11. Ecology and Nature Conservation

11.1 Introduction

11.1.2 This Chapter, which has been prepared by Waterman, provides a statement of conformity with regard to the potential ecology and nature conservation impacts arising from the Scheme with Phase 1B (North) in place (and having regard also to the detailed design previously approved in relation to Phase 1A (North)). This statement of conformity, supported by updated baseline survey information, is provided pursuant to the s73 ES and other EIA Documentation (as defined in **Chapter 4: Approach to the ES Further Information Report**) in light of the further detailed design information now available in respect of Phase 1B (North) and confirms whether the findings of the s73 ES and other EIA Documentation with respect to the likely significant effects, mitigation and residual impacts in relation to ecology and nature conservation remain valid.

11.1.3 A review of relevant policy, legislation and guidance published since preparation of the s73 ES and other EIA Documentation has been carried out. A review of the detailed design for Phase 1B (North), as defined in **Chapter 2: Description of Phase 1B (North) RMA**, has then been undertaken, to identify elements of the Phase 1B (North) RMA of relevance to the ecological assessment.

11.1.4 The approach to the assessment methodology is set out, and a summary of recent consultation is provided. A review of the baseline information presented in the s73 ES and other EIA Documentation has been undertaken to confirm where this remains valid and updated data are presented where relevant, including an Updated Ecological Appraisal for Phase 1B (North) prepared in November 2016 which comprised an update ecological data search, an update 'Extended' Phase 1 Habitat Survey and update tree inspections for roosting bats. Any new or different potential ecology and nature conservation impacts arising from the Development (comprising the Scheme with the detailed design for both Phase 1A (North) and Phase 1B (North) in place) from those identified in the s73 ES and other EIA Documentation are described. Likewise, any new or different mitigation measures from those identified in the s73 ES and other EIA Documentation are presented where considered necessary, and residual impacts following the application of mitigation are described.

11.1.5 This Chapter is supported by **Appendix 11.1: Updated Preliminary Ecological Appraisal** (ecological data search, 'Extended' Phase 1 Habitat Survey and tree inspections for roosting bats).

11.2 Policy, Legislation and Guidance

11.2.1 There have been no significant changes to policy, legislation or guidance since the s73 ES and other EIA Documentation was prepared which have a material effect on the approach to or findings of the assessment.

11.2.2 Nevertheless, for completeness, a review of relevant material published or amended since the s73 ES and EIA Documentation was prepared is set out below.

Regional and Local Planning Policy Guidance

The London Plan, March 2016

11.2.3 In March 2016, the Mayor published **The London Plan (consolidated with alterations since 2011)**[i].

11.2.4 The consolidated version of the London Plan does not affect the guidance relating to ecology already considered in the s73 ES and other EIA Documentation, as set out in the London Plan 2011. However, the alterations since the 2011 London Plan, which are relevant to ecology and nature conservation, are listed below for consideration:

- Changes to policy 2.18 which highlights the importance of undertaking a strategic approach to plan positively for the creation, protection, enhancement and management of networks of green infrastructure;
- Changes to policy 7.18 which states that boroughs should undertake qualitative and quantitative audits of all forms of open space.

11.2.5 The Mayor of London published **Green Infrastructure and Open Environments: The All London Green Grid**[ii] (Supplementary Planning Guidance (SPG) in March 2012. This SPG relates to policy 2.18, 7.14 and 7.15 of the London Plan and it sets out strategic objectives and priorities for green infrastructure across London.

London Borough of Barnet, October 2016

11.2.6 The London Borough of Barnet (LBB) published its **Supplementary Planning Document: Sustainable Design and Construction**[iii] in October 2016. This SPD sets out design and construction principles to protect and enhance biodiversity. Section 2.16 - 'Biodiversity and Habitat Quality' states that a key objective of Barnet's approach is to protect and enhance the natural ecological environment, maintain and improve biodiversity and harness the benefits of healthy local habitats. The creation of new biodiversity should be encouraged wherever possible.

Guidelines for Ecological Impact Assessment

11.2.7 The Chartered Institute of Ecology and Environmental Management (CIEEM) published a second edition of the Guidelines for Ecological Impact Assessment in the UK and Ireland[iv] in January 2016. Relevant amendments to this guidance have been discussed in the Assessment Methodology section below.

