AESG

Preliminary Ecological Appraisal

Sion Court

Paper Title	Preliminary Ecological Appraisal
Description	A Preliminary Ecological Appraisal and Preliminary Roost Assessment: A survey aimed to establish the ecological value of a site called Sion Court, and the presence/likely absence of notable and/or legally protected species to inform appropriate mitigation, compensation, and enhancement actions regarding a proposed renovation.
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Reviewed by	Sam Luker
Approved by	James Dickson

1 Executive Summary

AESG was commissioned to undertake a Preliminary Ecological Appraisal and Preliminary Roost Assessment by Savills of a site known as Sion Court on Sion Road in Twickenham, Richmond.

This survey aimed to establish the ecological value of this site and the presence/likely absence of notable and/or legally protected species - particularly bats - to inform appropriate mitigation, compensation, and enhancement actions regarding a proposed renovation.

This document is a report of this survey and has been produced to support a planning submission for the site which seeks the demolition of an apartment building and several broken and outdated garages on site, and the construction of a new set of apartments.

The survey area extends to 3600m^2 and comprises an apartment block, one first floor apartments, 4 sets of derelict garages with associated areas of hard standing and amenity planting.

The site has potential to support the following species:

- Low potential to support foraging and commuting bats;
- Low to support roosting bats; and
- Moderate to support nesting birds.

Due to the absence of features indicating bat presence, no further surveys are recommended to confirm the presence/likely absence of roosting bats on site.

Mitigation, compensation, and enhancement measures are discussed, which should be factored into the design and approach at site. Assuming key mitigation actions identified by the results of the further surveys are completed, alongside enhancements for the site including wildlife friendly landscaping, bird and bat boxes and invertebrate habitat features, then the proposals have the potential to result in gains for biodiversity.

2 Introduction

AESG was commissioned to undertake a Preliminary Ecological Appraisal (PEA) and Preliminary Roost Assessment by Savills of a site known as Sion Court on Sion Road in Twickenham, Richmond.

This document is a report of this survey and has been produced to support a planning submission for the site which seeks the demolition of a first-floor apartment building and several broken and outdated garages on site, and the construction of a new apartment building, as well as an extension of the landscape.

This survey aimed to establish the ecological value of this site and the presence/likely absence of notable and/or legally protected species - particularly bats - to inform appropriate mitigation, compensation, and enhancement actions regarding a proposed renovation.

2.1 Site Description

The survey area extends to approximately 3600m^2 and is centered on National Grid Reference TQ166734, OS Co-ordinates 516655, 173462.

The site largely comprises buildings and hard standing with areas of amenity planting. The main buildings and structures are described below:

- **Garages A**: Set of 6 derelict garages with broken doors that are too dangerous to open/use
- **Garages B**: Set of old broken garages that are fragile and sit with the first-floor apartment
- **Building A**: Sion Court, a 5-story apartment block made from concrete with an upper floor of brick
- **Building B**: A derelict abandoned first floor single family apartment made from brick and concrete

In addition, there is a shared garden containing amenity grassland, amenity planting, shrub rows and a collection of trees.

The site is located in a large rich historic urban context in southwest London. The wider landscape is dominated by residential housing and associated gardens. Placed at the centre of the Twickenham Riverside Conservation Area, the area contains an abundance of ecological habitats.

Twickenham Railway Station sits 500m northwest of the site (a 10 minute walk) whilst Twickenham Town Centre and bus connections are just a 2 minute walk from the site. Green spaces in the wider area include:

- York Gardens ~ 50m south
- Diamond Jubilee Gardens ~ 300m southwest
- Oak Lane Cemetery ~ 200m northwest
- Orleans Gardens ~ 300m southeast
- Marble Hill Park ~ 600m east

3 Methodology

The PEA (which included an Extended Ecological Phase 1 Survey) was undertaken in accordance with best practice guidelines (CIEEM, 2017) and the Preliminary Roost Assessment was undertaken in accordance with the best practice guidelines set out by Collins (2016) and the Bat Workers' Manual (Mitchell-Jones & McLeish, 2004).

The habitat survey followed the methodology of the UK Habitat Classification (Butcher et al., 2020), mapping out habitats within the study area.

The overall assessment consisted of:

- Site specific biological information gained from a Greenspace Information for Greater London (GiGl) statutory and non-statutory search; and
- A site walkover protected species scoping assessment and phase 1 habitat survey.

The site-specific consultation provided the ecological context for the site survey carried out on 14th May 2024.

The survey boundary and existing site is shown in image 3.1 below:

