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APPENDICES

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6.1 INTRODUCTION

6.1.1 Catherine Bickmore Associates were commissioned on 17th May 2013 by CgMs Consulting on behalf of Haymarket Media Group to undertake an ecological impact assessment of proposals for redevelopment of Teddington Studios, Teddington. This was carried out in connection with submission of an environmental impact assessment to redevelop the site for residential use.

6.1.2 The survey methods are described, followed by a description of the desk study and field survey findings. A description of the proposals and assessment of effects are then discussed and recommendations are given. Finally the residual and cumulative impacts are discussed. Photographs of the habitats on and around the site are presented in Appendix 6.1, photographs from the bat survey are included in Appendix 6.2, a flora species list is included in Appendix 6.3, a summary of relevant legislation is given in Appendix 6.4, a description of protected sites is included in Appendix 6.5, and the data from the bat emergence survey is presented in Appendix 6.6. References are included in Appendix 6.7.

Scope of Assessment

6.1.3 An initial phase one habitat survey was undertaken and the need for further specialist surveys was identified. A daylight inspection for bat was recommended and carried out, followed by a nocturnal emergence bat survey.

Data Collection Methodology

Desk study

6.1.4 A desk study included collation of records of protected species and Biodiversity Action Plan (BAP) species, and sites of nature conservation interest, and a summary of the national and local planning policy. Biological records were requested from GIGL and London Bat Group for a 2km radius around the site, and Nature on the Map was consulted for international designations within 5km (Natural England, 2013).

6.1.5 Note: the absence of a record does not necessarily equate with the absence of a particular species, rather that no records have been submitted.

6.1.6 In addition, shadow analysis plans provided by the architect were consulted to indicate the existing and proposed extent of shading caused by the buildings towards the river, to enable an assessment of impact on ecology.

Phase one habitat survey

6.1.7 A phase one habitat survey was undertaken on 21st June 2013, a calm, mostly dry day, by a qualified ecologist and full member of CIEEM. The field survey method followed the phase one habitat survey procedures in Nature Conservancy Council (1990) and comprised a walk over of the site recording main habitat types and species present using the DAFOR scale (D = dominant; A = abundant; LA = locally abundant; F = frequent; LF = locally frequent; O = occasional; R = rare). A check was also made for signs of and potential for protected species such as bats and badger.

6.1.8 Features of note were described and plotted approximately by eye on a topographical plan, along with the main habitat types (Figure 6.1). Common names are used throughout the text with scientific equivalents listed in Appendix 6.3, applying BSBI (2007) or Stace (2010) nomenclature.

Constraints

6.1.9 The survey was subject to seasonal and access constraints and the conditions at the time of the survey, and only provide a snapshot in time. June is an appropriate month for undertaking phase one habitat surveys. Access was restricted to the garden of Weir Cottage (Building 1), however it was visible over the wall.

Daylight building inspection for bat

6.1.10 Buildings with pitched roofs scheduled for demolition as part of the development (Buildings 2, 3, 4 and 5) were included in the daylight building inspection. Building 1 was to be retained and the loft space and roof unaffected by proposals, therefore no further survey was necessary.

6.1.11 Buildings 2-5 were inspected for signs of bat on the 8th August 2013. The search was undertaken by an ecologist registered under Natural England bat survey class licence CL018 (Registration No. CLS01156) with the aid of a ladder, high powered torch (1 million candle power) and binoculars.

6.1.12 Evidence of bats using a building as a roost site typically comprises the following:

Droppings;
Piles of insect remains e.g. moth wings;
Staining at roost entrances or within the roost;
Bats (live or dead).

6.1.13 Bats can use a range of different residential buildings with pitched roofs as roost sites. The features typically used by roosting bats include the following:

Cracks in the masonry and pointing;
Gaps between roof, ridge and hanging tiles;
Gaps beneath wooden cladding;
Gaps under lead flashing, behind soffits and fascia boards;
Spaces under roofing felt.

Survey constraints

6.1.14 Access was available to the interior of Buildings 2, 3 and 4 during the peak season for recording bat activity i.e. May to August, and as such there were no significant constraints to the internal surveys. No access was available to the roof space in Building 5 due to the presence of asbestos. Free access was available to the exterior of all of the buildings but the survey was carried out

from ground level or from nearby flat roofs and often due to the height of the buildings the view of the exterior was restricted.

Daylight tree inspection for bat

6.1.15 A daylight survey was carried out of trees with possible potential for bat, to be affected by proposals. Three mature horse chestnut trees scheduled for removal as part of the development (Trees A, B and D) were included in the survey, as well as a mature horse chestnut to be retained but situated immediately adjacent to the new building (tree C) (Figure 6.1). Tree A was inspected on the 8th August 2013 and Trees B-D on 15th November 2013 by an ecologist registered under Natural England bat survey class licence CL018 (Registration No. CLS01156).

6.1.16 The survey comprised a visual inspection of the tree, undertaken from ground level with the aid of binoculars and a powerful torch, looking for evidence of use by bats such as droppings and staining around potential roost sites, and for features that could offer potential roosting sites. Trees can offer potential roosting sites for bats if they possess the following features:

Cracks, splits and crevices in the trunk and branches
Areas of loose bark
Cavities and hollows e.g. woodpecker and rot holes
Dense ivy cover

6.1.17 The potential for the tree to provide roosting habitat for bats was assessed and the tree classed as set out below:

High potential – Mature tree with one or several features providing good roosting conditions for bats which are likely to be suitable for use by multiple bats at different periods of the year; has potential to act as a hibernation site.

Moderate potential – Mature tree with one or several features providing limited roosting opportunities. Likely to be suitable only as transient roosts for individual or a small number of bats for small periods during the summer; unlikely to be suitable as a hibernation site.

Low potential – Mature or semi-mature tree with very few opportunities for bats, but occasional minor features such as dead branches, or ivy growth that may provide for short term use by individual bats.

Negligible potential – Immature tree or tree which can be clearly viewed and seen not to have any features of potential for bats, or evidence of use by bats.

Survey constraints

6.1.18 The survey of the trees was carried out from ground level only and therefore it is possible that features of potential for bats at height may not have been visible.

Dusk emergence survey for bat

6.1.19 Evening emergence surveys of Building 3 & 4 were undertaken on the 19th September 2013 by four surveyors: two ecologists licensed to disturb and handle bats under Natural England Class Licence CL018, and two ecologists experienced in undertaking bat emergence surveys.

6.1.20 Figure 6.2 shows the positions of the surveyors during the survey. The surveyors situated on the north eastern side of Building 3 and north western side of Building 4 used Anabat SD2 detectors in conjunction with Batbox Duet frequency division detectors to assist with identification in the field. The surveyor situated to the west of Building 3 used an Anabat SD2 detector in conjunction with a Pettersson D200 detector to assist with identification of bat calls in the field. The surveyor situated to the south of Buildings 3 & 4 used an EM3 detector. The Anabat and EM3 recordings were later analysed using the Analook software package.

6.1.21 The evening emergence survey started 15 minutes before sunset and continued until approximately 1.75 hours after sunset. Weather conditions were suitable for survey, being dry and calm with some high cloud and temperatures of 15-16oC (Appendix 6.6).

Constraints

6.1.22 The emergence survey was carried out in conditions suitable for recording bat activity i.e. dry with air temperatures above 8°C, and within the appropriate season for recording bat activity (May to September) (BCT 2007) and therefore had no significant constraints.

Assessment of impact

6.1.23 The method of approach follows general guidance for ecological impact assessments published by Institute for Ecology and Environmental Management (IEEM) in July 2006 and the Highways Agency (2008).

6.1.24 It is broadly accepted that the significance of an effect reflects the relationship between two factors:

The value of the affected resource or receptor and its sensitivity to the impact (which can vary depending on the nature of the impact), and

The magnitude of an impact i.e. the actual change taking place to the environment.

6.1.25 The value/sensitivity of the affected resource/nature conservation interest is assessed by considering the rarity and potential for substitution of the resource and relating to the geographic frame of reference of their importance (Table 6.1).

6.1.26 The magnitude of the ecological impacts, as defined in Table 6.2, has been assessed by consideration of a number of factors including:

Positive or negative;
Magnitude and extent;
Duration;
Reversibility;
Timing and frequency; and
Cumulative effects.