11.3 Relevant Phase 1B (North) RMA Details

11.3.1 The elements of Phase 1B (North) of relevance to the ecology and nature conservation assessments are as follows:

- **Phase 1B (North) (Open Spaces / Public Realm / Threshold Spaces)**:
  - Several new areas of Public Realm and Open Space are to be provided as part of Phase 1B (North). These include Threshold Spaces including - Fenwick Place, Tempelhof Circus and Layfield Place;
  - The Eastern Brent Riverside Park and Western Brent Riverside Park are new parks to be provided adjacent to the realigned River Brent as marked on Parameter Plan 011. River Brent Nature Park is a new nature park of 0.27 ha to be provided alongside the River Brent; and

- Sturgess Park is located to the north west of the Shopping Centre. The existing Sturgess Park is to be retained and enhanced including new formal play facilities, seating areas, gardens, informal sports provision and nature areas. The park will consist of an area of 0.7ha.

11.3.1 The built development associated with Phase 1B (North) is described in **Chapter 2: Description of Phase 1B (North) RMA**.

11.4 Assessment Methodology

Baseline Surveys and Assessment

11.4.1 For the purposes of this assessment, Waterman has carried out a review of the existing ecological baseline presented in the s73 ES and other EIA Documentation. In addition, the ecological baseline assessments undertaken by Waterman in 2014 in support of the FIR for Phase 1A (North) RMA have been reviewed where relevant to Phase 1B (North).

11.4.2 The data search of ecological records presented in the s73 ES and the other EIA Documentation, specifically the Phase 1A (North) FIR, was updated by Waterman in August 2015 (**Appendix 11.1**). Records were sourced from Greenspace Information for Greater London (GiGL).

11.4.3 Waterman undertook an update 'Extended' Phase 1 Habitat Survey and update tree inspections for Phase 1B (North) in August 2015. These surveys were completed to inform the detailed design of the Development and to validate the findings of the previous 'Extended' Phase 1 Habitat Surveys. The results of the update 'Extended' Phase 1 Habitat Surveys, update tree inspections, together with the update data search, are presented in an Updated Preliminary Ecological Appraisal (PEA) Report for Phase 1B (North) dated November 2016 (included at **Appendix 11.1**). The assessment within the PEA includes sites of ecological value within a Site radius of 2km.

11.4.4 All trees within Phase 1B (North) were assessed during the update 'Extended' Phase 1 Habitat Survey for their potential to support roosting bat species, therefore updating the 2006 and 2014 surveys for bat roost potential assessment. Further update surveys were undertaken for a number of trees within the Phase 1A (North) and Phase 1B (North) areas in July 2016 to inform the discharge of condition 27.14 in advance of their removal.

11.4.5 No further protected species surveys for other species were considered necessary to be updated from those presented in the s73 ES and Phase 1A (North) FIR.

11.4.6 **Table 11.1** summarises the ecology survey work undertaken on the Site to date as part of the EIA process. Further details of these surveys can be found in the s73 ES, unless otherwise stated. This summary also includes work undertaken by Waterman in 2014 as part of the Phase 1A (North) RMAs, which was presented in the Phase 1A (North) FIR.

11.4.7 A number of surveys in **Table 11.1** (otter, water vole, river corridor survey, reptile and terrestrial macro-invertebrates) were considered to remain valid from the s73 ES and were therefore not updated based on the review of all previous survey data for the Site, and having regard to the findings of the 'Extended' Phase 1 Habitat Survey undertaken in 2015. The only update surveys which were considered to be required following the 'Extended' Phase 1 Habitat Survey undertaken in 2015 were ground based and aerial tree inspections for roosting bats, as detailed in **Table 11.1** below.

Table 11.1: Ecology Surveys Summary

Survey Type	Date of Survey	Author
'Extended' Phase 1 habitat survey	2006	Thomson Ecology (TE)
	2013	Environmental Resources Management (ERM)
	2014	Waterman
	2015	Waterman
Desk Study	2006	TE
	2014	Waterman
	2015	Waterman
Great crested newts (HSI and presence / absence)	2000	ERM
	2001	ERM
	2006	TE
	2015	Waterman
Badgers	2006	TE
	2014	Waterman
Bats	2006	TE
	2011	The Ecology Consultancy (TEC)
	2014	Waterman
	2015	Waterman - Ground based and aerial tree inspection
	2016	Waterman - Ground based tree inspections (not all trees)
Breeding birds	2006	TE
Reptiles	2006	TE
Terrestrial macro-invertebrates	2006	TE
Aquatic macro-invertebrate survey of Clitterhouse Brook	2014	Ahern Ecology
River Corridor Survey	2006	TE
Otter	2006	TE
Water vole	2006	TE

