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Client: Lovell Homes

Project: Novartis Phase 1&2

Report: Preliminary Roost Assessment

QUALITY ASSURANCE

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1.0 EXECUTIVE SUMMARY

Greengage Environmental Ltd (Greengage) was commissioned to undertake a Preliminary Roost Assessment (PRA) by Lovell Homes of an area of land on the former Novartis research centre, known as Novartis Phase 1&2, in Horsham, West Sussex, hereafter referred to as 'the site'.

This report has been produced to inform a planning submission for the site which seeks the retention and change of use of the current building on-site (B1), and erection of multiple resident units (with associated infrastructure).

A Preliminary Ecological Appraisal (PEA), external PRA and Ground Level Tree Assessment GLTA)[3]undertaken by Greengage in 2024 involved a detailed systematic assessment of the sites suitability to support bats. The site contained sparsely vegetated urban land, developed land; sealed surface, buildings, bramble scrub, other neutral grassland, modified grassland, other woodland; mixed, other native hedgerow, willow scrub and an internal courtyard with introduced scrub and an ornamental pond. During the external PRA, the building on site (B1) was assessed as being having low suitability for roosting bats.

During the PRA undertaken in January 2025, previously un-accessed areas of the building were assessed, this includes the facades in central courtyard area and the internal building itself. Potential Roosting Features (PRFs) were noted within the internal courtyard of B1, which include missing mortar under the concrete eave and a hole in brickwork. The locations of the PRFs are shown on Figure A.1. Due to several access/egress points from smashed windows into the building and number of features, the building was assessed overall with moderate suitability for summer roosting bats.

The building was also assessed to provide high suitability for hibernating bats, with the basement of the building providing cool, humid, dark and stable temperatures. No bats or signs of bats were recorded during the PRA survey.

The proposed redevelopment of B1 has the potential to contravene legislation pertaining to roosting bats. Therefore, hibernation surveys and two dusk emergence survey in line with best practice guidance[5] is required to determine the presence/likely absence of roosting bats within B1. Results from these surveys will inform the mitigation and/or enhancement strategies in relation to roosting bats.

In accordance with planning policy and good practice, measures to mitigate for foraging bats and enhance the site for both roosting and foraging bats are recommended. These measures include:

- Retention of foraging/commuting habitat and compensatory planting where habitat is lost;
- Bat-sensitive lighting regime following guidance from The Institute of Lighting Professionals (ILP) and BCT[7].
- Provision of 14 bat boxes into the fabric of the new building/s and on retained mature trees; and
- Wildlife friendly habitat creation to enhance the site as a foraging and commuting resource, including provision of biodiverse roofs, planting of scrub, treelines/hedgerows.

The data collected during the PRA is considered valid for 18 months in accordance Chartered Institute of Ecology and Environmental Management (CIEEM) guidance[6] and an updated survey will be required if the works have not started within this timeframe or should site conditions change significantly during this time.

2.0 INTRODUCTION

Greengage Environmental Ltd (Greengage) was commissioned to undertake a Preliminary Roost Assessment (PRA) by Lovell Homes of an area of land at the former Novartis research centre, known as Novartis Phase 1&2, in Horsham, West Sussex and hereafter referred to as 'the site'.

This report has been produced to inform a planning submission for the site which seeks the retention and change of use of the current building on-site (B1) and erection of multiple resident units (with associated infrastructure).

2.1 AIMS OF SURVEY

The purpose of the PRA was to undertake an inspection of B1, to assess its suitability to support roosting bats. This involved a systematic search of the internal spaces and basements to search for evidence of roosting bats including field signs or bats themselves, and an external inspection to note any Potential Roosting Features (PRFs). The PRA will inform the need for further survey effort or any mitigation requirements.

2.2 SITE DESCRIPTION

The site extends to approximately 2.63 hectares (ha) and is centred on National Grid Reference TQ 17809 31816, OS Co-ordinates 517809, 131816.

The site is comprised primarily of developed land; sealed surface, with one large existing building located adjacent to the site's eastern boundary which contains a courtyard hereafter referred to as "B1". The courtyard included a pond, surrounded by bramble scrub, dense scrub, modified grassland and individual trees.

Two large patches of sparsely vegetated urban land were located towards the centre of the site, both of which were which boarded by large patches of bramble scrub. Multiple areas of other neutral grassland were located throughout the site, positioned around the centre of the site, and in the northeast and southwest corners of the site. Two patches of willow scrub were located adjacent to the western site boundary, with an area of modified grassland located towards the northwest corner. At the entrance to the site along the western boundary, a small patch of other woodland - mixed - mainly conifer was present to the south, with bramble scrub to the north bordered by another native hedgerow. Individual trees were located through the site, with the highest density located along the northern boundary of the site.

The site is located in the centre of Horsham and therefore situated in an urban setting, primarily surrounded by residential buildings and gardens. Parsonage Road and Wimblehurst Road run along the northern and western boundaries of the site respectively, with a railway line running adjacent to the southern boundary. An additional railway line is located in close proximity to the east of the site.