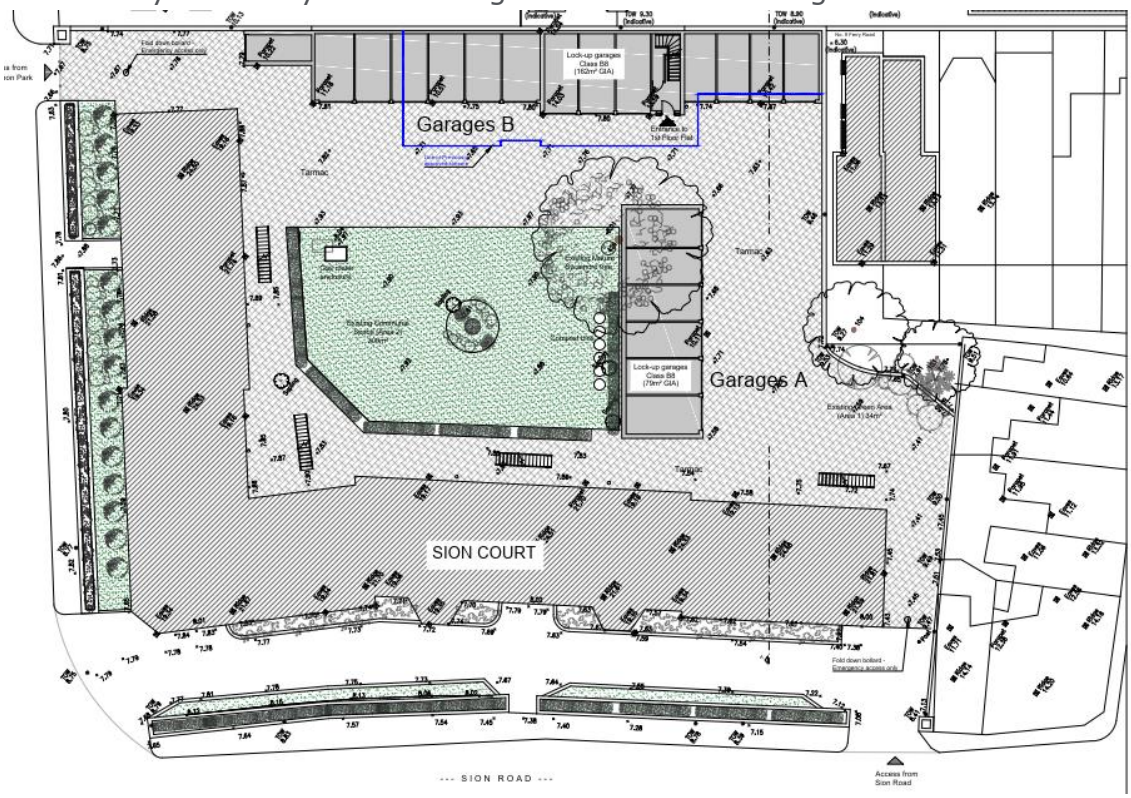


Image 3.1 Birds Eye View of the Sion Court Site

AESG undertook the site walkover during crisp autumn weather conditions. Features within the site boundary and accessible features immediately bordering it were evaluated and the extent and distribution of habitats and plant communities were recorded and supplemented with target notes on areas or species requiring further commentary. Fauna using the area were recorded and areas of habitat suitable for statutorily protected species were identified where present, with an active search carried out for evidence of such use.

3.1 Desk Top Review

A review of readily available ecological information and other relevant environmental databases was undertaken for the site and its vicinity. In addition, a biological records search from Greenspace Information for Greater London (GiGL) was reviewed to identify the location and citations of local non-statutory designated sites and presence of records for notable and protected species. This provided the overall ecological context for the site, to better inform the Phase 1 Survey.

3.2 On Site Survey

3.2.1 Flora

The extent and distribution of different habitats on site were identified and mapped according to the standard Phase 1 Survey methodologies, supplemented with target notes describing the dominant botanical species and any features of interest. Any present protected plant species and invasive/non-natives were also noted. A habitat map has been produced to illustrate the results, as shown in Appendix 1.

3.2.2 Fauna

The Phase 1 Survey specifically included assessments to identify the potential value for notable, rare and protected species at site. This involved identifying potential habitats in terms of refugia, breeding sites and foraging areas in the context of species known to be present locally and regionally.

The likelihood of occurrence is ranked as follows:

- Negligible - While presence cannot be absolutely discounted, the site includes very limited or poor-quality habitat for a particular species. The site may also be outside the known national range for a species;
- Low - On-site habitat is poor to moderate quality for a given species, with few or no information about their presence from desk top study. However, presence cannot be discounted due to the national distribution of the species or the nature of on-site and surrounding habitats;

- Moderate - The on-site habitats are of moderate quality, providing most or all of the key requirements for a species. Several factors may limit the likelihood of occurrence, habitat severance, habitat disturbance and small habitat area;
- High - On-site habitat of high quality for given species. Site is within a regional or national stronghold for that species with good quality surroundings and good connectivity;
- Present - Presence confirmed for the survey itself or recent, confirmed records from information gathered through desk top study.

The species surveyed for included:

3.2.2.1 Bat Species (Chiroptera)

The site visit was undertaken in daylight and the evaluation of bat potential comprised an assessment of natural features on site that aimed to identify characteristics suitable for bat roosts, foraging and commuting. In accordance with the best practice guidelines set out by Collins (2016) and the Bat Workers' Manual (Mitchell-Jones & McLeish, 2004) consideration was given to:

- The availability of access to roosts for bats;
- The presence and suitability of crevices and other places as roosts; and
- Signs of bat activity or presence.

Definite signs of bat activity were taken to be:

- The bats themselves;
- Droppings;
- Grease marks;
- Scratch marks; and
- Urine spatter.

Signs of possible bat presence were taken to be:

- Stains; and
- Moth and butterfly wings.

Features with potential as roost sites include mature trees with holes, crevices or splits (the most utilised trees being oak, ash, beech, willow and Scots pine), caves, bridges, tunnels and buildings with cracks or gaps serving as possible access points to voids or crevices.

Additionally, linear natural features such as tree lines and hedgerows are often considered valuable for commuting and semi-natural habitats such as woodland can provide important foraging resources. Consideration was given to the presence of these features both immediately within and adjacent to the assessment area.

3.2.2.2 Birds

During the walkover survey, the potential for breeding, wintering and migratory birds was assessed. This includes areas of trees and shrubs that could support nests for common or notable species.

3.2.2.3 Invertebrates

As part of the walkover survey the quality of invertebrate habitat and the potential for notable terrestrial invertebrate species was considered. There is a wide variety of habitats suitable for invertebrates including trees, overgrown hedges and shrubberies.

Biodiversity Action Plan priority species/ Species of Principal Importance

Where consultation and desk-study indicated the presence of BAP priority species (Species of Principal Importance) not protected by statute, effort was made to establish the potential for the site to support these species.

3.3 Surveyors

Sam Luker, who undertook the survey, has a BSc in Ecology & an MSc in Environmental Technology with Ecology Management and has over 10 years of experience in ecological survey and assessment.

3.4 Constraints

The PEA was undertaken by a suitably qualified ecologist during late spring 2024, meaning that all hedges and trees had their leaves. It was also conducted during the late morning, therefore bat presence was determined purely on any potential signs of activity. The constraints therefore inform the recommendation to further assess the presence of bats.