11.4.8 The full ecological assessment methodology is included in **Appendix 11.1**.

11.4.9 A review has been undertaken of detailed design and landscaping proposals relating to the Phase 1B (North) RMA as well as other reports relevant to this assessment prepared to support the s73 ES and other EIA Documentation. These include:

- Detailed landscape drawings and planting palettes for all areas which form part of the Phase 1B (North) RMA;
- Tree Survey and Constraints Plan (2016);
- Tree retention drawings for all areas which form part of the Phase 1B (North) RMA;

- Survey of Wildlife and Countryside Act (WCA, 1981, as amended) Schedule 9 Listed Invasive Species (Elcot Environmental, July 2014);
- River Brent Shading Study (Appendix 17B.2 of the Phase 1A (North) FIR); and
- Landscape and Ecological Management Plans (LEMPs) for open / public spaces which are required to discharge planning condition 27.9 in relation to both Phase 1A (North) and Phase 1B (North) (the latter currently comprising a draft).

11.4.10 The above details have been reviewed to identify whether the further baseline information is relevant to the assessment, and to determine whether the impacts reported in the s73 ES and other EIA Documentation remain valid or whether impacts are likely to arise which were not identified (or identifiable) previously. The conclusions of this review are set out in this Chapter.

Evaluation of Ecological Features

11.4.11 As detailed previously, since the s73 ES and other EIA Documentation was prepared, the second edition of the Guidelines for Ecological Impact Assessment in the UK and Ireland[v] has been published. This new guidance provides a slightly different geographical frame of reference when assessing the importance of an ecological feature. However, for the purposes of this assessment and in the interest of clarity and consistency with the s73 ES and other EIA Documentation, no consequential adjustments have been made with regards to the geographical scales when valuing an ecological feature in this Chapter, as this is not considered to materially affect the outcome of the assessment.

Limitations and Constraints

11.4.12 Owing to the growth structure, a group of Lombardy poplar *Populus nigra* 'Italica' trees (labelled as G1 in Figure 2, **Appendix 11.1**) were unsuitable for aerial inspection. However, given the results of the ground-based inspection (i.e. negligible to low potential), further aerial inspection is not required in accordance with best practice guidelines.

11.5 Consultation

11.5.1 The scope of the update ecological surveys undertaken to support the Phase 1B (North) RMA was provided to LBB as part of the EIA Scoping Report. Any consultee comments received are addressed in this Chapter, as appropriate. The approach to the ecology and nature conservation assessment was considered acceptable to LBB (see **Appendix 4.2**).

11.6 Baseline Conditions

11.6.1 The baseline information for the Ecology and Nature Conservation Chapter presented in the s73 ES and other EIA Documentation has been reviewed and its validity is largely confirmed. Commentary on the data from surveys and data searches undertaken in 2015 and 2016 is provided below.

11.6.2 The update 2015 desk study provided no records for the Site, however a number of protected and / or notable species were recorded within 2km of a central point within the Site, including a number of bat and bird species, such as common pipistrelle *Pipistrellus pipistrellus*. A number of invasive species were also recorded within 2km of a central point within the Site, such as giant hogweed *Heracleum mantegazzianum* and Japanese knotweed *Fallopia japonica*.

11.6.3 The 'Extended' Phase 1 Habitat Survey of the Phase 1B (North) area only, undertaken in 2015, recorded that the habitats within Phase 1B (North) are considered to have changed little in

terms of their ecological value since the s73 ES and other EIA Documentation was prepared. The PEA assesses the value of the ecological receptors for the Phase 1B (North) area only, based on the findings of the 'Extended' Phase 1 Habitat Survey. Please note however that for the assessment of the effects on ecological receptors within this Phase 1B (North) FIR, consideration has been given to the ecological receptors in the context of the Scheme as a whole.

11.6.4 **Appendix 11.1** and **Figure 11.1** present the Phase 1 Habitat Survey findings.

11.6.5 The 2015 'Extended' Phase 1 Habitat Survey assessed the only two buildings (Brent Cross Shopping Centre and a building to the north of the shopping centre currently in use as Topsy Turvy World) within the Phase 1B (North) part of the Site, both of which were assessed as having negligible potential to support roosting bats.

11.6.6 The 2016 PEA **(Appendix 11.1)** details the results of bat survey work within Phase 1B (North). Based on the tree ground inspections and aerial inspections undertaken in 2015 and subject to partial update in 2016, two groups of trees, referred to as G1 and G2, and three separate trees (T1-T3), were assessed as having bat roost potential.

11.6.7 Most of Phase 1B (North) is considered to offer limited foraging and commuting opportunities for bats owing to the predominant habitat type comprising buildings and hard standing. However, the River Brent, and broad-leaved plantation woodland and scattered trees are considered to provide some opportunities for foraging and commuting bats.

