Our ref: King's Pond, Alton - BNG

Date: December 2023

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KING'S POND, ALTON, HAMPSHIRE – BIODIVERSITY NET GAIN STRATEGY

Introduction

RPS was commissioned by Alton Town Council, to undertake a high-level walkover survey, of the landholding associated with King's Pond, Alton, Hampshire.

The aim of this high-level, Biodiversity Net Gain (BNG) strategy is to identify the baseline habitats present on the site and the species they supported. It has also then gone on to look at any proposed enhancements, and the subsequent biodiversity credits that can be awarded on completion of these; and as such, any financial gain that could be associated with such (if the credits were to be then sold).

Phase 1 Habitat Walkover

The survey work was carried out in August 2023. The site was initially separated into homogenous stands, within which the species distribution and composition was relatively uniform. The surveyor then assessed each stand for the species present and their level of dominance and assigned each the most likely National Vegetation Classification (NVC) (as per Rodwell 1992 & 2000).

Biodiversity Net Gain Assessment

Biodiversity Net Gain (BNG) is defined in Baker *et al* (2019) as:

"Development that leaves biodiversity in a better state than before."

Planning Policy

The requirement for developments to seek to achieve BNG arises from the National Planning Policy Framework (NPPF, 2019), which states in Para. 174 that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by … minimising impacts on and providing net gains for biodiversity."

The site falls within the planning authority of East Hampshire, who have issued guidance on the delivery of net gain within their document *"East Hampshire Biodiversity and Planning Guidance"*.

"The purpose of net gain within the East Hampshire Planning Authority Area will be to:

- *Provide a measurable gain in biodiversity value for all development over 0.1Ha.*
- *To bolster the Local Ecological Network.*
- *To provide quality and sustainable habitat gains in the right place".*

Methods

There is no single set method for quantifying the assessment of BNG. However, the most common method is the use of biodiversity calculators to assess the biodiversity value of habitats pre- and post-development based on habitat type, distinctiveness, and condition.

A biodiversity index is derived for the baseline and for the proposed development, CIEEM (2019) describe a projects ecological baseline as:

'*Conditions existing in the absence of proposed activities.*'

BNG is considered to be achieved where an increase in value is delivered (on or offsite), and where habitats of a higher value are not replaced exclusively with habitats of a lower value.

The methods of calculating BNG for this project followed the guidance produced by Natural England's (NE) Biodiversity Metric 4.0 (JP029) (Crosher *et al.* 2019). Defra made available its beta test update of its BNG assessment tool in July 2019, which was subsequently updated in March 2023. This tool has been used for the assessment in this report. The tool and associated documents were downloaded from The Biodiversity Metric 4.0 - JP039 (naturalengland.org.uk)

The baseline data and post development data such as habitat enhancement and creation, was inputted into the calculator to work out the total net % change of the site.

Condition Assessment

Using the data collected from the Phase 1 Habitat Surveys, habitat condition assessments were undertaken for the habitats present within the survey boundary were assigned.

The appropriate 'Condition sheet' was first selected via the Table TS1-1 in the technical supplement provided by Crosher *et al.* (2019).

The condition sheet was then used to assess the individual habitats by comparing how they scored against pre-set condition assessment criteria. The criteria describe what components are needed for the habitat to be of good value.

Each habitat was scored the following:

1. Poor;
2. Fairly poor;
3. Moderate;
4. Fairly good; and
5. Good,

It should be noted that some habitats (i.e., those which are low scoring by default and of no ecological value, such as hardstanding) are given a fixed score and do not need assessing.

This report pertains to these results only; recommendations included within this report are the professional opinion of an experienced ecologist and therefore the view of RPS. The surveys and desk-based assessments undertaken as part of this review and subsequent report including the Ecological Appraisal Notes are prepared in accordance with the British Standard for *Biodiversity Code of Practice for Planning and Development (BS42020:2013).*

Results

Phase 1 Habitat Survey

Figure 1, Appendix B illustrates the below habitats; and they are described below, in (roughly) their order of extent.

King's Pond (non-priority)

King's Pond comprised the majority of the survey boundary. This was a large body of water with very little (to no) aquatic vegetation present. It had a hard landscaped edge, and as such no marginal vegetation present either. A number of waterfowl were observed during the survey.

