Appendix 7.11

BIODIVERSITY NET GAIN ASSESSMENT

Greengage

Brighter strategies
for greener projects

Client: London Borough of Hillingdon

Project: Hillingdon Water Sports Facility and Activity Centre

Report: Biodiversity Net Gain

QUALITY ASSURANCE

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1.0 EXECUTIVE SUMMARY

Greengage Environmental Ltd was commissioned to undertake a Biodiversity Net Gain (BNG) Assessment by London Borough of Hillingdon (LBH) of a site known as Hillingdon Water Sports Facility and Activity Centre (HWSFAC), Broadwater Lake, Moorhall Road, Harefield, UB9 6PE.

Broadwater Lake lies within the Mid Colne Valley Site of Special Scientific Interest (SSSI); SSSIs are defined as those areas of land and water that are considered to best represent the country's natural heritage in terms of flora and fauna. The SSSI designation is made by Natural England under the Wildlife and Countryside Act (1981). Broadwater Lake is significant for its assemblages of breeding birds and over-wintering water birds.

The Site forms part of a designated SSSI. In accordance with the National Planning Policy Framework (summarised in Appendix A) development proposals should be refused unless significant harm to biodiversity can be avoided or adequately mitigated for. Within a SSSI, development should not normally be permitted unless the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest.

Alternative sites have been assessed prior to this site being chosen. LBH concluded that this was the only site suitable and available (see Alternative Sites Assessment document submitting with planning application).

This document is a report of this assessment and has been produced to inform a planning submission for the site which seeks the redevelopment of the site to create the HWSFAC including demolition of existing Broadwater Lake Sailing Club (BSC) clubhouse at the north of the lake and erection of a building to be occupied by Hillingdon Outdoor Activity Centre (HOAC) and BSC including changing facilities, meeting rooms, storage, Workshop and seasonal worker accommodation (sui generis), activity shelters; installation of pontoons and concrete slipways; boat shed; equipment storage huts (north of lake and at entrance); boat parking and racking areas; camping area; outdoor activity areas; ecological enhancement throughout the site; new pedestrian routes through the peninsula; landscaping including new woodland, dense vegetation screens and boundary treatment; new access and access road; localised dredging and land reclamation; relocation of existing sailing area and creation of floating and fixed islands within the lake; coach drop off and turning area; vehicle parking; cycle parking; and associated works.

The assessment aimed to quantify the predicted change in ecological value of the site in light of the proposed development. At the time of the report, detailed landscape plans including species lists had not been finalised and will be developed in consultation with key stakeholders.

The survey area extends to approximately 79.95 hectares (ha) and comprises areas of standing open water (moderate alkaline lake), broadleaved woodland, wet woodland, tree lines, invasive non-native buddleia scrub, dense scrub, modified grassland, gravel hardstanding, concrete, and buildings. The dominant habitat across the Site was moderate alkaline lake in the form of Broadwater Lake (approximately 60ha).

Proposed habitat creation includes areas of other neutral grassland, mixed scrub, ponds (non-priority habitat), bare ground, reedbeds, wet woodland, developed land; sealed surface and tree planting.

The development also seeks to retain a significant amount of habitat across the site including areas of moderate alkalinity lake (this habitat will be enhanced), lowland mixed deciduous woodland, wet woodland, modified grassland, ruderal/ephemeral vegetation, artificial unvegetated, unsealed surface, developed land; sealed surface, and numerous existing individual trees. 0.446km of line of trees and 0.596km of river situated in the north of the site will also be retained.

The proposals stand to result in a net gain of 35.04 biodiversity units associated with area-based habitats compared with pre-development value. This is equivalent to a net % gain of 3.56%. Watercourse and hedgerow units remain the same as no works are proposed to hedgerows or the adjacent canal. These % gains are made with all trading rules satisfied.

The BNG Metric is based on an assessment of the habitats both on area provided and also the condition of that habitat. Generally, this provides an assessment based on quantitative terms, with some consideration for qualitative gain/loss. It does not however, specifically include an assessment of the value of said habitat(s) for protected species / groups of species. This is an important note to consider because although the proposals can be demonstrated to have an overall small net gain for biodiversity, the actual value, in qualitative terms for the faunal species that use these habitats is considered in our professional opinion to be significantly greater.

Detail relating to the proposed ecological compensation and enhancement actions in relation to habitat creation and management is being provided within a Mitigation, Enhancement and Management Plan (MEMP).

2.0 INTRODUCTION

Greengage Environmental Ltd was commissioned to undertake a Biodiversity Net Gain (BNG) Assessment by London Borough of Hillingdon (LBH) of a site known as Hillingdon Water Sports Facility and Activity Centre (HWSFAC), Broadwater Lake, Moorhall Road, Harefield, UB9 6PE.

This document is a report of this assessment and has been produced to inform a planning submission for the site which seeks the redevelopment of the site to create the HWSFAC.

The assessment aimed to quantify the predicted change in ecological value of the site in light of the proposed development. At the time of the report, detailed landscape plans including species lists had not been finalised and will be developed in consultation with key stakeholders.

This BNG assessment has been undertaken in October 2023. Any further changes to the design will impact upon the BNG score and the metric will need to be updated to reflect such changes. This also carries forward throughout the entire lifetime of the project, including after planning permission has been granted, in and throughout the construction phase. Biodiversity net gain aims to give an accurate reflection of the changes happening on site.

2.1 SITE DESCRIPTION

The survey area ('the Site') extends to approximately 79.95 hectares and is centred on National Grid Reference TQ 04396 89593, OS Co-ordinates 504396, 189593.

The Site is located in South Harefield approximately 5km north of Uxbridge. The Site forms part of the Mid-Colne Valley Site of Special Scientific Interest (SSSI) and Site of Importance for Nature Conservation (SINC) and lies within the Colne Valley, an area of lakes and rural habitat.

The Site comprises an access road from Moorhall Road, the lake itself with an associated lagoon (south-east corner of the lake), a peninsula at the south-east corner, an existing sailing club (Broadwater Sailing Club) at the north end of the lake, parts of the margins of the lake, and islands set within the lake. There are also two discrete land parcels that fall within the same ownership; a hawthorn woodland to the east, and a grassland field to the south. The areas of these component parts are set out in Table 2.1 and shown in Appendix A Site Location and Component Areas.

Table 2.1 Component parts of the Site and their areas

Areas in ha of the Site and of its component parts	Approximate Area ha
Main Site - Lake, peninsula, sailing club, access road and lake margins	79.95
Peninsula only	6.38
Lake (water coverage - including lagoon to south-east corner)	58.81
Lagoon only (south-east corner)	1.31
Existing Islands	2.06

Areas in ha of the Site and of its component parts	Approximate Area ha
Broadwater Sailing club and its gravel parking area and small field adjacent	1.27
North-western grassland area	1.12
North river area	0.44
Eastern woodland and access road	3.93
Southern woodland	1.20
Offsite - field to south on Moorhall Road	1.27
Offsite - woodland to east	0.75
Offsite- remaining hardstanding areas	1.44

The survey area extends to approximately 79.95 hectares (ha) and comprises areas of standing open water (moderate alkaline lake), broadleaved woodland, wet woodland, tree lines, invasive non-native buddleia scrub, dense scrub, modified grassland, gravel hardstanding, concrete, and buildings. The dominant habitat across the Site was moderate alkaline lake in the form of Broadwater Lake (approximately 60ha).

The habitats immediately surrounding the Site primarily comprise the River Colne to the west and north, a large residence with gardens to the north, the Grand Union Canal to the east, and woodland, scrub and a mineral processing site to the south along with residential bungalows on Boyer's Pit Road. Within the wider area, urban development in the form of South Harefield exists to the east, with further lakes, woodland and open grassland being present to the north, south and west.

2.2 PROPOSED DEVELOPMENT

Redevelopment of the site to create the Hillingdon Watersports Facility and Activity Centre including demolition of existing Broadwater Lake Sailing Club (BSC) clubhouse at the north of the lake and erection of a building to be occupied by HOAC and BSC including changing facilities, meeting rooms, storage, Workshop and seasonal worker accommodation (sui generis), activity shelters; installation of pontoons and concrete slipways; boat shed; equipment storage huts (north of lake and at entrance); boat parking and racking areas; camping area; outdoor activity areas; ecological enhancement throughout the site; new pedestrian routes through the peninsula; landscaping including new woodland, dense vegetation screens and boundary treatment; new access and access road; localised dredging and land reclamation; relocation of existing sailing area and creation of floating and fixed islands within the lake; coach drop off and turning area; vehicle parking; cycle parking; and associated works.

The main components of the proposed development with specific relevance to the ecological performance of the lake and wider area are as follows:

- Ecological mitigation and enhancement measures;

- Partial land reclamation within the lake using dredged material to create a suitable platform for development on the peninsula;
- Removal of two islands and creation of new floating and fixed islands within the lake;
- Relocation of HS2 a proposed ecological mitigation (not yet delivered);
- Continued use of the lake for sailing and water based activities;
- Improvements to the existing unnamed access road to Broadwater Lake from the south;
- Landscaping including new woodland, dense vegetation screens and boundary treatment; and
- Localised dredging of the lake to create depths suitable for sailing and generate material to be re-used on-site.

The main user group for HOAC comprise; schools, colleges, scout and guides groups with the more local schools and residents of Buckinghamshire and South Bucks District visiting on a regular basis. The next largest group is the holiday/summer holiday course attendees. HOAC will operate at the site on weekdays between 1 April and 31 September.

An extensive schedule of ecological mitigation and enhancements measures is proposed. These are shown and labelled on the landscape plans, see Appendix E. The enhancements are fully described in the draft Mitigation and Ecological Management Plan (MEMP). The biodiversity net gains arising from these measures have been briefly described in Section 4 of this report.

3.0 METHODOLOGY

3.1 GOOD PRACTICE PRINCIPLES

To calculate the ecological value of the pre- and post-development site, the Natural England Metric 4.0 methodology was utilised, following good practice guidance from Natural England[1,2], and joint guidance from CIEEM, IEMA and CIRIA[3]. The good practice guidelines *"provide a framework that helps improve the UK's biodiversity by contributing towards strategic priorities to conserve and enhance nature while progressing with sustainable development"*. This framework consists of 10 good practice principles which are outlined in Table 3.1.

Table 3.1 Good Practice Principles and Discussion

Good Practice Principle	Discussion
1. Apply the Mitigation Hierarchy	The mitigation hierarchy has been applied. Prior to this site being chosen alternative sites were considered and assessed. It is understood that LBH concluded that this was the only site suitable and available (see Alternative Sites Assessment document submitting with planning application) The proposals require the removal of habitat. The initial proposals had been to deliver the proposal on the woodland area that exists on the current peninsula. However, following discussion with relevant stakeholders, including Natural England, it was made clear that the woodland on site should be retained and that the loss of open water would be more preferable to loss of woodland. The proposals are predicted to enhance the site for the faunal species that the site is designated a SSSI for and other species that use it, including otter, an aspect that is not specifically picked up through the use of the BNG Metric. The enhancements are shown in Appendix E of this report. The loss of a small proportion of the overall moderate alkalinity lake is offset through the enhancement of the remaining area of moderate alkalinity lake from moderate condition to fairly good.
2. Avoid Losing Biodiversity that Cannot be Offset by Gains Elsewhere	No irreplaceable habitats are present on-site pre-development. The loss of a small proportion of the overall moderate alkalinity lake is offset through the enhancement of the remaining area of moderate alkalinity lake from moderate condition to fairly good.

Good Practice Principle	Discussion
3. Be Inclusive and Equitable	The proposals for the site have been designed, adapted and created through extensive consultation and collaboration. Input from the wider design team has been significant. Extensive changes to the design have also been made following multiple consultation meetings with and feedback from Natural England, Environment Agency, LBH and following receipt of up-to-date survey data from 2022 and 2023.
4. Address Risks	Greengage and the wider design team have worked extensively to improve the biodiversity value of the site and mitigate risk from the original design. For example, changing the original design from development within the woodland area on the existing peninsula to now reclaiming land from the open water area allows all woodland on the peninsula to be retained, protected and enhanced. New island and floating habitat features are to be installed to provide new habitat and to screen important areas of the site for birds from the development and operational activities. These new habitat provisions have significantly increased over the design period, and importantly have been designed and updated based on up-to-date survey findings from a suite of surveys completed on site.
5. Make a Measurable Net Gain Contribution	The development will deliver a net gain for biodiversity with trading rules satisfied. The metric uses area and condition of habitats to assign ecological value. What the metric does not directly consider is the value said habitat and/or mosaic of habitats provides faunal species, the qualitative value. Even with the loss of a proportion of the open water habitat on-site, sufficient open water habitat will still be present on-site post development for the site to support the faunal species that currently utilise the lake. Furthermore, the enhancement of this open water habitat and the creation of new habitats within the wider site (see Appendix E of this report) will provide significantly increased roosting, sheltering, breeding and feeding habitat for a whole host of faunal species,

Good Practice Principle	Discussion
	including those that the site is designated for as well as other species such as otter and bats.
6.Achieve the Best Outcomes for Biodiversity	It is our professional opinion that the proposals offer the best outcome for biodiversity whilst also delivering the objectives of the project brief, to provide a new outdoor activity centre for children. The proposals result in a small net gain whilst also satisfying trading rules. As discussed above, the actual predicted increase in ecological value for faunal species from a qualitative basis, is considered to be significantly greater than suggested by the metric. The existing site is already subject to negative pressures, some controlled (existing boating and fishing) and some uncontrolled (illegal access, fishing and fly tipping for example). The lake itself is also considered to be of a relatively low quality when compared to other similar lakes. This is due to it being relatively uniform in level with limited macrophyte growth, other than in places around the periphery and with a significantly smaller fish population than expected. This in turn means that the necessary food webs to support a thriving population of birds (breeding and over wintering), as well as other faunal species populations, are negatively impacted accordingly. The proposals address many of these existing issues. Access will be managed, activities will still take place on the water but key areas for birds and other species such as otter, will be protected, enhanced and screened off thereby reducing the disturbance. Perhaps most importantly, the lake will be made significantly less homogenous and extensive new marginal and terrestrial habitat will be created. This in turn will provide extensive new foraging, sheltering, breeding and roosting habitat for a host of species including birds, otters and bats. The proposals will also include a commitment to the long term management of the site. It is for these reasons that it is considered that the proposals achieve the best outcomes for biodiversity, whilst also delivering the objectives of the project brief, to provide a new outdoor activity centre for children.

Good Practice Principle	Discussion
7. Be Additional	In addition to the habitat creation, a suite of additional enhancements such as bird and bat boxes, invertebrate features (e.g. log piles, stone piles, ponds), solar powered bubble aerators to improve oxygen levels in shallow areas of the lake, fish nursery features (man-made features such as cages), will be delivered across the site. Therse will benefit the species they are aimed at as well as indirectly benefitting other species such as otter.
8. Create a Net Gain Legacy	The landscaping on site will be designed, where possible, to be climate resilient, including more drought tolerant species and ultimately increase the carrying capacity of the site. The BNG on site will be managed for at least 30 years. The provision of aquatic and emergent vegetation will increase the resilience of the lake to climate change pressures by reducing water temperature, reducing water loss and preserving the lake well into the future.
9.Optimise Sustainability	The design for HWSFAC has been created not only with biodiversity in mind, albeit this has been the primary driver. The project has a significant social aspect to it in that it is being delivered to replace an important community resource that is now closed due to HS2. It will provide health and wellbeing benefits to those that use the facility, in particular vulnerable children and young people. The development is targeting net zero. The habitat creation and beneficial management of the habitats on site will help improve ecosystem services such as temperature regulation and air quality control, to help create a climate resilient environment.
10. Be Transparent	LBH commissioned Greengage Environmental Ltd to run the BNG calculations and communicate findings in a BIA report.

