

Elton Reservoir, Bury

GM Allocation 7

## OUTLINED ECOLOGICAL MITIGATION AND ENHANCEMENT STRATEGY

March 2019

[ERAP (Consultant Ecologists) Ltd ref: 2017-001k]

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## 1.0 INTRODUCTION

### 1.1 Background and Rationale

- 1.1.1 ERAP (Consultant Ecologists) Ltd was commissioned by Peel Holdings (Land and Property) Limited to carry out the relevant ecological surveys and assessment of the Elton Reservoir site, Bury / GM Allocation 7 (hereafter referred to as the 'site').
- 1.1.2 The surveys were requested in connection with proposals to promote the site for development within the Greater Manchester Spatial Framework (GMSF).
- 1.1.3 The site covers an area of approximately 248 hectares and occupies land between Bury and Radcliffe, Greater Manchester. The site is bound by the A58 (Bury and Bolton Road) to the north, the Metrolink line to the east and residential development to the west. The Ordnance Survey (OS) grid reference at the centre of the site is SD 786 089.
- 1.1.4 As detailed in **Section 1.2**, a suite of ecological surveys has been carried out. As the baseline survey data have been collated, the data have been used to inform the iterative process of the preparation of the principles and objectives identified at **Section 5.2**, the Development Framework (Peel, March 2019) and the Sketch Masterplan (Turley, March 2019). This process is described in more detail at **Section 3.0**.

### 1.2 Scope of Supporting Information and Reports

- 1.2.1 The following scope of ecological surveys have been carried out:

**Table 1.1: List of Supporting Ecological Reports**

Scope / Title	Date
Results of Desktop Study and Scope of Ecological Survey	March 2019
Phase 1 Habitat Survey	March 2019
Confidential: Badger Survey	March 2019
Water Vole and Otter Survey 2017	March 2019
Great Crested Newt Surveys 2017	March 2019
Wintering and Breeding Bird Surveys 2017	March 2019
Bat Activity Surveys and Assessment	March 2019

- 1.2.2 This document and the appended plans have been prepared with reference to the ecological baseline survey data listed above.
- 1.2.3 It is recognised that further, more detailed, ecological surveys are necessary to support the preparation of a more detailed masterplan and a planning application. However, the scope of ecological survey carried out to date is considered to be proportionate and appropriate to promote the site under the GMSF consultation process and to demonstrate deliverability of the scheme in accordance with ecological considerations, relevant planning policy, relevant wildlife legislation and best practice.

### 1.3 Purpose

- 1.3.1 The main purpose of this report is to:
- a. Identify the key principles, parameters and main ecological considerations and opportunities associated with development and delivery of the Elton Reservoir site and associated Elton Parkland;

- b. Identify the necessary mitigation measures in accordance with the mitigation hierarchy (avoid, mitigate then compensate);
- c. Identify where compensation is necessary and the scope of works considered necessary;
- d. Identify where there are opportunities for green infrastructure and ecological enhancement to achieve a measurable net gain for biodiversity and enhancement of natural capital and work towards the quantification of this with the use of a biodiversity calculator / metric;
- e. Inform the preparation of a cost for the delivery of the Parkland; and
- f. Aim to demonstrate that development at the site can be achieved in accordance with all wildlife legislation, Natural England guidance, the principles of the National Planning Policy Framework (NPPF), the policies of the GMSF and best practice.

1.3.2 At the current time the assessment is based on the current version of the Development Framework (Peel, March 2019) and Sketch Masterplan (Turley, March 2019) which have been informed by the ecological surveys.

## 2.0 SUMMARY OF ECOLOGICAL BASELINE

### 2.1 Introduction

2.1.1 The specific details of the baseline ecological surveys are presented in the supporting reports listed in **Section 1.2**. This report should be read in conjunction with the listed reports. A summary of the identified ecological receptors is provided below and at the Considerations and Opportunities Plans (**Figures 1, 2 and 3**), appended.

### 2.2 Designated Sites for Nature Conservation

#### Statutory Designated Sites

- 2.2.1 The site does not hold any statutory designation for nature conservation, such as a Special Area of Conservation (SAC), Special Protection Area (SPA) or Site of Special Scientific Interest (SSSI). There are no statutory designated sites within a two kilometre radius of the site boundary.
- 2.2.2 Ashclough SSSI and Nob End SSSI lie approximately three kilometres and four kilometres south-west of the site respectively. At its closest point, the Rochdale Canal SSSI lies approximately nine kilometres east of the proposed development site.
- 2.2.3 The site does lie within a SSSI Impact Risk Zone (Ordnance Survey, 2019), however as this zone is over three kilometres from the nearest SSSI there is no requirement for any further consultation with Natural England for any development other than aviation proposals, pig and poultry units, slurry lagoons, and general combustion processes, such as waste incineration and sewage treatment in relation to impacts on the SSSI.
- 2.2.4 There are seven Sites of Biological Importance (SBI) within the site boundary, as listed below and illustrated on **Figure 1b**:

**Table 2.1: List of Sites of Biological Importance (SBI) within the Site**

SBI Name	Grade <sup>1</sup>
Elton Reservoir SBI	A
Withins Reservoir SBI	B
Spen Moor Ponds SBI	B
Elton Goyt SBI	B
Marl Pits at Black Lane SBI	A
Manchester, Bolton and Bury Canal SBI	A
Wetland Near Radcliffe SBI	C

<sup>1</sup> = Grade A: County Importance, Grade B: District Importance and Grade C: More Than Local Importance.

2.2.5 As illustrated on **Figure 2**, the seven SBIs form a mosaic over the Elton Reservoir site and occupy a total of approximately 67.3 hectares (27%) of the site area, with approximately 40.2 hectares (16.2% of the site area) classified as Grade A SBI, approximately 26.4 hectares (10.6% of the site area) classified as Grade B SBI, and 0.74 hectares (0.3% of the site) classified as Grade C SBI.

2.2.6 There are also a further 16 SBIs within a two kilometre radius of the site boundary.

## 2.3 Habitats

2.3.1 The site supports the following broad habitat types:

**Table 2.2: Summary of Habitat Types and Area Covered**

Broad Habitat Type	Conservation Status / Notes	Habitat Distinctiveness <sup>1</sup> (Defra, 2012)	Approximate Area Covered (hectares)	% of Total Site Area
A2.1 Dense continuous scrub	-	Medium-low	13.24	5.34%
A3.1 Parkland and scattered trees - broad-leaved trees	-	Medium	0.56	0.23%
B1.1 Acid grassland - unimproved	-	Medium	0.36	0.14%
B2.2 Neutral grassland - semi-improved	Lowland Meadow Priority Habitat	High (upgraded from medium as this is Priority Habitat)	20.28	8.18%
B4 Improved grassland	-	Low	91.69	36.97%
B5 Marsh / Marshy grassland	Coastal Floodplain and Grazing Marshy Priority Habitat	High	8.06	3.25%
B6 Poor semi-improved grassland	-	Medium-low	60.45	24.37%
C1.1 Bracken, continuous	-	Low	0.05	0.02%
C3.1 Other tall-herb and fern - tall ruderal	-	Medium-low	1.56	0.63%
F1 Swamp	Common Reed ( <i>Phragmites australis</i> ) areas have affinities with the Reedbed Priority Habitat	High	1.33	0.54%
G1 Standing water	-	High	26.07	10.51%
G2 Running water	-	High	1.20	0.48%
J1.2 Cultivated / disturbed land - amenity grassland	-	Low	8.91	3.59%
J1.3 Cultivated / disturbed land – ephemeral / short perennial	-	Low	0.41	0.16%
J1.4 Introduced shrub	-	Low	0.02	0.01%
J4 Bare ground	-	Low	7.70	3.10%
J5 - Other habitat - coarse, unmanaged species-poor neutral grassland	-	Medium	0.23	0.09%
J5 - Other habitat - individual buildings	-	None	1.10	0.44%
J5 - Other habitat - ponds	Many of the ponds meet the criteria to be Priority Habitat	High	1.14	0.46%
J5 Other habitat	-	None	2.17	0.87%
<b>Linear Habitats</b>				
J2.1.1 Hedgerows – intact, native species-poor	Priority Habitat All hedgerows are assumed to be 1 metres wide	Medium	1.45 (14.45 kilometres)	0.58%
J2.2.2 Hedgerows – defunct, native species poor	Priority Habitat All hedgerows are assumed to be 1 metres wide	Low	0.07 (0.693 kilometres)	0.02%
Ditches	Assumed to be 1 metre wide	High	0.04 (0.393 kilometres)	0.03%
<b>TOTAL</b>			<b>248 hectares</b>	<b>100.01%</b>

<sup>1</sup> 'High', 'Medium' or 'Low' in accordance with Appendix 1 - Distinctiveness Bands for the Biodiversity Offsetting Pilot and The Environment Bank Biodiversity Impact Assessment calculator (Defra, 2012).

- 2.3.2 The semi-improved grasslands are representative of the Lowland Meadows Priority Habitat and occupy 20.28 hectares (8.18%) of the site area.
- 2.3.3 The hedgerows and the associated trees and scrub within the site and on the site boundaries are Priority Habitat and are of local value as they add structural diversity, support a habitat connectivity / green infrastructure function and are suitable for use by nesting birds, foraging bats and other Priority Species such as hedgehog. Hedgerow Priority Habitat accounts for approximately 0.6% of the site area. All hedgerows will be assessed in accordance with *The Hedgerows Regulations 1997* wildlife and landscape criteria (H.M.S.O., 1997) during the Phase 2 / more detailed surveys to determine if any meet the criteria to be classed as ‘important’.
- 2.3.4 The marshy grassland, particularly the area within and adjacent to Elton Goyt SBI (c. 5.5 hectares), is representative of Coastal Floodplain and Grazing Marsh Priority Habitat.
- 2.3.5 The stand of Common Reed at TN15 is relatively small in area (0.0185ha) this vegetation has affinities with the Reedbed Priority Habitat.
- 2.3.6 There are 36 ponds within the site area. Ten ponds support great crested newt and / or common toad and are therefore Priority Habitat. Further surveys for aquatic invertebrates, if required, will be carried out as part of the Phase 2 / more detailed surveys and may identify other ponds as Priority Habitat.
- 2.3.7 As discussed in the *Phase 1 Habitat Survey* (ERAP (Consultant Ecologists) Ltd, March 2019) the distinctiveness of a habitat includes parameters such as species richness, diversity, rarity and the degree to which a habitat supports species rarely found in other habitats. Defra has defined the distinctiveness values for the habitat types as part of the biodiversity offsetting pilot studies (Defra, 2012).
- 2.3.8 Based on the use of the Defra values only it is indicated that the site supports the following:

**Table 2.3: Summary of Distinctiveness Values at the Site**

Distinctiveness	Area (ha)	% of Site Area
High	58.12	23.45%
Medium	2.6	1.04%
Medium - Low	75.25	30.34%
Low	108.85	43.87%
None	3.27	1.32%
<b>TOTAL</b>	<b>248 ha</b>	<b>c. 100%</b>

## 2.4 Species

- 2.4.1 The habitats at the site support protected species and Priority Species (as defined by Section 41 of the 2006 Natural Environment and Rural Communities (NERC) Act).