Access was provided for internal inspections for one of the abandoned first-floor apartment buildings (Building B), as well as the used garages (Garages B). However, access was not permitted for any other garages due to the hazards associated with their unsafe structure. Therefore, the assessment was carried out taking into consideration what was seen within the accessible areas, as well as in the surrounding landscape.

4 DESK STUDY

4.1 Designations

Consultations with the local biological record centre (GiGL) have confirmed that there are no statutory or non-statutory designated sites within or adjacent to the site boundary.

There is 1 internationally significant designated site within 2km of the site, Richmond Park - A Special Area of Conservation (SAC), National Nature Reserve (NNR) & Site of Special Scientific Interest (SSSI).

There are three statutory designated Local Nature Reserve (LNRs) within a 2km radius – Ham Common, Ham Lands and Isleworth Ait. Given that Isleworth Ait is located in the river and therefore displays different environmental conditions to Sion Court, this has been excluded from this study.

Records from GiGL also identified 22 non-statutory Sites of Importance for Nature Conservation (SINCs) within 2km of the site boundary. SINCs are recognised as important wildlife sites. The closest and most relevant sites from each of the SINC categories - (Metropolitan importance, Borough importance and Local importance – have been included in table 4.1 below. Table 4.1 below gives the locations and descriptions of a selection of the nearest/most relevant local designations

Table 4.1 Summary of Statutory and Non-Statutory Designations

Site Name	Approximate Location	Description
Statutory Designations		
Richmond Park (SAC, NNR, SSSI)	1.7 km east	Richmond Park has is managed as a royal deer park and produces a range of habitats of value to wildlife. Richmond Park is of importance for its diverse deadwood beetle fauna associated with the ancient trees found throughout the parkland. Many of these beetles are indicative of ancient forest areas where there has been a long continuous presence of over-mature timber. The site is at the heart of the south London centre of distribution for stag beetle (*Lucanus cervus*). This area has been designated as a Special Area of Conservation (SAC) because it contains habitat types and/or species which are rare or threatened within a European context. It is also a National Nature Reserve (NNR) due to the outstanding number of veteran oak trees and the significance of the insects they support. Over 1000 species of beetle have been recorded in the park, many of which are linked to dead and decaying wood while

		others are associated with wetland habitats and deer droppings.
Ham Common (LNR)	1.8 km southeast	Most of the site has been succeeded by birch and oak woodland. There is a lot of dead wood habitat valuable for invertebrates, fungi and cavity-nesting birds such as woodpeckers. There are several wet hollows within the woodland which support breeding frogs during wet springs where there is sufficient standing water. The common is divided in two by a road—in the northern section the woodland is generally younger with a denser understorey and more diverse ground flora. A more extensive area of grassland survives at the western end of the common with a wide range of plants typical of dry acid grassland.
Ham Lands (LNR)	0.5 km south	Ham Lands is an area of infilled gravel pits, some old water meadows and a narrow belt of woodland. The area has developed into a mosaic of different ecological zones. The site is of considerable value for informal recreation and is well used by local people and children. It is also used by local schools and for educational projects by students and nature groups.
Non-Statutory Designations		
Richmond Park and associated areas (SINC -Metropolitan)	1.7 km east	In addition to Richmond Park itself, this site includes Richmond Park and Sudbrook Park Golf Courses as well as Ham, Petersham, East Sheen and Palewell Commons. Together, these form an extensive area of high-quality wildlife habitats. The many ancient, pollarded oaks are of international importance for invertebrates, especially beetles, and also support a wide range of fungi and hole-nesting birds. The stag beetle (*Lucanus cervus*) is common here, while many other insect species are nationally rare or scarce. Acid grassland is the most extensive habitat on the site, and includes both dry and damp areas. These support numerous regionally uncommon plants, including upright chickweed (*Moenchia erecta*), blinks (*Montia fontana*) and subterranean clover (*Trifolium subterraneum*). There are also several areas of plantation woodland supporting a diversity of breeding birds, including woodcock and hobby. The adjacent golf courses and common provide additional areas of acid grassland and secondary woodland.
Royal Mid-Surrey Golf Course (SINC - Borough Grade I)	1.9 km north-north-east	This large golf course, adjacent to Kew Gardens, supports fine acid grassland, especially in the northern half where there is a thriving population of heath groundsel (*Senecio sylvatica*), which is scarce in London. Other plants in the acid grassland include heath and lady's bedstraws (*Galium saxatile and G. verum*), mouse-ear hawkweed (*Pilosella officinarum*) and sheep's sorrel (*Rumex acetosella*). A single plant of heather

		(*Calluna vulgaris*) has recently been found. Common butterflies abound in the roughs, including small heath, meadow brown and small, large and Essex skippers. There are some fine mature trees, and small areas of scrub and woodland, providing further habitat for birds and mammals.
Marble Hill Park and Orleans House Gardens (SINC - Local)	0.5 km east	Marble Hill Park is an attractive landscaped park. The most impressive natural feature of the park is a huge black walnut tree (*Juglans nigra*). Wildlife habitats in the park include grassland and woodland. Strips of grassland in the south and east of the park are mown infrequently, increasing the ecological value. Wild flowers occurring in patches where seed has been sown include common knapweed (*Centaurea nigra*), greater bird's-foot-trefoil (*Lotus pedunculatus*), smooth tare (*Vicia tetrasperma*), meadow buttercup (*Ranunculus acris*), oxeye daisy (*Leucanthemum vulgare*) sainfoin (*Onobrychis villosa*), meadow crane's-bill (*Geranium pratense*) and salad burnet (*Sanguisorba minor*). A strip of woodland in the north-west of Marble Hill Park is composed mainly of non-native species, with a dense understorey of rhododendron (*Rhododendron ponticum*) and holly (*Ilex aquilifolium*). This provides food and cover for birds and complements the open grassland of most of the site. Across Orleans Road from Marble Hill Park are the gardens of Orleans House, much of which is now wooded. Specimen trees from earlier landscaping, such as cedar of Lebanon (*Cedrus libani*) and Oriental plane (*Platanus orientalis*) are now surrounded by sycamore (*Acer pseudoplatanus*), silver birch (*Betula pendula*) and other young trees. This woodland is developing a good structure with more saplings and young trees present now among the mature trees.