6.1.27 A matrix is then used to describe the significance of the impact in the absence of mitigation, taking into account the two factors: the environmental value of the feature affected and the magnitude of the impact (Table 6.3). A description of each level of impact significance is given in Table 6.4.

6.1.28 The significance of the impact is then re-assessed, assuming recommended mitigation measures were undertaken, to give the residual effect.

Table 6.1: Geographical frame of reference of importance of ecological features used to determine environmental value

Environmental value/ Sensitivity	Geographical context
Very high	International (Europe and World wide)
High	UK/national (England, Scotland, Wales, Northern Ireland)
Medium	Regional (South East England)/ Sub-regional (Greater London)
Low	Local/ District (Richmond)
Negligible	Within the immediate zone of influence of the site (the site)

Table 6.2: Criteria used to classify magnitude of impact on ecological features (modified from HA 2008)

Magnitude of impact	Typical criteria
Major	Where the proposals result in a large scale adverse or beneficial effect on the extent or quality and integrity of a feature in terms of the coherence of its ecological structure and function that enables it to sustain the complex of habitats and/or the population levels of species for which it is valued.
Moderate	Where the feature's integrity will not be adversely affected, with partial loss/damage of or benefits to key characteristics: but the effects on the feature are likely to be significant in terms of its ecological objectives (with reference to BAP or Local Plan).
Minor	If neither of the above apply, but some measurable change in quality and integrity of a feature, with minor loss/gain or alteration to key characteristics
Negligible	Very minor alteration to characteristics: no expected impact.

Table 6.3: Significance of effect categories (modified from HA 2008) (see Table 6.4 for descriptions)

		Magnitude of impact (Table 6.2)			
		Major	**Moderate**	**Minor**	**Negligible**
Value of resource (Table 6.1)	**Very high**	Major adverse/beneficial	Major-moderate adverse/beneficial	Moderate adverse/beneficial	Negligible
	High	Major-moderate adverse/beneficial	Moderate adverse/beneficial	Moderate- minor adverse/beneficial	Negligible
	Medium	Moderate adverse/beneficial	Moderate-minor adverse/beneficial	Minor adverse/beneficial	Negligible
	Low	Moderate-minor adverse/beneficial	Minor adverse/beneficial	Minor to negligible adverse/beneficial	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Table 6.4: Descriptors of the significance of effects categories

Significance category	Typical criteria of effect
Major	Beneficial or adverse effect generally associated with designated sites or species of international or national importance and key to decision making process, however a major change to a suite of or feature of local importance may also be included
Moderate	Beneficial or adverse effects may be important and may be key decision making aspects
Minor	Beneficial or adverse effects may be raised locally and unlikely to be critical but are important in enhancing the subsequent design of the project
Negligible	No effects within normal bounds of variation

6.2 POLICY CONTEXT

National Planning Policy

6.2.1 The National Planning Policy Framework (NPPF), published 27th March 2012, replaced the majority of the previous Planning Policy Statements, and is based

around a presumption in favour of sustainable development. The framework includes a number of core principles, including that planning should contribute to conserving and enhancing the natural environment. Note: Government Circular 06/2005 (Biodiversity and Geological Conservation) remains in force.

6.2.2 Chapter 11 states that the planning system should contribute to and enhance the local and natural environment by measures including:

> *'protecting and enhancing valued landscapes, geological conservation interests and soils;*
>
> *recognising the wider benefits of ecosystem services;*
>
> *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;'*

6.2.3 Principles to be applied when determining planning applications include: encouraging opportunities to incorporate biodiversity into and around developments; requiring adequate mitigation or, as a last resort, compensation, for impacts that cannot be avoided; and refusing permission for development that would have an adverse effect on SSSIs or irreplaceable habitats (such as ancient woodland or veteran trees) except where the need and benefits clearly outweigh the negative effects.

6.2.4 The framework charges local planning authorities to set criteria based policies regarding protected wildlife sites which make distinctions based on the hierarchy of international, national and local designation so that protection is commensurate with their status and the contribution they make to the wider ecological network. They should also plan positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure, and promote the conservation of priority habitats and species linked to national and local targets. It states that planning policies and decisions should limit the impact of light pollution on local amenity, intrinsically dark landscapes and nature conservation.

6.2.5 Section 40 of The Natural Environment and Rural Communities Act 2006 (NERC Act) requires all public authorities to have regard to biodiversity conservation, and Section 41 requires the Secretary of State to publish a list of priority species and habitats which are of principle importance for the conservation of biodiversity (see biodiversity action plans).

6.2.6 In addition to matters related to sites and species scheduled under European designations Habitats Regulations (2010), Section 39 requires planning authorities to include policies which encourage the 'management of features of the landscape of major importance for fauna and flora' in particular linear features 'essential for migration, dispersal and exchange of genetic populations'.

Regional Planning Policy

6.2.7 The Mayor of London is required to take account of local biodiversity action plans produced by the boroughs (Greater London Authority Act 1999). Policy 7.19 in the London Plan (Greater London Authority, 2011) relates to biodiversity and ensures that:

> a proactive approach will be taken to the protection, enhancement, creation, promotion and management of biodiversity through the Biodiversity Strategy;
>
> sites of nature conservation importance will be given a level of protection commensurate with their importance; and
>
> development proposals should, wherever possible contribute to the proactive approach to biodiversity conservation, prioritise assisting in achieving biodiversity action plan targets, and should not adversely affect European or nationally designated site or protected species or priority BAP habitat or species.

6.2.8 Policy 7.21 relates to trees and states that existing trees of value should be retained and any loss as a result of development should be replaced, and additional tree planting included in new developments wherever appropriate.

6.2.9 Policy 7.28 relates to restoration of the Blue Ribbon Network and encourages development proposals to restore and enhance the network by, for example, naturalising river channels and increasing habitat value.

6.2.10 A biological diversity strategy (Greater London Authority, 2002) has been produced to provide a broad statutory framework for London. This lists as objectives:

biodiversity for people,
nature for its own sake
economic benefits
functional benefits
sustainable development.

6.2.11 The strategy makes reference to the range of habitats present within London. It notes the opportunity provided by the built environment including the value of buildings including roofs, walls and paving. It suggests that these should be taken into account as part proposals for new development.

6.2.12 The biodiversity strategy contains a number of policies with particular emphasis on:

'protection of biodiversity,
positive measures to encourage biodiversity action,
promoting the management, enhancement and creation of valuable green space,
incorporating biodiversity into new development,
access to nature and environmental education'

6.2.13 A hierarchy of sites of nature conservation interest have been identified and these are given protection, in particular sites of Metropolitan Importance. Development adversely affecting protected species will be resisted also.

6.2.14 Boroughs are required to take account of biodiversity in all planning decisions with new developments encouraged to take up opportunities to benefit wildlife. There is particular emphasis on protection of the Blue Ribbon Network, London's strategic network of water spaces, including through designing new

waterside developments in a way that increases habitat value and improves public access to the waterside.

Local planning policy

6.2.15 The London Borough of Richmond (2009) adopted core strategy states that as part of the spatial strategy, open spaces and biodiversity will be protected and enhanced. Policy CP4 requires that the boroughs biodiversity will be safeguarded and biodiversity enhancements will be encouraged, particularly in areas of new development and along wildlife corridors such as the River Thames. It also states that weighted priority in terms of their importance will be afforded to protected species and priority BAP species.

6.2.16 The Development Management Plan states that it is a key priority for the Council to protect and enhance river corridors and open spaces. DMOS5 relates specifically to biodiversity and new development and states:

> *"All new development will be expected to preserve and where possible enhance existing habitats including river corridors and biodiversity features, including trees.*
>
> *All developments will be required to enhance existing and incorporate new biodiversity features and habitats into the design of buildings themselves as well as in appropriate design and landscaping schemes of new developments with the aim to attract wildlife and promote biodiversity, where possible.*
>
> *When designing new habitats and biodiversity features, consideration should be given to the use of native species as well as the adaptability to the likely effects of climate change.*
>
> *New habitats and biodiversity features should make a positive contribution to and should be integrated and linked to the wider green and blue infrastructure network, including de-culverting rivers, where possible."*

6.2.17 Supplementary guidance on nature conservation (the design guide for nature conservation and development) includes principles of nature conservation, such as the benefits of: planting, in particular native tree planting and creation of semi-natural habitats; provision of nesting sites through provision of climbing plants, boxes, gaps and ledges; and retention and enhancement of existing site features such as mature trees and riverside character.