11.6.8 The Survey of Schedule 9 Listed Invasive Species[vi] which was undertaken to inform the Phase 1A (North) FIR provides a detailed survey of invasive weed species under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife. A survey was submitted and approved by LBB in November 2014 as required by planning condition 27.8 (Ref No: F/04565/14) attached to the 2014 Permission, and identified areas of Japanese knotweed *Fallopia japonica* across the Site, with a number of stands along the existing River Brent channel and along the North Circular road. A significant amount of cotoneaster *Cotoneaster sp*., was also recorded throughout the external areas associated with Brent Cross Shopping Centre.

11.7 Assessment and Mitigation

Construction

Potential Impacts

Effects on Designated Sites

11.7.1 The nature of construction of the River Brent alteration works and other works have not changed since that presented in the s73 ES and other EIA Documentation, and therefore the assessment remains valid, i.e. no significant effects upon designated sites are expected. Generic mitigation measures in line with Environment Agency best practice Pollution Prevention Guidelines (PPGs) are included in the draft Code of Construction Practice (CoCP) which accompanied the s73 ES and will be updated in accordance with Condition 8.1, with further mitigation measures, if required and Construction Environmental Management Plans (CEMP) will be produced in line with pre-commencement Condition 8.3.

Direct Mortality and Injury of Protected Species

11.7.2 There are no buildings with the potential to support bat roosts within Phase 1B (North).

11.7.3 The Tree Retention and Loss Plans (presented in **Figure 11.3**) were reviewed for each component of the Phase 1B (North) RMA to ascertain which trees which offer bat roosting potential may be impacted by Phase 1B (North). Trees with bat roost potential that are to be impacted then underwent further survey by Waterman in 2016 (as detailed in **Appendix 11.1**). A small group of trees which have been identified as having low potential to support roosting bats are to be felled (G2). These trees will be felled under the supervision of a bat licensed ecologist using precautionary sensitive felling techniques (as detailed in **Appendix 11.1**).

11.7.4 Two trees (T2 and T3) which are also proposed to be felled were assessed during the 2016 surveys as having moderate bat roost potential.protected species These trees fall within the Phase 1A (North) area but are immediately adjacent to the area of works for Phase 1B (North) and were not previously assessed as having potential for roosting bats. These will be subject to further surveys to ascertain their use by bats during the 2017 survey season. If these trees do support bat roosts their removal could lead to the direct mortality or injury of bats, should they be using the trees at the time of the felling works. In this scenario, all works to the trees would be undertaken in accordance with a Natural England Licence. The loss of the bat roost would likely be a 'local adverse impact'. The 2016 PEA (**Appendix 11.1**) also makes recommendations for further survey and mitigation / ecological enhancement measures, where appropriate.

11.7.5 Tree and vegetation removal will be undertaken outside the breeding bird season (i.e. undertaken September to February) to ensure that legislation in relation to direct bird mortality and injury is adhered to. As previously reported in the s73 ES, this potential impact is therefore not considered to be significant.

11.7.6 No other protected species will be impacted with regard to direct mortality or injury.

Disturbance

11.7.7 Following a review of the detailed design and updated baseline information, those disturbance effects previously reported in the s73 ES and other EIA Documentation are considered to remain valid.

Habitat Loss

11.7.8 The s73 ES and other EIA Documentation identified a negative impact of up to local significance associated with habitat damage and loss outside the river corridor in the short term. The impacts from disruption to habitat along the existing River Brent corridor were identified as negligible. These impacts remain valid taking into account the detailed Phase 1B (North) proposals. The tree retention and loss plans show that a significant number of mature trees will be lost on the Site due to the realignment of the River Brent. Most these trees are to be lost as part of Phase 1A (North) and were assessed within the Phase 1A (North) FIR. The trees to be lost are predominantly poor condition and / or show signs of disease.

Invertebrates

11.7.9 The s73 ES states that to ensure the "…. *successful implantation of the green and brown roofs for invertebrates, additional surveys will be undertaken to inform the detailed design….*". It is assessed however, that given the highly urbanised nature of the Site and the habitats present (with no change in the management of these habitats in the intervening years from previous

surveys), it is not necessary to repeat the invertebrate surveys for the design of the green and brown roofs. The design will however be targeted at the National Environment and Rural Communities (NERC) Act 2006 and Local Biodiversity Action Plan species lists (where practical for the Site post development) as well as species identified in previous surveys. Several buildings within Phase 1B (North) will have green roofs to help attenuate surface water runoff and encourage biodiversity (**Figure 11.2**). As such, the impact to invertebrates previously reported in the s73 ES and other EIA Documentation is considered to remain valid.