### Mammals

#### *Badger*

- 2.4.2 Refer to *Confidential: Badger Survey* (ERAP (Consultant Ecologists) Ltd, March 2019).

#### *Bat Species*

- 2.4.3 The *Desktop Study and Scope of Ecological Survey* (ERAP (Consultant Ecologists) Ltd, March 2019) report identifies one record of a bat species roost at Higher Spen Moor Farm at the northern end of the site (dated 2001).

- 2.4.4 No buildings, structures or trees have been examined as part of the scope of ecological baseline surveys. Licensed bat surveys and assessment will form part the more detailed scope of surveys at a later date and appropriate and proportionate mitigation proposals will be accommodated at the scheme (including any Natural England licensing requirements).
- 2.4.5 Baseline bat activity surveys confirm the areas surveyed within the site are regularly used by foraging common pipistrelle (*Pipistrellus pipistrellus*), noctule bats (*Nyctalus noctula*) and *Myotis* species, and occasionally by soprano pipistrelle (*Pipistrellus pygmaeus*).
- 2.4.6 Brown long-eared bat (*Plecotus auritus*) was detected at the site, however no further conclusions can be drawn regarding the extent or distribution of brown long-eared bats at the site as the bat activity surveys carried out will typically under-represent their abundance due to the low amplitude of their echolocation calls.
- 2.4.7 In terms of the spatial and temporal distribution of bat activity the following statements are made following the extent of study conducted to date (ERAP (Consultant Ecologists) Ltd, March 2019):
- a. The site is used for foraging by all bat species typically found within the local area<sup>2</sup>;
  - b. The initial assessment of the value of the habitats present to foraging bats is broadly accurate, in that the water bodies, water courses, tree lines and marshy grassland appear to provide habitat of greater value than the improved pasture fields (although foraging activity was detected at the improved pasture fields included within the survey area, a greater abundance of species and level of activity was detected at the other habitats);
  - c. A variety of bat species were regularly detected in the areas close to water bodies, water courses and tree lines within the site, and these areas are likely to provide the highest quality habitat for bat species; and
  - d. Whilst bat activity is likely to be found throughout the active season, peaks of activity were detected in August, which are likely to be related to prey abundance and important times within the annual bat lifecycle.

#### **Water Vole**

- 2.4.8 Water vole has not been detected at the site (ERAP (Consultant Ecologists) Ltd, March 2019). There are no reported positive records of water vole at the site and local area.

#### **Otter**

- 2.4.9 Otter activity has not been detected at the site (ERAP (Consultant Ecologists) Ltd, March 2019). Records of otter activity are reported for the wider area, particularly along the River Irwell.

#### **Brown Hare**

- 2.4.10 Brown hare, a Priority Species, presence has been recorded in the fields around Old Hall Farm.

#### **Bird Species**

##### **Wintering Birds**

- 2.4.11 A total of 77 species were detected during the wintering bird species<sup>3</sup>. One Greater Manchester

<sup>2</sup> Notwithstanding the fact that *Myotis* species calls could not be identified to species.

<sup>3</sup> In total, 93 bird species were detected across the whole site over the course of the wintering bird surveys and breeding bird surveys combined.

Biodiversity Action Plan (BAP) Priority Species was detected, namely willow tit (*Poecile montanus*, this species is also a Priority Species).

- 2.4.12 Twelve Priority Species were detected, namely bullfinch (*Pyrrhula pyrrhula*), dunnoek (*Prunella modularis*), herring gull (*Larus argentatus*), house sparrow (*Passer domesticus*), lapwing (*Vanellus vanellus*), linnet (*Carduelis cannabina*), lesser redpoll (*Carduelis cabaret*), reed bunting (*Emberiza schoeniclus*), skylark (*Alauda arvensis*), starling (*Sturnus vulgaris*), song thrush (*Turdus philomelos*) and willow tit.
- 2.4.13 Three species listed under Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended) was detected, namely fieldfare (*Turdus pilaris*), kingfisher (*Alcedo atthis*) and redwing (*Turdus iliacus*).
- 2.4.14 Eleven species associated with wintering within the UK and north-west England were detected, namely little egret (*Egretta garzetta*), fieldfare, goosander (*Mergus merganser*), greylag goose (*Anser anser*), lapwing, lesser redpoll, pink-footed goose (*Anser brachyrhynchus*), pochard (*Aythya farina*), redwing, shoveler (*Anas clypeata*) and teal (*Anas crecca*).

### **Breeding Birds**

- 2.4.15 A total of 72 species were detected during the breeding bird surveys, of which 13 are Priority Species, namely skylark, brent goose<sup>4</sup>, linnet, reed bunting, herring gull, grasshopper warbler (*Locustella naevia*), curlew (*Numenius arquata*), house sparrow, dunnoek, bullfinch, starling, song thrush and lapwing.
- 2.4.16 Four species listed under Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended) were detected, namely kingfisher, ruff (*Philomachus pugnax*), little gull (*Hydrocoloeus minutus*) and barn owl (*Tyto alba*).

### **Summary**

- 2.4.17 In respect of the status of the 15 Priority Species and 6 species listed under Schedule 1 (Part 1) of the *Wildlife and Countryside Act 1981* (as amended) detected within the site the following summary is made:
- a. Bullfinch were detected regularly (i.e. each survey repetition) in good numbers during both the wintering and breeding bird surveys; bullfinch use the site all year round. This species was recorded to be associated with the scrub habitats at the north-eastern end of the site, the marshy grassland at the south-eastern end of the site, and the tall-herb and scrub vegetation at the weirs to the south-east of Withins Reservoir;
  - b. Brent goose were detected in low numbers and during summer only, at a field of improved grassland at the north-western end of the site;
  - c. Curlew were detected in low numbers (i.e. two birds) on one survey repetition only, in a field of improved grassland at the north-western end of the site. Breeding was not confirmed in 2017;
  - d. Dunnoek were detected regularly (i.e. each survey repetition) in good numbers during both the wintering and breeding bird surveys; dunnoek use the site all year round, and was detected throughout, chiefly associated with the field boundary scrub and hedgerows within the site;

<sup>4</sup> No distinction has been made between the dark-bellied brent goose (*Branta bernicla* subspecies *bernicla*), a Priority Species, and the brent goose (*Branta bernicla*); for the purposes of the assessment, all have been listed as a Priority Species.

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- e. Grasshopper warbler: One bird detected during one survey repetition in summer only, located within the marshy grassland at the northern end of Elton Goyt SBI;
  - f. Herring gull: Detected regularly in low numbers during winter and on one occasion only in summer, again in low numbers. The birds were detected at Elton Reservoir but also at the fields of improved grassland at the north-western end of the site and semi-improved grassland at the south-western end of the site;
  - g. House sparrow: Detected regularly (i.e. each survey repetition) in good numbers during both the wintering and breeding bird surveys; house sparrow use the site all year round. Associated chiefly with the buildings and hedgerows at the site boundaries and buildings within the site, particularly at the western site boundary;
  - h. Lapwing: Detected regularly and in good numbers during both the wintering and breeding bird surveys; lapwing use the site all year round. Breeding lapwing were typically detected within the fields of semi-improved grassland at the southern end of the site (west of Crow Trees Farm), and within the fields around the margins of Elton Goyt SBI;
  - i. Linnet: Detected infrequently in low numbers during both the wintering and breeding bird surveys; linnet use the site all year round, and is associated with the fields of semi-improved grassland and field boundary hedgerows at the southern end of the site;
  - j. Little gull: One bird detected during one survey repetition in summer only, located in a field to the north of Withins Reservoir;
  - k. Lesser redpoll: A winter migrant, recorded in low numbers and infrequently during the winter surveys, near scrub, hedgerows and tracks at the north-eastern and southern ends of the site;
  - l. Reed bunting: Detected regularly (i.e. each survey repetition) in good numbers during both the wintering and breeding bird surveys; reed bunting use the site all year round. Associated with the marshy grassland at Elton Goyt SBI, the stream corridor at the outlet from Withins Brook and the canalside habitats;
  - m. Skylark: Detected infrequently in low numbers during both the wintering and breeding bird surveys; skylark use the site all year round, and is chiefly associated with the semi-improved grassland at the southern end of the site (i.e. the species-rich grasslands at Old Hall Farm) and the fields near Doffer Fold Farm;
  - n. Starling: Detected regularly (i.e. each survey repetition) in good numbers during both the wintering and breeding bird surveys; starling use the site all year round. Starling were detected throughout the site, although were more frequently encountered at the semi-improved grassland near housing to the south-western end of the site;
  - o. Song thrush: Detected regularly and in good numbers during both the wintering and breeding bird surveys; song thrush use the site all year round, and were chiefly associated with field boundary hedgerows, with a greater number of birds detected within the southern end of the site, particularly along the canal;
  - p. Willow tit: Recorded in low numbers during the wintering bird surveys only; it is possible that the species breeds at the site but this was not recorded. Associated with the ponds and scrub at the north-eastern corner of the site;
  - q. Barn owl: Recorded infrequently and in low numbers during the summer surveys, however it is considered likely that the daylight surveys will have under-recorded this nocturnal species.

Habitats within the site (i.e. unmanaged and / or semi-improved grassland which will provide an abundance of prey items) are suitable for foraging barn owl;

- a. Fieldfare: A winter migrant, recorded infrequently but in good numbers during the winter surveys. All observations were near field boundary features at the northern and southern ends of the site, in flocks of between 6 and 46+;
- r. Kingfisher: Recorded infrequently and in low numbers during the winter and summer surveys, associated with the margins of Elton Reservoir;
- s. Redwing: A winter migrant, recorded in low numbers and infrequently during the winter surveys. Associated with field boundaries at the north-western and south-western ends of the site; and
- t. Ruff: Recorded in low numbers (i.e. one bird) during one repetition of the summer surveys, associated with Elton Reservoir.

2.4.18 In addition, sand martin (*Riparia riparia*) were regularly detected in good numbers over Elton Reservoir during the breeding bird surveys.

### **Amphibians**

2.4.19 Great crested newt (GCN), a European and UK protected species and a Priority Species, have been detected at ten ponds in the site. The populations are considered to form four metapopulations across the site (Black Lane, Spen Moor, Elton South and Elton North (historic / recovering)).

2.4.20 Common toad, a Priority Species, has been recorded at two ponds and may also use Withins and Elton Reservoir (surveys of the reservoirs have not been carried out).

### **Reptiles**

2.4.21 The consideration of reptile species has been reasonably scoped out of the ecological assessment.

## **3.0 IDENTIFIED / IMPORTANT ECOLOGICAL RECEPTORS**

### **3.1 Assigning Importance / Sensitivity**

3.1.1 The Identified Ecological Receptors (IERs) have been determined with reference to Chapter 4 of the CIEEM's guidelines on EclA (CIEEM, 2018) and the distinctiveness values for habitats (refer to **Table 2.2**). A level of importance has been assigned based on a defined geographical scale using the criteria in the table below. Expert judgment is also required for the identification of IERs, particularly where these may not be included in lists, designated sites or features, or highlighted in nature conservation policy.