3.2 BIODIVERSITY METRIC

This metric uses Biodiversity Units as a proxy for the ecological value of area or linear based habitats. The areas of each habitat parcel are measured, with each parcel assigned a 'Distinctiveness', 'Condition' and 'Strategic Significance' score. Distinctiveness is a default score for the habitat classification, representing its inherent ecological value, whereas condition refers to the state each parcel is in relative to predetermined set of criteria outlined in the supplementary Biodiversity Metric 4.0 guidance.

Strategic significance draws upon priorities and objectivise within local plans and strategies, and is measured by providing habitats with a score from low to high as follows:

- High - "area/action formally identified within a local plan, strategy or policy";
- Medium - "location ecologically desirable but area/action not identified in local plan, strategy or policy"; and

- Low - " area/action not identified in any local plan, strategy or policy; or no local strategy in place"[4].

For post-development habitat areas, additional multipliers are applied considering the time taken to reach maturity and difficulty of creation of the habitats, and whether the habitat creation is in a strategically beneficial location.

An assessment of the predicted change in ecological value is undertaken comparing the Biodiversity Units and assessing percentage change. Changes in broader habitat types (for example, 'Urban', 'Woodland' and 'Grassland' habitats) are also tracked, and trading habitats is discouraged unless specifically targeted within a local strategy. Trading down of habitats is not permitted.

3.3 BASELINE CALCULATION

To calculate pre-development Biodiversity Units, data collected during site visits undertaken by Greengage during 2022 and 2023 survey work have been used. The primary source of data is from the Preliminary Ecological Appraisal (PEA). Areas of each habitat type were taken from the baseline habitat map within QGIS (Appendix A) and the condition of each habitat (along with its location) is described (see Section 4.1). The targeted condition for each baseline habitat has been provided within condition sheets in Appendix B, which sets out the basis for the assumptions made. Appendix C provides the lake condition assessment, while Appendix D provides a map showing woodland areas with different conditions for each mapped area.

Additionally, to calculate the Biodiversity Units associated with trees on site, stem diameters of each tree were used to assign each tree a rating of 'small', 'medium' or 'large', in line with the Natural England BNG User Guide. The rating corresponds to an area value to be used. Default distinctiveness and condition scores are given.

Distinctiveness values were automatically calculated for the site and habitat conditions were assessed both in the field, and retrospectively using site photos.

Strategic significance was assessed by reviewing the following:

- Hillingdon Local Plan[5];
- DEFRA's magic maps application[6]; and
- National Character Area Profile 115: Thames Valley[7].

As found within the Hillingdon Local Plan, the area sits just within the restoration zone boundary of 'RZ01: Red Cross Gardens- and Surrounds'. This means that the restoration of the Site, in the context of it being part of the wider restoration zone, is formally identified in local strategy and is therefore in a strategically significant zone.

The site is one of four units that make up an existing SSSI and is close to existing strategic habitat corridors and green chain routes. Aerial maps show that the site is also close, and connected, to urban green features of possible benefit to biodiversity. The proposed development is likely to help enhance this green network.

The site lies within Greenbelt and Green Chain areas as defined by the Local Plan. These are areas which contribute to the green network within the borough. Additionally, there is a BAP priority woodland and SINC off-site along the north east boundary and extending further to the northeast.

Due to the above evidence, including the fact that the site is a SSSI, the site is thought to be with a strategically significant area and therefore, all habitats pre and post development have been assigned a high strategic significance.

3.4 PROPOSED DEVELOPMENT CALCULATIONS

The proposed development seeks to develop the HWSFAC on the peninsula, with eventual demolition of the current BSC facilities at the north end of the lake. Landscaping habitat types were provided by Colour UDL and then translated into the relevant UKHAB and Metric 4.0 habitats.

This was only relevant for grassland and lacustrine habitats, as shown below:

Table 3.2 Translation of habitat classifications between landscaping, UKHab and the Defra 4.0 metric

Landscaping Habitat	UKHAB	Metric 4.0
Wildflower grassland in northern extent	G3C	Other neutral grassland
Species rich amenity grass on peninsula	G3C	Other neutral grassland
Lake	r1 open standing water or canals	Moderate alkalinity lakes

Targeted condition scores were assigned by Greengage, using the Metric 4.0 habitat condition criteria and species provided by Colour UDL, whilst considering the likely future use of each area. The targeted condition for each habitat has been provided within condition sheets in Appendix D, which sets out the basis for the assumptions made.

Final detailed landscape plans are to be developed in due course and so the length of time that will elapse between site habitat clearance, and habitat re-creation is not known at this time. However, the ecological mitigation strategy is for the work to be completed in phases with aspects of habitat creation taking place prior to any habitat loss. As such, for this current BNG assessment, the time recorded within the BNG metric has remained as 0 years as default.

This time is recorded with Metric 4.0 as a temporal multiplier called 'delay in starting habitat', which is added to each post-development habitat type, and increases 'time to target condition'. As a general pattern, the longer the time elapsed between habitat clearance and creation, the longer it takes to achieve the targeted habitat condition, which can consequently negatively affect the metric score.

3.5 COMPENTENCIES

Alex Hurley, who undertook the calculations and prepared this report, has a BSc Zoology & Physiology and MSc Conservation Biology and has five years' experience working within the environmental

management sector. She has experience planning and coordinating restoration management activities, developing environmental management plans and undertaking ecological surveys.

Stephanie Harper, who undertook the PEA and prepared this report, has a BSc (Hons) and PhD in Environmental Sciences, and a Natural England Level 1 class licence for bats. She has 15 years' experience in ecological survey and consultancy.

Mike Harris, who reviewed this report, has a Bachelor's degree in Environmental Biology (BSc Hons), a Natural England Great Crested Newt Licence and Dormouse Licence, is a Chartered Environmentalist (CEnv) and Full member of CIEEM. Mike has over 20 years' experience in ecological surveying and has undertaken and managed numerous ecological surveys and assessments.

This report was written by Alex Hurley and Stephanie Harper and reviewed and verified by and Mike Harris who confirms in writing (see the QA sheet at the front of this report) that the report is in line with the following:

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

3.6 CONSTRAINTS

The assessment methodology does not incorporate ecological features beyond area and linear based habitats. The potential for the site to support protected species, for example, is not captured by this assessment. As such this report should be read in conjunction with all other ecological reports for the site. The mitigation hierarchy in relation to protected and notable habitats and species much be followed. This report should accordingly be read in conjunction with the PEA and any other appropriate protected species surveys.

As detailed in several places within this report, the proposals will deliver significantly greater ecological value for a host of protected species and those of conservation concern, through the provision of greater and better resting, sheltering, roosting, nesting and feeding habitat, an aspect that is not brought out by the BNG Metric alone.

The BNG assessment at this stage is predictive in nature. To ensure delivery of BNG, requirements outlined within this report must be adhered to, and a rigorous programme of monitoring and maintenance must be implemented.

4.0 RESULTS

4.1 BASELINE CONDITIONS

The baseline metric calculation reflects area-based, linear-based and river habitats existing on site. The biodiversity units associated with each of these habitats are considered distinctly separate within the metric and therefore, they cannot be summed, traded or converted between each other.

Baseline Area-based Habitats

The baseline area-based biodiversity value of the site is calculated to be 983.23 biodiversity units. A breakdown of this calculation is provided in Table 4.1:

Table 4.1 Area-based Habitats - Baseline Biodiversity Units

Broad Habitat	Habitat Type	Area (Hectares)	Distinctiveness	Condition	Biodiversity Units
Grassland	Modified grassland	1.2569	Low	Moderate	5.78
Grassland	Modified grassland	2.4678	Low	Poor	5.68
Heathland and shrub	Mixed scrub	0.0703	Medium	Poor	0.65
Lakes	Moderate alkalinity lakes	60.1428	High	Moderate	829.97
Urban	Sparsely vegetated land - Ruderal/Ephemeral	0.9393	Low	Moderate	4.32
Urban	Artificial unvegetated, unsealed surface	2.6248	V.Low	N/A - Other	0.00
Urban	Bare ground	0.0053	Low	Moderate	0.02
Urban	Developed land; sealed surface	1.7831	V.Low	N/A - Other	0.00

Broad Habitat	Habitat Type	Area (Hectares)	Distinctiveness	Condition	Biodiversity Units
Urban	Introduced shrub	0.1229	Low	Condition Assessment N/A	0.28
Watercourse footprint	Watercourse footprint	0.4363	V.low	N/A - Other	0.00
Woodland and forest	Lowland mixed deciduous woodland	0.3762	High	Good	7.79
Woodland and forest	Lowland mixed deciduous woodland	6.5557	High	Moderate	90.47
Woodland and forest	Lowland mixed deciduous woodland	0.9678	High	Poor	6.68
Woodland and forest	Other coniferous woodland	0.0695	Low	Poor	0.16
Woodland and forest	Wet woodland	2.1544	High	Moderate	29.73
Individual trees	Urban tree	0.0039	Medium	Good	0.05
Individual trees	Urban tree	0.1129	Medium	Moderate	1.04
Individual trees	Urban tree	0.2065	Medium	Poor	0.95
***Urban trees are not included in the total site area to avoid double counting**				TOTAL	983.23

In accordance with Metric 4.0 guidance, 'Developed land; sealed surface', 'Artificial unvegetated; unsealed surface', 'Introduced shrub' and 'Watercourse footprint' have no condition assessment.

'Watercourse footprint' was included in the area-based habitat module to record the area of wide watercourse within the northern extent of the site. This category is to account for the area only and there are no biodiversity units associated with this category. Biodiversity units are accounted for this habitat within the watercourse habitat.

'Modified grassland' in moderate condition was present within the northern extent of the site around the Broadwater Sailing Club. The grassland in the north had six species per square metre. There were bare patches around the edge of the lake from footfall and grazing from wildfowl. Longer areas occurred around parked boats away from the water edge. Along the river outside the footprint of the BSC the sward was unmanaged and uniformly long; the grassland is allowed to grow very long until the path is used by fishermen; the management regime does not appear to have allowed a good range of species to develop and there does seem to be some nutrient enrichment.

Other neutral grassland' in moderate condition was also present in the field to the southernmost extent of the site on Moorhall Road. 90% of the field had a 'roughland' character (a habitat term specific to Greater London which is essentially a damp grassland). There were a mixture of grasses and rushes including perennial ryegrass (Lolium perenne) meadow foxtail (Alopecurus pratensis), quaking grass (Briza media) red fescue (Festuca rubra), reed sweet-grass (Glyceria maxima), soft brome (Bromus hordaceous), black bent (Agrostis gigantea), jointed rush (Juncus articulatus) and soft rush (Juncus effusus). Herbs included prostrate knotweed (Polygonum aviculare), tormentil (Potentilla erecta), red bartsia (Odontites vernus), creeping buttercup (Ranunculus repens), celery-leaved buttercup (R. sceleratus), selfheal (Prunella vulgaris), white clover (Trifolium repens), tufted vetch (Vicia cracca), broadleaf plantain (Plantago major). Large patches of tall ruderals were scattered through the field, with curled dock (Rumex crispus), thistles (Circium arvense and C. vulgare), lesser burdock (Arctium minus) with occasional teasel (Dipsacus fullonium); there were some dense tufts of gypsywort (Lycopus europaeus); osier (Salix viminalis) and white willow (Salix alba) and common alder (Alnus glutinosa) occurred occasionally, nettle (Urtica dioica) was also present. The remaining 10% in the south-west corner of the field was more marshy / damp in character with amphibious bistort (Persicaria amphibia), great willowherb (Epilobium hirsutum), American willowherb (E. ciliatum), broadleaf dock (Rumex obtusifolius), smooth sow thistle (Sonchus oleraceus), prickly sow thistle (Sonchus asper), redshank (Persicaria maculosa), gypsywort, fat hen (Chenopodium . Bramble scrub (Rubus fruticosus), lesser burdock and field bindweed (Calystegia sepium) occurred along the boundary hedgerow (elder (Sambuca nigra), ash (Fraxinus vulgaris) and alder); small stands of bulrushes (Typha latifolia) occurred along the south-west fenceline with HS2, marking spots where the ground stayed wet through the summer.

'Willow scrub' (dense scrub with dominant willow) was present on the northern side of one of the islands; the scrub has likely regenerated from cut down trees (clearance occurs on the islands as management for birds); species noted included willows and alder. These woody shrubs were very dense and mostly the same age therefore of a similar height typically 5m, and with thin stems (0.05m DBH); scrub was the most appropriate classification (rather than trees or woodland). The habitat was in poor condition lacking different age classes, glades, rides and well-developed edges. The condition was mainly constrained by the limited space available on an island.

'Mixed scrub' (defined as dense scrub comprising a mixture of species without a single species dominant) was present near the entrance to the peninsula, growing around a fence dividing two access gates onto the Site. The scrub was more mature and gappy, with shrub species including hawthorn (Crataegus

monogyna), dog rose (Rosa canina), hazel (Corylus avellana), birch (Betula pendula), elder (Sambucus nigra) along with the ubiquitous buddleia; typical understorey herbs such as nettles, bramble, yarrow and rosebay willowherb occurred in the understorey. The habitat was in poor condition lacking different age classes, glades, rides and well-developed edges. The condition was mainly constrained by the limited size of the habitat.

'Moderate alkalinity lake' relates to Broadwater Lake, the dominant habitat across the site. This has been assessed as being in moderate condition. The assessment is supplied in Appendix B.

'Ruderal/ephemeral' vegetation occurred on five islands, assessed to be in moderate condition. Part or all the surface of these islands is cleared annually by members of the sailing club as part of a management plan agreed with the local wildlife trust in the early 2000s to benefit the wildfowl using the lake; management occurs in October and includes rotivation to expose bare earth and removal of woody species. The island soils will be organically enriched from bird guano. By summer at the time of survey, the islands were densely vegetated with tall ruderals. Dominant species appeared to be nettles, hogweed (Heracleum spondylium) and regenerating willows, with a covering of hedge bindweed (Calystegia sepium). Foxglove (Digitalis purpurea) was noted in one location. Non-natives were not apparent. The habitat has a moderate condition as there were a variety of species flowering at different times of the year, and invasive non-natives appeared absent, however the habitat did not have a varied structure - the height was uniform and dense across each island.

'Bare ground' - area that will be part of the go-kart track through the trees. The go-kart track will exploit bare ground that is an existing part of an access path, and also areas made bare through removal of buddleia. The habitat condition is 'poor' as standard given that bare ground cannot have healthy attributes of a habitat such as structure and variety of plant species.