6.2.18 The site itself is not shown under any particular designation on the proposals map regarding nature conservation, however the cottage in the south western corner of the site is included in the adjacent conservation area, and the whole site is within the Thames Policy Area (under policy DM OS 11) which requires that new development protects and promotes the history and heritage of the river including landscape features, and opens up the river frontage to public access (London Borough of Richmond-upon-Thames, 2011). There is also a supplementary planning document relating to development options for the Teddington Studio site.

Biodiversity action plans (BAPs)

6.2.19 JNCC and Defra (2012) have published the latest UK biodiversity framework on behalf of the Four Countries' Biodiversity Group. This framework supersedes the previous UKBAP (2007) and is based around the new global 'Aichi' targets arising from the 2010 biodiversity meeting in Nagoya, Japan. The England Biodiversity Action Plan (Defra, 2011), sets out the countries overall strategy with regard to biodiversity, and has as its mission:

> *'to halt overall biodiversity loss, support healthy well-functioning ecosystems, and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people'.*

6.2.20 The list of priority habitats and species which was agreed under the previous UKBAP still forms the basis of much biodiversity work in the four countries, however it has been separated into statutory lists of priorities for the individual countries. The list of habitats and species of principle importance in England (NERC Section 41 list) includes rivers and hedgerows, and species such as noctule, soprano pipistrelle and brown long-eared bats, Western European

hedgehog, common toad, stag beetle and birds such as song thrush, starling, dunnock, reed bunting, spotted flycatcher, hedge accentor, house and tree sparrow.

6.2.21 The London Biodiversity Partnership (2012) have developed 11 habitat action plans including for parks and urban green spaces, tidal Thames and rivers and streams, along with a list of other important habitats which have targets but no action plan such as built structures. The rivers action plan includes as its aims to enhance the ecological value of London's rivers and associated habitats, and to increase and promote the contribution of rivers towards quality of life in London. The tidal Thames habitat action plan includes aims to deliver the Blue Ribbon Network objectives through preparing and advocating guidance and strategies, creating new areas of habitat, and increasing public understanding and appreciation of the habitats and species.

6.2.22 There are eight species action plans for bats, reptiles, house sparrows, stag beetles, sand martin, water vole, mistletoe and black poplar; and a list of other important species including black redstart, grey heron and peregrine falcon.

6.2.23 The local biodiversity action plan for the London Borough of Richmond upon Thames (date unknown) includes habitat action plans for broad-leaved woodland and tidal Thames, and species action plans for bats, song thrush and stag beetle among others.

6.2.24 The tidal Thames is described in the Richmond local BAP as a controlled river course with hard engineering such as sheet piles used to stabilise the riverbanks, with generally good water quality but with periodic outflow of untreated sewage (London Borough of Richmond upon Thames, date unknown). The river is described as:

> *"a valuable amenity to Borough residents and visitors and provides a mode of transport for some commercial and much seasonal leisure traffic. It receives much of our treated effluent and urban run-off whilst also providing a vital wildlife corridor for the migration of wildlife between urban parks and green space... There is also continued large-scale abstraction of fresh water for public water supply from above*

Teddington Lock. Although this is regulated by a variable minimum flow control at the lock, it still results in reduced fresh water inflows to the tidal reach throughout the year, and potential changes to river ecology during the low flow summer period… Although this is largely a tidal reach, the water quality is dominated by the inflow of fresh water from upstream. Marine salinity levels are understood to be low throughout the stretch, although may be elevated in extreme drought periods. Water levels vary according to fresh water inflows and the monthly tidal cycle. Low levels are mitigated, on the tidal reaches upstream, by the outflow regulation of Richmond Half Lock, and the fresh water upstream reaches are maintained by Teddington Lock."

6.3 BASELINE CONDITIONS

Biological records

Sites of nature conservation importance

International and national sites

6.3.1 Richmond Park Special Area of Conservation (SAC), (also a Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR) and Site of Metropolitan Importance for Nature Conservation) is situated c. 2km to the east of the site, and the SAC is primarily designated for its stag beetle populations (Appendix 6.5). The SSSI has been managed as a royal deer park since the seventeenth century, and is of particular importance for its diverse deadwood beetle fauna associated with the ancient trees. It also supports the most extensive area of dry acid grassland in Greater London.

6.3.2 Wimbledon Common SAC and SSSI is situated c.4.6km to the east of the site, separated from it by dense residential development, Richmond Park and main roads. The SAC is primarily selected for its stag beetle populations, and wet and dry heath habitats are also present as qualifying features.

Local statutory sites

6.3.3 There were two local statutory sites of nature conservation within 2km of Teddington Studios:

6.3.4 Ham Lands Local Nature Reserve (LNR) is situated c.130m to the north of the site, on the northern bank of the River Thames, and is an area of infilled gravel pits, old water meadows and a narrow belt of woodland, of considerable value for informal recreation.

6.3.5 Ham Common LNR, c.1.1km to the north east, separated from the site by residential development, consisting of birch and oak woodland with good dead wood habitat and dry acid grassland.

Non-statutory sites

6.3.6 Sites of Importance for Nature Conservation are non-statutory designations of sites which contain the best examples of habitats or rare species/assemblages of species or important populations of species or sites which are of particular significance in being in an otherwise heavily built up area. Sites of Metropolitan Importance are significant on a London-wide scale while Sites of Borough Importance are important from a borough perspective. Borough sites are divided into two categories, Grade I and Grade II, according to their quality, however all are important at a borough-wide scale.

6.3.7 Sites of nature conservation interest are protected under the London Plan (Greater London Authority, 2011) which states that sites should be given a level of protection commensurate with their importance and adverse impacts on the biodiversity interest should be avoided or minimised and mitigated/compensated.

6.3.8 There were 14 non-statutory sites of nature conservation interest within 2km of the site. Seven of these were within 1km of the Studios, and these are described in Table 6.5. The closest, and only site adjoining Teddington Studios, was the River Thames Site of Metropolitan Importance for Nature Conservation (M031) immediately adjacent to the northern edge of the site. This is described as a wildlife corridor including a number of valuable habitats such as mud-flats,

shingle beaches, intertidal vegetation, islands and the river channel itself, and supporting over 100 species of fish, wildflower and wading birds, and invertebrate communities.

6.3.9 The other seven sites (RiL24 Teddington Cemetery, RiL02 Marble Hill Park and Orleans House Gardens, RIBII05 Strawberry Hill Golf Course, RiBII10 The Copse, Holly Hedge Fields and Ham Avenues, RiBII12 Petersham Lodge Wood and Ham House Meadows, M082 Richmond Park SMINC, M084 Bushy Park and Home Park) were more than 1km from Teddington Studios and separated from the site by built development, and therefore are not considered further.

Table 6.5: Non-statutory sites of nature conservation interest within 1km of the site (summarised from information provided by GiGL)

Site name	Designation* and area	Approximate distance from site	Description
M031 River Thames and tidal tributaries	SMINC (2304.54ha)	0m (immediately adjacent)	River channel with mudflats, single, islands, inter-tidal vegetation supporting many fish and birds
M083 Ham Lands	SMINC (72.27ha)	0.1km to the north of the site, separated from it by the river	Restored gravel pits with scrub and grassland adjacent to River Thames with diverse plant life and breeding reed bunting and kingfisher
RiL15 Churchyard of St Mary with St Alban, Teddington	SLINC (0.56ha)	0.1km to the south west and separated from the site by roads and a sports field	Churchyard with semi-improved neutral grassland and some large trees
KiL10 Royal Park Gate Open Space	SLINC (1.55ha)	0.5km to the east and separated from the site by the Lensbury country club and golf course and the River Thames	A public park next to the Thames and Ham Lands. Includes scrub, trees and semi-improved neutral grassland
RiL08 Cassel Hospital	SLINC (3.63ha)	0.8km to the north east and separated from the site by the Thames and residential development	Hospital grounds with acid grassland lawns and a fringe of woodland
RiL16 The Copse at Hampton Wick and Normansfield Hospital	SLINC (13.02ha)	0.9km to the south east and separated from the site by residential development	Wooded nature reserve and landscaped grounds of former hospital
RiL13 Ham Common West	SLINC (8.51ha)	0.9km to the north east and separated from the site by the Thames and residential development	Area of short acid grassland with a pond

* SMINC: Site of Metropolitan Importance for Nature Conservation

SB(II)INC: Site of Borough Grade II Importance for Nature Conservation

SB(I)INC: Site of Borough Grade I Importance for Nature Conservation

SLINC: Site of Local Importance for Nature Conservation

Protected species

6.3.10 GiGL provided numerous records for around one hundred BAP and protected species in total. None of the records related to the site directly, however there were several within 200m of the site, including stag beetle, song thrush, house sparrow, hedgehog, and an unidentified bat species, all recorded c.170m to the

south west of the site in 2002. There was also a record of spotted flycatcher, 70m to the north west of the site in 2002.

