



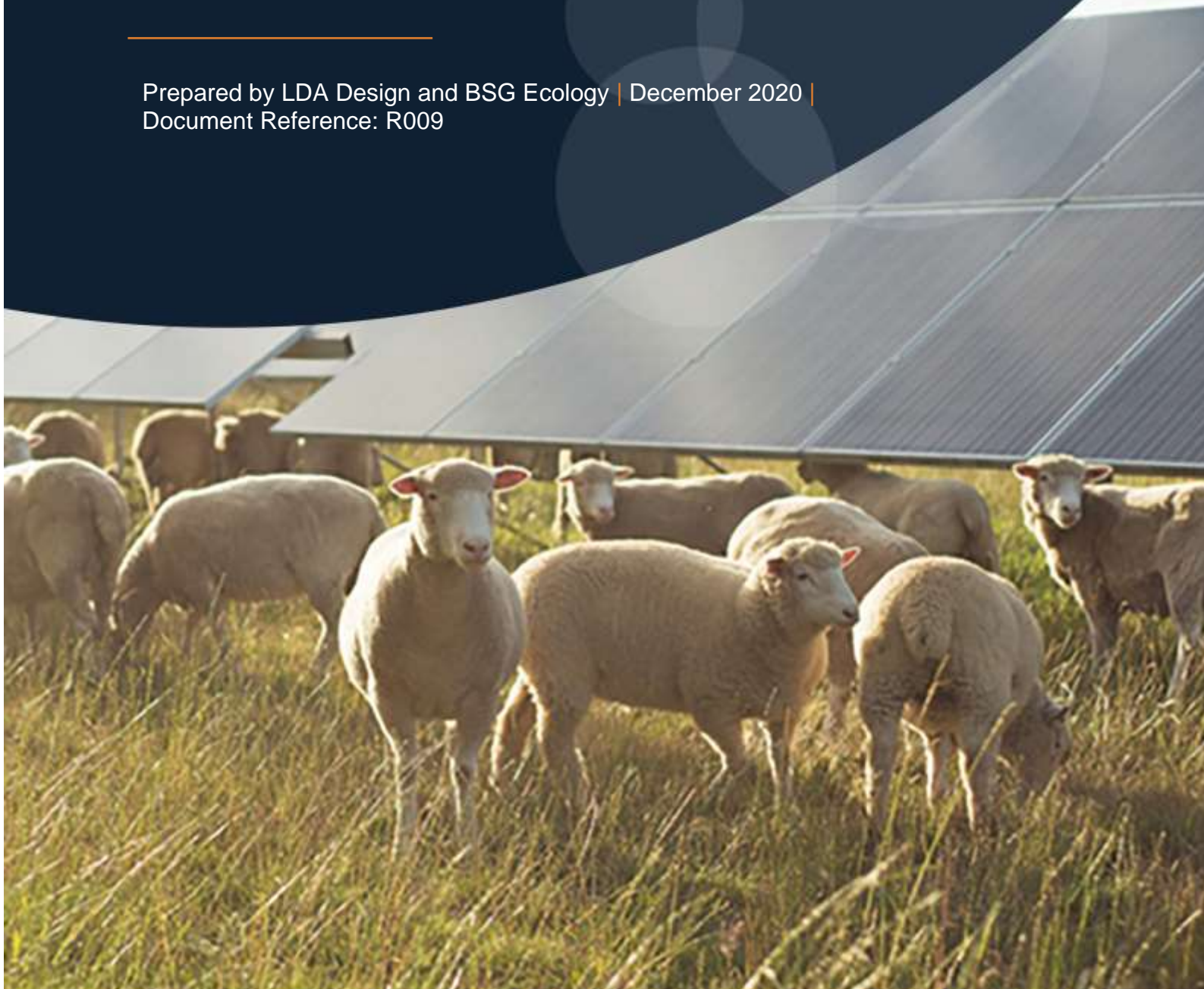
# Hilfield Solar Farm and Battery Storage

## Landscape and Ecological Management Plan

on behalf of Elstree Green Limited

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Prepared by LDA Design and BSG Ecology | December 2020 |  
Document Reference: R009



# Hilfield Solar Farm and Battery Storage

Landscape and Ecological Management Plan (LEMP) (Document Ref. 009)  
December 2020

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Comment Final

This document has been prepared and checked in accordance with ISO 9001:2015.

