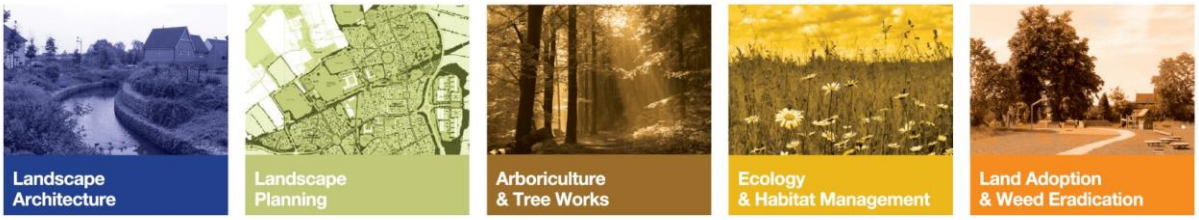

James Blake Associates Ltd

Construction and Environmental Management Plan

for

Persephone Gardens, West Hampstead, London Borough of Camden

on behalf of

Lifecare Residences

October 2018

Over 30 Years of Service, Value and Innovation

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Disclaimer

James Blake Associates Ltd have made every effort to meet the client's brief. However, no survey ensures complete and absolute assessment of the changeable natural environment. The findings in this report were based on evidence from thorough survey: It is important to remember that evidence can be limited, hard to detect or concealed by site use and disturbance. When it is stated that no evidence was found or was evident at that point in time, it does not mean that species are not present or could not be present at a later date: The survey was required because habitats are suitable for a given protected species, and such species could colonise areas following completion of the survey.

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CONTENTS

Executive Summary

This document details a Construction and Environmental Management Plan (CEMP) for the proposed development of extra care housing with provision for a nursing home at Persephone Gardens (formerly known as Gondar Gardens Reservoir) in West Hampstead, Camden, London. It contains mitigation recommendations from previous surveys undertaken by James Blake Associates Ltd (JBA). These reports are reviewed and summarised to inform the management during construction and propose enhancement recommendations for the site. The CEMP will be a living document which will be updated over the course of the development.

If the mitigation and enhancement recommendations provided in this report are implemented, it was considered that the development could proceed without impact to any rare, protected or species of principal importance in England, and will likely enhance the site and local area for wildlife post development.

1 INTRODUCTION

Background

1.1 James Blake Associates Ltd was commissioned by LifeCare Residences to produce a Construction and Environmental Management Plan (CEMP) for the development of Persephone Gardens (formerly known as Gondar Gardens Reservoir) in West Hampstead. Grid Reference: TQ 2488523 (taken from the centre of the site).

1.2 This report is provided to give an understanding of the ecological issues arising from the construction of the new extra care housing and nursing home and to ensure that appropriate mitigation is undertaken to safeguard protected species and plants. The document should be read in conjunction with the Construction Management Plan for Persephone Gardens. The following documents were also reviewed and used in the writing of this report:

- Landscape and Ecology Mitigation Review and Ten-Year Management Plan, London Wildlife Trust, 2017;
- Phase 1 Habitat Survey, Reptile Survey, Bat Survey and Bird Survey, James Blake Associates, 2016;
- Updated Phase 1 Habitat Survey, Reservoir Bat Inspection and Reptile Survey James Blake Associates, 2018;
- Ecological Action Plan of the former reservoir site at Gondar Gardens, West Hampstead, James Blake Associates, 2015;
- Arboricultural Survey, Tim Moya Associates, 2017; and
- Landscape Report, Andy Sturgeon Landscape Design, 2017.

1.3 The above reports have been used to inform this CEMP.

1.4 Protected species surveys and assessments carried out by James Blake Associates in 2018 identified the need for mitigation and precautionary measures for slow-worms.

Site Description and Proposals

1.5 The site is located in West Hampstead in the London Borough of Camden, to the south of Hampstead Cemetery. It is approximately 1.24 hectares in size and is surrounded by the gardens of dwellings on Gondar Gardens to the north, Agamemnon Road to the

east and Hillfield Road to the south. It has a frontage onto Persephone Gardens to the west. The wider landscape is urban in character (See Figure 1).

1.6 The site itself is an area of open neutral grassland with belts of native trees, shrubs and scrub to its boundaries. The landform of the western section is raised as it covers a partially-buried reservoir which dates back to Victorian times and is no longer in use. There are grassy banks on the southern and eastern sides that slope downwards towards the adjoining residential properties.

1.7 The site is designated as a Site of Borough (Grade ll) Importance for Nature Conservation (CaBll19 Gondar Gardens Covered Reservoir). This designation is mainly due to the fact that it is the only known site in Camden with a population of slow-worms.

1.8 The proposals for the site include the construction of a new building containing extra care housing and a nursing home on the western section of the site where the ground level is currently raised due to the presence of a buried reservoir structure. The building will be designed to include courtyards at different levels and will also feature areas of green and brown roofing. The soil profiles would be changed in order to both facilitate the removal of the reservoir and the creation of a new landform to the immediate east of the new building that would allow light into the lower sections of it. Where the new soil banks would be steep enough to require it, a soil reinforcement system would be used using Tensar Geogrid.

1.9 The construction as described above would necessitate the removal of eight individual trees and one group of trees. All of the trees that would be removed are of low quality (category ‘C1/C2’ or ‘U’ according to the Arborcultural Survey carried out by Tim Moya Associates). The Landscape Plan prepared by Andy Sturgeon Associates proposes that sixty new trees would be planted as mitigation for these tree losses. The Proposed Development Habitats Plan can be found in Appendix B.