6.3.11 The other records included 10 plant species, 22 invertebrates including numerous records of stag beetle (a Habitats and Species Directive Annex II species), and records of European eel, two amphibian species, four mammal species (including badger, hedgehog, hazel dormice and water vole) and eight bat species.

6.3.12 There were records for sightings of 17 protected water bird species in the search area, five raptor species (including peregrine falcon recorded in 2007 – location not given) and ten other protected bird species including the Schedule 1 kingfisher (recorded c.500m to the north west of the site in 2005). There were also records for 25 other BAP bird species, including for example grey partridge, cuckoo, turtle dove, lesser spotted woodpecker, sand martin, tree pipit, hedge accentor, house sparrow, reed bunting, tree sparrow, song thrush, starling, spotted flycatcher, black redstart and yellow wagtail.

6.3.13 The London Bat Group supplied 560 records of bats within a 2km x 2km square around the site. Records included roosts for common and soprano pipistrelle, brown long-eared bats and Daubentons, with the closest roost record an unknown species, recorded in 1992 c.200m to the west of the Studios, and more recently (2009) a soprano pipistrelle roost c.600m to the south east of the Studios. The closest and most recent records of bat activity related to Teddington weir, in the Thames immediately adjacent to the northern edge of the site, from 2012, and included records for common and soprano pipistrelle, noctule, Daubenton's, Leisler's and serotine.

6.3.14 The GIGL bat records (which do not include roosts) included unknown bat species (the nearest recorded c.170m to the south west of the site in 2002), myotis (c.240m to the east of the site in 2009), serotine (c.500m to the north west of the site in 2001) Daubenton's (c.240m to the east of the site in 2008), Natterer's (c.680m to the north west of the site in 2006), noctule (c.500m to the north west in 2001), lesser noctule (c.1km to south east in 2007) , brown long-eared bat (c.500m to the north west of the site in 2001) and three

pipistrelle species (the nearest being common and soprano pipistrelle recorded c.400m to the north west of the site in 2006).

Invasive species

6.3.15 A number of species, including some of potential relevance to the site, for example false acacia, green alkanet, cotoneaster, tree of heaven, Turkey oak and Indian balsam, have been recorded in the area and are listed on the non-statutory London Invasive Species Initiative list.

6.3.16 Indian balsam was recorded closest to the site at c.70m to the north west of the site in 2004, and is described as a species of high impact or concern which is widespread and requires concerted, coordinated and extensive action to control/coordinate. Tree of heaven also falls under this category.

6.3.17 The other species were recorded more than 1km from the site. False acacia is described as widespread such that eradication is not feasible but avoiding spread to other sites may be required. Green alkanet is not considered to pose a threat, however cotoneaster and Turkey oak are described as species of high impact or concern at specific sites, for which actions to control, eradicate and manage are a priority in London.

6.3.18 Variegated yellow archangel is included on Schedule 9 of the Wildlife and Countryside Act 1981 as amended, making it an offence to plant or cause them to grow in the wild (Appendix 6.4).

Shadow analysis

6.3.19 The architect's shadow analysis plans (for example at 1400 hours on 21st June when biological productivity is expected to be around its highest) show the existing 6 storey main building at the centre of the site currently causes a shadow extending c.8-12m from the building, which would not reach the river banks at this time. The two storey building in the north eastern corner of the site is shown casting a shadow extending c.5m from the building, including c.2m of the edge of the river channel for a length of c.30m.

6.3.20 The existing trees along the northern boundary of the site are shown as casting a shadow of c.10-20m over the edge of the river channel, causing intermittent shading along the majority of the site frontage. This may be beneficial for the river as shading, when combined with open areas, can enhance habitat structure and diversity (RSPB, NRA and RSNC, 1993) and is the subject of guidance produced by the Environment Agency (2012) regarding the benefits of riparian shading.

Field survey findings

Site description and context

6.3.21 The site covered c.1.8ha and was situated to the north of Broom Road, in a built up area at the eastern edge of Teddington, on the banks of the River Thames (OS grid reference TQ168713). It was used as a film and television studios, and was immediately bordered by the River Thames to the north, a public house and slipway with storage to the west, Lensbury Club Hotel and Gardens to the east, and Broom Road with adjacent sports pitches to the south.

6.3.22 The site lay adjacent to the Teddington Lock and Weir on the River Thames, which provides the main corridor of connectivity from the site to habitats in the wider area. Teddington Lock forms the tidal limit of the Thames, therefore the reach of the Thames by the site is the inland-most extent of the tidal Thames. The river channel immediately adjacent to the site was c. 60m wide, with an island at the northern edge which appeared to have gravelly banks and semi-natural wooded vegetation. A further channel c.30m wide separated the island from Ham Lands nature reserve to the north. Boats were moored from a floating pontoon off the southern edge of the island. Teddington lock lay to the north west of the island with weir to the east, c. 80m from the northern boundary of the site. A footbridge crossed the river c.20 m to the north of the site, providing access to the island and the nature reserve on the other side.

6.3.23 In the wider area, the land to the south and east of the site comprised open sports playing fields and a golf course, land to the west was predominantly

residential with established houses and their associated gardens, and Ham Lands Nature Reserve (an area of grassland and scrub) is situated on the northern bank of the River Thames just over c.130 metres from the Studio site.

6.3.24 Most of the site was at c.6m Above Ordnance Datum (AOD) and is fairly flat, with a lower walkway at c.5m AOD at the northern boundary of the site adjacent to the river. Large flat-roofed studio buildings covered the majority of the site, with several smaller tiled buildings, hard standing/car parks with scattered trees, and some small areas of ornamental planting. There was no access to the river from the site, the banks of which were supported by vertical sheet piling, with the ground level at the northern edge of the site c.1.5-2m above the level of the water at the time of the survey.

Phase one survey habitat description

Buildings and hard standing

6.3.25 The majority of the site consisted of tarmac access roads and car parking around large five to six storey, flat-roofed warehouse-type buildings (the main studio buildings), along with other flat-roofed building including offices, the gatehouse and a multi-storey car park, with extensive external security lighting in most parts (Appendix 6.1: Photograph P1). There were three buildings to the south of the main studio building with tiled, pitched roofs (Buildings 2, 3 and 4) (Appendix 6.1: Photograph P4), and building 5 to the east which had a sloping corrugated asbestos roof. There was also a small two storey cottage in the south western corner of the site (Weir Cottage/Building 1) with a pitched tiled roof (Appendix 6.1: Photograph P2). There was no access to the small patio behind the cottage, however it was viewed from over the wall and included bare paving and leaf litter (D), along with false acacia saplings (F), ivy (F), firethorn (O) and ornamental spurge (O).

6.3.26 The river frontage consisted of pavings bounded by metal railings alongside the river (Appendix 6.1: Photograph P5), with occasional ephemeral/short perennial species growing in the cracks of the paving, including for example annual meadow grass, broad-leaved dock, cleavers, fennel, ivy-leaved toadflax,

nipplewort, petty spurge, willowherb and bryophytes. There were several low lamps c.1m tall along the length of the river frontage.

Introduced shrubs

6.3.27 There were several beds of ornamental shrubberies around the periphery of the site. The main shrubbery was situated along the northern edge of the site, adjacent to the River Thames (Appendix 6.1: Photograph P5). It included species such as aquilegia, burgenia, choisya, cotoneaster, ornamental dogwood, ornamental spindle, fuschia, iris, lemon balm, loosestrife, Oregon grape, spotted laurel, red valerian, smoke-tree, tutsan, Turkey oak saplings, yew, variegated yellow archangel, and rare occurrences of holly and ivy. The understorey included frequent bare earth, with some ephemeral species such as field forget-me-not (O), nettle (O), nipplewort (O), and petty spurge (O). There were some trees in the planting bed including eucalyptus, honey locust, and an immature cherry.