The pond is fed by the River Wey, and as such, it is expected that water levels frequently fluctuate.

Following the UKHabs classification, this would best fit the 'non-priority pond' category; and would be classified as being of a poor condition, as it meets only four of the habitat condition criteria (please refer to Table 1, below).

Table 1 – Non-Priority Pond (Condition Assessment).

Core Criteria - applicable to all ponds (woodland[1] and non-woodland)		Condition Met (Y/N)
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.	N
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
C	Less than 10% of the water surface is covered with duckweed *Lemna* spp. or filamentous algae.	Y
D	The pond is not artificially connected to other waterbodies, e.g. agricultural ditches or artificial pipework.	N
E	Pond water levels can fluctuate naturally throughout the year. No obvious artificial dams[2], pumps or pipework.	Y
F	There is an absence of listed non-native plant and animal species[3].	Y
G	The pond is not artificially stocked with fish. If the pond naturally contains fish, it is a native fish assemblage at low densities.	N

Hardstanding

A hardstanding footpath ran around the edge of the pond, with a thin strip of amenity grassland on either side. Hardstanding, being of no ecological value, is not awarded a habitat condition within the biodiversity net gain metric.

Dense Scrub

Areas of dense scrub occurred around King's Pond, which included scattered trees frequently present throughout. Dense scrub species were dominated by brambles *Rubus sp.*, with hawthorn *Crataegus monogyna*, bindweed *Calystegia sepium*, common nettle *Urtica dioica L*, dock *Rumex sp.*, sycamore *Acer pseudoplatanus*, willow *Salix sp.*, field maple *Acer campestre*, hogweed *Heracleum sphondylium*, buddleja, hazel *Corylus avellana*, snowberry *Symphoricarpos albus*, ash *Fraxinus excelsior* and holly *Ilex aquifolium*. Some of the trees within this area were mature; whilst others less so.

Following the UKHabs classification, this would best fit the 'mixed scrub' category; and would be classified as being of a moderate condition, as it meets three of the five criteria set out in the NE guidance:

Condition Assessment Criteria		Condition Met (Y/N)
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, 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
B	Seedlings, saplings, young shrubs and mature (or ancient or veteran) shrubs are all present.	Y
C	There is an absence of invasive non-native plant species (as listed on Schedule 9 of WCA4) and species indicative of sub-optimal condition make up less than 5% of ground cover.	N
D	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.	Y
E	There are clearings, glades or rides present within the scrub, providing sheltered edges.	N

It would fail to meet the good condition criteria, as there are no glades or rides present within such areas, and invasive species (snowberry) is occasionally present.

Other, Semi-Neutral Grassland

South of King's Pond was a larger area of grassland; which could be reasonably classified as species-poor, semi-improved grassland. Species included perennial rye-grass *Lolium perenne*, ribwort plantain *Plantago lanceolata*, daisy *Bellis perennis*, yarrow *Plantago lanceolata,* red clover *Plantago lanceolata,* white clover *Trifolium repens,* thistle *Carduus sp.*, bugle *Ajuga reptans*, speedwell *Veronica sp.*, ragwort *Senecio jacobaea* and dock.

Following the UKHabs classification, this would best fit the 'other, semi-neutral' category; and would be classified as being of a moderate condition, as it meets three of the five criteria set out in the NE guidance:

	Condition Assessment Criteria	Condition Met (Y/N)
A	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.	N
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 insects, birds and small mammals to live and breed.	Y
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens.	Y
D	Cover of bracken Pteridium aquilinum is less than 20% and cover of scrub (including bramble *Rubus fruticosus agg.)* is less than 5%.	Y
E	Combined cover of species indicative of sub-optimal condition2 and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species (as listed on Schedule 9 of WCA4) are present, this criterion is automatically failed.	N

It would fail to meet any of the higher conditions, as a number of the species present are considered to be undesirable (ie, the thistle and clovers).

Broadleaved woodland

To the west of King's Pond, there was a broadleaved woodland island; although access onto this was restricted, species present looked to be similar to those surrounding the edge of the pond; including oak *Quercus sp.*, ash, sycamore, willow and field maple.

On the northern side of King's Pond, a thin strip of woodland was present (north of the footpath), which bordered the railway line. Species present were similar to that mentioned above.