## 1.0 Introduction

This Landscape and Ecological Management Plan (LEMP) has been prepared by LDA Design and BSG Ecology to accompany a planning application by Elstree Green Ltd for the construction, operation, management and decommissioning of a grid connected solar farm with battery storage and associated infrastructure (hereafter referred to as the 'Proposed Development'), on Land to the North East and West of Elstree Aerodrome (the 'Site'). The Site is approximately 130ha in size.

The Site is located within the administrative boundary of Hertsmere Borough Council (HBC) lying adjacent to the Elstree Aerodrome. The Site's extent is shown on **Figure 1: Landscape and Ecology Enhancement Plan**, which accompanies this report.

The Proposed Development would supply 49.9MW of clean, renewable electricity to the National Grid, providing the equivalent annual electrical needs of approximately 15,600 family homes. The anticipated CO<sub>2</sub> displacement is around 25,400 tonnes per annum, which represents an emission saving equivalent of a reduction in c.8,100 cars on the road every year. It is also estimated the solar farm will increase the total amount of renewable electricity generated in Hertsmere from 5.4% to 20%, bringing Hertsmere closer to the national average of 33% electricity generated from renewable sources. The battery storage facility would be utilised to reinforce the power generation of the solar farm. Storing energy at times of low demand and releasing to the grid in periods of higher demand or when solar irradiance is lower, as well as providing balancing services to maintain National Grid stability. The connection to the grid will be made at the National Grid Substation at Elstree, located adjacent to the northwest of the Site on Hilfield Lane. The cable grid connection route would be run below ground from the northern boundary of the Site on Hilfield Lane directly into the National Grid Substation avoiding any permanent changes to land.

The LEMP has been produced with reference to the Biodiversity – Code of Practice for Planning and Development British Standard: BS 42020:2013 (BSI Standards Limited, 2013) and in particular, Section 11.1, which provides details on the content of the management plans.

The measures proposed will ensure that there is an overall net gain in the biodiversity value of the Site in accordance with National Planning Policy Framework (NPPF, Paragraph 170, 2019). The NPPF advises that:

*“Planning policies and decisions should contribute to and enhance the local environment by (d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...”*

As part of the application process, engagement with Hertsmere Borough Council Biodiversity Officer, Aldenham Parish Council, Letchmore Heath Trust, Elstree Aerodrome and neighbouring schools and residents has been undertaken, the findings of which have informed the design of the Proposed Development and this LEMP.

In particular, correspondence by the landowner with Hertsmere and Middlesex Wildlife Trust (*per. comms.* 16.11.20) has informed the LEMP.

## 1.1. LEMP's objectives:

The objective of the LEMP is to set out how the Proposed Development will positively manage landscape, habitats, species, and functionality of the Site and deliver the following:

- Significantly enhance the overall biodiversity value of the Site, including for protected and notable species and habits and locally designated sites;
- Protect and enhance the existing characteristics and features of value of the Site including the field structure, mature trees, hedgerows and ditches;
- Create a strong structural planting framework and protect, restore and maintain the existing vegetation network, which would also provide enhanced screening of close- and middle-distance views of the Proposed Development.
- Create greater opportunities for protected species' and species of conservation concern;
- Significantly enhance the Green Infrastructure (GI) connectivity within the Site and wider landscape, contributing positively to aspirations set out with the Hertsmere Green Infrastructure Plan (2011);
- Facilitate opportunities for engagement with the natural environment and renewable energy;
- Protect and enhance recreational amenity from Public Rights of Ways (PROW);
- Secure the long term future management of the Site for the duration of the development.