4.2 Biodiversity Action Plans

Local Biodiversity Action Plans (LBAPs) ensure that national action plans (the UK BAP/Biodiversity 2020) are translated into effective action at the local level, and establish targets and actions for locally characteristic species and habitats.

Greater London BAP

The London BAP lists 26 priority habitats and species to protect and enhance, which are of importance to London's nature conservation. Notable features of the London BAP that are of relevance to this report are:

- The onus placed on the importance of built structures to local wildlife;
- The bat Species Action Plan (SAP); and

- The house sparrow SAP.

Species Record

The information provided in the biological data search from GiGL identified records of a number of protected and BAP priority species within 2km search radius of the site. Among others these include the following species of relevance to the site; primarily these are species that are known to be in the area that may be impacted by any proposals at the site, or that stand to benefit as a consequence of potential ecological enhancements at the site:

- Stag beetle (*Lucanus cervus*);
- Starling (*Sturnus vulgaris*);
- House sparrow (*Passer domesticus*);
- Hedgehog (*Erinaceus europaeus*); and
- Bats (*Pipistrellus sp., Myotis sp., Nyctalus sp.* and *Eptesicus sp*.).

4.2.1 Species Record

The information provided in the biological data search from GiGL identified records of several protected species within a 2km search radius of the site. Among others, these include the following species of relevance to the site:

- Birds - common sandpiper (*Actitis hypoleucos*), Kingfisher (*Alcedo atthis*), Cuckoo (*Cuculus canorus*), Lesser Whitethroat (*Curruca curruca*), Lesser Spotted Woodpecker (*Dryobates minor*), Linnet (*Linaria cannabina*), Redwing (*Turdus iliacus*), Mistle Thrush (*Turdus viscivorus*)
- Mammals (excluding bats) – West European hedgehog (*Erinaceus europaeus)*
- Bat species including serotine – Bat (*Chiroptera*), Serotine (*Eptesicus serotinus*), Unidentified Bat (*Myotis*), Daubenton's Bat (*Myotis daubentoniid*), Natterer's Bat (*Myotis nattereri*), Nyctalus Bat Species (*Nyctalus*), Pipistrelle (*Pipistrellus*), Brown Long-eared Bat (*Plecotus auratus*), Vesper Bat (*Vespertilionidae*)
- Invertebrates – Common Darter (*Sympetrum striolatum*), Black-headed Cardinal Beetle (*Pyrochroa coccinea),* Marsh Fritillary (*Euphydryas aurinia*), Small Copper (*Lycaena phlaeas*), Jersey Tiger (*Euplagia quadripunctaria*)

The species listed above are primarily those known to be in the area that may be impacted by any proposals at the site, or that stand to benefit as a consequence of potential ecological enhancements at the site and inform site-specific mitigation and enhancement recommendations described in the following chapter.

4.3 Detailed Description of Site: Habitats

The habitats present across the assessment site fall under the following Joint Nature Conservation Committee (JNCC) Phase 1 Habitat categories, as mapped in Appendix 1:

- Introduced shrub (J1.4);
- Species Poor Hedge (J3.2);
- Buildings (J3.6);
- Hard standing (J3.6.1);
- Amenity Grassland (J2); and
- Scattered trees.

4.3.1 Introduced shrub

There are a couple of areas of introduced shrub around the site. These include an existing area near the entrance to the site containing Choisya (*Choisya ternate)* and other shrubs. A small circular in the centre of the amenity grassland containing Rose (*Rosa rubiginosa)*, Monkey Puzzle (*Araucaria Araucana)* and Choisya (*Choisya ternate).*

Figure 4.1 Introduced Shrub with Monkey Puzzle (*Araucaria Araucana)*

4.3.2 Species Poor Hedge

There is hedge running alongside the amenity grassland containg Box *Buxus*, Yew *Taxus baccata* and other species. There is also a hedge alongside the garages with shrubs and small trees including Elm (*Ulmus minor*).

Figure 4.2 Species poor hedge with Box *Buxus*

4.3.3 Buildings

A single brick apartment building is located in the middle of a run of garages on the eastern border of the site. It is two storey and flat roofed. These are garages to the eastern edge of the site (Garages B) where the southeastern aspect is densely ivy clad. As well as a run of garages in the centre of the site (Garages A), which also have a densely clad area of ivy.

Figure 4.3 Garages and Apartment building

4.3.4 Hard Standing

The areas of hard standing include the driveway into and out of the site as well as the pathways around the buildings and garages.

Figure 4.4 Garages and Apartment building

4.3.5 Amenity Grassland

An area of amenity grassland is found in the center of the site, surrounded by hedges and introduced shrubs.

Figure 4.5 Amenity Grassland

4.3.6 Scattered trees

Scattered tree species included young, self-seeded elm (*Ulmus minor*) and cherry saplings (*Prunus avium*) adjacent to the central garages. There is a single large sycamore (Acer pseudoplatanus) in the centre of the site adjacent to the run of central garages. There is also a medium sized Birch (*Betula pendula*) tree in the green area by the entrance to the site.

There are dense patches of ivy (Hedera sp.) overgrowing the garages. These are of reasonable value as they are dense and significantly overgrown, providing ample cover for birds and invertebrates.

Figure 4.6 Silve Birch Tree by the entrance to the site

4.4 Detailed Description of Site: Species

4.4.1 Bats

4.4.1.1 Foraging and Commuting

There are records of numerous bat species within the surrounding 2km. The site is in close proximity to York House Gardens & the River Thames to the south which provides foraging habitat and a migrating route for bats. However, there is a lack of linear landscape features across the site.