'Lowland mixed deciduous woodland' is present on the peninsula where much of the woodland is less than 50 years old and very sparse. Species include birch (Betula pendula) and alder with willows occurring on the shorelines. It had a very sparse and species-poor ground flora comprising of dominant nettle (Urtica dioica) with occasional bramble (Rubus fruticosus agg.), cleavers (Galium aparine) ivy (Hedera helix) and buttercup (Ranunculus sp.), being quite choked with buddleia in most places and with very hard and organic-poor substrate. The northern most peninsula area scored 34 out of a possible 39 across all assessment indicators to achieve a condition score of 'good'. Woodland on the eastern and southern edges of the peninsula as well as directly adjacent to the wet woodland parcel scored between 27 and 30 points across all assessment indicators to achieve a condition assessment score of 'moderate'. Woodland parcels on the north-western edge and through the middle of the southern portion of the peninsula scored between 22 and 24 points across all assessment indicators to achieve a condition assessment score of 'poor'. A figure has been provided to show the parcels of woodland with the different habitat conditions in Appendix D.

'**Lowland mixed deciduous woodland**' is also present to each side of the access road, along the edge of the adjacent canal and along the edge of the lake with a typical native woodland understorey of mixed scrub, herbs and grasses. Species included oaks (Quercus spp.), willows, poplar (Populus spp.) with alder, birch and hazel, and understorey of bramble, nettles (Urtica dioica), ivy (Hedera helix). The habitat was in moderate condition with a score of 31 points (the threshold for good condition is 32 points).

'**Wet woodland**' is present on several existing islands which are well wooded with mature trees dominated by willow with native broadleaved shrubs as well through the central peninsula with species including pedunculate oak (Quercus robur), alder, birch and hazel (Corylus avellana) as well as willows. The peninsula wet woodland scored 31 out of a possible 39 across all assessment indicators to achieve a condition assessment score of '**moderate**'.

Individual 'Urban Trees' are present on the peninsula, on some islands and growing in shallow areas of the lake. These trees were assessed and grouped into those with good, moderate and poor condition, in accordance with the arboricultural report for the Proposed Development.

Baseline Linear-based Habitats

The baseline linear-based biodiversity value of the site is calculated to be 1.96 biodiversity units. A breakdown of this calculation is provided in Table 4.2.

Table 4.2 Linear Habitats - Baseline Biodiversity Units

Hedgerow Type	Length (km)	Distinctiveness	Condition	Biodiversity Units
Line of trees	0.446	Low	Moderate	1.96
			TOTAL	1.96

The moderate condition assessed for this tree line is provided within Appendix B.

Baseline Watercourse Habitats

The baseline watercourse biodiversity value of the site is calculated to be 7.15 biodiversity units. A breakdown of this calculation is provided in Table 4.3.

Table 4.3 River Habitats - Baseline Biodiversity Units

Watercourse Type	Length (km)	Distinctiveness	Condition	Biodiversity Units
Other rivers and streams	0.596	Low	Moderate	7.15
			TOTAL	7.15

A generic condition of 'moderate' has been applied A river habitat condition assessment was not undertaken. The river bank lies outside the fence line of the BSC and provides a path for fishermen. The area will remain unchanged by the development proposals and will be protected from impacts during development.

4.2 PROPOSED SITE LAYOUT

Proposed Area-based Habitats

Based on masterplan drawings, the proposed development is predicted to provide 1018.27 area-based biodiversity units as shown in Table 4.4.

Table 4.4 Post-Development Area-based Biodiversity Units

Broad Habitat	Habitat Type	Area (Hectares)	Distinctiveness	Condition	Biodiversity Units
Enhanced On Site Habitat					
Lakes	Moderate alkalinity lakes	57.272	High	Fairly Good	836.01
Retained On-Site Habitat					
Grassland	Modified grassland	1.2569	Low	Moderate	5.78
Grassland	Modified grassland	1.4338	Low	Poor	3.30
Sparsely vegetated land	Ruderal/Ephemeral	0.6494	Low	Moderate	2.99
Urban	Artificial unvegetated, unsealed surface	0.0035	V.Low	N/A - Other	0.00
Urban	Developed land; sealed surface	1.4498	V.Low	N/A - Other	0.00
Watercourse footprint	Watercourse footprint	0.4363	V.low	N/A - Other	0.00
Woodland and forest	Lowland mixed deciduous woodland	0.3653	High	Good	7.56
Woodland and forest	Lowland mixed deciduous woodland	6.6252	High	Moderate	90.47

Broad Habitat	Habitat Type	Area (Hectares)	Distinctiveness	Condition	Biodiversity Units
Woodland and forest	Lowland mixed deciduous woodland	0.9678	High	Poor	6.68
Woodland and forest	Other coniferous woodland	0.0695	Low	Poor	0.16
Woodland and forest	Wet woodland	2.1544	High	Moderate	29.73
Individual trees	Urban tree	0.0265	Medium	Moderate	0.24
Created On-Site Habitat					
Grassland	Other neutral grassland	1.9285	Medium	Good	18.64
Heathland and shrub	Mixed scrub	0.1663	Medium	Poor	0.74
Heathland and shrub	Willow scrub	0.5067	Medium	Poor	1.31
Lakes	Moderate alkalinity lakes	0.2158	High	Fairly Good	0.60
Lakes	Ponds (non-priority habitat)	0.0284	Medium	Moderate	0.23
Urban	Bare ground	1.4332	Low	Poor	3.18
Urban	Developed land; sealed surface	1.7216	V.Low	N/A - Other	0.00
Wetland	Reedbeds	0.837	High	Good	7.57
Urban	Bare ground	0.0016	Low	Poor	0.00
Woodland and forest	Wet woodland	0.5196	High	Poor	2.01
Individual trees	Urban tree	0.3298	Medium	Poor	1.31
***Urban trees and green walls are not included in the total site area to avoid double counting**				TOTAL	1018.27

The proposed design seeks to retain a significant amount of the existing vegetation across the site. Therefore, the total biodiversity units delivered includes the retention of habitat specified in Table 4.4. All other habitats will be removed and new habitats created. The assumed condition for each habitat that will be created is evidenced within condition sheets provided in Appendix D.

The enhancement strategy is set out in detail within the draft MEMP. The enhancement measures are described below in Table 4.5 along with their purpose at the Site whether for functional reasons or to provide a biodiversity net gain.

Table 4.5 Enhancement measures summary

Habitat	Enhancement measure
Moderate alkalinity lake	Improve condition from moderate to fairly good by A) improving physical naturalness (added islands, changed topography to increase shallowness and depth, greater areas of macrophytes) and B) aim to reduce nutrient concentrations within the lake and thereby reduce algal content of water to increase clarity. Achieved through higher percentage of macrophytes on floating islands, emergent beds and aquatic planting on coir mattresses. Long term water quality monitoring (temperature, DO, turbidity) to set targets for improvement and monitor progress. Studies of zoo / phytoplankton, manipulation of biofauna over 10+ years. Other measures that may generate improvements are pumps for water circulation of isolated areas, and solar pumps / bubblers for increased dissolved oxygen (DO) during hot summers
Other neutral grassland	Within the activities area, archery area and small boundaries along new islands. Good condition has been targeted and will easily be achieved through ground preparation, use of good quality seed mix and ongoing management and monitoring.
Willow scrub	Buffer planting of willow alder and native thorns around the lagoon - provides a range of flowers through the year and visual screening and protection for the lagoon.
Mixed scrub	Around car parking areas - mixed shrubs with understorey wildflowers for landscaping purposes and to benefit invertebrates.
Lake	New area of open water created within the lake from removal of islands - fairly good condition applied as this area will be enhanced along with the rest of the lake.
Ponds	Two wildlife ponds created at the activities / camping area and BSC - moderate condition targeted.
Bare ground	Two areas with poor condition (it is not possible to achieve a higher condition). At the peninsula, Emorgate EM6F seed mix will be spread over the aggregate-surfaced boat parking areas to introduce sparse wildflowers through the area, to enhance the flower resource for invertebrates. The survival rate is unknown

Habitat	Enhancement measure
	at this stage therefore for BNG purposes the area has been classified as bare ground. On island 2, bare ground will be created as habitat enhancement for wildfowl. This is actually already created annually in winter but becomes revegetated each summer.
Developed land sealed surface	Access roads etc (unvegetated areas) - retained and new concrete and gravel hardstanding surfacing - condition does not apply.
Reedbeds	Concrete caisson planting where native aquatic and emergent planting will be provided. Condition will be good per the Defra metric criteria.
Bare ground	Very small area - removal of fisherman storage shed and workshop beneath tree canopy - area put into metric to reconcile areas only. Poor condition (it is not possible to achieve a higher condition).
Floating reedbeds	These have not been included in the BNG calculator. This is to avoid overstating the loss of open water. The features are effectively temporary and removable therefore the metric is not set up to properly assess the benefits of such a 3D structured environment where wate may be present beneath other habitats.
Wet woodland	All new permanent islands have been assumed to become wet woodland with willows etc with an assumed condition of poor.
Individual trees	Fruit trees planted into prepared tree pits within the activities area (due to constraints removing concrete) - poor condition assumed.

5.0 EVALUATION & DISCUSSION

Under these proposals, and in the absence of additional enhancement measures and habitat creation, the development stands to result in a net gain of 35.04 biodiversity units associated with area-based habitats compared with pre-development value. This is equivalent to a net % gain of 3.56%. Watercourse and hedgerow units remain the same as no works are proposed to hedgerows or the adjacent canal. These % gains are made with all trading rules satisfied.

As discussed throughout this report, the BNG Metric primarily uses a quantitative approach for assessing net gain and, for this scheme in particular, does not fully represent the qualitative gain that will be delivered though the enhancement of existing and creation of new ecologically valuable habitats. These habitats have been designed specifically to benefit the species that already utilise the site, both those that the SSSI is designated for and those that are protected or of conservation concern but not a reason for the SSSI designation.

The enhancements and habitat creation, detailed in Appendix E of this report, will ensure the lake will be made significantly less homogenous with extensive new marginal and terrestrial habitat created. This in turn will provide extensive new foraging, sheltering, breeding and roosting habitat for a host of species.

Many of the key requirements of the species of bird that the SSSI is designated for are associated with foraging, nesting and roosting habitat. The open water habitat does not provide this and so the new and increased amount and quality of riparian and terrestrial habitat being proposed will provide an abundance of suitable foraging, nesting and roosting habitat.

Further qualitative ecological enhancement will also be included in detailed designs such as:

- Bat boxes in trees;
- Bird boxes in trees – mixture of generalist and open fronted types;
- Green walls and green roof installed on buildings if feasible for invertebrates and to integrate buildings in to the landscape;

Details on habitat enhancement and management to ensure delivery of BNG will be outlined in a Mitigation, Enhancement and Management Plan (MEMP) and detailed landscaping plans.

The MEMP provides a description of how habitats are to be created and managed for a period of at least 30 years.

6.0 SUMMARY & CONCLUSION

Greengage was commissioned by LBH to undertake a Biodiversity Impact Assessment a site known as Hillingdon Water Sports Facility and Activity Centre (HWSFAC) in the London Borough of Hillingdon in order to assess the change in ecological value of the site in light of the proposed development.

Broadwater Lake lies within the Mid Colne Valley Site of Special Scientific Interest (SSSI); SSSIs are defined as those areas of land and water that are considered to best represent the country's natural heritage in terms of flora and fauna. The SSSI designation is made by Natural England under the Wildlife and Countryside Act (1981). Broadwater Lake is significant for its assemblages of breeding birds and over-wintering water birds.

The Site forms part of a designated SSSI. In accordance with the National Planning Policy Framework (summarised in Appendix A) development proposals should be refused unless significant harm to biodiversity can be avoided or adequately mitigated for. Within a SSSI, development should not normally be permitted unless the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest.

Alternative sites have been assessed prior to this site being chosen. LBH concluded that this was the only site suitable and available (see Alternative Sites Assessment document submitting with planning application).

This report demonstrates that the Proposed Development will result in a net gain of 35.04 biodiversity units associated with area-based habitats compared with pre-development value. This is equivalent to a net % gain of 3.56%. Watercourse and hedgerow units remain the same as no works are proposed to hedgerows or the adjacent canal. These % gains are made with all trading rules satisfied.

This BNG assessment has been undertaken in October 2023. Any further changes to the design will impact upon the BNG score and the metric will need to be updated to reflect such changes. This also carries forward throughout the entire lifetime of the project, including after planning permission has been granted, in and throughout the construction phase. Habitat condition criteria must also be adhered to. Any changes must be reflected in the biodiversity metric.

Details on habitat enhancement and management to ensure delivery of BNG are outlined in a Mitigation, Enhancement and Management Plan (MEMP) and detailed landscaping plans.

The MEMP should provide description of how habitats are to be created and managed for a period of at least 30 years.

