

WORMWOOD SCRUBS

Phase 2 NVC Vegetation Survey Report

October 2018



Wild carrot on the Scrubs © Mike Waller

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1 Executive Summary

London Wildlife Trust (hereafter referred to as “the Trust”) was commissioned by the London Borough of Hammersmith & Fulham (hereafter referred to as “LBHF”) to undertake a Phase 2 Vegetation Survey on Wormwood Scrubs (hereafter referred to as “the Scrubs”).

The survey was commissioned to gain a detailed understanding of the vegetation communities present on the Scrubs and highlight areas of greatest ecological importance in light of proposed impacts to the Scrubs through the construction and operation of High Speed Rail 2 (“HS2”). The catalyst for the work is because a linear strip running along the southern edge of the embankment is earmarked for the HS2 Stamford Brook sewer realignment¹.

The survey effort was focussed entirely across the area of scrub and tall grassland located in the western portion of the site and south of ‘Lester’s Embankment’ that runs alongside the adjacent railway. This is thought to be the area of greatest biodiversity value present on the Scrubs due its broad expanse of naturalistic vegetation which supports a number of species rare in this area of London such as viviparous lizard *Zootoca vivipara* and common whitethroat *Sylvia communis*.

An initial walkover survey of the Scrubs was undertaken on 13th June 2018 which identified five vegetation communities present within the survey area. A further two survey visits were then undertaken on the 27th July and 1st August to undertake quadrat surveys.

Only one vegetation community was found to show a conclusive match to a published community using the MAVIS system; W24 *Rubus fruticosus-Holcus lanatus* underscrub. However, the vast majority of the grassland across the scrubs was returned as a near match for the grassland vegetation community MG1b *Arrhenatherum elatius-Urtica dioica* sub-community. Both of these vegetation communities are very common in unmanaged areas and typically are accorded low ecological value at a national level, although in urban areas their presence can be of relative importance.

Other small areas with recognisably different vegetation communities were found elsewhere but these exhibited very weak match to published National Vegetation Classification (NVC) data although they are thought to be of higher ecological value due to the presence of a greater variety of wildflower species. It is highly likely that the varied usage of this area of the Scrubs has resulted in a complex mosaic of common vegetation types which do not neatly fit with published data. This is a typical outcome for urban environments and especially in London due to the incredibly varied land use history.²

It is recommended that conservation management practises such as grazed and/or seasonal cutting are undertaken on a long-term basis in order to improve the diversity of the vegetation which is currently dominated by few highly competitive species that are prohibiting sward diversity.

¹ The proposal is described in Supplementary Environmental Statement 3 (“SES”) and Additional Provision 4 Environmental Statement Volume 2 Community forum area reports CFA4 Kilburn (Brent) to Old Oak Common at 5.2.1 to 5.2.10 (pp 51-52), 5.2.105 – 5.2.117 (pp 63-65) and in Table 3 Summary of amendments.

² The NVC was compiled without any surveys undertaken in London.

2 Introduction

The Trust was commissioned by LBHF to undertake a Phase 2 NVC Vegetation Survey of the western scrub area of the Scrubs in order to accurately characterise the vegetation communities present. This was recommended by the Trust in order to attain a detailed understanding of the habitats which exist on the Scrubs and how these may be more appropriately managed in the future via funding acquired as part of mitigation measures for HS2 works carried out on site and elsewhere nearby.

2.1 Context

The Trust has previously been commissioned by LBHF to undertake a series of ecological surveys on the Scrubs between 2016-18. This was in order to gain a comprehensive understanding of the biodiversity value of the site, particularly for protected species for which there are legal obligations. This was to inform mitigation for partial site destruction as a direct result of HS2 construction works.

2.1.1 HS2 Stamford Brook sewer realignment

A strip of land along the entire length of the railway lines (which run along the northern edge of the Scrubs) is likely to be temporarily destroyed and surrounding areas heavily disturbed by the Stamford Brook sewer realignment as part of the Kilburn (Brent) to Old Oak Common section of HS2 construction measures. The land under construction usage will run from Chats Paddock south-west along Lester's Embankment and then turn south along the western edge of the open scrub area where it will join Braybrook Street. A satellite compound will also be erected on the Scrubs immediately at the edge of Chats Paddock.³

2.2 Site Details

2.2.1 Location

Wormwood Scrubs is situated in inner west London between White City, East Acton and Kensal Green, within the northern part of the borough (postcode W12). There are a range of semi-natural habitats across the site which is extensive and covers an area of just over 66 hectares (not including Little Wormwood Scrubs).