**Sections 3 to 6** of this report set out in greater detail how the Proposed Development will achieve these key objectives.

The LEMP's objectives support the protection and enhancement of Ancient Semi-Natural Woodland (ANSW), broadleaf woodland and hedgerows, UK priority habitats and the creation of parkland, orchard, wildflower grassland, scrub mosaics and small woodland copses. The proposed habitat creation will also benefit great crested newts that are breeding onsite, reptiles, and birds providing nesting and foraging opportunities as well as other priority species such as bats.

## 1.2. Structure of the LEMP

The LEMP is structured as follows:

- **Section 1:** Provides an introduction and sets out the structure of the LEMP; describes the Site; sets out its ecological value, records the habitats and species present; and summarises the landscape character of the Site and its surrounds.
- **Section 2:** Details the development proposals.
- **Section 3:** Sets out management objectives.
- **Section 4:** Details the anticipated management works.
- **Section 5:** Provides a management programme for the Site and summary of funding arrangements.

- **Section 6:** Sets out the roles, responsibilities, and monitoring programme.

### 1.3. Associated Documents

This LEMP has been informed with reference to the following drawings and reports:

- Proposed Site Plan (Document Ref. HF2.0).
- Ecological Appraisal report (including Biodiversity Net Gain Statement) (Document Ref. R012) undertaken by BSG Ecology.
- Landscape and Visual Impact Assessment (Document Ref. R018) undertaken by LDA Design.
- Flood Risk and Drainage Strategy (Document Ref. R010) undertaken by RMA.
- Hertsmere Green Infrastructure Plan (2011) Land Use Consultants.
- Green Arc Strategic Green Infrastructure Plan (with Hertfordshire) (2011) Land Use Consultants.

### 1.4. Summary of Baseline Data

#### 1.4.1. The Site

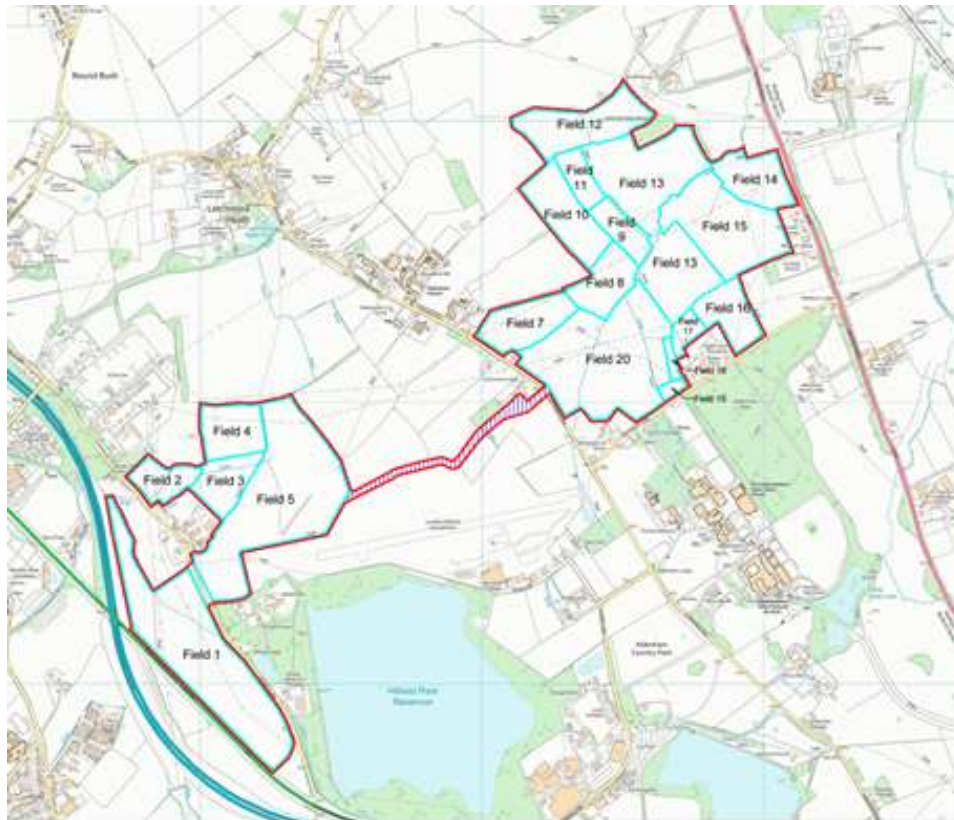
A Phase 1 Habitat survey of the Site was undertaken by BSG Ecology in March 2020 and is contained within the Ecological Appraisal Report (Document Ref. R012). This analysis provides a description of the habitats on Site and records the presence or potential presence of protected species and species of conservation concern. Further protected species' surveys, including for badgers, great crested newts and a breeding bird characterisation survey, were also carried out in over the period March to September 2020.