3.1.2 Importance is assigned based on the conservation importance of a receptor, however in some cases social or economic factors may have been taken into account.

**Table 3.1: Criteria for Assigning the Importance of Ecological Features**

Value/Importance	Criteria
International	<p><b>Habitats</b> Internationally designated sites or candidate sites (i.e. Special Protection Area (SPA), provisional SPA (pSPA), Special Areas of Conservation (SAC), candidate SAC (cSAC), Ramsar site, World Heritage Site, or an area which meets the published selection criteria for such designation.</p> <p>A viable area of a habitat type listed in Annex I of the Habitats Directive, or smaller areas of such habitat essential to maintain the viability of a larger whole.</p> <p><b>Species</b> Regularly occurring populations of an internationally important species, where:</p> <ul style="list-style-type: none"> <li>• The loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale; or</li> <li>• The population forms a critical part of a wider population at this scale; or</li> <li>• The species is at a critical phase of its life cycle at this scale.</li> </ul>
National	<p><b>Habitats</b> A nationally designated site i.e. Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Marine Nature Reserve, or an area, which meets the published selection criteria for national designation (e.g. SSSI selection guidelines). A habitat of principal importance including those published in accordance with Section 41 of the Natural Environments Rural Communities (NERC) Act (2006) or smaller areas of such habitat essential to maintain the viability of a larger whole. Areas of Ancient Woodland e.g. woodland listed within the Ancient Woodland Inventory.</p> <p><b>Species</b> Resident, or regularly occurring, populations of species which may be considered at an International, European, UK or National level where:</p> <ul style="list-style-type: none"> <li>• The loss of these populations would adversely affect the conservation status or distribution of the species at this scale; or</li> <li>• The population forms a critical part of a wider population at this scale; or</li> <li>• The species is at a critical phase of its life cycle at this scale.</li> <li>• This may include regionally or county significant population/number of an internationally/nationally important species.</li> <li>• A significant and regularly occurring population of a nationally important species which is threatened or rare in the region or county.</li> </ul>
Regional	<p><b>Habitats</b> Areas of habitat identified in the Natural England North-West Natural Area Profile i.e. Sites which exceed the county-level designations but fall short of SSSI selection criteria.</p> <p><b>Species</b> Resident, or regularly occurring populations of species which may be considered at an International, European, UK or National level where:</p> <ul style="list-style-type: none"> <li>• The loss of these populations would adversely affect the conservation status or distribution of the species at this scale; or</li> <li>• The population forms a critical part of a wider population at this scale; or</li> <li>• The species is at a critical phase of its life cycle at this scale.</li> </ul> <p>This may include regularly occurring, locally significant population of a species listed as being nationally scarce which occurs in 16-100 10km squares in the UK or in a Regional BAP. A regularly occurring, locally significant population / number of a regionally important species.</p>

Value/Importance	Criteria
County	<p><b>Habitats</b> Designated Sites that are recognised by local authorities e.g. Biological Heritage Sites and County sites that the designating authority / partnership has determined meet the published ecological selection criteria for designation, including Local Nature Reserves (LNR) in the county context. Areas which meet the published selection criteria for county site designations but which are not themselves designated as such. A viable area of habitat identified in County / District BAP or in the relevant Natural England area profile.</p> <p><b>Species</b> Resident, or regularly occurring populations of species which may be considered at an International, European, UK or National level where:</p> <ul style="list-style-type: none"> <li>• The loss of these populations would adversely affect the conservation status or distribution of the species at this scale; or</li> <li>• The population forms a critical part of a wider population at this scale; or</li> <li>• The species is at a critical phase of its life cycle at this scale.</li> </ul> <p>This may include; Locally significant populations of species that is listed in a County / District BAP on account of its regional rarity or localisation. A regularly occurring, locally significant population of a county / district important species (particularly during a critical phase of its life cycle).</p>
Local	<p><b>Habitats</b> Designated Sites including LNRs, Trees protected by Tree Preservation Orders (TPOs) Areas of habitat considered to appreciably enrich the habitat resource within the local context (e.g. native hedgerows, ponds etc.). It may also include sites that retain other elements of semi-natural vegetation that due to their size, quality or the wide distribution of such habitats within the local area are not considered for local designations.</p> <p><b>Species</b> Populations / assemblages of species that appreciably enrich the biodiversity resource within the local context.</p>
Site	Habitats and / or species that are of limited ecological importance due to their size, species composition or other factors. Widespread and common.

3.1.3 In addition, potential effects on all protected species will be considered in accordance with ODPM Circular 06/2005 (Biodiversity and Geological Conservation – Statutory Obligations and Their Impact Within the Planning System), which states:

*‘The presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat’.*

### 3.2 Identified Ecological Receptors / Considerations

3.2.1 The Identified Ecological Receptors (IERS) are listed below:

**Table 3.2: Identified Ecological Receptors / Considerations**

Ecological Feature	Distinctiveness / Maximum Geographical Scale of Importance	Rationale	IER
<b>Sites</b>			
Non-statutory designated sites (Sites of Biological Importance (SBI))	County	Three Grade A SBIs occupying 40.18 hectares of the site area and comprising areas of standing open water, semi-natural grassland and ponds identified to be of value to birds.	Yes
	County	Three Grade B SBIs occupying 26.36 hectares of the site area and comprising ponds, wetland habitat and semi-natural grassland identified to be of value to birds.	Yes
	County	One Grade C SBI occupying 0.74 hectares of the site and comprising ponds with aquatic plant species and breeding amphibians and birds.	Yes
<b>Habitats</b>			
Dense continuous scrub	Medium – Low Local	Young in origin. Not species diverse. Provides habitat connectivity through and around the site. Of value for the attraction of fauna, including Priority Species such as willow tit.	Yes
Parkland and scattered mature and semi-mature trees	Medium Site only	Of low intrinsic value but trees are rare within the context of the whole site. Trees provide opportunities for nesting birds (including Priority Species) and possibly roosting bats (to be determined by further surveys).	Yes
Acid grassland – unimproved	Medium Site	Not extensive in area. Not semi-natural in origin and species-poor.	No
Species-rich semi-improved grassland / Lowland Meadow Priority Habitat	High County	Occupies 20.28 hectares of the site of which 14.5 hectares lies outside the existing SBI boundaries. Representative of Lowland Meadow Priority Habitat.	Yes
Improved grassland	Low Site only	Common and replicable habitats of low intrinsic ecological value but may provide supporting habitat for protected species and other fauna.	No
Marshy grassland and wetland / Coastal Floodplain Grazing Marsh Priority Habitat.	High County	Occupies 8.06 hectares of the site of which 1.23 hectares lies outside the SBI areas. Representative of Coastal Floodplain Grazing Marsh Priority Habitat.	Yes
Other / Poor semi-improved grassland	Medium - Low Local	Common and replicable habitats of low intrinsic ecological value but may provide supporting habitat for protected species and other fauna such as Priority Species of bird.	No
Tall-herb vegetation and bracken underscrub	Medium - Low Site only	Of low intrinsic value and easily replaceable.	No
Swamp / Reedbed	High Local	Not extensive in area. Example of a low scale Reedbed Priority Habitat	Yes
Ponds of Priority Habitat status	High County	Ten ponds support great crested newt (2017 data). Common toad recorded in two ponds (likely more). Note: Priority Habitat status of ponds is not informed by aquatic invertebrate survey data at this time.	Yes
Other ponds	High Local	Other ponds contribute to the presence of five native amphibian species at the site.	Yes
Running water / Stream corridors	High Local	Support a mosaic of habitats including semi-natural features (woodland herbs and more mature trees).	Yes

Ecological Feature	Distinctiveness / Maximum Geographical Scale of Importance	Rationale	IER
Amenity grassland	Low Site only	Occupies 8.91 hectares of the site. Of low intrinsic value and easily replaceable.	No
Hedgerows (Priority Habitat)	Medium Local	Hedgerows are Priority Habitat. Contribute to habitat connectivity through the site and provide opportunities for fauna including protected and Priority Species.	Yes
Hard-standing / buildings and other habitats	None	No or low ecological value	No
<b>Species</b>			
Invasive plant species	Site	Isolated stands of four invasive plant species listed on Schedule 9 of the <i>Wildlife and Countryside Act 1981</i> (as amended) present (Indian Balsam, Giant Hogweed, Japanese Knotweed and Montbretia).	No
Badger	Local	Protected species and therefore a material consideration.	Yes
Roosting bats	County / Local dependent on species	Further baseline information would be required	Yes
Foraging bats	Local	Populations/assemblages of common species that appreciably enrich the biodiversity resource within the local context.	Yes
Brown hare	Local	Populations known to be present but low	Yes
Wintering birds	County	Twelve Priority Species (bullfinch, dunnock, herring gull, house sparrow, lapwing, linnets, lesser redpoll, reed bunting, skylark, starling, song thrush and willow tit). Three Schedule 1 species (namely fieldfare, kingfisher and redwing). Assemblage and diversity of bird species appreciably enrich the biodiversity resource within the local context and includes locally significant populations of species that is listed in a County BAP on account of its regional rarity or localisation.	Yes
Breeding birds <b>Note:</b> May be separated into ground nesting Priority Species and passerine Priority Species for impact assessment purposes	County	13 Priority Species (namely skylark, brent goose, linnets, reed bunting, herring gull, grasshopper warbler, curlew, house sparrow, dunnock, bullfinch, starling, song thrush and lapwing). Three Schedule 1 species (namely kingfisher, ruff and barn owl). Assemblage and diversity of bird species appreciably enrich the biodiversity resource within the local context and includes locally significant populations of species that is listed in a County BAP on account of its regional rarity or localisation.	Yes
Great crested newt	County	Ten GCN breeding ponds forming four metapopulations within the site.	Yes
Common toad	Local	Presence of breeding common toad at two ponds (likely more).	Yes

### Ecosystem Services / Green Infrastructure

3.2.2 The list above focuses on designated sites, Priority Habitats, protected species and Priority Species. In accordance with ecological principles it is essential to also recognise the general biodiversity value, green infrastructure and ecosystem services that are currently provided by the site to ensure that these features are also taken into consideration during the design of the development and future assessment.

### 3.3 Baseline Ecological Considerations Plans

3.3.1 The information summarised in **Table 3.2** above is presented at the Considerations and Opportunities Plans (**Figures 1, 2 and 3**) and has been provided to the design team throughout the scheme to inform

the preparation of the Development Framework (Peel, March 2019) and Sketch Masterplan (Turley, March 2019).

## 4.0 DESCRIPTION OF DEVELOPMENT FRAMEWORK

### 4.1 Introduction

4.1.1 It is not the intention of this document to provide an Ecological Impact Assessment (EclA) of the implementation of the Development Framework, however, it identifies the scope of embedded mitigation and scope of ecological enhancement that can be secured by the scheme whilst achieving compliance with the GMSF requirements.