This woodland parcel would most reasonably fit under the habitat definition of other-broadleaved woodland, being dominated by a mixture of species (oak, ash, sycamore). The condition, based on the criteria set out in the NE guidance (the working methodology sheets for which can be found in Appendix A), would mean the woodland is classified as being of *poor* condition, scoring 25 points.

Potential Enhancements – Biodiversity Net Gain Strategy

The below enhancements are based on a scenario whereby secondary / alternative uses of King's Pond are not considered (i.e., this is the best version of events, from an ecology perspective). However, in reality, it could be that other uses, such as public access etc, are required, meaning that the highest ecological value of some habitats is not achievable.

Dense scrub

The removal of the invasive species (snowberry) from the dense scrub, combined with a reduction in the % coverage of bramble, and the introduction of further, native, woody species; could potentially enhance the condition of the scrub from a moderate condition to a good condition.

The condition enhancement from moderate to high would deliver the site **circa 7 biodiversity units.**

Broadleaved woodland

The current broadleaved woodland on site was considered to be of a poor condition, and there is the possibility that it's condition could be managed to a higher standard, as a way to achieve some BNG credits.

Enhancements could include the planting of a more diverse, structured shrub layer, with species such as hazel, holly, dogrose, and similar species. Other areas of the ground flora, where the land is more open, could be planted with a suitable shade tolerant grassland mix, again, in order to enhance the condition of the habitat.

The condition enhancement from poor to moderate would deliver the site **10 biodiversity units.**

Enhancement of existing grassland

Areas of the currently species-poor grassland could be enhanced to a longer, wildflower meadow, style grassland. In order to create this, the grass must be cut as short as possible and the entire area thoroughly raked over to remove dead grass, loose vegetation and create bare patches of soil for seeding into.

A species rich wildflower mix should be used, ideally similar to a mix which has established elsewhere within the local area (a bespoke species mix would be ideal). The seeds should be gently raked in and then rolled or trampled in by foot.

Management of the created habitat would include allowing to grow long, with a hay cut in August / September once the seeds have set.

Wildflower meadows provide good habitat, both foraging and sheltering for a range of species, including some known to occur on the site (birds, bats, amphibians, and invertebrates).

The condition enhancement from poor to good would deliver the site **circa 7 biodiversity units.**

Pond

In order to enhance the biodiversity quality of King's Pond, it is recommended that the pond be taken 'offline' from the River Wey system, not only as a mechanism to improve the pond quality, but also to restore the River Wey to a higher quality, chalk stream. Therefore, for King's Pond, the following could be implemented:

- The 'hard' landscaped edge be removed and re-engineered, to a softer, vegetated edge;
- Separation of one larger pond into two smaller pond systems; which would be of more benefit to wildlife;
- Introduction of aquatic, submerged and marginal vegetation; and
- Removal of any fish present.

If the pond is to be split into smaller ponds, these should be at least 100 m^2 in size to have any proper benefit for wildlife; it is also important to create ponds with irregular-shaped edges and a range of depths, although a shallow margin (in full sunlight) is key to providing warm water.

Although specifics would depend on the locations of the ponds / layout of the site, as a general guide, 50% of the pond area should be less than 20cm deep, 30-40% between 20-60cm deep, and 10-20% between 60-150cm deep. If possible, deeper areas should also be created, between 1-1.5m in depth, this will provide water habitat and extend the longevity of the pond.

[redacted]

The delivery of the above could deliver circa **11 biodiversity units.**

However, the above situation is based upon the site being created and managed for wildlife in the long-term; whereas it is recognised that the site may indeed have some recreational public pressures, and so, with this is mind; aiming for a moderate condition (as opposed to good), would **deliver 4 biodiversity units.**

The River Wey

As part of the enhancement strategy for this area, it is recommended that King's Pond be taken offline from the River Wey system, so that the chalk stream nature of the Wey can be restored; as has been successfully achieved elsewhere within Alton. As a brief over-view; chalk stream restoration can include the following principles:

- De-culvert, take King's Pond offline to restore the natural flow regime;
- Restore the gravel stream bed, using material similar to that in other sections;
- Use felled / fallen trees within the stream channel to enhance habitat variety; and
- Restore the stream channels and banks (ensuring they are varied) with suitable habitats and species.

