Ecological Impact Assessment

St. Margaret's Business Centre ,Twickenham

8th June 2022

TG Report No. 13340_R01d_HDBJ_TW

Tyler Grange

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Summary

S.1. This report has been prepared by Tyler Grange Group Ltd on behalf of Godstone Development Limited. It sets out the findings of a Phase 1 habitat survey, desk study, Preliminary Bat Roost Assessment (PBRA) and bat emergence/re-entry surveys of a parcel of land at Godstone Road, St Margaret's, TW1 1JS (Grid Reference: TQ 16644 74119), hereinafter referred to as the "site".

S.2. This report has been updated following a previous submission in 2020 on the site for a similar scheme (Ref: 20/2664/FUL).

S.3. The purpose of this report is to set out results of the Ecological Assessment (EA) in the context of future development which comprises the erection of three residential units and associated car parking, access and landscaping, and includes:

a. Phase 1 habitat survey and desk study:

- The site is not covered by nor adjacent to any sites that are the subject of statutory or non-statutory protection and no such sites are likely to be affected by development at the site.
- The majority of the site comprises hardstanding associated with the car parking area, which is bordered by introduced shrub and scattered trees. The habitats found on site are of either negligible or local ecological importance and where such habitats are proposed to be lost, it is considered that the impacts could be mitigated for and enhancements can be implemented through ecologically minded landscaping.

b. Preliminary Bat Roost Assessment (PBRA) – Trees T1, T2, and T3 have low potential for roosting bats, the remaining eight onsite trees have negligible potential for roosting bats; and

c. Bat emergence/re-entry surveys – Two emergence/re-entry surveys were undertaken in 2020 on trees T1 and T2, during which no bats were observed emerging or re-entering the identified Potential Roost Features (PRFs).

S.4. The scheme proposes to remove all habitat on site, and 3 of the 11 existing trees, to facilitate the development of 3 dwellings with associated landscaping and the introduction of 5 new trees. None of the trees which have been identified as having bat roosting potential are to be removed as a part of the scheme.

S.5. As the construction phase of the development will likely cause disturbance to any potential roosts associated with trees T1, T2, and T3, the identified features will be checked prior to commencement of groundworks on the site, to ensure no roosting bats are present. This will be undertaken by a suitably qualified ecology (SQE), and the details will be set out in a construction environment management plan (CEMP), which can in turn be secured by a suitably worded planning condition

S.6. Precautionary checks for nesting breeding birds are recommended to be undertaken by an ECoW, if trees or shrubs are removed during the core nesting bird season (March – August, inclusive), to prevent death or injury of individual birds/active nests by the proposed works. However, it should be noted that nests may be found at any time of year so due diligence must be shown at all times of year by all contractors. Should nesting birds be present with young or eggs (at any time of year),

an appropriate buffer should be erected, and the nest checked periodically by an ECoW until it is clear the young have fledged or the nest is no longer active.

S.7. It is recommended that sensitive working methods be adhered to during the construction phase in relation to hedgehog, which can be secured through the production of/input into a CEMP.

S.8. Where adverse impacts on protected species are predicted, it is considered that these can be mitigated for appropriately and that the proposals present the opportunity to incorporate ecological enhancements. Creating new habitat and improving opportunities for fauna will be in line with the London Borough of Richmond Local Plan Policies LP 15 and LP 17, London Plan Policies 5.11 and 7.19 and draft London Plan Policies G6 and G1. In addition, enhancements for specific species groups could be provided post-construction, including bird and bat boxes to increase the nesting and roosting opportunities across the site, respectively. The inclusion of a green roof also presents an opportunity to create suitable habitat for invertebrates and in turn foraging opportunity for bats.

S.9. A Biodiversity Net Gain (BNG) assessment was undertaken on the site using the DEFRA 3.0 metric. Based on the proposed site layout (appendix 6), the net habitat unit change is +0.01 habitat units (baseline = 0.27, post-development = 0.28 habitat units) in addition to a net hedgerow change of +0.04 units (baseline = 0.02, post-development = 0.04 hedgerow units). Overall, the development has a 4.69% habitat and a 191.83% hedgerow unit increase.

Section 1: Introduction

1.1. This report has been prepared by Tyler Grange Group Ltd on behalf of Godstone Development Limited. It sets out the findings of a Phase 1 habitat survey and desk study, Preliminary Bat Roost Assessment (PBRA) and bat emergence/re-entry surveys of a parcel of land at Godstone Road, St Margaret's, TW1 1JS (Grid Reference: TQ 16644 74119), hereinafter referred to as the "site". The purpose of this report is to set out the Ecological Assessment of the site in the context of future development which comprises the erection of three residential units and associated car parking, access and landscaping.

1.2. The proposed development reflects a new planning application following the refusal of a previous submission in 2020 (Ref: 20/2664/FUL), and subsequent dismissal at appeal.

1.3. See **Figure 1.1** below for the site location plan.

Figure 1.1 Site boundary

Context

1.4. The site is approximately 0.06ha in size and comprises land formerly used as a car park associated with St Margaret's Business Park, located to the west of the site. The site lies to the south of Godstone Road and is bordered by Winchester Road to the east. The majority of the site comprises hardstanding associated with the car parking area, which is bordered by introduced shrub and scattered trees on the western, northern and eastern site boundaries.

1.5. The proposals are for the erection of three no. residential dwellings (Class C3) with associated parking, access, and landscaping. The proposal also includes a green roof to be installed, for which a suggested species mix is provided in **Appendix 8**.

Purpose

1.6. This Report:

a. Uses available background data and results of field surveys, to describe and evaluate the ecological features present within the likely "zone of influence" (ZoI)[1]

b. Describes the actual or potential ecological issues and opportunities that might arise as a result of the site's future development or;

c. Where appropriate, makes recommendations for mitigation of adverse effects and ecological enhancement, to ensure conformity with policy and legislation; and

d. Can be used to accompany a planning application for the site's redevelopment.

1.7. This assessment and the terminology used are consistent with the 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (CIEEM, 2018).

[1] https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/

Section 2: Methodology

Data Search

2.1 The aim of the data search is to collate existing ecological records for the site and adjacent areas. Obtaining existing records is an important part of the assessment process as it provides information on issues that may not be apparent during a single survey, which by its nature provides only a 'snapshot' of the ecology of a given site.

2.2 The data search has been undertaken for a 10km radius around the site for European statutory sites, a 2km radius for national statutory, a 1km radius for non-statutory sites and a 1km radius for protected and priority[2] species records.

2.3 The following organisations and individuals have been contacted and, where relevant, the information provided has been incorporated with acknowledgement within this report:

- The Greenspace Information for Greater London (GIGL) was contacted for details of protected and priority species and non-statutory sites on the 14th July 2020 and the information was received on 19th July 2020. Where relevant records were identified, the information provided has been incorporated into the report with due acknowledgement;
- The Multi-Agency Geographic Information for the Countryside (MAGIC) website[3] was accessed for information on the location of statutory designated nature conservation sites within a 10km and 2km search radius of the site;
- Section 41 of the Natural Environment and Rural Communities (NERC) Act for priority species and habitats in England, subject to conservation action, to assist with the evaluation of ecological resources and to inform site enhancement strategies;
- The London Borough of Richmond upon Thames Biodiversity Action Plan (BAP) was assessed for local priority habitats and species subject to conservation action, to assist with the evaluation of ecological resources and to inform site enhancement strategies; and
- The London Borough of Richmond upon Thames council website was accessed for details of relevant local planning policies and supplementary planning guidance.

Extended Phase 1 Habitat Survey

2.4 An "extended' Phase I habitat survey was undertaken on 24th March 2022 by Daniel Lock, an experienced field ecologist and qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM). The technique was based upon Phase I survey methodology (JNCC, 2010). This 'extended' Phase I technique provides an inventory of the habitat types present and dominant species.

[2] UK priority species and habitats are those subject to conservation action and referred to as Species of Principal Importance (SoPIs) or Habitats of Principal Importance (HoPIs). They are listed at Section 41 [42 in Wales] of the Natural Environment and Rural Communities (NERC) Act 2006. Section 40 of the NERC Act states that local planning authorities must have regard for the conservation of both SoPIs and HoPIs.
[3] http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

2.5 The weather conditions for the survey were dry with 15% cloud cover and a temperature of 16°C.

Preliminary Bat Roost Assessment (PBRA)

2.6 A preliminary assessment of the trees present within the site was undertaken, again by Daniel Lock, to assess their potential to support roosting bats. This survey was undertaken alongside the 'extended' Phase 1 habitat survey. The surveys followed standard methodologies (Mitchell-Jones, A.J., 2004; Mitchell-Jones, A.J. and McLeish, A.P., 2004; Collins, 2016) which are described below.

2.7 The PBRA for trees comprised a ground level inspection of all trees present on the site on 24th March 2022 to determine the potential of each tree to support roosting bats. During this survey, Potential Roost Features (PRFs) that may be used by bats, as identified within the BCT Good Practice Guidelines (Collins, 2016), were sought. These included the following:

- Woodpecker holes, rot holes, knot holes arising from naturally shed branches and man-made holes;
- Hazard beams and other vertical or horizontal cracks and splits (such as frost-cracks) in stems or branches;
- Partially detached platey bark;
- Cankers;
- Other hollows or cavities, including butt-rots;
- Partially detached ivy with stem diameters in excess of 50mm; and
- Bird, bat or dormouse boxes.

2.8 Evidence of the presence of bat roosts was also sought. These signs include:

- Bat droppings in, around or below a PRF;
- Odour emanating from a PRF;
- Audible squeaking at dusk or in warm weather; and
- Visible staining below a PRF.

2.9 The potential of each tree at the site and immediately adjacent to the site to support roosting bats was then categorised against the criteria described in **Table 2.1**.

Suitability	Description of Roosting Habitats
Negligible	Negligible habitat features on-site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection conditions and surrounding habitat.

Table 2.1 – Roost Assessment Criteria (adapted from Collins, 2016)

Bat Emergence Survey (2020)

2.10 Bat surveys were undertaken in 2020 to support a previous planning application (Ref: 20/2664/FUL) on the site which proposed the removal of certain trees with PRFs. As the latest scheme proposes the retention of these trees, no updated bat surveys have been undertaken.

2.11 The emergence and re-entry surveys followed standard methodologies set out in the Bat Mitigation Guidelines (Mitchel-Jones, A. J., 2004), the Bat Workers Manual (Mitchell- Jones, A.J. and McLeish, A.P., 2004) and Bat Surveys – Good Practice Guidelines 3rd Edition (Collins, 2016). The methods broadly comprise the following:

- Desk Study - acquiring records of bats and/or bat roosts within the local area; and
- One emergence survey and one re-entry survey conducted on tree T1 which was considered to have low potential for roosting bats and tree T2 which was considered to have moderate potential for roosting bats.

2.12 Records of bats within 1km of the site were requested and received from the Green Space Information for Greater London (GIGL) on the 5th May 2020.

2.13 Tree T2 was considered to have moderate potential (following the PBRA undertaken in 2020) for roosting bats due to the presence of a cavity at 5m on the eastern aspect of the tree and so, in line with best practice guidance (Collins, 2016), required two emergence/re-entry surveys during the bat active season (May-September, inclusive). The feature required one surveyor to adequately cover the PRF.

2.14 Tree T1 was considered to have low potential for roosting bats, as although no discernible features were identified the tree had multiple limbs and dense ivy cover. Best practice guidelines state that no emergence/re-entry surveys are required (Collins, 2016), however as T2 only needed one surveyor to adequately cover the PRF but two surveyors were required due to night-time working protocols, T1 was subject to two emergence/re-entry surveys in conjunction with the two surveys undertaken on T2.

2.15 Surveyors were positioned strategically to ensure that the potential bat roost features were covered adequately (see plan **13040/P04**). Surveyors remained in these positions, observing the trees from 15 minutes before sunset, through until 1.5 hours after sunset during the emergence survey and 1.5 hours prior to sunrise, through to 15 minutes after sunrise during the re-entry survey. **Table 2.2** shows the metadata for the surveys.

2.16 Following an updated PBRA undertaken on 24th March 2022, the roosting potential of T2 was reduced to 'low' as the cavity identified on T2 was determined to be subject to considerable exposure to the elements, making it less appealing to roosting bats than previously recorded. The potential of T3 was also upgraded to 'low' following the identification of a cavity on T3, therefore trees T1, T2, and T3 are now all considered to have low roosting potential. The proposed scheme includes the retention of these trees, and so no further bat surveys have been undertaken.