Additionally, the site is open with limited vegetation structure and is therefore unlikely to attract significant numbers of invertebrate prey. Therefore, overall, the site is considered to have low potential for foraging and commuting bats.

4.4.1.2 Roosting

All trees on site were assessed for roosting potential from ground level. No features of value to roosting bats were identified.

During the previous survey, it was thought that there were potential signs of bat presence within the apartment building on site (such as insect remains on many of the windowsills). However, during this survey, ants were witnessed around the jamb and lintel of the window, therefore it was concluded that the insect remains were from discarded ant wings and are not from the remains from bat foraging. Therefore, no further surveys are recommended.

Figure 4.7 Insect remains indicating possible bat presence

Figure 4.8 Potential ingress points into the apartment building

4.4.2 Birds

There are records for numerous birds categorised as Priority Species/Species of Principal Importance in the surrounding 2km area, including Schedule 1 black redstart and UK/London BAP species, house sparrow. The site has small areas of vegetation which may support a range of common and widespread bird species. The site is therefore considered to have low potential to support nesting birds.

The habitats on site offer potential foraging habitat for black redstart, however none were encountered during the survey and there are no suitable nesting opportunities for this species.

4.4.3 Invasive/non-native species

No invasive/non-native species were found on site.

4.4.4 Other Protected and Notable Species

No direct evidence of any other protected or notable species (e.g. badgers, water voles, reptiles and great crested newt etc.) or suitable habitat was identified during the site visit. Therefore, we can consider the potential for these species on site to be Negligible.

5 Evaluation and Recommendations

5.1 Baseline Summary

The proposed development site and its surroundings have been assessed to hold the potential to support the following ecological receptors detailed in Table 5.1. Further detail on mitigation and recommendations for each receptor is provided in the subsequent sections.

Table 5.1 Baseline Summary

Receptor		Comments
Statutory Designated Sites of Importance	3 sites with European or National statutory designation 3 Local Nature Reserves within the search area	Potential impacts during the construction period are highly unlikely given the distances involved, and presence of significant physical barriers. Given that the site is small, impacts from visitation are also highly unlikely.
Designated Sites: Non-Statutory	22 present within 2km of the site, one being	Potential impacts during the construction period are highly unlikely given the distances involved, and presence of significant physical barriers. Given that the site is small, impacts from visitation are also highly unlikely.
Foraging bats	Low	Habitat on-site site is limited, however, there is suitable habitat present in the surrounding area. The site is unlikely to support established flight routes or valuable foraging habitat.
Roosting bats	Low	The apartment building on site provides some limited value for roosting bats. However, there were no signs of bat activity were noted inside.
Birds	Moderate	All nesting birds must be protected as per the Wildlife and Countryside Act 1981. Any vegetation removal or demolition works should be carried out outside of the main bird nesting season (approximately March to August) to avoid any potential damage or disturbance to nesting birds. Alternatively, if clearance is required within the nesting season, a nesting bird check of the

		vegetation to be cleared should be undertaken by a suitably qualified ecologist prior to clearance.

5.2 Discussion and Recommendations

Discussion is provided below on the key ecological receptors that stand to be impacted/benefit from proposed works; providing an overall analysis of the site, drawing conclusions and recommending mitigation and enhancement measures.

5.2.1 Mitigation

5.2.1.1 Existing Habitats

Although the site is of limited value in terms of habitats or plant species, it is recommended that the Sycamore tree and the Birch trees to be retained as part of the proposed plans are protected in accordance with 'BS 5837'.

5.2.1.2 Bats

5.2.1.2.1 Foraging and Commuting

Given the site's urban location, and the proximity to surrounding buildings, it is highly likely that the site is already subject to some light disturbance. The lighting to be implemented on site should therefore be designed to minimise the increase in light levels above the current baseline level.

In order to achieve this, lighting should be designed in line with guidance from the Bat Conservation Trust (BCT) and should include mitigation such as:

- Use of low-UV warm-white LED bulbs with directional, downward facing and shielded lights;
- Lighting pointing away from areas of newly implemented planting or features; and
- External lights designed in compliance with Table 2 (and its accompanying notes) to ILP Guidance notes for the reduction of obtrusive light, 2011.
- All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00.

Figure 5.1 Example bat friendly downlight

Additionally, the landscaping should be designed to provide foraging resources for bats, in line with best practice guidance from the BCT.

5.2.1.2.2 Roosting

All trees on site were assessed for roosting potential from ground level. No features of value to roosting bats were identified.

During the previous survey, it was thought that there were potential signs of bat presence within the apartment building on site (such as insect remains on many of the windowsills). However, during this survey, ants were witnessed around the jamb and lintel of the window, therefore it was concluded that the insect remains were from discarded ant wings and are not from the remains from bat foraging. Therefore, no further surveys are recommended.

5.2.1.3 Birds

Potential for common nesting bird species was identified within the trees and shrubs across the site, in particular within the ivy and hedges adjacent to the garages. Nesting birds, are protected and it is therefore recommended that any clearance of vegetation is undertaken outside of bird nesting season (March to August). If clearance of vegetation needs to take

place within this period, a Suitably Qualified Ecologist should confirmed the absence of nesting birds.