4.1.2 To provide a transparent approach and to inform the relevant costs it is considered essential that this section of the Strategy provides an overview of the following<sup>5</sup>:

- a. A brief description of the aim of the allocation;
- b. A review of relevant documents and policies;
- c. A description of the embedded mitigation (refer to **Section 5.0**);
- d. An overview of the likely sources of ecological impacts (refer to **Section 6.0**); and
- e. A description of the general ecological strategy that has been prepared to compensate, where required, and to secure a measurable net gain for biodiversity (refer to **Sections 5.0 to 9.0**).

### 4.2 Description of the Aim of the Allocation

4.2.1 In accordance with the *Greater Manchester Spatial Framework – Revised Draft January 2019* (Greater Manchester Combined Authority, January 2019) development at the Elton Reservoir site (GMA7) will be required to:

- a. *“Deliver a broad mix of around 3500 houses with good accessibility and with potential for improved public transport connectivity, particularly in the southern areas of the site;*
- b. *Make provision for affordable housing;*
- c. *Make provision for recreation;*
- d. *Make provision for significant new and improved highways infrastructure including a north-south spine road connecting Bury and Bolton Road (A58) to Bury Road, Radcliffe, a connection from the spine road to Spring Lane, Radcliffe, and other off-site highway works;*
- e. *Make provision for major investment in public transport;*
- f. *Make provision for two new two form entry primary schools;*
- g. *Make provision for a new secondary school;*
- h. *Make provision for new local centres;*
- i. *Ensure the design and layout allow for effective integration with surrounding communities;*

<sup>5</sup> This report has been prepared in outline, as the Development Framework evolves further this section will be updated accordingly.

- j. *Make provision for a large amount of new, upgraded and publicly accessible green infrastructure throughout the area, including the enhancement of the existing assessment at Elton and Withins Reservoirs and the Manchester, Bolton and Bury Canal;*
- k. *Minimise impacts and provide net gains for biodiversity assessment within the site;*
- l. *Develop a satisfactory management plan for areas of green infrastructure, biodiversity features and other areas of open space;*
- m. *Upgrade the recreation, leisure and tourism offer of the wider area;*
- n. *Enable more trips to be made by walking and cycling by retaining, extending and enhancing strategic recreation routes on the former Bury to Bolton railway line and beside the Manchester, Bolton and Bury Canal, together with improvements to the network of pedestrian and cycle routes and public rights of way across the site, facilitating new connections to surrounding urban areas;*
- o. *Ensure any development is safe from potential flood risk and incorporate measures to mimic natural drainage through the use of green sustainable urban drainage to control the rate of surface water run-off; and*
- p. *Ensure that heritage assets and features of archaeological value are fully considered.”*

### **4.3 Relevant Policies and Papers**

- 4.3.1 To support the GMSF process a series of topic papers have been prepared. This document makes reference to the *Natural Environment* topic paper (Greater Manchester Spatial Framework, January 2019).
- 4.3.2 The following documents are also of relevance:
  - a. The *National Planning Policy Framework* (NPPF);
  - b. The *Natural Environment Priority Green and Blue Infrastructure – May 2018*<sup>6</sup>;
  - c. *An Ecological Framework for Greater Manchester* (Association of Greater Manchester Authorities, August 2008). This document identifies the Elton and Coggra Fold areas as a ‘Priority Biodiversity Opportunity Site’ for habitat creation and repair. The document makes specific reference to opportunities for the creation / improvement of open water and pond habitats; and
  - d. *Greater Manchester Biodiversity Action Plans*<sup>7</sup>.

## **5.0 EMBEDDED / INHERENT MITIGATION AND ADDITIONAL MITIGATION**

### **5.1 Definition and Scope within the Development Framework**

- 5.1.1 Embedded / inherent mitigation is regarded as the mitigation measures that have been identified and adopted as part of the evolution of the project design. Additional mitigation comprises the actions necessary to further mitigate an identified impact and may include compensation.
- 5.1.2 As outlined below an annotated on the relevant appended plans, the Development Framework (Peel, March 2019) and specifically the Sketch Masterplan (Turley, March 2019) has been prepared in accordance with the embedded and additional mitigation as outlined below. The detail of any

<sup>6</sup> Available at [https://www.greatermanchester-ca.gov.uk/media/1728/the-natural-environment-priority-b\\_gi-2018.pdf](https://www.greatermanchester-ca.gov.uk/media/1728/the-natural-environment-priority-b_gi-2018.pdf)

<sup>7</sup> Available at [http://www.gmbp.org.uk/site/index.php?option=com\\_content&task=view&id=9&Itemid=27](http://www.gmbp.org.uk/site/index.php?option=com_content&task=view&id=9&Itemid=27)

additional measures and enhancement is discussed in **Section 7.0**.

- 5.1.3 When preparing an Ecological Impact Assessment, it is necessary to characterise the unmitigated impact on the IER taking into consideration the embedded mitigation. However, for ease of reference, in this strategy both the embedded mitigation and the additional mitigation measures at each IER are outlined together.

## 5.2 Principles and Objectives of the Mitigation and Strategy

5.2.1 The Sketch Masterplan proposals can essentially be viewed as two separate items to comprise:

- a. The 'Elton Parkland' (i.e. habitats to be retained, created, enhanced and managed); and
- b. The built environment (i.e. the areas of the site used to deliver the housing and will include landscaping and habitat creation to contribute to green infrastructure and the sustainable urban drainage).

5.2.2 The aim is that the identified embedded mitigation will be 'front loaded' as much as possible to ensure an area / element of the Parkland is delivered (and definitely the commitment to delivery) *prior to* construction operations within the development parcels (perhaps with the exception of the link road and development over areas where the ecological impact would be low). Other impacts will be managed / mitigated for over a time period. For example, the requirement for areas of habitat creation and enhancement to be completed prior to the delivery of a threshold number of units can be secured by a planning condition.

5.2.3 In accordance with the 'The Mitigation Hierarchy' (i.e. avoid, mitigate, compensate), the principles and objectives of this Ecological Mitigation and Enhancement Strategy at the Parkland and wider site are to:

- a. Create and manage a fully integrated Parkland;
- b. Avoid and conserve the Sites of Biological Importance (SBI) and their features of interest, particularly bird species diversity, with appropriate buffers, and / or secure, deliver and manage compensatory habitats, where possible;
- c. Avoid and conserve Priority Habitats and semi-natural / species-rich habitats (and extend the area covered by Priority Habitat, where feasible);
- d. Maintain populations of the identified protected species (great crested newt, badger and foraging bats) and Priority Species (bird species) at a favourable conservation status and implement actions to achieve enhancement;
- e. Avoid fragmentation, protect existing and improve and create ecosystem services and green infrastructure;
- f. Secure a scheme that achieves and will deliver a net gain for biodiversity; and
- g. Facilitate recreational use of the Parkland by visitors and manage potentially damaging operations.

5.2.4 The paragraphs below outline how any potential impacts on the IERs will be avoided, mitigated and / or compensated via delivery of the scheme. Comment is also provided in relation to how the proposals can secure a net gain for biodiversity in accordance with the requirements of the National Planning Policy Framework (NPPF) and the GMSF and supporting documents and this is also discussed in **Sections 7.0** and **9.0**.

5.2.5 The approach is summarised at the Sketch Map with Ecological Considerations (**Figure 3**) and the

Ecological Mitigation and Enhancement Strategy: Overarching Plan (V3 March 2019) (Figure 4).

### 5.3 Detailed Plans and Landscape and Habitat Management Plan (LHMP)

- 5.3.1 Once the site design and parameters have been finalised, and secured, more detailed habitat creation and landscape plans will be prepared for the Parkland site. The detailed plans will be prepared with reference to this strategy and will enable a more accurate account of the costs to deliver the Parkland and will also inform the completion of a biodiversity calculator, as appropriate.
- 5.3.2 Following the preparation of the detailed plans a *Landscape and Habitat Management Plan (LHMP)* will be prepared to outline the objectives and prescriptions for the management of the Parkland site in perpetuity. The preparation and implementation of the LHMP will be secured by a suitably worded planning condition / Section 106 obligation, as appropriate, and will include:
- a. Description and evaluation of the features to be managed;
  - b. Ecological trends and constraints on site that may influence management;
  - c. Aims and objectives of management;
  - d. Appropriate management options for achieving aims and objectives;
  - e. Prescriptions for management actions;
  - f. Preparation of a work schedule (including a project register, an annual work plan and the means by which the plan will be rolled forward annually);
  - g. Personnel responsible for implementation of the plan; and
  - h. Monitoring and remedial / contingency measures triggered by monitoring.

### 5.4 Sites of Biological Importance (SBI)

#### Embedded Mitigation

- 5.4.1 As embedded mitigation the Development Framework seeks to:
- a. Avoid and conserve the SBIs, where possible;
  - b. Identify and maintain a suitable landscaped buffer (i.e. at least 20 metres) between the habitats and the built environment, where feasible;
  - c. Demonstrate the conservation and maintenance of an appropriate hydrological regime at the relevant SBIs in a sustainable way, where relevant; and
  - d. Conserve habitat links between all SBIs to create one fully integrated network of retained and created / enhanced habitat across the site.

#### Compensation

- 5.4.2 Where loss / likely degradation of an area of SBI is unavoidable, compensation will be achieved by:
- a. Extensions of the complementary habitats adjacent to the individual SBIs within the long-term aim of achieving an extension / re-alignment of the SBI boundary. This is of particular relevance at Elton Goyt SBI where it is the intention that the unavoidable loss of 6.2 hectares of marshy grassland / semi-improved grassland with biodiversity interest and use by nesting / wintering lapwing and other Priority Species such as reed bunting will be compensated for by the creation of marshy grassland and enhancement of at least 2.59 hectares of land to the east of the existing

Elton Goyt SBI and by the creation of wetland habitats across the remainder of the site;

- b. Creation / enhancement of additional habitat to complement / provide for the features of special interest at the SBIs (for example new ponds);
- c. Adjusting the drainage regime in local areas as part of the drainage strategy to achieve increased or reduced inundation, where relevant; and / or
- d. Securing the habitat creation and positive management at SBIs, particularly where further surveys may identify the need for appropriate management / enhancement in accordance with conservation objectives.

#### **Enhancement**

- 5.4.3 The approach described above will aim to, by working with the Greater Manchester Ecology Unit (GMEU), secure the re-alignment of boundaries and / or extension of the land allocated as an SBI.
- 5.4.4 The integrated approach aims to secure the commitment and implementation of the positive management of habitats in accordance with conservation objectives of a large (at least 57.18 hectares within an SBI and an addition 57.87 hectares (Total = 115.05 hectares)) contiguous area / ecological network of land in the long-term.
- 5.4.5 The role and importance of the proposed *Landscape and Habitat Management Plan* to be prepared and implemented to secure the implementation of the mitigation, compensation and enhancement to be achieved by the Strategy is outlined in **Section 8.0** below.