APPENDIX A MAPPING

Figure A.1 Site Location and Component Areas

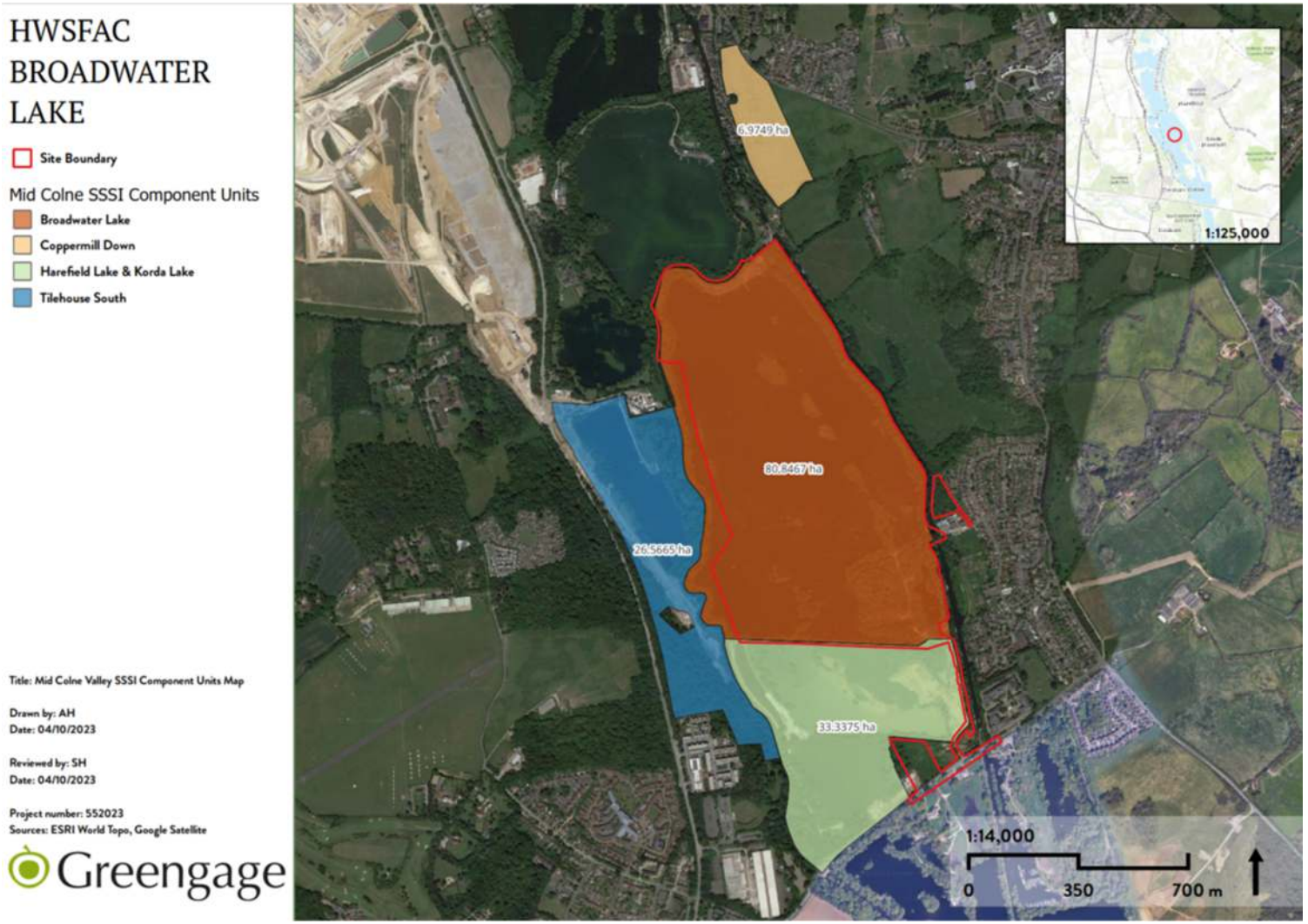
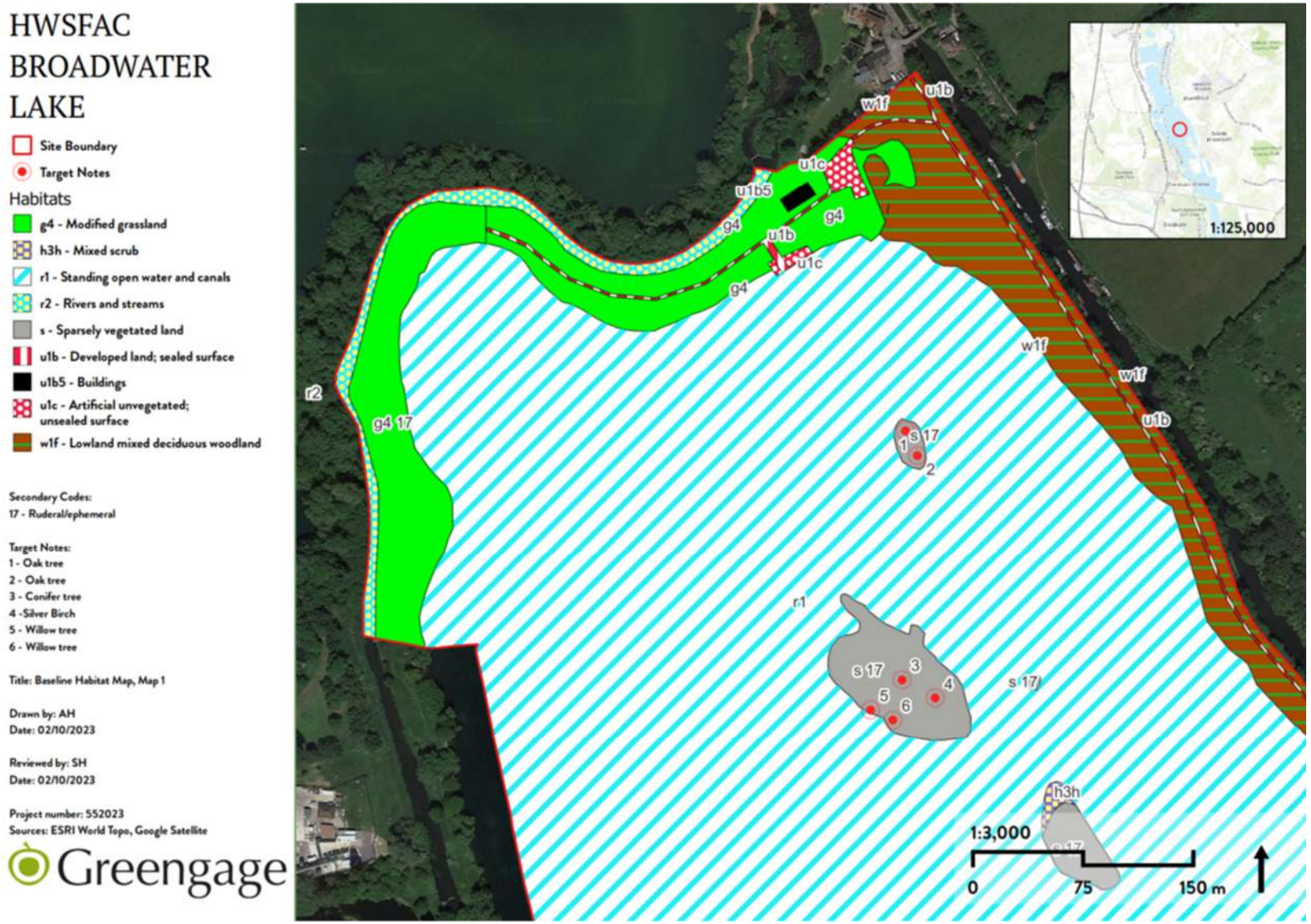


Figure A.2 UKHab habitat maps for the Site (Maps 1-5)



HWSFAC BROADWATER LAKE

- Site Boundary
- Target Notes

Habitats

- h3h - Mixed scrub
- r1 - Standing open water and canals
- s - Sparsely vegetated land
- u - Urban
- u1b - Developed land; sealed surface
- w1d - Wet woodland
- w1f - Lowland mixed deciduous woodland

Secondary Codes:
17 - Ruderal/ephemeral
1160 - Introduced shrub

Target Notes:
3 - Conifer tree
4 - Silver Birch
5 - Willow tree
6 - Willow tree
7 - Sycamore tree
8 - Extensive Giant knotweed
9 - Cormorant island

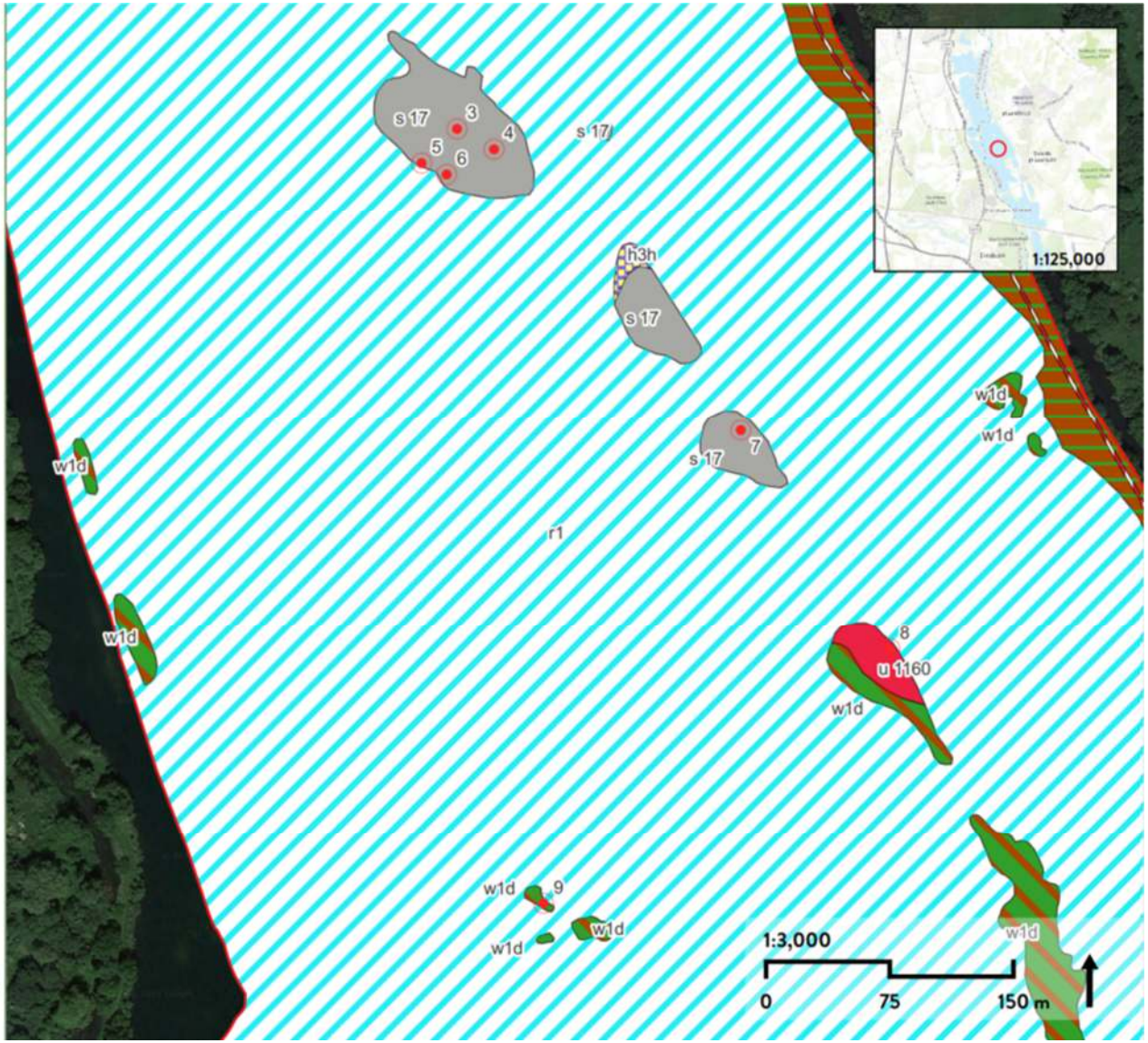
Title: Baseline Habitat Map, Map 2

Drawn by: AH
Date: 02/10/2023

Reviewed by: SH
Date: 02/10/2023

Project number: 552023
Sources: ESRI World Topo, Google Satellite

Greengage



HWSFAC BROADWATER LAKE

- Site Boundary
- Target Notes

Habitats

- h3h - Mixed scrub
- r1 - Standing open water and canals
- u1b - Developed land. sealed surface
- u1b5 - Buildings
- u1c - Artificial unvegetated unsealed surface
- w1d - Wet woodland
- w1f - Lowland mixed deciduous woodland

Secondary Codes:
11- Scattered trees
17 - Ruderal/ephemeral
73 - Bare ground
164 - Wet moss lawn
1160 - Introduced shrub

Target Notes:
10 - Japanese knotweed
11 - Black poplar
12 - Giant knotweed
13 - Giant knotweed

Title: Baseline Habitat Map, Map 3

Drawn by: AH
Date: 11/10/2023

Reviewed by: SH
Date: 11/10/2023

Project number: 552023
Sources: ESRI World Topo, Google Satellite

Greengage

HWSFAC BROADWATER LAKE

- Site Boundary
- Target Notes

Habitats

- h3h - Mixed scrub
- r1 - Standing open water and canals
- u1b - Developed land. sealed surface
- u1b5 - Buildings
- u1c - Artificial unvegetated unsealed surface
- w1d - Wet woodland
- w1f - Lowland mixed deciduous woodland

Secondary Codes:
11- Scattered trees
17 - Ruderal/ephemeral
73 - Bare ground
164 - Wet moss lawn
1160 - Introduced shrub

Target Notes:
10 - Japanese knotweed
11 - Black poplar
12 - Giant knotweed
13 - Giant knotweed

Title: Baseline Habitat Map, Map 3

Drawn by: AH
Date: 11/10/2023

Reviewed by: SH
Date: 11/10/2023

Project number: 552023
Sources: ESRI World Topo, Google Satellite

Greengage

HWSFAC BROADWATER LAKE

Site Boundary
Target Notes

Habitats

r1 - Standing open water and canals
u1b - Developed land; sealed surface
u1b5 - Buildings
u1c - Artificial unvegetated; unsealed surface
w1d - Wet woodland
w1f - Lowland mixed deciduous woodland

Secondary Codes:
11 - Scattered trees
17 - Ruderal/ephemeral
164 - Wet moss lawns

Target Notes:
9 - Cormorant island
10 - Japanese knotweed
14 - Custer of trees, substrate not visible underneath; Cormorant island
15 - Tern raft
16 - Tern raft
17 - Tern raft
18 - Tern raft

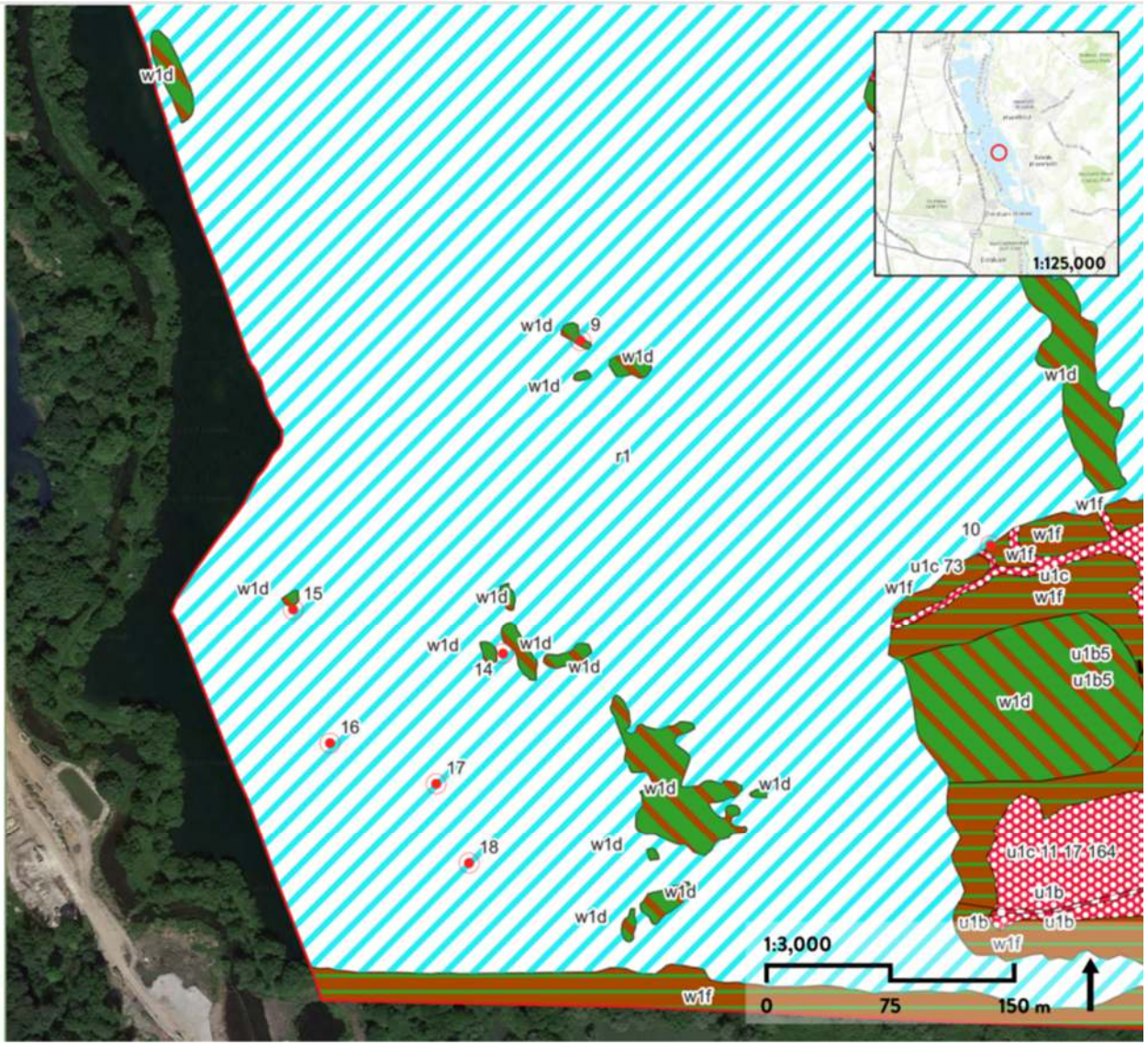
Title: Baseline Habitat Map, Map 5

Drawn by: AH
Date: 02/10/2023

Reviewed by: SH
Date: 02/10/2023

Project number: 552023
Sources: ESRI World Topo, Google Satellite Imagery

Greengage



APPENDIX B BASELINE CONDITION ASSESSMENTS

Condition Sheet: GRASSLAND Habitat Type (low distinctiveness)			
UK Habitat Classification (UKHab) Habitat Type(s)			
Grassland - Modified grassland			
Site name and location	Broadwater Lake	**On-site or off-site**	Onsite
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	North of Site - BSC and land between lake and river
Habitat Description			
ukhab – UK Habitat Classification			