The survey area is located in the western portion of the Scrubs, south of 'Lester's Embankment' that runs alongside the adjacent railway (only the foot of the embankment was surveyed), and covers an area of 14 ha (see Appendices for site outline).

2.2.2 Designations

The entire area is designated as common land since the Wormwood Scrubs Act 1879 was passed by Parliament to lay down the conditions by which the area would be owned by the British Army. The Act remains in force to this day so that the area is kept for military training purposes but also '*the perpetual use thereof by the inhabitants of the metropolis for exercise and recreation*'⁴. Its common land status is protected by the 1879 Act, as well as that of the Commons Act 2006, requiring Ministerial consent for the erection of any structure or impediment to access.⁵ The Scrubs are also designated Metropolitan Open Land.

A significant extent (42 ha) of the Scrubs is also identified as a Site of Borough Importance for Nature Conservation (site H&FBI01 *Wormwood Scrubs Park*). In addition seven discrete

³ Map number: CT-05-009a. Map Name: Construction Phase SES3 and AP4 ES

⁴ Quote taken from the Wormwood Scrubs Act 1879.

⁵ In addition, proposed structures require the consent of the borough council and the Secretary of State for Defence.

parcels form a designated Local Nature Reserve (LNR), covering all areas of woodland which are primarily located around the edge of the site.

2.2.3 Management

Currently the area is managed by Hammersmith & Fulham Council. The site is championed by the Friends of Wormwood Scrubs who aim to advise on management, protect it from damage, and continue to campaign to prevent development plans adversely affecting the Scrubs' natural character, biodiversity and people's tranquil enjoyment of the site.

2.2.4 Topography

The Scrubs lie on the northern side of the Thames Valley above the Lower Flood Plain with a very gently south-sloping aspect. The highest point is approximately 28 metres asl at the northern edge dropping to approximately 15 metres asl at the southern extremity of the site.

The railway embankment, created as part of the earlier Channel Tunnel Rail Link works (for North Pole Depot) in the early 1990s, which marks the northern edge of the site is steep and approximately 15m high.

The topography of the survey area is broadly flat with some shallow depressions.

2.2.5 Hydrology and soils

The entire site sits directly on London Clay which underlies much of London originating as marine mud deposited on the sea floor approximately 50 million years ago. During the summer months, the clay dries and contracts causing surface cracks to appear whereas during the wetter winter months, the area often becomes muddy as the water is slow to drain through the thick clay.

The railway embankment is man-made comprising of '*a mixture of sand and gravel, rubble, spent ballast, clay and coal dust and associated debris from the age of steam.*'⁶

The soils present across the Scrubs vary from neutral to slightly acidic and may even be slightly alkaline in places due to historic land use (as observed during the Phase 1 Habitat survey conducted by the Trust in 2016).

2.2.6 Site usage

The use of the survey area is varied due to its large size, openness and relatively level topography. The primary usage of the site and the wider Scrubs is for leisure and amenity.

The path that runs around the perimeter of the site is popular with joggers and dog walkers. The site is also used for wildlife watching activities and especially bird-watching which attracts unusual migrant species during spring and summer.

⁶ All quotes and much information for this subchapter is taken from *The Wildlife of Scrubs Wood* (1984) by The Hammersmith & Fulham Group of London Wildlife Trust.

3 Methodology

3.1 Details

The broad survey area covers the entire western scrub and tall grass area as outlined in the Appendices.

Table 1 provides details for each survey visit.

Table 1. Details of survey visits

<i>Survey type</i>	<i>Survey date</i>	<i>Weather Conditions</i>	<i>Time surveyed (hours/minutes)</i>
Initial walkover	13 th June 2018	Sunny, 20°C	2 hours
Quadrat survey 1	27 th July 2018	Sunny, 30°C	3 hours
Quadrat survey 2	1 st August 2018	Sunny, 23°C	3 hours

3.2 Survey timings

The optimal period of Phase 2 NVC Vegetation surveying is during June and July when plant growth reaches its maximum and grass and wildflower species are at their most conspicuous and thus easiest to accurately identify. The timings of the survey were deemed as **adequate** with one survey undertaken in late July and one in early August. However, there was no issue with plant identifications despite this less suitable survey date.

