

APPENDIX 2

Southwark Biodiversity Action Plan Evidence Base 2013



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1. Introduction

The evidence base document provides supporting information for the biodiversity action plan. The evidence base report provides background and supporting information for the BAP. This document covers legislation and policy, wildlife resources, Invasive species, and background to the 5 themes.

1.1 Introduction to Southwark

Southwark is an inner-city borough with an area of 2,886 ha, and a resident population estimated at 286,000 in 2011. The population is projected to grow to 312,300 in 2016 and to 348,700 in 2026. According to the 2001 census the percentage of people in ethnic groups was: White: 63%; Black or Black British: 25.9%; Asian or Asian British: 4.1%; Mixed: 3.7%; Chinese or other ethnic group: 3.3%. A number of new communities have become established in Southwark in recent years including those from Sierra Leone, French speaking African countries, Latin America and Eastern Europe. Southwark currently ranks 26th out of 354 local districts on the deprivation index (9th in London), with a high level of estate based local authority housing, high unemployment, a large proportion of lone parent families and teenage pregnancies.¹

2 Strategic policy and context

2.1 National BAP

The national BAP sets targets for priority habitats and species in the UK. Targets have been set to maintain, restore or increase the priority habitats by 2020. Some priority species also have targets to increase populations by 2020. Regional and local BAP's set targets for these habitats and species and others of conservation concern. The UK BAP targets are found on the Biodiversity Action Reporting System (BARS). Regional and local BAP targets are also entered onto this system.

UK BAP habitat	Target
Reedbeds	Create 3000 ha by 2020
Lowland meadows	Restore 2687 ha from semi improved or neglected grassland by 2020
	Re-establish 345 ha by 2020. 75% to be adjacent to semi natural habitat
Hedgerows	Increase by 800 km per year until 2020
Ponds	Create 31800 by 2020
UK BAP Species	Target
Bats	Increase population by 35% of the 2005 UK baseline by 2020

2.2 The National Planning Policy Framework

The National Planning Policy Framework (NPPF) replaces Planning Policy Statement 9, biodiversity and geological conservation. However the Circular on Biodiversity and Geological Conservation is relevant.

The Government's objective is that planning should help to deliver a healthy natural environment for the benefit of everyone and safe places which promote wellbeing.

The National Planning Policy Framework sets out the following principals:

To achieve this objective, the planning system should aim to conserve and enhance the natural and local environment by:

- protecting valued landscapes
- minimising impacts on biodiversity and providing net gains in biodiversity, where possible; and
- preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of land, air, water or noise pollution or land instability. Take account of the need to plan for biodiversity at a landscape-scale across local authority boundaries

The policy states that Local Authorities when producing local plans should:

- take account of the need to plan for biodiversity at a landscape-scale across local authority boundaries
- identify and map components of the local ecological networks, including: international, national and local sites of importance for biodiversity, and areas identified by local partnerships for habitat restoration or creation
- promote the preservation, restoration and re-creation of priority habitats, ecological networks and the recovery of priority species populations, linked to national and local targets¹³; and identify suitable indicators for monitoring biodiversity in the plan; and
- aim to prevent harm to geological conservation interests.

When determining planning applications in accordance with the Local Plan and the presumption in favour of sustainable development, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused
- planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss
- development proposals where the primary objective is to conserve or enhance biodiversity should be permitted
- opportunities to incorporate biodiversity in and around developments should be encouraged
- planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of

aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss.

2.3 London Regional BAP Habitat Targets 2020

The London plan Policy 7.19 biodiversity and access to nature says, ‘*The Mayor will work with all relevant partners to ensure a proactive approach to the protection, enhancement, creation, promotion and management of biodiversity in support of the Mayor’s Biodiversity Strategy. This means planning for nature from the beginning of the development process and taking opportunities for positive gains for nature through the layout, design and materials of development proposals and appropriate biodiversity action plans*’. In line with this statement the London Plan 2011 sets out a number of targets for priority habitats in London. ⁱⁱ

Habitat type	Maintain	Enhance	Increase
Coastal and floodplain grazing marsh	850 ha	200 ha	50 ha
Chalk grassland	350 ha	30 ha	10 ha
Acid grassland	1466 ha	40 ha	10 ha
Heathland	45 ha	20 ha	5 ha
Reedbeds	131 ha	20 ha	16 ha
Woodland	4609 ha	500 ha	20 ha
Meadows and pastures	685 ha	40 ha	20 ha
Tidal Thames	2300km	2km	-
Rivers and streams	1407km	100km -	-
Standing water	599 ha 7	7 >2ha sites 20 <2ha sites	250 ponds <2ha
Fen, marsh and swamp	109 ha	10 ha	-
Open mosaic habitats on previously developed land/brownfield	185 ha	-	-

London Regional BAP Habitat Targets

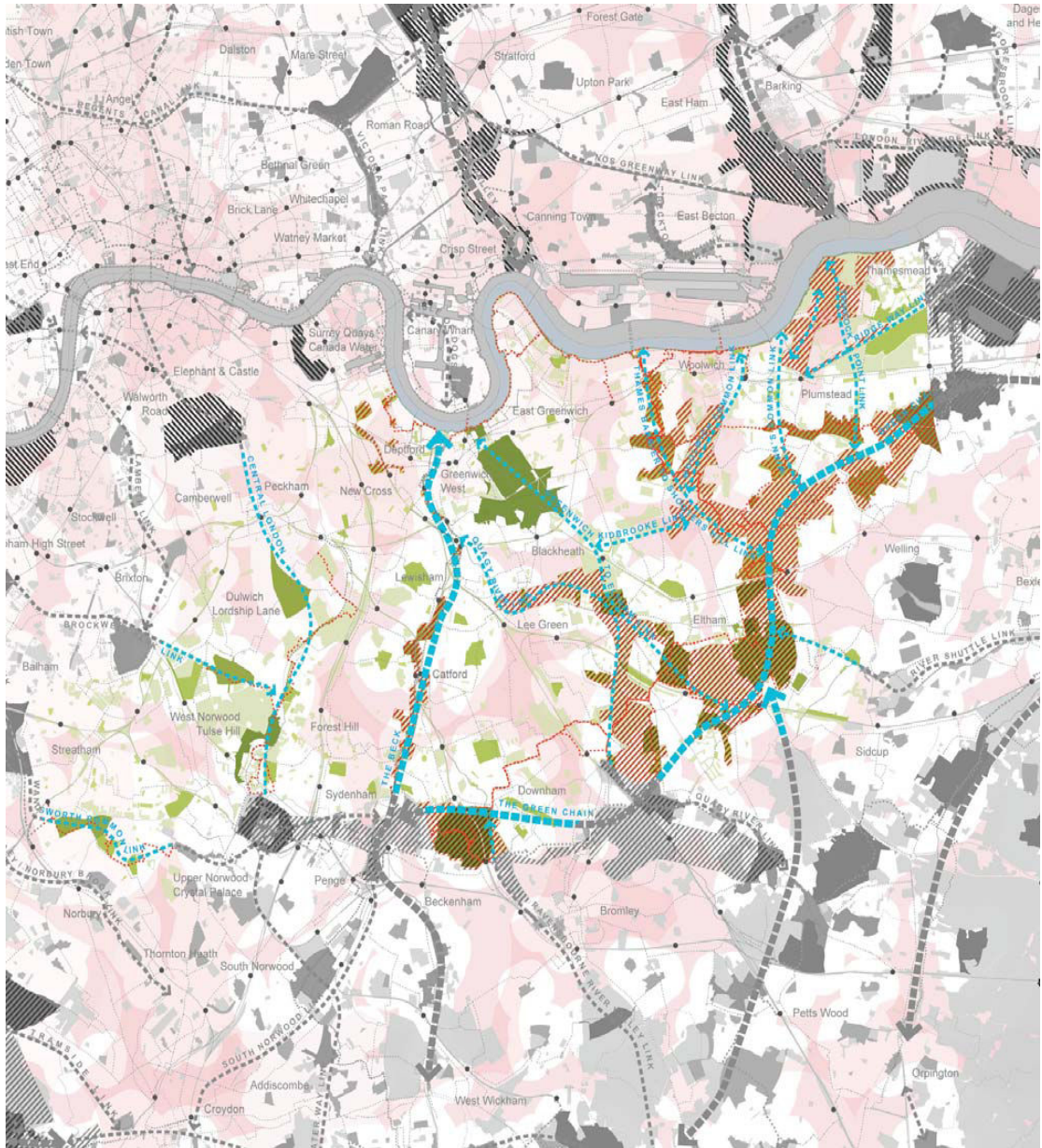
2.4 The All London Green Grid Supplementary Planning Guidance (SPG)

The All London Green Grid is an SPG produced by the Mayor of London. The All London Green Grid (ALGG) aims to promote a shift from grey to green infrastructure to secure environmental, social and economic benefits. It progresses from viewing London as a city punctuated by parks, green spaces and surrounded by countryside, to an appreciation of this network as part of the city's fundamental infrastructure. The SPD identifies opportunities for improvement of parks and open spaces within the grid to deliver the strategic objectives. ⁱⁱⁱ

London is divided into Green Grid character areas. Southwark contains 2 Green Grid character areas: GGA6 South East London Green Chain Plus, and GGA12 Central London. See appendix 3 for the maps of the ALGG relevant to Southwark. This SPD impacts on spatial policy and is relevant to this BAP as it has objectives that contribute to biodiversity.

The ALGG describes GGA6 as 'the South East London Green Chain is a partnership between the London Boroughs of Bexley, Bromley, Greenwich, Lewisham, and Southwark and is an extensive network of parks and open spaces. The character of the Green Chain is very varied and includes ancient and semi-natural woodland, historic parkland, heath, horse paddocks, playing fields, cemeteries, and allotment gardens'.

GGA12 is described as 'most of the open spaces have an urban character, with mown grass and views to surrounding suburban housing. Central London is dominated by the Thames and in South London, small hedged meadows and large heathy commons set against a backdrop of extensive woodlands on higher land'.