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
A	There are 6-8 vascular plant species per m^2 present, including at least 2 forbs (this may include those listed in Footnote 1). **Note - this criterion is essential for achieving Moderate or Good condition.** Where the vascular plant species present are characteristic of medium, high or very high distinctiveness grassland, or there are 9 or more of these characteristic species per m^2 (excluding those listed in Footnote 1), please review the full UKHab description to assess whether the grassland should instead be classified as a higher distinctiveness grassland. Where a grassland is classed as medium, high, or very high distinctiveness, please use the relevant condition sheet.	Yes	6 sp per m2
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.	No	Only small areas with varied sward height
C	Some scattered scrub (including bramble *Rubus fruticosus* agg.) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	Yes	
D	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.	Yes	
E	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens)[2].	No	Only bare ground is at the shore and clubhouse arising from footfall and grazing by geese
F	Cover of bracken *Pteridium aquilinum* is less than 20%.	Yes	
G	There is an absence of invasive non-native plant species[3] (as listed on Schedule 9 of WCA[4]).	Yes	
	Essential criterion achieved (Yes or No)		Yes
	Number of criteria passed		5

Condition Assessment Result (out of 7 criteria)	Condition Assessment Score	Score Achieved */
Passes 6 or 7 criteria including passing essential criterion A	Good (3)	
Passes 4 or 5 criteria including passing essential criterion A	Moderate (2)	Moderate
Passes 3 or fewer criteria; OR Passes 4 - 6 criteria (excluding criterion A)	Poor (1)	

Suggested enhancement interventions to improve condition score

Footnotes

Footnote 1 – Creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, common nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, greater plantain *Plantago major*, white clover *Trifolium repens* and cow parsley *Anthriscus sylvestris*.

Footnote 2 – For example, this could include small, scattered areas of bare ground allowing establishment of new species, or localised patches where not exceeding 10% cover.

Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 4 – Wildlife and Countryside Act 1981 (as amended).

Condition Sheet: SCRUB Habitat Type			
UK Habitat Classification (UKHab) Habitat Type			
Heathland and shrub - Blackthorn scrub **Heathland and shrub - Gorse scrub** **Heathland and shrub - Hawthorn scrub** **Heathland and shrub - Hazel scrub** **Heathland and shrub - Mixed scrub** **Heathland and shrub - Dunes with sea buckthorn (H2160)** **Heathland and shrub - Willow scrub**			
Habitat Description			
For Dunes with sea buckthorn see:	Dunes with sea-buckthorn (Dunes with Hippophae rhamnoides) - Special Areas of Conservation (jncc.gov.uk)		
For other scrub types see:	ukhab – UK Habitat Classification		
Site name and location	Broadwater Lake	**On-site or off-site**	Onsite
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	Willow scrub and mixed scrub

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
A	The scrub is a good representation of the habitat type it has been identified as, based on its UKHab description (where in its natural range). The appearance and composition of the vegetation closely matches the characteristics of the specific scrub type. At least 80% of scrub is native, and there are at least three native woody species[1], with no single species comprising more than 75% of the cover (except hazel *Corylus avellana*, common juniper *Juniperus communis*, sea buckthorn *Hippophae rhamnoides* or box *Buxus sempervirens*, which can be up to 100% cover).	yes	3+ species
B	Seedlings, saplings, young shrubs and mature (or ancient or veteran[2]) shrubs are all present.	no	too small an area
C	There is an absence of invasive non-native plant species[3] (as listed on Schedule 9 of WCA[4]) and species indicative of sub-optimal condition[5] make up less than 5% of ground cover.	yes	none observed
D	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.	no	too small an area
E	There are clearings, glades or rides present within the scrub, providing sheltered edges.	no	too small an area
	Number of criteria passed		2

Condition Assessment Result (out of 5 criteria)	Condition Assessment Score	Score Achieved ×/☐
Passes 5 criteria	Good (3)	
Passes 3 or 4 criteria	Moderate (2)	
Passes 2 or fewer criteria	Poor (1)	Poor

Suggested enhancement interventions to improve condition score

Condition Sheet: LAKE Habitat Type			
Habitat Type(s)			
Lakes - Aquifer fed naturally fluctuating waterbodies **Lakes - Ornamental lake or pond [Use this condition sheet for Ornamental lakes, or use Pond condition sheet for Ornamental ponds and pools]** **Lakes - High alkalinity lakes** **Lakes - Low alkalinity lakes** **Lakes - Marl lakes** **Lakes - Moderate alkalinity lakes** **Lakes - Peat lakes** **Lakes - Reservoirs** **Lakes - Temporary lakes ponds and pools (H3170) [Use this condition sheet for Temporary lakes, or use Pond condition sheet for Temporary ponds and pools]**			
Habitat Description			
Broadwater Lake			
See Water Framework Directive:			
WFD Lakes typologies description			
For 'Aquifer fed naturally fluctuating waterbodies', 'Reservoirs' and 'Temporary lakes, ponds and pools' see UK Habitat Classification:			
UKHab			
Condition Assessment Criteria			
The Freshwater Biological Association 'Habitat Naturalness Assessment' is used to assess the condition of lakes. Scores for four attributes (physical, hydrological, chemical, and biological naturalness) are averaged to generate an overall 'habitat naturalness assessment score' which can then be translated into a condition score for use in the metric (see below). There are other elements considered in the lake naturalness assessment, but these are not included when calculating the condition assessment score. Details of the methodology for assessing naturalness of lakes are available at: http://priorityhab.wpengine.com/contribute/			
The key documents are: Lake naturalness assessment – guidance document (PDF) Annex I – Printable lake naturalness survey form to use in field (PDF) Annex II – Physical naturalness photographs (PDF) Annex III - Hydrological naturalness photographs (PDF) Annex IV – Chemical naturalness photographs (PDF) Annex V – Plant functional group photographs (PDF) Annex VI – Further species recording (PDF)			
We encourage recording of data on lakes on the Freshwater Biological Association 'Habitat Naturalness Assessment' website portal: Contribute data – Discovering Priority Habitats in England (wpengine.com)			
Site name and location	Broadwater Lake	**On-site or off-site**	Onsite
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

Average 'Habitat Naturalness Assessment' Class	Condition Assessment Score	Score Achieved
1 Natural	Good (3)	Moderate (2)
2	Fairly good (2.5)	
3	Moderate (2)	
4	Fairly poor (1.5)	
5 Least natural	Poor (1)	

Suggested enhancement interventions to improve condition score

Condition Sheet: URBAN Habitat Type			
Habitat Type			
Where a parcel contains areas of higher distinctiveness habitats within it, then the area of higher distinctiveness habitat must be separated and recorded and assessed as such. **Sparsely vegetated land - Ruderal/Ephemeral** **Sparsely vegetated land – Tall forbs** **Urban – Allotments** **Urban – Biodiverse green roof** **Urban - Bioswale** **Urban - Cemeteries and churchyards** **Urban - Facade-bound green wall** **Urban - Ground based green wall** **Urban - Intensive green roof** **Urban - Open mosaic habitats on previously developed land** **Urban - Rain garden** **Urban - Sustainable drainage system (SuDS)** **Urban - Vacant or derelict land** **Urban – Bare ground**			
Habitat Description			
See Biodiversity Metric 4.0 User Guide for green roofs and UK Habitat Classification (UKHab) for other habitats:			UKHab – UK Habitat Classification
Site name and location	Broadwater Lake	**On-site or off-site**	Onsite
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	Islands - tall ruderal
Condition Assessment Criteria		**Criterion passed (Yes or No)**	**Notes (such as justification)**
Core Criteria - must be assessed for **all urban habitat types**:			
A	Vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area.	N	Uniform structure due to small area and unvarying ground conditions
B	The habitat parcel contains different plant species that are beneficial for wildlife, for example flowering species providing nectar sources for a range of invertebrates at different times of year.	Y	
C	Invasive non-native plant species (listed on Schedule 9 of WCA [1]) and others which are to the detriment of native wildlife (using professional judgement) [2] cover less than 5% of the total vegetated area [3]. **Note - to achieve Good condition, this criterion must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).**	Y	
Additional Criteria - must be assessed for **Open mosaic habitat on previously developed land** only:			
D1	The parcel shows spatial variation and forms a mosaic of at least four early successional communities (a) to (h) PLUS bare substrate. (a) annuals; (b) mosses/liverworts; (c) lichens; (d) ruderals; (e) inundation species; (f) open grassland; (g) flower-rich grassland; (h) heathland.		
D2	The parcel contains pools of water such as permanent and ephemeral waterbodies.		
Additional Criteria - must be assessed for **Bioswale and SuDS** habitat types only:			
E1	Plant species are mostly native. If non-native species are present, they should not be detrimental to the habitat or native wildlife [4].		
E2	The vegetation is comprised of plant species suited to wetland or riparian situations.		
Additional Criterion - must be assessed for **Intensive green roofs** only:			
F	The roof has a minimum of 50% native and non-native wildflowers. 70% of the roof area is soil and vegetation (including water features).		
Additional Criterion - must be assessed for **Biodiverse green roofs** only:			

G	The roof has a varied depth of 80 – 150 mm; at least 50% is at 150 mm and is planted and seeded with wildflowers and sedums or is pre-prepared with sedums and wildflowers. **Note – to achieve Good condition some additional habitat, such as sand piles, stones, logs etc are present.**		
		Essential criteria relevant for habitat type achieved (Yes or No)	
		Number of criteria passed	
Condition Assessment Result		**Condition Assessment Score**	**Score Achieved ×/□**
Results for habitats requiring assessment of 3 core criteria only **(all listed urban habitats except Open mosaic habitat on previously developed land, Bioswale, SuDS and Green roofs)** :			
• Passes all 3 core criteria; AND • Meets the requirements for Good condition within criterion C.		Good (3)	
• Passes 2 of 3 core criteria; OR • Passes 3 of 3 core criteria but does not meet the requirements for Good condition within criterion C.		Moderate (2)	2
• Passes 0 or 1 of 3 core criteria.		Poor (1)	
Results for **Green roofs** (requiring assessment of 4 criteria only - core criteria plus additional criterion specified for habitat type):			
• Passes all 3 core criteria; AND • Meets the requirements for Good condition within criterion C; AND • Passes additional criterion relevant to specific habitat type (F or G).		Good (3)	
• Passes 2 or 3 of 4 criteria; OR • Passes 4 of 4 criteria but does not meet the requirements for Good condition within criterion C.		Moderate (2)	
• Passes 0 or 1 of 4 criteria.		Poor (1)	
Results for **Open mosaic habitat on previously developed land, Bioswale or SuDS** (requiring assessment of 5 criteria - core criteria plus additional criteria specified for habitat type):			
• Passes all 3 core criteria; AND • Meets the requirements for Good condition within criterion C; AND • Passes all additional criteria relevant to specific habitat type (Group D or Group E)		Good (3)	
• Passes 3 or 4 of 5 criteria; OR • Passes 5 of 5 criteria but does not meet the requirements for Good condition within criterion C.		Moderate (2)	
• Passes 2 or fewer of 5 criteria.		Poor (1)	
Suggested enhancement interventions to improve condition score			
Footnotes			

Condition Sheet: WOODLAND Habitat Type

UK Habitat Classification (UKHab) Habitat Type(s)

Woodland and forest - Lowland beech and yew woodland
Woodland and forest - Lowland mixed deciduous woodland
Woodland and forest - Native pine woodlands
Woodland and forest - Other coniferous woodland
Woodland and forest - Other Scot's pine woodland
Woodland and forest - Other woodland; broadleaved
Woodland and forest - Other woodland; mixed
Woodland and forest - Upland birchwoods
Woodland and forest - Upland mixed ashwoods
Woodland and forest - Upland oakwood
Woodland and forest - Wet woodland

Habitat Description

Woodland habitats on peninsula

ukhab – UK Habitat Classification

This condition sheet is based on the England Woodland Biodiversity Group (EWBG) Woodland Condition Survey Method, available here:

Woodland Wildlife Toolkit (nybva.org.uk)

IMPORTANT: This biodiversity metric woodland condition assessment must be used to assess woodland being input into the biodiversity metric. The outputs of this condition assessment are not equivalent to, nor are they comparable with the scores from the EWBG condition assessment, because the EWBG assessment has been adapted for the biodiversity metric, including the removal of EWBG Indicator 7 (Proportion of favourable land cover around woodland) and Indicator 14 (Size of woodland), and minor changes to other indicators.