Survey	Date	Survey Times	Weather		Surveyors
			Start	End	
Dusk Emergence – Tree T1 Tree T2	06/08/20	Sunset: 20:40 Start: 20:25 End: 22:11	Wind (Beaufort): 0 Temp (°C): 27 Precipitation: dry Cloud cover (% cover): 5	Wind (Beaufort): 0 Temp (°C): 26 Precipitation: dry Cloud cover (% cover): 0	Rebekah Baker Benjamen Nelumbu
Dawn Re-entry – Tree T1 Tree T2	26/08/20	Sunrise: 6:05 Start: 4:35 End: 6:20	Wind (Beaufort): 2-3 Temp (°C): 15 Precipitation: dry Cloud cover (% cover): 40	Wind (Beaufort): 2 Temp (°C): 15 Precipitation: dry Cloud cover (% cover): 100	Rebekah Baker Benjamen Nelumbu

Table 2.2. Metadata for the two emergence/re-entry surveys for trees T1 and T2.

2.17 Surveyors used a combination of visual observations and echolocation detection to identify any bats emerging from the trees. The type of detector used by each surveyor is detailed within the raw data in **Appendix 3**.

Evaluation

2.18 The evaluation of habitats and species is defined in accordance with published guidance (CIEEM, 2018). The level of importance of specific ecological features is assigned using a geographic frame of reference, with international being most important, then national, regional, county, borough, and local.

2.19 Evaluation is based on various characteristics that can be used to identify ecological features likely to be important in terms of biodiversity. These include site designations (such as Sites of Species Scientific Interest (SSSIs)), or for undesignated features, the size, conservation status (locally, nationally or internationally), and the quality of the ecological feature. In terms of the latter, quality can refer to habitats (for instance if they are particularly diverse, or a good example of a specific habitat type), other features (such as wildlife corridors or mosaics of habitats) or species populations or assemblages.

Limitations

2.20 At discrete points during the second emergence/re-entry visit on the 26th August 2020 the wind was strong. However, as these conditions were only for short discrete parts of the survey, it was not considered to be a limitation.

Quality Control

2.21 All ecologists at Tyler Grange Group Ltd are members of CIEEM and abide by the Institute's Code of Professional Conduct.

Biodiversity Net Gain Assessment

2.22 A Biodiversity Net Gain (BNG) Assessment was undertaken on the scheme. The methodology and results and captured in **Appendix 7** of this report.

Section 3: Ecological Features and Evaluation

Context

3.1 The site is approximately 0.06ha in size and comprises mostly hardstanding associated with the sites' previous use as a car park, with landscaping and trees which line the western, northern and eastern site boundaries.

Protected sites

Statutory Sites

3.2 There are three European designated sites within a 10km radius of the site; Richmond Park Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI), Wimbledon Common SAC and SSSI and South West London Waterbodies Special Protection Area (SPA) and Ramsar Two nationally designated sites within a 2km radius of the site were also recorded; Ham lands Local Nature Reserve (LNR) and Site of Importance for Nature Conservation (SINC) and Iselworth Ait LNR.

3.3 **Table 3.1** details the site name, geographical importance, approximate distance from site and the reason for designation for the five statutory sites.

Table 3.1 Details of the five statutory designated sites returned by the data search.

Site Name	Designation	Geographical Importance	Approximate Distance from Site	Reason for Designation
Richmond Park	SAC, SSSI	International	1.9km south east	Designated for the Annex II species stag beetle *Lucanus cervus*. It contains a large number of ancient trees with decaying timber and is a site of national importance for the conservation of the fauna of invertebrates associated with the decaying timber of ancient trees.
Wimbledon Common	SAC, SSSI	International	5.5km south east	Designated for the Annex I habitats, Northern Atlantic wet heaths with Erica tetralix and European dry heaths and the Annex II species stag beetle. Like Richmond Park SAC, Wimbledon Common has a large number of old trees and supports a number of other scarce invertebrate species associated with decaying timber.
South West London Waterbodies	SPA, Ramsar	International	5.5km south west	Designated as both an SPA and Ramsar for its internationally important numbers of wintering gadwall *Anas strepera* and shoveler *Anas clypeata* (Ramsar Criterion 6). The site comprises a number of reservoirs and former gravel pits in the Thames Valley adjacent to Heathrow Airport between Windsor and Hampton Court.
Ham Lands	LNR, SINC	National	1km south	Ham Lands is an extensive area of grassland and scrub. The site was once extensively excavated for gravel, then backfilled over time with a variety of soil types from all over London. This has created a mosaic of different habitat types which support a diversity of species.
Iselworth Ait	LNR	National	1.34km north	A three-and-a-half-hectare island located in the Thames, which provides an undisturbed site for a variety of birds including treecreeper *Certhia familiaris*, kingfisher *Alcedo atthis* and heron *Ardea cinerea*. It also supports several rare beetles and two rare species of mollusc, the two-lipped door snail *Balea biplicate* and the German hairy snail *Pseudotrichia rubiginosa*.

Non-Statutory (Local) Sites

3.4 In London, non-statutory sites designated for their biodiversity importance are known as Sites of Importance for Nature Conservation (SINCs). SINCs are recognised by the Greater London Authority and London Borough Councils as important wildlife sites. SINCs are broken down into

three tiers dependent on the geographic scale at which they are of importance, and these are, from most to least important:

a. Sites of Metropolitan Importance;
b. Sites of Borough Importance (borough grade I and borough grade II); and
c. Sites of Local Importance.

3.5 Within 1km of the site there are eight SINCS, including Ham Lands, described in **Table 3.1**, which is also designated as a LNR and as such will not be discussed further within this section of the report. The details **of these sites are listed in Table 3.2.**

Table 3.2 Details of the eight SINCs within a 1km radius of the site.

Site Name	Geographical Importance	Approximate Distance from Site	Reason for Designation
Moor Mead Recreation Ground	Local	0.2km west	This site is a village green beside the River Crane in Twickenham. The habitats at site include amenity grassland, running water, scattered trees, semi-improved neutral grassland and tall herbs.
River Crane at St Margaret's	Borough Grade II	0.52km north west	A section of river, lined with trees, that runs through allotments. The habitats the site supports include running water, scrub, secondary woodland and semi-improved neutral grassland.
River Crane at St Margaret's (Richmond Side)	Borough Grade II	0.55km north west	A short section of the River Crane, just above its tidal limit, spanning the borough boundary between Richmond and Hounslow.
Marble Hill Park and Orleans House Gardens	Local	0.70km south east	This site is the landscaped grounds of two 18th century houses, with meadows, woodland and mature trees. Habitats include amenity grassland, planted shrubbery, scattered trees, secondary woodland, semi-improved neutral grassland and veteran trees.
River Thames and Tidal Tributaries	Metropolitan	0.82km south	The Thames provides a wildlife corridor that runs across the capital. The habitats at this site include intertidal, marsh/swamp, pond/lake, reed bed, running water, saltmarsh, secondary woodland, vegetated wall/tombstones, wet ditches, wet grassland and wet woodland/carr.
Twickenham Road Meadow	Local	0.98km west	A narrow strip of grassland with scattered trees, part of which floods regularly. The habitats at this site include scattered trees, semi-improved neutral grassland, vegetated wall/tombstones and wet grassland.
Twickenham Junction Rough	Local	1km south west	An island of wildlife habitat surrounded by railway lines. Habitats at this site include bracken, scrub, secondary woodland, semi-improved neutral grassland, tall herbs and vegetated wall/tombstones.

3.6 The site is located within an identified SSSI Impact Risk Zone (IRZ). However, only proposals for large infrastructure, wind & solar energy, oil & gas, industrial, agricultural, landfill, combustion processes, composting of more than 75000 tonnes, discharge of water greater than 5m^3 per day or large warehousing need consideration for their potential impacts on nearby SSSIs. The development type sought does not fall under any of these categories.

Habitats and Flora

3.7 The site supports the following habitats:

a. Bare Ground;
b. Hardstanding;
c. Hedgerow (Species-poor);
d. Introduced Shrub;
e. Scattered Trees; and
f. Scrub

3.8 All the features described are shown on the Habitat Features and Potential Bat Roost Features Plan **13340/P02b**.

Bare Ground

3.9 The car park is surrounded by landscaping on the western, eastern and northern site boundaries which comprise bare ground and associated ornamental planting, which is described under 'introduced shrub' and 'scattered trees' below. The bare ground located at the south westerly corner (see TN1 on **13340/P02b**) supports some emergent vegetation which includes species such as bind weed *Calystegia sepium*, dandelion *Taraxacum officinale agg., senecio sp.* and annual mercury *Mercurialis annua*.

3.10 The bare ground and the small amount of emergent vegetation it supports at the southwestern most corner of the site, is common and widespread and offers little biodiversity value to the site. As such, it is considered to be of **negligible ecological importance** and is not discussed further within this report.

Photograph 3.1 Example of the bare ground which borders the eastern, northern and western car park boundaries

Hardstanding

3.11 The majority of the site is made up of hardstanding that forms the car park and some smaller areas of pavement found on the eastern boundary of the site.

3.12 This habitat offers no biodiversity value to the site and is considered to be of **negligible ecological importance** and is not discussed further within this report.

Photograph 3.2 Hardstanding associated with the site's use as a car park

Hedgerow (Species Poor)

3.13 The northern site boundary is lined with a hedgerow that comprises a mixture of non-native invasive snowberry *Symphoricarpos albus*, introduced firethorn *Pyracantha sp.* and native privet *Ligustrum vulgare*.

3.14 Snowberry is listed on the London Invasive Species Initiative (LISI) and is discussed in more detail below in **paragraph 3.46**.

3.15 This hedgerow does not fit the definition for priority hedgerow habitat[4] under the Habitats of Principle Importance (HoPI) in Section 41 of the NERC[5] Act, as it is less than 20m long and does not comprise at least 80% native woody and shrubby species.

3.16 Although this hedge does not qualify as a HoPI and it comprises mostly of non-native species, it is the only hedgerow habitat on site and so is considered to be of **negligible ecological importance**.

[4] https://hub.jncc.gov.uk/assets/ca179c55-3e9d-4e95-abd9-4edb2347c3b6
[5] https://jncc.gov.uk/our-work/uk-bap-priority-habitats/

Photograph 3.3 Hedgerow that runs along northern site boundary

Introduced Shrub

3.17 The landscaping that borders the western, northern and eastern boundaries of the site comprises several patches of introduced shrub, which comprise mostly of firethorn, *Cotoneaster sp.* and snowberry with some Caucasian ivy *Hedera colchica* and bind weed. The introduced shrub does contain small amounts of native species such as one specimen of elder *Sambucus nigra* and dog rose *Rosa canina*.

3.18 Snowberry, as detailed above, and *Cotoneaster sp.* are both listed on the LISI list and are discussed in more detail in **paragraph 3.46** below.

3.19 As this habitat comprises mostly invasive species, it is considered to be of **negligible ecological importance**.

Photograph 3.4 Introduced shrub

Scrub

3.20 The wall that borders the western site boundary is clad with common ivy *Hedra helix* scrub, which has spread onto the introduced shrub that lies in front of it (See TN2 on **13340/P02b**).

3.21 This habitat is common and widespread and as such is considered to be of **negligible ecological importance**.

Photograph 3.5 Ivy clad wall on western site boundary

Scattered Broadleaved Trees

3.22 Eleven scattered semi-mature broadleaved trees are located on the western, northern and eastern site boundaries and comprise hornbeam *Carpinus betulus*, lime *Tilia sp.* and one *Prunus sp.* Street trees such as these are common and widespread, as such this habitat is considered to be of **local ecological importance**.

3.23 The trees were assessed for their potential to support roosting bats, which is discussed below in **Section 4**.

Photograph 3.6 Example of scattered broadleaved tree

Fauna

Amphibians

3.24 96 records of common and widespread amphibians were returned by the data search, including eight records of common toad *Bufo bufo* with the nearest record being 0.5km north east from site and the most recent being in 2018, and 88 records of common frog *Rana temporaria* with the nearest record being 0.1km south east from site and the most recent being in 2011.

3.25 The site does not offer any suitable habitat for common and widespread amphibians and are, therefore, considered to be likely absent from site. As such, they are not discussed further within this report.

3.26 It is considered that great crested newt (GCN) *Triturus cristatus* are absent from site as there is no suitable habitat on site and no suitable waterbodies within a 250m search radius of the site. In addition to this, no records were returned by the data search. As such, GCN are not considered further within this report.