### **5.5 Connectivity / Green Infrastructure**

#### **Embedded Mitigation**

- 5.5.1 Habitat connectivity and green infrastructure requirements are an essential component of the design of the scheme to avoid impacts associated with fragmentation and isolation.
- 5.5.2 Continuous habitat connectivity over 115.05 hectares of the site will be achieved in accordance with the following:
  - a. Retention / creation of connected habitats to conserve green infrastructure across the whole site;
  - b. Use and enhancement of existing linear features such as the former Bolton to Bury railway line;
  - c. Avoidance of obstructions (both at ground level and protruding that would act to deter birds) between the River Irwell and the Manchester, Bolton and Bury Canal at the north-eastern corner of the site;
  - d. Conserved connectivity to off-site SBIs, for example at the Marl Pits at Black Lane SBI;
  - e. Conserved habitat (terrestrial and aquatic) connectivity to habitats that extend off-site such as along the outlet from Withins Reservoir to the Manchester, Bury and Bolton Canal and to the canal from the Elton Goyt SBI; and
  - f. Avoidance of adverse effects by the appropriate use of lighting.

#### **Compensation / Enhancement**

- 5.5.3 Where connectivity will be unavoidable fragmented this will be mitigated by a combination of:
  - a. Enhancement / extension of the availability of habitats for specific fauna (such as great crested newt and amphibians) on either side of the obstruction (for example, creation of ponds and

enhanced terrestrial habitats); and

b. By installation of features such as tunnels, where relevant.

5.5.4 To complement the Parkland the habitat connectivity and green infrastructure within the built environment will be created / protected in the following ways:

a. Conservation of a landscaped buffer to mark the interface between the built environment and the wider parkland;

b. Use of open channel swales connected to surface water attenuation ponds;

c. Arrangement of properties to create contiguous rear gardens;

d. Use of trees within the street scenes to provide stepping stones for use by species such as birds and bats;

e. Installation of gaps beneath plot boundary fencing to permit the movement of wildlife; and

f. Appropriate use of lighting.

## 5.6 Habitats

### Embedded Mitigation

5.6.1 Embedded mitigation to conserve existing habitats will achieve the following:

a. Priority given to the retention of Priority Habitats, where feasible;

b. Concentration of development (and enhancement of habitats) on areas identified to be of 'Low' distinctiveness;

c. Retention of all ponds with a buffer of at least 10 metres between ponds and any built development (50 metres from known great crested newt ponds);

d. Creation of replacement wildlife ponds (appropriate locations to be determined, the sustainable locations will be informed by the drainage strategy) for the likely losses / unavoidable isolation of Ponds 6, 7, 17, 30 and 31 (not current great crested newt ponds) as a result of either the access road and / or site topography;

e. Retention and conservation of hedgerows, where feasible. Where hedgerow removal is unavoidable a greater length / area of native and species diverse hedgerow / scrub will be planted;

f. Retain and enhance the semi-improved grasslands that lie outside the SBI designations, where feasible; and

g. Retain and enhance the marshy grasslands that lie outside the SBI designations (in consultation with the drainage regime).

### Conservation During Earthworks

5.6.2 As part of the works it will be the intention to carefully plan the earthworks and cut and fill operations to maximise the conservation of seed banks at species-rich grasslands and marshy grasslands (where loss is unavoidable) for re-use within the re-graded site such as along road verges and embankments.

5.6.3 This action will be managed as part of the Construction Environment Management Plan (CEMP) to be secured by a planning condition.

## Habitat Compensation, Creation and Conversion

5.6.4 Habitat compensation and creation across the will be in accordance with the following principles:

**a. *Increase in area of Priority Habitat that is complementary to the existing habitats and provides links and stepping stones between Priority Habitat and habitats used by protected species;***

For example, creation of at least five new ponds with associated terrestrial habitat between the four identified populations of great crested newt and other amphibians to increase habitat connectivity and improve survivability and genetic diversity.

**b. *Planting of new, native and species-rich hedgerows;***

To compensate for the removal of hedgerows a greater length of native hedgerow / scrub will be provided at the site. The positions of the hedgerows will be carefully considered to avoid fragmenting large open fields that are required by /selected by ground nesting birds, for example.

**c. *Creation of new and complementary Priority Habitat;***

For example, the creation of new ponds and wetlands including significant areas of Common Reed reedbed (a Priority Habitat) in suitable areas such as associated with the surface water drainage strategy at the site. These areas will aim to comply with the targets of the Priority Biodiversity Opportunity Site (Association of Greater Manchester Authorities, August 2008). The reedbed will also provide complementary habitat for the attraction of bird species including Priority Species such as nesting reed bunting and possibly as a night roost for starling.

**d. *Maximised use of native plant species of local provenance within the habitat creation schemes;***

Native species and species of local provenance to be specified.

**e. *Conversion of other areas of poor semi-improved or improved grassland to wildflower grassland; and***

To be achieved by the application of appropriate management in accordance with conservation objectives such as over-seeding with Yellow Rattle and hay from the species-rich grassland and will be applied as part of the Landscape and Habitat Management Plan.

**f. *Secured management in accordance with nature conservation objectives in the long-term.***

Refer to **Section 8.0**.

## 5.7 Protected Species and Notable Species

5.7.1 The scheme will secure both mandatory mitigation for protected species, in accordance with wildlife legislation of current Natural England guidance and policies, and enhancement.

5.7.2 The principles of the mitigation strategies for protected species are outlined below.

### **Badger**

5.7.3 Refer to the *Confidential: Badger Survey* (ERAP (Consultant Ecologists) Ltd, March 2019).

## Bat Species

### Roosting Bats

- 5.7.4 Licensed bat surveys and assessments of the trees and buildings, as relevant, will form part the more detailed scope of surveys at a later date and appropriate and proportionate mitigation proposals will be accommodated at the scheme (including any Natural England licensing requirements).

### Foraging and Commuting Bats

- 5.7.5 The embedded mitigation and Sketch Masterplan achieve the retention and conservation of opportunities for foraging and commuting bats as part of the proposals both within the Parkland and the built environment.
- 5.7.6 Additional measures such as the appropriate use of lighting and installation of opportunities for roosting bats will be secured by the proposals.

### Great Crested Newt and Common Toad

- 5.7.7 The principles of the great crested newt / common toad and other amphibian mitigation strategy are outlined in the *Great Crested Newt Surveys 2017* report (ERAP (Consultant Ecologists) Ltd, March 2019) and include:
- a. Avoidance of the loss of any of the identified GCN breeding ponds
  - b. Avoid any built development, including roads, within 50 metres of a breeding pond, where feasible (the immediate 50 metres radius surrounding a breeding pond is known as the core habitat and provides the most important areas of terrestrial habitat for GCN);
  - c. Avoidance of severance of habitats between pond clusters (with the use of tunnels, if needed);
  - d. Avoidance of fragmentation of terrestrial habitat (where feasible);
  - e. Installation of amphibian friendly gully pots;
  - f. Enhancement of habitats and secure habitat corridors to connect the four identified metapopulations of GCN (Black Lane, Spen Moor, Elton North and Elton South); and
  - g. Identification of areas suitable for enhancement of habitats and long-term management to be secured by the development proposals.
- 5.7.8 The area of contiguous terrestrial habitat / green infrastructure through the site will be enhanced through appropriate management *and* the creation of at least five new ponds with aim of ‘rescuing’ the local population from extinction and encouraging movement of animals between ponds.

### Brown Hare

- 5.7.9 Habitat retention and creation opportunities to attempt to conserve brown hare at the site will be achieved as part of the delivery of the Parkland and the *Landscape and Habitat Management Plan*.

### Bird Species

- 5.7.10 It is recognised that the Development Framework will result in the loss of grasslands and habitats currently used by nesting birds of Priority Species.
- 5.7.11 As agreed with GMEU in early consultation exercises the loss will be off-sett / mitigated for by a combination of:

- a. Carefully planned network of footpaths and accessible areas to achieve a mosaic of publicly accessible habitats and inaccessible areas specifically for conservation of more sensitive species such as nesting lapwing (where conservation of this species is the objective);
- b. Habitat creation / conversion of retained habitats to increase the carrying capacity of retained areas (within reason for the territories typically held by the species). For example, creation of scrapes in the relevant fields for lapwings;
- c. Securing the long-term management of new and retained habitats in accordance with conservation objectives for specific species; and
- d. Creation of increased areas of new habitats for species, including Priority Species, at the Parkland site and also within the built environment, refer to **Section 7.0**.

## 5.8 General Embedded Mitigation to Be Applied Across the Site

### Protection of Retained Features During Construction

#### *Tree, Shrub and Hedgerow Protection*

- 5.8.1 During the construction phase, temporary protective demarcation fencing will be used to protect the tree, shrubs and hedgerows to be retained. The fencing must extend outside the canopy of the retained trees and must remain in position until all areas have been developed to ensure protection is provided throughout the construction phase.
- 5.8.2 The fencing will be in accordance with BS5837:2012 Trees in Relation to Design, Demolition and Construction: Recommendations (BSI, 2012).

#### *Protection of the SBIs*

- 5.8.3 The SBIs will be bordered with temporary protective fencing, as needed, during the construction phase.

#### *Construction Environmental Management Plan (CEMP) for Biodiversity*

- 5.8.4 All development parcels will be required to prepare and implement a Construction Environmental Management Plan (CEMP). The CEMP will include *inter alia* the following sections:
  - a. Tree protection (as detailed above);
  - b. SBI protection (as detailed above);
  - c. Measures for the protection of nesting birds to achieve compliance with the *Wildlife and Countryside Act 1981* (as amended) and best practice;
  - d. Implementation of relevant pollution prevention guidelines (PPG) such as:
    - PPG1: Basic good environmental practices (Environment Agency, 2013);
    - PPG5: Works in, near or over watercourses (Environment Agency, 2014);
    - PPG6: Construction and demolition sites (Environment Agency, 2012); and
    - PPG7: Operating refuelling sites (Environment Agency, 2011).
  - e. Implementation of relevant measures for the eradication / control / management of the identified invasive plant species, as relevant;

- f. Protection of soil and seed banks and translocation of seed banks, as appropriate;
- g. Details of any Natural England licensing requirements; and
- h. Specification of external lighting and the need to minimise lighting overspill, particularly at the retained habitats during the construction phase.

## 5.9 Eradication and Control of Invasive Plant Species

- 5.9.1 The baseline surveys have identified the presence of Japanese Knotweed, Giant Hogweed, Montbretia and Indian Balsam at the site.
- 5.9.2 The implementation of the Parkland and the associated management and maintenance plan, see below, will secure an opportunity to control the non-native invasive plant species listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended).

## 6.0 OVERVIEW OF LIKELY ECOLOGICAL IMPACTS

### 6.1 Introduction

- 6.1.1 Based on the aims for the site allocation (refer to **Section 4.2**), and the embedded mitigation accommodated by the Development Framework (refer to **Section 5.0**), the potential sources of impacts on the IER are identified in **Tables 6.1** and **6.2**, below.
- 6.1.2 It is not the intention of this Strategy to identify the scale or magnitude of an impact on an IER at this stage. However, where the impacts can be quantified this information has been provided to facilitate the specification of any additional mitigation and compensation measures required and enhancement strategy that is pursuant to current planning policy, relevant wildlife legislation and best practice guidance and in doing so is proportionate and appropriate to the impacts.