Figure 1: Location Plan

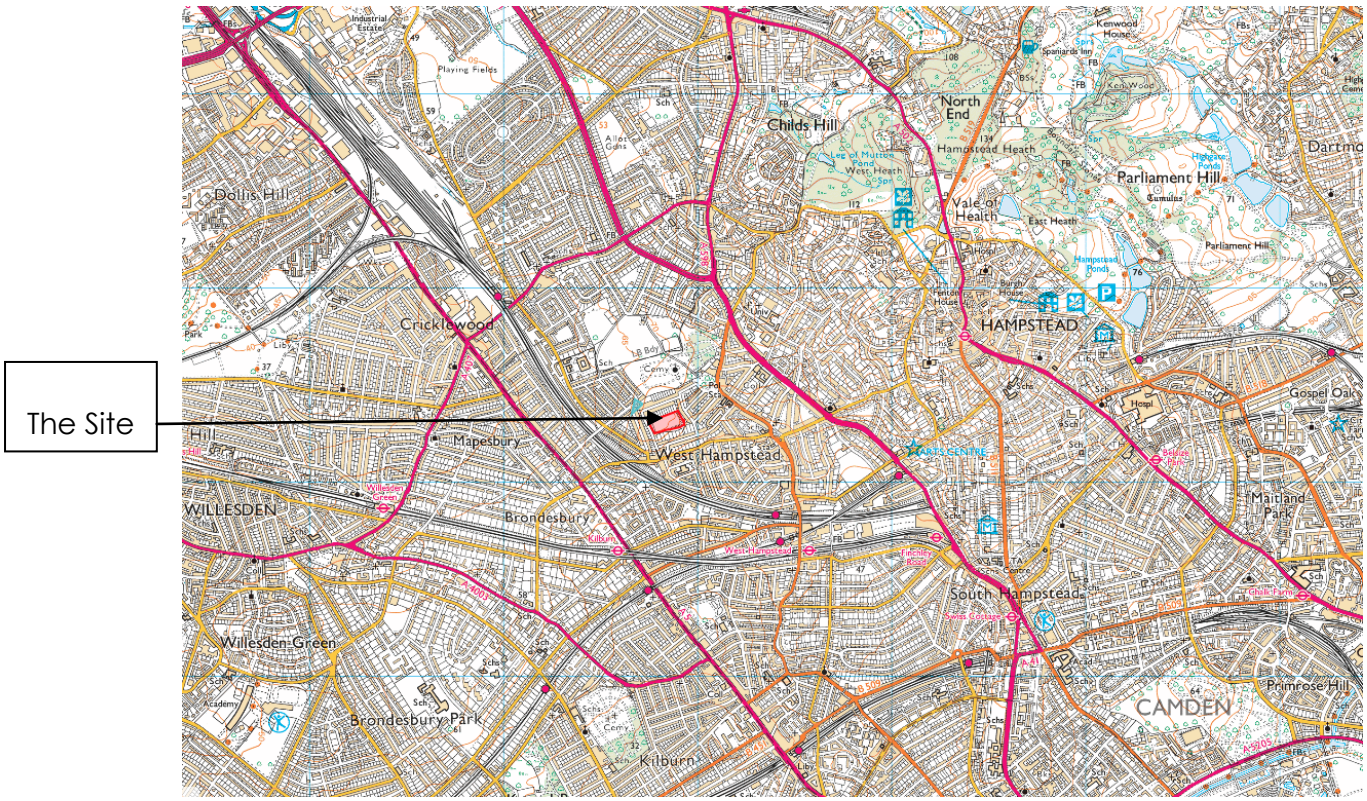


Figure 2: Aerial Image of the Site

Aims & Objectives

1.10 The aim of this Construction and Environmental Management Plan (CEMP) is to review existing ecological information for the site and advise on timings and methods of construction works throughout development, including details concerning further surveys and pre-commencement checks for protected and notable species and highlight appropriate working practices and safeguards to protect wildlife whilst works are taking place on site. It will also identify any enhancement opportunities, with the aim of increasing the biodiversity value of the site, post development.

2 Results of Previous Surveys and Evaluation

Flora and habitats

2.1 The Phase 1 Habitat Survey was undertaken by James Blake Associates in August 2016, and was updated in July 2018. An ecological data search for an area within 2km of Persephone Gardens (including the species records and information on statutory sites, non-statutory sites, habitats and open space information held by Greenspace Information for Greater London) was also commissioned from eCountability Ltd in order to supplement the survey data.

Semi-improved Neutral Grassland

2.2 Neutral semi-improved grassland, on shallow soil, was present above the reservoir, and was dominated by grasses with frequent to abundant forbs. To the east of this was an area of less species rich, rough, taller grassland. Spiked sedge (*Carex spicata*) was recorded at the site during the 2013 Phase 1 Habitat Survey in very small quantities within the south east corner. This species was not recorded during the 2016 or 2018 surveys and therefore is not likely to persist on the site. Areas in which it was previously recorded have been subject to scrub encroachment as a result of lack of grassland management in recent years. The grassland within the site is dominated by false oat grass (*Arrhenatherum elatius*) and cocksfoot (*Dactylis glomerata*) and approximates to the MG1 type under the NVC.

Scattered Trees and Scrub

2.3 The site is bounded by scattered semi-mature trees, the majority of which are situated within the adjacent gardens bordering all but the western boundary. The trees are predominantly sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*), Scot's pine (*Pinus sylvestris*) and willows (*Salix spp.*) Some of these to the eastern and southern boundaries were considered to have low to moderate bat roost potential. A semi mature ash which had a snapped main stem and woodpecker holes, along the southern boundary was also considered to have high bat roost potential. The belt of trees to the eastern site boundary is protected by a Tree Preservation Order (Camden TPO C378 2003). There is a layer of shrubs beneath these semi-mature trees mainly

hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*).The western, eastern and southern boundaries all have bramble and immature tree scrub, which is encroaching from the boundaries onto the main body of the site, particularly in the south east corner of the site along the south and east facing banks. The northern boundary fence is covered by Virginia creeper (*Parthenocissus quinquefolia*), a Schedule 9 species that is encroaching on the semi-improved grassland as of the updated 2018 Phase 1 Habitat Survey.

Reptiles

2.4 Slow worms (*Anguilis fragilis*) are protected from being killed and injured under Schedule 5 of the Wildlife and Countryside Act 1981 and are also a Species of Principal Importance (SPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act, 2006.

2.5 Reptile surveys were undertaken by James Blake Associates in 2010, 2013, 2016 and are ongoing into 2018. Between 110 and 140 refuges were laid out across the site, ten checks (during suitable weather conditions) were made of the refuges.

2.6 During 2010 a low population of slow worms was recorded on site, this increased to a good population of slow worms recorded on site in 2013. Slow worms were recorded predominantly in the rough grass on the southern boundary and one individual on the northern boundary. In 2016 a good population of slow worms was using the site, predominantly within the rough grass on the southern boundary and with all but a few individuals found within the eastern half of the site. The latest reptile survey results from 2018 (James Blake Associates, 2018) has recorded a good population of slow worms on the site; however, lower peak counts where noted from individual surveys when compared to 2016, and distribution was more centralised around the southern boundary.