3.3 Limitations

3.3.1 Access

The entire site is publically accessible at all times so organising special access was not required. However, access to 'Lester's Embankment' and much of the central area of the scrubland is largely impossible due to the density of the scrub (particularly bramble), meaning some areas were viewed through binoculars and comparison assessments made based on more easily accessible areas.

3.3.2 Survey design

This NVC survey does not constitute a comprehensive survey for higher plant or bryophyte species protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended), invasive plant species or a full botanical survey aiming to locate every higher plant or bryophyte species present. NVC survey methodology is based on taking samples of vegetation, not surveying all the vegetation in every stand.

The NVC survey was undertaken mostly in July, therefore some plant species will have been under-recorded, especially early flowering species. However, this limitation is unlikely to affect the overall determination of the plant communities found under the NVC system.

3.4 National Vegetation Classification

A Phase 2 NVC Vegetation Survey was carried out at select locations based on the data collected from the walkover Phase I survey over two days in July and August 2018 by Mike Waller. A total of 25 1m x 1m quadrats were taken across the survey area in selected habitats to help determine the composition of the core habitats types present. Species coverage within each quadrat was collected as percentage cover.

The quadrat data was then inputted into MAVIS (Modular Analysis of Vegetation Information System) – a program which accepts data in the form of single species lists, with assigned abundance codes or % percentage coverages. MAVIS then classifies each quadrat or group into published vegetation types. A percentage match is given for each quadrat or group based on the species present and their coverage. Any percentage exceeding 70% is thought to be a close match for the suggested NVC community. Any percentage below 70% is thought to be a weak match.

Complex taxa, such as *Taraxacum* (dandelions) and *Rubus* (brambles), are treated as aggregates as there is little value in distinguishing these for determining habitat types, especially in London.

3.5 Aims

The aims are to:

- Identify the NVC plant communities present within the site;
- Record any notable or protected plant species of conservation value; and
- Inform recommendations for the conservation management practises designed to enhance the diversity and quality of the vegetation communities identified.

4 Results and evaluation

The majority of the survey area is covered by false oat-grass dominated grassland with areas of dense bramble scrub and some more complex transitional areas of unclassified vegetation communities. Most vegetation communities identified and surveyed were a poor match for any published classifications. This is likely a result of the very varied usage of the Scrubs over the past century which has created a mosaic of disturbance patterns, affecting unseen factors such as soil pH, fertility and dampness. It should also be noted that the NVC community descriptions are entirely based on those studied in rural environments and so some consistent urban vegetation communities can be overlooked when compared to the published data.

Communities which were identified as a match to a published classification or were a near match are titled below with the corresponding NVC code. Those that were a very weak match (below 30%) are simply titled with the dominant or most notable plant species present, e.g. "*Daucus carota* grassland community".

4.1 NVC Communities

4.1.1 W24 *Rubus fruticosus*-*Holcus lanatus* underscrub community

This habitat is particularly prevalent on the Scrubs, arising in patches across the survey area. Quadrat data confirmed this community with an 83% match to W24. The constant dominant species is bramble *Rubus fruticosus* with cock's-foot *Holcus lanatus* in association. This community is split into two sub-communities based on additional associated species. Both of these sub-communities are present on the Scrubs:

- **W24a** *Cirsium arvense*-*Cirsium vulgare* sub-community
- **W24b** *Arrhenatherum elatius*-*Heracleum sphondylium* sub-community

Evaluation: This vegetation community is very common and typical of unmanaged grassland where bramble scrub invades and spreads. However, it is an important habitat for nesting and sheltering birds due to its dense impenetrable structure. Small mammals and reptiles also benefit from cover; bramble also provides nectar for a range of pollinating insects.

4.2 Undetermined communities

Five vegetation communities that did not match close enough to any published NVC community data, were found to be present on site. These communities have been broadly classified to match a general vegetation type recognised in the walkover survey.