6.3.28 A bed covered with slate chippings in the south western corner of the site had been planted with dogwood and ornamental iris plants with occasional small yew saplings and petty spurge. At the eastern edge of Building 1 the planting beds included choisya, hebe, variegated holly, sycamore saplings and immature tree of heaven.

6.3.29 There was a small shrubbery to the south of building 2 including choisya, clematis, cotoneaster, escallonia, firethorn, honeysuckle, ivy, ornamental spindle and spotted laurel, with occasional ephemeral species in the understorey and between paving slabs, such as annual mercury, green alkanet, nettle, petty spurge, smooth sow thistle and yellow sorrel.

6.3.30 The shrubbery along the main frontage of the site with Broom Road included species such as cherry laurel, choisya, cosmos, dogwood, fennel, pittosporum, and wood avens, and a similar ephemeral understorey to the above.

Trees

6.3.31 There were trees scattered across the site, several of which were subject to a tree preservation order (TPO). The majority of the larger semi-mature to mature trees were situated in the car park in the northern part of the site (Appendix 6.1: Photograph P3), including three large horse chestnuts, Turkey oak, several tree of heaven and lime trees, and a pine tree. At the base of some of the trees was a small planting bed of mostly bare soil, with occasional great willowherb, tare, perennial ryegrass, annual meadow grass, common mouse ear and ragwort. There was also a mature horse chestnut immediately adjacent to Building 2 within the southern boundary of the site, and several small ornamental species in the south eastern shrubbery such as false acacia and crab apple.

6.3.32 There was a group of immature to semi-mature sycamore trees of c.15-20cm diameter at breast height (DBH) just outside the south western boundary of the site, and a group of semi-mature to mature sycamores along with a lime and horse chestnut just outside the eastern boundary. There was a group of holly, horse chestnut, sycamore and ash trees, and a separate group of a false acacia and horse chestnut tree just outside the chain link fence at the western edge of the site, with a hedge including privet and holly partially growing through the fence.

River

6.3.33 The banks of the river consisted of vertical sheet piling, with the ground level of the site c.1.5-2m above the level of the water at the time of the survey (Appendix 6.1: Photograph P6). There were no macrophytes visible in the water from the edge of the site, and the bottom of the river channel was not visible. Water flowed downstream past the site from east to west. There is likely to be light spillage into the river corridor given the number of lamps along the river front walk, and the tall security lighting of the adjacent car park.

6.3.34 Just outside the north western corner of the site, there was a small area (c.15m^2) of exposed, unvegetated, sandy mudflat just above the water level, partially covered by a concrete bridge forming the north western corner of the

site car park. A pipe and sluice gate indicated possible outflows from under the site to the river at this point. There may be other tidally exposed areas, not visible at the time of the survey.

Potential for protected and BAP species

6.3.35 The majority of the site consisted of flat-roofed buildings and hard standing, and therefore did not provide suitable habitat for use by protected species such as badger and herpetofauna. However, some of the larger trees (Figure 6.1), and buildings with tiled, pitched roofs (Buildings 1, 2, 3, 4 and 5) were considered to have possible potential for bat roosts from the initial phase one survey, particularly on account of the large number of bat records in the vicinity. Further surveys for bat were therefore recommended for these buildings and trees which are to be affected by proposals (Buildings 2-5) and Trees A-D.

6.3.36 Some of the buildings, the trees and the ornamental shrubberies could be used by nesting birds, and could support BAP species such as house and tree sparrow and starling. The northern edge of the site is likely to be used by bats foraging or commuting along the river, on account of the large number of bat records from Teddington Weir immediately to the north of the site.

Invasive species

6.3.37 Variegated yellow archangel was recorded on the site in the ornamental shrubbery by the river, and is included on Schedule 9 of the Wildlife and Countryside Act 1981 as amended, making it an offence to plant or cause them to grow in the wild (Appendix 6.4).

6.3.38 False acacia, green alkanet, cotoneaster, tree of heaven and Turkey oak were also recorded on site and are listed on the non-statutory London Invasive Species Initiative list (see Biological Records).

Daylight inspection for bat

6.3.39 The detailed findings of the daylight bat survey of Buildings 2, 3, 4 and 5 (to be demolished), and four horse chestnut trees (to be felled or possibly requiring works) are described below and summarised on Figure 6.3.

Building 2

6.3.40 Building 2 was a brick built building with a pitched tiled roof on the site's south western boundary with Broom Road (Appendix 6.2: Photograph P1). The building's roof tiles were moulded concrete tiles that were tightly interlocking with no visible missing tiles or gaps between that could allow bats into the space beneath the tiles (Appendix 6.2: Photograph P2). A single tile on the roadside (south western) elevation was damaged slightly immediately above the gutter but the gutter obstructed access making it unsuitable for roosting bats. The ridge tiles were all in situ and had no gaps visible beneath. The building adjoined a flat roofed building on its north eastern and south eastern sides. The roof line was formed by brick soffits on the roadside (south western) side which offered no visible opportunities for bats. Timber soffits enclosed a large space at the roof line on the north western end, and a large section was missing but the space created was open and exposed and unsuitable for use by bats.

6.3.41 The roof space within Building 2 was served by a hatch from an adjoining space and contained several air conditioning pipes creating a cluttered space (Appendix 6.2: Photograph P3). The underside of the roof was boarded with hardboard internally; a gap in the boarding at the south eastern end exposed the bitumen and hessian felt lining the roof tiles (Appendix 6.2: Photograph P6). No evidence of bat activity was visible in the space but a pigeon's nest was present on the pipework (Appendix 6.2: Photograph P4) and a small number of mouse droppings were present in the south eastern corner (Appendix 6.2: Photograph P5).

Building 3

6.3.42 Building 3 was a large, brick built building with a hipped roof covered with moulded, concrete tiles (Appendix 6.2: Photograph P7 & 8). The roof tiles were in place and no missing tiles were visible. The tiles were on the whole tightly fitting, but in a small number of places, particularly close to lead flashing surrounding pipes, occasional tiles were sufficiently raised to provide opportunities for bats to enter beneath the tiles (Appendix 6.2: Photograph P9-10). The ridge tiles were all in place and no gaps in the mortar bedding them to the tiles beneath were visible. Timber soffits were present at the roof line and these lacked any visible gaps suitable for use by bats.

6.3.43 The large loft space within Building 3 was a walk in space used partly for the storage of office equipment and files. A small enclosed room for storage, formed by hard board, within the loft space was present at the north western end (Appendix 6.2: Photograph P11). Within the rest of the void, the timber sarking lining the underside of the roof was exposed and the space had a ridge to floor height of approximately three metres. At the ridge, there was a gap between the ridge and top sarking board but this showed no evidence of use by bats (Appendix 6.2: Photograph P12). Daylight was visible through the sarking in one location (Appendix 6.2: Photograph P13). The floor of the void was boarded, centrally unboarded and uninsulated towards the margins and showed no evidence of bats and no bats were visible within the space.

Building 4

6.3.44 Building 4 was a brick built building with a pitched roof covered with flat roof tiles housing the boiler room and cafeteria (Appendix 6.2: Photograph P14). The building's tiled roof was in sound condition and no missing tiles were visible; however a small number of tiles were slightly misaligned along the verge at the north western corner creating gaps that could be used by bats (Appendix 6.2: Photograph P15). The ridge tiles were in situ and lacked any visible gaps beneath. Timber soffit boxes were present at the roofline on the north western side. Pigeon droppings were present just below the soffit with wiring designed to deter them above. A small gap between the top edge of the

soffit and tile above was present at the north east facing gable which could allow bats access. The tile ends on the north east gable were sound with no visible gaps.

6.3.45 Within Building 4, a boiler room was present at the north eastern end of the building (Appendix 6.2: Photograph P16). The room contained boilers and associated pipework and was open to the underside of the roof. The roof was lined with boarding which was intact and closely fitted to the walls. Skylights in the roof illuminated the room and a vent may provide potential access for bats (Appendix 6.2: Photograph P17). No evidence of bats was visible within the room. The remainder of the building's interior housed the staff cafeteria and again this space was open to the underside of the roof and was unsuitable for use by bats (Appendix 6.2: Photograph P18).

Building 5

6.3.46 Building 5 was a large building with rendered walls and a corrugated sheet asbestos roof (Appendix 6.2: Photograph P19). No access was available to the loft space due to the presence of asbestos. Externally, the sheet roof was of simple construction and lacked crevice opportunities suitable for use by bats. No cracks or crevices were visible within the rendered walls and the barge boards at the eaves were closely sealed to the brickwork (Appendix 6.2: Photograph P20).