2.7 Encroachment of scrub and tall ruderal vegetation in the south eastern corner noted in the 2018 updated Phase 1 Habitat Survey has reduced the suitable habitat for slow worms (which prefer tall layered grassland). This may have resulted in the reduced peak counts and distribution of slow worms recorded in the 2018 reptile surveys. It is considered that appropriate management of this area (including control of encroaching scrub) will enhance the site for slow worms.

2.8 A translocation of slow worms will be required in order to prevent any potential harm to slow worms using the construction zone. This will need to be detailed in a Reptile

Mitigation Strategy and Method Statement and submitted to and agreed by the LPA. The strategy will involve the erection of a reptile exclusion fence around the construction zone, details of the translocation and enhancement of the receptor area for slow worms through appropriate management and hibernacula creation.

Bats

2.9 All species of bats and their roosting and resting places are legally protected under the Conservation of Habitats and Species Regulations, 2017 and the Wildlife and Countryside Act, 1981. The legal protection also makes it an offence to disturb a bat whilst using any roosting or resting place.

2.10 No evidence of roosting bats has been found on site. In 2016 common pipistrelles and occasionally soprano pipistrelles were recorded within 30 minutes of sunset on multiple nights throughout the survey. A noctule (*Nyctalus nocutula*) was also recorded within 15 minutes of sunset on a single survey. This indicates that common pipistrelles (*Pipistrellus pipistrellus*) and noctules are likely to be roosting close to the site boundary. There are a few trees on site with low to moderate suitability for roosting with potential roosting features including ivy coverings and/or snapped limbs or stems and an ash which lay fallen into the site had moderate to high bat roost potential due to a snapped stem and woodpecker holes. These were all located along the southern boundary and are due to be retained.

2.11 The 2010, 2014 and 2016 bat activity surveys found that bat activity was concentrated along the site boundaries, with common pipistrelles the species most commonly recorded. Soprano pipistrelles (*Pipistrellus pygmaeus*) and noctules were also recorded on several occasions. Nathusius' pipistrelles (*Pipistrellus nathusii*), serotine (*Eptescus serotinus*), Myotis species and Leisler's (*Nyctalus leisleri*) were also recorded infrequently, suggesting they commute over the site. Surveys in 2010 and 2014 also showed low numbers of common pipistrelles using the site boundaries for foraging and commuting. Similarly, occasional commuting passes from soprano pipistrelle, noctule and Leisler's bat were also recorded in 2014.

2.12 In 2014 no signs or evidence (droppings, stains, scratch marks etc.) of bat activity was found at the covered reservoir. However, there were some areas that could allow access to bats including several ventilation pipes that were no longer blocked and metal cover/lids to the ventilation pipes were easy to open and/or missing parts. During the 2016 external inspection these potential access routes were found to have been

blocked to prevent the entry of bats into the underground reservoir. No signs or evidence of bat activity were found during the internal inspection. An additional internal reservoir inspection was carried out in June 2018 due to the entrance hatch to the reservoir being left ajar, potentially providing access for bats. However, no signs or evidence of bat activity were identified during the following inspection.

2.13 It is likely that the increased noise and lighting associated with the construction phase of the development could disturb commuting bats. Therefore, lighting restrictions and sensitive methodology is recommended (detailed within Section 3).

Breeding Birds

2.14 All species of wild birds, their eggs and dependent young are fully protected against killing, injury and taking and against disturbance at the nest and their active nests are protected from damage or destruction under Part 1 of the Wildlife and Countryside Act, 1981.

2.15 The boundary trees and scrub provided potential nesting and foraging opportunities for birds. Neutral grassland also provides potential foraging opportunities.

2.16 Twenty-three bird species were recorded on or close to the site in 2016 during breeding bird surveys. These findings were similar to those from the previous surveys carried out in 2011 and 2014. The birds identified during these surveys were mostly common species, both at a National and Local level. Four species of principal importance (SPIs) in England under Section 41 of the NERC Act, 2006 were recorded using the site during these three surveys; herring gull (*Larus argentatus*), starling (*Sturus vulgaris*), house sparrow (*Passer domesticus*) and dunnock (*Prunella modularis*). All of these species are common and widespread in the London area. Of all the SPI bird species (and BOCC (Birds of Conservation Concern) Red and Amber species) recorded within the site, only dunnock which was recorded as singing in suitably scrubby areas on site in 2014 only, is considered to have been possibly nesting onsite. All other SPI or BOCC red or amber species were unlikely to be nesting onsite. The majority of birds heard and seen during the surveys were within the trees and scrub areas on the site boundaries and within adjacent gardens. Three species, blackbird (*Turdus merula*), feral pigeon (*Columba oenas*) and wood pigeon (*Columba palumbus*), were recorded using the roof of the reservoir either feeding or flying from or to the area without any confirmed breeding activity.

2.17 Only small amounts of suitable nesting habitats will be affected by the development and it was considered unlikely that nesting birds would be significantly impacted provided precautionary methods for vegetation removal are implemented.

2.18 Precautionary measures include timing restrictions for removal of suitable nesting habitat or surveys to assess presence before removal (this is detailed within Section 3).

Amphibians

2.19 Great crested newts (*Triturus christatus*) are protected against being killed, injured and being taken and their breeding and resting places are legally protected against damage or destruction under the Conservation of Habitats and Species Regulations, 2017 and the Wildlife and Countryside Act, 1981. The legal protection also makes it an offence to disturb a great crested newt whilst using any breeding or resting place.

2.20 There are no ponds or waterbodies within the site for breeding amphibians such as great chested newts (*Triturus christatus*). The closest pond identified on OS maps was 500m south-east of the site boundary. The semi-improved grassland, trees, shrub belt and log piles at the proposed development site provide suitable foraging, sheltering and hibernation opportunities for amphibians. Due to the distance between the proposed development site and the closest pond (which potentially now no longer exists), and the ecological barriers between it and the site, such as roads and buildings, it was considered unlikely that great crested newts or other amphibians are using the proposed development site during their terrestrial phase.

Other Mammal Species

2.21 No signs of badger activity were recorded on the site. The grassland, shrub belt and areas of scrub and ruderal vegetation provided moderate quality habitat for foraging badgers and hedgehogs. It was considered unlikely that badgers would use the site due to its isolation, and the fact that there are no badger records within the 2km data search area. However, evidence of hedgehog activity was found on the site in the 2018 Updated Phase 1 survey, it was considered likely that hedgehogs use the site as additional foraging habitat and to commute between the boundary residential gardens. There are also records of hedgehogs within the site boundary from 2004. Fox (*Vulpes vulpes*) runs were abundant throughout the site but no fox earths have been recorded.