Bats

3.27 191 records of bats were returned by the data search, which includes 113 of unidentified bat species and 78 records of identified species from eight species of bat:

i. One record of serotine *Eptesicus serotinus* with the nearest record being approximately 0.66km south and the most recent in 2015;
ii. Ten records of Daubenton's bat *Myotis daubentonii* with nearest record being approximately 0.67km north west and most recent in 2016;
iii. Four records of natterer's bat *Myotis nattereri* with the nearest record being approximately 0.66km south and the most recent in 2019;
iv. Two records of Nathusius's pipistrelle *Pipistrellus nathusii* with the nearest record being approximately 0.95km south east and the most recent in 2006;
v. 28 records of soprano pipistrelle *Pipistrellus pygmaeus* with the nearest record being approximately 0.65km south and the most recent in 2018;
vi. 18 records of common pipistrelle *Pipistrellus pipistrellus* with the nearest record being approximately 0.66km south from site and the most recent in 2019; and
vii. One record of brown long eared bat *Plecotus auritus* approximately 0.66km south from site in 2015.

3.28 Two European Protected Species (EPS) licences were returned in the data search within 1km of the site. The details of the EPS licences are set out in **Table 3.3**.

Case reference of licence	Species to which the licence relates	Start and end date	Approximate distance and direction from site	Notes or description of licence
2016-25082-EPS-MIT	Brown long-eared bat, soprano and common pipistrelle	06/09/2016-01/09/2021	0.8km south	License allows destruction of a resting place
EPSM2009-1356	Common pipistrelle	08/04/2011-30/06/2015	0.9km north	License allows destruction of a resting place

Table 3.3. ESP licences within a 1km search radius

Potential Bat Roost Assessment (PBRA)

3.29 A PBRA was undertaken of all trees present within the site to assess their potential to support roosting bats. All trees subject to a PBRA with negligible or low bat roost potential are summarised in **Table 3.4**.

3.30 Trees T1, T2, and T3 were considered to have low potential for roosting bats. No trees on site were considered to have high or moderate potential for roosting bats. For a more detailed summary, including a summary of the potential roost features (PRFs) identified and photographs of the high potential trees, see **Appendix 2**.

Table 3.4 Summary of the results from the PBRA assessment undertaken on the 11 onsite trees and the recommended further required works where necessary. The location of the trees with bat roost potential, T1, T2 , and T3, are shown on the Habitat Features and Potential Bat Roost Features Plan 13340/P02b)

Tree Number	Bat Roost Potential	Recommended Further Works
T4, T5, T6, T7, T8, T9, T10, T11	Negligible	N/A
T1, T2, T3	Low	Any works are required to be carried out under the supervision of an ECoW (Collins, 2016)

Dusk Emergence Survey

3.31 Two emergence re-entry surveys were undertaken on trees T1 and T2, during which no emergences or re-entries were observed.

3.32 Although no emergences were recorded, low levels of bat activity were observed and common pipistrelle, soprano pipistrelle, and noctule were observed. The most common bat recorded during the surveys were soprano pipistrelle, and noctule were only recorded once.

3.33 Bats were observed foraging over the tree canopies, car park and towards the railway tracks to the south of the site and were also heard commuting over site.

Badger

3.34 One record of badger *Meles meles* was returned by the data search from 2018, however the location has not been provided, due to the confidential nature of badger records.

3.35 The site does not contain any suitable habitat for badgers and taking into account the urban environment, they are considered to be likely absent from site and are not discussed further within this report.

Birds

3.36 338 records of birds were returned by the data search including those listed on the Birds of Conservation Concern (BoCC) red list including house sparrow *Passer domesticus* (Richmond BAP species) and starling *Sturnus vulgaris* (London BAP species) and those on the amber list including swift *Apus apus* (Richmond BAP species) and house martin *Delichon urbicum*.

3.37 The site could support common and widespread bird species however, it is considered unlikely that the site could support notable assemblages of breeding or wintering birds. As such, no further work is required regarding notable assemblages of breeding or wintering birds.

3.38 The introduced shrub, scattered trees and ivy scrub have the potential to support nesting birds.

Invertebrates

3.39 220 records of stag beetle *Lucanus cervus* were returned by the data search, with the nearest being approximately 0.86km from site and the most recent in 2019.

3.40 The site is not considered to support suitable habitat for stag beetle as the scattered trees are well maintained and do not contain large amounts of deadwood. As such, stag beetle are not considered further within this report.

Western European Hedgehog

3.41 96 records of Western European hedgehog *Erinaceus europaeus (*Richmond BAP species*)* were returned by the data search, with the nearest record being approximately 0.12km south and the most recent from 2018.

3.42 The hedgerow and introduced shrub could provide habitat for foraging and commuting hedgehog.

Other Notable Species

3.43 No records of white-clawed crayfish *Austropotamobius pallipes*, European water vole *Arvicola terrestris*, Eurasian otter *Lutra lutra*, hazel dormouse *Muscardinus avellanarius* or reptiles were returned by the data search. Due to the absence of suitable habitat on site and lack of records, it is considered that these species are not present on site and as such are not discussed further within this report.

Invasive Species

3.44 Invasive species are those listed under Schedule 9 of the Wildlife and Countryside Act 1981. With regard to invasive plant species (listed under Part II of Schedule 9), it is an offence to plant or otherwise cause to grow in the wild any plant which is included in Part II of Schedule 9.

3.45 Snowberry and *Cotoneaster* were both observed on site within the introduced shrub and hedgerow.

3.46 Although the *Cotoneaster* was not identified to species level, for the purpose of this report it is considered that the *Cotoneaster* present on site is a Schedule 9 species. In addition to this, *Cotoneaster* is a Category 2 LISI species (species of high impact or concern present at specific sites that require attention (control, management, eradication etc))[6]. Snowberry is not listed on Schedule 9 of the WAC Act (1981), however it is also a Category 2 LISI species. As such, both of these species should be carefully removed during construction.

[6] http://www.londonisi.org.uk/what-and-where/species-of-concern/

Section 4: Potential Impacts, Mitigation and Enhancements

Proposed Development

4.1 The proposals are for the erection of three no. residential dwellings (Class C3) with associated parking, access, and landscaping. A green roof will be installed as a part of the scheme, a suggested species mix for which is included in **Appendix 8**.

4.2 The potential consequences with respect to future development of the site are set out below along with design advice, with reference to relevant legislation and planning policy, which is summarised in **Appendix 1**.

Protected Sites

Statutory Sites

4.3 None of the five statutory sites are found within the site boundary or directly adjacent to the site and as such it is considered that direct impacts on these sites as a result of the development can be ruled out.

4.4 Statutory sites can be negatively impacted via indirect impact pathways such as recreation and air quality.

Internationally Designated Statutory Sites

4.5 The development proposals are for three new residential units and as such it is considered that any impacts on these five sites through recreational pressure or air quality would be negligible. Moreover, with regards to Wimbledon Common and Richmond Park SACs the qualifying features of these sites are not thought to be negatively impacted through recreational pressure[7]. Richmond SAC is designated for the stag beetle which is dependent on the presence of mature trees and deadwood. The habitat the stag beetle relies on is not impacted by recreational pressure, with the exception of small numbers of individuals removing deadwood from site[7].

4.6 Wimbledon Common is however, also designated for its heathland habitats which can be vulnerable to increases in recreational pressure. According to the most up to date Greater London Authority Plan Habitat Regulations Assessment[7], the main hotspots for recreation at this site are the grassland areas which do not represent any SAC features. Moreover, the Natural England condition assessment for the SAC concludes that there are no indications of disturbance to this qualifying features[7].

4.7 As detailed within the most up to date Greater London Authority Plan Habitat Regulations Assessment[7], although the components of the South West London Waterbodies SPA are vulnerable to recreational disturbance, Kempton Park East Reservoir, Stain Hill Reservoirs and the Red House Reservoir are either not accessible to the public or are carefully managed for visitor numbers. Princes Lake and Befont Lakes components are currently both open to the public, with

[7] https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/intend-publish-london-plan-2019

Princes Lake being a large water ski site. It is however noted though that these uses do not appear to negatively impact those qualifying features of the SPA that use these components.

4.8 Considering the above and the small scale of the development, it is considered unlikely that the proposals would have any significant likely effect on the internationally-designated sites or their conservation objectives as a result of indirect pressures due to an increase in recreational pressure on the European designated sites found within a 10km radius of the site.

4.9 In terms of air quality, the qualifying feature of Richmond Park, stag beetle, is not thought to be impacted by air quality and the qualifying heathlands within Wimbledon Common already exceeds the critical load range for nitrogen deposition. The South West London Waterbodies SPA, open water habitat is considered to be phosphate limited rather than nitrogen limited, as it is the phosphate availability which controls the growth of macrophytes[7].

4.10 The policies within the London plan are said to aim to improve the air quality in London considerably over the planned period[8]. With this in mind, in addition to the small number of vehicles likely associated with the site in comparison to the current capacity of the car park and the immediate residential access to St Margaret's train station, it is not considered likely that the proposals would lead to a likely significant effect on the conservation objectives of the Wimbledon Common SAC, Richmond Park SAC or South West London Waterbodies SPA.

Statutory Designated sites

4.11 Hams Lands and Isleworth Ait LNR are over 1km from site and so considering the distance from site and the small scale of the proposals, the development is considered unlikely to have any negative indirect impacts on these two sites via pressures such as recreation or air quality. Moreover, as described above for the European designated sites, the capacity of the site to hold parked cars is due to decrease and so the proposals are considered unlikely to lead to any tangible air quality impacts on protected sites.

Non-statutory Sites

4.12 None of the eight non statutory sites are covered by the site or are directly adjacent to the site and as such it is considered that direct impacts as a result of the proposals do not require any consideration.

4.13 Residential developments can impact local sites through indirect pressures associated within recreation, air quality and rubbish dumping.

4.14 Moor Mead Recreation Ground SINC is close to the site (approximately 0.2km west) and therefore may be subject to greater levels of recreation or rubbish dumping as a result of the proposals. However, this SINC was viewed during the Phase 1 habitat survey and appears to be managed for recreational use, as the majority of the site comprises short mown amenity grassland with a playing ground and tennis courts. As such, considering the small scale of the proposals and the fact that the site is already heavily used and managed for recreation, it is considered unlikely that the proposals would have a tangible negative impact on Moor Mead Recreation Ground SINC.

4.15 Twickenham Junction Rough and River Crane at St Margaret's SINCs are not publicly accessible and only part of the River Crane at St Margaret's (Richmond side) SINC is accessible. As such these

[8] https://www.london.gov.uk/what-we-do/environment/london-environment-strategy

sites are not considered likely to be impacted through indirect pressures relating to recreation or rubbish dumping.

4.16 The remaining five SINCs are considered to be sufficiently distant from site to be likely to be affected by indirect impacts as a result of the proposals in relation to recreational pressure and rubbish dumping.

4.17 Due to the small scale of the proposals, which include three residential units, the capacity for parking is going to be reduced from the site's current level. As such, it is considered unlikely that the proposals will result in any indirect impacts on the eight SINCs resulting from a decrease in air quality.

4.18 The river habitats associated with River Crane at St Margaret's and River Crane at St Margaret's (Richmond side) are considered to be sufficiently distant from site to likely be subject to any adverse impacts as a result of run off from the construction works at the site.

Habitats

Scattered Broadleaved Trees

4.19 The proposals will result in the retention of all trees except T8, T10, and T11, to facilitate the development of the site.

4.20 This loss will be mitigated for by replacement tree planting which is detailed in the Arboricultural Impact Assessment (AIA) (**13340/R02c**).

Introduced Shrub

4.21 The proposals will result in the removal of all introduced shrub and as part of the construction work, all snowberry and cotoneaster should be carefully removed via excavating all root systems and chipping on-site.

4.22 Although the loss of the non-native invasive will be an enhancement, to mitigate the loss of the most common habitat structure on site, replacement native shrub planting will be included in two separate parcels on the site, as described in the soft landscape proposals (**13340/P05a**). A mixture of native shrub species such as dogwood C*ornus sanguinea*, hazel *Corylus avellana*, holly *Ilex aquifolium*, dog rose *Rosa canina*, and guelder rose *Viburnum opulus,* will be included.

4.23 Similar species mixes will be included within the proposed gardens, to further enhance the ecological value of the site.