GGGA6 South East London Green Chain Plus

- Strategic Corridors
- - - Strategic Links
- ▨ Metropolitan Park Opportunities
- ▨ Regional Park Opportunities
- Regional Parks
- Metropolitan Parks
- District Parks
- Local Park and Open Spaces
- Small Open Spaces - Pocket Parks
- Other / Private Open Spaces
- ⋯ Strategic Walking Routes
- Strategic Cycling Routes



GGA12 Central London

- Strategic Corridors
- - - Strategic Links
- Metropolitan Park Opportunities
- Regional Park Opportunities
- Regional Parks
- Metropolitan Parks
- District Parks
- Local Park and Open Spaces
- Small Open Spaces - Pocket Parks
- Other / Private Open Spaces
- ⋯ Strategic Walking Routes
- Strategic Cycling Routes

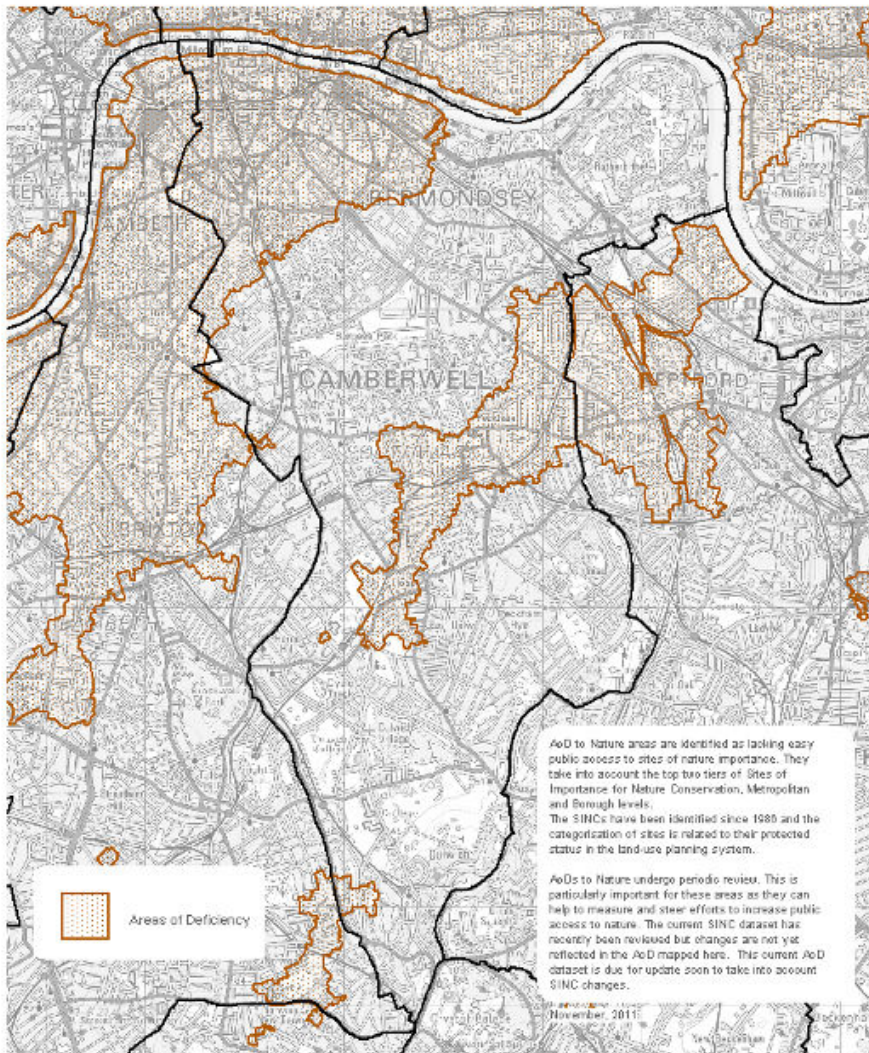
2.5 Access to nature and areas of natural deficiency

Access to nature is increasingly seen as a key component of living in an urban environment. The London Plan policies 7.18 and 7.19 are the drivers for addressing access to nature.

Southwark has good access to green spaces; however in some parts of the Borough people do not enjoy easy access to green spaces with significant wildlife value. These are defined by the GLA as 'Areas of Deficiency (AoD), in Access to Nature'. The map of Areas of Natural Deficiency in Southwark is below.

Areas of deficiency (AoD) to Sites of Importance to Nature Conservation (SINCs), London Borough of Southwark, November 2011

GiGL



2.6 Single Data List and the Council Plan

The single data list is a catalogue of all the datasets that local government must submit to central government in a given year. Improved local biodiversity is one of those data sets. Southwark Council set a target for this dataset as part of the council plan in 2010. This is to increase the number of SINC's in positive management by from a baseline of 72% of our 59 SINC sites in positive management, and have set a target to increase this by 11% in 2014. This target was originally known as National Indicator 197.

2010 Baseline	2011/2012 Target	2012/13 Target	2013/2014 Target
72.88%	76.27%	81.35%	83.30%

Table 4 SINC management targets 2012 - 2014

The indicator is based on key deliverables on the SINC sites within the borough.

- A site management plan
- Biodiversity Action Plan actions delivered i.e. habitat creation such as reedbed or meadows or erecting bat boxes.
- Ecology Officer or specialist advising 3rd parties such as Dulwich Estate and evidence they have acted on this advice.
- Evidence of active management undertaken on the site.

Data from GiGL states that 23.37% of the borough is classed as AoD.

Access is based on the metropolitan and borough Sites of Importance to nature Conservation (SINC) designation. These are graded into four tiers:

- Sites of Metropolitan importance – important in a London wide context.
- Sites of Borough Importance – important in a Borough context.
- Sites of Local Importance – have no bearing on the AoD.

Localities where people are further than 1km walking distance from a publicly accessible site of metropolitan or Borough level of significance for nature conservation are defined as in the London Plan as 'Areas of Deficiency in Access to Nature'.^{xi} See appendix 4 for map of Southwark's AoD.

2.7 Southwark strategies and policies

There are a number of Southwark policies and strategies that have relevance to the BAP and are considerations when determining the actions in the plan. The actions under the 5 BAP themes contribute to the delivery of the policies and strategies listed below.

2.8 The Southwark Core Strategy

The core strategy is based on 5 themes so a theme based bap provides continuity between the two. The five themes of the Core strategy are:

- Theme 1: Improving individual life chances
- Theme 2: Making the borough a better place for people

- Theme 3: Delivering quality public services
- Theme 4: Making sure positive change happens
- Theme 5: Developing in growth areas

2.9 The Core Strategy policies

The key policies and objectives relevant to this BAP are:

- Policy 1 sustainable development.
- Policy 11 open spaces and wildlife
- Policy 13 High environmental standards
- Strategic Objective 2F

Policy 1 addresses planning policy documents and planning applications.

Policy 11 addresses the need to protect open spaces and green corridors and to improve and protect habitats for a variety of wildlife. This policy is supported by the BAP themes Wildlife and Ecosystem services, The Urban Forest, and connecting with nature.

Policy 13 addresses sustainable development and climate change and is supported by the BAP themes The Urban Forest, The Built Environment, and Climate Change, and Sustainability.

Existing or development of new planning policy documents will support the key policies of the Core Strategy.^{iv}

Under theme 1 of the Core Strategy strategic objective 2F addresses conservation of natural places and notes the policies related to this theme.

Strategic Objective 2F. Conserve and protect historic and natural places

Southwark's heritage assets and wider historic environment will be conserved and enhanced. Open spaces and biodiversity will be protected, made more accessible and improved. The policies related to this theme are: STP 1, STP 2 SP 1, SP 11, SP 12, and SP 14.

Supplementary Planning Documents (SPD) and Area Action Plans (AAP) set a number of objectives that:

- Help secure funding for open spaces
- Address open space deficiencies
- Improve access to nature
- Promote urban greening
- Link open spaces through corridors and the Green Chain
- Promote food growing and composting

2.10 The Community Strategy, Southwark 2016

The community strategy, Southwark 2016, focuses on improving individual life chances. This ranges from being safe, healthy, achieving educational potential, enjoying leisure and cultural activities, a livable public realm, and sustainable use of resources. Conserving green spaces, achieving more Green flags, and enhancing the ecological and leisure experiences in Southwark's parks and open spaces. The BAP helps deliver and contributes to all of these objectives.

2.11 Southwark Fairer Future Policies

The BAP will contribute to delivery of some of the 10 fairer future promises and priority statements for each of the 9 Cabinet members:

Particular focus is to be made as to how the BAP will support the following proposals identified in the above:

Deliver against the performance schedules for:

- Encourage healthy lifestyles (Promise 7)
- Transport, Environment and Recycling and in particular increasing the biodiversity of Southwark's green spaces.
- Culture, Leisure, Sport and the Olympics and in particular increasing residents' satisfaction with leisure services
- Equalities and Community Engagement and in particular maintain the high percentage of local people who think that Southwark is a place where people from different backgrounds get on well together and achieving against the volunteering strategy action plan

2.12 Southwark Plan saved policy 3.28 biodiversity

The saved policies from the Southwark Plan 2006 set out protection of natural habitats and features and enhancement of biodiversity in developments.

The local planning authority will take biodiversity into account in its determination of all planning applications and will encourage the inclusion in developments of features which enhance biodiversity, requiring an ecological assessment where relevant.

Developments will not be permitted which would damage the nature conservation value of sites of importance for nature conservation (SINC's) and local nature reserves (LNR's) and/or damage habitats, populations of protected species or priority habitats/species identified in the United Kingdom, London or the Southwark biodiversity action plan. Where, exceptionally, such developments are permitted, the Council will seek mitigation and/or compensation for the damage to biodiversity. Where new sites of importance for nature conservation and local nature reserves are identified, these sites will be afforded protection under this policy and the Policy 3.27 Other Open Space. ^v

2.13 Open Spaces Strategy

The Draft Open Spaces strategy sets out priorities and objectives for Southwark's open space. The strategy covers all open spaces including not just land but also areas of open water such as our docks and the River Thames. The strategy undertook an audit of Southwark's open spaces and sets out standards for each type of open space. The strategy identifies Borough-wide measures to address deficiencies.

2.14 Green Flags and Green Pennants

Green Flags are a quality standard for parks and open spaces. They allow us to benchmark and continually improve our management of these spaces.

Many government policies have sought to encourage improvements in local green spaces. One of these is the Green Flag Award that are given annually to those spaces judged against criteria including health, safety and security, community involvement, access and sustainability.

The Green Flag Awards are well placed to help develop a number of roles including biodiversity, sustainability, education, and the public health role of parks.

Green Pennants are similar but are awarded to non government organisations who manage green spaces.

2.15 Planning Policy and the Open Spaces strategy.

2.16 Open Spaces Strategy Objectives

Vision

“To encourage a diverse network of sustainable open space of high quality which meets the needs of those living and working within the Borough and encourages the development of more inclusive communities, safeguards natural resources and cultural heritage, provides recreational and educational opportunities and helps to promote sustainable development”.^{vi}

To Enhance Provision to Meet the Needs of an Increasing and Changing Population

Sets objectives for the following themes:

- **Biodiversity**

Sets objectives to protect, manage, and enhance areas of importance for nature conservation and biodiversity.

Encourages ways of incorporating new areas of natural habitat within new developments, and existing open space.

- **Community Cohesion**

Encourages greater use of open space and incorporates safety and sense of ownership.

- **Regeneration**

Sets objectives to ensure that open spaces and the public realm are integral to the overall design of regeneration projects. Encourages community engagement in the planning, designing and management of local open spaces.

- **Health and Wellbeing**

Sets open space standards to ensure that all residents have access to open space within a reasonable distance of their home. Advocates increased participation in active recreation and increased range and provision of recreation types available within open spaces.

- **Tackling inequality**

Sets objectives to meet the needs of a varied community, encourage greater use by non users, making open spaces safer, improving accessibility and providing facilities for teenagers and young people.

- **Education**

Sets objectives to improve provision of educational information within open spaces, improve provision of cultural infrastructure and promote outdoor learning.

- **Networks, Chains, and Grids**

Promotes the development of a network of open spaces, green chains and green links in Southwark and neighbouring boroughs.