				Habitat parcel reference									
Site name and location		**On-site or off-site**		REF1	REF2	REF3	REF4	REF5	REF6	REF7	REF8		
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**		**Grid reference**									

Condition Assessment Criteria

	Indicator	Good (3 points)	Moderate (2 points)	Poor (1 point)	Score per indicator										Notes (such as justification)
A	**Age distribution of trees**	Three age-classes[1] present.	Two age-classes[1] present.	One age-class[1] present.	3	1	2	2	2	3	3	3			
B	**Wild, domestic and feral herbivore damage**	No significant browsing damage evident in woodland[2].	Evidence of significant browsing pressure is present in 40% or less of whole woodland[2].	Evidence of significant browsing pressure is present in 40% or more of whole woodland[2].	3	3	3	3	3	3	3	3			
C	**Invasive plant species**	No invasive species[3] present in woodland.	*Rhododendron ponticum* or cherry laurel *Prunus laurocerasus* not present, other invasive species[3] <10% cover.	*Rhododendron* or cherry laurel present, or other invasive species[3] >10% cover.	2	2	2	2	1	2	2	2			
D	**Number of native tree species**	Five or more native tree or shrub species[4] found across woodland parcel.	Three to four native tree or shrub species[4] found across woodland parcel.	Two or less native tree or shrub species[4] across woodland parcel.	3	2	3	1	3	3	3	3			
E	**Cover of native tree and shrub species**	>50% of canopy trees and >50% of understory shrubs are native[5].	50 - 50% of canopy trees and 50 - 50% of understory shrubs are native[5].	<50% of canopy trees and <50% of understory shrubs are native[5].	3	3	3	3	3	3	3	3			
F	**Open space within woodland**	10 - 20% of woodland has areas of temporary open space[6]. Unless woodland is <10ha, in which case 0 - 20% temporary open space is permitted[7].	21 - 40% of woodland has areas of temporary open space[6].	<10% or >40% of woodland has areas of temporary open space[6]. But if woodland <10ha has <10% temporary open space, please see Good category[7].	3	1	1	2	2	3	3	2			

G	**Woodland regeneration**	All three classes present in woodland[4]; trees 4 - 7 cm Diameter at Breast Height (DBH), saplings and seedlings or advanced coppice regrowth.	One or two classes only present in woodland[4].	No classes or coppice regrowth present in woodland[4].	3	1	1	2	3	3	3	3			
H	**Tree health**	Tree mortality less than 10%, no pests or diseases and no crown dieback[9].	11% to 25% tree mortality and or crown dieback or low-risk pest or disease present[9].	Greater than 25% tree mortality and or any high-risk pest or disease present[9].	3	3	3	3	3	3	3	3			
I	**Vegetation and ground flora**	Recognisable NVC plant community[10] at ground layer present, strongly characterised by ancient woodland flora specialists.	Recognisable woodland NVC plant community[10] at ground layer present.	No recognisable woodland NVC plant community[10] at ground layer present.	1	1	1	1	1	1	1	1			
J	**Woodland vertical structure**	Three or more storeys across all survey plots, or a complex woodland[11].	Two storeys across all survey plots[11].	One or less storey across all survey plots[11].	3	1	1	2	2	3	2	2			
K	**Veteran trees**	Two or more veteran trees[12] per hectare.	One veteran tree[12] per hectare.	No veteran trees[12] present in woodland.	3	1	1	1	1	1	1	1			
L	**Amount of deadwood**	50% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, branch stubs and stumps, or an abundance of small cavities[13].	Between 25% and 50% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities[13].	Less than 25% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities[13].	3	2	2	1	2	1	3	2			
M	**Woodland disturbance**	No nutrient enrichment or damaged ground evident[14].	Less than 1 hectare in total of nutrient enrichment across woodland area and or less than 20% of woodland area has damaged ground[14].	More than 1 hectare of nutrient enrichment and or more than 20% of woodland area has damaged ground[14].	1	1	1	1	1	1	1	1			
				Total Score (out of a possible 39)	34	22	24	24	27	30	31	29			

Condition Assessment Result	**Condition Assessment Score**	**Result Achieved**									
Total score >32 (33 to 39)	Good (3)	Good									
Total score 26 to 32	Moderate (2)										
Total score <26 (13 to 25)	Poor (1)		Poor	Poor	Poor	Mod	Mod	Mod	Mod		

Suggested enhancement interventions to improve condition score

Condition Sheet: WOODLAND Habitat Type					
UK Habitat Classification (UKHab) Habitat Type(s)					
Woodland and forest - Lowland beech and yew woodland **Woodland and forest - Lowland mixed deciduous woodland** **Woodland and forest - Native pine woodlands** **Woodland and forest - Other coniferous woodland** **Woodland and forest - Other Scot's pine woodland** **Woodland and forest - Other woodland; broadleaved** **Woodland and forest - Other woodland; mixed** **Woodland and forest - Upland birchwoods** **Woodland and forest - Upland mixed ashwoods** **Woodland and forest - Upland oakwood** **Woodland and forest - Wet woodland**					
Habitat Description					
ukhab – UK Habitat Classification					
This condition sheet is based on the England Woodland Biodiversity Group (EWBG) Woodland Condition Survey Method, available here:					
Woodland Wildlife Toolkit (sylva.org.uk)					
IMPORTANT: This biodiversity metric woodland condition assessment must be used to assess woodland being input into the biodiversity metric. The outputs of this condition assessment are not equivalent to, nor are they comparable with the scores from the EWBG condition assessment, because the EWBG assessment has been adapted for the biodiversity metric, including the removal of EWBG Indicator 7 (Proportion of favourable land cover around woodland) and Indicator 14 (Size of woodland), and minor changes to other indicators.					
Site name and location	Broadwater Lake	**On-site or off-site**	Onsite		
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**			
Grid reference		**Habitat parcel reference**	Access Road woodland		
Condition Assessment Criteria					
Indicator	**Good (3 points)**	**Moderate (2 points)**	**Poor (1 point)**	**Score per indicator**	**Notes (such as justification)**
A **Age distribution of trees**	Three age-classes[1] present.	Two age-classes[1] present.	One age-class[1] present.	3	
B **Wild, domestic and feral herbivore damage**	No significant browsing damage evident in woodland[2].	Evidence of significant browsing pressure is present in 40% or less of whole woodland[2].	Evidence of significant browsing pressure is present in 40% or more of whole woodland[2].	3	
C **Invasive plant species**	No invasive species[3] present in woodland.	Rhododendron *Rhododendron ponticum* or cherry laurel *Prunus laurocerasus* not present, other invasive species[3] <10% cover.	Rhododendron or cherry laurel present, or other invasive species[3] >10% cover.	2	
D **Number of native tree species**	Five or more native tree or shrub species[4] found across woodland parcel.	Three to four native tree or shrub species[4] found across woodland parcel.	Two or less native tree or shrub species[4] across woodland parcel.	3	
E **Cover of native tree and shrub species**	>80% of canopy trees and >80% of understory shrubs are native[5].	50 - 80% of canopy trees and 50 - 80% of understory shrubs are native[5].	<50% of canopy trees and <50% of understory shrubs are native[5].	3	

F	**Open space within woodland**	10 - 20% of woodland has areas of temporary open space[6]. Unless woodland is <10ha, in which case 0 - 20% temporary open space is permitted[7].	21 - 40% of woodland has areas of temporary open space[6].	<10% or >40% of woodland has areas of temporary open space[6]. But if woodland <10ha has <10% temporary open space, please see Good category[7].	3	
G	**Woodland regeneration**	All three classes present in woodland[8]; trees 4 - 7 cm Diameter at Breast Height (DBH), saplings and seedlings or advanced coppice regrowth.	One or two classes only present in woodland[8].	No classes or coppice regrowth present in woodland[8].	3	
H	**Tree health**	Tree mortality less than 10%, no pests or diseases and no crown dieback[9].	11% to 25% mortality and/or crown dieback or low-risk pest or disease present[9].	Greater than 25% tree mortality and or any high-risk pest or disease present[9].	3	
I	**Vegetation and ground flora**	Recognisable NVC plant community[10] at ground layer present, strongly characterised by ancient woodland flora specialists.	Recognisable woodland NVC plant community[10] at ground layer present.	No recognisable woodland NVC plant community[10] at ground layer present.	1	
J	**Woodland vertical structure**	Three or more storeys across all survey plots or a complex woodland[11].	Two storeys across all survey plots[11].	One or less storey across all survey plots[11].	2	
K	**Veteran trees**	Two or more veteran trees[12] per hectare.	One veteran tree[12] per hectare.	No veteran trees[12] present in woodland.	1	
L	**Amount of deadwood**	50% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, branch stubs and stumps, or an abundance of small cavities[13].	Between 25% and 50% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities[13].	Less than 25% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities[13].	1	
M	**Woodland disturbance**	No nutrient enrichment or damaged ground evident[14].	Less than 1 hectare in total of nutrient enrichment across woodland area and or less than 20% of woodland area has damaged ground[14].	More than 1 hectare of nutrient enrichment and or more than 20% of woodland area has damaged ground[14].	3	
				Total Score (out of a possible 39)	31	

Condition Assessment Result	Condition Assessment Score	Result Achieved
Total score >32 (33 to 39)	Good (3)	
Total score 26 to 32	Moderate (2)	
Total score <26 (13 to 25)	Poor (1)	

Suggested enhancement interventions to improve condition score

Condition Sheet: INDIVIDUAL TREES Habitat Type											
Habitat Type(s)											
Individual trees – Urban trees **Individual trees – Rural trees** Complete a condition sheet for each tree or block of trees. **Please see separate Line of trees condition sheet for a line of Rural trees.**											
Habitat Description											
Peninsula											
Individual trees (description applied to the urban or rural environment): Young trees over 7.5 cm in diameter at breast height whose canopies are not touching. **Urban Perimeter / Linear Blocks and Groups (description applied to the urban environment only):** Groups or stands of trees (size requirement as defined above) within and around the perimeter of urban land. This includes those along urban streets, highways, railways and canals, and also former field boundary trees incorporated into developments. Canopies must overlap continuously. Groups of urban trees that don't match the descriptions for woodland may be assessed within this category.											
Site name and location	Broadwater Lake	**On-site or off-site**	**Onsite**								
		Survey reference (if relating to a wider survey)	**Habitat parcels are the target note numbers for the trees on the UKHab mapping for the Site**								
Limitations (if applicable)		**Habitat parcel reference**	**G26**	**T50**	**G28**	**G27**	**G2**	**G3**	**G31**	**G32**	**G33**	**T49**
		Grid reference										
Condition Assessment Criteria		**Criterion passed (Yes or No)**										**Notes (such as justification)**
A	The tree is a native species (or at least 70% within the block are native species).		N	Y	Y	N	Y	Y	N	Y	Y	Y	
B	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).		N	Y	N	N	N	N	N	N	N	Y	
C	The tree is mature (or more than 50% within the block are mature).		N	Y	Y	Y	N	N	N	N	N	N	
D	There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their age range and height.		N	Y	Y	N	N	N	N	N	N	Y	
E	Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.		Y	Y	Y	Y	Y	Y	Y	N	Y	Y	
F	More than 20% of the tree canopy area is oversailing vegetation beneath.		N	N	N	N	N	N	N	N	N	N	
		Number of criteria passed	**1**	**5**	**4**	**2**	**2**	**2**	**1**	**0**	**2**	**4**	
Condition Assessment Result (out of 6 criteria)	**Condition Assessment Score**	**Score Achieved ×/✓**										
Passes 5 or 6 criteria	Good (3)			5								
Passes 3 or 4 criteria	Moderate (2)				4							4
Passes 2 or fewer criteria	Poor (1)		1			2	2	2	1	0	2	
Note that 'Fairly Good and Fairly Poor' condition categories are not available for this broad habitat type.												
Suggested enhancement interventions to improve condition score												

Condition Sheet: INDIVIDUAL TREES Habitat Type

Habitat Type(s)

Individual trees – Urban trees
Individual trees – Rural trees
Complete a condition sheet for each tree or block of trees.

Please see separate Line of trees condition sheet for a line of Rural trees.

Habitat Description

Peninsula

Individual trees (description applied to the urban or rural environment):
Young trees over 7.5 cm in diameter at breast height whose canopies are not touching.

Urban Perimeter / Linear Blocks and Groups (description applied to the urban environment only):
Groups or stands of trees (size requirement as defined above) within and around the perimeter of urban land. This includes those along urban streets, highways, railways and canals, and also former field boundary trees incorporated into developments. Canopies must overlap continuously. Groups of urban trees that don't match the descriptions for woodland may be assessed within this category.

Site name and location	Broadwater Lake	**On-site or off-site**	**Onsite**
		Survey reference (if relating to a wider survey)	**Habitat parcels are the target note numbers for the trees on the UKHab mapping for the Site**

Limitations (if applicable)		**Habitat parcel reference**										
		T72	**T71**	**T56-58,**	**G11**	**T11**	**T9 retaine**	**T46 retaine**	**T51 retain**			
		Grid reference										
Condition Assessment Criteria		**Criterion passed (Yes or No)**										**Notes (such as justification)**
A	The tree is a native species (or at least 70% within the block are native species).	Y	Y	Y	Y	Y	Y	Y	Y			
B	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).	Y	Y	Y	N	Y	Y	Y	Y			
C	The tree is mature (or more than 50% within the block are mature).	N	N	N	N	N	N	Y	Y			
D	There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their age range and height.	N	N	N	N	N	Y	N	N			
E	Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.	N	Y	N	N	N	Y	Y	Y			
F	More than 20% of the tree canopy area is oversailing vegetation beneath.	N	N	N	N	N	N	N	N			
	Number of criteria passed	**2**	**3**	**2**	**1**	**2**	**4**	**4**	**4**			

Condition Assessment Result (out of 6 criteria)	**Condition Assessment Score**	**Score Achieved ✓**									
Passes 5 or 6 criteria	Good (3)										
Passes 3 or 4 criteria	Moderate (2)		3				4	4	4		
Passes 2 or fewer criteria	Poor (1)	2		2	1	2					

Note that 'Fairly Good and Fairly Poor' condition categories are not available for this broad habitat type.

Suggested enhancement interventions to improve condition score

APPENDIX C LAKE CONDITION ASSESSMENT

The Freshwater Biological Association 'Habitat Naturalness Assessment' is used to assess the condition of lakes. Scores for four attributes (physical, hydrological, chemical, and biological naturalness) are averaged to generate an overall 'habitat naturalness assessment score' which can then be translated into a condition score for use in the DEFRA Biodiversity Metric (see below). There are other elements considered in the lake naturalness assessment, but these are not included when calculating the condition assessment score.

Details of the methodology for assessing naturalness of lakes are available at:

http://priorityhab.wpengine.com/contribute/

The key documents are:

http://priorityhabitats.org/wp-content/uploads/Lake-Naturalness-Assessment-Guidance-3.pdf

http://priorityhabitats.org/wp-content/uploads/Lakes-print-out-naturalness-form-2.pdf

http://priorityhab.wpengine.com/wp-content/uploads/Annex-II-Physical-Naturalness-Photographs.pdf

http://priorityhab.wpengine.com/wp-content/uploads/Annex-II-Physical-Naturalness-Photographs.pdf

http://priorityhab.wpengine.com/wp-content/uploads/Annex-IV-Chemical-Naturalness.pdf

http://priorityhab.wpengine.com/wp-content/uploads/Annex-V-Plant-Functional-Group-pictures.pdf

http://priorityhabitats.org/wp-content/uploads/Annex-VI-Further-Species-Recording-1.pdf

Table C.1 Condition assessment result and associated scores.