Where an NVC community is very loosely matched to an NVC community code, the code has been used in its name. The communities and their descriptions are as follows:

4.2.1 MG1b *Arrhenatherum elatius*-*Urtica dioica* sub-community type

Quadrat data collected for this community type received a 59% match to the MG1b community and so although very similar, is not a close enough match to conclusively name this habitat as MG1b. Nonetheless, this broad community type covers the vast majority of the Scrubs in various forms but always with false oat-grass *Arrhenatherum elatius* present in association with stinging nettle *Urtica dioica*, creeping thistle *Cirsium arvense*, hogweed *Heracleum sphondylium* and ragwort *Jacobaea vulgaris*.

The broader MG1 community is a very common and typical vegetation type of unmanaged grasslands. Rodwell (1992, p34), states:

“The Arrhenatheretum is, above all, an ungrazed grassland. It is characteristic of circumneutral soils throughout the British lowlands and occurs on road verge, railway embankments and churchyards and in neglected agricultural and industrial habitats such as badly-managed pastures and meadows, building sites, disused quarries and rubbish dumps.”

Evaluation: This community is of relatively low conservation value although it is not surprising that it is dominant across the Scrubs following several decades of minimal or absent management.

4.2.2 OV28 *Agrostis stolonifera*-*Ranunculus repens* community type

A small area of grassland loosely matching this community (34% match) was found in the south-east corner of the survey area with dominant carpet of creeping buttercup *Ranunculus repens* and some creeping bent *Agrostis stolonifera*.

Rodwell (2000, p425), states:

“The Agrostio-Ranunculetum is characteristic of damp silts and clays on river islands and banks, in and around sluggish streams, drainage ditches and seasonally-inundated hollows and ill-drained pastures, arable fields and river flood plains, around waterlogged places in made ground and among dumps of soil and along muddy tracks.”

Evaluation: It seems likely that a small area of this common grassland community has developed in low-lying ground which may be prone to surface water collecting outside of the summer period.

4.2.3 U1 *Festuca ovina*-*Agrostis capillaris*-*Rumex acetosella* community type

A small area (~6m²) of this acid grassland type was located in the central area of the survey area near a path. The presence of sheep's-sorrel *Rumex acetosella* confirms the acidic nature of the soil, however there was only weak match with this community due to the lack of other typical associated species.

Evaluation: Acid grassland is rare in London and therefore of high conservation value. It is listed as a priority habitat in both the UK and London Biodiversity Action Plans. Efforts should be made to enlarge this area by introducing grazing to suppress the growth of surrounding false oat-grass.

4.2.4 *Lolium perenne* grassland community

This particular grassland is prevalent along the edges of the path network where trampling has allowed perennial rye-grass *Lolium perenne* to become dominant with various common associated species such as white clover *Trifolium repens* and dandelion *Taraxacum officinale* agg.

Evaluation: This is very common grassland community of low ecological value typical of intensively managed areas such as playing fields.

4.2.5 *Lolium perenne* grassland transitional community

This grassland consists of a broad mix of species as it grades away from the primarily perennial rye-grass dominated path edges. Other species, in addition to those listed above, include varying coverage of small cat's-tail *Phleum bertolonii*, tufted hair-grass *Deschampsia flexuosa*, meadow fescue *Festuca pratensis*, meadow foxtail *Alopecurus pratensis*, upright hedge-parsley *Torilis japonica* and creeping bent *Agrostis stolonifera*.

Evaluation: This species composition is indicative of damp grassland and has likely developed due to surface water persisting above the thick clay during the winter months.

4.2.6 *Daucus carota* grassland community

This grassland is primarily located around the northern corner of the survey area and is noticeable by the significantly sparser, more open structure with fine-leaves grasses such as red fescue *Festuca rubra* agg. and a good coverage of wild carrot *Daucus carota*. This particular grassland type was not a close match to any of described NVC communities but is noteworthy because of its noticeably different structure compared to the rest of the Scrubs.

Evaluation: The presence of wild carrot suggests that the soil may be slightly calcareous (alkaline). This community provides the highest floristic diversity on the Scrubs and is relatively rich in wildflowers. Under more favourable conservation management, this important vegetation community has the potential to expand and become more diverse.

5 Discussion, conclusion and recommendations

5.1 Discussion

This Phase 2 Vegetation survey has shown that the survey area is a fairly homogenous expanse of false oat grassland and bramble underscrub with some smaller areas of other vegetation communities, most of which do not match with published NVC descriptions. This is not an unusual result for London's green spaces which are typically subject to a very varied history of site usage, disturbance and management. Consequently, communities of plants develop together that would not typically occur in more 'naturalistic' rural conditions where land management is more homogenous across typologies.