**Table 6.1: Likely Sources of Ecological Impacts During Site Preparation and Construction Based on Sketch Masterplan**

Identified Impact	Quantification / Notes
Loss of non-statutory designated site (SBI) resource	<p>In addition to the embedded mitigation, 9.6 hectares of land within an SBI will be directly impacted by Development Framework (of which 6.2 hectares is within Elton Goyt SBI), refer to <b>Figure 2</b>.</p> <p>Additional mitigation measures and habitat compensation / creation and long-term management are essential to mitigate the loss to an acceptable effect (and to seek enhancement).</p>

Identified Impact	Quantification / Notes
Habitat loss: Vegetation / habitats	<p>Habitat loss is an identified impact of the proposals. The magnitude of impact will be dependent on the value of the habitats to be lost and the extent of loss.</p> <p>For example, based on the current Sketch Masterplan, despite the avoidance and conservation of the Priority Habitat the loss of 6.15 hectares of semi-improved grassland and 4.35 hectares of marshy grassland is likely.</p> <p>Addressed to some extent by embedded mitigation as part of good design (i.e. avoidance of Priority Habitat) and by compensation by habitat creation.</p> <p>Likely loss / isolation of Ponds 6, 7, 17, 30 and 31 (five non-great crested newt ponds) to facilitate proposals to be compensated for by excavation of new replacement ponds in appropriate and sustainable locations.</p>
Habitat Loss: Protected Species and Priority Species	<p>Badger: Mitigation will be achieved by the embedded mitigation and Sketch Masterplan.</p> <p>Great crested newt and common toad: Mitigation will be achieved by the embedded mitigation and Sketch Masterplan.</p> <p>Brown hare: Mitigation will be achieved by the embedded mitigation and Sketch Masterplan.</p> <p>Bird species: Magnitude of impacts will be dependent on the species and habitat requirements / sensitivities. Proposals will aim to secure opportunities for all identified Priority Species and protected species. This will secure benefits and positive effects for some species (for example, willow tit, house sparrow and starling).</p> <p>Losses (in terms of area of suitable habitat and possible disturbance impacts) may be a residual impact for species such as lapwing. The overall approach to the conservation of habitats and the provision of opportunities for Priority Species aims to mitigate for any species specific residual effects to an acceptable level. It is likely that a mitigation strategy will need to involve monitoring to ensure mechanisms for remedial actions, if necessary, are secured.</p> <p>The preparation of Mitigation Strategies (including identification of licensed works, as needed) for the relevant protected and Priority Species will be essential.</p>
Fragmentation and isolation of habitats	<p>The loss of habitat connectivity and adverse effects on integrity is an identified impact.</p> <p>Loss of green infrastructure function and too much reliance on the creation of new green infrastructure will have a greater magnitude of impact than retention of existing green infrastructure.</p> <p>Addressed to some extent by embedded mitigation as part of good design.</p>

Identified Impact	Quantification / Notes
Degradation of habitat owing to effects of shading, pollution and a change in the hydrological regime (desiccation and flooding)	<p>In relation to shading, this is of particular relevance at the canal (shading of the aquatic and emergent flora by construction of the access road).</p> <p>Consideration of a change in hydrological regime is of particular relevance at Elton Goyt SBI and at the ponds, including GCN ponds within the site and the local area.</p> <p>This impact will need to consider the inter-relationship between ecology and the drainage strategy. A full understanding of the drainage regime and the ecological / hydrological requirements of the habitats to be retained and created will be necessary and can be achieved.</p>
Pollution during construction	<p>Magnitude of impact will be dependent on the sensitivity / value of the receptor.</p> <p>Avoided by the preparation and implementation of an appropriate Construction Environment Management Plan (CEMP).</p>
Noise and disturbance during construction	<p>Displacement of fauna including Priority Species and protected species (particularly bird and bat species) is a significant consideration.</p> <p>Avoided to some extent by a phased construction, a sensitively designed layout and by the preparation and implementation of an appropriate Construction Environment Management Plan (CEMP).</p>

**Table 6.2: Likely Sources of Ecological Impacts During Operation Based on Sketch Masterplan**

Identified Impact	Quantification / Notes
Increased recreational pressures including post-development interference impacts	<p>Increase in local population will increase use of footpaths and access to the wider site including retained and sensitivity habitats.</p> <p>Addressed to some extent by embedded mitigation as part of good design and implementation of a Landscape and Habitat Management Plan.</p>
Disturbance associated with lighting and noise	<p>Excessive lighting will disturb and displace fauna such as badger, bat species, nocturnal birds and other crepuscular / nocturnal fauna.</p> <p>Addressed by embedded mitigation as part of good design.</p>
Pollution during operation	<p>Increase risk of incidents as a result of harmful activities such as vehicle oil changes by residents and fly tipping (for example).</p> <p>Addressed by embedded mitigation as part of good design.</p> <p>Avoided by the education of users of the site and residents in the local area via leaflets, signage and a website.</p>
Inappropriate management of retained habitats	<p>Controlled / minimised by the preparation and implementation of a Landscape and Habitat Management Plan that has been prepared in accordance with conservation objectives.</p> <p>The consistent implementation of the Plan can be secured by the employment of a permanent warden / maintenance team.</p>
Increased risk of hazards to fauna associated with the site and surrounds as a result of roads (gully pots)	<p>Developed land / built environment in proximity to the retained and created habitats will increase the risk.</p>

Identified Impact	Quantification / Notes
	Addressed to some extent by embedded mitigation as part of good design.
Increased risk of predation by cats	This is identified as an impact. Addressed by guidance, awareness and distribution of information to residents.

## 7.0 ADDITIONAL MITIGATION: COMPENSATION AND ENHANCEMENT

### 7.1 Introduction

- 7.1.1 In addition to the embedded mitigation described in **Section 5.0** and accommodated in the Sketch Masterplan the overview of the likely ecological impacts has identified the need for additional mitigation. The relevant measures are described below and summarised on **Figures 3** and **4**, appended.
- 7.1.2 In addition, and in accordance with Chapter 15, paragraph 175 point 'd' of the NPPF, local planning authorities should encourage opportunities to incorporate biodiversity improvements in and around developments, especially where this can secure measurable net gains for biodiversity. The relevant measures are described below and summarised on **Figures 3** and **4**, appended.

### 7.2 Compensation and Enhancement: Within the Parkland

#### Habitats

- 7.2.1 Existing and new habitats at the site will be enhanced by securing the application of appropriate management (reduction in grazing intensity for example) in accordance with conservation objectives.
- 7.2.2 In addition to the creation / conversion of grasslands to create marshy grassland (2.59 hectares to the east of Elton Goyt SBI) and species-rich grassland (5.45 hectares) to compensate for the losses, an additional 24.4 hectares area of grassland / habitats of low ecological value will be converted / managed appropriately to create habitat of greater ecological value with the aim of creating Priority Habitats.
- 7.2.3 The five new ponds (minimum) designed for great crested newt and other amphibians with associated hibernacula and terrestrial habitats are enhancement.

#### Provisions for Protected Species and Other Fauna

- 7.2.4 In addition to the embedded mitigation measures in the Parkland, as described above, the following additional measures to enhance the nature conservation value of the area will be explored:
- Installation of a wader / tern / waterfowl / swan nesting rafts on Elton Reservoir or Within Reservoir (or both), refer to **Appendix 12.1**;
  - Construction of a stand-alone bat house in a suitable position, refer to **Appendix 12.2**;
  - Construction of a stand-alone provision for roosting / nesting barn owl in a suitable position, refer to **Appendix 12.3**;
  - Construction of a sand martin nesting tower, refer to **Appendix 12.4**; and
  - Installation of opportunities for roosting bats at the existing culverts and bridges, refer to the *Bat*

*Activity Surveys* report (ERAP (Consultant Ecologists) Ltd, March 2019).

### **Sailing Club Building**

- 7.2.5 Subject to the confirmation of the proposals at the sailing club building opportunities to maximise the biodiversity value of the building will be provided such as installation of opportunities for nesting birds such as swift and house sparrow and roosting bats.

### **Ancillary Buildings**

- 7.2.6 The ancillary buildings necessary to support the Parkland, for example, a ranger's station, toilets, visitor's centre, machinery store(s) and livestock shelters will be designed and built to maximise their inherent value to wildlife. The designs will make reference to current guidelines<sup>8</sup> and will comprise:
- a. Integrated opportunities for nesting birds including swift and Priority Species such as house sparrow and starling;
  - b. Provision of anchors / nesting cups at timber canopies for nesting swallow and house martin;
  - c. Use of overlapping horizontal timber cladding, as appropriate, to provide opportunities for roosting bats and invertebrates;
  - d. Use of native climbing plants on the elevations of the buildings to provide opportunities for nectaring insects and nesting birds; and
  - e. Exploration of use of green and / or brown roofs to increase the potential biodiversity value of the buildings.

### **Long-term Management**

- 7.2.7 The long-term management and maintenance of the additional measures described above will be added to the *Landscape and Habitat Management Plan*, as needed.

## **7.3 Within the Residential Areas**

- 7.3.1 It is the intention that the principles of maximising habitat connectivity and opportunities for wildlife are integrated into the development parcels.
- 7.3.2 It is anticipated that the development parcels will sign up to and implement the principles of an 'Ecological Design Strategy' (or similar) to comprise:
- a. Lifted sections of garden and plot boundary fences 0.1 to 0.15 metres from ground level will be specified to encourage the passage of wildlife such as hedgehog and amphibians through the site;
  - b. Installation of provisions for nesting birds at the new properties refer to **Appendix 12.5**;
  - c. Installation of provisions for roosting bats at the new properties, refer to **Appendix 12.6**;
  - d. Maximised use of native species and species known to be of value for the attraction of biodiversity in the development area landscape schemes;
  - e. Maximised use of trees (native species) to create stepping stones for the movement of wildlife;

<sup>8</sup> Such as *Biodiversity for Low and Zero Carbon Buildings: A Technical Guide for New Build* (Williams, C. , 2010)

- f. Creation of green corridors through the site (potentially as part of the sustainable urban drainage);
- g. Arrangement of properties to 'front on' to areas of habitat and SBIs to maximise the buffer and decrease the risk of rear garden extensions and fly-tipping into protected areas and sensitive habitats;
- h. Arrangement of contiguous rear gardens that back on to each other to create pockets of greenspace through the site; and
- i. Appropriate and sensitive use of lighting to minimise adverse effects.