Trees

6.3.47 The mature horse chestnut Tree A, to the north of the buildings (Figure 6.1), had a diameter of approximately 1.3m and had been topped in the past (Appendix 6.2: Photograph P21). The tree lacked any visible cavities. Wounds where limbs had been removed or fallen in the past were visible on the southern side of the tree but these did not extend into cavities suitable for use by bats when closely inspected. No other features suitable for use by bats were visible during the survey. The tree was therefore classified as likely to be of negligible potential for bats, however due to its large size there remained a small risk that there could be undetected cavities at height.

6.3.48 Tree B was a similarly large mature horse chestnut tree in the car park to the north west of the building, with visible wounds on the northern, western and south western sides of the tree where limbs had been removed or fallen in the past (Appendix 6.2: Photograph P22). The majority of these wounds could be inspected with a torch and binoculars, showing that they did not extend into cavities suitable for use by bats. The wounds on the south western side of the tree (Appendix 6.2: Photograph P23) was considered unlikely to extent into a cavity, but due to its height this could not be confirmed. Therefore, the tree was classified as possibly of low potential for bats.

6.3.49 Tree C was a smaller mature horse chestnut in the car park adjacent to Tree B, with about half the height and girth of Trees A-B (Appendix 6.2: Photograph P24). No features suitable for use by bats were visible during the survey and due to its smaller size it was more easily inspected, therefore it was classified as of negligible potential.

6.3.50 Tree D, another smaller mature horse chestnut in the southern part of the site (Appendix 6.2: Photograph P25), did not have any features suitable for use by bats visible during the survey, therefore it was also classified as of negligible potential.

Summary

6.3.51 Trees C and D and Buildings 2 and 5 showed no evidence of use by bats and lacked any visible opportunities for bats and as such were considered to be of negligible potential for bats. Tree A was also likely to be of negligible potential, but with slightly greater risk due to its size. Tree B was classified as possibly but unlikely to be of low potential for bats, due to a high wound which could not be fully inspected.

6.3.52 Buildings 3 and 4 showed no evidence of use by bats but both possessed occasional features that would offer potential roosting opportunities for individual or small numbers of crevice dwelling bat species. The buildings were set in a built up area illuminated by street and security lighting, but due to the close proximity of the River Thames and numerous records of several bat

species in the area, the potential for bats to be present is increased. Overall, the buildings were considered to be of low potential for bats.

6.3.53 Therefore, one evening emergence or dawn re-entry survey was undertaken during the peak season for bat activity (May-September) at Buildings 3 and 4 to determine the presence or absence of crevice-dwelling bats.

Dusk emergence survey for bat

6.3.54 During the evening emergence survey of Buildings 3 and 4 on 19th September 2013, no bats were observed emerging from the buildings. Bat activity was very low with a total of five bats recorded by all four surveyors (Appendix 6.6).

6.3.55 A Nathusius's pipistrelle (Pipistrellus nathusii) pass was recorded twice by the surveyor situated to the west of Building 3 at 20:09 and 20:19 but not seen on either occasion. A soprano pipistrelle (Pipistrellus pygameus) pass was heard at 20:21 – 20:23 by three surveyors of which two saw the pipistrelle fly from the south east into the courtyard to the north of Building 3, circled overhead and then passed back to the road to the south (Figure 6.2). A soprano pipistrelle was also heard but not seen by the surveyor situated to the south of Building 4 at 19:55 and 20:43.

6.3.56 It is therefore considered unlikely that Buildings 3 and 4 supported roosting bats.

Nature conservation interest

6.3.57 The majority of the site consisted of studio buildings and car parks with small areas of introduced shrubs and some trees, and therefore was of negligible conservation interest overall.

6.3.58 The groups of mainly ornamental trees and shrubs provide some habitat to commonly occurring species and thus have some nature conservation interest at a site level, particularly the larger horse chestnut and lime trees, some of

which were subject to a TPO. The introduced tree species included the invasive tree of heaven, which is listed on the non-statutory London Invasive Species Initiative list, and is therefore of lower nature conservation interest than native or non-invasive naturalised trees.

6.3.59 The ornamental shrubbery at the northern boundary of the site, adjacent to the River Thames, had some functional value in providing a buffer of vegetation between the river and the development site, and possibly a linear feature for use by foraging and commuting bat. However, its interest was limited as it covered a relatively small area surrounded by tarmac and paved surfaces and lighting, and the majority of the species were introduced, and some were invasive species. The trees are unlikely to form potential bat roosts, therefore the trees and shrubberies on the site are considered to be of negligible/site level environmental value/sensitivity.

6.3.60 Some of the buildings may support nesting birds (a pigeon nest was recorded in the loft of Building 2), however as no signs of bats were recorded in the buildings to be removed and potential for use by bats was low to negligible, they are therefore considered to be of low to negligible value to bats.

6.3.61 The River Thames, immediately outside the northern boundary of the site, is a Site of Metropolitan Importance for Nature Conservation, important as a wildlife corridor including for protected and BAP species. This is therefore considered to be a feature of regional importance, and therefore medium environmental value/sensitivity (Table 6.1).

6.4 PREDICTING THE IMPACTS OF DEVELOPMENT

Description of proposals

6.4.1 The development proposals consist of demolition of existing buildings (with the exception of Building 1/Weir Cottage which is to be retained for residential use) and the erection of four 4-7 storey buildings for flats along with 6 two storey houses and a block of 12 flats on the Broom Road frontage and associated car

and cycle parking, access, landscaping, and a publically accessible riverside walk (drawing A9991-D 0100 date 19/11/13).

6.4.2 The tallest buildings of the proposed development are situated in the centre of the site (c.8m closer to the edge of the river compared to the existing building in this location), and in the north west (c.10m closer to the river than the existing building). The shadow analysis plans show that these buildings are predicted to cast a shadow of no more than c.15m at 1400 hours on 21st June, and none of the buildings' shadows would reach the river edge at this time. The buildings would be arranged in three separate lines, aligned north south, resulting in gaps in the shadow caused by the buildings. Retention of the larger trees at the northern boundary of the site would result in a similar level of intermittent shading by trees along the length of the river frontage as currently.

Assessment of effects

Construction

6.4.3 These proposals would result in the loss of buildings and several small ornamental shrubberies, including some immature trees and shrubs and three mature horse chestnut trees (trees A, B and D: Figure 6.1), as well as possible tree works to Tree C, which could be used by nesting birds. This is assessed as a minor scale of impact on the habitat, as several of the mature trees are to be retained therefore loss will be limited (Table 6.2). Overall there is therefore predicted to be a negligible significance of effect on tree/shrub habitat (Table 6.6).

6.4.4 The horse chestnut tree A, C and D and Buildings 2 and 5 showed no evidence of use by bats and lacked any visible opportunities for roosts and as such were considered to be of negligible potential for bats. Buildings 3 and 4 had low potential for use by bats, however no bats were observed emerging from the buildings during the survey which was undertaken within the suitable season and conditions for undertaking emergence, and therefore it is considered unlikely that the two buildings currently support roosting bats. Tree B was

classified as possibly low potential as one of the wounds could not be fully inspected due to height, however it is thought unlikely to extend into a cavity suitable for use by bat. It is therefore unlikely that the removal of the trees or demolition of the buildings will have any impact on current bat roosts, however given the large number of bat records in the area and the proximity to the river corridor, removal of these potential roost structures could result in a low to negligible affect on bat.

6.4.5 Demolition of one of the buildings in the north eastern part of the site would be in close proximity to the river front, and there is a low risk that works could result in accidental pollution of the watercourse (for example fuel spillage) if undertaken without precautions. This is considered to be unlikely as the site is mostly hard standing car park with kerbs, however if it were to occur it could cause a minor to moderate magnitude of impact, depending on the nature of the pollution. The frontage of the site reaches along a c.140m length of the river, which is a very small proportion of the full extent of the river and Site of Metropolitan Nature Conservation Importance, however, a pollution event could also affect other protected sites along the river, such as Ham Lands Local Nature Reserve on the northern banks of the river. Combined with the medium environmental value of the river resource, this is predicted to potentially cause a moderate adverse significance of effect (Table 6.6), although the likelihood of occurrence is low.

6.4.6 The development is not expected to affect any other non-statutory sites of nature conservation interest, or Richmond Park/Wimbledon Common SACs, due to the distance and separation between the protected sites and development site created by high density residential development.