All of these measures will restore the habitat requirements of the ecosystem engineers (fish, insects, mammals and plants) which shape the dynamic habitat of a chalk stream. The above principles are a high-level outline strategy to restoration; and it is expected a much more detailed strategy would be required in order to carry out any works.

The delivery of the above could deliver circa **2 biodiversity units.**

Biodiversity Enhancements

Current Habitat	Proposed Habitat	Proposed Units Gained
Scrub	Poor to good condition enhancement	7
Other, semi-natural grassland	Moderate quality to high quality	7
Broadleaved woodland	Management to enhance quality	10
King's Pond	Take offline and enhance	11*
River Wey	Chalk stream restoration	2
Total		**37**

*Assumes a good condition, realistically, recreational disturbance could reduce this to 4.

The above approach would all need to be solidified with a more detailed National Vegetation Classification (NVC) survey, and more detailed plans of any habitat creation and an appropriate methodology to do so; should the above be taken forward to accompany any planning application.

Assuming that each credit could be worth (roughly) £30-£60k; the potential financial gains from selling 'credits' could be £1,100,000 – £2,200,000). **However, this does not factor in the costs of carrying out and then maintaining the above habitats in perpetuity, which would need to be factored in.**

Do let me know if you require any further information.

Yours sincerely,
for RPS Consulting Services Ltd

Hannah Knight MSc MCIEEM
Associate Director – Ecology

Appendix A – Woodland Criteria Conditions

No.	Indicator	Good (3 points)	Moderate (2 points)	Low (1 point)	Score
1	Age distribution of trees	Three age classes present	Two age classes present	One age class present	2
2	Wild, domestic and feral herbivore impact	No significant browsing damage evident in woodland	Evidence of significant browsing pressure is present in 40% or less of whole woodland	Evidence of significant browsing pressure is present in 40% or more of whole woodland	3
3	Invasive non-native plant species	No invasive species present in woodland	Rhododendron and laurel not present, other invasive species < 10% cover	Rhododendron and laurel present, or other invasive species > 10% cover	2
4	Number of native tree species	Five or more native tree or shrub species found across whole woodland	Three to four native tree or shrub species found across whole woodland	None to two native tree or shrub species across whole woodland	3
5	Cover of native tree and shrub species	> 80% of canopy trees and >80% of understory shrubs are native	50-80% of canopy trees and 50-80% of understory shrubs are native	< 50% of canopy trees and <50% of understory shrubs are native	3
5	Open space within woodland	10 – 20% of woodland has areas of temporary open space	21- 40-% of woodland has areas of temporary open space	More than 40% or less than 10% of woodland has areas of temporary open space	1
6	Woodland Regeneration	All three classes present in woodland; Trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth	One or two classes only present in woodland	No classes or coppice regrowth present in woodland	2
7	Tree health	Rapid tree mortality less than 10%, no pests or diseases and no crown dieback	11% to 25% rapid mortality and/or crown dieback or low risk pest or disease present	Greater than 25% tree rapid mortality and or any high-risk pest or disease present	2

No.	Indicator	Good (3 points)	Moderate (2 points)	Low (1 point)	Score
8	Ground vegetation	Recognisable NVC plant community at ground layer present, strongly characterised by ancient woodland flora specialists	Recognisable NVC plant community at ground layer present	No recognisable NVC community at ground layer	1
9	Woodland vertical structure	Three or more storeys across all survey plots or a complex woodland	2 storeys across all survey plots	One or less storey across all survey plots	2
10	Veteran trees	Four or more veteran trees per hectare	One to four veteran trees per hectare	No veteran trees present in woodland	1
11	Amount of deadwood	More than 50% of woodland and/or 50% of all survey plots surveyed have standing deadwood, large dead branches/ stems and stumps	Between 25% and 50% of woodland and/or between 25% and 50% of all survey plots surveyed have standing deadwood, large dead branches/ stems and stumps	Less than 25% of woodland and/or less than 25% of all survey plots surveyed have standing deadwood, large dead branches/ stems and stumps	1
12	Woodland disturbance	No nutrient enrichment or damaged ground evident	Less than 1 ha in total of nutrient enrichment across woodland area and/or less than 20% of woodland area has damaged soil	More than 1 ha of nutrient enrichment and/or more than 20% of woodland area has damaged soil.	2
	Total score				**25**