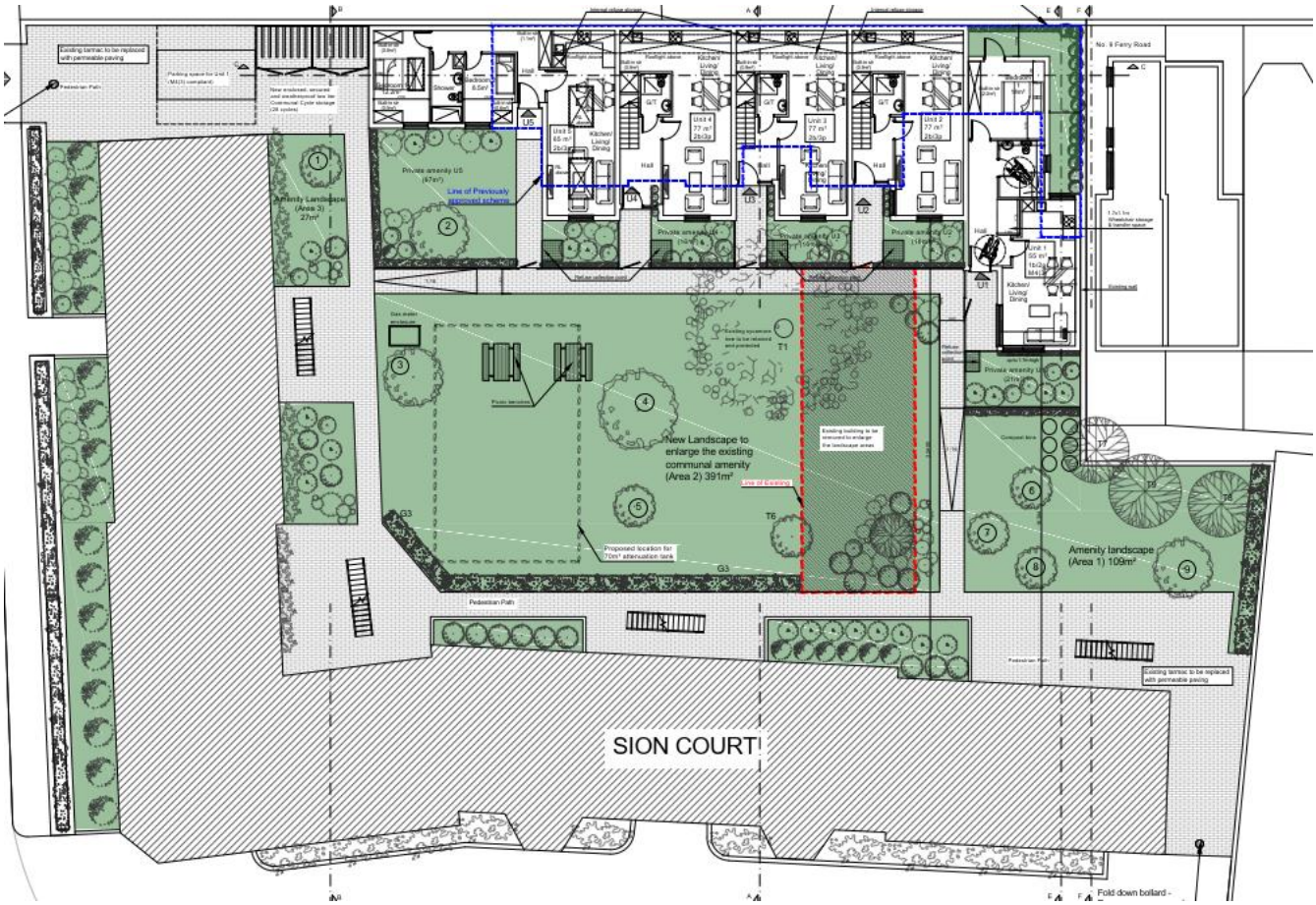
5.2.2 Ecological Enhancements

Proposals should provide net gains in biodiversity, specifically targeting certain species and habitats. The enhancement recommendations have been made in line with the London Borough of Richmond Biodiversity Action Plan.

The following ecological enhancement are confirmed to be implemented on site:

- Biodiverse Green roof with PV panels;
- Communal Amenity landscaping;
- Private Amenity landscaping;

Figure 5.2 Proposed Landscaping



5.2.2.1.1 Shrub and Herbaceous Planting and Tree Planting

Wildlife planting within the communal and private amenity spaces should follow the guidance set out within Richmond Council's Biodiversity Action Plan.
Shrub and herbaceous species of known value to wildlife, in particular plant species which provide pollen, nectar and fruit for a variety of local wildlife should be considered. A list of recommended species is provided by the Royal Horticultural Society (RHS). Ground cover plants such as periwinkle (*Vinca minor)* should be considered to provide shelter for small mammals and ground feeding birds.

Emphasis should be placed on providing habitats which act as a green link and form part of an ecological corridor.

Late flowering native and non-native plant species should also be considered to provide an extended feeding season for invertebrates. Suitable border plants include lady's bedstraw (*Galium verum)*, vetches (*Vicia sp).* and foxglove (*Digitalis purpurea)*. Suitable trees and shrubs include blackthorn (*Prunus spinosa)*, field maple (*Acer campestre)* and crab apple (*Malus sylvestris)*.

Figure 5.4 Foxglove and Blackthorn

5.2.2.1.2 Biosolar Roof

Biodiverse Green Roofs with PV panels are proposed on the top roof of the proposed building. These roofs will combine the vegetation underneath the PV panels (biosolar).
The substrate used for the biosolar roof should be nutrient-poor, and compose of recycled material. For example, the specification could follow Bauder's Biodiverse Substrate. This should be installed at varied depths across roof area, to create undulations varying between a depth of 100mm to a depth of 200mm. This provides a mix of habitats and introduces diversity to the biodiverse roof.

The substrate should be sown with a seed mix which provides a variety of species including a mix of wildflower, sedges, grasses, annuals and sedums, as recommended by the Royal Horticultural Society (RHS) Good for Pollinators Guide.

Figure 5.5 Biosolar roof

5.2.2.1.3 Green Walls

Vertical greening should be incorporated where possible to provide suitable habitat and to soften the hard facades of the site. These should take the form of climbers on trellis systems utilising native species of value for pollinators or herbivorous insect.
Suitable species include the following:

- Common Ivy (*Hedera helix*) placed in full sun/partial shade/full shade (south, east, north or west facing);
- Clematis species (*Clematis sp.*) place in full sun or partial shade (south, west or east facing);
- Honeysuckle (*Lonicera sp.)* placed in full sun or partial shade (south, west or east facing); and
- Star Jasmine (*Trachelospermum jasminoides*) placed in full sun or partial shade (south, west or east facing).