Pollution

11.7.10 The potential impacts previously reported in the s73 ES and other EIA Documentation remain valid as the detailed design does not alter the risk of pollution incidents.

Invasive Species

11.7.11 No significant impacts were identified in the s73 ES and other EIA Documentation in respect of invasive species. This conclusion remains valid, provided that management methods and controls are implemented as set out in the Schedule 9 Invasive Species Report.

Summary

11.7.12 In summary, the assessment of construction impacts upon ecology and nature conservation as presented in the s73 ES Ecology and Nature Conservation Chapter and other EIA Documentation are considered to remain valid, taking into account the detailed design of the Phase 1B (North) RMA.

Mitigation

11.7.13 Mitigation measures for construction identified in the s73 ES and other EIA Documentation are considered to remain valid including:

- Preparation of CoCPs;
- Preparation of CEMPs;
- Protection of trees; and
- Invasive species eradiation and method statements.

11.7.14 The Indicative Construction Programme (ICP) for the Scheme has been subject to an interim update as described in **Chapter 2: Description of Phase 1B (North) RMA**, and hence there have been some updates to the timing and phasing of works (clearance and demolition) since the s73 ES and other EIA Documentation was produced.

11.7.15 As a result of further landscaping information and arboricultural surveys which have been carried out for the Phase 1B (North) RMA, along with information provided in the updated ICP, the following mitigation measures will now be implemented:

- Designated Sites, Habitat Damage, Loss and Creation, Habitat Fragmentation and Isolation and Pollution and Other Indirect Impacts: following comments raised by the LBB Ecologist, measures will be implemented to mitigate for the temporary loss of habitats whilst newly created habitats in the proposed open spaces are created and have time to mature. Mitigation measures implemented to ameliorate impacts from construction dust will be detailed within the CEMP. Details of measures such as the provision of a linear feature erected alongside the existing River Brent during the construction period following the removal of trees and vegetation along this corridor are being investigated to mitigate the

temporary removal of commuting and foraging habitats for bats during the realignment of the River Brent. Habitats such as trees and shrubs within Sturgess Park will be retained and habitats enhanced as part of the Development. This will retain opportunities for invertebrates, and foraging bird and bat species.

- Protection of Trees: An updated Arboricultural Method Statement will be provided to discharge Pre-RMA planning condition 27.2 of the 2014 Permission for the purpose of Phase 1B (North), providing further detail on mitigation in respect of those trees to be retained within the Site. Demolition of existing structures or the removal of hard surfaces is not shown to impact on the RPA of any retained trees. Therefore, other than the provision of protective fencing, no additional specialist protection measures are required. Installation of new hard surfaces and excavation and soil re-modelling is not shown to encroach within the RPA of any retained trees. Protective fencing will be erected in full accordance with the requirements of BS 5837:2012.

Residual Impacts

11.7.16 The loss of the two trees within the Phase 1A (North) area which are currently considered to have moderate potential to support roosting bats may result in the loss of a bat roost/s. This would likely result in a temporary **local adverse impact,** although this cannot be confirmed until further surveys are undertaken to determine presence/absence and type of bat roost. These surveys are to be undertaken in compliance with the requirements of condition 27.14 prior to tree removal.

11.7.17 No other new or different residual construction impacts have been identified from those presented in the s73 ES or other EIA Documentation, therefore, aside from the above, the conclusion that there would be 'no significant impacts' with mitigation in place as recorded in Table 22.2 of the s73 ES for the receptors discussed above remains valid.

Operation

Potential Impacts

11.7.18 The detailed design and landscaping proposals for Phase 1B (North) have provided clarification to the elements of the habitats within the Development. The RMA includes details of landscape features to be retained and removed under Pre-RMA planning condition 27.1 of the 2014 Permission and habitat enhancement measures associated with landscaping to discharge planning condition 27.4. A review of the impacts presented in the s73 ES and other EIA Documentation in light of this detailed design information is set out below.

Impacts on Designated Sites

11.7.19 Impacts on designated sites including the Brent Reservoir (Welsh Harp Reservoir) SSSI remain not significant, as the proposed alterations to the River Brent have not changed significantly from those reported in the s73 ES and other EIA Documentation.

Direct Mortality and Injury of Protected Species

11.7.20 The detailed design for Phase 1B (North) does not include any proposals which would affect the outcome of the s73 ES and other EIA Documentation with regard to direct mortality or injury of protected species, and hence the impact is considered to remain not significant as previously reported.