The Site is split into eastern and western parcels either side of Aldenham Road. Each parcel comprises a mixture of agricultural fields, ranging from medium to large-scale, in a well wooded landscape, with woodland blocks and tree belts breaking up the Site (see **Diagram 1: Field Arrangement Plan**). The majority of the fields are of arable farmland, but areas of pasture, treebelts, field boundary hedgerows and individual trees are also present. A large area of the Site (eastern part of Field 20) is a former landfill site, scrubby in nature and used for rough grazing. Parts of the Site are currently managed under a Countryside Stewardship Scheme (CSS) agreement. The obligations of the CSS are compatible with the Proposed Development and the management prescriptions set out within this LEMP.

Little Kendals Wood adjacent to the north of the eastern parcel is a small copse of broadleaf woodland and Aldenham Park to the south of the eastern parcel (also designated as Registered Park and Garden) is designated ancient woodland. To the south of western parcel, Hilfield Reservoir and its surrounding woodland is designated as a Local Nature Reserve (LNR).

The boundaries of the Site are generally well-vegetated, comprising a variety of native woody species. The Site's perimeter is delineated by a combination of established field hedgerows, roadside and woodland vegetation; A41, Hilfield Lane, Aldenham Road and Butterfly Lane. The boundaries are more open in some areas, delineated by fence-lines

where hedgerows have been lost, or are gappy such as along the southern boundary of the western parcel or short section along Watling Street in the eastern parcel.



**Diagram 1: Field arrangement Plan**

A total of seven footpaths and three restricted byways (Bushy 036, 037 and 046) traverse the Site. A number of other routes run near and adjacent to the Site including the Hertfordshire Way to the north of the eastern parcel.

The topography of the Site is illustrated in the Topography plan (**Diagram 2**). For the western parcel the land comprises gently undulates eastward from the A41 around 90m AOD before rising notably eastward from Hilfield Lane to around 95m AOD. The main topographical landform of the eastern parcel is formed by Aldenham Brook which runs southwest to northeast. Gradients across the eastern parcel are relatively flat ranging from 85m dropping to Aldenham Brook before rising again to 89m AOD at Watling Street. There is a notable rise in terrain in Field 20 along Aldenham Brook owing to the form landfill uses.