Fragmented priority woodland is found throughout Horsham with the closest located in Horsham Park approximately 480 metres (m) south of the site boundary. Warnham Local Nature Reserve (LNR) is located approximately 665 m northwest of the site boundary, with a golf course located directly south

of the LNR. Large areas of ancient woodland can be found within the wider area, with the closest located in approximately 850 m north of the site boundary. Multiple parcels of different priority habitats are located between 1 km to 2 km from the site boundary, these include woodland pasture and parks, good quality semi-improved grassland (non-priority), ancient replacement woodland, and lowland meadows which are all classified as priority habitats.

2.3 PROPOSALS

The proposals seek the retention and change of use of the current building on-site (B1) and erection of multiple resident units (with associated infrastructure).

2.4 ECOLOGICAL BACKGROUND

Existing ecological survey data from the site, collected between 2015 and 2024, is summarised below.

Preliminary Ecological Appraisal 2015 - 2018

An initial Preliminary Ecological Appraisal (PEA) was undertaken by Hampshire County Council in 2015 and updated in 2018/2019[1]. This surveyed included the wider Novartis site, incorporating what is now known as Novartis Phase 1&2 (the site) and Novartis Phase 3 (an area of land to the east of the site). The site was found to comprise developed land; sealed surface (hard standing), three buildings (B1, which comprised the main building) and two gatehouses, a courtyard, introduced shrub, semi-improved grassland, scrub, bare ground and trees. The site was assessed to have suitability to support roosting bats, commuting and foraging bats, badger *Meles meles*, small mammals, reptiles, common amphibians, breeding birds and invertebrates with the presence of Invasive Non-Native Species (INNS) confirmed. Further surveys were recommended.

Bat Surveys 2018

Two dusk (emergence) and one dawn (return) bat survey were undertaken in 2018[1] by Hampshire County Council on two buildings formally known as the gatehouses (which have since been demolished) and B1. No bats were observed emerging from or returning to roost at any of the buildings and bats were, therefore, confirmed likely absent. During these surveys, low to moderate levels of bat activity were recorded, which mainly pertained to common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*, with sightings and calls also recorded for brown long-eared bat *Plectous auritis*, noctule *Nyctalus noctula* and *Myotis* species.

Aerial tree climb surveys were conducted with moderate suitability identified at T47 (now T046) and low suitability at three trees (T3 (now T037), T17 (no longer present) and T22 (now T011).

Preliminary Ecological Appraisal and Bat Surveys 2022

An updated PEA, reptile surveys and bat surveys were undertaken in 2022[2] by Ecology & Habitat Management Ltd. The site was found to support a building (B1), hard standing/bare ground, semi-

improved grassland, mixed scattered trees, scrub, tall ruderal and a courtyard. The building on site was assessed with negligible suitability for roosting bats. Seven trees on site were assessed with low to moderate suitability. The site was assessed with high suitability for commuting and foraging bats.

During the bat surveys, one dusk emergence survey was conducted in August 2022, no bats were observed emerging from B1, confirming likely absence of roosting bats. During the bat activity surveys, a moderate level of activity was recorded from common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, serotine *Eptesicus serotinus* and noctule *Nyctalus noctula* with majority of the activity recorded in the southwest of the site around the treelines.

PEA and Ground Level Tree Assessment 2024

A PEA, external Preliminary Roost Assessment (PRA) and a Ground Level Tree Assessment (GLTA)[3] were undertaken by Greengage on 5th November 2024 in appropriate weather conditions. The site was found to still comprise developed land; sealed surface, a building (B1), a pond (non-priority), sparsely vegetated urban land, bramble scrub, other neutral grassland, willow scrub, modified grassland, other woodland; mixed, native hedgerow and individual trees. The habitats had moderate suitability for use by commuting and foraging bats and roosting bats. External PRFs were noted on B1, which comprised gaps in mortar under the concrete eaves and a gap between the metal parapet and wall. The building was assessed initially with low suitability for roosting bats. As a result further bat survey, to include a PRA incorporating the internal areas and courtyard of B1 and emergence surveys were recommended.

Nine trees on site were surveyed during the GLTA, to search for the presence of PRFs and assign a category to them based on the assessed level of suitability that it may have to support roosting bats. One tree (T038) was identified to have PRF-I suitability which comprised a small callus roll. Five trees (T037, T039, T040, T041 and T042) were identified as Further Assessment Required (FAR) as the features were not able to be fully inspected from the ground. Three trees (T7, T8 and T9) were identified to have PRFs of negligible suitability and were subsequently scoped out of requiring further assessment.

Aerial PRF inspection surveys were recommended for trees T037, T039, T040, T041 and T042 identified with FAR suitability.

Desk Study

As part of the PEA[3] undertaken by Greengage in November 2024, biological records were analysed to identify any records of bat species in the local area. Records were obtained from Sussex Biodiversity Record Centre (SxBRC).

A total of 167 records for the following bat species were identified within 2km of the site:

- Common pipistrelle;
- Soprano pipistrelle;
- Serotine;
- Natterer's bat *Myotis nattereri*;

- Leisler's Nyctalus leislerii;
- Noctule;
- Nathusius' Pipistrelle *Pipistrellus nathusii*;
- Brown long eared *Plecotus auritus*;
- Daubenton's *Myotis daubentonii*;
- Unidentified pipistrelle bat species *Pipistrellus* spp;
- Unidentified bat species *Chiroptera* spp; and,
- Whiskered *Myotis mystacinus*.