Completed development (operational)

External lighting and public access

6.4.7 In the absence of mitigation, external lighting of the northern part of the development could result in greater light spillage onto the river banks at night, possibly slightly reducing the suitability of c.140m of the southern bank of the

River Thames SMINC as a wildlife corridor for nocturnal species such as foraging and commuting bat. However, the banks of the river are already lit with footpath lighting and most likely from spillage of car park lighting, and the site only fronts a relatively short section of the river, therefore the impact is expected to be minor in magnitude at most (Table 6.2), resulting in a low/minor adverse significance of effect (Table 6.6).

6.4.8 Although the proposed development aims to increase public access to the riverfront through providing a riverside walk and adjacent green space, these provisions will be above the sheet piling reinforced river bank, and there will be no access to the river itself and therefore this is unlikely to have an effect.

6.4.9 The development is not expected to affect any other non-statutory sites of nature conservation interest, or Richmond Park/Wimbledon Common SACs, due to the distance and separation between the protected sites and development site, and due to the existing dense residential nature of the area.

Shading

6.4.10 The new buildings, slightly closer to the river, would cause slightly longer shadows towards the river banks (no more than an additional c.3m length at the example time reference point of 1400 hours on 21st June), compared to the existing buildings. However, the extent of shading of the river by the building in the north east would be reduced as the new buildings would be set further back from the river's edge in this area. The closest block would be c.15m from the river banks in the north west, compared with the existing situation in which one of the buildings is c.5m from the river in the north eastern corner of the site. Additionally, as the buildings would be in three separate lines aligned north-south and perpendicular to the river front, the extent of the shading would be less than the existing building which is a large single block stretching across the majority of the site.

6.4.11 Shading of the river along the northern boundary is currently dominated by existing trees, and as the majority of these larger trees are to be retained, this effect would remain similar. This form of intermittent shading is likely to be

beneficial for the habitat structure and diversity of the watercourse, particularly as the width of the channel is such that shading only affects the edge of the river. In addition, no macrophytes were seen in the river channel adjacent to the site, therefore even with a slight increase in shadow length over the river, this is not expected to affect productivity of the river. The magnitude of the impact on the river is therefore expected to be negligible (Table 6.2), resulting in a negligible significance of effect (Table 6.6).

Table 6.6: Summary of Impacts

Topic Area (Ecology)	Description of Impact	Geographical Importance					Impact	Nature	Significance Before Mitigation
		N	R	S	D	L			
Construction									
Trees and scrub habitat (site level/ negligible value)	Partial loss					*	Minor adverse	Long-term	Negligible
River Thames (medium value)	Possible pollution (unlikely)			*			Moderate to minor adverse	Short-term	Moderate
Bats (low value)	Loss of possible future roost opportunities					*	Minor adverse	Long-term	Low to no effect
Operational									
River Thames (medium value)	Lighting of potential foraging/commuting bat habitat			*			Minor adverse	Long-term	Low (minor)
	Shading of watercourse habitat		*				Negligible	Long-term	No effect

KEY: Geographical importance - N: national, R: regional, S: sub-regional, D: district, L: local.

6.5 MITIGATION

Construction

Nesting bird mitigation

6.5.1 As nesting birds and active nests are protected under the Wildlife and Countryside Act (Appendix 6.4), features which could be used by nesting birds should be removed outside of the nesting bird period, or following a thorough check for nesting bird by an ecologist. If nesting birds were found, the nest should be avoided until nestlings had fledged. These features potentially include shrubs, trees/woody vegetation, including dense climbers such as ivy and clematis, as well as buildings with lofts or other potential gaps and eaves in which nests could be built (a pigeon nest was recorded in the loft of Building 2).

Bat mitigation

6.5.2 Although surveys have shown presence of bats in the buildings to be demolished is unlikely, bats are cryptic and highly mobile and could go undetected or start using the building in the future, therefore a precautionary approach to the demolition of Buildings 2-5 is recommended. The demolition should be preceded by a soft strip of the roof coverings by gloved hands. In the unlikely event that bats are encountered during the course of the demolition, the work should stop immediately and a licensed ecologist called to site to attend to the bat and liaise with Natural England for advice on how to proceed; work should not continue until written advice has been received. At this point, a European Protected Species licence may be required to permit the work to continue lawfully at this stage.

6.5.3 Similarly, the felling of the horse chestnut Trees A and B should be preceded by a close, climbing inspection of the tree by the tree surgeon to check for cavities and for any evidence of the presence of bats. In the event that cavities are found or evidence of the presence of bats, a licensed ecologist should be called to site to provide advice; further detailed survey consisting of high level

inspections and/or emergence and re-entry survey may be required at this stage to establish if bats are present or absent.

6.5.4 As demolition/felling is scheduled to take place more than 12 months after the date of this survey, the survey findings should be updated within the period between May and September before demolition/felling. If any works are required in the future to other trees identified as having possible potential for bat and not included in this survey, or to the roof or loft spaces in Building 1, daylight inspections for bat would be required, possibly followed by emergence surveys (in the appropriate survey season i.e. May - September).

River Thames protection – precautions during construction

6.5.5 Measures should be taken to reduce the risk of contamination of the river during works, particularly where machinery is working close to the edge of the river.

6.5.6 Environment Agency consent may be required for proposed works within 8m of the top of the river bank.

Habitat creation and landscape design – compensation and enhancement

6.5.7 The development design and landscape proposals should take opportunities to incorporate nature conservation measures as part of the green infrastructure, in particular through creating a habitat buffer along the northern boundary of the site by the river edge.

6.5.8 The larger trees, including those subject to a tree preservation order, should be retained where possible. Tree protective fencing should be erected to protect the trees to be retained (to be informed by the tree survey). Immature non-native, invasive trees and shrubs, such as false acacia, cotoneaster and Turkey oak, should be removed where possible to prevent spread. Variegated yellow archangel, included on Schedule 9 of the Wildlife and Countryside Act 1981 as amended, should also be removed as it is invasive and may invade

subsequently created habitats (Appendix 6.4). Care should be taken to avoid planting non-native, invasive species such as those included on the London Invasive Species Initiative list.

6.5.9 Native, semi-natural habitats should be created in the riverside walk green space, in the northern part of the site, through planting small groups or a line/hedgerow of locally occurring native tree and/or shrub species (for example willow, hazel, alder, birch and hawthorn). These trees and shrubs would replace those to be lost and form a buffer of semi-natural vegetation adjacent to the river, providing biodiversity enhancement in particular through helping to reduce artificial light spillage into the river corridor at night, and providing linear habitat for foraging and commuting bat, and foraging and nesting birds. Scrub species such as hazel and hawthorn should be managed through annual pruning and 5-7 year coppicing on rotation where appropriate, to enable flowering and fruiting and provide a dense bushy structure to provide shelter for birds.

6.5.10 Creation of areas of neutral wildflower grassland, consisting of native wildflower and grass species, in the space adjacent to the river is also recommended, for example around the edges of the green space and between the trees/shrubs. These areas of grassland should be managed to allow flowering to provide an attractive landscape for recreational users of the riverbank, as well as a source of nectar for invertebrates, and associated benefits for bats and birds. They should be integrated with areas of amenity grassland for more intensive recreational use.

6.5.11 Log piles and loggeries should be created where possible in the areas of long grass and in shaded areas, using logs from trees felled on site. This would provide habitat for invertebrates, in particular the BAP species stag beetle, for which there are numerous records in the area and for which Richmond Park SAC is designated. In addition, logs from felled trees could be used to create informal play features. Establishment of climbing plants such as ivy or honeysuckle is recommended on walls and fences where appropriate, with management to provide shelter, flowers and fruits for birds, invertebrates and associated benefits to bats.

6.5.12 Nesting bird and bat boxes/bricks (a minimum of 8 of each) should be installed on the larger trees to be retained at the northern edge of the site and on the north facing aspects of the building (bird boxes on north facing aspects and bat boxes on south facing aspects), to replace potential nesting/roosting sites to be lost, and should include boxes for BAP species such as sparrows, thrushes and starlings.

Further enhancement measures

6.5.13 Additional measures which could be employed to further enhance the biodiversity value of the site include provision of a nesting site for peregrine falcon on the roof of one of the apartment blocks, and/or provision of a green roof.