Disturbance

11.7.21 The birds using the existing Brent Cross Shopping Centre and the surrounding parks are all common in urban environments and are likely to be already habituated to relatively high background levels of disturbance. Whilst an increase in disturbance of birds is likely to occur due to the encouragement of people into Sturgess and Brent Riverside Parks, this is not considered significant for the reasons given above.

11.7.22 In order to protect bats foraging, roosting and commuting along the River Brent and the proposed riverside parks, light spill from external artificial lighting into adjacent habitats shall be minimised by use of an appropriate detailed lighting scheme to be agreed with LBB, as per planning condition 34.3.

11.7.23 The impacts from disturbance are not significant, and hence remain as previously reported in the s73 ES and other EIA Documentation.

Habitat Damage, Loss and Creation

11.7.24 The s73 ES did not assess the specific habitat gain / loss figures for habitats within Phase 1B (North) as the detailed design of the landscaping was not available at the outline stage. Based on the detailed landscaping design for Phase 1B (North) there will be a net gain of habitat for Phase 1B (North) of approximately 31,150m^2. It should also be noted that the habitat to be provided as part of Phase 1B (North) will be far more diverse and beneficial to biodiversity than the existing available habitats.

11.7.25 The re-alignment of the River Brent (which forms part of Phase 1A (North)) and the New Town Centre construction will require the loss of a number of trees as described in the Construction Impacts section, however replacement native tree planting is proposed throughout the proposed Development.

11.7.26 It is proposed that a number of trees / hedgerow are to be removed from Sturgess Park predominately due to their poor condition. Landscaping will replace the removed trees with native tree and hedgerow planting, wildflower planting and ornamental planting. Areas of retained grassland will also be enhanced.

11.7.27 The impacts identified in Table 11.10 of the s73 ES associated with habitat loss within the Site as a whole are considered to remain valid and are unaffected by the details of the Phase 1B (North) RMA.

11.7.28 Native planting and biodiversity enhancements in the open spaces to be included in Phase 1B (North), such as the Eastern and Western Riverside Parks and Sturgess Park, would be managed under LEMPs which would ensure that habitats are established and maintained to fulfil their role to provide replacement and enhanced invertebrate, bird and bat foraging and sheltering habitat.

Habitats outside the River Corridor

11.7.29 Detailed design of the landscaping provides information on ecological enhancements to be incorporated into the Development within the Phase 1B (North) area, including bird and bat boxes and native species planting palettes. The contribution of these enhancements to biodiversity and the change from the pre-Development condition is considered to give rise to a permanent **minor beneficial** impact of local significance in the long-term in respect of Phase 1B (North). This was identified as a minor negative impact in the s73 ES for the Site as a whole.

Habitats within the River Corridor

11.7.30 The River Brent will be subject to significant ecological improvement works (as part of Phase 1A (North)) comprising re-alignment and naturalisation, which includes removing the existing channel, realignment of a new channel (producing a three-stage widened channel), to create a low flow channel set within the staged channel.

11.7.31 The Eastern and Western Brent Riverside Parks stretching the length of Reaches 1 and 3 of the River Brent will be created as part of Phase 1B (North). This will include the planting of riparian and marginal vegetation including native species and the addition of boxes for invertebrates, birds and bats, along with timber fenders provided on the river walls. The enhancement of the River Brent along Reaches 1 and 3 will create a far improved habitat for common fish and invertebrate species. In addition, there should be a rise in the pollutant intolerant species and fish species that feed on current fauna due to an increase in oxygenation and decrease in water turbidity. The positive impact on nature conservation of up to Borough significance reported in the s73 ES therefore remains valid.

11.7.32 A shading study of the River Brent previously undertaken by BMT to discharge planning condition 34.4, included as Appendix 17B.2 of the Phase 1A (North) FIR. This study was not available at the time of the s73 ES, since the detailed design of the bridges was not available at the outline stage.

11.7.33 An assessment of the impact of the bridge structures along the River Brent was undertaken as part of the Phase 1A (North) FIR. This assessment was reviewed for the potential impacts of Phase 1B (North). The assessment undertaken for Phase 1A (North) concluded that the stretches of the river and riverside parks in proximity to the bridge structures within Phase 1B (North) and which cross the newly created Eastern and Western Brent Riverside Parks failed the two-hour sunlight criteria (as defined by relevant criteria for shading of outdoor amenity space defined by the Building Research Establishment[vii]). There are therefore a number of areas along the River Brent and within the riverside parks within Phase 1B (North) which will be overshadowed by the bridge structures which form part of Phase 1A (North). The newly created habitat in these shaded locations has therefore been designed with shade tolerant plant species. The water quality effects of riparian shading are largely unknown, although given the urban nature of the River Brent and its associated water quality it is reasonable to conclude that any impacts would be negligible. The impact on the created River Brent habitat is considered to be negligible, and therefore the finding of the s73 ES and other EIA Documentation remains valid.