5.2.2.1.4 Amenity Grassland

Amenity grassland will be introduced into the communal gardens and courtyard areas area. Diversity should be increased to include a greater abundance of low growing flowering species such as:

- White clover (*Trifolium repens*)
- Betony (*Stachys officinalis*)
- Creeping buttercup (*Ranunculus repens*)
- Bird's foot trefoil (*Lotus corniculatus)*

5.2.2.1.5 Bird Boxes

It is recommended that the development includes integrated bird bricks or bird boxes to provide nesting habitat for local birds. Hole front bird boxes for species such as house sparrows (*Passer domesticus)* and common starling (*Sturnus vulgaris)* should be positioned 2-4m above ground level, facing between north and east to avoid strong sunlight and winds.

Artificial nests to attract swallows (*Hirundo rustica)* and house martins (*Delichon urbica)* are also recommended under the eaves where possible. Swift (*Apus apus)* boxes should also be placed under eaves away from direct sunlight or rainfall and at least 5m off of the ground.

Figure 5.6 House Sparrow Boxes

5.2.2.1.6 Bat Boxes

Given the scale of the proposed development, two bat boxes should be integrated into the fabric of the new building. The boxes should be positioned 2-5 metres from ground level and be away from direct sources of light. It is recommended that integrated Habitat boxes are used as these can be customised to match the façade of the building and provide ideal opportunities for summer roosting.

Figure 5.7 Example of integrated bat box

5.2.2.1.7 Invertebrate Habitat Features

Log pile loggeries should be provided amongst the landscaping in the communal amenity areas, in particular in sheltered locations. Plants such as ferns, bulbs and other woodland understory plants should be planted amongst the loggeries.

Figure 5.8 Example of invertebrate loggery

6 Biodiversity Net Gain

To calculate the ecological value of the pre- and post-development sites, the DEFRA Biodiversity Net Gain Metric 3.1 has been adopted. This metric uses Biodiversity Units as a replication for the ecological value of area or linear based habitats. The areas of each habitat parcel are measured, with each parcel assigned a 'Distinctiveness' and 'Condition' score. Distinctiveness is a default score for that habitat classification, representing its inherent ecological value, whereas condition refers to the state each parcel is in relative to a predetermined set of criteria.

6.1 Proposed Development

The proposed development will incorporate the inclusion of:

- A Biodiverse Green roof with PV panels;
- Communal Amenity landscaping;
- Private Amenity landscaping;

The additional features to improve biodiversity outlined within the recommendation section do not impact the biodiversity net gain percentage as the calculator does not consider them but add value to the site biodiversity and should be implemented.

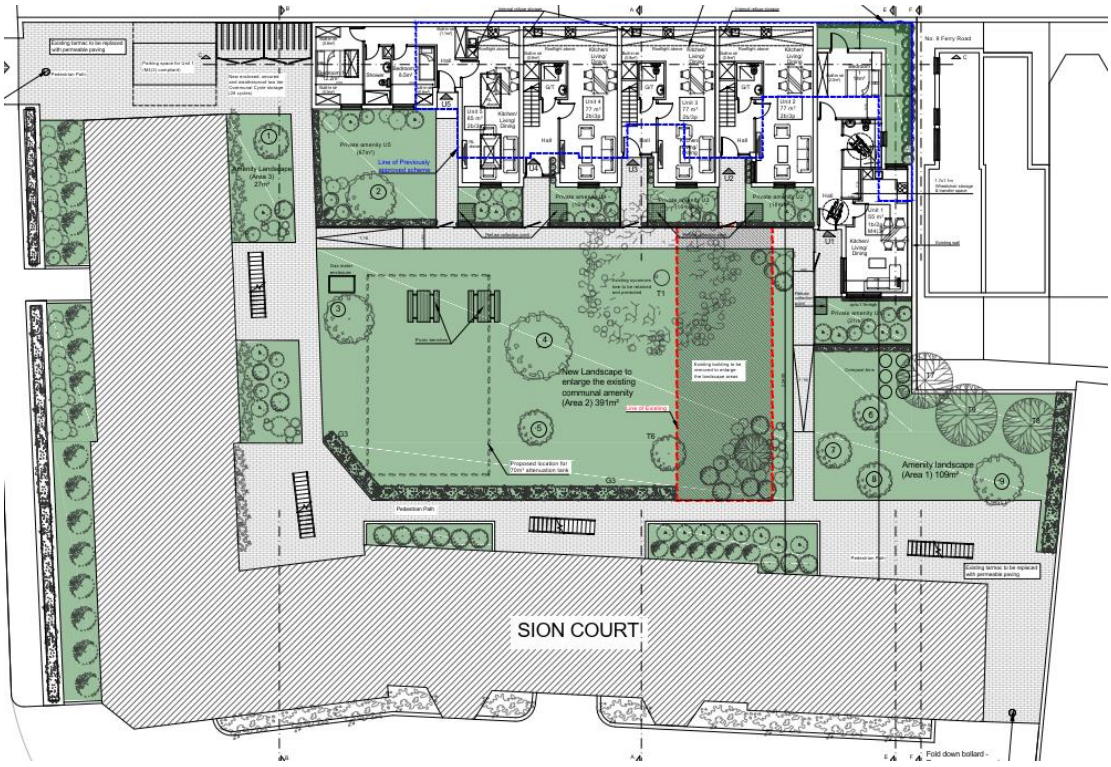


Figure 6.1: Proposed development mark up

6.2 Biodiversity Net Gain Conclusions

The proposed development will retain the majority of the existing ecological features whilst enhancing the communal and private landscaped areas as well as the provision of a number of new trees and intensive green roofs on flat roofs of the proposed apartments.