Invertebrates

2.22 The semi-improved grassland, trees, shrub belt and areas of scrub provided suitable habitat for common and widespread invertebrates. However, these habitats were of limited extent and therefore unlikely to support a significant assemblage of rare invertebrates. The log piles on the south-facing bank provided rotting deadwood, some of which was likely to be ash, which was frequent along the adjacent tree line, providing potential habitat for breeding stag beetles (*Lucanus cervus*).

3 Key timing and management operations

Roles and responsibilities

3.1 Throughout this section, and within the Timings Table (Table 1), reference will be made to an Ecological Clerk of Works (ECoW), developer and site manager. It will be the role of the ECoW, developer and site manager to ensure the management operations are enforced and/or adhered to throughout all phases of the development. This will be through the provision of tool box talks, appropriate supervision and monitoring.

3.2 In this instance the ECoW will be a suitably qualified ecologist; the site manager is yet to be appointed. The ECoW will have experience of informing and implementing management plans at active construction sites and will be appointed to the site based on their relevant skills base, experience and qualifications, according to guidance given by the Association of Environmental and Ecological Clerks of Works (AEECoW).

3.3 Other people with a role in the Construction and Environmental Management Plan are the arboricultural consultant and potentially an ecology consultant with a bat licence (if the ECoW does not have this licence). These consultants will be brought in by the ECoW if their additional expertise were to be needed.

3.4 It is the responsibility of the site manager to maintain up to date copies of ecological reports, relevant planning conditions and protected species licences in the site office for referral.

3.5 Training will be provided to all on site personnel regarding ecological issues in the form of tool box talks. Talks will be given prior to the commencement of construction works and any new contractors will be given a talk upon their appointment. Training information/documentation will be kept in the site office for referral/access when needed.

3.6 Following tool box talks all non-ecological site personnel will have an awareness of sensitive areas, protected species, be aware of timing constraints and be able to carry out necessary procedures in the event of a breach of protected areas and implementation of emergency measures.

3.7 The site manager will undertake weekly checks of on-site works and the ECoW will make monthly visits/checks (detailed below).

3.8 The developer and site manager are responsible for providing correspondence to the LPA where necessary, prior to commencement of works. For example the findings of protected species surveys prior to the start of works.

3.9 The CEMP will be kept in the site office and available to all on-site workers. The site manager will be responsible for the implementation of the CEMP on a day to day basis. Any alterations to planned methodologies or timings should be discussed with the ECoW and the CEMP will be re-issued to the LPA for approval.

3.10 The site manager/developer is responsible for compliance with regulations, planning conditions, environmental procedures and contractual agreements and obtaining legal consents. This includes compliance with the legal requirements concerning the trees on site that are covered by Tree Protection Orders (Camden TPO C378 2003) Reports will be provided to the ECoW describing the success and compliance of works and the CEMP or on-site practices amended accordingly.

Monitoring, compliance, contingency and emergency measures

3.11 Before any materials or machinery are brought onto site and before any demolition, soil stripping or construction work commences, it will be necessary to erect protective fencing (barriers) around the trees and hedgerows adjacent to the development area that are to be retained. This is to be done in accordance with BS5837:2012. Contractors must refer to the Arboricultural Survey conducted by Tim Moya Associates in September 2017.

3.12 Once erected, barriers and any ground protection will be regarded as sacrosanct and will not be removed or altered without the prior approval of the LPA, except where there is proposed development within these areas and special approved construction and working methods are adopted.

3.13 The barriers will remain intact for the duration of the works and should any breaches occur during this period, then work will be stopped until repairs can be completed.

3.14 Once construction has been completed, it will be necessary to remove the tree protection fencing in order to facilitate soft landscaping. It is important to ensure that

heavy machinery is not used within the Root Protection Areas (RPAs) unless suitable ground protection is adopted following further consultation with the LPA.

3.15 The site manager will make weekly checks of on-site works to ensure these follow procedures and methodologies laid out in the CEMP. The ECoW is to be informed of any breaches of protected areas or if emergency measures are required. The ECoW will then contact the relevant authorities, such as Natural England, and alongside the site manager will implement necessary remedial actions.

3.16 A bio-security management plan for the works will be prepared by the principal ecologist for the contractor or by the ecological clerk of works, covering such items as plant and seed procurement, importation and documentation in order to avoid the spread of potential diseases and pests. It shall also cover the control on site of any potentially invasive plant species and pernicious, injurious and ruderal weeks including any species named in the Wildlife and Countryside Act Schedule 9: 1981 or most recent legislation.

3.17 The bio-security management plan will be kept on site by the site manager with other documents relevant to the landscape and ecology of the site (such as the Construction and Environmental Management Plan) and its contents communicated to all site staff through induction talks and toolbox talks.

Pre-construction

Habitats

3.18 It is important to protect retained hedgerows and trees from construction works and disturbance. A fence will be erected around retained hedgerows and trees (a standard RPA) prior to works commencing.

3.19 An arboriculturist and ecologist will give a toolbox talk to all site workers (both before construction and as new workers are contracted) regarding the necessity for protective fencing and precautionary procedures to be employed to ensure the protection of all retained hedgerows and trees, making it explicitly clear that the fencing is not to be breached.

3.20 Native planting of hedgerow will be included with the planting scheme. Native species that are fruit/nut bearing will be included within the planting scheme.

Reptiles

3.21 Before works can begin, a 'construction zone' will be delineated as shown in Appendix B. This will include the footprint of the proposed building, working space around it and the portion of the 'wild' area at the eastern side of the site where the soil profiles are to be changed in order to create a new landform that will allow light to reach the lower parts of the new building and the lower courtyards. A reptile exclusion fence erected to separate the construction zone from the rest of the site. All reptiles on site will be translocated to the protected area on-site which is separated from the construction zone by the reptile exclusion fence. This will be carried out by ecologists with the appropriate qualifications and experience. The erection of the reptile exclusion fence and the translocation of the reptiles will be carried out in accordance with a Mitigation Method Statement to be prepared by James Blake Associates.