Section 3

3.1 Benefits of biodiversity and the natural environment

The big picture is that biodiversity underpins our existence by providing the very building blocks for life on Earth. Biodiversity supports the economy through providing raw materials, food and fuel. The natural environment provides the air and clean water we require, and regulates the environment. The natural environment provides sustainability through regulation of the climate, pollutants and breaking down waste products. Biodiversity offers a space for cultural, spiritual and leisure activities.

The natural environment gives us a sense of place, pride and identity. Contact with nature inspires and moves us, also helping children to learn and improving our health and wellbeing. As the Ecosystems Services study showed, nature benefits humans but also humans can benefit nature. Protecting urban nature can provide community cohesion and health benefits from taking an active role in improving our natural environment.

Many studies and publications have made the case that biodiversity benefits people. Although important in its own right biodiversity also benefits and contributes to society and delivery of social policy. Studies have established that biodiversity has an intrinsic aesthetic and spiritual value. Contact with biodiversity benefits society in many ways. It provides common ground for communities and acts as a catalyst for community action. Biodiversity benefits our health and wellbeing through opportunities for physical exercise and mental health. Studies have found that contact with nature and green spaces have a positive effect on our mental health. Biodiversity offers a lifelong learning experience and is an essential skill for a sustainable future.

3.2 Health and Wellbeing

3.3 Southwark's health

Southwark has a population of 286,000. 60% of the population live in areas classified as the most deprived areas in England.

The Southwark Housing Requirements Study found that 53,500 (20%) of people living in Southwark said they had health problems. 25% of households contained at least one member with a health problem. 18,030 people had a long term illness,

disability or infirmity. 690 were wheelchair users and 4,460 had other walking or mobility difficulties. 4,470 had difficulties due to old age or frailty. 26% of year 6 children in Southwark were recorded as obese in 2007/8. This is one of the highest figures in the country.

In 2008 there were an estimated 38,412 households living in unsuitable housing with a need to move with high levels of overcrowding. More than 12,000 residents are claiming disability living allowance which is about 5% of the population. The Standardised Mortality ratio is well above the national average at 108 (where 100 represents the national average), reflecting widespread deprivation.

3.4 Health benefits of the natural environment.

The simple message from the Government through the Natural England White Paper "Securing the Value of Nature" is that nature is good for human health.^{vi} There is a wealth of evidence on the positive effect that spending time in the natural environment has on the health and emotional wellbeing of people. It is clear from studies such as the Marmot Review "Fairer Society - Healthier Lives" that contact with the natural environment and green spaces helps improve the health and wellbeing of people and can save money.

Green space and green infrastructure improve mental and physical health and have been shown to reduce health inequalities. Green infrastructure networks reduce urban temperatures and improve drainage, reducing the risks to health associated with heat waves and flooding. Well designed and maintained green spaces can encourage social interaction, exercise, play and contact with nature. Well designed, car free and pleasant streets encourage feelings of well-being, chance interactions, and active travel; good quality and good access to public spaces contributes to pride in the community, integration and social cohesion. Over 95 per cent of people believe it is very or fairly important to have green spaces near to where they live and this value placed on green space is high.

A good-quality environment is associated with a decrease in problems such as high blood pressure and high cholesterol. It is also linked with better mental health, reduced stress and more physical activity. If every household in England were provided with good access to quality green space, an estimated £2.1 billion in healthcare costs could be saved. On the other hand, a poor local natural environment can damage people's health and contribute to health inequalities. For example, the social costs of the impacts of air pollution are estimated at £16 billion per year in the UK.^{vii}

3.5 Education

Over a third (35%) of working age residents in 2001 had higher education qualifications, which is nearly double the national norm. However the proportion of those with no qualifications (24%) was above the London average. In 2001 Southwark was home to 18,800 full time students. This is almost double the national average and the third highest in London. 27% of children in 2009 were documented as having special educational needs. Source: schools census.^{viii}

Just as the natural environment is good for our health, it helps us learn and develop as people. Outdoor learning is very important in our development.

Open Spaces can provide both a valuable educational and cultural resource for children and adults alike. Educational use of open space can be on an organised basis as part of the school curriculum for sports or for environmental studies, or can be on a more informal basis through the provision of nature walks or interpretation of natural or historical features. 43% of Southwark's open spaces have an existing educational role of some sort. Existing educational use includes spaces for organised school sports, as well as several open spaces that are used for environmental study such as Surrey Docks Farm, and several that include historical interpretation such as Geraldine Mary Harmsworth Park. The potential for more of our open spaces to be used in this way has been identified and will be pursued through this strategy.

Section 3 Background to the 5 themes

The background information provided in this section supports the 5 themes below.

- The Natural Environment and Ecosystems Services
- The Urban Forest
- The Built Environment
- Climate Change and Sustainability
- Connecting with Nature

3.1 Ecological conservation

Many natural habitats and species are declining and deteriorating. These habitats and species are often identified as of 'priority' or of conservation concern. This is supported by international commitments, European and national legislation. This is supported by national, regional and local biodiversity action plans. The quality of our natural environment is a key factor in maintaining a coherent and resilient ecological network. The dominance of the savannah style of landscape in urban areas may be attractive, feel safe because of clear sightlines, and be easily maintained but it contributes to the decline of species because the habitat features vital for urban nature are not present.

3.2 What makes a coherent and resilient ecological network?

Much of England's wildlife is now restricted to wildlife sites, which consist largely of semi-natural habitats. The view of the Wildlife and Ecosystems Services Strategy is that "an ecological network is this network of high quality sites, protected by buffer zones, and connected by wildlife corridors and smaller, but still wildlife-rich, "stepping-stone" sites. The ecological networks for different species work at varying scales: some species need a large area, others a much smaller area".

For many species, habitat does not have to be a continuous, physical connection for them to disperse.

The connectivity and quality of wildlife sites is important to allow species or their genes to move between these sites. In Southwark the major parks such as Dulwich, Peckham Rye, and Russia Dock Woodland act as the large sites with the smaller parks and open spaces acting as the stepping stones. These are connected by the railway corridors, gardens and street trees.

3.3 Ecosystem services

Provisioning services

The main service for urban areas is Genetic resources. Production of timber, crops, livestock and fisheries rarely apply to urban areas and are usually associated with heavily managed ecosystems.

Regulating services

Provide a diverse number of services from pollination and pest and disease regulation on provisioning services. The important regulating services of climate and hazard regulation such as urban cooling and flooding fall into this category. Regulation of water quality and soil and air quality are also provided by regulation services.

Cultural services

Possibly the most identifiable service for urban areas, as many spaces such as gardens, parks, rivers and lakes are instrumental in the interactions between society, cultures and wellbeing. Such places provide opportunities for outdoor education and many kinds of recreation. Experience of such places can have benefits including aesthetic satisfaction, improvements in health and fitness, and an enhanced sense of spiritual well-being. They provide community cohesion.

People's engagement with environmental settings is dynamic: meanings, values and behaviours change over time in response to economic, technological, social, political, and cultural drivers, and change can be rapid and far-reaching in its implications.

Parks entered into the green flag award were surveyed for visitor numbers in 2008/09. The results showed that the major parks receive between 800,000 to over 1,000,000 visits per annum and smaller parks receive between 250,000 and 270,000 visits per annum.

Supporting services

Underpin all the other services as they provide the basic infrastructure of life. Primary production in the form of the capture of the sun's energy produces complex organic compounds. All other ecosystem services regulating, provisioning, and cultural ultimately depend on them.

Biodiversity is under pressure from the increasing demand for new development, increasing population, loss and fragmentation of habitat, invasive species and climate change.

3.4 Tree management and the Urban Forest

Southwark directly manages over half the tree population (57,000 trees). When broken down over operational areas the numbers of trees in Southwark's management are as follows:

- Housing Estates 20,000
- Parks & Open Spaces 20,000
- Highways 15,000
- Schools 2,000

There are approximately 90,000 trees in Southwark excluding areas designated as woodland. Southwark Council is responsible for the direct management, maintenance and care of over half these trees.^{xiv}

Trees not managed by Southwark include those managed by Transport for London, trees located within residential gardens and those on other private land such as railway corridors. There are over 300 species of tree found in Southwark. The most common species are listed below:

10 most common tree species in Southwark

Platanus x hispanica - London Plane 10.6%

Prunus - Cherry 9.7%

Tilia - Lime 6.5%

Acer pseudoplatanus - Sycamore 5.3%

Fraxinus - Ash 5.2%

Acer platanoides - Maple 4.3%

Sorbus - Mountain Ash 4.0%

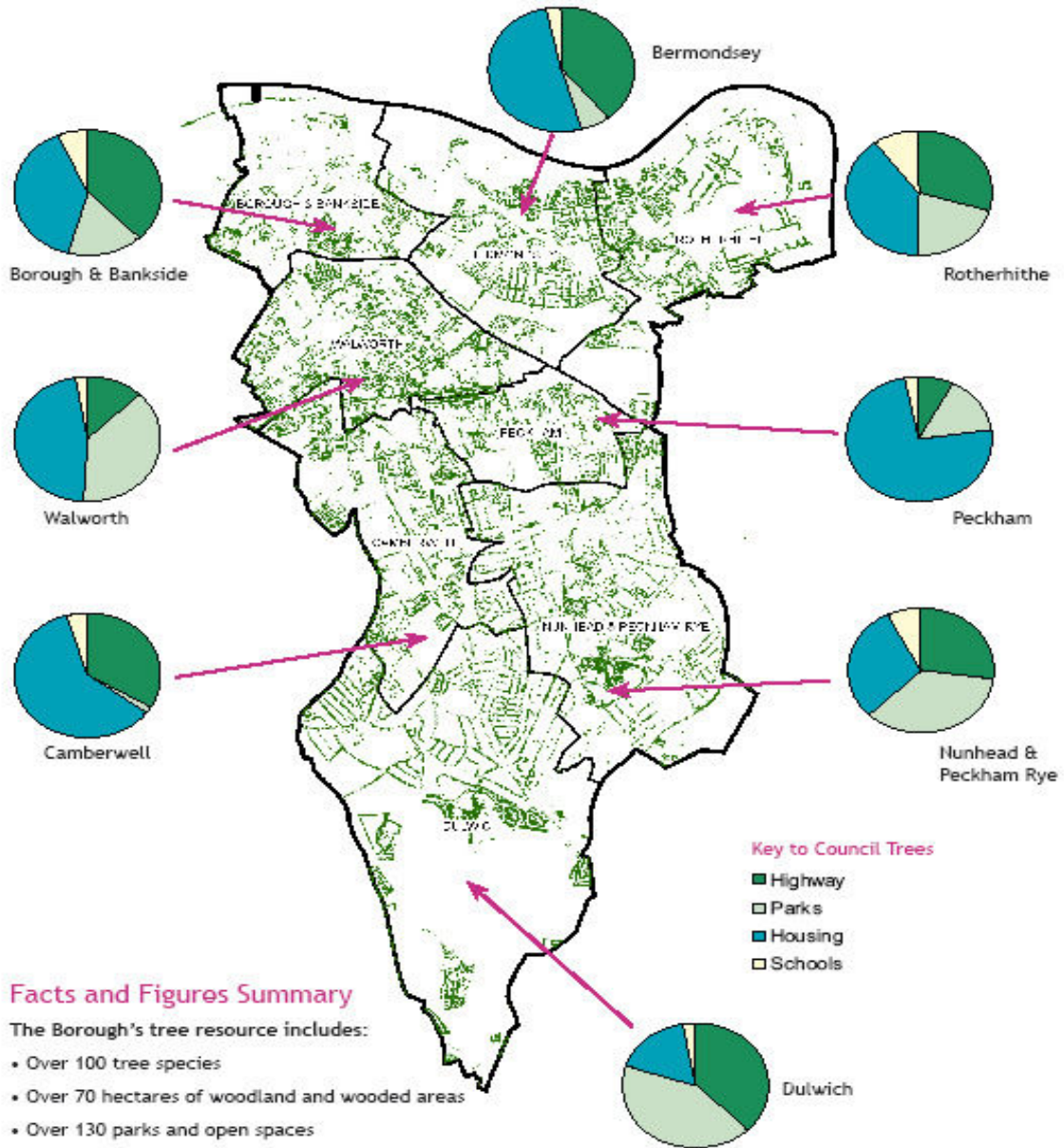
Crataegus - Hawthorn 2.9%

Quercus - Oaks 2.4%

Pyrus -Pear 2.2 %

The Distribution of Council Managed Trees

(Note: This map does not show woodland areas or trees on private land. Not all of the Borough's schools have been surveyed therefore the figures shown are not comprehensive.)