After inputting the baseline ecology elements onto the biodiversity metric 3.1 calculator as well as the proposed layout with the new features, a biodiversity net gain of 28.5% is achieved, with a net gain in hedgerow units of 36.04%. Appendix B shows screen shots of the biodiversity metric tool calculator habitat baseline and habitat creation values as well as the results.

7 Summary and Conclusion

AESG was commissioned by Savills to undertake a Preliminary Ecological Appraisal and Preliminary Roost Assessment of the Sion Court site, Twickenham, in the London Borough of Richmond.

Due to the absence of features indicating bat presence, no further surveys are recommended to confirm the presence/likely absence of roosting bats on site.

Measures to avoid impacting nesting birds have also been recommended, and vegetation clearance should be undertaken between October and February, outside of the nesting bird season.

Key mitigation, compensation and enhancement actions are described to enable legislative and policy compliance, with the achievement to achieve biodiversity net gain for the site. The enhancement recommendations have been made in line with the Borough of Richmond's Green Infrastructure & Biodiversity Strategy.

8 Supporting Documents/Images

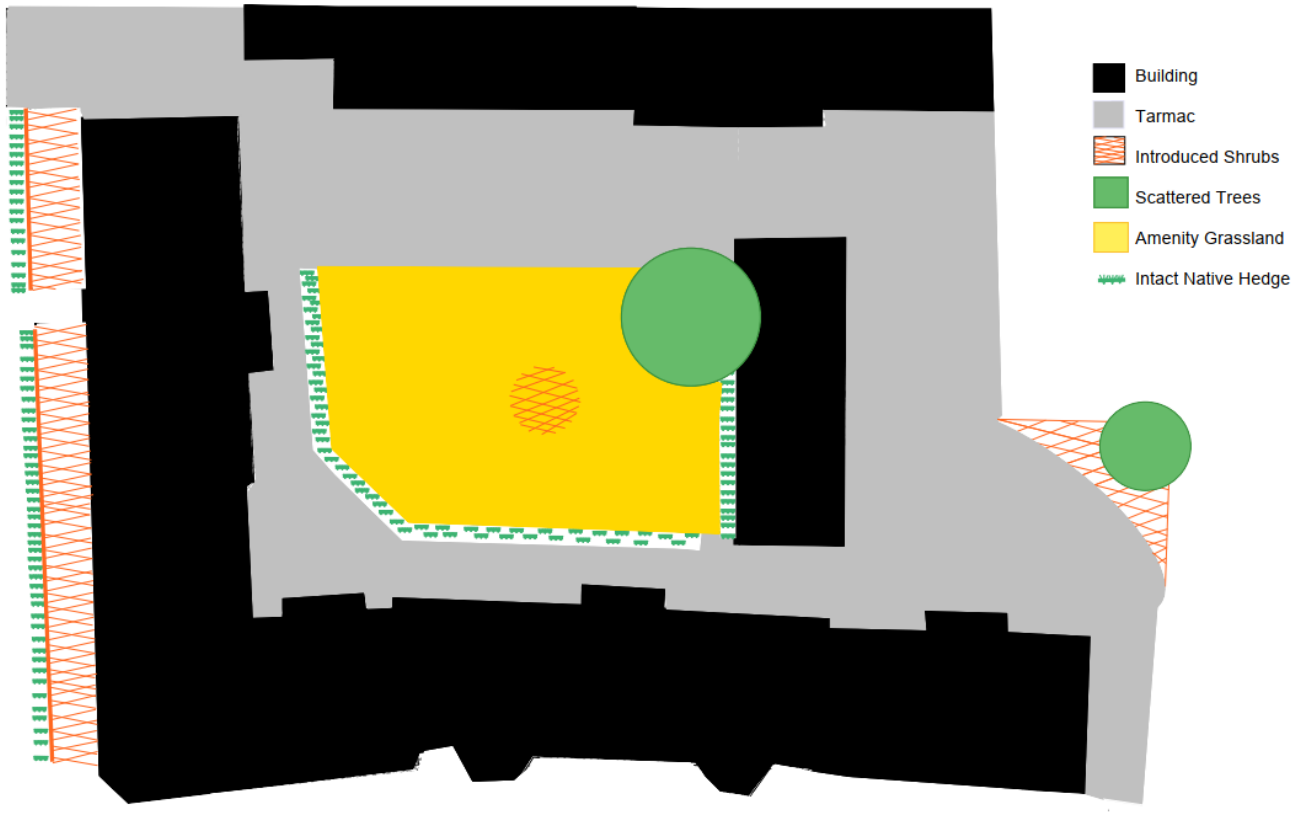
The following section includes images taken from the site assessment.

Figure 7.1: Set of Derelict Garages A

Figure 7.2: First-Floor Apartment Building (Outside) with set of Garages B

Figure 7.3: Introduced Hedges on the backside of Garages A, with Sycamore Tree

APPENDIX A – HABITAT MAP



APPENDIX B – BNG CALCULATIONS

Existing area habitats				Distinctiveness		Condition	
Broad Habitat	Habitat Type	Irreplaceable habitat	Area (hectares)	Distinctiveness	Score	Condition	Score
Grassland	Modified grassland	No	0.03	Low	2	Good	3
Urban	Vegetated garden	No	0.0034	Low	2	Condition Assessment N/A	1
Urban	Developed land; sealed surface	No	0.8	V.Low	0	N/A - Other	0
Individual trees	Urban tree	No	0.015	Medium	4	Good	3
Urban	Vacant or derelict land	No	0.4	Low	2	Moderate	2

Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness		Condition	
			Distinctiveness	Score	Condition	Score
Urban	Vegetated garden	0.0415	Low	2	Condition Assessment N/A	1
Individual trees	Urban tree	0.1585	Medium	4	Moderate	2
Urban	Intensive green roof	0.1585	Low	2	Good	3

FINAL RESULTS		
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	0.56
	Hedgerow units	0.01
	Watercourse units	0.00
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	28.50%
	Hedgerow units	36.04%
	Watercourse units	0.00%
Trading rules satisfied?	Yes ✓	