Aerial PRF Inspection Survey

The five trees identified with FAR suitability were subject to aerial PRF inspections[4] in January 2025. T039, T040 and T042 were confirmed with PRF-I suitability (suitability for individual or low numbers of bats) and T037, T038 and T041 were confirmed to have no suitability.

Trees T039, T040 and T042 with PRF-I suitability are to be soft felled under ecological supervision following a pre-works inspection.

3.0 METHODOLOGY

3.1 PRELIMINARY ROOST ASSESSMENT

A PRA was undertaken in daylight on 5th February during cool (3- 5°C), sunny and dry conditions. The evaluation of bat suitability comprised a detailed systematic internal and external assessment of B1 (Figure A.1), that aimed to identify suitable PRFs. In accordance with the Bat Conservation Trust's (BCT) Good Practice Guidelines[5] consideration was given to:

- The presence, number and suitability of PRFs;
- The availability and value of nearby habitats for bats;
- The availability of access to roosts for bats; and,
- Signs of bat activity or presence.

Definite signs of bat activity were taken to be:

- Bats themselves; and,
- Bat droppings;

Signs of possible bat presence were taken to be:

- Feeding remains such as moth and butterfly wings;
- Grease marks/staining;
- Scratch marks; and,
- Urine spatter.

Accessible PRFs were inspected by an appropriately licenced and trained ecologist using a torch and endoscope.

Roosting suitability was defined as per BCT guidelines, which is assessed on a scale through none, negligible, low and moderate to high, as per Table 3.1 below. If a roost is confirmed to be present, then the suitability is still applied as other roosts may be present but undiscovered. Other factors such as the surrounding habitat and presence of roosts within the surrounding area (as detailed below within Section 3.2 below) was considered when assigning a level of suitability to the building.

Table 3.1 Habitat Suitability for Roosting Bats

Potential suitability	Description of roosting habitats in structures
None	No PRFs on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of PRFs at all ground/underground levels).
Negligible	No obvious PRFs on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable PRFs on occasion.

Potential suitability	Description of roosting habitats in structures
Low	A structure with one or more PRFs that could be used by individual bats opportunistically at any time of the year. These PRFs however do not provide enough space, shelter, protection, appropriate conditions (temperature, humidity, height above ground level and light levels of disturbance), and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unsuitable to support a maternity colony and not a classic cool/stable hibernation site).
Moderate	A structure with one or more PRFs 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, e.g. maternity or classic cool/stable hibernation sites.
High	A structure with one or more PRFs 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. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation sites.

Hibernation Roosting Assessment

Hibernation roosting suitability for structures is also assessed on a scale through none, negligible, low and moderate to high. However, the below rational also applies when considering hibernation suitability:

- Are there suitable roosting features?
  - If none or limited features exist treat as low hibernation suitability;
  - If underground features exist e.g. cellars, tunnels etc. this is considered a 'classic hibernation site' and should be treated as having high hibernation suitability; and,
  - If roosting features are present but are not underground this is a 'non-classic hibernation site' and should be treated as having moderate hibernation suitability.
- What is the surrounding habitat like?
  - If poor quality and/or poor connectivity consider reducing the hibernation suitability level; and,
  - If good quality and/or well connected consider maintaining or increasing the hibernation suitability level;
- Are there known summer roosts in the structure, adjacent structure or in the immediate area?
  - If not known maintain the hibernation suitability level; and,
  - If yes consider increasing the hibernation suitability level.

3.2 SURVEYORS

The survey was undertaken by Luke Measey and Ben Newbury. Luke was accredited under Natural England Level 2 Class bat licence no. 2016-23564-CLS-CLS registered to Jennie Caddick.

Luke Measey, Senior Consultant, has an undergraduate degree in Ecology and Environmental Management BSc (Hons). He holds a Natural England Level 1 Class Survey Licence for great crested newt, Natural England Level 1 Class Survey Licence for bats and a certified tree climber. Luke is a full Chartered Institute of Ecology and Environmental Management (CIEEM) member and has over six years' experience in ecological survey and assessment.

Ben Newbery, Consultant, has an undergraduate degree in Zoology (BSc Int) and an MSc in Biodiversity and Conservation, with over two years' experience in ecological survey and assessment. Ben's experience spans PEAs, Biodiversity Net Gain (BNG) and bat-surveying, with botanical identification being a particular interest.

Jennie Caddick, Associate Consultant, holds a BSc (Hons) in Ecology and full CIEEM membership. She has 20 years consultancy experience working for a varied client base, with a focus on complex schemes where requirement for consultation and bespoke surveying has been used and holds Natural England survey licences for bats (Class 2), great crested newt, water vole and white-clawed crayfish. In addition, she has also held mitigation licences for otter.

Jess Cole, Senior Consultant, has a BSc degree in Ecology (Hons) and is an Associate member of CIEEM. Jess holds a Natural England Level 1 Class Survey great crested newt licence and has over seven years' experience in ecological survey and assessment.

This report was written by Luke Measey and reviewed by Jess Cole and verified by Jennie Caddick who confirms in writing (see the QA sheet at the front of this report) that the report is in line with the following:

- Represents sound industry practice;
- Reports and recommends correctly, truthfully and objectively;
- Is appropriate given the local site conditions and scope of works proposed; and,
- Avoids invalid, biased and exaggerated statements.

