity Action Plans.

5.2 Biodiversity: the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (definition from the UK Biodiversity Action Plan 1994).

5.3 Biodiversity Action Plans (BAPs): the UK BAP is the UK Government's response to the International Convention on Biological Diversity (CBD) signed in 1992. It describes the UK's biological resources and provides a detailed plan for the protection of these resources. It includes 391 Species Action Plans, 45 Habitat Action Plans and 162 Local Biodiversity Action Plans with targeted actions. Organisations can produce their own BAP as part of their commitment to the UK BAP. More details at http://www.ukbap.org.uk

5.4 Biodiversity enhancement (or similar phrase): either increase in number of (priority or other) species or number of individuals within a species; improvement in the status of habitats; extension in area of priority habitats (as listed in Local Biodiversity Action Plans) or other habitats; improved conditions for interaction (e.g. hedgerows proving wildlife corridors between two priority habitats). To be awarded the Biodiversity Benchmark, an organisation must be able to demonstrate enhancement in one or more of the above categories.

5.5 Biodiversity impact: any change to biodiversity on its land-holdings, whether adverse or beneficial, wholly or partially resulting from an organisation's activities.

5.6 Biodiversity objective: overall biodiversity aim which the organisation intends to achieve and is consistent with the organisation's biodiversity policy.

5.7 Biodiversity performance: a measure of the net gains or losses of habitats and/or species within the organisation's landholdings.

5.8 Biodiversity target: a detailed performance requirement based upon the organisation's biodiversity objectives and which need to be completed in order to fulfil those biodiversity objectives.

5.9 Ecological survey: a field-based survey of the habitats present on one or more sites, usually following the Joint Nature Conservation Committee methodology (further details contained within Guidelines). In addition species information may also be recorded, especially of legally-protected species.

5.10 Habitat: the area or environment where organisms or ecological communities normally occur, for example, a woodland habitat.

5.11 Independent is not necessarily external to the organisation, but must not be related through line management to the management of the site.

5.12 Landholdings: the total area of land within the United Kingdom owned and/or managed by the organisation.

5.13 Remedial action: actions to solve both the immediate consequences of the problem and prevent a similar problem from happening again.

5.14 Species: a group of closely related and interbreeding living things; the smallest standard unit of biological classification, for example, Primula veris, the cowslip.

Appendix H Obligations to Biodiversity – planning policy

Planning Policy Statement 9: Biodiversity and Geological Conservation

The requirement to incorporate biodiversity enhancements into development proposals is contained within Planning Policy Statement 9; this states that when considering a planning application, the local planning authorities should maximise opportunities to enhance biodiversity opportunities, using planning obligations were appropriate.

ODPM Circular 06/2005: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System

This Circular provides administrative guidance on the application of the law relating to planning and nature conservation as it applies in England and complements the expression of national planning policy in Planning Policy Statement 9. Whilst it is used primarily as a source of guidance by Local Planning Authorities, the information contained within the Circular can be of value when making a planning application for a proposal that may have an impact on biodiversity.

Paragraph 84 of the Circular states that the potential effects of a development on habitats or species listed as priorities in the UK Biodiversity Action Plan and by Local Biodiversity Partnerships are capable of being a material consideration in the making of planning decisions.

The conservation of biodiversity in London is also enshrined in this document with paragraph 87 stipulating that the Mayor's duties include the preparation of a state of the environment report (which must include information on biodiversity) and a London Biodiversity Action Plan. The London BAP must contain information on the ecology, wildlife and habitats of Greater London, together with proposals for conserving and promoting biodiversity and the commitments of other bodies intended to achieve the London BAP objectives. The London BAP must have regard to any plans relating to biodiversity prepared by a London Borough Council or the Common Council of the City of London.