Hedgerow (Species Poor)

4.24 The removal of the non-native invasive and LISI species, cotoneaster and non-native LISI species snowberry, will be an enhancement.

4.25 A native species-rich hedgerow is proposed to be introduced to the northeast of the site, as detailed in the soft landscape proposals (**13340/P05a**). This will comprise the following native, woody species; hazel *Corylus avellana*, holly *Ilex aquifolium*, common hawthorn *Crataegus monogyna*, european spindle *euonymus europaeus*, and blackthorn *prunus spinosa*. This will

considerably enhance the hedgerow habitat available on site, as well as offering improved opportunity for sheltering, commuting, or nesting fauna.

Scrub

4.26 The development will result in the removal of all native scrub found on site, which consists mostly of the ivy clad wall on the western boundary.

4.27 The removal of the ivy scrub will be mitigated by the proposed introduced native shrub planting associated with gardens and amenity areas.

Fauna

Bats

4.28 Bats are protected under The Conservation of Species and Habitats Regulations (2018, as amended) which makes it an offence to deliberately or recklessly capture, injure or kill such an animal, harass an animal or group of animals and obstruct access to a breeding site or resting place, or otherwise deny an animal use of a breeding site or resting place

Roosting

4.29 As stated in **Section 3**, trees T1 and T2 were subject to two emergence/re-entry surveys in 2020 in line with best practice guidance (Colins, 2016), during which no bats were observed emerging or re-entering. T1 and T2 are to be retained within the development proposals, should this change and a need for them to be removed arose, then a soft felling approach would be required.

4.30 After initially being identified as having 'moderate' potential following a survey in 2020, the roosting potential of T2 was reduced to 'low' as the cavity identified on T2 was determined to be subject to considerable exposure to the elements, making it less likely to be used byroosting bats than previously recorded.

4.31 Although there will be no requirement to apply for a European Protected Species (EPS) licence to enable the development to proceed, in the unlikely event bats are discovered during the felling works, then works must cease immediately and advice must be sought by a licensed bat ecologist.

4.32 All trees identified as having bat roosting potential on site are to be retained within the development. However, if felling was required at a later date, a soft felling approach would be required.

4.33 The site will be enhanced for roosting bats by including bat boxes into the scheme design. This will be achieved by using free hanging exterior bat boxes on the new buildings, such as the "Schwegler 1F Bat Box" or by using integrated brick bat boxes such as the "Ibstock Enclosed Bat Box" which can be incorporated into the design of the buildings. The exact number, location, and specification of bat boxes will be specified in a Landscape and Ecological Management Plan (LEMP), which can be secured by a suitably worded planning condition. **Appendix 4** contains more detailed information on possible bat box specifications.

Foraging

4.34 It is clear from the survey results that the site is utilised by low numbers of foraging bats, however, this activity is limited to more light tolerant species common pipistrelle and soprano pipistrelle. Bats were observed foraging over the tree canopies, over the car park and offsite towards the railway track to the south. Full details of the bats observed during the surveys are included within **Appendix 3**.

4.35 The proposals would result in the loss of the car park and three onsite trees. The proposals currently include the establishment of gardens associated with the three new residential units, and five proposed replacement trees (**Appendix 6**). It is considered that these landscaping proposals would mitigate for the loss of the current foraging habitat.

4.36 The site will be further enhanced for foraging through establishing areas of native shrub plating within the proposed gardens. The proposed green roof will also feature a species mix designed to support invertebrate populations, further enhancing the foraging opportunities for bats on the site, details of which are included in **Appendix 8**. Features such as insect hotels could be incorporated into the design to not only improve invertebrate biodiversity on the site, but also provide greater foraging opportunities for bats. The exact number, location, and specification of bat boxes will be specified in a Landscape and Ecological Management Plan (LEMP), which can be secured by a suitably worded planning condition.

Lighting

4.37 The site is currently well lit, being situated in a residential area and adjacent to the railway tracks. However, to secure the sites' value for bats in the long term, a sensitive lighting strategy could be implemented. Sensitive lighting measures may include low bollard lighting, use of hoods and cowls on lamps and use of low-pressure sodium or, where glass glazing is preferred, use of high pressure sodium instead of metal halide lamps (Collins, 2016; BCT and Institute of Lighting Engineers, 2009).

4.38 In particular, any newly installed bat boxes and areas of ecological landscaping, such as green roofs and boundary planting should be subject to a sensitive lighting scheme.

Birds

4.39 In England and Wales, birds and their nests are protected under the Wildlife and Country-side Act (1981) (as amended).

4.40 The existing on site scattered trees and introduced scrub have the potential to support common and widespread nesting birds. Any impacts to nesting birds which would potentially be using the site will be mitigated through the construction phase of works by sensitive timing of works. For instance, scheduling any vegetation works for outside of the core nesting bird season (March-August,), although nests can be present at any time of year. If works must take place during the breeding bird season, the vegetation must first be checked for nesting birds by a suitably qualified ECoW. Should any active nests be found during works, a suitable buffer must be erected around the nest and no works may take place within that buffer until the nest can be confirmed fledged or inactive by an ECoW.

4.41 New nesting opportunities will be provided through the incorporation of new native planting and bird boxes into the scheme design. In particular, bird boxes that target Richmond BAP species

swift and house sparrow could be used, such as the "No. 16 Schwegler Swift Box" and "1SP Schwegler Sparrow Terrace". **Appendix 5** contains more detailed information on bird box specifications.

Western European Hedgehog

4.42 Western European hedgehogs are listed under Section 41 of the NERC act and as a result, public bodies must take the conservation of hedgehogs into consideration when undertaking any of its functions. Hedgehogs are also a Richmond upon Thames BAP species and as such, species-specific enhancements for hedgehog should be considered.

4.43 The border landscaping that could offer commuting and foraging habitat for hedgehogs is proposed to be removed. This could be mitigated for by the native scrub planting as aforementioned.

4.44 Any fence panels used to separate garden areas could have hedgehog holes in them to retain the connectivity of the site for hedgehogs. The site could also be enhanced for hedgehogs through the placement of hedgehog houses in areas of native planting within the site. Sensitive construction methods should be put in place during the construction phase of the development to prevent harm to any hedgehogs that may be using the site. These would include measures such as the safe storage and disposal of chemicals and covering up holes at night-time. These measures could be secured through inputs into a Construction Environmental Management Plan (CEMP).

Section 5: Conclusion

5.1 The site is not covered by nor adjacent to any sites that are subject to statutory or non-statutory protection and none are considered likely to be negatively affected by indirect impact pathways as a result of the proposals.

5.2 The habitats on site were found to be either of negligible ecological importance (bare ground, hardstanding, introduced shrub, scrub, and species poor hedgerow) or of local ecological importance (scattered broadleaved trees). Those of negligible ecological importance require no mitigation for their loss and it is considered that any proposed loss of those habitats of local ecological importance can be mitigated for through replacement tree and native shrub planting.

5.3 The non-native invasive snowberry and *Cotoneaster* will be carefully and wholly removed during works.

5.4 Two of the onsite trees identified as having bat roost potential, trees T1 (low) and T2 (moderate), were subject to two emergence/re-entry surveys in 2020, during which no bats were observed emerging or re-entering the PRFs. Following an updated PBRA undertaken in March 2022, trees T1, T2, and T3 were all identified as being of 'low' potential for roosting bats. No further surveys were undertaken on these trees and they are proposed for retention within the layout.

5.5 Should the trees later be subject to felling, a soft felling approach will be required. Tree T3, which was considered to have low bat roosting potential following a PBRA undertaken in 2022, was not subject to a further survey, but is to be retained within the proposals and so will not require further works.

5.6 Following completion of a BNG assessment, the net habitat unit change is +0.01 habitat units (baseline = 0.27, post-development = 0.28 habitat units) in addition to a net hedgerow change of +0.04 units (baseline = 0.02, post-development = 0.04 hedgerow units). Overall, the development has a 4.69% habitat and a 191.83% hedgerow unit increase.

5.7 It is considered that the proposals present the opportunity to enhance a site which offers little biodiversity value in its current state and supports a flora dominated by non-native invasive species. The removal of the non-native invasive species and the incorporation of an ecologically minded landscaping plan which comprises tree and native shrub planting could enhance the site for biodiversity.

5.8 Moreover, it is considered that the proposals present the opportunity to enhance the site for protected species. Nesting and roosting opportunities could be increased on site through the incorporation of bird and bat boxes, hedgehog houses, and insect hotels and planting a range of native woody and shrubby species , which would provide a food source year round and will increase the amount of insect forage on site for bats and birds. The inclusion of a green roof also presents an opportunity to create suitable habitat for invertebrates and in turn foraging opportunity for bats.

5.9 Overall, those valuable ecological resources that exist, or could exist, at the site, could be accommodated by the adoption of design principles. Where impacts may occur, these could be mitigated through creation of new habitat within the site.

5.10 In conclusion, it is considered that the principle of development at the site should be compliant with the relevant planning policy and legislation with regard to ecology.

Appendix 1: Legislation and Planning Policy

National Planning Policy Framework (NPPF), July 2021

A1.1. The National Planning Policy Framework (NPPF) was updated in July 2021 and sets out the Government's planning policies for England and how these should be applied. It replaces the National Planning Policy Framework published in July 2019.

A1.2. Paragraph 11 states that:

"Plans and decisions should apply a presumption in favour of sustainable development."

A1.3. Section 15 of the NPPF (paragraphs 174 to 182) considers the conservation and enhancement of the natural environment including habitats and biodiversity (paragraphs 179-182)

A1.4. Paragraph 174 states that planning and decisions should contribute to and enhance the natural and local environment by:

- "protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland; and
- minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures"

A1.5. Paragraph 175 states that plans should distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

A1.6. Paragraph 179 states that in order to protect and enhance biodiversity and geodiversity, plans should:

- "Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
- promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity."

A1.7. When determining planning applications, Paragraph 180 states that local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- "if significant harm to biodiversity 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;

- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

- development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and

- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate."

A1.8. As stated in paragraph 181 the following should be given the same protection as habitats sites:

- "potential Special Protection Areas and possible Special Areas of Conservation;

- listed or proposed Ramsar sites; and

- sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites."

A1.9. Paragraph 182 states that the presumption in favour of sustainable development does not apply where the planned project is likely to have a significant effect on a habitat site (alone or in combination with other plans or projects) unless an appropriate assessment has concluded the plan or project will not adversely affect the integrity of the habitats site.

Local Planning Policy

London Plan 2021

A1.10. *Policy G1 Green infrastructure*

London's network of green and open spaces, and green features in the built environment should be protected and enhanced. Green infrastructure should be planned, designed and managed in an integrated way to achieve multiple benefits.

Boroughs should prepare green infrastructure strategies that identify opportunities for cross-borough collaboration, ensure green infrastructure is optimised and consider green infrastructure in an integrated way as part of a network consistent with Part A.
Development Plans and area-based strategies should use evidence, including green infrastructure strategies, to:

- *identify key green infrastructure assets, their function and their potential function; and*
- *identify opportunities for addressing environmental and social challenges through strategic green infrastructure interventions.*
- *Development proposals should incorporate appropriate elements of green infrastructure that are integrated* into London's wider green infrastructure network.

A1.11. *Policy* G5 *Urban Greening*

Major development proposals should contribute to the greening of London by including urban greening as a fundamental element of site and building design, and by incorporating measures such as high-quality landscaping (including trees), green roofs, green walls and nature-based sustainable drainage;

Boroughs should develop an Urban Greening Factor (UGF) to identify the appropriate amount of urban greening required in new developments. The UGF should be based on the factors set out in Table 8.2, but tailored to local circumstances. In the interim, the Mayor recommends a target score of 0.4 for developments that are predominately residential, and a target score of 0.3 for predominately commercial development (excluding B2 and B8 uses); and

Existing green cover retained on site should count towards developments meeting the interim target scores set out in (B) based on the factors set out in Table 8.2.

A1.12. *Policy G6 Biodiversity and access to nature*

Sites of Importance for Nature Conservation (SINCs) should be protected.