Old aerial photography of Wormwood Scrubs from the 1940s (viewable on Google Maps) clearly show that much of the western scrub area was allotments. This is significant as it indicates that the soil profile was, until relatively recently, very disturbed and likely heavily fertilised which promotes the establishment of vigorous fast-growing plant species.

In addition, the clearance of woodland to construct the railway depot to the immediate north in 1990, which led to the creation of Lester's Embankment, also resulted in the translocation of soils and turves (Archer & Keech, 1993). Many of these supported a 'wasteland community' including ragwort, creeping thistle, hogweed which are present today.

5.2 Conclusion

Any damage inflicted by the HS2 sewer realignment work along the base of Lester's Embankment will not reduce the vegetational diversity of the site as this area is floristically identical to the rest of the survey area. The plant communities in this region, primarily bramble underscrub and false oat grass grassland, are of low intrinsic ecological value in terms of their diversity although they have conservation value by providing cover and foraging areas for birds, small mammals, reptiles and invertebrates.

In the context of the entire survey area, the sheer expanse of false oat grass grassland and therefore the large number of flowering and seeding plants (particularly flowering plants such as hogweed, wild carrot and creeping thistle which are important for pollinating insects) ensures that the area is of high local importance when viewed in the context of its geographical position. This is reinforced by the findings of the invertebrate survey carried out concurrently with this survey which found several nationally rare species associated with rough grasslands that contain a good proportion of flowering plants (Jones, 2018).

Furthermore, the presence of a small area of acid grassland near the centre of the survey area is significant as this is a priority habitat which is rare in London. Elsewhere, the dominance of wild carrot in certain areas suggests a slightly calcareous soil which, under positive management, has the potential to support a range of other plant species and develop into a more ecologically valuable region.

5.3 Recommendations

Since much of the site is covered by low diversity false oat-grass type grassland, there is huge potential to improve its ecological quality. Presently, vegetation grows up and flowers/fruits each season before dying back - developing a thick 'thatch' of dead vegetation over the ground. This severely limits the ability of new plants to establish and further extends the

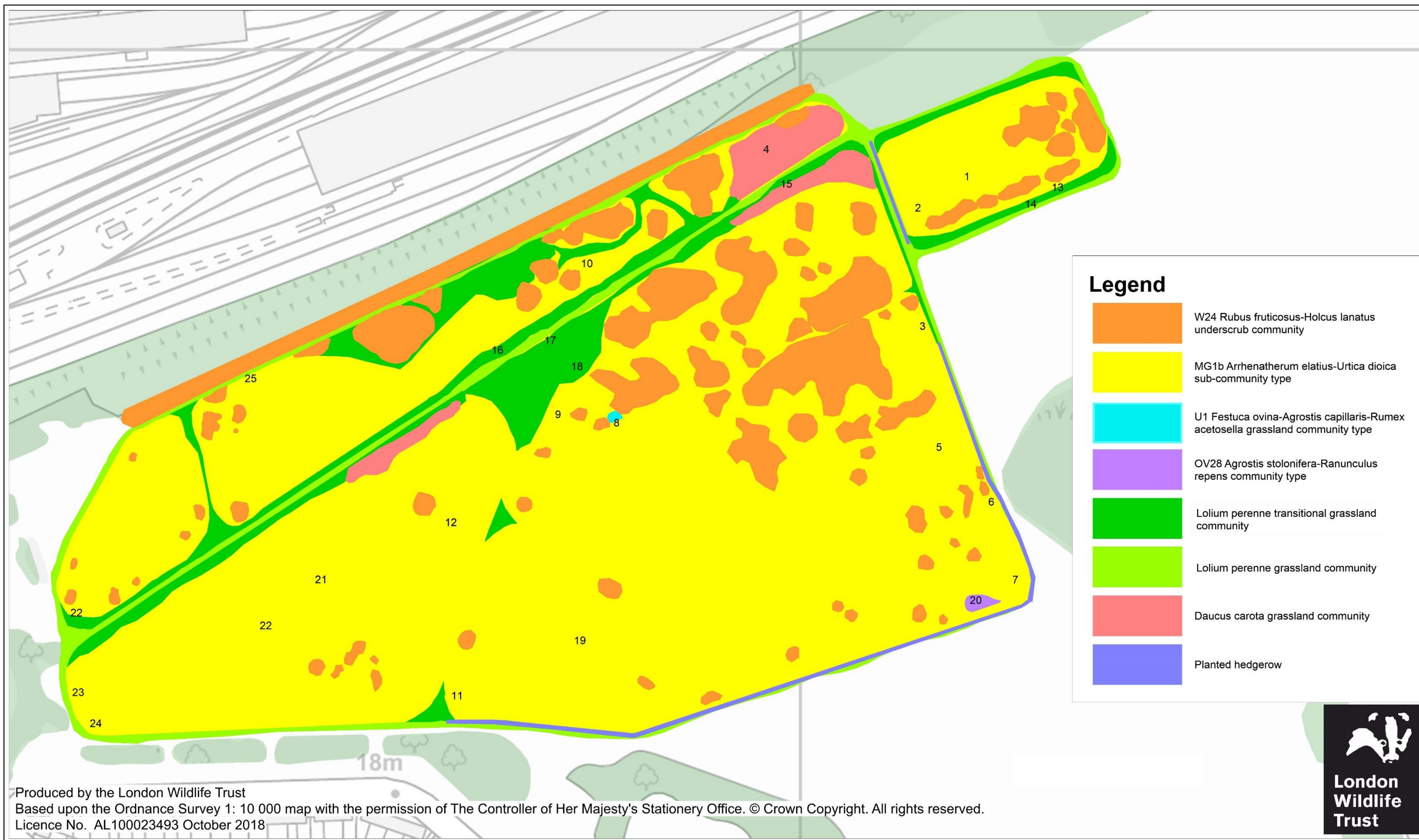
dominance of a few generalist species which can compete effectively with the spatial competition.