Facts and Figures Summary

The Borough's tree resource includes:

- Over 100 tree species
- Over 70 hectares of woodland and wooded areas
- Over 130 parks and open spaces

Northern part of Borough:

- Densely urbanised, less open space, fewer trees.
- Council trees concentrated along roadsides and on housing estates.

Southern part of Borough:

- Suburban, large open spaces, significant ancient woodland, large private gardens.
- Council trees concentrated along roadsides and in parks and open spaces.

Woodland management

Woodlands such as Sydenham Hill Wood, Russia Dock Woodland and Nunhead Cemetery are some of our best habitats for wildlife. Sydenham Hill Wood contains remnants of ancient woodland. This is the most important ecological habit in Southwark and is irreplaceable.

Woodlands require management for nature conservation and this management sits outside the tree management contract with the exception that trees that are close to paths, roads or properties would be managed under the dead dying or dangerous principal. In the case of woodlands and buildings we maintain a 2 metre tree canopy clearance from the property.

Southwark's management of woodlands for conservation consists of a number of key objectives:

- Management by non intervention
- Coppicing and glade creation
- Selected removal of invasive and non native trees
- Creation of the woodland edge habitat
- Retention of buffer zones between woodlands and built developments
- Development of the woodland flora
- Introducing native climax woodland species into young woodlands

Management of trees and hedges in parks and open spaces for biodiversity

Management of trees for biodiversity in parks and open spaces is undertaken as part of the cyclical maintenance regime.

Restocking of trees in parks and open spaces will be undertaken using 50% native trees.

Native hedges are valuable for providing wildlife corridors in the urban environment and offering nesting, shelter and foraging habitats for birds and Invertebrates.

In addition to the benefits for wildlife mixed native hedges offer benefits to people. They soften the hard boundaries of parks and open spaces, reduce graffiti, create natural barriers and clean the air of pollutants. A recent trend has been to plant hedges to provide natural foraging opportunities for the public. Hedges require cutting usually twice a year and as they mature they can be laid.

Trees that are dying or dead and pose no threat to public safety are managed to provide dead wood habitat. This is achieved by leaving standing trees with the top two thirds removed as totems. When a tree has to be removed stump grinding is avoided where feasible, this provides habitat for stag beetles and other invertebrates. Dead wood habitat is also created by retaining the cut timber as features in suitable areas of parks. The tree strategy expands on the use of wood and our desired method of dealing with this issue.

Timber and green waste recycling and reuse

Arboricultural works inevitably generate green waste. Southwark Council requires its arboriculture contractor to arrange for all green and all woody waste to be recycled. This is expected to be approximately 208 tons per month or 2500 tons a year. Soft foliage and smaller branches can be shredded/ chipped and the resulting waste either composted or used directly as a mulch material. Timber too large for chipping

may be suitable for local craft or commercial purposes (e.g. as fencing material, firewood or furniture). In woodland or informal parks, the most sustainable solution is often to leave the cut timber in situ. It can be carved into a sculpture or simply stacked into log piles to provide a wildlife habitat. Transportation costs (both financial and environmental) are an important consideration and should be kept to a minimum when moving green waste or timber.

Trees and climate change

The climate of the UK is changing. We have experienced three of the hottest summers on record within the last decade. The most recent predictions for the UK suggest an overall increase in temperature and changes to rainfall patterns and wind speed.

Climate change has a direct and indirect effect on trees in a number of ways. A rise in carbon dioxide levels in the atmosphere causes an increase in tree growth and extends the growing season. Some tree species will experience earlier flushing of leaves and flowers.

Lower summer rainfall and increased evaporation are likely to lead to longer periods of drought-induced stress on trees. An increase in the occurrence of storms will make trees more vulnerable to wind damage. Warmer summers and a rise in temperatures in general are likely to extend the life cycle and geographical range of certain pests and diseases. Trees under stress are more susceptible to colonisation by insect pests and decay-causing fungi.

The role of trees and woodlands in urban areas will become more important as climate change makes towns and cities increasingly unpleasant during heat waves. Trees produce oxygen and provide shade. They limit the urban heat island effect and intercept rainfall reducing the impact of storms. Southwark Council will ensure appropriate provision is made by planting suitable trees that will withstand the predicted changes to climate and weather patterns.

Climate change will inevitably have a detrimental effect on our present tree population. Shallow rooting species such as Beech and Hornbeam often suffer drought stress during hot periods. Trees can recover from drought conditions, particularly if they occur as single one-off events, but if such conditions are repeated year on year, they can easily succumb. An increased occurrence of high winds, particularly when soils are waterlogged and deciduous trees are in leaf can also damage the local tree population. Warm summers and milder winters can favour the existence of harmful tree pathogens, which become more prevalent in such conditions. An example is the occurrence of Horse Chestnut Bleeding Canker (*Pseudomonas syringae* pv *aesculi*) which has increased significantly in recent years. It is important, therefore, for tree owners to protect the current tree resource, ensuring that it is sustained and where possible, expanded. It is also important that landscape architects and tree managers have regard to the effects of climate change, particularly when selecting new trees for planting schemes.

Right Tree Right Place

Preservation of the existing tree stock through replacement tree planting is delivered through implementation of the 'Right tree Right place' principle.

The Tree and Woodland Framework for London supports the principle of 'Right Place, Right Tree', 'which seeks to ensure new planting/colonisation is appropriately located and designed'. The Framework provides a useful checklist of factors to be considered which are summarised below.

- Right location?

- Existing habitat and landscape value: assess and record the habitat types and landscape character of the site. The shade cast by trees, and their demands on soil, water and nutrients can have a negative impact on existing valuable wildlife habitats or landscape character. Understand the value of the site before committing to planting.
- Tree cover history: Historically would there have been trees on the site? Check historical records to establish whether the creation of new woodland or tree cover would be appropriate.
- Right species and appropriate design?
- Development design: avoid locating trees where they will experience inappropriate growing conditions, e.g. in the shadow of tall buildings.
- Space: check available space against the final height and spread of the proposed tree species with a view to minimising frequency and amount of pruning required, particularly where near to buildings or built structures.
- Infrastructure: do not plant too close to existing or proposed over/underground infrastructure (utilities). Replace removed trees in the same pit if appropriate.
- Local character: is there history for the use of a particular species in the area that could be reflected in new tree planting?
- Work with nature: in natural areas, use tree stock of locally native origin or ideally encourage natural regeneration.
- Great trees of the future: where the setting allows, select and plant large species of trees with a longer lifespan.
- Accessibility: new trees and woodlands are most needed where they can provide people with access to nature and natural landscape in areas presently lacking in such access.
- Highways: meet the statutory safety requirements to maintain a clear route along roads (consider heights of buses, HGVs, cars, cycles and horses).
- Soil condition: the soil in hard landscaped areas is often poor. Soil compaction needs to be limited in the tree pit and adequate nutrients supplied. Use species known to be robust to these limitations.

Once the design layout has been determined and species selected there are a number of choices to be made before sourcing the trees. Trees are either sold as 'bare root' stock, which are dug straight from the nursery field; or as 'container grown' stock, their roots established inside containers. Trees are also sold in different size categories. Although the larger-sized trees, such as 'extra-heavy standard' have more immediate visual impact, smaller trees such as 'feathered' and 'standard' may be more manageable to plant and require less initial care and maintenance. Very young trees are sold as 'whips' and 'transplants' which may be appropriate for establishing a planting framework combined with some mature trees for example to form a shelterbelt.

- Right time to plant?
- New trees are best planted during the Autumn/Winter, Southwark's planting season runs from mid-October to March. Care must be taken to avoid planting when the soil is frozen or waterlogged. Container grown trees can be planted at any time, provided they are watered regularly during dry periods. This is because their roots have grown in a container and so do not suffer the same root disturbance as bare root stock which have to be dug from the ground prior to transporting to the planting site.

New trees should conform to and be planted in accordance with the following British Standard Codes of Practice:

- BS 3936-1: 1992 Nursery stock specification for trees and shrubs
- BS 4043: 1989 Recommendations for transplanting root-balled trees
- BS 4428: 1989 (Section 7) Recommendations for General Landscape Operations

Particular reference also needs to be taken of guidance contained within The Validation of Planning Applications (DCLG, 2008), Trees in Towns 2 (DCLG, 2008) and documents provided by the Trees and Design Action Group.

A large number of mature and over-mature trees in a population can have significant long-term implications on sustaining tree cover for the future. An ongoing replacement planting programme is essential in order to counter tree losses, to ensure that a stock of maturing trees is available to take the place of those that, through necessity, must be felled.

Species choice for a particular location will affect a tree's subsequent management and maintenance requirements. Wherever appropriate, native species are preferred for ecological reasons. However due to the ecology of urban areas, impact of climate change and existing local conditions, it is necessary to prioritise species that can tolerate the harsh urban environment. Species choice needs to be determined on a site-by-site basis and a balanced approach is needed.

Planting methods and protection measures are also considerations in relation to a particular tree location. The use of root barriers or similar tree growth restriction methods for newly planted trees should be considered in high risk areas identified by insurance claims.

Species choice, nursery source and planting methods can impact on a tree's future management and maintenance requirements and it is therefore important that both the Tree team and Urban Forester are involved in the design, planning and planting process. Container grown trees are preferable in the majority of cases since, although more costly to purchase, these establish more readily, require less maintenance and are less likely to fail.

Trees and Planning

The Council's Development Management Business manages planning applications, oversees government guidance and legislation on biodiversity and green issues, applies Tree Preservation Orders (TPO's), authorises, and oversees works in Conservation Areas.