## 8.0 MANAGEMENT AND MAINTENANCE

### 8.1 Introduction

- 8.1.1 An essential part of securing the delivery of the Elton Reservoir site over the long-term is the preparation and implementation of a *Landscape and Habitat Management Plan*.
- 8.1.2 The Plan will cover the implementation of management and enhancement of existing habitats and establishment and aftercare of the new landscaping planting and habitat creation, and will cover the whole Elton Parkland.
- 8.1.3 The Plan will be costed and the source of funding will be identified to demonstrate viability. As outlined earlier the Plan will include:
  - a. Description and evaluation of the features to be managed;
  - b. Ecological trends and constraints on site that may influence management;
  - c. Aims and objectives of management;
  - d. Appropriate management options for achieving aims and objectives;
  - e. Prescriptions for management actions;
  - f. Preparation of a work schedule (including a project register, an annual work plan and the means by which the plan will be rolled forward annually);
  - g. Personnel responsible for implementation of the plan; and
  - h. Monitoring and remedial / contingency measures triggered by monitoring.
- 8.1.4 Where feasible, the client will work with conservation bodies such as the local Wildlife Trust to ensure management is applied in accordance with a strategic approach relevant to the local area as part of the GMSF and other local initiatives such as the Great Manchester Wetland Improvement Area.
- 8.1.5 General conservation objectives and also conservation objectives for specific species such as willow tit and great crested newt will be referred to.
- 8.1.6 The Parkland will be divided into a series of management / habitat areas. Appropriate management prescriptions in accordance with conservation objectives will be described for each of the areas with a schedule / programme of works.
- 8.1.7 The Plan will include ecological monitoring of the retained and new habitats, as required. This will ensure that the Plan provides a mechanism for remedial actions to be implemented if required (such as control of undesirable weeds and repair of fencing, signs etc.).

8.1.8 Preliminary recommendations for inclusion in the *Landscape and Habitat Management Plan* are described below:

#### **Existing and Retained Trees and Scrub**

8.1.9 Management prescriptions may comprise:

- a. Selective felling on a rotational basis of self-seeded trees and shrubs to promote light penetration to the herb layer and facilitate the longevity of desirable species;
- b. Creation of dead wood habitat piles as material become available;
- c. Conservation of standing and fallen dead wood, where it is safe to do so, as habitat for colonisation by bats, willow tit, fungi and invertebrates; and
- d. Monitoring, clearing out and repairs / replacement of bird and bat boxes.

#### **Retained and New Pond Habitats**

8.1.10 Management prescriptions may comprise:

- a. Selective tree felling around the water margins to decrease shading and improve light penetration;
- b. Selective removal of aquatic and emergent vegetation, particularly Bulrush, to ensure cover does not exceed 75% of the pond area; and
- c. Creation of new dead wood habitat piles on the pond margins for use by sheltering amphibians as materials become available.

#### **Wildflower Grasslands / Lowland Meadows**

8.1.11 Management prescriptions may comprise:

- a. Application of an appropriate cutting / grazing regime to maximise flowering periods, including the continued use of heritage and conservation cattle;
- b. Control of invasive species such as Indian Balsam and undesirable species such as thistles and docks, if required; and
- c. Over-seeding with Yellow Rattle, as appropriate.

#### **Existing Hedgerows and New Native Hedgerow Planting**

8.1.12 Management prescriptions may comprise:

- a. Aftercare of all planting including the removal and replacement of dead and diseased plants;
- b. Creation of new dead wood habitat piles as material becomes available;
- c. Selective thinning after 5, 10 and 15 years to encourage the growth of native hedgerow species; and
- d. Continued control of invasive species.

#### **SuDS and Wetland Habitats**

8.1.13 Management prescriptions may comprise:

- a. Clearance of self-seeded willow scrub from swales and marshy grassland;

- b. Selective removal of Bulrush (*Typha latifolia*) at new ponds and swales;
- c. Control of invasive plant species and undesirable fauna; and
- d. Maintenance of the sluices / inlets / outlets to ensure a functioning system.

**Estate Fabric (e.g. ancillary buildings, fencing, signposts, lifebelts near ponds etc.)**

- 8.1.14 Monitoring and maintenance will be carried out at the appropriate intervals.
- 8.1.15 Management and maintenance of green and brown roofs at the new ancillary buildings, as appropriate.

**Footpaths**

- 8.1.16 Management of seasonal closure of footpaths to protect sensitive habitats and habitats used by nesting birds.

**Resident Liaison**

- 8.1.17 The Plan may also provide a mechanism for resident liaison via liaison meetings / social media / website and an opportunity to distribute wildlife awareness information to minimise the disturbance to wildlife at the site such as keeping cats in at night and preventing dogs from entering the ponds / wetlands and sensitive habitats, particularly during the bird and amphibian breeding season.

## **9.0 BIODIVERSITY NET GAIN**

### **9.1 Biodiversity Net Gain Policy for Greater Manchester**

- 9.1.1 At the time of preparation of this report the *Biodiversity Net Gain Policy Guidance for Greater Manchester* and the *Greater Manchester Net Gain Road Map* referred to in the Natural Environment topic paper are not available. The main aim of this work is to determine an agreed method and metric for assessing biodiversity net gain in Greater Manchester.
- 9.1.2 The application of a biodiversity calculator / metric has not been carried out at this stage as the Masterplan has not been finalised. The text and information at **Figures 1, 2 and 3** aim to demonstrate at this stage how a measurable net gain for biodiversity will be achieved and delivered at the site to comply with relevant policies.

## **10.0 CONCLUDING COMMENTS**

- 10.1 It is concluded, in the presence and implementation of the measures outlined in this *Outlined Ecological Mitigation and Enhancement Strategy* including all habitat protection, creation, enhancement and management, that a development can be delivered at the site to comply with the requirements of the Greater Manchester Allocation 7 of the GMSF.
- 10.2 It is feasible to achieve the protection of Sites of Biological Importance and their features of special interest, Priority Habitats, protected species and Priority Species as part of the embedded mitigation as detailed on the Sketch Masterplan. Where loss of habitats is unavoidable, appropriate and proportionate compensation / creation and conversion measures are feasible to mitigate any impacts to an acceptable level. It is accepted that further surveys and assessment of the proposals are necessary to inform the preparation of the detailed measures.
- 10.3 Where residual effects are anticipated (for example the decrease in area of opportunities for breeding lapwing) the measures to be applied to provide mitigation and compensation to retain lapwing at the

site are described (habitat creation at the grasslands and at Elton Reservoir) along with other measures to provide enhancement for Priority Species / species of a similar conservation status to off-set any reduction in carrying capacity for the site for use by lapwing.

- 10.4 The scheme will achieve a demonstrable enhancement in multi-functional Green Infrastructure and secure and deliver a contribution to local ecosystem services.
- 10.5 Net gains for biodiversity will be achieved and secured by the proposals in a sustainable way. It is considered that the scheme will achieve and secure both quantitative and qualitative benefits for biodiversity that would not be achieved in the absence of the proposals and continuation of the baseline agricultural management / absence of management.

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## 12.0 APPENDIX 1: EXAMPLES OF HABITAT CREATION

### 12.1 Wader / Tern Nesting Rafts

[http://ww2.rspb.org.uk/Images/Designofrafts\\_tcm9-212589.pdf](http://ww2.rspb.org.uk/Images/Designofrafts_tcm9-212589.pdf)

<https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/advice/conservation-land-management-advice/nesting-rafts/construction-advice/>

### 12.2 Bat House

To be in accordance with section 9.5.1 page 64 of the Bat Mitigation Guidelines (Mitchell-Jones, 2004) <http://www.warksbats.co.uk/pdf/Batmitigationguide.pdf>

or

The bat tower designed by ERAP (Consultant Ecologists) Ltd at page 14 of the following publication: [http://www.bats.org.uk/news.php/375/mitigation\\_case\\_studies\\_forum\\_a\\_proceedings\\_now\\_available](http://www.bats.org.uk/news.php/375/mitigation_case_studies_forum_a_proceedings_now_available)

### 12.3 Barn Owl Tower

<https://www.barnowltrust.org.uk/barn-owl-nestbox/wildlife-tower/>

### 12.4 Provisions for Nesting Sand Martin

[http://downloads.gigl.org.uk/website/artificial\\_bank\\_creation.pdf](http://downloads.gigl.org.uk/website/artificial_bank_creation.pdf)

### 12.5 Provisions for Nesting Birds in the Built Environment

Opportunities for nesting birds will be enhanced by installation of additional nesting opportunities such as specialist nest boxes mounted on trees and provisions within the existing and new buildings.

Suggestions are detailed below. An ecologist will advise on the number and siting of the boxes.



**Insert 1:** (left to right) Schwegler 1B Nest Box (26mm hole) suitable for blue tit, coal tit and possibly wren, Schwegler 1N suitable for wren, pied wagtail and spotted flycatcher, Schwegler 2M suitable for nuthatch and house / tree sparrow) and Schwegler 2H open-fronted bird box suitable for a variety of woodland birds.



**Insert 2:** (left to right) IBStock swift box and 1SP Schwegler house sparrow terrace

### 12.6 Provisions for Roosting Bats in the Built Environment

To contribute to achieving a net gain for biodiversity as part of the development it is recommended that the development incorporates bat access panels at the new buildings.

The bat access panels should be sited at least four metres above ground level, ideally facing or close to areas of landscape planting or existing linear features. The access panels should not be positioned over windows or doorways where bat droppings may become a nuisance. Once the development layout has been finalised, an ecologist will advise on appropriate number and positions for the bat access panels. Suitable bat access panels are available from NHBS Ecology ([www.nhbs.com](http://www.nhbs.com)) and are presented below:



**Insert 3:** Examples of commercially available bat access panels.

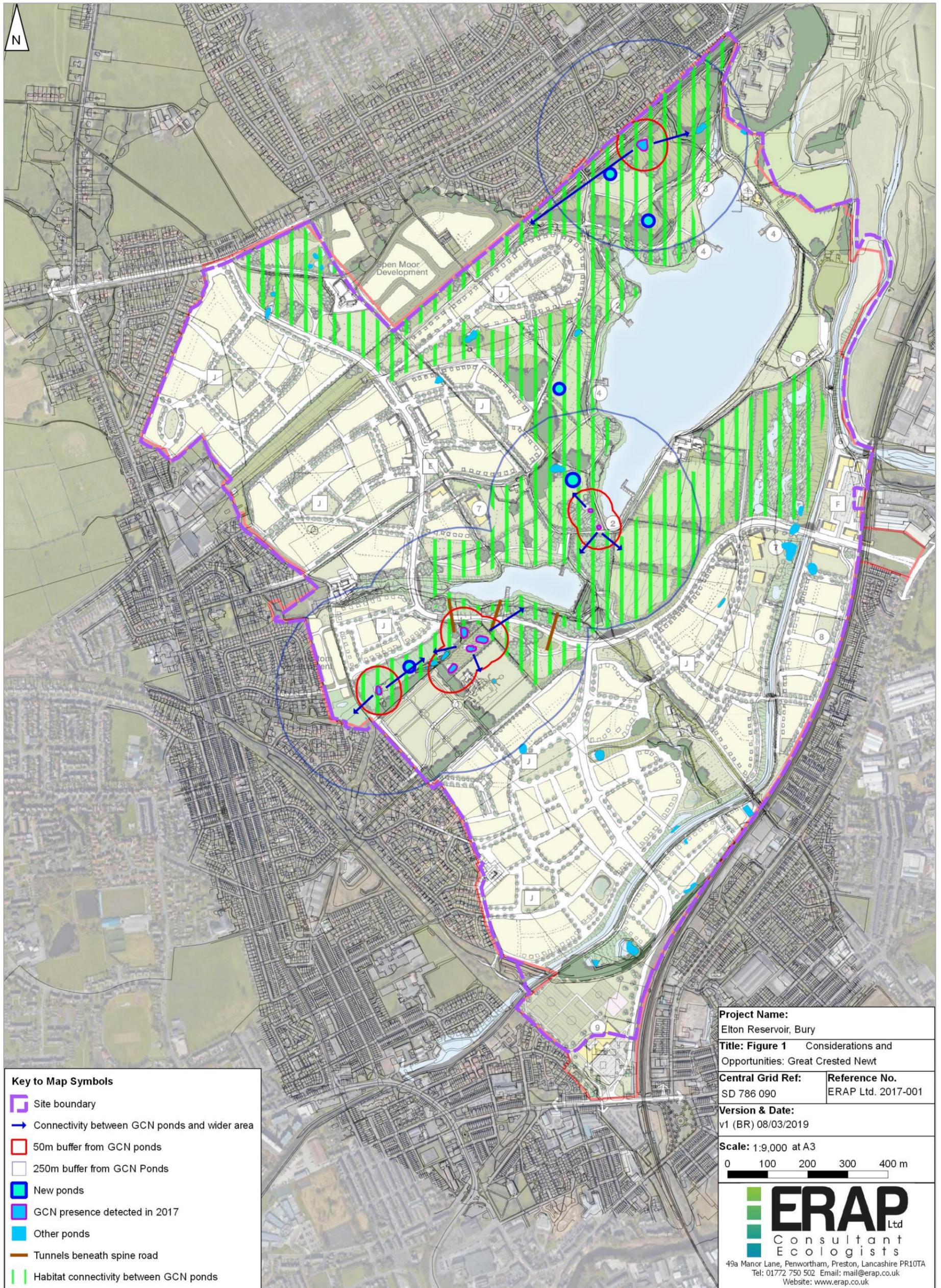
In addition, it is recommended that bat boxes are installed on suitable retained trees within the site. An ecologist will advise on the number and the siting of the bat boxes. Suitable bat boxes are the Schwegler 1FF and Schwegler 1FD, see below.