In order to break this cycle, the grassland should be put under a conservation management regime by introducing a seasonal cut, implementing test 'scrapes' and/or even grazing. A specific seasonal cut is easiest to implement, but will depend on the removal of arisings and will take time to change the diversity of species. By removing the top soil in certain areas to create scrapes this removes nutrients, reduces the presence of competitive grasses, and allows a greater diversity of herbaceous plants to take hold; it would look more damaging in the short-term, but evidence suggests that this can result in a more species-rich sward in a few years. Conservation grazing will require a more complex infrastructure (fencing, water, overlooking, etc.) – but may provide some public benefits, so could be considered as an additional tool.

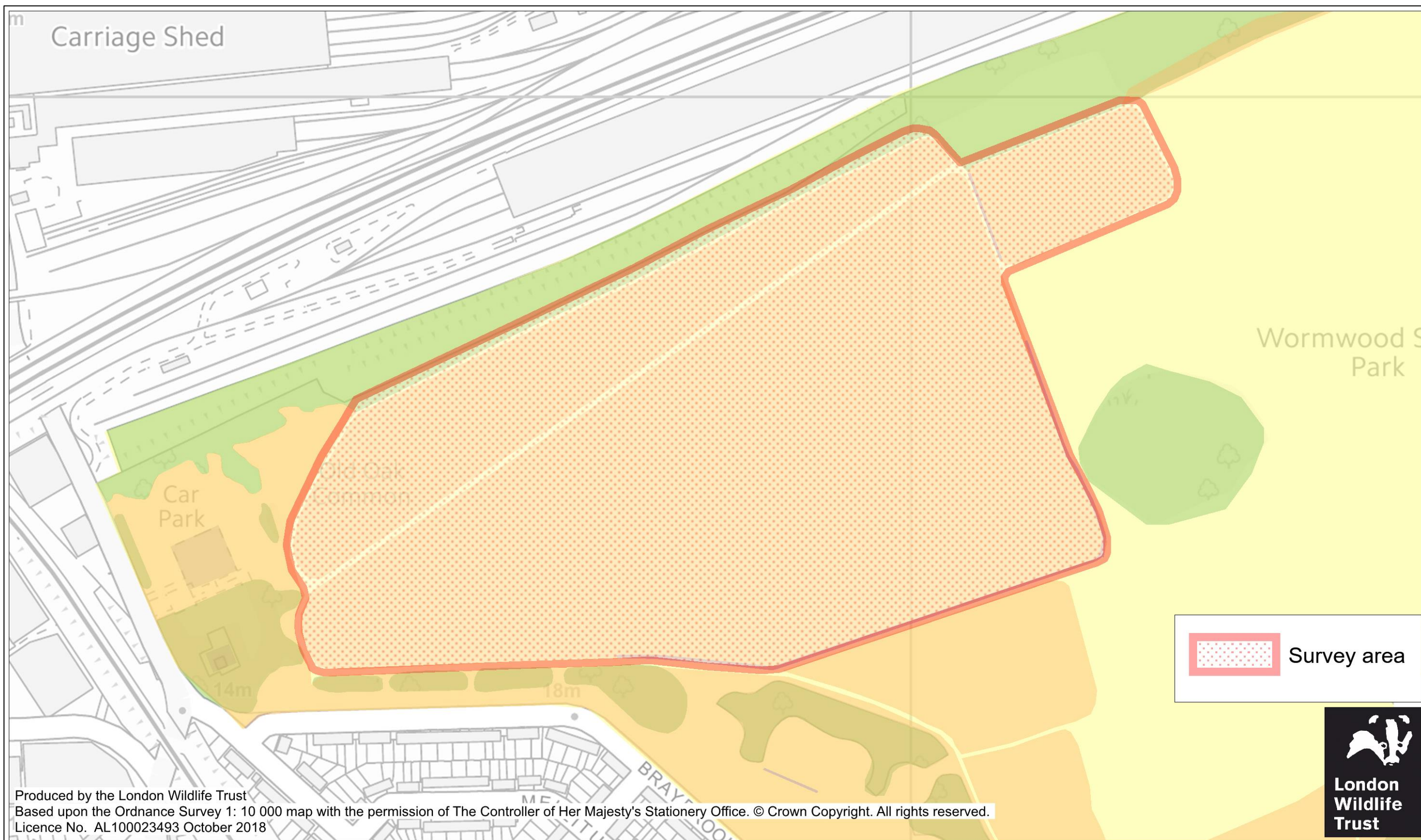
Some areas should, however, be kept as they are, allowing a variety of vegetation heights and densities to develop in order to improve the favourability of the site to a broader variety of invertebrate, mammal and bird species. A schedule of how this may be achieved should be outlined in detail in an updated conservation management plan.

6 Appendices

6.1 Phase 2 Vegetation map with quadrat number locations



6.2 Survey area



7 References

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Capability statement

Company and report information

London Wildlife Trust delivers a variety of contracts across the Greater London area, such as Phase 1 Habitat surveys, landscape design and habitat creation. We understand the urban as well as the suburban and rural environments as they relate to biodiversity and are well placed to deliver ecological surveys across the Greater London area.

London Wildlife Trust is the only charity dedicated solely to protecting and the capital's wildlife and improving wild spaces, engaging London's diverse communities through access to our nature reserves, campaigning, volunteering and outdoor learning. We therefore have a specific interest in ensuring that all land holders and managers manage their land for the benefit of wildlife and people.