3.22 Three hibernacula will be constructed within the area protected by the reptile exclusion fence prior to translocation. This will enhance the designated receptor area for suitability for translocated slow worms. These will be created using excavated spoil mixed with hardcore/brick rubble/logs to create mounds and be constructed as directed on site by the ECoW. Details of the hibernacula will be included in the Reptile Mitigation Strategy and Method Statement.

Bats

3.23 A toolbox talk given by the ECoW to all site workers will give clear instruction as to the actions to be followed during construction phase of development. This will include the steps taken should bats be found roosting within mature trees on site subject to management or felling works if required.

3.24 If any works are required on boundary trees, this will be undertaken following a consultation with a suitably qualified and bat licensed ecologist to ensure that no bats are roosting within trees. Trees with bat roost potential will then be dismantled following a climb and inspect survey by a suitably qualified and bat licensed ecologist, who will then supervise the dismantling. This should be undertaken during the bat active season (April to September). If bats are found during tree inspections works will stop and a bat licenced ecologist or Natural England will be consulted. Works may have to be delayed until a Natural England mitigation licence can be obtained. No works should be undertaken until advice has been sought or a European Protected Species Mitigation Licence is in place. Continuing to undertake work to a structure

known to be used by bats would be unlawful and any such work would result in large penalty fines.

Breeding Birds

3.25 A toolbox talk (given by the ECoW to all site workers) will give clear instruction as to the actions to be followed during construction phase of development should nesting birds be found on site.

3.26 The removal of any trees/scrub on the site which will be necessary in order to facilitate the construction work shall be carried out outside the bird breeding season (i.e. not after the beginning of March and before the end of September). If this is not possible, a nesting bird check should be carried out by the ECoW to determine if nesting birds are using the scrub/trees for nesting. If an active nest is found, a radius of 5m of vegetation should be left around the nest until the young have fledged.

During construction

3.27 Throughout the construction period, it is the responsibility of the site manager to inform the ECoW immediately about any breaches of the Construction and Environmental Management Plan and any issues of relevance to the delivery of the measures described in the CEMP.

Habitats

3.28 Checks will be made to ensure the integrity of the tree and hedgerow protection fencing remains throughout the construction phase, and any repairs made, if necessary. These checks will be carried out weekly by the site manager and by the ECoW during site visits. If any repairs or realignment is necessary, this should be undertaken following consultation with the appointed arboriculturist and works in the area potentially damaging to trees/hedgerows will cease in the interim. Any layout changes to RPAs will be agreed in writing by the LPA prior to adjustment.

3.29 Root protection fencing will not be entered during construction unless agreed to by a suitably qualified arboriculturist and the LPA. This will be monitored by the site manager. Any revised working methods within RPA will be agreed in writing by the LPA prior to adoption.

3.30 Any works are to be carried out within the RPA any of the boundary trees on site should be carried out in accordance with the Arboricultural Impact Assessment (Tim Moya Associates, 2017).

3.31 In the case of layout changes where areas of hard-standing need to be created within the RPAs, certain methodologies are available. Usually such methods will include ensuring no digging and the maintenance of permeable surfaces above tree roots. Any methodologies will be agreed with a suitably qualified arboriculturist and will be agreed to in writing by the LPA prior to any commencement of such works.

3.32 Grass should be cut using a brush-cutter once in March and again in October (cuts should not take place during frosty or wet conditions) throughout the construction phase ensuring that the vegetation is cut no lower than 20cm in height. Cutting should be undertaken in a way that any slow-worms or small mammals present in the grassland can escape into adjacent habitat such as uncut grassland or scrub, without them having to cross areas already cut or them being exposed to predation. Cut material should be left in-situ for 2 days (allowing invertebrates to leave) before being collected and composted. A third cut in December/January may be undertaken if monitoring of vegetation determines that this is required.

3.33 Habitats on site should be implemented and managed in accordance with the Landscape Ecological Management Plan (LEMP).

Reptiles

3.34 Weekly checks will be made of the integrity of the reptile exclusion fence by the site manager. It will also be checked by the ECoW whenever they visit the site, with a minimum frequency of inspection of once a month during the construction phase.

3.35 If any breaches are found in the reptile exclusion fence at any time during the construction phase, it shall be repaired immediately and all work halted while a qualified ecologist searches within the construction zone and translocate any slow-worms found in it back to the protected area.

3.36 Within the protected area of semi-improved grassland, management shall be carried out in order to maintain the habitat in a state that will be conducive to slow-worms. For management method see section 3.29.

Breeding Bats

3.37 Before any arboricultural work is undertaken on any of the retained mature trees on the site during the construction phase, it will be checked by an appropriately licenced ecologist for bat roots and cavities.

3.38 The detailed location of the bird and bat boxes and the hibernacula to be erected shall be agreed on site with a bat-licenced ecologist, for approximate locations see Appendix B.

3.39 The following measures can be applied to reduce any disturbance to bats during the construction period:

- Working at night will be avoided so that lighting is off when bats are active and using the site for foraging and commuting.
- If working at night is necessary, a sensitive lighting scheme will be adhered to for all on-site lighting e.g. security lighting.

3.40 A sensitive lighting scheme during construction will consist of the following measures:

- Minimise the lighting levels across habitats where potential foraging/commuting corridors are located e.g. semi-improved grassland, hedgerows and trees.
- Minimise the spill of light with the use of directional luminaires, shields, baffles and louvers to direct light to where it is needed and to prevent light being directed over the aforementioned habitats.
- Lighting for security reasons will use a lamp of no greater than 2000 lumes (150 watts) and will be passive infrared (PIR) sensor-activated, to ensure that the lights are only on when required.
- Use light sources that emit minimal ultra-violet light and avoid the white and blue wavelengths of the light spectrum, which attract insects. Avoiding attracting insects, and potentially reducing numbers in adjacent areas which bats use for foraging and commuting, will reduce the risk of disturbing bats during construction.

- Limiting the height of lighting columns to 8m and increase the spacing of lighting columns can reduce the spill of light into unwanted areas such as the aforementioned habitats.

Birds

3.41 Works proposed to any trees or hedgerows will be conducted outside the main bird breeding season (which is March until September). For clarity, vegetation removal should be undertaken between October and February inclusive. If vegetation removal is unavoidable between these dates, an ecologist will survey the site for active bird nests immediately prior to works. If active nests are identified, a radius of 5m of vegetation will be retained around the nest until the young have fledged. Red hazard tape should be erected around the nest so that all contractors are aware of the nest. As such, there may be a delay in the clearance of some vegetation until all young birds have fledged.