The Development Management Business Unit has employed a Senior Planner specialising in Urban Forestry to manage planning related tree enquiries. This role is to:

- Respond to enquiries relating to planning issues
- Gauge the impact on trees and landscape when considering planning applications and other issues related to new development
- Commenting on BS5837 surveys and approving tree protection and landscaping plans produced by private developers;

- Manage and maintain the Council's Tree Preservation Order register, managing and processing of current and new TPO's
- Advice on applications to undertake work on trees subject to TPO's and trees in Conservation Areas
- Investigation of unauthorised works to protected trees
- Provide input to policy on green infrastructure and determine the application of available s106 funds, including advice on the design and management of planting and other landscaping projects, strategic new planting and biodiversity
- Advice on project management and technical support regarding the design, maintenance and procurement of trees and landscaping for capital funded projects such as s106, CGS and Major Projects
- Consultation, including site visits, community council meetings and court evidence

Tree Preservation Orders

The Council complies with the statutory requirement under s214 TCPA 1990 to maintain a register of applications to do works to preserved trees and those within conservation areas. This information is available online via the Southwark website along with planning applications and is managed within Development Management.

However, information regarding existing TPO's is currently only available to the public by enquiry (written, email or telephone).

Trees and Planning Policy

The planning policy team are responsible for preparing planning documents that make up the Local Development Framework. These documents set out policies and planning guidance for the borough and cover issues such as public realm and open space. The Tree team will work with the planning policy team in the preparation of LDF documents to ensure the Tree Strategy is taken into consideration and to ensure development in the borough will not negatively impact on Southwark's trees. Guidance on trees and landscape can be incorporated in forthcoming area based Supplementary Planning Documents and Area Action Plans and themed documents covering green infrastructure. The timetable for preparing these documents has been agreed through the Local Development Framework.

Voluntary organisations and trees

Since the 1980s, the London Wildlife Trust, The Conservation Volunteers (TCV), formally BTCV, Groundwork Trusts, and many local organisations have been actively promoting community interest and engagement in trees, often in partnership with local authorities and Government agencies. Trees for London (an independent charity), established in 1993, has become a key player in promoting tree planting, especially in areas of economic deprivation. Trees for Cities published The London Tree Manifesto in 2001, which the Mayor of London has signed up to help deliver.

Other voluntary sector organisations, such as Dulwich, Peckham and Camberwell Societies and Friends of Parks groups, have an active interest in trees. These groups undertake informal surveillance and report issues with trees.

The Dulwich Estate is a registered charity and has responsibility for the management of trees on their land.

3.5 The Built Environment

New developments and existing buildings have the potential to include features for biodiversity including Green roofs, living walls, Sustainable Urban Drainage Systems (SUDS), nesting and roosting places for wildlife, and natural planting. All of these actions are considered important in maintaining a coherent and resilient ecological network.

Both the Bankside Business improvement district and the London Bridge Business Improvement District have undertaken green audits of their areas and have mapped and identified buildings and streetscape that could receive green infrastructure improvements. These actions will benefit biodiversity and mitigate against the effects of climate change and contribute to the surface water management plan for Southwark.

The London Plan supports this through the following policies:

- 2.18 Green infrastructure
- 5.3 Sustainable design and construction
- 5.4 Retrofitting
- 5.10 Urban greening
- 5.11 Green roofs and development site environs
- 5.13 Sustainable drainage
- 7.19 Biodiversity & access to Nature

Southwark Council supports this through the following objectives in the Core Strategy 2B, 2E, and 2F and policy 11 Open spaces and wildlife.

3.6 Climate Change & Sustainability

The built environment and the public realm can offset the effects of climate change and increase sustainability. For example Green/brown roofs help insulate buildings, reduce and slow runoff, optimise the performance of Photo voltaic panels, and provide habitat.

3.7 Sustainability

The Southwark Sustainable Environment Partnership promotes the importance of a quality, livable and sustainable environment for all who live in, work in and visit Southwark by developing and overseeing the implementation of all environmental aspects of the Southwark Sustainable Community Strategy, including:

- Energy and climate
- Waste management and recycling
- Air quality
- Water
- Biodiversity, and The public realm (i.e. streets, parks and open spaces)

The Southwark Sustainable Environment Partnership also monitors the effectiveness of the implementation and delivery of the environmental aspects of the Sustainable Community Strategy, including:

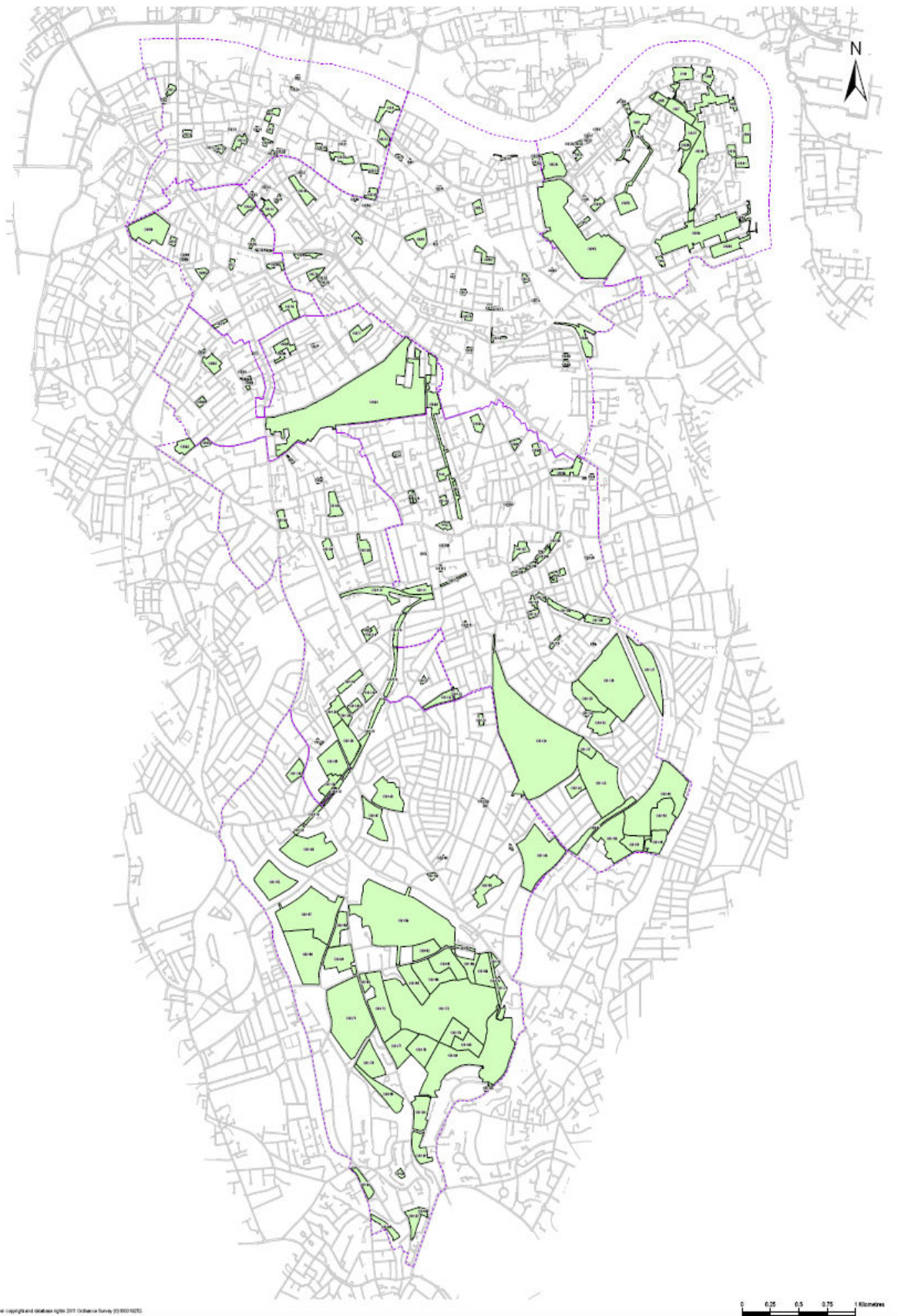
- Relevant Local Area Agreement indicators and targets
- Promoting the importance of sustainability amongst members of the Local Strategic Partnership and the wider community of Southwark, including residents, businesses and voluntary and community organisations
- Coordinating a range of services delivered through partner agencies, identifying gaps in provision and developing proposals to address them
- Maximising funding coming into the borough for environmental services

3.8 Community engagement

The voluntary sector in Southwark is well established and made up of around 18,000 individuals delivering services through 1,200 community groups and voluntary organisations. Volunteer management committees manage 90% of the sector and 71% depend on volunteers to run day to day services. The contribution of volunteer activity in Southwark has been estimated at about £26m per annum.

Biodiversity and nature conservation offers many opportunities for community involvement through Wildlife events, volunteering, and ecological monitoring. Open spaces can also represent a source of wider social benefits and cultural value providing the setting for sport, community meetings, fairs, firework displays, picnics etc. Open spaces which host small and large events can help create a sense of community; open space can provide opportunities for social interaction and the development of social capital through family and group outings, community events and activities. Southwark already has a number of open spaces that provide dedicated venues and facilities to support cultural events, and has a number of spaces that are used as part of our cultural events programme. The challenge will be to tap into open spaces that have the potential to accommodate cultural events and to provide a broader programme of events in future.

Section 4 The Ecological baseline in Southwark



Map of Open spaces in Southwark

4.1 Sites of Importance for nature Conservation in Southwark.

Metropolitan Sites of Importance for Nature Conservation			
Site Name	Size ha	Key Habitat/Species	Management plan
RT1 River Thames	100.	Intertidal mud, Waterfowl, Wading birds.	No
OS 126 Nunhead Cemetery, (LNR)	21.	Secondary woodland, Grassland, Tawny owl, Greater spotted woodpecker.	Yes
OS 181 Dulwich & Sydenham Hill Woods (Sydenham Hill Wood is LNR).	28.	Ancient woodland, Ponds, Veteran trees, Dead wood, Owls, Hobby, Kestrel, Sparrow hawk, Bats.	Yes Part managed by LWT and Dulwich Estate
OS 174 Cox's Walk	0.98	Oak lined walk adjacent to Sydenham Hill Wood	Yes
South Dock	0.26	Waterfowl	No

Borough Grade 1 Sites of Importance for Nature Conservation			
Site Name	Size ha	Key Habitats/ Species	Management plan
OS 8 Lavender Pond Nature Park (LNR)	0.7	Standing water, Reedbeds, Alder Carr, Wet meadow, Reed bunting & Reed warbler, Red eyed damselfly.	Yes
OS 150 One Tree Hill (LNR)	6.8	Secondary woodland, Acid grassland, Common lizard, Stag beetle, Owls.	Yes
OS 36 Stave Hill	0.69	Parkland, Woodland & wet woodland, Standing water, Reedbeds, Grassland, Native scrub, Stag beetle, Kingfisher, Oaks, Black poplar, Slow-worm, Hedgehog.	Yes
OS 37 Russia Dock Woodland	9.67	Parkland, Woodland & wet woodland, Standing water, Reedbeds, Grassland, Native scrub, Stag beetle, Kingfisher, Oaks, Black poplar, Slow-worm, Hedgehog.	Yes
OS 38 Stave Hill Ecological Park	2.05	Hill with wildflower planting on some slopes	Yes