**Insert 4:** Schwegler 1FF and Schwegler 1FD bat boxes

## 13.0 APPENDIX 2: FIGURES

**Figure 1: Considerations and Opportunities: Great Crested Newt**

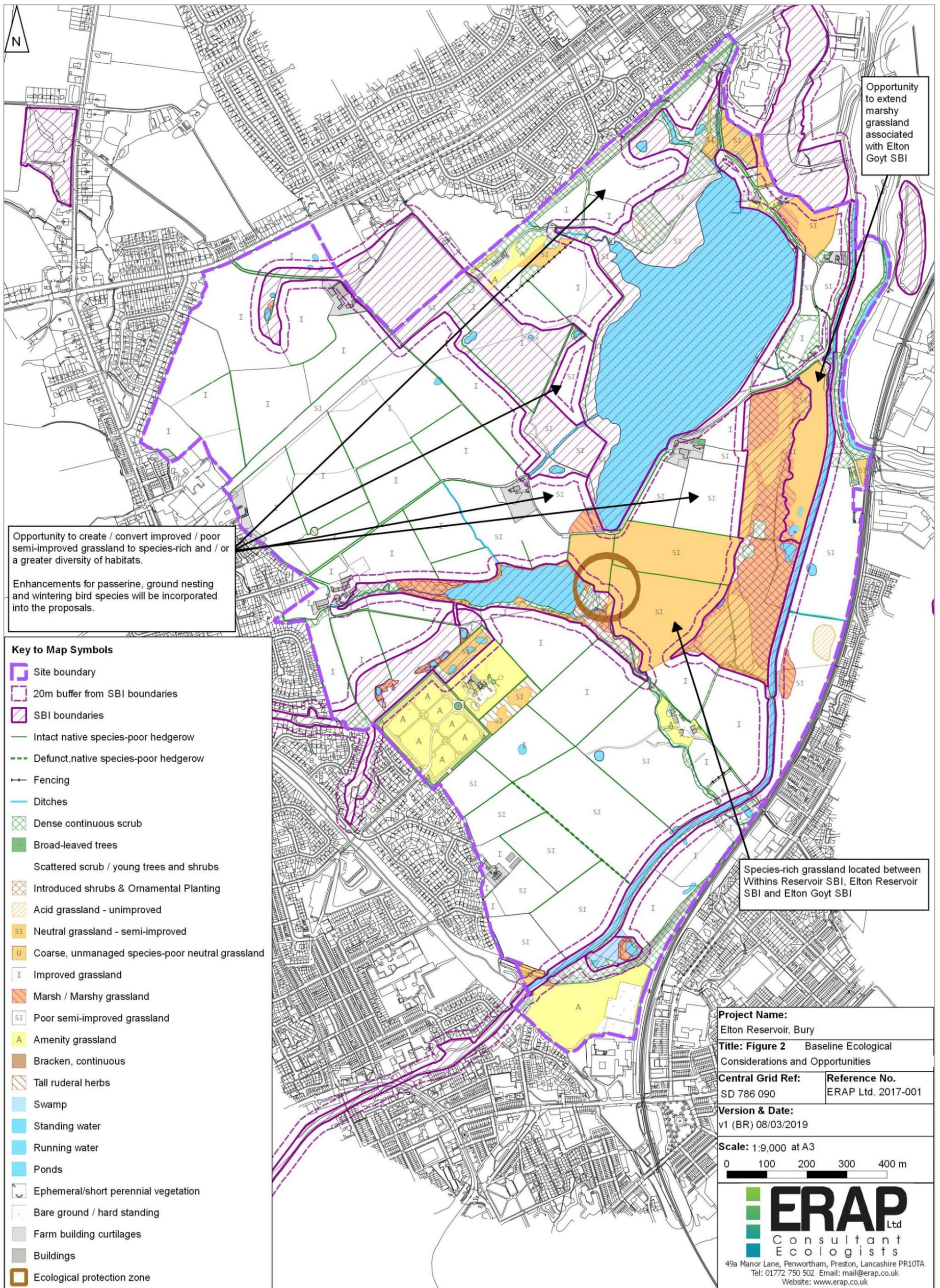


**Key to Map Symbols**

- ▭ Site boundary
- Connectivity between GCN ponds and wider area
- 50m buffer from GCN ponds
- 250m buffer from GCN Ponds
- New ponds
- GCN presence detected in 2017
- Other ponds
- Tunnels beneath spine road
- Habitat connectivity between GCN ponds

<b>Project Name:</b> Elton Reservoir, Bury	
<b>Title:</b> Figure 1 Considerations and Opportunities: Great Crested Newt	
<b>Central Grid Ref:</b> SD 786 090	<b>Reference No.</b> ERAP Ltd. 2017-001
<b>Version &amp; Date:</b> v1 (BR) 08/03/2019	
<b>Scale:</b> 1:9,000 at A3	
0 100 200 300 400 m	
49a Manor Lane, Penwortham, Preston, Lancashire PR10TA Tel: 01772 750 502 Email: mail@erap.co.uk Website: www.erap.co.uk	

**Figure 2: Baseline Ecological Constraints and Opportunities**



**Figure 3: Sketch Map with Ecological Considerations**

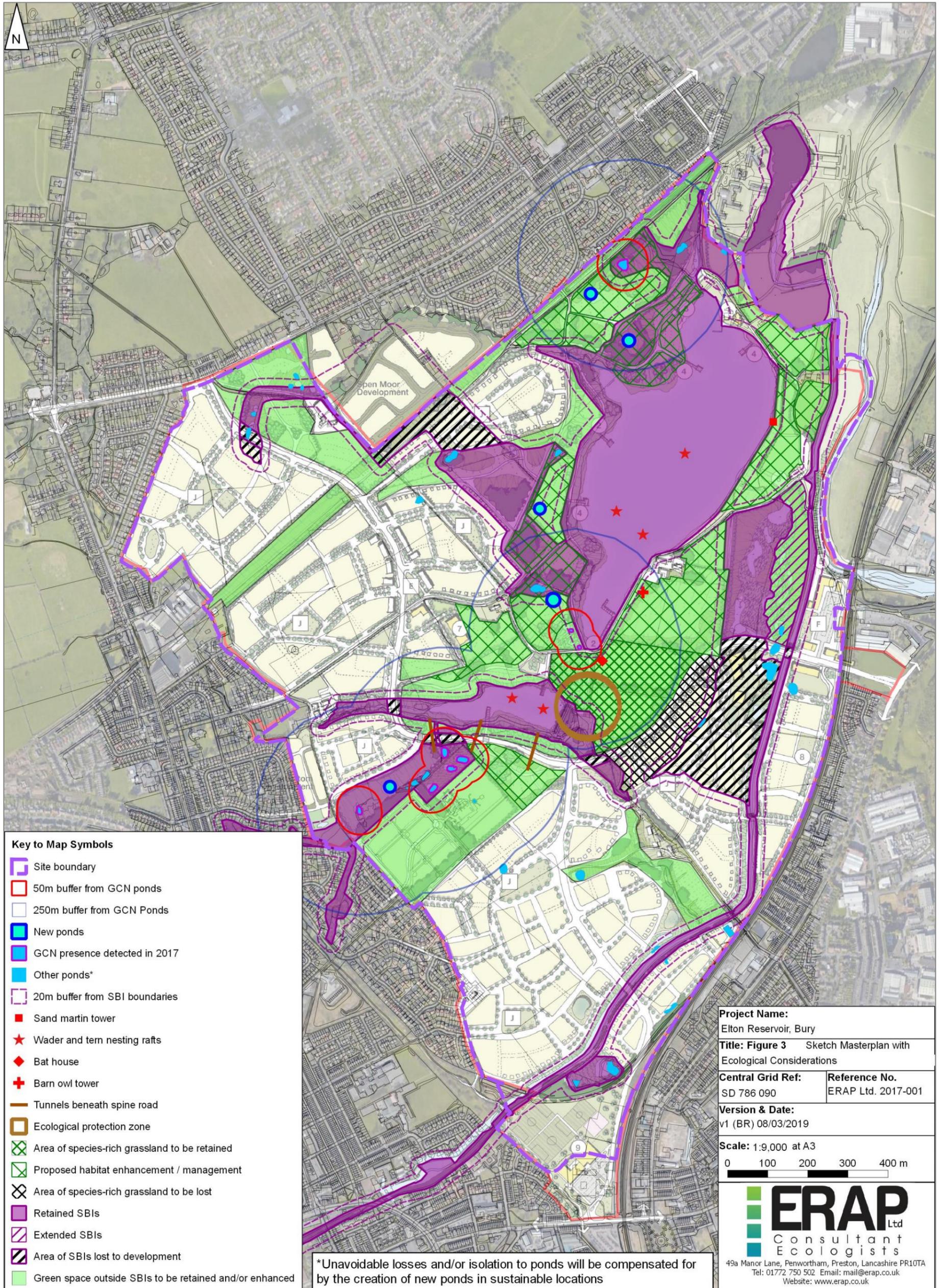


Figure 4: Ecological Mitigation and Enhancement Strategy: Overarching Plan