3.3 SURVEY LIMITATIONS

The roof of B1 could not be accessed during the survey. This is not considered a significant limitation as the roof tiles were clearly visible with the use of binoculars from ground level.

Voids from the lift shafts around the stairwells could not be fully inspected due to the height of the void. Shafts where pipework entered the building within the basement could not be access due to health and safety reasons. This is not a significant limitation as the voids were fairly well sealed, constructed of brick wall/concrete breeze blocks with no suitable crevices. The accessible areas were searched for

droppings/signs of bat activity. Additionally, these areas are to be monitored for hibernating bats which will confirm presence/likely absence.

The data collected during this PRA is considered valid for 18 months in accordance with CIEEM guidance[6] and an updated survey will be required if the works have not started within this timeframe or should site conditions change significantly during this time.

4.0 RESULTS

4.1 SITE CONTEXT

The site is set within the urban setting of Horsham, with a small ornamental pond within the internal courtyard (see Plate B.1), a mosaic of developed land; sealed surface, bramble scrub, willow scrub, woodland, hedgerows, sparsely vegetated land, modified grassland and scattered trees. The site is likely to be unilluminated by artificial lighting. The site is surrounded by residential housing to the north and west. Directly south is the railway corridor which is only vegetated along the north-western corner of the site. To the south of the site only minor vegetation is present along the railway corridor. East of the site is a railway line with a retail park beyond. The college of Richard Collyer with a large playing field bounded by trees is present 30m south of the site.

Fragmented priority woodland is found throughout Horsham with the closest area found in Horsham Park approximately 480 m south of the site boundary, which connects to the railway corridor to the south of the site by a line of trees and the college of Richard Collyer. Warnham LNR is located approximately 665 m northwest of the site boundary, with a golf course located directly south of the LNR which connects to the site via the railway corridor. Large areas of ancient woodland can be found within the wider area, with the closest located in approximately 850 m north of the site boundary, also connected by the railway corridor.

4.2 PRA: EXTERNAL INSPECTION

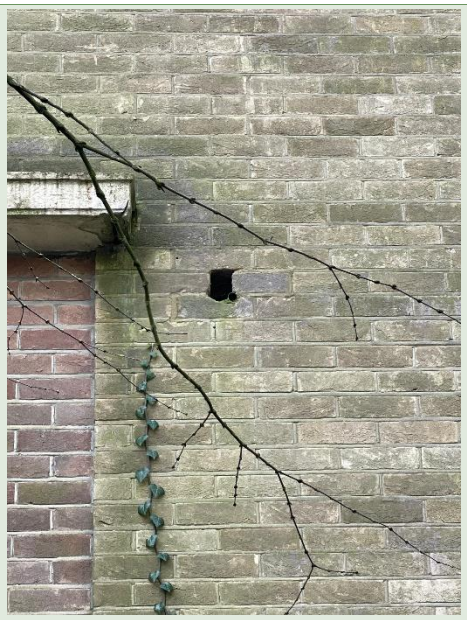
B1 is a brick constructed building that is derelict. The western half of the building was constructed 1910 - 1960 and has an absence of a cavity wall (see Plate B.2 to Plate B.3), with the eastern half of the building (see Plate B.4 to Plate B.5) likely constructed 1960 to present. There is a flat roof present with pitched roof with clay tiles (see Plate B.6). The tiles are in good condition, with no damage or decay noted. Lead flashing is present. The building has an absence of soffits or fascia's, however, concrete eaves are present. The building brickwork and roof structure is in good condition overall.

On the externals of the building ingress/egress points include smashed windows to allow access into the internal of the building and a hole in brickwork. PRFs include holes in brickwork, missing/cracked mortar, holes in concrete eaves and a gap between the metal parapet and concrete wall. The PRFs are all likely to be surface features and lacking any large cavity spaces, therefore, individually they have been assessed with low suitability for roosting bats. No signs of bats or bats themselves were noted during the external inspection.

Nevertheless, given the number of features found, coupled with the amount of smashed and broken windows (see below) the overall suitability level to support summer roosting bats is considered to be moderate.

Results of the external PRA are provided in Table 4.1 below and shown on Figure A.1 in Appendix A, with photographs of the survey provided in Appendix B.

Table 4.1 Results of the External PRA

PRF No.	PRF Description	Photograph	Suitability
Internal Courtyard			
F001	Hole in brickwork at approximately 4.5m from ground level within the internal courtyard, with a northern aspect. Approximately 10cm tall and 7cm wide. Likely a surface feature with no large cavity space that is exposed an open and therefore thermally unstable.		Low
F002	Missing mortar under the concrete eave on the eastern aspect within the internal courtyard at roof level. Likely a surface feature with		Low

PRF No.	PRF Description	Photograph	Suitability
	no large cavity space that is exposed an open and therefore thermally unstable.		
F003	Missing mortar under the concrete eave with a southern aspect within the internal courtyard at roof level. Likely a surface feature with no large cavity space that is exposed an open and therefore thermally unstable.		Low
External Façade			
F004	Gap in mortar under concrete eave on the southwest corner with a northwest aspect. Feature is likely to be superficial and		Low