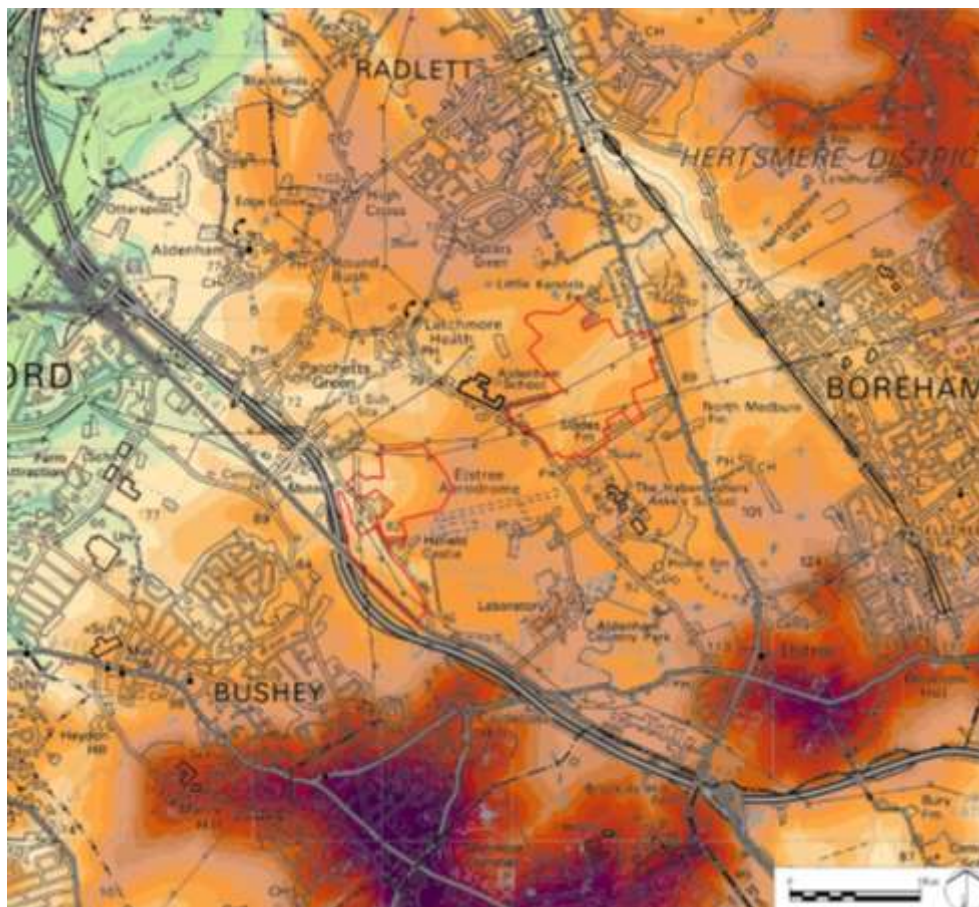


Diagram 2: Topography Plan

## 1.5. Habitats and Designated Sites

### 1.5.1. Habitats

A summary is presented below in **Table 1** of the existing habitats found within the extent of the Site. Further details are set out in the Ecological Appraisal Report (Document Ref. R012).



**Table 1: Summary of Existing Habitats**

Habitat Types	Location and Comments
Arable fields	The majority of the eastern and western parcels of the Site support arable farmland under intensive cultivation with minimal field margins and minimal arable weeds. This habitat is of low intrinsic ecological value.
Hedgerows	Most of the internal and external boundaries on Site comprise mature native hedgerows, some of which are species-poor and some of which are species-rich, with dominant species including hawthorn <i>Crataegus monogyna</i> , blackthorn <i>Prunus spinosa</i> and field maple <i>Acer campestre</i> . Hedgerows on the internal boundaries tend to be heavily managed and cut to approximately 1.5–2 m height, while hedgerows on external boundaries tend to be overgrown and to form scrubby treelines. Standard trees, predominantly mature pedunculate oak <i>Quercus robur</i> with some ash <i>Fraxinus excelsior</i> are common in hedgerows, particularly in the northern part of the eastern parcel. All hedgerows on Site meet the definition of the Hedgerows Habitat of Principal Importance (HPI).
Woodlands	<p>There is a small area of semi-natural broadleaved woodland in the southwest of the Site, dominated by ash, with a ground flora dominated by bramble <i>Rubus fruticosus</i> agg. The boundaries of the substation in the north-west of the Site support mature broadleaved woodland dominated by hybrid poplars <i>Populus</i> sp in some areas and by and pedunculate oak in others. There are other small pockets of broadleaved woodland at the Site.</p> <p>The Site borders areas of mature broadleaved woodland including Little Kendals Wood to the north-east of the eastern parcel; this is ancient woodland and a Local Wildlife Site.</p> <p>All of the above woodland corresponds to the Lowland Mixed Deciduous Woodland HPI.</p>