Borough Grade 1 Sites of Importance for Nature Conservation			
Site Name	Size ha	Key Habitats/ Species	Management plan
OS 173 Dulwich & Sydenham Hill Golf Course	32	Woodland, Pond, Oak pollards, Scrub, Acid grassland.	Yes
OS 187 &. Dulwich Upper Wood (LNR)	1.8	Ancient & secondary woodland, Wood anemone, Ramsons, Ivy broomrape, Fungi, Stag beetle, Bats.	Yes
OS 188 College Road, part of Dulwich Upper Wood	0.4	Ancient & secondary woodland, Wood anemone, Ramsons, Ivy broomrape, Fungi, Stag beetle, Bats.	Yes
OS 149 Camberwell Old Cemetery	11.6	Burial Ground, Grassland, Mature trees, Secondary woodland, Scrub, Black poplar.	Yes
OS 124 Peckham Rye Park, Common and Piermont Green	45	Standing & running water, Veteran trees, Woodland, Parkland, Wildflower meadows, Stag beetle, Watercress, Water figwort, Lamprey, Kingfisher, Bats, House sparrow.	Yes
OS 159 Dulwich Park	28.8	Standing water, Parkland, Waterfowl, Bats, Veteran trees, Stag beetle, Woodland birds.	Yes
OS 55 Canada Water	1.8	Standing water, Marginal vegetation, Reedbeds, Lesser reedmace, Damselflies, Waterfowl, Bats.	No March 2015
OS 35 Albion Channel	0.88	Standing water, Marginal vegetation, Reedbeds, Lesser reedmace, Damselflies, Waterfowl, Bats.	No
OS 5 Surrey Water	1.92	Standing water, Marginal vegetation, Reedbeds, Lesser reedmace, Damselflies, Waterfowl, Bats.	No
OS 121 London Wildlife Trust Centre for Wildlife Gardening	0.3	Ponds, Wildflower plots, Meadow, Common frog, Smooth newt, Stag beetle.	Yes
OS 7 Surrey Docks Sports Ground	2.98	Sports pitches.	No
OS 81 Walworth Garden Farm.	0.3	Pond, Horticultural beds, Bee hives.	Yes

Borough Grade II Sites of Importance for Nature Conservation			
Site Name	Size ha	Key Habitat/species	Management plan
OS 110 Grove Park Cuttings and Peckham Rye to North Dulwich Railsides.	12	Secondary woodland, Roughland, Hawthorn, Ivy, Bramble.	No Managed by Network Rail
OS 138 Sunray Gardens.	1.6	Standing Water, Parkland, Reedbed, Marginal vegetation, Waterfowl, Coarse fish.	Yes
OS 145 Camberwell New Cemetery, Honour Oak Crematorium, Sports ground.	17	Secondary woodland, Hedges, Mature trees, Common lizard.	Yes
OS 151 Honor Oak Allotments	2.16	Allotments, Secondary woodland, Hedges, Mature trees, Common lizard	No
OS 183 Countisbury House Lawns.	0.1	Grassland, Trees, Corky fruited water dropwort. Hairy wood rush, Cuckoo flower.	Yes
OS 91 Burgess Park.	47	Standing water, Grassland, Young woodland, Bats, Stag beetle, Reedbed, Waterfowl.	Yes
OS 160 Belair Park.	10.7	Standing water, Wet woodland, Veteran trees, Gipsywort, Lesser pond sedge, Waterfowl. Bats, Stag beetle.	No Feb 2013
OS 156 Sydenham Hill and West Dulwich Railsides.	10	Secondary woodland, Roughland, Veteran trees.	No Managed by Network Rail
OS 185 Carlton Place/ Hitherwood.	0.4	Ancient woodland, Veteran trees, Bluebell.	Unknown
OS 140 James Allen's School Botany Garden.	0.7	Secondary woodland, Oak, Greater spotted woodpecker.	No Managed by James Allen's School
OS 143 Aquarius Golf Course.	2.4	Neutral grassland, Grey sedge.	Unknown
OS 164 Dulwich Mill	0.9	Standing water, Yellow iris.	No

Borough Grade II Sites of Importance for Nature Conservation			
Site Name	Size ha	Key Habitat/species	Management plan
Pond.			Managed by Dulwich Estate
OS Alleyn School Playing Fields	4.95	Trees, Grassland.	No Managed by Alleyn's School
OS 41 Surrey Docks Farm.	0.8	Ponds, Hedge, Nature area, Paddocks.	Yes
OS 186 Gipsy Hill Railway Cutting.	1.3	Woodland, Veteran trees.	No Managed by Network Rail
OS 64 Greenland Dock & St George's Wharf.	12	Standing water, Waterfowl, Great crested grebe, Gulls.	No March 2014
OS 114 Lettsom Gardens.	0.5	Secondary woodland, Grassland, Mulberry, Wild angelica.	No Managed by Lettsom Gardens Association
OS 155 Dawson's Hill.	2.4	Woodland, Neutral grassland, Hedgehog, Bats, Fruiting hedges.	Yes
OS 144 Brenchley Gardens.	2.9	Woodland, Grassland, Pollarded ash, Cowslip, Stag beetle.	No March 2014
OS 80 South Bermondsey Railway Embankments.	2.6	Woodland, Grassland, Scrub, Bermuda-grass.	No Managed by Network Rail
OS 53 Southwark Park.	25	Standing water, Wildflower meadows, Parkland, Veteran trees, Spotted flycatcher, Waterfowl, Bats, Yellow rattle.	Yes
OS 108 Nunhead Railway Embankments.	4.7	Woodland, Grassland, Sycamore, Ash, Wild cherry.	No Managed by Network Rail

Borough Grade II Sites of Importance for Nature Conservation			
Site Name	Size ha	Key Habitat/species	Management plan
OS 108 Kirkwood Nature Garden (Pending)	1.2	Woodland, Pond, Fruit trees, Woodland birds.	Yes

Local Sites of Importance for Nature Conservation			
Site Name	Size ha	Key Habitat/species	Management plan
OS 20 Leathermarket Gardens.	1.2	Parkland, Hedges, Woodland birds.	Yes
OS 44 Dickens Square Park.	1.4	Woodland, Parkland, Roughland, Jay, Green woodpecker, Black cap warbler.	No March 2014
OS 97. Benhill Road Nature Garden.	0.1	Roughland, Jay.	No March 2016
OS 105 Lucas Gardens.	1.7	Parkland, Mature trees.	No March 2015
OS 68 Victory Park & Elba Place Nature Garden.	0.4	Grassland, Parkland, Woodland birds. Pond.	No March 2015
OS 103 Goldsmith Road Nature Garden.	0.2	Grassland, Scrub, Woodland birds, Pond.	No Managed by Housing
OS 77 Surrey Square.	1.3	Parkland, Wildlife area.	No March 2013
OS 56 Geraldine Mary Harmsworth Park.	5.7	Parkland, Hairy buttercup, White mulberry, Pond.	Yes
OS 95 Bird in Bush Park.	0.6	Parkland, Wildlife area, Woodland birds.	No March 2014
OS 116 Consort Park.	0.4	Neutral grassland.	No March 2013
OS 106 Northfield House Wildlife Garden.	0.2	Neutral grassland, Wildflower meadow, Hedges.	Unknown

Local Sites of Importance for Nature Conservation			
Site Name	Size ha	Key Habitat/species	Management plan
OS 11 St Mary's Garden Rotherhithe.	0.4	Parkland, Nectar plants.	No March 2014
OS 49 St Mary Magdalene Churchyard.	0.7	Parkland, Hedge, Blackthorn, Green woodpecker.	No March 2016
OS 112 Bellenden Road Nature Garden.	0.3	Former LWT tree nursery. Mature trees, wildflowers, scrub.	No Managed By LWT
OS 119 Dog Kennel Hill.	0.9	Woodland, Parkland.	Yes
OS 134 Nairne Grove Nature Garden.	0.2	Grassland, Pond, Scrub, Common frog.	No Managed by Bessemer Grange School
OS 63 Aspinden Road Nature Garden.	0.1	Woodland, Pond, Common frog.	No Leased to Bede House Association
OS 74 Galleywall Road Nature Garden.	0.1	Grassland, Woodland, Pond, Living wall.	No Leased to Friends of Galleywall Rd
OS 115 McDermott Road Nature Garden.	0.1	Nature garden, Woodland birds, Mosaic of habitats.	No Managed by Housing
OS 89 Varcoe Road Nature Garden/Bramcote Nature Garden.	0.2	Roughland, woodland, Protected under London Squares and Enclosures (Preservation) Act of 1906.	No Leased to Presentation Housing Association LTD
OS 82 Surrey Gardens. AKA Pasley Park.	1.7	Parkland.	No March 2014
OS 46. Tabard Gardens.	1.0	Scrubland, Chalk meadow bank.	Yes

Local Sites of Importance for Nature Conservation			
Site Name	Size ha	Key Habitat/species	Management plan
OS 146 Herne Hill Stadium Meadow.	2	Damp neutral grassland, Woodland. Scrub.	No Managed by Velodrome
OS 21 Snowfields Primary School Nature Garden.	0.1.	Grassland, Pond.	No Managed by School
Plough Lane Pond	0.1	Pond	No
King Stairs Gardens	3.46	Scrub, Mature trees, Hazel Coppice	Yes
Deal Porters Walk	0.58	Bats, Shrubs, Trees	Yes
Durand's Wharf	0.97	Scrub, Mature trees, bats.	Yes

4.2 UK BAP and BAP priority species recorded in Southwark.

Scientific Name	Common Name if applicable	Type of animal	^{1st} Year record	Last record	BAP status
<i>Hericum cirrhatum</i>	Tiered Tooth	fungus	2007	2007	BAP Priority London
<i>Centaurea cyanus</i>	Cornflower	flowering plant	1994	1994	BAP Priority National
<i>Populus nigra</i> subsp. <i>betulifolia</i>	<i>Populus nigra</i> subsp. <i>betulifolia</i>	flowering plant	1994	1994	BAP Priority London
<i>Viscum album</i>	Mistletoe	flowering plant	1995	2007	BAP Priority London
<i>Anisus (Disculifer) vorticulus</i>	<i>Anisus (Disculifer) vorticulus</i>	mollusc	2004	2005	BAP Priority London; BAP Priority National; Hab&Spp Dir Anx 2; Hab&Spp Dir Anx 4
<i>Ophonus (Metophonus)</i>	<i>Ophonus (Metophonus) puncticollis</i>	insect - beetle (Coleoptera)	2007	2007	BAP Priority National

Scientific Name	Common Name if applicable	Type of animal	1 st Year record	Last record	BAP status
puncticollis					
Lucanus cervus	Stag beetle	insect - beetle (Coleoptera)	1997	2009	BAP Priority London; BAP Priority National; Hab&Spp Dir Anx 2; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b
Cupido minimus	Small Blue	insect - butterfly	2006	2006	BAP Priority London; BAP Priority National; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b
Coenonympha pamphilus	Small Heath	insect - butterfly	1994	1995	BAP Priority London; BAP Priority National
Watsonalla binaria	Oak Hook-tip	insect - moth	2001	2001	BAP Priority London; BAP Priority National
Chiasmia clathrata	Latticed Heath	insect - moth	2007	2007	BAP Priority London; BAP Priority National
Ennomos quercinaria	August Thorn	insect - moth	2001	2001	BAP Priority London; BAP Priority National
Arctia caja	Garden Tiger	insect - moth	1988	1998	BAP Priority London; BAP Priority National
Tyria jacobaeae	Cinnabar	insect - moth	2007	2007	BAP Priority London; BAP Priority National
Chrysis fulgida	Chrysis fulgida	insect - hymenopteran	2005	2005	BAP Priority National
Bufo bufo	Common Toad	amphibian	1998	2007	BAP Priority London; BAP Priority National; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b
Anguis fragilis	Slow-worm	reptile	1999	2005	BAP Priority London; BAP Priority