Completed development (operational)

6.5.14 The external lighting scheme should be designed to minimise the impact of lighting on the northern boundary of the site, adjacent to the River Thames which is likely to provide a relatively dark corridor used by foraging and commuting bats. This could be achieved using, for example, reflectors/cowls and/or low intensity/low height lighting, and timed/movement activated lights if possible.

6.5.15 The created habitats and habitat features should be managed in the long-term to benefit biodiversity, and an integrated landscape and conservation management plan is recommended to ensure appropriate management for wildlife (as described above).

6.6 RESIDUAL IMPACT

Construction

6.6.1 Implementation of the recommended mitigation, compensation and enhancement measures, should enable avoidance of possible minor adverse

impacts on the River Thames, other nearby protected sites, and bats, and would result in creation of native, semi-natural buffer habitats along the Thames, resulting in more green space and a minor beneficial effect (Table 6.7).

6.6.2 Implementation of the further enhancement measures would further increase the biodiversity value of the site and would therefore result in a greater beneficial effect of the development as a whole.

Completed development

6.6.3 Design of lighting to minimise light spillage into the river corridor, would result in a neutral effect of the development on commuting/foraging bat during the operational, post-construction phase. The development would comply with the NPPF which states that decisions should limit the impact of light pollution on intrinsically dark landscapes and nature conservation.

6.6.4 Creation of native buffer habitat in the area of green space adjacent to the river and long-term management of biodiversity features would result in a minor beneficial effect (Table 6.7) and would comply with London Plan policy 7.19 regarding protection, enhancement and creation of biodiversity and sites of importance. It would also comply with policy 7.21 regarding protection and replacement of trees and new tree planting, and policy 7.28 regarding enhancement of the Blue Ribbon Network. The aims of the London Borough of Richmond core strategy would also be achieved through enhancing biodiversity in areas of new development and along wildlife corridors (DMOS5), and the mitigation measures would help towards certain biodiversity action plans.

6.6.5 No significant adverse effects are predicted for sites of nature conservation importance, and creation of native buffer habitat would provide a slight benefit to the River Thames corridor.

Table 6.7: Summary of Residual Impacts

Topic Area (Ecology)	Description of Impact	Geographical Importance					Impact	Nature	Significance After Mitigation
		N	R	S	D	L			
Construction									
Trees and scrub habitat (negligible value)	Partial loss followed by replacement with native species and habitat creation					*	Minor beneficial	Long-term	Low beneficial
River Thames (medium value)	Protection from pollution			*			Neutral	Short-term	No effect
Bats	Creation of roost opportunities and precautionary strip					*	Neutral	Long-term	No effect
Operational									
River Thames (medium value)	Restricted lighting of river edge and habitat management			*			Minor beneficial	Long-term	Minor beneficial
	Shading of watercourse habitat			*			Neutral	Long-term	No effect

KEY: Geographical importance - N: national, R: regional, S: sub-regional, D: district, L: local.

6.7 CUMULATIVE IMPACTS

6.7.1 The only other significant project in close proximity is reported to be a proposal for HamHydro power facility on part of the adjacent Teddington Weir. A number of specialist surveys were undertaken of the weir pool, wider river and banks, including for macrophytes, invertebrates, and fish (Ham Hydro CIC, 2013), summarised below:

There was a lack of aquatic macrophytes in the section of river to be affected;

The macro-invertebrates present in the weir pool indicated good water quality, but consisted mostly of common and widespread species, and a number of invasive species were also present;

The majority of fish caught were juveniles, and the majority of the fish were recorded near the gravel beach on the lock island. Spawning is

likely to be restricted due to tidal influences and the lack of macrophytes.

(Ham Hydro CIC, 2013)

Construction

6.7.2 Bat surveys were recommended of a gauging station to be affected by construction, and checks were also recommended for nesting bird, hedgehog, hazel dormice, water vole and reptiles, particularly if a contingency access on the northern bank is proposed (Ham Hydro CIC, 2013). However, the development is expected to mostly affect the watercourse itself, with a small part of the development footprint also affecting part of the adjacent Lensbury Club site which consists mostly of mown grassland and hard standing (Ham Hydro CIC, 2013).

6.7.3 The summary report states that

"the installation of 3 archimedean screw turbines, a larinier fish pass, and flood protection channel will have a negligible impact on local ecology" (Ham Hydro CIC, 2013)

6.7.4 An earlier environmental site audit report by AMEC (2011) states that no effects on terrestrial ecology are anticipated. As proposals for Teddington Studios will not affect the river channel, it is therefore unlikely that the cumulative impact of the two developments would be significantly different from the individual predicted residual impact. Therefore, the cumulative impact for Teddington Studios is expected to be minor beneficial.

Completed Development

6.7.5 An environmental site audit report by AMEC (2011) details the fish pass proposed to mitigate the impact on migratory fish and states that no effects on terrestrial ecology are anticipated.

6.7.6 As the weir proposals will mostly affect the river channel itself and the residual impacts are expected to be negligible, while the proposals for Teddington Studios will not affect the river channel, it is therefore unlikely that the cumulative impact of the two developments would be significantly different from the individual predicted residual impact. Therefore, the cumulative impact of the completed development at Teddington Studios is expected to be minor beneficial.

6.8 SUMMARY AND CONCLUSIONS

6.8.1 Catherine Bickmore Associates were commissioned on behalf of Haymarket Media Group to undertake an ecological impact assessment at Teddington Studios, Teddington, London Borough of Richmond. The assessment was in connection with proposals to redevelop the film studio site for residential use. Biological records were obtained for a 2km radius around the site, and a phase one habitat survey was carried out. This was followed by a daylight inspection for bat and a nocturnal emergence bat survey of structures with potential for bat roosts which were to be affected as part of development. Shadow analysis plans were consulted to indicate current and future shading of the site by the buildings. The likely impact of the development was then assessed following guidance published by the Institute for Ecology and Environmental Management and the Highways Agency.

6.8.2 The site covered c.1.8ha and was situated to the north of Broom Road, in a built up area at the eastern edge of Teddington, on the banks of the River Thames (a Site of Metropolitan Importance for Nature Conservation). There was no access to the river from the site, which was c.1.5-2m above the level of the water at the time of survey. The river banks were retained by vertical sheet piling. The majority of the site consisted of studio buildings and car parks with small areas of mostly introduced shrubs and trees, and therefore the site was of negligible conservation interest. The trees and shrubs, particularly the more mature trees in the car park in the northern part of the site, provided some limited ecological value at a site level. The ornamental shrubbery at the northern boundary of the site, adjacent to the River Thames, had some functional value in providing a buffer of vegetation between the river and the development site, and possibly a linear feature for use by foraging and

commuting bat. However, its interest was limited as it covered a relatively small area surrounded by tarmac and paved surfaces and lighting, and the majority of the species were introduced, including some invasive species.

6.8.3 The daylight bat inspection identified two buildings to be demolished which had low potential for bats, however a subsequent emergence survey recorded low bat activity generally and did not record any bats using the buildings. Two further buildings to be demolished were also inspected, however bat potential was considered to be negligible. Four mature horse chestnut trees to be affected were also inspected for potential for bats. Three of the trees were thought to have negligible potential for bat and one was possibly of low potential.

6.8.4 Demolition of the existing studio buildings and construction of a large residential development would result in the loss of several large buildings covering most of the width of the site, and several small ornamental shrubberies, including some immature trees and shrubs and three mature horse chestnut trees. Replacement with north-south orientated buildings, slightly closer to the river, would slightly increase length of shadows to the north, however extent/width of the shadows would be reduced, and the effect on the river is expected to be negligible. Loss of potential opportunities for future bat roosts, and lighting of the river edge and possible contamination could result in a minor adverse effect. No current bat roosts are expected to be affected. Overall there is predicted to be a minor adverse effect on nature conservation as a result of the development in the absence of mitigation.

6.8.5 Recommendations are therefore made to ensure the river corridor is protected during construction, and enhanced in the long-term through creation and management of native buffer habitat and minimisation of light spillage. In addition, a precautionary approach to demolition of the buildings and removal of mature trees is recommended for bat, measures are recommended to avoid harming birds or active nests, and installation of bird and bat boxes is recommended as compensation. Integration of nature conservation into a landscape management plan is recommended to ensure maintenance of the biodiversity features in the long-term. These mitigation and enhancement

measures are expected to result in a minor beneficial effect on the nature conservation value of the site, in particular along the boundary with the river.