Post construction

3.42 Appropriate management of the open spaces and ecological areas will be carried out. Details of this are provided in the Proposed 10 Year Management Plan 2019-28 that has been produced by the London Wildlife Trust, and the LEMP.

3.43 Bat and Bird boxes should be erected as instructed in sections 4.4 and 4.5, this will be carried out by the ECoW or a suitably qualified ecologist.

3.44 Information about the location of the bat boxes included on the site should be passed on to the local Bat Group.

Construction management - timing of works

3.45 Table 1 details the above ecological management measures for pre-construction, during and post-construction.

Table 1: Timings of construction and ecological management works

Timings	Feature/species of interest	Action	Person responsible
Pre-construction			
Prior to any construction works and when any new contractors are commissioned	All elements	Toolbox talk to include all the ecological measures relevant to construction.	Site manager and ECoW
Prior to any construction works	All elements	Produce a bio-security management plan.	Site manager and ECoW
Prior to any construction works	Reptiles	Reptile exclusion fencing to separate the construction zone from the protected/receptor area.	Site manager and ECoW
Prior to any construction works	Reptiles	Implementation of hibernacula to receptor area at the same time as reptile fence erection	Site manager and ECoW
Prior to any construction works	Reptiles	Slow worm translocation from the construction zone to the protected/receptor area.	Site manager and ECoW

Timings	Feature/species of interest	Action	Person responsible
Prior to any construction works	Reptiles & Ground nesting birds	Clear ground vegetation where the footprint of the building and the re-profiled landform will go.	Site manager and ECoW
Prior to any construction works	Reptiles	Construct three hibernacula within the area protected by reptile exclusion fencing.	ECoW
As required	Bats	Inform the ECoW of any arboricultural work required to a mature tree.	Site manager
Prior to any construction works	Trees and shrubs	Protective fencing around retained trees and shrubs.	Site manager, and arboriculturist
Between the beginning of October and the end of February	Breeding birds	Remove any trees and shrubs scheduled to be removed.	Site manager and ECoW
During construction			
When construction site is set up	Bats	Sensitive lighting scheme.	Site manager
Daily checks	Reptiles	Checks of the reptile exclusion fencing.	Site manager

Timings	Feature/species of interest	Action	Person responsible
Weekly checks	Reptiles	Ensuring cleared areas remain free of vegetation.	Site manager
Weekly checks	Hedgerows & trees	Checks of protective fencing around retained hedgerows, trees and stumps.	Site manager
March and October	Reptiles	Cut the semi-improved grassland with a brush-cutter.	Site manager
As required	All elements	Inform the ECoW of any work required within 10m of a TPO tree.	Site manager
As required	Bats, Breeding Birds and Reptiles	Agree on-site the exact location of bat boxes, bird boxes and hibernacula.	Site manager and EcoW
Post construction			
As required	All elements	Appropriate management of open spaces.	Site manager
Within two months of completion	Bats	Inform the local Bat Group of the location of the bat boxes in site.	ECoW

4 Enhancements

4.1 The re-profiled landform to the east of the new building will include a south-facing grassy slope, which will provide a suitable new habitat for slow worms.

4.2 Three reptile hibernacula should be implemented along the eastern end of the southern boundary to enhance suitability for slow worms.

4.3 A new pond is proposed as part of the sustainable drainage scheme. It will be located to the east of the new building and will form a naturalistic feature which will increase the biodiversity of the site.

4.4 Schwegler bird boxes consisting of two 3SV Starling boxes, two 2H open fronted boxes and three 1B (holed) nest boxes will be installed on retained mature trees within the site hedgerows. 5 17b swift bricks should also be installed into buildings. Boxes will be located out of direct sunlight and close to, but not restricted by, vegetation and should follow manufacturer's specifications. 3S starling boxes will be placed over 2.5m above ground level, with the 2H and 1B boxes placed between 2m to 4m above ground level. 17b swift bricks should be positioned at the highest points possible, ideally under eaves and above 5m form the ground.

4.5 Six Schwegler 2F bat boxes will be placed on retained mature trees within the site hedgerows (See Appendix B). Schwegler bat boxes are recognised as being suitable for roosting bats and long lasting. Bat boxes will be located facing a variety of aspects (between south east and south west), close to vegetation and high (above 5m) and should follow manufacturer's specifications. Final locations of the bat and bird boxes will be agreed on site and should be incorporated into landscape plans.

4.6 Landscaping will incorporate native or wildlife attracting trees, shrubs, and wildflower areas as these will be of benefit to a variety of wildlife including, birds, badgers, bats and invertebrates.

4.7 The land will be maintained post-construction by a grounds team to be employed by LifeCare Residences. This will improve the standard of maintenance carried out on the 'wild' open space and woodland belts and improve their condition as wildlife habitats

4.8 Log piles will be formed on-site to create new habitats for invertebrates.

5 Conclusions

5.1 The recommendations detailed in this report were based upon results from Phase 1 Habitat Survey and surveys for reptiles, bats and breeding birds. These were carried out in August and September 2016 by James Blake Associates.

5.2 It is considered that by following the timing and management recommendations contained within the development could proceed with minimal risk of impact on protected or rare wildlife, including species of principal importance in England, or to local nature conservation. If the enhancement recommendations contained within are implemented, the ecological value of the site is likely to be increased, post development.

6 References

Construction Management Plan for Persephone Gardens (2017)

James Blake Associates Ltd (2010a) *Phase 1 Habitat Survey of Covered Reservoir Gondar Gardens Reservoir Site, West Hampstead, London* On Behalf Of Linden Wates (West Hampstead) Ltd.

James Blake Associates Ltd (2010b) *Reptile Survey of Covered Reservoir Gondar Gardens Reservoir Site, West Hampstead, London* On Behalf Of Linden Wates (West Hampstead) Ltd.

James Blake Associates Ltd (2010c) *Bat Survey of Covered Reservoir Gondar Gardens Reservoir Site, West Hampstead, London* On Behalf Of Linden Wates (West Hampstead) Ltd.