Scientific Name	Common Name if applicable	Type of animal	1 st Year record	Last record	BAP status
					National; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b; W&CA Sch 5 Sec 9.1
Zootoca vivipara	Common Lizard	reptile	2005	2005	BAP Priority London; BAP Priority National; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b; W&CA Sch 5 Sec 9.1
Falco peregrinus	Peregrine Falcon	bird	2004	2008	BAP Priority London; Birds Dir Anx 1; W&CA Act Sch 1 Part 1
Vanellus vanellus	Northern Lapwing	bird	1983	1983	BAP Priority London; BAP Priority National
Larus argentatus	Herring Gull	bird	1980	2007	BAP Priority London
Dendrocopos minor	Lesser Spotted Woodpecker	bird	1980	1998	BAP Priority London
Alauda arvensis	Sky Lark	bird	1987	1987	BAP Priority London
Motacilla flava	Yellow Wagtail	bird	1980	1987	BAP Priority London
Prunella modularis	Hedge Accentor	bird	1980	2008	BAP Priority London
Phoenicurus ochruros	Black Redstart	bird	1987	2004	BAP Priority London; W&CA Act Sch 1 Part 1
Turdus philomelos	Song Thrush	bird	1980	2008	BAP Priority London
Muscicapa striata	Spotted Flycatcher	bird	1980	1994	BAP Priority London; BAP Priority National
Sturnus vulgaris	Common Starling	bird	1980	2008	BAP Priority London
Passer domesticus	House Sparrow	bird	1980	2007	BAP Priority London; BAP Priority National
Carduelis cannabina	Common Linnet	bird	1980	1994	BAP Priority London
Carduelis flammea	Common Redpoll	bird	1980	1998	BAP Priority London

Scientific Name	Common Name if applicable	Type of animal	1 st Year record	Last record	BAP status
<i>Pyrrhula pyrrhula</i>	Common Bullfinch	bird	1980	2002	BAP Priority London
<i>Coccothraustes coccothraustes</i>	Hawfinch	bird	1998	1998	BAP Priority London; BAP Priority National
<i>Emberiza schoeniclus</i>	Reed Bunting	bird	1980	1994	BAP Priority London; BAP Priority National
<i>Phoca vitulina</i>	Common Seal	marine mammal	2004	2006	BAP Priority National; Hab&Spp Dir Anx 2
<i>Erinaceus europaeus</i>	West European Hedgehog	terrestrial mammal	1994	2008	BAP Priority London; BAP Priority National
<i>Vespertilionidae</i>	<i>Vespertilionidae</i>	terrestrial mammal	1983	2008	BAP Priority London; Cons Regs 1994 Sch2; W&CA Act Sch5 Sec 9.4a; W&CA Act Sch5 Sec 9.4b; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b; W&CA Sch 5 Sec 9.1
<i>Myotis</i>	Unidentified Bat	terrestrial mammal	2005	2005	BAP Priority London; Cons Regs 1994 Sch2; W&CA Act Sch5 Sec 9.4a; W&CA Act Sch5 Sec 9.4b; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b; W&CA Sch 5 Sec 9.1
<i>Myotis daubentonii</i>	Daubenton's Bat	terrestrial mammal	1996	2008	BAP Priority London; Cons Regs 1994 Sch2; Hab&Spp Dir Anx 4; W&CA Act Sch5 Sec 9.4a; W&CA Act Sch5 Sec 9.4b; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec

Scientific Name	Common Name if applicable	Type of animal	1 st Year record	Last record	BAP status
					9.5b; W&CA Sch 5 Sec 9.1
Myotis nattereri	Natterer's Bat	terrestrial mammal	2005	2005	BAP Priority London; Cons Regs 1994 Sch2; Hab&Spp Dir Anx 4; W&CA Act Sch5 Sec 9.4a; W&CA Act Sch5 Sec 9.4b; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b; W&CA Sch 5 Sec 9.1
Nyctalus noctula	Noctule Bat	terrestrial mammal	1996	2008	BAP Priority London; BAP Priority National; Cons Regs 1994 Sch2; Hab&Spp Dir Anx 4; W&CA Act Sch5 Sec 9.4a; W&CA Act Sch5 Sec 9.4b; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b; W&CA Sch 5 Sec 9.1
Pipistrellus	Pipistrellus	terrestrial mammal	1985	2006	BAP Priority London; Cons Regs 1994 Sch2; W&CA Act Sch5 Sec 9.4a; W&CA Act Sch5 Sec 9.4b; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b; W&CA Sch 5 Sec 9.1
Pipistrellus pipistrellus	Pipistrellus pipistrellus	terrestrial mammal	1997	2008	BAP Priority London; Cons Regs 1994 Sch2; Hab&Spp Dir Anx 4; W&CA Act Sch5 Sec 9.4a; W&CA

Scientific Name	Common Name if applicable	Type of animal	1 st Year record	Last record	BAP status
					Act Sch5 Sec 9.4b; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b; W&CA Sch 5 Sec 9.1
Pipistrellus pygmaeus	Soprano Pipistrelle	terrestrial mammal	2000	2008	BAP Priority London; BAP Priority National; Cons Regs 1994 Sch2; Hab&Spp Dir Anx 4; W&CA Act Sch5 Sec 9.4a; W&CA Act Sch5 Sec 9.4b; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b; W&CA Sch 5 Sec 9.1
Plecotus auritus	Brown Long-eared Bat	terrestrial mammal	2005	2007	BAP Priority London; BAP Priority National; Cons Regs 1994 Sch2; Hab&Spp Dir Anx 4; W&CA Act Sch5 Sec 9.4a; W&CA Act Sch5 Sec 9.4b; W&CA Act Sch5 Sec 9.5a; W&CA Act Sch5 Sec 9.5b; W&CA Sch 5 Sec 9.1

4.3 Invasive Species

A number of *Phytophthora* diseases are entering Britain from imported plants. This could be easily tackled by sourcing plants of local or native provenance. Migrant species are also increasing and in some cases becoming resident to the UK. For example Blackcap warblers are now an established resident in the UK.

The ring-necked parakeet is one example of an introduced bird that has undergone a population boom. In 2007 the RSPB estimated the parakeet numbers in London at around 30,000 and expected them to increase to 50,000 by 2010. Some roosts contain well over 500 birds. This parakeet nests as early as January and could be

out-competing other native birds. From 2012 they are allowed to be culled under general licence if they are causing damage to crops or native wildlife.

Species listed on Schedule 9 part 1(animals) and part 2(plants) of the Wildlife and Countryside Act 1981 as amended.

Common name	Scientific Name
Animals	
Bass, Large-mouthed Black	<i>Micropterus salmoides</i>
Bass, Rock	<i>Ambloplites rupestris</i>
Bitterling	<i>Rhodeus sericeus</i>
Boar, Wild	<i>Sus scrofa</i>
Capercaillie	<i>Tetrao urogallus</i>
Chough	<i>Pyrrhocorax pyrrhocorax</i>
Corncrake	<i>Crex crex</i>
Crab, Chinese Mitten	<i>Eriocheir sinensis</i>
Crane, Common	<i>Grus grus</i>
Crayfish, Noble	<i>Astacus astacus</i>
Crayfish, Red Swamp	<i>Procambarus clarkii</i>
Crayfish, Signal	<i>Pacifastacus leniusculus</i>
Crayfish Spiny-cheek	<i>Orconectes limosus</i>
Crayfish, Turkish	<i>Astacus leptodactylus</i>
Deer, Chinese Water	<i>Hydropotes inermis</i>
Deer, Muntjac	<i>Muntiacus reevesi</i>
Deer, Sika	<i>Cervus nippon</i>
Dormouse, Fat	<i>Glis glis</i>
Duck, Carolina Wood	<i>Aix sponsa</i>
Duck, Mandarin	<i>Aix galericulata</i>

Duck, Ruddy	<i>Oxyura jamaicensis</i>
Eagle, White-tailed	<i>Haliaeetus albicilla</i>
Flatworm	<i>Kontikia andersoni</i>
Flatworm	<i>Kontikia ventrolineata</i>
Flatworm, Australian	<i>Australoplana sanguinea</i>
Flatworm, New Zealand	<i>Artiposthia triangulate</i>
Frog, edible	<i>Rana esculenta</i>
Frog, European Tree (otherwise known as common tree frog)	<i>Hyla arborea</i>
Frog, Marsh	<i>Rana ridibunda</i>
Goose, Bar-headed	<i>Anser indicus</i>
Goose, Barnacle	<i>Branta leucopsis</i>
Goose, Canada	<i>Branta Canadensis</i>
Goose, Egyptian	<i>Alopochen aegyptiacus</i>
Goose, Emperor	<i>Anser canagicus</i>
Goose, Snow	<i>Anser caerulescens</i>
Goshawk	<i>Accipiter gentilis</i>
Heron, Night	<i>Nycticorax nycticorax</i>
Kite, Red	<i>Milvus milvus</i>
Limpet, Slipper	<i>Crepidula fornicata</i>
Lizard, Common Wall	<i>Podarcis muralis</i>
Marmot, Prairie (otherwise known as Prairie Dog)	<i>Cynomys</i>
Mink, American	<i>Mustela vison</i>
Newt, Alpine	<i>Triturus alpestris</i>
Newt, Italian Crested	<i>Triturus carnifex</i>
Owl Barn	<i>Tyto alba</i>
Owl Eagle	<i>Bubo bubo</i>

Oyster Drill, American	<i>Urosalpinx cinerea</i>
Parakeet, Monk	<i>Myiopsitta monachus</i>
Parakeet, Ring-necked	<i>Psittacula krameri</i>
Partridge, Chukar	<i>Alectoris chukar</i>
Partridge, Rock	<i>Alectoris graeca</i>
Pheasant, Golden	<i>Chrysolophus pictus</i>
Pheasant, Lady Amherst's	<i>Chrysolophus amherstiae</i>
Pheasant, Reeves'	<i>Syrmaticus reevesii</i>
Pheasant, Silver	<i>Lophura nycthemera</i>
Pochard, Red-crested	<i>Netta rufina</i>
Pumpkinseed (otherwise known as Sun-fish or Pond-perch)	<i>Lepomis gibbosus</i>
Rat, Black	<i>Rattus rattus</i>
Shelduck, Ruddy	<i>Tadorna ferruginea</i>
Snake, Aesculapian	<i>Elaphe longissima</i>
Squirrel, Grey	<i>Sciurus carolinensis</i>
Swan, Black	<i>Cygnus atratus</i>
Terrapin, European Pond	<i>Emys orbicularis</i>
Toad, African Clawed	<i>Xenopus laevis</i>
Toad, Midwife	<i>Alytes obstetricans</i>
Toad, Yellow-bellied	<i>Bombina variegata</i>
Wallaby, Red-necked	<i>Macropus rufogriseus</i>
Wels (otherwise known as European catfish)	<i>Silurus glanis</i>
Zander	<i>Stizostedion lucioperca</i>
Plants	
Alexanders, Perfoliate	<i>Smyrnium perfoliatum</i>