PRF No.	PRF Description	Photograph	Suitability
	lack a large cavity space. Is likely to be thermally unstable.		
F005	Crack in brickwork directly below the concrete eave on the southern aspect at roof level. Unlikely to provide a large cavity space and is likely to be exposed and thermally unstable.		Low
F006	Crack in mortar under concrete eave above the 5th window on the south-western aspect at roof level. It is unlikely to provide a large cavity space and is likely to be thermally unstable.		Low

PRF No.	PRF Description	Photograph	Suitability
F007	Gap between metal parapet and concrete wall on eastern aspect at roof level, likely to be thermally unstable.		Low
F008	Hole in concrete eave on the northeastern aspect. Unlikely to provide a large cavity space and is likely to be thermally unstable.		Low

4.3 PRA: INTERNAL INSPECTION

The internal construction of the building (see Plate B.7) was a mixture of brick walls with a Flemish bond with an absence of a cavity wall and concrete walls and ceiling on the basement and middle floors of the building. The top floor ceiling (see Plate B.8) was illuminated by sunlight due to the presence of skylights and windows, with the ceiling constructed of hollow clay tiles which lacked suitable crevice spaces for bats, reducing suitability for roosting bats.

There were minor surface cracks within the concrete ceilings on the basement and middle floors (see Plate B.9), providing space for low numbers of bats on an opportunistic basis which could provide low suitability PRFs for roosting bats. The lift shafts around the stairwells may contain damaged brickwork/concrete breeze blocks (see Plate B.10), however no PRFs were noted within the areas that could be inspected (due to health and safety reasons) and would lack the presence of a large cavity space suitable for large numbers of roosting bats due to the absence of cavity walls.

The internal conditions of the building were cool and drafty due to the large open concrete structure and high number of broken windows, it is therefore unlikely to provide warm and humid conditions suitable for maternity roosts.

No signs of bats or bats themselves were noted during the inspection. The internal of the building was assessed with low suitability for summer roosting bats, with suitability for an opportunistic feeding perch.

4.4 HIBERNATION ROOSTING ASSESSMENT

The basement of the building was largely illuminated and drafty due to the smashed windows. Areas of the basement were filled with water previously with watermarks present on the concrete walls, with an area under the stairwell on both the southern and northern section of the building flooded with approximately 50 centre meter (cm) deep stagnant water (see Plate B.11).

Within the southwestern section of the basement is lower section of the building that was dark, cool and humid, with water droplets present on the high ceilings. This area contained a shaft (see Plate B.12) that extended southwest outside of the building that contained water pipes approximately 20m in length. The shaft was made of concrete and no apparent cracks or crevices were noted from the entrance, the shaft could not be inspected fully due to health and safety concerns. The humidity within this area was high, thermally stable and cool providing good conditions for hibernating bats. The basement of the building and pipework shafts were therefore assessed with high hibernation suitability.

No signs of bats or bats themselves were noted during the hibernation assessment. The basement area of the building was assessed with high suitability for hibernating bats.

The remainder of the building above basement level contained superficial features that lack deep crevices and were likely to be exposed to wind and sunlight. It has been assessed with low hibernation suitability.

5.0 MITIGATION AND RECOMMENDATIONS

5.1 FURTHER SURVEY

Summer Roosting

As the building has been assessed with overall moderate suitability for summer roosting bats, two dusk emergence survey should be undertaken between May and August in line with best practice[5]. The results of the emergence survey would inform the requirement for/scope of any formal bat-specific mitigation measures.

Should these surveys record the presence of roosting bats, further survey effort to characterise any potential roost(s) and a European Protected Species Mitigation (EPSM) licence application may need to be applied for from Natural England, with associated mitigation, to allow the works to proceed lawfully.

Hibernation

As the building has been assessed with high suitability for hibernating bats further hibernation surveys should be undertaken to confirm presence/likely absence of hibernating bats. As this PRA survey was undertaken during the optimal hibernation period (between January and February inclusive), this can be used as one of the two required survey visits for hibernation surveys.

Further hibernation survey should comprise one further survey in February/March during suitable cool conditions (overnight temperatures below 5°C). During the survey B1, including the basement will be physically searched for presence of hibernating bats utilising torches, mirrors and endoscopes. Evidence of roosting bats as well as evidence of bat activity (e.g. droppings) should be recorded during the survey.

This survey information will be supplemented with data collected by deploying static detectors in B1 between February and March. Static detectors will record any calls of bats active during this time and the data will be analysed in the office to identify bat calls and species present. The result of the further hibernation survey will outline any specific mitigation measures and recommendations for hibernating bats.

5.2 MITIGATION

The building has been assessed with moderate suitability for summer roosting bats and high suitability for hibernating bats. Therefore, the proposed development has the potential kill or injure bats or destroy a bat roost and therefore contravene legislation pertaining to roosting bats (see Appendix C).

Further surveys are required to confirm the presence/likely absence of summer roosting and hibernating bats in B1 prior to the development commencing, in line with best practice guidelines[5] (as above).