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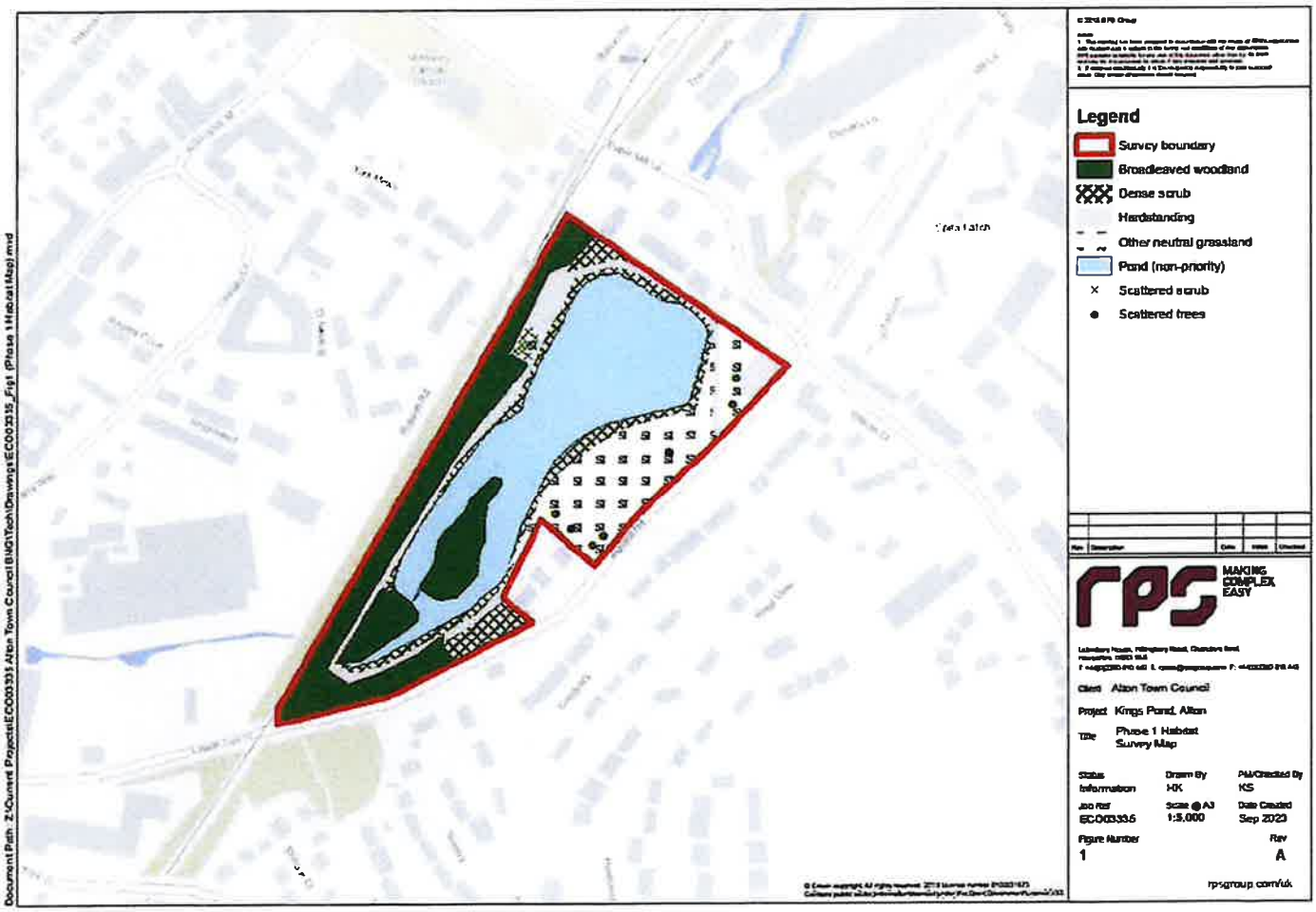
Appendix B – Phase 1 Habitat Survey Map



Appendix C – Potential BNG Enhancement Plan

Appendix D – Site Survey Photographs