Boroughs, in developing Development Plans, should:

- *use up-to-date information about the natural environment and the relevant procedures to identify SINCs and ecological corridors to identify coherent ecological networks*
- *identify areas of deficiency in access to nature (i.e. areas that are more than 1km walking distance from an accessible Metropolitan or Borough SINC) and seek opportunities to address them*
- *support the protection and conservation of priority species and habitats that sit outside of the SINC network, and promote opportunities for enhancing them using Biodiversity Action Plans*
- *seek opportunities to create other habitats, or features such as artificial nest sites, that are of particular relevance and benefit in an urban context*
- *ensure designated sites of European or national nature conservation importance are clearly identified and impacts assessed in accordance with legislative requirements.*

- *Where harm to a SINC is unavoidable, and where the benefits of the development proposal clearly outweigh the impacts on biodiversity, the following mitigation hierarchy should be applied to minimise development impacts:*
- *avoid damaging the significant ecological features of the site*
- *minimise the overall spatial impact and mitigate it by improving the quality or management of the rest of the site*
- *deliver off-site compensation of better biodiversity value.*

Development proposals should manage impacts on biodiversity and aim to secure net biodiversity gain. This should be informed by the best available ecological information and addressed from the start of the development process.

Proposals which reduce deficiencies in access to nature should be considered positively.

A1.13. *Policy G7 Trees and woodlands*

London urban forest and woodlands should be protected and maintained, and new trees and woodlands should be planted in appropriate locations in order to increase the extent of London's urban forest –the area of London under the canopy of trees.

In their Development Plans, boroughs should:

- *protect 'veteran' trees and ancient woodland where these are not already part of a protected site*
- *identify opportunities for tree planting in strategic locations.*
- *Development proposals should ensure that, wherever possible, existing trees of value are retained. If planning permission is granted that necessitates the removal of trees there should be adequate replacement based on the existing value of the benefits of the trees removed, determined by, for example, i-tree or CAVAT or another appropriate valuation system. The planting of additional trees should generally be included in new developments –particularly large-canopied species which provide a wider range of benefits because of the larger surface area of their canopy.*

Richmond Upon Thames Local Plan (adopted 2018)

A1.14. The Richmond Upon Thames Local Plan sets out the policies and guidance for development in the borough over the next 15 years. The policies relevant to ecology are as follows:

A1.15. *Policy LP 12 Green Infrastructure*

Green Infrastructure Green infrastructure is a network of multi-functional green spaces and green features, which provides multiple benefits for people, nature and the economy.

A. To ensure all development proposals protect, and where opportunities arise enhance, green infrastructure, the following will be taken into account when assessing development proposals:

a. the need to protect the integrity of the green spaces and features that are part of the wider green infrastructure network; improvements and enhancements to the green infrastructure network are supported;

b. its contribution to the wider green infrastructure network by delivering landscape enhancement, restoration or re-creation;

c. incorporating green infrastructure features, which make a positive contribution to the wider green infrastructure network.

B. The hierarchy of open spaces, as set out in the table below, will be protected and used in accordance with the functions shown.

Type and Size	
Regional Parks (400ha+)	Large areas, corridors or networks of open space, the majority of which will be publicly accessible and provide a range of facilities and features offering recreational, ecological, landscape, cultural or green infrastructure benefits. Offer a combination of facilities and features that are unique within London, are readily accessible by public transport and are managed to meet best practice quality standards.
Metropolitan Parks (60-400 ha)	Large areas of open space that provide a similar range of benefits to Regional Parks and offer a combination of facilities at a sub-regional level, are readily accessible by public transport and are managed to meet best practice quality standards.
District Parks (20-60ha)	Large areas of open space that provide a landscape setting with a variety of natural features providing a wide range of activities, including outdoor sports facilities and playing fields, children's play for different age groups and informal recreation pursuits as well as visual amenity.
Local Parks (2-20ha)	Providing for court games, children's play, sitting out areas, visual amenity and nature conservation areas.
Small local parks and open spaces (less than 2 ha)	Gardens, sitting out areas, children's play spaces or other areas of a specialist nature, including nature conservation areas as well as visual amenity
Pocket Parks (under 0.4ha)	Small areas of open space that provide natural surfaces and shaded areas for informal play and passive recreation that sometimes have seating and play equipment as well as visual amenity.
Linear Open Spaces (variable)	Open spaces and towpaths alongside the Thames and other waterways; paths, disused railways; nature conservation areas; and other routes that provide opportunities for informal recreation. Often characterised by features or attractive areas which are not fully accessible to the public but contribute to the enjoyment of the space and visual amenity.

A1.16. *Policy LP 15 Biodiversity*

A. The Council will protect and enhance the borough's biodiversity, in particular, but not exclusively, the sites designated for their biodiversity and nature conservation value, including the connectivity between habitats. Weighted priority in terms of their importance will be afforded to protected species and priority species and habitats including National Nature Reserves, Sites of Special Scientific Interest (SSSI) and Other Sites of Nature Importance as set out in the Biodiversity Strategy for England, and the London and Richmond upon Thames Biodiversity Action Plans. This will be achieved by:

1. protecting biodiversity in, and adjacent to, the borough's designated sites for biodiversity and nature conservation importance (including buffer zones), as well as other existing habitats and features of biodiversity value;
2. supporting enhancements to biodiversity;
3. incorporating and creating new habitats or biodiversity features, including trees, into development sites and into the design of buildings themselves where appropriate; major developments are required to deliver net gain for biodiversity, through incorporation of ecological enhancements, wherever possible;
4. ensuring new biodiversity features or habitats connect to the wider ecological and green infrastructure networks and complement surrounding habitats;
5. enhancing wildlife corridors for the movement of species, including river corridors, where opportunities arise; and
6. maximising the provision of soft landscaping, including trees, shrubs and other vegetation that support the borough-wide Biodiversity Action Plan.

B. Where development would impact on species or a habitat, especially where identified in the relevant Biodiversity Action Plan at London or local level, or the Biodiversity Strategy for England, the potential harm should:

1. firstly be avoided (the applicant has to demonstrate that there is no alternative site with less harmful impacts),
2. secondly be adequately mitigated; or
3. as a last resort, appropriately compensated for.

A1.17. *Policy* LP *16 Trees, Woodland and Landscape*

A. The Council will require the protection of existing trees and the provision of new trees, shrubs and other vegetation of landscape significance that complement existing, or create new, high quality green areas, which deliver amenity and biodiversity benefits.

B. To ensure development protects, respects, contributes to and enhances trees and landscapes, the Council, when assessing development proposals, will:

Trees and Woodlands

1. resist the loss of trees, including aged or veteran trees, unless the tree is dead, dying or dangerous; or the tree is causing significant damage to adjacent structures; or the tree has little or no amenity value; or felling is for reasons of good arboricultural practice; resist development that would result in the loss or deterioration of irreplaceable habitat such as ancient woodland;

2. resist development which results in the damage or loss of trees that are considered to be of townscape or amenity value; the Council will require that site design or layout ensures a harmonious relationship between trees and their surroundings and will resist development which will be likely to result in pressure to significantly prune or remove trees;

3. require, where practicable, an appropriate replacement for any tree that is felled; a financial contribution to the provision for an off-site tree in line with the monetary value of the existing tree to be felled will be required in line with the 'Capital Asset Value for Amenity Trees' (CAVAT);

4. require new trees to be of a suitable species for the location in terms of height and root spread, taking account of space required for trees to mature; the use of native species is encouraged where appropriate;

5. require that trees are adequately protected throughout the course of development, in accordance with British Standard 5837 (Trees in relation to design, demolition and construction – Recommendations).

The Council may serve Tree Preservation Orders or attach planning conditions to protect trees considered to be of value to the townscape and amenity and which are threatened by development. Landscape 1. require the retention of important existing landscape features where practicable; 2. require landscape design and materials to be of high quality and compatible with the surrounding landscape and character; and 3. encourage planting, including new trees, shrubs and other significant vegetation where appropriate.

A1.18. *Policy* LP *17 Green Roofs and Walls*
Green roofs and/or brown roofs should be incorporated into new major developments with roof plate areas of 100sqm or more where technically feasible and subject to considerations of visual impact. The aim should be to use at least 70% of any potential roof plate area as a green / brown roof.

The onus is on an applicant to provide evidence and justification if a green roof cannot be incorporated. The Council will expect a green wall to be incorporated, where appropriate, if it has been demonstrated that a green / brown roof is not feasible.

The use of green / brown roofs and green walls is encouraged and supported in smaller developments, renovations, conversions and extensions.

A1.19. The Borough of Richmond upon Thames is in the process of producing a new Local Plan, however no draft policies are available currently.

Biodiversity Action Plans

A1.20. The UK Post-2010 Biodiversity Framework succeeded the UK BAP partnership in 2011 and covers the period 2011 to 2020. However, the lists of Priority Species agreed under the UK BAP still form the basis of much biodiversity work in the UK. The current strategy for England is 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' published under the UK Post-2010 UK Biodiversity Framework. Although the UK BAP has been superseded, Species Action Plans (SAPs) and Habitat Action Plans (HAPs) developed for the UK BAP remain valuable resources for background information on priority species under the UK Post-2010 Biodiversity Framework.

A1.21. Most areas now possess a Local BAP (LBAP) to complement the national strategy where priority habitats and species are identified, and targets set for their conservation. BAP's are the key nature conservation initiative in the UK, working at national, regional and local levels.

The London BAP

A1.22. The London BAP outlines Species Action Plans for the following species and habitats:

A1.23. Species

- Bats
- Black poplar
- House sparrow
- Mistletoe
- Reptiles
- Sand Martin
- Stag Beetle
- Water vole

A1.24. Habitats

- Acid grassland
- Chalk grassland
- Heathland
- Parks and urban green spaces
- Private gardens
- Reedbeds
- Rivers and Streams
- Standing Water
- Tidal Thames
- Wasteland

London Borough of Richmond Upon Thames BAP (2019)

A1.25. The London Borough of Richmond Upon Thames BAP, launched in 2019 is the first major revision of the local BAP since 2011 and provides an update on the original local BAP habitats and species as well as provided plans for additional species. It outlines Species Action Plans for the following habitats and species:

A1.26. Habitats

- Acid Grassland
- Ancient and Veteran Trees
- Broad Leaved Woodland
- Reedbeds
- Tidal Thames
- Hedgrows
- Neutral Grassland
- Private Gardens
- Rivers
- Streams

A1.27. Species

- Bats
- Song Thrush

- Stag Beetle
- Tower Mustard
- Water Vole
- Native Black Poplar
- Hedgehogs
- House Sparrow
- Swift
- White-letter hairstreak
- Elm
- Pollinators

Appendix 2: Preliminary Bat Roost Assessment

A2.1 **Table A2.1** contains the details of the PBRA for each tree found on site. The location of trees T1-T11 is shown on the Habitat Features and Potential Bat Roost Features Plan (**13340/P04)**.

Tree Number	Species	Potential Bat Roost Features	Potential Bat Roost Potential
T1	*Tilia sp.*	No discernible PRFs from ground assessment but multiple stems and ivy cover of 100% (see **Photograph A2.1**)	Low
T2	*Tilia sp.*	Cavity 5m up on the eastern aspect of the tree (see **Photograph A2.2**)	Low
T3	*Tilia sp.*	Cavity near the top of the trunk (see **Photograph A2.3**)	Low
T4	Hornbeam	No visible PRFs	Negligible
T5	Hornbeam	Branch union 6m up on the tree with negligible bat potential	Negligible
T6	Hornbeam	No visible PRFs	Negligible
T7	*Prunus sp.*	Upward facing crack with negligible bat potential	Negligible
T8	Hornbeam	No visible PRFs	Negligible
T9	Hornbeam	Upward facing crack with negligible bat potential	Negligible
T10	Hornbeam	No visible PRFs	Negligible
T11	Hornbeam	No visible PRFs	Negligible

Table A2.1 Details of PBRA of onsite trees.

Photograph A2.1 Multi-stemmed tree T1 with dense ivy cover which could be concealing possible PRFs.

Photograph A2.2 Cavity present on T2.

Photograph A2.3 Cavity present on T3.

Appendix 3: Raw Bat Survey Data

A3.1 See the Bat Surveyor Location Plan **13340/P04** for the locations of the two surveyors

Emergence Survey Visit 1:

Surveyor: Ben Nelumbu		
Date: 06/08/2020		
Survey: Dusk		
Tree: T1		
Surveyor Location: SL1		
Equipment used: Batlogger		
Sunset time: 20:40	Start time: 20:25	End Time: 22:10
Weather	At Start	At End
Cloud Cover (%):	5	0
Wind (Beaufort Scale):	0	0
Precipitation	0	0
Temperature (C°)	27	26
Notes: three occurrences of common pipistrelle, with two passing over site and one foraging, twelve occurrences of soprano pipistrelle with bats foraging around the trees, over the car park and towards the rail corridor to the south of the site and one noctule commuting over the site. No emergences.		