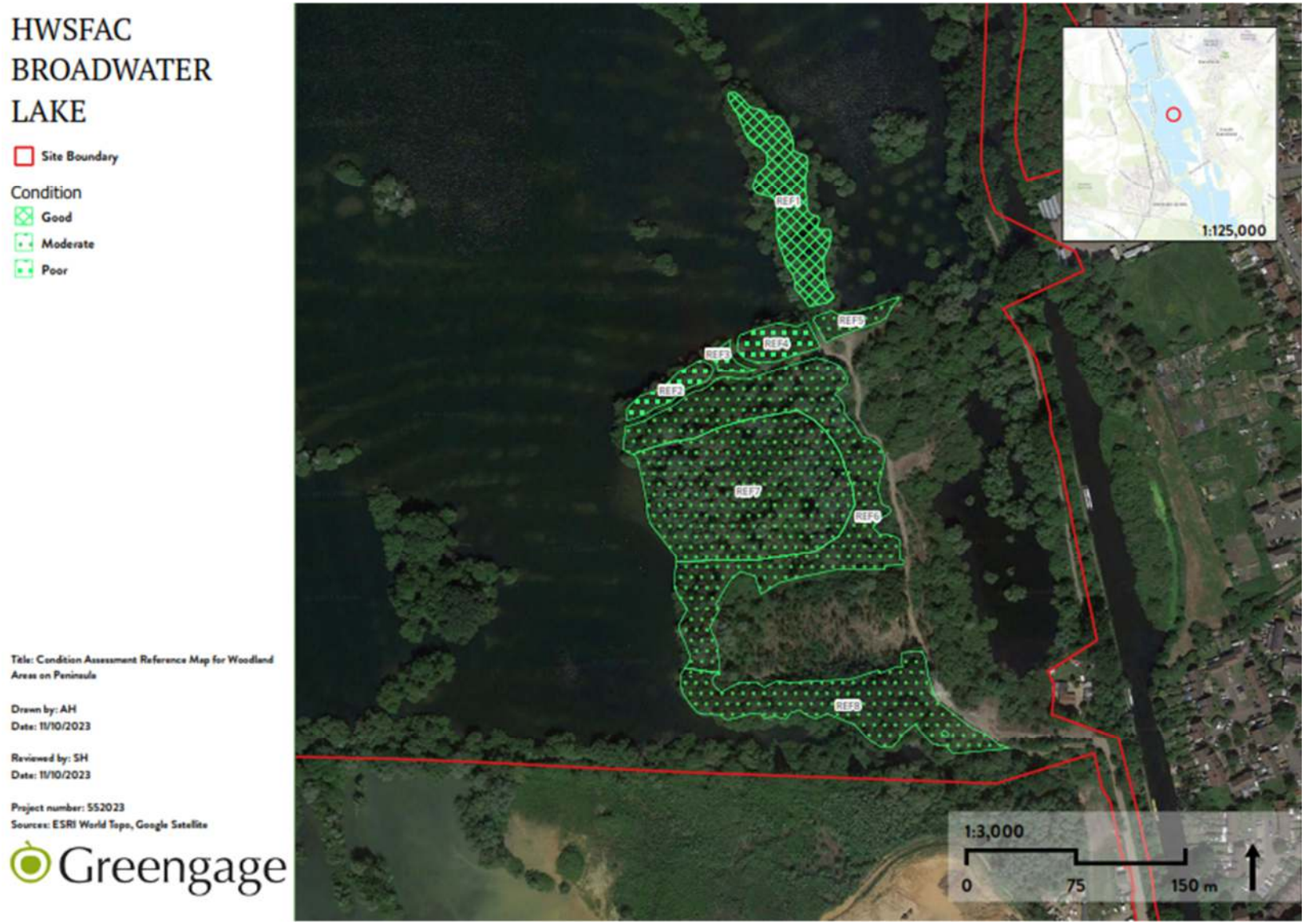
Condition Assessment Result	Condition Assessment Score
1 Natural	Good (3)
2	Fairly good (2.5)
3	Moderate (2)
4	Fairly poor (1.5)
5 Least natural	Poor (1)

Table C.2 Broadwater Lake condition assessment

Criterion	Score 1=best 5=worst	Comment	Improvement Target
Physical naturalness	5	Least natural – steep sides, no real natural-type bank habitats just willow trees, only riparian vegetation is at the bottom of the bank in limited locations.	Target for 4 – added islands, changed topography to increase shallowness and depth, greater areas of macrophytes.
Hydrological naturalness	1	The lake is fed from springs arising from the underlying chalk aquifer and is in continuity with groundwater. During flow events, the waters of the River Colne seep through natural gravels into the lake. No other inputs are known or suspected.	No improvement possible.
Chemical naturalness	3	In summer the water is green, with sparse submerged plants in shallow areas only. Plants below 3m depth are dead in summer. Visibility was reduced in August 2023 to the top 50cm.	Target for 2 – aim to reduce nutrient concentrations within the lake and thereby reduce algal content of water to increase clarity. Achieved through higher percentage of macrophytes on floating islands, emergent beds and aquatic planting on coir mattresses. Long term water quality monitoring (temperature, DO, turbidity) to set targets for improvement and monitor progress. Studies of zoo / phytoplankton, manipulation of biofauna over 10+ years. Other measures that may generate improvements are pumps for water circulation of isolated areas, and solar pumps / bubblers for increased dissolved oxygen (DO) during hot summers.
Biological naturalness	2	Scores 1 for plants as only non-native is Elodea. Plants found were Lemna minor, a Potemageton sp, and filamentous	No target set. Eradication of non-natives would be unlikely to be achieved, and an improvement relative to the current score may be

Criterion	Score 1=best 5=worst	Comment	Improvement Target
		algae. These are typical of lower status sites and associated with elevated nutrient concentrations. Scores 2 for non-native fauna, as there are signal crayfish and carp, but they don't appear to cause obvious detrimental signs of impacts to water quality.	impossible. Further surveys and monitoring would be required to reassess the potential for improvements to be made.
Total	12		10
Average	3	3 = Moderate Condition	2.25 = Fairly Good

APPENDIX D WOODLAND HABITAT CONDITION PLAN



Proposed (Created) Habitat Condition Assessments

Condition Sheet: WOODLAND Habitat Type					
UK Habitat Classification (UKHab) Habitat Type(s)					
Woodland and forest - Lowland beech and yew woodland **Woodland and forest - Lowland mixed deciduous woodland** **Woodland and forest - Native pine woodlands** **Woodland and forest - Other coniferous woodland** **Woodland and forest - Other Scot's pine woodland** **Woodland and forest - Other woodland; broadleaved** **Woodland and forest - Other woodland; mixed** **Woodland and forest - Upland birchwoods** **Woodland and forest - Upland mixed ashwoods** **Woodland and forest - Upland oakwood** **Woodland and forest - Wet woodland**					
Habitat Description					
Permanent islands assumed to develop into wet woodland over 20 years					
ukhab – UK Habitat Classification					
This condition sheet is based on the England Woodland Biodiversity Group (EWBG) Woodland Condition Survey Method, available here:					
Woodland Wildlife Toolkit (sylva.org.uk)					
IMPORTANT: This biodiversity metric woodland condition assessment must be used to assess woodland being input into the biodiversity metric. The outputs of this condition assessment are not equivalent to, nor are they comparable with the scores from the EWBG condition assessment, because the EWBG assessment has been adapted for the biodiversity metric, including the removal of EWBG Indicator 7 (Proportion of favourable land cover around woodland) and Indicator 14 (Size of woodland), and minor changes to other indicators.					
Site name and location	Broadwater Lake	**On-site or off-site**	Onsite		
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**			
Grid reference		**Habitat parcel reference**	Within the lake		
Condition Assessment Criteria					
Indicator	**Good (3 points)**	**Moderate (2 points)**	**Poor (1 point)**	**Score per indicator**	**Notes (such as justification)**
A Age distribution of trees	Three age-classes[1] present.	Two age-classes[1] present.	One age-class[1] present.	1	
B Wild, domestic and feral herbivore damage	No significant browsing damage evident in woodland[2].	Evidence of significant browsing pressure is present in 40% or less of whole woodland[2].	Evidence of significant browsing pressure is present in 40% or more of whole woodland[2].	3	
C Invasive plant species	No invasive species[3] present in woodland.	Rhododendron *Rhododendron ponticum* or cherry laurel *Prunus laurocerasus* not present, other invasive species[3] <10% cover.	Rhododendron or cherry laurel present, or other invasive species[3] >10% cover.	3	
D Number of native tree species	Five or more native tree or shrub species[4] found across woodland parcel.	Three to four native tree or shrub species[4] found across woodland parcel.	Two or less native tree or shrub species[4] across woodland parcel.	1	
E Cover of native tree and shrub species	>80% of canopy trees and >80% of understory shrubs are native[5].	50 - 80% of canopy trees and 50 - 80% of understory shrubs are native[5].	<50% of canopy trees and <50% of understory shrubs are native[5].	3	

Condition Sheet: SCRUB Habitat Type												
UK Habitat Classification (UKHab) Habitat Type												
Heathland and shrub - Blackthorn scrub **Heathland and shrub - Gorse scrub** **Heathland and shrub - Hawthorn scrub** **Heathland and shrub - Hazel scrub** **Heathland and shrub - Mixed scrub** **Heathland and shrub - Dunes with sea buckthorn (H2160)** **Heathland and shrub - Willow scrub**												
Habitat Description												
Creation of scrub planting at the peninsula - 1) areas of willow and alder scrub with thorns, and 2) areas of mixed scrub planting for landscaping												
For Dunes with sea buckthorn see:	Dunes with sea-buckthorn (Dunes with Hippophae rhamnoides) - Special Areas of Conservation (jncc.gov.uk)											
For other scrub types see:	ukhab – UK Habitat Classification											
Site name and location	Broadwater Lake	**On-site or off-site**		**Onsite**								
		Survey reference (if relating to a wider survey)										
Limitations (if applicable)		**Habitat parcel reference**										
		1	2									
		Grid reference										
Condition Assessment Criteria												
		Criterion passed (Yes or No)										**Notes (such as justification)**
A	The scrub is a good representation of the habitat type it has been identified as, based on its UKHab description (where in its natural range). The appearance and composition of the vegetation closely matches the characteristics of the specific scrub type. At least 80% of scrub is native, and there are at least three native woody species[1], with no single species comprising more than 75% of the cover (except hazel *Corylus avellana*, common juniper *Juniperus communis*, sea buckthorn *Hippophae rhamnoides* or box *Buxus sempervirens*, which can be up to 100% cover).	Y	Y									
B	Seedlings, saplings, young shrubs and mature (or ancient or veteran[2]) shrubs are all present.	N	N									Individual trees will be allowed to develop but
C	There is an absence of invasive non-native plant species[3] (as listed on Schedule 9 of WCA[4]) and species indicative of sub-optimal condition[5] make up less than 5% of ground cover.	Y	Y									
D	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.	N	N									Limited footprint
E	There are clearings, glades or rides present within the scrub, providing sheltered edges.	N	N									Limited footprint
	Number of criteria passed	2	2									
Condition Assessment Result (out of 5 criteria)	**Condition Assessment Score**	**Score Achieved ✓**										
Passes 5 criteria	Good (3)											
Passes 3 or 4 criteria	Moderate (2)											
Passes 2 or fewer criteria	Poor (1)	Poor	Poor									
Suggested enhancement interventions to improve condition score												

Footnote 1 - A woodland pond will be surrounded on all sides by woodland habitat.

Footnote 2 – This excludes natural dams such as those created by Eurasian beaver *Castor fiber*.

Footnote 3 - Any species included on the Water Framework Directive (WFD) UKTAG GB High Impact Species List should be absent: WFD UKTAG (2021) *Classification of aquatic alien species according to their level of impact* [online]. Available from:

Condition Sheet: POND Habitat Type												
Habitat Type(s)												
Lakes - Ponds (priority habitat) **Lakes - Ponds (non-priority habitat)** **Lakes - Temporary lakes ponds and pools (H3170)** [Use this condition sheet for Temporary ponds and pools, use Lake condition sheet for Temporary lakes] **Lakes - Ornamental lake or pond** [Use this condition sheet for Ornamental ponds, use Lake condition sheet for Ornamental lakes]												
Habitat Description												
Creation of wildlife ponds at the BSC (1) and activities area (2)												
ukhab – UK Habitat Classification												
For ponds (non-priority) – see the Biodiversity Metric 4.0 Technical Annex 2.												
Site name and location	Broadwater Lake	**On-site or off-site**	Onsite									
		Survey reference (if relating to a wider survey)										
Limitations (if applicable)		**Habitat parcel reference**										
		1	2									
		Grid reference										
Condition Assessment Criteria												
		Criterion passed (Yes or No)										**Notes (such as justification)**
Core Criteria - applicable to all ponds (woodland[1] and non-woodland):												
A	The pond is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution. Turbidity is acceptable if the pond is grazed by livestock.	Y	Y									
B	There is semi-natural habitat (moderate distinctiveness or above) completely surrounding the pond, for at least 10 m from the pond edge for its entire perimeter.	Y	N									
C	Less than 10% of the water surface is covered with duckweed *Lemna* spp. or filamentous algae.	N	Y									Subject to management
D	The pond is not artificially connected to other waterbodies, e.g. agricultural ditches or artificial pipework.	Y	Y									
E	Pond water levels can fluctuate naturally throughout the year. No obvious artificial dams[2], pumps or pipework.	Y	Y									
F	There is an absence of listed non-native plant and animal species[3].	Y	Y									Subject to management
G	The pond is not artificially stocked with fish. If the pond naturally contains fish, it is a native fish assemblage at low densities.	Y	Y									No fish planned
Additional Criteria - must be assessed for all non-woodland ponds:												
H	Emergent, submerged or floating plants (excluding duckweed)[4] cover at least 50% of the pond area which is less than 3 m deep.	N	N									Subject to ma
I	The pond surface is no more than 50% shaded by adjacent trees and scrub.	Y	Y									
	Number of criteria passed	7	7									
Condition Assessment Result	**Condition Assessment Score**	**Score Achieved ×/**										
Results for woodland ponds which require assessment of 7 core criteria												
Passes 7 criteria	Good (3)											
Passes 5 or 6 criteria	Moderate (2)											
Passes 4 or fewer criteria	Poor (1)											
Results for non-woodland ponds which require assessment of 9 criteria												
Passes 9 criteria	Good (3)											
Passes 6 to 8 criteria	Moderate (2)	Mod	Mod									
Passes 5 or fewer criteria	Poor (1)											
Suggested enhancement interventions to improve condition score												

J	All ditches recorded within the habitat achieve Good condition as assessed using the Ditch condition sheet. Note – do not record ditches which are part of the floodplain wetland mosaic and CFGM within the Watercourse module.		
		Essential criterion achieved (required for Good condition) Yes or No:	Yes
		Number of criteria passed	7
Condition Assessment Result	**Condition Assessment Score**	**Score Achieved x/**	
Results for habitats requiring assessment of 6 criteria (Depression on peat substrates (H7150) and Oceanic valley mire [1] (D2.1)):			
•Passes 5 or 6 core criteria, including criterion A.	Good (3)		
•Passes 3 or 4 core criteria; OR •Passes 5 core criteria but fails criterion A.	Moderate (2)		
•Passes 2 or fewer core criteria.	Poor (1)		
Results for habitats requiring assessment of 7 criteria - core criteria and additional criterion specified for habitat type (all habitat types except Depression on peat substrates (H7150) and Oceanic valley mire [1] (D2.1):			
•Passes 5 or 6 core criteria including criterion A; AND •Passes additional criterion G, H, I or J (choose the one specified for the habitat type).	Good (3)	Good (3)	
•Passes 4 or 5 of 7 criteria; OR •Passes 6 of 7 criteria but fails criterion A or additional criterion G, H, I or J (choose the one specified for the habitat type).	Moderate (2)		
•Passes 3 or fewer criteria.	Poor (1)		
Suggested enhancement interventions to improve condition score			