Lighting

Artificial lighting can cause disturbance to bat species' roosting, foraging and commuting activity. Proposals should therefore impose measures to limit additional light disturbance at site following

development. Bat-sensitive lighting should be incorporated into the scheme to minimise any potential impacts of increased lighting levels on foraging, commuting and socialising bats. Lighting design should follow guidance provided by the Institute of Lighting Professionals (ILP) and BCT[7], specifically:

- Will avoid use of metal halide and fluorescent light sources;
- Warmth' of luminaires. Any external areas will incorporate light at a <2700K where possible, with peak wavelengths higher than 550nm;
- Use of screens/hoods to make any external lighting as directional as possible, avoiding light spill on any natural features;
- Where possible, external lights will be as low to the ground as possible and use of bollard lighting should be avoided;
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered. Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt;
- Lighting controls in place where appropriate to minimise the duration lights are illuminated, this could be for example instated through motion sensor lighting or subject to curfews. Lighting associated with existing or created greenspace should be avoided during the active bat season (April-October, inclusive);
- Dark corridors will be created with no light levels over the boundary tree lines edges;
- Measures should be taken in internal light placement to reduce risk of light spill from windows; and,
- Lighting at site should be modelled to confirm predicted intensity and spill which should be reviewed by a Suitably Qualified Ecologist (SQE).

By providing compensatory foraging habitat through landscaping proposals, and minimising the impacts of external lighting, impacts upon foraging and commuting bats will be sufficiently minimised.

5.3 ENHANCEMENT

In addition to the above best practice mitigation, the below enhancement measures are also recommended due to the suitability for bats at the site.

Bat Boxes

A minimum of 14 bat boxes should be incorporated into the proposed development. Eight bat boxes should be installed on the building, either integrated into the new proposed level or mounted on the existing building structure, and six bat boxes should be mounted on retained mature trees.

Summer bat boxes should be positioned in sunny locations, most suitably on the southern and western façades of the building, with hibernation boxes situated on northern aspects. Bat boxes should be placed away from doors, windows and street lighting, ideally at a minimum of 3-5m from ground level, with the entrance free from obstruction. The behaviour of bats varies between species however, generally they

will use a number of different roosts of varying climate conditions. Therefore, it is advisable to integrate several boxes with varying locations and aspects across the site.

Boxes should comprise a mixture of:

- Integrated Habibat Bat Box 003 (or similar), suitable for pipistrelle and Myotis species, such as Natterer's *Myotis nattereri* and Whiskered *Myotis mystacinus*;
- Schwegler 2FE (or similar) or wall mounted bat shelter, suitable for summer or winter hibernation roosts suitable for pipistrelle and whiskered;
- Tree mounted bat boxes; Schwegler 2FS and Schwegler 1FW (or similar) suitable for maternity colonies and hibernation; and,
- Schwegler 2FN (or similar) suitable for noctule.

Wildlife Friendly Habitat Creation

By increasing the diversity of habitats on site the scheme will be increasing the diversity of bat invertebrate prey species. The following habitat types should be considered for incorporation into the landscaping plans:

- Provision of extensive, substrate based biodiverse roofs on all available flat roof spaces. This consist of a low-nutrient substrate with an average depth of between 150-200 millimetres (mm) and should be seeded and plug planted with at least 30 wildflower species of known value to wildlife. These should be further enhanced through provision of log piles, stony piles, sand mounds and water trays. Extensive biodiverse roofs are compatible with photovoltaic (PV) arrays;
- Wildlife friendly landscaping across the site. Areas of communal grassland should incorporate wildflower turf or sown with a wildflower mix which provide higher provision of wildflowers and nectar sources for invertebrate prey. Introduced shrub should include native shrubs or perennials with known value to wildlife such as those listed on the Royal Horticulture Society (RHS) Plants for pollinators[8]; and,
- Tree lines and hedges planted to create linear features for commuting and should include a diverse mix of native species such as those listed within Table 5.1 below.

Table 5.1 Suitable Species for Attracting Bat Invertebrate Prey

Common Name	Scientific Name
Shrub	
Hazel	*Corylus* sp
Hawthorn	*Crataegus monogyna*
Willow species	*Salix* sp
Hebe species	*Hebe* sp
Lavender	*Lavandula* sp
Blackthorn	*Prunus spinosa*

Common Name	Scientific Name
Dog rose	*Rosa canina*
Guelder rose	*Viburnum opulus*
Herbaceous	
Yarrow	*Achillea millefolium*
Bugle	*Ajuga reptans*
Kidney vetch	*Anthyllis vulneraria*
Cuckoo flower	*Cardamine pratensis*
Knapweed	*Centaurea* sp
Red Valerian	*Centranthus ruber*
Sweet rocket	*Hesperis matronalis*
Birds-foot trefoil	*Lotus corniculatus*
Ornamental tobacco	*Nicotiana sylvestris*
Night-scented stock	*Matthiola longipetala*
Evening primrose	*Oenothera biennis*
Marjoram	*Origanum majorana*
Red campion	*Silene dioica*
Wild carrot	*Daucus carota*
Climbers	
Honeysuckle	*Lonicera periclymenum*
Jasmine	*Jasminum officinale*
Ivy	*Hedera helix*
Trees	
Oak	*Quercus* sp
Ash	*Fraxinus excelsior*
Silver birch	*Betula pendula*
Field maple	*Acer campestre*
Elder	*Sambucus nigra*

The development presents the opportunity to benefit a range of taxa through incorporation of ecological features and provision of new habitats that would encourage species to the site. Assuming appropriate mitigation and compensation actions are followed, alongside enhancements described above it should be possible to deliver an increase in value for local bat populations.