Table A3.1 Survey data for Ben Nelumbu

Surveyor: Rebekah Baker		
Date: 06/08/2020		
Survey: Dusk		
Tree: T2		
Surveyor Location: SL2		
Equipment used: Ediroll and Bat Box Duet		
Sunset time: 20:40	Start time: 20:25	End Time: 22:10
Weather	At Start	At End
Cloud Cover (%):	5	0
Wind (Beaufort Scale):	0	0
Precipitation	0	0
Temperature (C°)	27	26
Notes: three occurrences of common pipistrelle with one foraging over the canopy, two commuting and one foraging and five occurrences of soprano pipstrelle foraging. All bats were heard and not seen. No emergences.		

Table A3.2 Survey data for Rebekah Baker

Re-entry survey Visit 2

Surveyor: Ben Nelumbu		
Date: 26/08/2020		
Survey: Dawn		
Tree: T1		
Surveyor Location: SL1		
Equipment used:		
Sunrise time: 6:05	Start time: 4:35	End Time: 6:20
Weather	At Start	At End
Cloud Cover (%):	40	100
Wind (Beaufort Scale):	2-3	2
Precipitation	0	0
Temperature (C°)	15	15
Notes: Three occurrences of soprano pipistrelle all heard but not seen, passing over the site. No emergences and no foraging activity.		

Table A3.3 Survey data for Ben Nelumbu

Surveyor: Rebekah Baker		
Date: 26/08/2020		
Survey: Dawn		
Tree: T2		
Surveyor Location: SL2		
Equipment used: Bat Box Duet and Anabat Express		
Sunrise time: 6:05	Start time: 4:35	End Time: 6:20
Weather	At Start	At End
Cloud Cover (%):	40	100
Wind (Beaufort Scale):	2-3	2
Precipitation	0	0
Temperature (C°)	15	15
Notes: No emergences and no bats heard or seen.		

Table A3.4 Survey data for Rebekah Baker

Appendix 4: Bat Box Specifications

A4.1 External bat boxes (such as the Schwegler 1FF bat box) could be installed onto the walls of the site post-development or internal bat boxes (such as the Ibstock Enclosed bat box "C") could be integrated into the scheme design. These boxes offer suitable roosting conditions for crevice dwelling species such as common and soprano pipistrelle.

Figure A2.1: Schwegler 1FF bat boxes (image from: http://nhbs.com/)

Figure A2.2 Ibstock Enclosed bat box "C" (image from: http://nhbs.com/)

A4.2 The bat boxes should be installed at least 4m off the ground and positioned with an unobstructed approach. If possible, they should be placed where there will be no lighting directed towards them, with the boxes sited on the south, west and east aspects of buildings to receive maximum amounts of sunlight and warmth.

Appendix 5: Bird Box Specifications

A5.1 External bird boxes such as the "Schwegler 1B Nest Box" could be hung on external walls on the site post-development or internal bird boxes such as the "No. 17 Schwegler Swift Box" and "1SP Schwegler Sparrow Terrace" could be integrated into the building design . These boxes would increase the number of nesting opportunities for birds on site and specifically could be used to target Local BAP species such as the house sparrow and swift which depend on buildings for nests.

Figure A3.1 Schweglar 1B Nest Box (image from: https://www.nhbs.com/1b-schwegler-nest-box)

A5.2 These bird boxes should be installed at least 2m-4m off the ground, with the entrance facing between north and east.

Figure A3.2 1SP Schwegler Sparrow Terrace (image from https://gardenature.co.uk/product/sparrow-terrace-1sp-brown

A5.3 This bird box should be installed at least two meters of the ground with the entrance facing between north and east.

Figure A3.3 No. 17 Schwegler Swift Box (image from: https://www.nhbs.com/no-17b-schwegler-swift-nest-box-single-cavity)

This bird boxes should be installed at least six to seven meters above ground where there is unobstructive access and if possible, under the shelter of overhanging roofs, with the entrance facing between north and east.

Appendix 6: Proposed Site Layout

GODSTONE ROAD

WINCHESTER ROAD

Translucent Glazing

13
15

3

4

2

101

+6.13
+6.31
+6.38
+6.48
+6.27
+6.22
+6.27
+6.28
+6.27
+6.27
+6.23

Util/
Stor.
5.7
Sq.m

Wc
3.9
Sq.m

Living/
Dining/
Kitchen
41.1 Sq.m

Wc
3.6
Sq.m

Living/
Dining/
Kitchen
30.7 Sq.m

Wc
3.1
Sq.m

Living/
Dining/
Kitchen
39.7 Sq.m

2000

1500 Min.

0 1m 5m

N

Revision	Date	Description

Project
St Margarets Business Centre
Richmond, London

Drawing Title
GA Plan
Proposed Level GF

Drawing Number WP-0780-A-0100-P-00

Revision

Scale @ A3 1:200

Revision Date

Drawing Purpose
PLANNING

WIMSHURST PELLERITI

The Mews,
6 Putney Common, SW15 1HL

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wimshurst-pelleriti.com

Appendix 7: Biodiversity Net Gain Assessment

hello@tylergrange.com | 01285 831804 | www.tylergrange.co.uk

St Margaret's Business Park Biodiversity Net Gain Assessment Report 13340_R05_1st April 2022_HDBJ_CW

Introduction

1.1 Tyler Grange Group Ltd was instructed by Godstone Developments Ltd to undertake a Biodiversity Net Gain (BNG) assessment of a parcel of land at Godstone Road, St Margaret's, TW1 1JS (Grid Reference: TQ 16644 74119), hereinafter referred to as the 'site'. A detailed planning application is to be submitted to Richmond upon Thames local authority in April 2022 for the development of 3 residential dwellings, associated car parking, gardens, and landscaping.

1.2 To inform the application, an ecological assessment has been produced by Tyler Grange in March 2022 (Report reference: 13340_R01a_EA_HDBJ_NC_30032022) which included the results of a Phase I habitat survey and data search, an assessment of the effects, mitigation and enhancement measures in line with policy and legislation.

1.3 The site measures approximately 0.06 hectares and currently comprises a hardstanding car park featuring a species-poor hedgerow on the northern boundary, areas of introduced shrub, and scattered trees, (see Plan 13340/P02b). All habitats on site are described as being of negligible ecological importance, with the exception of the scattered trees, which are of local ecological importance.

1.4 As part of the Phase I survey, all habitats were assessed with reference to the UK Habitat Classification (The UK Habitat Classification Working Group, 2018[1]) and the Biodiversity Metric technical supplement (Natural England, 2021[2]) to determine their condition and ecological importance.

1.5 This survey work enables the accurate completion of Natural England's (NE) latest BNG metric (The Biodiversity Metric 3.0 Auditing and accounting for Biodiversity Calculator Tool, 2021) which should be reviewed in conjunction with this report. The condition assessments completed for the habitats pre and post construction are taken from the Condition Assessment Sheets (Excel format), 2021[2].

[1] Available online at: https://ukhab.org/ [visited 02/08/2021]
[2] Available online at: http://publications.naturalengland.org.uk/publication/6049804846366720 [visited 02/08/2021]

Existing Baseline

Bare Ground

1.6 The car park is bordered by areas of bare ground which accommodate occasional areas of introduced shrub, trees, or hedgerow, all of which are captured as separate habitats. The bare ground as a habitat is captured as poor condition.

Hardstanding

1.7 The majority of the site comprises a hardstanding car park, which does not have a condition applied to it.

Hedgerow (Species-poor)

1.8 The northern site boundary is lined with a hedgerow that comprises a mixture of non-native invasive snowberry *Symphoricarpos albus*, introduced firethorn *Pyracantha sp.* and native privet *Ligustrum vulgare*.

1.9 Given the species assemblage of the hedgerow, it is described as being of poor condition.

Introduced Shrub

1.10 Areas of non-native and invasive shrub plants are present around the edge of the site. Introduced shrub habitat can only be described as poor condition in the metric.

Urban Trees

1.11 Eleven native trees are present on the site, as there has been limited management and limited nearby vegetation in the immediate vicinity, the trees can only achieve a moderate condition.

Scrub

1.12 An area of ivy scrub is located on the western edge of the site, attached to a boundary wall and amongst areas of introduced shrub. Given the lack of species diversity, the scrub is described as poor condition.

1.13 The current habitat identified on site is captured below. It is noted that 3 out of the 11 trees existing on the site will be removed and replaced. Consequently, not all of the habitat described as 'Urban Tree' will be lost.

Habitat type	Area (hectares)/Length (km)	Condition	Units lost
Vacant/derelict land/ bareground	0.0188	Poor	0.04
Developed land; sealed surface	0.0368	N/A - Other	0.00
Introduced shrub	0.0099	Poor	0.02
Mixed scrub	0.0001	Poor	0.00
Urban Tree	0.0267	Moderate	0.07
Hedge Ornamental Non Native	0.022 (km)	Poor	0.02

Habitat Creation

1.14 The proposed scheme includes the introduction of the following habitat.

- Urban trees;
- Vegetated garden;
- Un-vegetated garden;
- Developed land;
- Species-rich hedgerow;
- Mixed scrub, and;
- Extensive green roof.

Proposed habitat	Area (hectares)/Length (km)	Condition	Habitat units delivered
Urban Tree	0.0203	Moderate	0.06
Vegetated garden	0.0156	Poor	0.03
Un-vegetated garden	0.0102	N/A - Other	0.00
Developed land; sealed surface	0.0356	N/A - Other	0.00
Mixed scrub	0.0057	Moderate	0.04
Extensive green roof	0.003	Poor	0.01
Native Species Rich Hedgerow	0.0166 (km)	Poor	0.06

Other Biodiversity Enhancements

1.15 In addition to the above points, further measures are to be implemented at the site that will assist with increasing biodiversity, including insect hotels and bat and bird boxes, although they are not considered within the BNG metric which deals with habitats and hedgerows only.

BNG Results Summary

1.16 Based on the proposed site layout, the net habitat unit change is +0.01 habitat units (baseline = 0.27, post-development = 0.28 habitat units) in addition to a net hedgerow change of +0.04 units (baseline = 0.02, post-development = 0.04 hedgerow units). Overall, the development has a 4.69% habitat and a 191.83% hedgerow unit increase.

Author: Harry Du Bois-Jones BSc

Appendix 8: High-Level Green Roof Specification

A8.1 Green roofs offer suitable habitat for a range of invertebrate taxa often associated with Open Mosaic Habitat or early successional communities. Due to changing land use in the UK, these habitats are often fragmented, or subject to degradation. Therefore, appropriately designed green roofs provide a proxy habitat for groups such as Coleoptera, Hemiptera and Arachnids which are reliant on access to nectar for foraging, substrate in which to over winter, and microclimates created by varying vegetation cover.

A8.2 A biodiverse green roof of benefit to invertebrates should be created in line with existing Buglife guidance (https://cdn.buglife.org.uk/2019/07/Creating-Green-Roofs-for-Invertebrates_Best-practice-guidance.pdf)to maximise the potential of attracting and maintaining a population of invertebrates on the roof. There are a number of considerations to be made when designing a green roof. Those of key importance for invertebrate communities are as follows:

A8.3 **Substrate Choice**: The choice of substrate will dictate the plant community that can be grown, and therefore the green roof's value to certain invertebrate groups, many of which can be associated directly with certain vegetation communities, or individual plant species. It is recommended that a fireclay-based substrate with a pH of between 6 - 8 and contains a high level of porous material is used. These substrates are nutrient poor and can therefore provide suitable growing conditions for a range of wildflowers which will provide valuable foraging opportunities for nectar feeding invertebrates.

A8.4 **Substrate Depth**: Variation in substrate depth across the extent of the green roof is an important consideration for establishing micro habitats which increase structural diversity, and therefore the carrying capacity of the green roof for invertebrate taxa. Thin areas of substrate may be sparsely vegetated, which offers warmer areas favoured by thermophilic (heat loving) species such as those often found in Hemiptera. Conversely, deeper areas may retain water more effectively, with deeper and wetter soils offering refuges or overwintering habitat.