James Blake Associates Ltd (2013) *Reptile Survey of Former Covered Reservoir at Gondar Gardens, Camden, London.* On Behalf Of Linden Wates (West Hampstead) Ltd. Revision B– *First issued November 2013, Reviewed April 2015, Re-issued August 2015*

JBA Consultancy Services (Now James Blake Associates Ltd) (2014) *Bird Survey of Reservoir at Gondar Gardens, London Rev. A* On Behalf Of Linden Wates (West Hampstead) Ltd

JBA Consultancy Services (Now James Blake Associates Ltd) (2014a) *Bat Survey of Reservoir at Gondar Gardens, London Rev. A* On Behalf Of Linden Wates (West Hampstead) Ltd.

James Blake Associates Ltd (2015) *Phase 1 Habitat Survey of Gondar Gardens Reservoir Site, West Hampstead, London* On Behalf Of Linden Wates (West Hampstead) Ltd *– First issued November 2013, Reviewed April 2015 (Rev. B).*

James Blake Associates (2015a) *Reptile Survey of Former Covered Reservoir at Gondar Gardens, Camden, London* On Behalf Of Linden Wates (West Hampstead) Ltd *– First issued November 2013, Reviewed April 2015, Re-issued August 2015.*

James Blake Associates (2015b) *Ecological Action Plan of the Former Reservoir Site at Gondar Gardens, West Hampstead* On Behalf Of Linden Wates (West Hampstead) Ltd *– First issued April 2015, Re-issued August 2015.*

James Blake Associates (2016) *Phase 1 Habitat Survey of Gondar Gardens Reservoir Site, West Hampstead, London* On Behalf Of Lifecare Residences– *First issued August 2016, Reviewed October 2017 (Rev B).*

James Blake Associates (2016a) *Reptile Survey of The Covered Reservoir at Gondar Gardens, West Hampstead, London* On Behalf Of Lifecare Residences.

James Blake Associates (2016b) *Breeding Bird Survey of Reservoir at Gondar Gardens, West Hampstead, London* On Behalf Of Lifecare Residences.

James Blake Associates (2016c) *Bat Activity Survey of Covered Reservoir at Gondar Gardens, West Hampstead, London* On Behalf Of Lifecare Residences.

James Blake Associates (2018a*) Updated Phase 1 Habitat Survey Report at Gondar Gardens, West Hampstead, London* On Behalf Of Lifecare Residences.

James Blake Associates (2018b) *Internal Inspection of Reservoir for Bat Use at Gondar Gardens, West Hampstead, London* On Behalf Of Lifecare Residences.

James Blake Associates (2018c) *Reptile Survey 2018 at Gondar Gardens, West Hampstead, London* On Behalf Of Lifecare Residences.

National Planning Policy Framework (2018) Ref: ISBN 978-1-4098-5302-2.

Drawings

Landscape Report for Persephone Gardens, Andy Sturgeon Landscape Design, September 2017.