6.0 SUMMARY AND CONCLUSION

Greengage was commissioned to undertake a PRA by Lovell Homes of a site known as Novartis Phase 1&2 to establish the suitability of building B1 for roosting bats.

The building was systematically searched for field signs of roosting bats and any PRFs and was assessed with moderate suitability to support summer roosting bats and high suitability to support hibernating bats.

Therefore, two dusk emergence survey and a hibernation survey are recommended to confirm the presence/likely absence of roosting bats on site. The results of the dusk emergence and further hibernation survey would inform the appropriate mitigation for roosting bats.

Enhancement measures for bats have been recommended to increase the biodiversity value of any proposed redevelopment and include provision of bat boxes and wildlife friendly habitat creation. These enhancements include the provision of bat boxes to provide roosting opportunities and further foraging resources. Assuming these enhancements are followed, the development will result in value for local bat populations.

APPENDIX A FIGURES

Figure A.1 Results of the PRA Survey

NOVARTIS PHASE 1 & 2

Legend

Red Line Boundary

PRFs

- Crack in brickwork
- Crack in mortar under concrete eave
- Gap in mortar under concrete eave
- Hole in brickwork
- Hole in concrete eave

PRF line

- Gap between metal parapet and wall

Suitability

- High (Hibernation)
- Moderate (Summer)

Title: Figure A.1 PRA Survey Results

Drawn by: LM
Date: 25/03/2025

Reviewed by: JC
Date: 25/03/2025

Project number: 552979

Greengage

APPENDIX B PHOTOGRAPHS OF THE SITE

Plate B.1 Internal courtyard looking north

Plate B.2 Western aspect of B1

Plate B.3 Southern aspect of B1

Plate B.4 Eastern aspect of B1

Plate B.5 Northern aspect of B1

Plate B.6 Flat roof (inaccessible)

Plate B.7 Brickwork of lift shaft in basement level

Plate B.8 Top floor

Plate B.9 Middle floor

Plate B.10 Void adjacent to lift shaft looking upwards from basement level

Plate B.11 Area under stairwell pooled with water

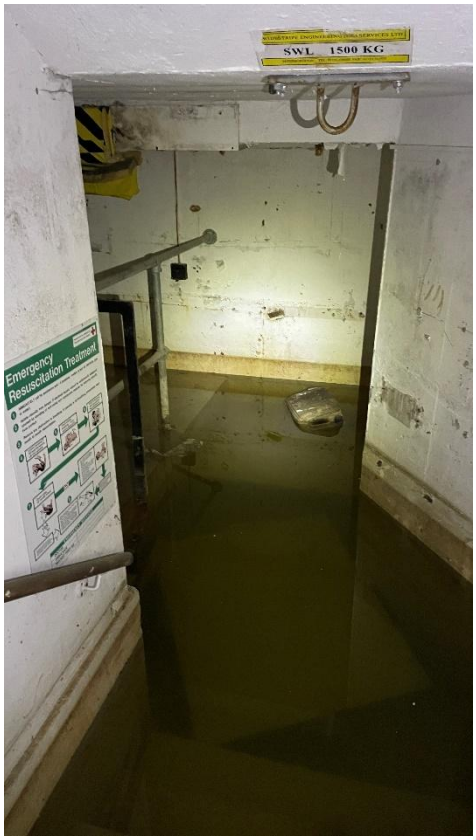
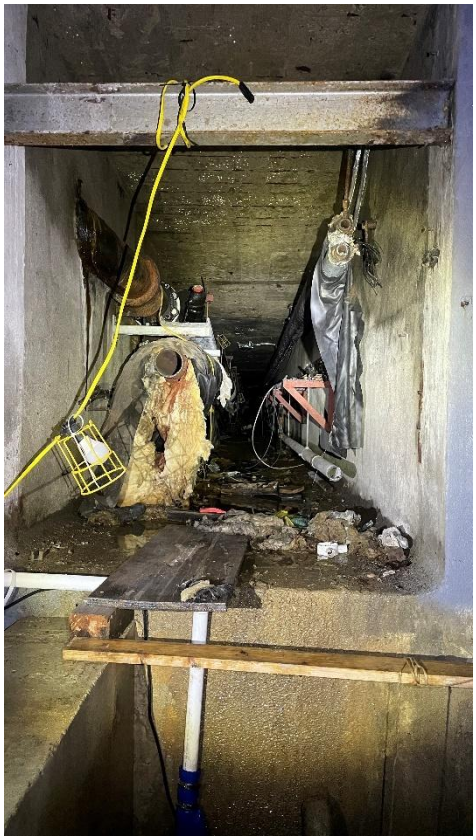


Plate B.12 Shaft within basement (high hibernation suitability area)



APPENDIX C LEGISLATION AND POLICY

C.1 LEGISLATION

All UK bats and their roosts are protected by law. Since the first legislation was introduced in 1981, which gave strong legal protection to all bat species and their roosts in England, Scotland and Wales, additional legislation and amendments have been implemented throughout the UK.