A8.5 **Plant Selection**: Grasses and wildflowers of local provenance will readily colonise a new roof, and in some instances will provide habitats of high ecological value by way of natural regeneration. Natural recolonisation should not be relied on solely as the method of vegetating the roof, as this can result in undesirable competitive species taking over, which will decrease biodiversity and potentially invite structural issues in the instance of particularly invasive plants such as buddleia. Wildflower seeding or plug planting can be used as a method of establishing a plant community on the rood, with consideration made to select plants of local provenance. Other important considerations include plants that are suited to the substrate selected, low growing and hardy to establish a permanent cover. A variety of plants should be selected to offer foraging opportunities for both generalist and specialist nectar feeding insects - a non-exhaustive list is provided in pg. 11 of Buglife guidance "Creating Biodiverse Green Roofs for Invertebrates".

A8.6 **Structural Diversity / Microhabitats**: Structural diversity is of paramount importance for maintaining a biodiverse green roof as it replicates the open mosaic and early successional communities favoured by invertebrates. Features which should be incorporated into the design of the green roof, dependant on structural integrity and load bearing capability of the roof include:

- Open bare ground/crushed brick/rocks or gravel - these provide warm and fast drying habitat for a range of invertebrates which will bask in the sun.
- Log Piles/ dead wood - these offer suitable nesting and burrowing habitat for species such as beetles, flies, mining bees or wasps.
- South facing sand banks - these will offer suitable habitat for a variety of solitary bees and wasps to burrow in.

- Waterbodies / wet areas - these can be achieved by varying substrate depth as discussed above, however shallow and wide containers can be placed on the roof which will retain water and provide a further diversification of habitats in the green roof.

- Standard insect "hotels" and habitats walls - a variety of materials such as recycled building materials / bamboo canes and brash can create suitable overwintering or nesting habitat for a range of taxa.

A8.7 **Management**: The management of a green roof should comprise maintenance of drainage outlets to avoid the habitats becoming waterlogged, removal of non-target or undesirable plants such as buddleia, and maintenance of established habitats such as management of bare ground to prevent vegetation colonisation or rotational cuts of wildflower areas to maintain a nutrient poor status and foster the continual growth of a diverse sward. Monitoring can be undertaken to identify the need for remedial actions in the event habitats do not establish, and to assess the population of invertebrates the green roof is supporting.

Habitat Features & Potential Bat Roost Features Plan (13340/P02b)

- Site boundary
- Bare ground
- Hardstanding
- Introduced shrub
- Ivy clad wall
- Species-poor hedgerow
- Target Notes
- Scattered trees
- Trees with low bat roosting potential

N

Project	St. Margaret's Business Park, Twickenham
Drawing Title	Habitat Features and Potential Bat Roost Features Plan
Scale	Not to scale
Drawing No.	13340/P02b
Date	March 2022
Checked	HDBJ/PW

Tyler Grange

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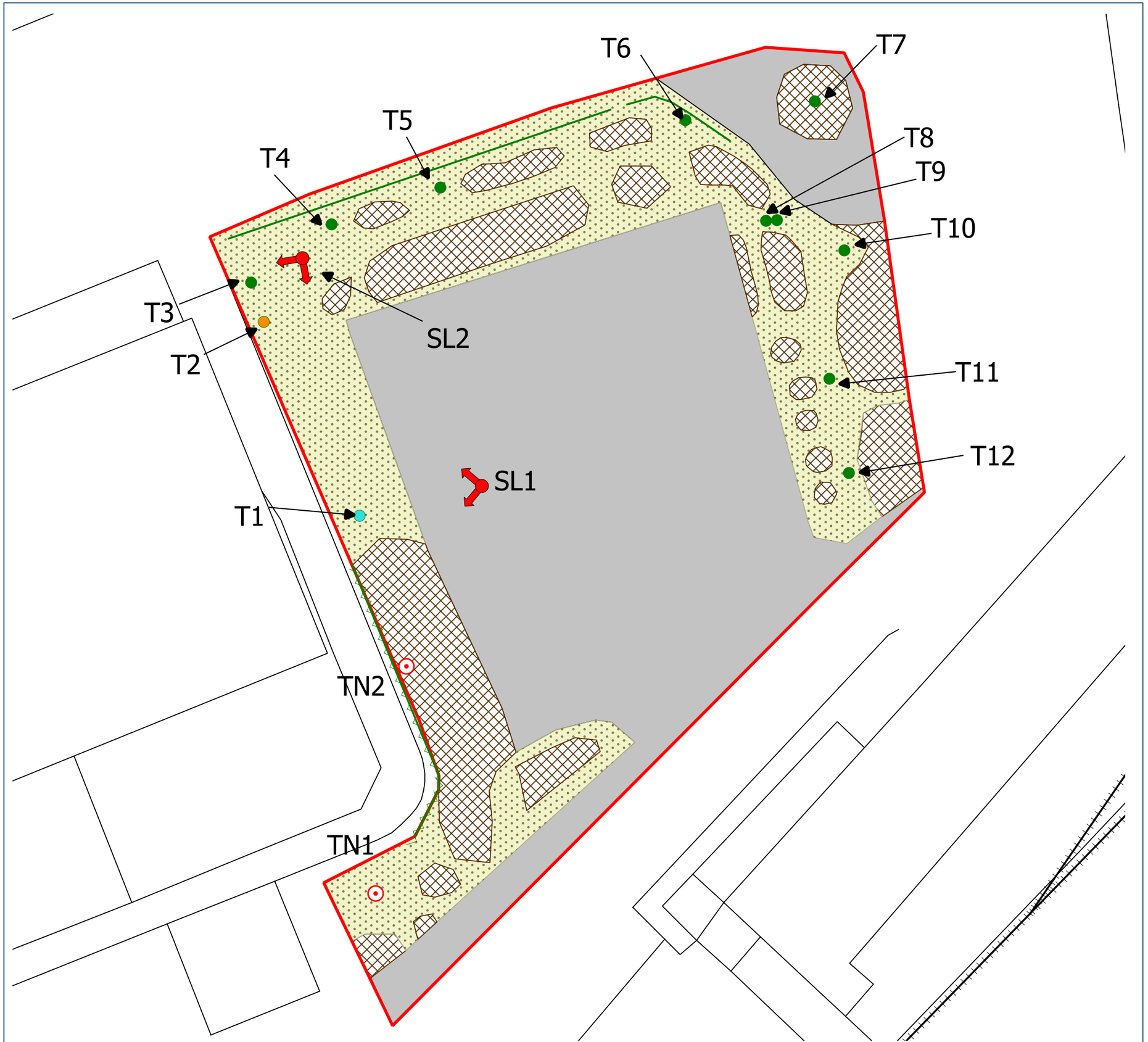
Bat Surveyor Location Plan (13340/P04)



- Red Line Boundary
- Bare Ground
- Hardstanding
- Introduced Shrub
- Ivy Clad Wall
- Hedgerow (Species Poor)
- Rail
- Scattered Trees
- Target Note
- Surveyor Location

Potential Bat Features

- Tree with Low Bat Potential
- Tree with Moderate Bat Potential

N

0 2.5 5 m

Project	St Margaret's Business Park
Drawing Title	**Bat Surveyor Location Plan**
Scale	As Shown (Approximate)
Drawing No.	13340/P04
Date	September 2020
Checked	RB

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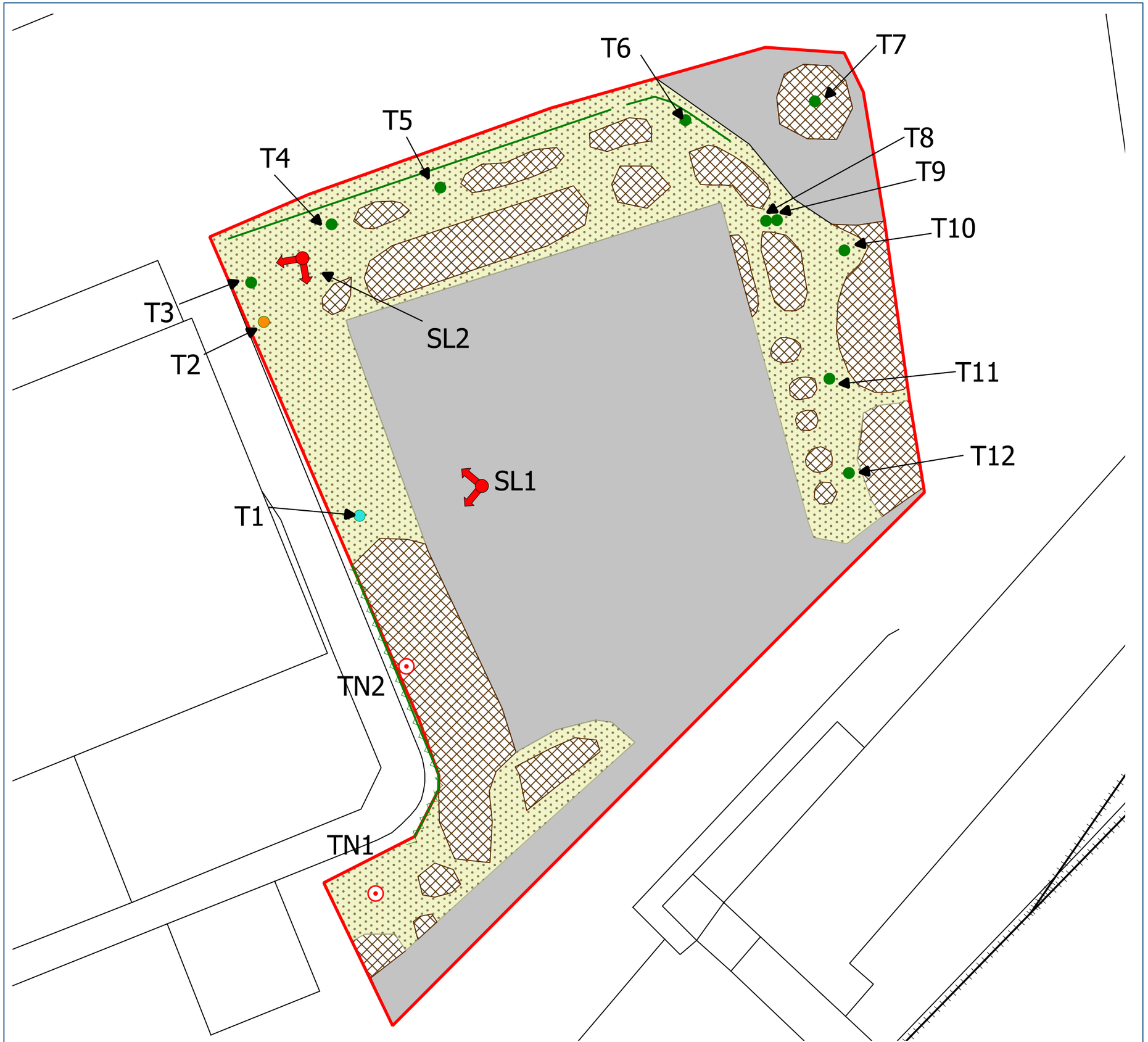
Plan 3: Soft Landscape Proposals



- Red Line Boundary
- Bare Ground
- Hardstanding
- Introduced Shrub
- Ivy Clad Wall
- Hedgerow (Species Poor)
- Rail
- Scattered Trees
- Target Note
- Surveyor Location

Potential Bat Features

- Tree with Low Bat Potential
- Tree with Moderate Bat Potential

N

0 2.5 5 m

Project	St Margaret's Business Park
Drawing Title	**Bat Surveyor Location Plan**
Scale	As Shown (Approximate)
Drawing No.	13340/P04
Date	September 2020
Checked	RB

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Plan 3: Soft Landscape Proposals

Planting Schedule

Trees

Number	Species	Specification	Density
5	Betula pendula 'Fastigiata Joes'	8; 2x; Feathered; 5 breaks	Counted

Native Hedge

Number	Species	Specification	Density	Percentage Contribution
27	Corylus avellana	Branched; 3 brks: C	0.25Ctr Double Staggered at 0.3m offset	20%
27	Crataegus monogyna	1+1: Transplant - seed raised: Branched: 4 brks: C	0.25Ctr Double Staggered at 0.3m offset	20%
27	Euonymus europaeus	1+2: Transplant - seed raised: Branched: 5 brks: B	0.25Ctr Double Staggered at 0.3m offset	20%
27	Ilex aquifolium	Leader with Laterals; C	0.25Ctr Double Staggered at 0.3m offset	20%
27	Prunus spinosa	1+1: Transplant - seed raised: Branched: 2 brks: B	0.25Ctr Double Staggered at 0.3m offset	20%
Total :135				