7 Appendices

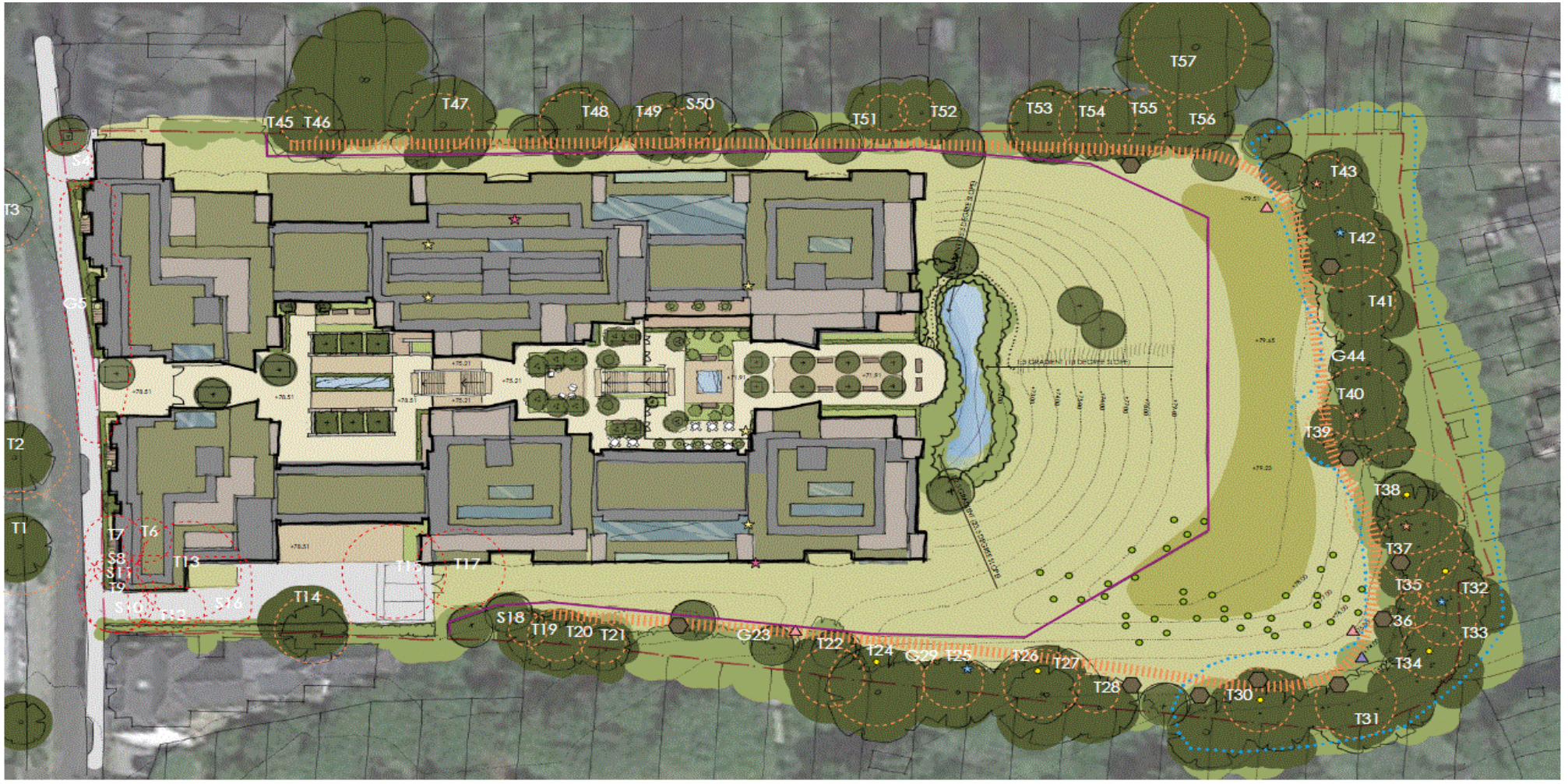
Appendix A: Risk assessments

Construction-type activity		**Undertaken at site**	**Risk minimisation**
Site clearance	Removal of ground vegetation	✓	Will be undertaken between December and February outside the breeding bird season, or up to mid-March following a nesting bird check by an ecologist.
	Removal of or pruning/cutting of trees and hedgerows	✓	Will be undertaken in two stages: 1) Cutting of vegetation down to 30cm between December and February outside the breeding bird season, or up to mid-March following a check for nesting birds and dormice by an ecologist. Remaining vegetation to be protected with heras fencing. 2) Removal of remaining vegetation and roots in May under supervision of a dormouse licenced ecologist.
	Removal of soil, rubble and other materials	✓	N/A
	Demolition of buildings and structures	X	N/A
Site set-up	Location of site offices, site huts, temporary latrines (including their drainage)	✓	Will be placed away from boundary vegetation.
	Temporary storage areas and stockpiles for soils, materials, spoils and waste	✓	Will be placed away from boundary vegetation. Ensure storage of all materials, fuel and wire fencing are stored on pallets to safeguard mammals and prevent colonisation by reptiles
	Site lighting	✓	Lighting restrictions detailed in Section 3
	Areas for plant maintenance and for storage of oils, fuels	✓	Will be placed away from boundary vegetation.

	and chemicals		Ensure storage of all materials, fuel and wire fencing are stored on pallets to safeguard mammals and prevent colonisation by reptiles
	Site fencing (e.g. disruption/severance of animal runs and paths)	✓	Install Heras fencing around the construction site to prevent site personnel entering buffer areas. Heras fencing will allow badgers and other mammals to still use the site for foraging and commuting purposes.
Groundworks	Ground investigations, foundations, excavations and piling, temporary earthworks, tunnelling (including the necessary space to operate cranes and large machinery)	✓	The covering of excavations overnight during the construction period to prevent animals falling in, or the provision of an escape ramp (e.g. secured scaffold boards) allowing animals to climb out.
	Installation of underground services (e.g. pipes, electricity, gas, telecommunications cables, foul and surface water drains)	✓	N/A
	Temporary diversion of watercourse, and/or water abstraction and/or dewatering from and/or discharge to a receiving water body	✓	Will follow pollution prevention guidelines.
Assembly areas for components of construction	Assembly areas for dry trades (e.g. steel works and reinforcements)	✓	Will be placed away from boundary vegetation.
	Assembly areas for wet trades (e.g. concrete pours and batching)	✓	Will be placed away from boundary vegetation. Will follow pollution prevention guidelines.
Marine works	Piling or other works relating to foundations	X	N/A
Construction	Night time working	✓	Avoid night-time working to prevent disturbance to nocturnal species

			such as bats and badgers. See lighting restrictions detailed in Section 3.
	Dust and noise	✓	Appropriate measure to reduce dust and noise pollution.
	Increase in traffic movements (deliveries, materials)	✓	Avoid receiving deliveries at night-time to prevent disturbance to nocturnal species. Outline roads and site entrances for deliveries and site workers prior to works to prevent excessive trampling.
Environmental incidents	Vandalism	Poss.	Install security fencing surrounding the construction zone to prevent entry.
	Fires and burning of wastes	Poss.	Install security fencing surrounding the construction zone to prevent entry.
	Pollution (air, water and ground)	Poss.	Implementation of SUDS to minimise run-off into water courses.
	Erosion and sediment run-off	Poss.	Implementation of SUDS to minimise run-off into water courses.
	Accidents (e.g. fuel leaks and spills)	Poss.	Implementation of SUDS to minimise run-off into water courses.
Disposal of waters, removal of site offices and final site clearance after construction		✓	Ensure that no construction waste remains on site.

Appendix B: Proposed Site Habitats Plan. Includes the site boundary, the group of trees covered by the Tree Protection Order and the proposed locations of the Reptile Exclusion fence and the hibernacula **(**Landscape Design, September 2017).



Legend

Neutral grassland semi-improved Protected where possible and reinstated by seeding

Semi-improved grassland with acidic qualities Protected where possible, reinstated and expanded by seeding

Shrub planting expanded

Surveyed trees with root protection zones (orange dashed line) Tim Moya Assoc. Tree Survey Feb 2017

Trees to be removed due to construction works Site-won tree timber used to create deadwood piles

Reptile exclusion fence to be erected during construction works as recommendations in JBA Reptile Survey Report Sep 2016

Hibernaculums to be erected as recommendations in JBA Reptile Survey Report Sept 2016

Retain and replenish rotting wood to enhance habitat for stag beetles. Do not disturb existing piles

6no. Schwegler 2F bat boxes, suitable for pipistrelles, on retained trees, 5m above ground

3 no. Schwegler 3SV starling boxes will provide additional nesting opportunities for BoCC red listed species such as house sparrow and starling

5no. Schwegler 17B swift bricks incorporated into external frame work as high as possible, ideally under eaves (min 5m above ground)

2no. open-fronted nest boxes, to encourage black redstarts, appropriately located under structures, such as over hangs or balconies

Existing Spiked Sedge *(Carex spicata)* protected and population enhanced. Cited in SINC designation due to its rare status in Camden

Dedicated stag beetle loggery to maintain an on-site breeding habitat for stag beetles

Retention ponds providing additional habitat typologies and handing surface water as part of SuDS drainage strategy

Private amenity spaces and roof terraces

Private amenity courtyard gardens, with shrub, perennial and tree planting to suit micro-climates created

New tree planting; suitable natives and fruit bearing selections. Gaps in boundary planting filled in

Scale 1:250

Trees under Camden TPO C378 2003 Group of trees of various species (G30 - G43 in Arboricultural Survey)

T26 G23 S4 Trees (T), Tree Groups (G) and significant Shrubs (S) identified in the Tim Moya Assoc. Arboricultural Survey Feb 2017

Outline of existing reservoir structure in dashed line

Site boundary

Habitat transition zone (ecotone) of 1-2m in width.

PL01 20.10.17 issued for planning JP AN A3

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client Lifecare Residences

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drawing Proposed Site Habitats Plan

1:250@A3
1:500@A1