Invertebrates, Amphibians and Birds

11.7.34 Overall, impacts identified in the s73 ES and other EIA Documentation in respect of invertebrates, amphibians and birds remain valid as the Phase 1B (North) RMA remains consistent with the parameters of the 2014 Permission in terms of habitat creation, including

landscaping and green and brown roofs. Green / brown roofs will be provided to provide enhanced ecological biodiversity and additional wildlife habitats; these would consist of pre-grown sedum turf with additional plug planting to provide additional species diversity (see **Figure 11.2**).

11.7.35 As set out in the s73 ES and other EIA Documentation, invertebrate habitat lost will be mitigated for in Phase 1B (North) by the inclusion of green / brown roofs, which will form part of the 10% requirement of the green / brown roofs for the Scheme as a whole. There will also be the creation of a mosaic of invertebrate habitats within Sturgess Park and the Eastern and Western Riverside Parks. Given there is no loss of significant invertebrate habitat, it is not considered that further surveys or turf translocation will be necessary to facilitate the creation of habitat suitable for the small number of notable urban invertebrate species recorded previously. The impacts reported in the s73 ES and associated EIA Documentation remain unchanged.

Bats

11.7.36 The 2016 bat surveys undertaken by Waterman identified two trees (T2 & T3) with moderate bat roosting potential. These fall within the area of vegetation to be removed for Phase 1A (North). These trees were not identified as having bat roosting potential in the s. 73 ES or the Phase 1A (North) FIR. Should these trees be confirmed as supporting a bat roost/s during further surveys, their removal and the provision of new roosting opportunities would be carried out under a Natural England licence. The loss of any roosts would be temporary, as suitable mitigation would be provided to replace the lost roost/s.

11.7.37 The s73 ES states that to compensate for the loss of roost sites in trees and to provide additional roosting opportunities for bats, bat boxes or bat bricks will be incorporated on / into trees and buildings in appropriate places, providing at least three bat boxes for each tree where bat roosting is lost. No confirmed tree bat roost in Phase 1B (North) will be lost, however a number of trees with bat roost potential will be lost and therefore the landscape design incorporates bat boxes and tubes on retained trees within Sturgess Park and in Brent Eastern and Western Riverside Parks on walls and bridge abutments.

11.7.38 The detailed landscape design set out in the Phase 1B (North) RMA would not result in any significant long-term impacts on bats, and therefore the findings of the s73 ES and other EIA Documentation remains valid.

Invasive Species

11.7.39 Invasive species will be controlled and / or removed where recorded on the Site and replaced with native species or species of biodiversity benefit (if non-native) wherever practical. Invasive species will be removed from the Site in line with planning condition 27.8 of the 2014 Permission. An updated invasive species survey of the Site was undertaken to inform the Phase 1A (North) FIR and methods for the correct destruction and removal of invasive species on the Site provided. No significant impacts have been identified with regard to invasive species within Phase 1B (North) and therefore the finding of the s73 ES and other EIA Documentation remains valid.

11.7.40 National Biodiversity Network Gateway have a record of Chinese mitten crab *Eriocheir sinensis* where the River Brent meets the Grand Union Canal in Hanwell (grid ref: TQ 14935 79702) approximately 15km downstream towards the River Thames where the bank form is more naturalised, in 2014[viii]. Chinese mitten crab is an invasive species which burrows into river banks causing erosion and, in some cases, leading to bank collapse. The section of the River Brent within Phase 1B (North) (Reaches 1 and 3), are currently heavily modified with concrete

sides similarly to Reach 2 within Phase 1A (North) and are unsuitable for Chinese mitten crab to inhabit. However, the re-naturalised sections of the River Brent within Reaches 1 and 3 may create habitat that Chinese mitten crabs could potentially colonise in the future, even though the existing record is a considerable distance downstream with heavily modified habitat in between. Therefore, the potential impacts as a result of the detailed design of Phase 1B (North) remain in accordance with those identified within the Phase 1A (North) FIR, and post-restoration monitoring of the River Brent will be required including checks for signs of colonisation of the restored reaches by Chinese mitten crab and for the recurrence of invasive flora. Corrective action will be taken if required at that time.