Native Shrub Mix

Number	Species	Specification	Density	Percentage Contribution
29	Cornus sanguinea	1+1: Transplant - seed raised: Branched: 2 brks: B	5/m²	20%
29	Corylus avellana	1+1: Transplant - seed raised: Branched: 2 brks: B	5/m²	20%
29	Ilex aquifolium	Bushy; 5 brks: C	5/m²	20%
20	Rosa canina	Branched; 5 brks: C	2/m²	20%
20	Viburnum opulus	Branched; 4 brks: C	2/m²	20%
Total :127				

Shrub Mix

Number	Species	Specification	Density	Percentage Contribution
63	Cornus sanguinea	1+1: Transplant - seed raised: Branched: 2 brks: B	5/m²	25%
63	Corylus avellana	1+1: Transplant - seed raised: Branched: 2 brks: B	5/m²	25%
53	Echinacea purpurea	Full Pot: C	5/m²	12%
67	Ilex aquifolium	Leader with Laterals: C	5/m²	26%
43	Skimmia x confusa 'Kew Green	Bushy; 3 brks: C	4/m²	12%
Total :289				

SPECIFICATION NOTES

GENERAL

- Proposals to be read in conjunction with Architects and Engineers Drawings;
- All landscape operations to be in accordance with all relevant and current British Standard Codes;
- All stock (other than container grown) shall be planted between November 30th and 28th February. Planting operations shall be carried out in suitable open weather and all plants re-firmed if lifted by frost during the contract. No planting shall take place in dry, hot and sunny weather or indeed of frost and snow are present, or in cold east winds, regardless of the stock specified
- Any plant material planted outside the recognised planting season (Nov-Feb), to be containerised stock and supplied at the sizes specified;

SOIL RND MULCH

- Where the landscape subcontractor is obliged to handle topsoil or scrape and remove topsoil (e.g. for any hard works constructed within public open spaces) store such topsoil on site, in an area agreed with the Employer, storing in heaps no greater than 2 metres high. Cover with sacking, or geotextile sheeting until used, to prevent excessive weed growth and drying. Any weed growth shall be removed before utilising the topsoil for fill through the application of suitable herbicides;
- Beds found to have inadequately broken up sub-grades, are prone to water-logging in wet periods, causing plants to die. Such beds should be reported immediately to the Site Manager, Surveyor, Design Manager and the Landscape Architect. Landscape Subcontractor's should allow for breaking up excavated bottoms, or piercing with an auger at 500mm centres, to ensure they are free draining; wherever there is any evidence of residual compaction or poor drainage;
- Imported topsoil shall be in accordance with BS3882:2015, General purpose topsoil and free from subsoil, clay and debris. Where a landscape subcontractor has concerns about the quality of on-site topsoil supplied by others, a representative sample should be sent to the Landscape Architect for comment;
- Topsoil shall be evenly and thoroughly cultivated to depths as follows incorporating any specified ameliorates to full depths of cultivation;
- Trees - see the tree pit details for information;
- Shrub Planting - 400mm deep;
- Turfed Areas - 150mm deep;
- All planting areas to be covered with a 75mm depth of medium grade bark mulch.

PLANT MATERIAL TREATMENT

- All trees and shrubs are to be supplied from nurseries in the UK or other member countries of the EEC. The Landscape Architect is to approve the nursery selected by the Landscape Subcontractor for the supply of plants. The landscape subcontractor is responsible for the protection of plant material being hardened off or grown at their nursery and shall make good defects;

EXISTING TREES AND SHRUBS

- Existing trees to be retained shall be protected in accordance with the requirements and specifications set out in BS5837:2012 paragraph 6.2.2 figure 3 and BS1722 : Part 4

PROPOSED TREES

- Contractor to ascertain the location of all sewers and services prior to tree planting;
- No trees to be planted within 3 metres of sewers or services or other easement recommended by the relevant statutory undertaker without the use of tree root barriers. Use Green Blue Urban Reroot 2000 in the vicinity of dwellings and Reroot Ribbed Barrier in the vicinity of paths/hard surfaces and services (refer to tree pit details). All tree pits with root barriers are subject to engineer's approval;
- Feathered trees in soft landscape to be secured using an underground guying system in accordance with the tree pit details.
- Where necessary increase tree pit dimensions to ensure that tree pits are at least 75mm deeper and 150mm wider than the rootball. Break up bottom of pits to a depth of 150mm. Compacted glazed sides of pits should be roughened;
- Cut back any broken or damaged roots to sound growth;
- Plant trees upright, in the centre of the pit and at original soil depth;

SHRUBS

- Plant shrubs in accordance with the landscape drawings. All non-perishable containers shall be removed and any damaged roots carefully pruned. Excavate planting holes 75mm wider than the root spread. Each plant shall be planted at it's correct depth, to the original soil or nursery mark, to BS4428:1989. Compost and sand additives shall be worked well into backfill whilst backfilling is in progress, taking care not to raise general levels of the soil so that bed edges are less than 65-80mm below the adjacent pavement edges;
- Gaps around the root ball shall be filled to half its depth and firmed by hand, but avoiding damage to the roots. Further soil can then be used to fill the voids to the surface and firmed by treading, taking care not to over firm and damage roots;
- Water in all plants within 2 hours of planting with 25 litres minimum per metre squared;
- Prune back leggy growth immediately after planting;
- Approved bark mulch to a depth of 75mm.

TURFING

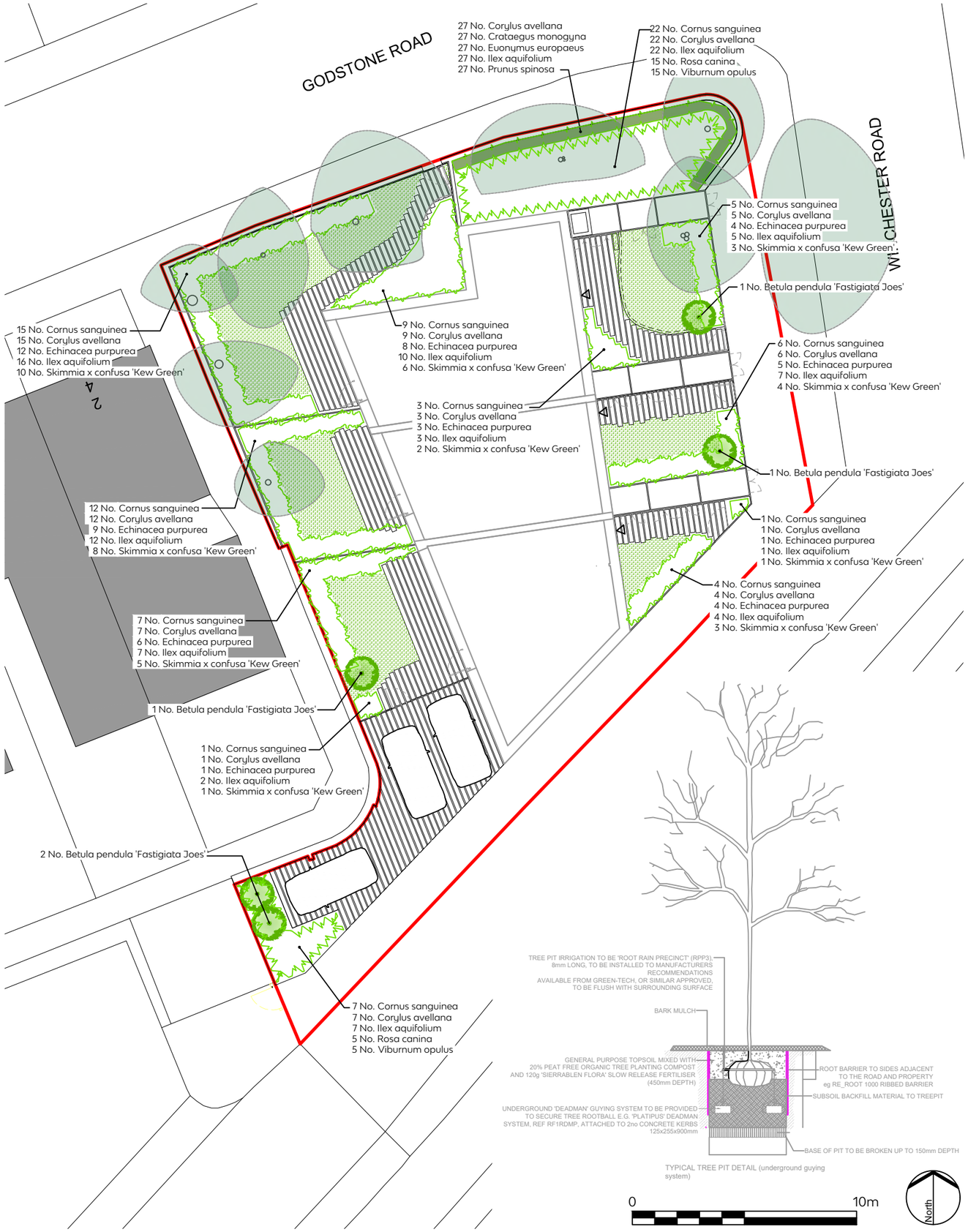
- All areas shall be cultivated in accordance with the specification for cultivated topsoil. No turf shall be laid until the topsoiling in whole or in part has been satisfactorily completed by being brought to an even tilth and firmness;
- Turf to be in accordance with BS3936:1998+A11:2013 and the recommendations for turfing are contained in BS4428:1989.
- The grass shall be of a close texture, of even density and green in colour and excluding any perennial weeds with the exception of clover. The turf shall be sufficiently fibrous for the turves to hold together when handled but excess fibre or material is undesirable. The grass shall have been closely mown and shall not exceed 25mm in height. It shall not be visible affected by pests or diseases.;
- For large areas, it is advisable that supplies of turves shall be delivered at the appropriate intervals throughout the turfing programme to avoid stacking turves for long periods. Turves shall be stacked on cleared ground to a maximum height of 1000mm, unless arranged on pallets for mechanical handling. After four days stacked turves shall be inspected at frequent intervals; any which show signs of deterioration should be used without delay or laid out. Turf shall be delivered to site within 36 hours of lifting. If stacked, turf shall be placed grass to grass. If kept for any period, the turf shall be laid out and maintained as for turfed areas;
- Turf shall be laid when the weather and soil conditions are suitable and where possible, preference shall be given to autumn and early winter operations. No turf shall be laid in exceptionally dry, frosty or other unsustainable weather conditions;
- Turves from the stack shall be wheeled to position on planks laid closely side by side. Adequate timber planks shall be used to support workmen and barrows and provide access. The turf shall be laid on prepared soil bed, closely butted and firmed. In large areas, turf shall be positioned in consecutive rows with broken joints as with stretcher bond brickwork. The turf shall be laid off planks, working over turves previously laid. Where necessary, the turves shall be lightly and evenly firmed with wooded beaters, the bottom of the beater being frequently scraped clean of accumulated soil or mud. A dressing of finely sifted topsoil (complying with BS3883:2015) or fine peat shall be applied and well brushed into the joints. Any inequalities in finished levels owing to variations in turf thickness or uneven soil shall conform to the levels indicated, allowing for final settlement. Turf edges and margins shall be laid with with whole turves.

WATERING AND WEEDING

- Planting areas are to be brought up to field capacity on completion of planting and during maintenance visits subject to prevailing conditions;
- Remove all weed growth by hand as necessary to ensure weed free and tidy planting beds. Take great care not to disturb sheet or bark mulch. All weeds shall be removed from the site. Two visits are required per growing season where sheet mulch is specified, and 6 visits per growing season are required where no sheet mulch is specified. Visits should occur approximately monthly, subject to weather conditions.

SHRUBS, TREES & TIDYING BEDS

- Remove all litter and debris at each visit, leaving the site clean and tidy. Firm in and straighten out plants loosened and prune out dead, leggy and broken branches, without damage to natural habit of the plant. In the case of trees, a suitably skilled and qualified arboriculturalist shall carry out such pruning. Tree stakes and ties shall be checked, adjusted and replaced as necessary.



Site Boundary

Retained tree - Extent of tree pruning

Proposed trees

Proposed Shrub Mix

Proposed Native Shrub Mix

Proposed Species Rich Native Hedge

Proposed Turf

Rev	Description	Date
B	Architect comments	01-04-2022
A	Updated General Arrangement	31-03-2022

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Project title

St Margarets Business Park Car Park

Drawing title

Soft Landscape Proposals

Scale	1:200 @ A3	Drawn	AB
Date	01.04.2022	Checked	RM

Drawing number

13340/P05

Revision

B