Algae, Red	<i>Grateloupia luxurians</i>
Archangel, Variegated Yellow	<i>Lamiastrum galeobdolon</i> subsp. <i>argentatum</i>
Azalea, Yellow	<i>Rhododendron luteum</i>
Balsam, Himalayan	<i>Impatiens glandulifera</i>
Cotoneaster	<i>Cotoneaster horizontalis</i>
Cotoneaster, Entire-leaved	<i>Cotoneaster integrifolius</i>
Cotoneaster, Himalayan	<i>Cotoneaster simonsii</i>
Cotoneaster, Hollyberry	<i>Cotoneaster bullatus</i>
Cotoneaster, Small-leaved	<i>Cotoneaster microphyllus</i>
Creeper, False Virginia	<i>Parthenocissus inserta</i>
Creeper, Virginia	<i>Parthenocissus quinquefolia</i>
Dewplant, Purple	<i>Disphyma crassifolium</i>
Fanwort (otherwise known as Carolina Water-shield).	<i>Cabomba caroliniana</i>
Fern, Water	<i>Azolla filiculoides</i>
Fig, Hottentot	<i>Carpobrotus edulis</i>
Garlic, Three-cornered	<i>Allium triquetrum</i>
Hogweed, Giant	<i>Heracleum mantegazzianum</i>
Hyacinth, Water	<i>Eichhornia crassipes</i>
Kelp, Giant	<i>Macrocystis pyrifera</i>
Kelp, Gaint	<i>Macrocystis angustifolia</i>
Kelp, Gaint	<i>Macrocystis integrifolia</i>
Kelp Giant	<i>Macrocystis laevis</i>
Kelp, Japanese	<i>Laminaria japonica</i>
Knotweed, Giant	<i>Fallopia sachalinensis</i>
Knotweed, Hybrid	<i>Fallopia japonica</i> x <i>Fallopia sachalinensis</i>
Knotweed, Japanese	<i>Fallopia japonica</i>

Leek, Few-flowered	<i>Allium paradoxum</i>
Lettuce, Water	<i>Pistia stratiotes</i>
Parrot's-feather	<i>Myriophyllum aquaticum</i>
Pennywort, Floating	<i>Hydrocotyle ranunculoides</i>
Potato, Duck	<i>Sagittaria latifolia</i>
Primrose, Floating Water	<i>Ludwigia peploides</i>
Primrose, Water	<i>Ludwigia grandiflora</i>
Primrose, Water	<i>Ludwigia uruguayensis</i>
Rhododendron	<i>Rhododendron ponticum</i>
Rhododendron	<i>Rhododendron ponticum x Rhododendron maximum</i>
Rhubarb, Giant	<i>Gunnera tinctoria</i>
Rose, Japanese	<i>Rosa rugosa</i>
Salvinia, Giant	<i>Salvinia molesta</i>
Seafingers, Green	<i>Codium fragile</i>
Seaweed, Californian Red	<i>Pikea californica</i>
Seaweed, Hooked Asparagus	<i>Asparagopsis armata</i>
Seaweed, Japanese	<i>Sargassum muticum</i>
Seaweeds, Laver (except native species)	<i>Porphyra spp except</i>
	<i>p.amethystea</i>
	<i>p.leucosticta</i>
	<i>p.linearis</i>
	<i>p.miniata</i>
	<i>p.purpurea</i>
	<i>p. umbilicalis</i>
Stonecrop, Australian swamp (otherwise known as New Zealand Pygmyweed).	<i>Crassula helmsii</i>
Wakame	<i>Undaria pinnatifida</i>

Waterweed, Curly	<i>Lagarosiphon major</i>
Waterweeds	<i>All species of the genus Elodea.</i>

Section 5

5.1 Ecological habitat enhancement in the urban environment

Certain features are valuable for urban biodiversity. The following list identifies some of these features. Detailed guidance for creating habitats and wildlife features in Southwark are provided by following the link below.

http://www.southwark.gov.uk/downloads/download/287/working_for_southwarks_wild_life

- **Dead wood**
- **Native fruiting plants**
- **Dense scrub**
- **Ponds and standing water (docks and lakes).**
- **Long grass around veteran trees and buffer zones between native shrubs and amenity grass**
- **Native hedges**
- **Wildflower meadows**
- **Ivy clad trees & walls**
- **Veteran trees**
- **Coppiced and pollarded trees**
- **Native climbers**
- **Brownfield habitat**
- **Natural buffer zones between open space and developments**
- **Nesting boxes and bat boxes on buildings**
- **Biodiverse brown or green roofs**
- **Sustainable urban drainage systems**
- **Green/living walls**

5.2 The Built Environment

Southwark's wildlife is dependent on the built environment as well as our network of green spaces. Built structures such as houses, flats, offices, schools and industrial sites can provide opportunities for species to thrive, such as swift and bats. Green Walls, living roofs and sensitive landscaping schemes can support a range of insect and plant species as well as the rarer species such as bats and the black redstart.

Development across Southwark is likely to be significant over the next decade due to

our position as an Inner London borough, and the major physical regeneration proposed for the north of the Borough. This development should be managed in such a way that opportunities for biodiversity enhancements such as living roofs are maximised whilst providing sustainable homes and facilities.

There exists a large volume of documented advice available for planners and developers. Limited advice on ecological surveying of the built environment and enhancements are provided here.

Below is a table showing when is the best time to survey and deliver any mitigating actions if required.

Month	J	F	M	A	M	J	J	A	S	O	N	D
Bat Activity	Hibernation			Becoming more active			Maternity sites Babies Born			Mating & Swarming		Hibernation
When to Survey	Inspection of tree and building roosts			No Surveys		Activity Surveys and inspection of building roosts. Emergence counts				No Surveys		Inspection of tree and building roosts
Mitigation	Work on maternity roosts		Works on maternity roosts until mid May. Works on Hibernation Roosts from mid March			Works on Hibernation roosts only		Hibernation roosts until November. Maternity Roosts from mid- September			Works on Maternity roosts only	

Fig.1. Table of bat activity, surveying, and mitigation.

5.3 Mitigation for bats.

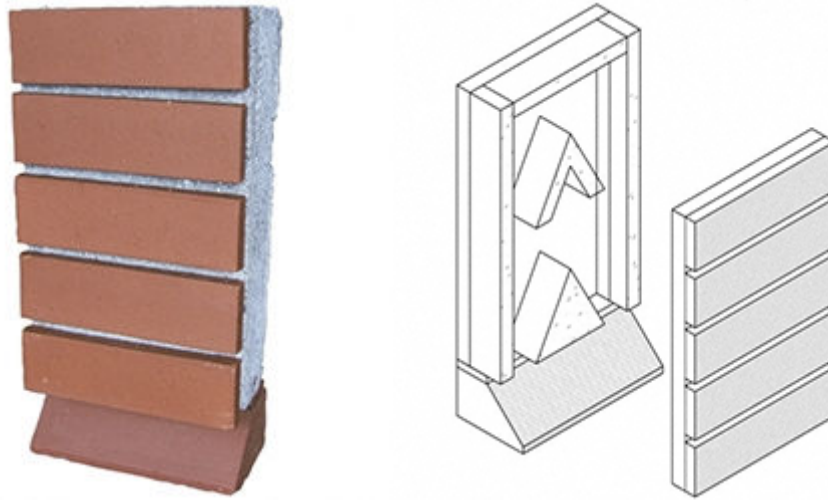
A new development could help bats by roost creation this is especially appropriate if the development is adjacent to parks, small woodland, lakes, docks and ponds.

This could be achieved by:

- Incorporating bat bricks into a building
- Adapting roof ventilators as bat access points.
- Installing a lead saddle in place of a slate to allow bats access to a ridge or roof void.
- Providing access slits in soffits.

Other things that would help bats and other species are to incorporate brown/green roofs, Green walls and or Sustainable Urban Drainage into a development.





Example of built in bat roost for installing in walls.

5.4 Brown/green roofs and nesting features



Green roof



Green roof with water feature



Swift brick



House martin nest box



Swift brick



Sedum roof with Photo voltaic panels



Brown roof with photo voltaic panels

6. References

- ⁱ Southwark Joint Strategic Needs Assessment. 2011
- ⁱⁱ The London Plan. 2011
- ⁱⁱⁱ All London Green Grid. 2011
- ^{iv} Southwark Core Strategy. 2011
- ^v The Southwark Plan. 2007.
- ^{vi} Southwark Open Spaces Strategy. 2012
- ^{vii} Natural England White Paper, 'The Natural Choice'. 2011
- ^{viii} The Marmot Review "Fairer Society - Healthier Lives" . 2010
- ^{ix} School Census 2011, Department of the Environment
- ^x Southwark Compact.2010
http://www.southwark.gov.uk/downloads/download/2396/southwark_compact
- ^{xi} The Mayors Biodiversity Strategy 'Connecting with London's Nature'. 2002.

<http://www.london.gov.uk/priorities/environment/urban-space/biodiversity>

^{xii} Biodiversity 2020, A strategy for England's wildlife and ecosystems services. 2011

^{xiii} UK National Ecosystem Assessment. 2011

^{xiv} Southwark Tree Strategy. 2010

^{xv} No Trees No Future, Tree & Design Action Group. 2012

Glossary

All London Green Grid (ALGG), Area Action Plan (AAP), Areas of Deficiency (AoD), Bankside Open Spaces Trust (BOST), Biodiversity Action Plan (BAP), Biodiversity Action Reporting System (BARS), British Trust for Conservation Volunteers (BTCV), Building Research Establishment Environmental Assessment Method (BREEAM), Business Improvement District (BID), Cleaner Greener Safer (CGS), Code for Sustainable Homes (CfSH), Connecting London's Amphibian and Reptile Environments (CLARE), Contract and Services Manager Parks (CSM), Environment Agency (EA), Green Flag (GF), Green Space Information for Greater London (GiGL), Hectare (ha), Integrated Cleaning Contract (ICC), Local Development Framework (LDF), Local Nature Reserve (LNR), London Borough Of Southwark (LBS), London Wildlife Trust (LWT), London Parks and Green Spaces Forum (LPGSF), Natural Environment and Rural Communities Bill (NERC), National Planning Policy Framework (NPPF), Peoples Trust for Endangered Species (PTES), Primary Care Trust (PCT), Supplementary Planning Guidance (SPG), Royal Society for the Protection of Birds (RSPB), Service Level Agreement (SLA), Southwark Biodiversity Partnership (SBP), Supplementary Planning Documents (SPD), Site of Importance for Nature Conservation (SINC), Sustainable Urban Drainage Systems (SUDS), Trust for Urban Ecology (TRUE), The Centre for Wildlife Gardening (CWG), Tree Preservation Order (TPO), Volunteer Centre Southwark (VCS), Walworth Garden Farm (WGF).