Mitigation

11.7.41 A number of operational mitigation measures presented in the s73 ES have now become part of the Phase 1B (North) detailed design (i.e. inherent mitigation built into the detailed design):

- The LEMPs (the draft LEMP produced to support the Phase 1A (North) RMA and the draft / emerging LEMP currently being produced to support the Phase 1B (North) RMA) propose monitoring to be undertaken to demonstrate the success or otherwise of mitigation and enhancement measures in the detailed design, as well as suggested requirements for replacement planting if required, as per planning condition 27.7 attached to the 2014 Permission. In addition, the draft / emerging LEMP will be agreed with LBB prior to formal submission, as per planning condition 27.9 of the 2014 Permission;
- Bat boxes have been incorporated into the landscaping proposals as trees with bat roost potential will be lost, as per planning condition 27.5 of the 2014 Permission, and in line with recommendations likely to be made with a Natural England licence if required for the temporary loss of trees roost/s, if found to be present following further surveys;
- Green / brown roofs will be provided as replacement invertebrate habitat on the Site, alongside the enhanced habitat created within Brent Eastern and Western Riverside Parks and Sturgess Park which includes the provision of invertebrate hotels and log piles; and
- Bird boxes including nest boxes for common bird species will be erected on trees within Sturgess Park and Plot 113 and sparrow and pied wagtail nest boxes along with kingfisher and sand martin tunnels within Brent Eastern and Western Riverside Parks, on riverside walls and bridge abutments, as per planning condition 27.15 of the 2014 Permission. Numbers of each type of box will be dictated by suitable box locations on structures and the proximity and type of adjacent habitat as considered appropriate by Waterman, and details will be provided to LBB.

11.7.42 With regard to lighting design, the s73 ES stated '*potential disturbance of foraging and commuting bats will be reduced by limiting the use of artificial lighting in key bat foraging habitat such as along the River Brent (in the Brent Cross East and West development zones) and Clitterhouse Stream (in the PDP), close to trees and hedgerows and over parks. Impacts from essential lighting will be reduced by fitting hoods to carefully direct light only where it is needed or with the use of low-pressure sodium lights. Measures, as described above, to minimise the impacts on bats will be incorporated into the final lighting design'*. Details of lighting design would be developed pre-commencement for the River Brent corridor specifically in line with planning condition 34.3 to minimise disturbance to bats.

11.7.43 Following a review of the detailed design and landscaping plans for Phase 1B (North) and in light of the updated baseline, the following mitigation has been identified in addition to that provided in the s73 ES and other EIA Documentation:

- **Protected Species** - If the trees (T2 & T3) are confirmed as supporting a bat roost/s during further surveys, their removal would be carried out under a Natural England licence. Adequate mitigation would be provided to replace the lost roost/s and further details would be provided as part of the Natural England licence.

Residual Impacts

11.7.44 Different residual operational impacts have been identified in light of the updated potential operational impacts and mitigation as provided above:

- **Habitat Damage, Loss and Creation for Habitats outside the River Corridor** - detailed design of the landscaping has provided further information on the ecological enhancements to be incorporated into the Scheme in Phase 1B (North), including bird and bat boxes, invertebrate hotels, log piles, timber fenders and native species planting palettes. As such, in line with the FIR for Phase 1A (North), the minor negative residual impacts identified in the s73 ES for the Scheme as a whole are considered to improve to a permanent **minor beneficial** impact of **local** significance in respect to Phase 1B (North).

11.7.45 A summary of the residual impacts associated with ecology and nature conservation is included within **Chapter 22: Summary of Residuals Impacts and Mitigation**.

References

[i] Greater London Authority (2016) The London Plan (consolidated with alterations since 2011).
[ii] Mayor of London (2012) Green Infrastructure and Open Environments: The All London Green Grid.
[iii] London Borough of Barnet (2016): Supplementary Planning Document – Sustainable Design and Construction.
[iv] Chartered Institute of Ecology and Environmental Management (CIEEM) (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, Second Edition, Winchester.
[v] Chartered Institute of Ecology and Environmental Management (CIEEM) (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, Second Edition, Winchester.
[vi] Elcot Environmental (2014) *Survey of schedule 9 listed invasive species.*
[vii] BRE (2011) *Site layout planning for daylight and sunlight: a guide to good practice.*
[viii] Marine Biological Association - *RISC and ALERT Marine Non-Native Species (Chinese Mitten Crab, Wakame and Carpet Sea Squirt) Records*. <https://data.nbn.org.uk/> Downloaded on 22 December 2014.