The recommendations set out within this report broadly reflect London Wildlife Trust's core principles and objectives.

The information in this document is, to the best knowledge of the author and London Wildlife Trust correct at time of writing.

The ecological recommendations offered in this document are based on known wildlife conservation good practice and where applicable, the current legislation on protected species but should not be treated as legal advice. The report may also contain additional, non-statutory, recommendations with regards to protected species and/or habitats. These are clearly identified as optional where they are offered.

London Wildlife Trust does not take any responsibility for future decisions about the site that is the subject of this assessment.

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Staff capability

All ecologists are members of the Chartered Institute of Ecology & Environmental Management (CIEEM), at the appropriate level, and follow the CIEEM code of professional conduct when undertaking ecological work.

8 Staff details

Name and contact details	Role in team	Relevant experience
Mike Waller BSc Grad CIEEM Tel: 07505 028037 Email: mwaller@wildlondon.org.uk	<i>Conservation ecologist</i> Data collection, Analysis and evaluation and report delivery.	Extensive experience of surveying techniques and land management. Excellent identification skills across a broad range of taxa with a specialisation in vascular plants.
Mathew Frith BSc, MCIEEM, CEnv Tel: 020 78034292 Email: mfrith@wildlondon.org.uk	<i>Project advisor</i> Quality control.	Nearly 30 years' experience of urban nature conservation policy and practice, including land management issues of parks and inner urban sites. Phase 1 survey experience and site assessment. Green Flag Award judge.