Condition Sheet: WETLAND Habitat Type			
Habitat Type(s)			
Grassland - Floodplain wetland mosaic and CFGM - See the Biodiversity Metric 4.0 User Guide. **Wetland - Blanket bog** **Wetland - Depression on peat substrates (H7150)** **Wetland - Fens (upland and lowland)** **Wetland - Lowland raised bog** **Wetland - Oceanic valley mire [1] (D2.1)** **Wetland - Purple moor grass and rush pastures** **Wetland - Reedbeds** **Wetland - Transition mires and quaking bogs (H7140)**			
Habitat Description			
Concrete caisson reedbed creation around new and existing islands within the lake - to include common reed, yellow flag iris, water mint etc and some aquatic planting			
For Oceanic valley mires - see EUNIS			
See the Biodiversity Metric 4.0 User Guide for Floodplain wetland mosaic and coastal and floodplain grazing marsh (CFGM). For CFGM also see the below:			
Coastal and floodplain grazing marsh UK BAP Priority Habitat description			
Priority Habitat Inventory (England) - data.gov.uk			
All other wetland habitats - see UK Habitat Classification (UKHab):			
UKHab			
Site name and location	Broadwater Lake	**On-site or off-site**	Onsite
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	
Condition Assessment Criteria		**Criterion passed (Yes or No)**	**Notes (such as justification)**
Core Criteria - must be assessed for **all wetland habitat types**:			
A	The water table is at, or near the surface throughout the year - this could be open water or saturation of soil at the surface. There is no artificial drainage, unless specifically to maintain water levels as specified above. **Note - this criterion is essential for achieving Good condition.**	Y	
B	The parcel is a good representation of the wetland habitat type it has been identified as, based on its UKHab description - as in, the appearance and composition of the vegetation closely matches the characteristics of the specific habitat type. Indicator species for the specific wetland habitat type[1] listed by UKHab are consistently present.	Y	
C	The water supplies (groundwater, surface water and or rainwater) to the wetland are of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution.	Y	
D	Cover of scrub and scattered trees are less than 10%.	Y	
E	Cover of bare ground is less than 5%.	Y	
F	There is an absence of invasive non-native plant species[2] (as listed on Schedule 9 of WCA[3]) and species indicative of sub-optimal condition[4] make up less than 5% of ground cover.	Y	
Additional Criterion - must be assessed for **Fen and Purple moor grass and rush pasture** habitats only:			
G	No more than 25% of the habitat area has a continuous cover of litter (such as dead vegetation) preventing regeneration.		
Additional Criterion - must be assessed for **Bog** habitats only:			
H	Sphagnum moss *Sphagnum* spp. and cottongrasses *Eriophorum* spp. are at least Frequent[5]. Cover of ericaceous dwarf shrubs[6] is less than 75%.		
Additional Criterion - must be assessed for **Reedbed** habitats only:			
I	The reedbed has a diverse structure with between 60 and 80% reeds *Phragmites australis*. Other areas may include open water (at least 10%), species-rich fen and or wet woodland.	Y	
Additional Criterion - must be assessed for **Floodplain wetland mosaic and CFGM** only:			

F	**Open space within woodland**	10 - 20% of woodland has areas of temporary open space[6]. Unless woodland is <10ha, in which case 0 - 20% temporary open space is permitted[7].	21 - 40% of woodland has areas of temporary open space[6].	<10% or >40% of woodland has areas of temporary open space[6]. But if woodland <10ha has <10% temporary open space, please see Good category[7].	1	
G	**Woodland regeneration**	All three classes present in woodland[8]; trees 4 - 7 cm Diameter at Breast Height (DBH), saplings and seedlings or advanced coppice regrowth.	One or two classes only present in woodland[8].	No classes or coppice regrowth present in woodland[8].	1	
H	**Tree health**	Tree mortality less than 10%, no pests or diseases and no crown dieback[9].	11% to 25% mortality and/or crown dieback or low-risk pest or disease present[9].	Greater than 25% tree mortality and or any high-risk pest or disease present[9].	3	
I	**Vegetation and ground flora**	Recognisable NVC plant community[10] at ground layer present, strongly characterised by ancient woodland flora specialists.	Recognisable woodland NVC plant community[10] at ground layer present.	No recognisable woodland NVC plant community[10] at ground layer present.	1	
J	**Woodland vertical structure**	Three or more storeys across all survey plots or a complex woodland[11].	Two storeys across all survey plots[11].	One or less storey across all survey plots[11].	1	
K	**Veteran trees**	Two or more veteran trees[12] per hectare.	One veteran tree[12] per hectare.	No veteran trees[12] present in woodland.	1	
L	**Amount of deadwood**	50% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, branch stubs and stumps, or an abundance of small cavities[13].	Between 25% and 50% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities[13].	Less than 25% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities[13].	1	
M	**Woodland disturbance**	No nutrient enrichment or damaged ground evident[14].	Less than 1 hectare in total of nutrient enrichment across woodland area and or less than 20% of woodland area has damaged ground[14].	More than 1 hectare of nutrient enrichment and or more than 20% of woodland area has damaged ground[14].	3	
				Total Score (out of a possible 39)	23	

Condition Assessment Result	Condition Assessment Score	Result Achieved
Total score >32 (33 to 39)	Good (3)	Poor
Total score 26 to 32	Moderate (2)	
Total score <26 (13 to 25)	Poor (1)	

Suggested enhancement interventions to improve condition score

Subject to stakeholder consultation, islands may be chosen to be managed as bare ground, grassland, scrub or trees, depending on the goals for the wildfowl - the aim of this habitat is not for biodiversity net gain but to support the designated features of the SSSI which is its avifaunal assemblages and species variety.

APPENDIX E LANDSCAPE PLANS

Bathymetric survey Key

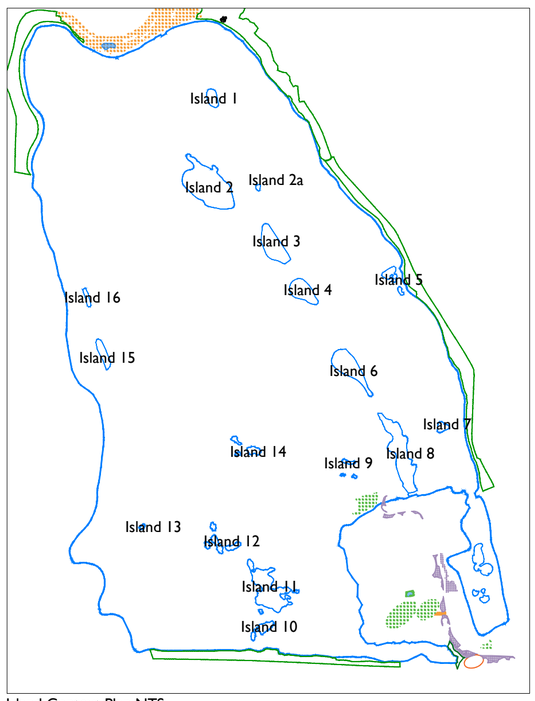
Lake bed level	Winter water depth	Summer water depth
36.5m	0.96m	0.64m
36.0m	1.46m	1.14m
35.5m	1.96m	1.64m
<35.5m	>1.96m	>1.64m

Note:
1. Calculations are based on an average winter/summer water level provided by the surveyor (refer dwg 32578BWLS-01-05)
2. Minimum 2m water depth is preferable for sailing and water activities to minimise algal blooms in summer
3. It was not possible to carry out a survey around the islands, but it is assumed that the water level is less than half a meter

Key (Lake)

Site red line boundary

1. Visual / refuge habitat provided by string of 5m x 2m modular prefabricated floating reed bed rafts to protect water for bird refuge. Monitoring to establish whether infill of protected water with reeds is required.
2. String of 5m x 2m modular prefabricated floating reed bed rafts to create discrete open water channel along western margin. To be kept open with periodic maintenance
3. Extend existing jetty for emergency access (remove adjacent jetties)
4. Keep existing entrance to Broadwater Lake Sailing Club for emergency access & retain track to jetty
5. Remove existing structures :
   - Include two parallel hedgerows 10m apart to create a sheltered grassland 'ride' for bats to forage and commute along (running east-west) and providing a sheltered area for nesting birds, mammals, otter couches etc
   - create a series of inviting mounds of varied orientation, shade and openness with aim for badger setts
   - grassland creation and enhancement in open areas to increase wildflowers
   - include small pond if possible (away from gas main)
   - care to be taken in this area with minimal digging due to the existing underground gas main
6. Anglers' WC to be connected to existing waste water in the location of the Broadwater Sailing Club
7. Floating reedbeds creating bays for young fish and sheltered angling stations.
8. Secure site boundary with Grand Union Canal using a bespoke fence sensitively located amongst existing trees, mindful of root protection zones and augmented with thorned native planting species depending on light conditions. Sections will include fence panel sections, thorny shrub planting, wire fences and trellises, to infill the open areas and strengthen more permeable vegetation. Repair and replace derelict hedgerows with laying / dry hedging techniques dependent on condition and light levels. This approaches retains habitat connectivity and desirable existing light levels
9. Enhance ground flora along the lake margin where reeds aren't proposed. Inland from here include areas of enhanced terrestrial ground flora. Enhancement of ground flora with biodiverse species (both sun loving and shade loving) for invertebrates, bats and birds. Installation of bat and bird boxes on trees in this area. Keep the access road mostly as a dark corridor for wildlife movement, with at least the one sunny spot.
10. Reprofile sediments area to required 2m depth for sailing with turbidity curtain to limit water quality effects until sediment settled
11. Diversify existing habitats on island with perimeter emergent vegetation
12. Number Not in Use
13. Enhance shallows as nursery habitat for coarse fish with artificial reefs
14. Dense barrier vegetation to visually screen eastern shore of islands and the reclaimed land from the north. Wind modeling of the lake and agreement of a minimum distance of natural wind trajectory from jetties should be agreed with sailing club
15. Maintain habitat connectivity with refurbishments or replacement of bridge over canal. Otter spraint was found beneath suggesting it is a landmark used by otters. Implement a watching brief during construction to ensure there is no harm to otters. No mitigation or enhancement for otters is needed or recommended.
16. Bat boxes on trees - here and throughout for maximum benefit
17. Bales of Christmas trees to keep out predatory fish. Monitor water flow and potentially enhance connectivity if climate change adversely reduces water levels.
18. Currently there are mature willows around much of the lagoon edge at the water line (with dense buddleia around and behind) and there are areas of high ground with unsafe steep slopes down to the water edge. High areas to be lowered to approximately 2m above water level and steep slopes reprofiled to 45degrees. Non-native buddleia to be removed and replaced with further willows. A border around the lagoon will be densely planted with native flowering, fruiting and thorny shrubs to prevent visual disturbance or direct human access to the lagoon (discrete viewing will be provided through bird hides). Woven willow panels will be used for instant screening while new planting establishes.
19. Proposed 2 m high thorn hedge to back of car park
20. Restoration to an undisturbed marginal vegetation
21. Break up existing concrete in places for root penetration
22. Main controlled access point for site
23. Existing B category tree group avoided
24. Reclaimed land with scattered native trees to visually break up views of existing building and low fertility dry well drained grass community to boatyards. The seed and plant mix for reclaimed land would only serve to make this area attractive. Although it has low potential to benefit bats (due to lighting), green walls and green roofs if feasible could be installed on buildings for invertebrates and to integrate buildings into the landscape. Judiciously located nectar providing planting would enhance the area although openness is important to minimise potential sheltering of wind for sailing.
25. Number not in use.
26. Up to 10 m wide buffer to prevent access, width will vary depending on existing vegetation, topography, presence of concrete surface, substrate and extent of land available
27. Native fruit trees as orchard / fruit walks within camping and activity area. Create an open mosaic habitat for invertebrates here and elsewhere wherever possible
28. Heron Inlet. Protect and enhance backwater with thorny planting and protective fence as required for the inlet to the south west of the peninsula to remain safe for bird and otter passage. Include some emergent vegetation and some grassland patches going down to the water for water vole and sleeping spots for birds or deer
29. Low key approach to drainage with ditches and filtering attenuation through site. Boatwash to go to foul drainage system
30. Grassland and wildflower enhancement in open areas and alongside paths of activity centre. Sandy patches, gravel and excavated dips to be incorporated
31. Create islands in shallowest parts of the lake to create protective water to the west of the lake. These will include trees and scrub planting
32. Proposed HS2 floating mitigation island
33. Enhance as dabbling areas for birds with submerged coir matresses
34. Deeper channels for water circulation
35. Include tethered habitat rafts with solar panel to power bubbling aerators in areas of semi-enclosed water. Integrated into the masterplan for climate adaptation based on monitoring of the dissolved oxygen levels across the lake over a period of months / years
36. Restrict access to causeway to avoid public safety hazard of quicksand and disturbance to quiet backwater
37. Wildlife pond for invertebrates and dipping activities on north side of cleaving in sun
38. Floating reedbeds provide shelter for water birds
39. Concrete caissons submerged and filled with silt / substrate and planted with vegetation tolerant of submersion such as reeds and willow
40. Species rich amenity grass
41. Zone for assisted natural regeneration
42. Waterpump for circulation
43. Remodel existing island based on:
    a) retain 4 existing trees
    b) create muddy scrape in north of island at same level as the shingle finger the extends north (Summer water levels)
    c) Artificial Sand Marten habitat
44. Proposed islands to protect existing island 14
45. Tern rafts within open water
46. Log piles and brash piles with existing vegetation to encourage wildlife habitation
47. Introduce species rich grass planting on existing gravel
48. Wildlife pond
49. Existing slipway removed, Jetties retained for Wildfowl
50. Proposed scrub planting scattered along grassland
51. Extent of existing vegetation
52. Enhanced ground flora along shoreline
53. Create 3no. shallow scrapes and allow ruderal ephemeral vegetation to colonise
54. Basking banks for reptiles



Island Context Plan NTS

0 25 50 75 100 150 200 250m

Rev	Amendments	Date	Drwn	Chkd
13	Annotation amended	26.09.23	AH	PO
12	Layout amended	11.09.23	JR	PO
11	Floating reedsbed and island layout amended	24.08.23	JR	PO
10	Updated following comments	22.08.23	DB	PO
09	Updated following comments	16.08.23	DB	PO
08	Updated following workshop on 28.07.23 at LBH, Uxbridge	08.08.23	DB	PO
07	Final QA	22.06.23	JR	PO
06	Amendments to the masterplan	21.06.23	JR	PO
05	Amendments to the masterplan	15.06.23	JR	PO
04	Amendments to the masterplan	30.05.23	JR	PO
03	Amendments to the key	23.03.23	JR	PO
02	Amendments to the key	22.03.23	JR	PO
01	First Issue	16.03.23	TK	PO

Project
HWSFAC

Drawing Title

Ecological Mitigation - Lake

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Scale @ A1 1:2500
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Revision 13

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