Six of the 18 British species of bat have Biodiversity Action Plans (BAPs) assigned to them, which highlights the importance of specific habitats to species, details of the threats they face and proposes measures to aid in the reduction of population declines.

The Wildlife & Countryside Act 1981 (WCA)[9] was the first legislation to provide protection for all bats and their roosts in England, Scotland and Wales (earlier legislation gave protection to horseshoe bats only.)

All eighteen British bat species are listed in Schedule 5 of the Wildlife and Countryside Act, 1981 and under Annexe IV of the Habitats Directive[10], 1992 as a European protected species. They are therefore fully protected under Section 9 of the 1981 Act and under Regulation 43 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[11], which transposes the Habitats Directive into UK law. Consequently, it is an offence to:

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; and
- Intentionally or recklessly obstruct access to a bat roost.

This legislation applies to all bat life stages.

The implications of the above in relation to the proposals are that where it is necessary during construction to remove trees, buildings or structures in which bats roost, it must first be determined that work is compulsory and if so, appropriate licenses must be obtained from Natural England. Additionally, although habitats that are important for bats are not legally protected, care should be taken when dealing with the modification or development of an area if aspects of it are deemed important to bats such as flight corridors and foraging areas.

C.2 PLANNING POLICY

National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) 2024[12] sets out the Government's planning policies for England, including how plans and decisions are expected to apply a presumption in favour of sustainable development. Chapter 15 of the NPPF focuses on conservation and enhancement of the

natural environment, stating plans should 'identify and pursue opportunities for securing measurable net gains for biodiversity'.

It goes on to state: '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'. Alongside this, it acknowledges that planning should be refused where irreplaceable habitats such as ancient woodland are lost.

Local

Horsham District Planning Framework[13]

Policy 24. Strategic Policy: Environmental Protection

The high quality of the district's environment will be protected through the planning process and the provision of local guidance documents. Taking into account any relevant Planning Guidance Documents, developments will be expected to minimise exposure to and the emission of pollutants including noise, odour, air and light pollution and ensure that they:

1. Address land contamination by promoting the appropriate re-use of sites and requiring the delivery of appropriate remediation;
2. Are appropriate to their location, taking account of ground conditions and land instability;
3. Maintain or improve the environmental quality of any watercourses, groundwater and drinking water supplies, and prevents contaminated run-off to surface water sewers;
4. Minimise the air pollution and greenhouse gas emissions in order to protect human health and the environment;
5. Contribute to the implementation of local Air Quality Action Plans and do not conflict with its objectives;
6. Maintain or reduce the number of people exposed to poor air quality including odour. Consideration should be given to development that will result in new public exposure, particularly where vulnerable people (e.g. the elderly, care homes or schools) would be exposed to the areas of poor air quality; and
7. Ensure that the cumulative impact of all relevant committed developments is appropriately assessed.

Policy 25. Strategic Policy: The Natural Environment and Landscape Character

The Natural Environment and landscape character of the District, including the landscape, landform and development pattern, together with protected landscapes and habitats will be protected against inappropriate development. The Council will support development proposals which:

1. Protects, conserves and enhances the landscape and townscape character, taking into account areas identified as being of landscape importance, the individual settlement characteristics, and maintains settlement separation.

2. Maintain and enhances the Green Infrastructure Network and addresses any identified deficiencies in the District.
3. Maintains and enhances the existing network of geological sites and biodiversity, including safeguarding existing designated sites and species, and ensures no net loss of wider biodiversity and provides net gains in biodiversity where possible.
4. Conserve and where possible enhance the setting of the South Downs National Park.

Policy 31. Green Infrastructure and Biodiversity

1. Development will be supported where it can demonstrate that it maintains or enhances the existing network of green infrastructure. Proposals that would result in the loss of existing green infrastructure will be resisted unless it can be demonstrated that new opportunities will be provided that mitigates or compensates for this loss, and ensures that the ecosystem services of the area are retained.
2. Development proposals will be required to contribute to the enhancement of existing biodiversity, and should create and manage new habitats where appropriate. The Council will support new development which retains and /or enhances significant features of nature conservation on development sites. The Council will also support development which makes a positive contribution to biodiversity through the creation of green spaces, and linkages between habitats to create local and regional ecological networks.
3. Where felling of protected trees is necessary, replacement planting with a suitable species will be required.
4. a. Particular consideration will be given to the hierarchy of sites and habitats in the district as follows:
    i. Special Protection Area (SPA) and Special Areas of Conservation (SAC)
    ii. Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs)
    iii. Sites of Nature Conservation Importance (SNCIs), Local Nature Reserves (LNRs) and any areas of Ancient woodland, local geodiversity or other irreplaceable habitats not already identified in i & ii above.

    b. Where development is anticipated to have a direct or indirect adverse impact on sites or features for biodiversity, development will be refused unless it can be demonstrated that:
        i. The reason for the development clearly outweighs the need to protect the value of the site; and,
        ii. That appropriate mitigation and compensation measures are provided.
5. Any development with the potential to impact Arun Valley SPA or the Mens SAC will be subject to a HRA to determine the need for an Appropriate Assessment. In addition, development will be required to be in accordance with the necessary mitigation measures for development set out in the HRA of this plan.

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