Ponds	<p>There are five ponds within the Site or on its boundaries (Ponds 1–5 as shown within the Ecological Appraisal Report (Document Ref. R012).</p> <p>Pond 1 held water in March 2020 but was dry by September 2020. It is extensively shaded by woodland and scrub and the marginal vegetation is dominated by reed sweet grass <i>Glyceria maxima</i>. Ponds 2, 3, 4, and 5 appear permanently wet. Ponds 2, 3 and 4 have extensive emergent vegetation dominated by reedmace <i>Typha latifolia</i> and an extensive surface cover of duckweed <i>Lemna</i> sp. Water starwort <i>Calitriche</i> sp. was abundant in Pond 4. Pond 5 has minimal marginal or aquatic vegetation and is heavily shaded by trees.</p> <p>Ponds 2 and 4 are considered to be HPI habitat, based on the presence of great crested newt <i>Triturus cristatus</i>. Ponds 1, 3 and 5 have potential to be HPI habitat, based on other criteria (such as macrophyte or invertebrate diversity) but survey has confirmed absence of great crested newts.</p> <p>All of the onsite ponds are overgrown, with Pond 2 showing evidence of disturbance caused by dogs. These factors currently reduce the ecological value of the ponds on Site.</p>
Grassland	<p>Species-poor semi-improved grassland, managed as horse paddock and planted under the CSS, is present in the south of the eastern parcel of the Site adjacent to Slade Farm. The sward is dominated by false oat grass <i>Arrhenatherum elatius</i>, with some tufted hairgrass <i>Deschampsia cespitosa</i> and soft rush <i>Juncus effuses</i> in the wetter areas. The forb community is largely confined to undesirable perennial species including ragwort <i>Senecio jacobaea</i> and creeping thistle <i>Cirsium arvense</i>. Other pockets of similar grassland are found along some field margins, such as a wide margin between Ponds 2 and 4 in the north of the eastern parcel. This grassland is of limited ecological value and does not meet the description of any HPIs.</p>
Scrub	<p>Several areas of dense scrub are present at the Site. This is generally dominated by hawthorn, with blackthorn elder <i>Sambucus nigra</i> and bramble.</p> <p>Scattered scrub comprising bramble, blackthorn and hawthorn, with some dog rose <i>Rosa canina</i> is present in the species-poor semi-improved grassland in the eastern parcel. Smaller areas (generally dominated by hawthorn) are present elsewhere at the Site.</p> <p>These habitats are not HPIs, although they have some ecological value.</p>
Mature trees	<p>In addition to the hedgerow trees mentioned above, the Site includes a small number of scattered mature trees. These are predominantly mature pedunculate oaks. These are not HPIs but are of some ecological value, and due to the timescales involved, are effectively an irreplaceable habitat.</p>

Streams and ditches	Two small flowing streams (the Hilfield Brook in the western parcel and Aldenham Brook in the eastern parcel) are present at the Site, together with several damp ditches. Both flowing watercourses are shallow with a stony bottom with minimal aquatic and marginal vegetation. Much of the length of these watercourses is enclosed within, or overhung by hedgerows or trees.  These habitats do not fit any of the descriptions of HPis, but are of some ecological value and provide ecological connectivity.
Other habitats	The Phase 1 habitat survey lists several other habitats, including semi-improved neutral grassland, improved grassland, ephemeral/short perennial vegetation, and bare ground. These are outside the current Site boundary.

## 1.6. Species

A summary is presented below in **Table 2** of the findings for protected species from the Ecological Appraisal Report (Document Ref. 012):

**Table 2: Summary of protected species**

Species	Comments
Bats	The mature field and hedgerow trees on Site provide suitable roosting habitat for bats, and the areas of woodland adjacent to the Site boundary also contain mature trees likely to provide suitable roosting habitat. All bats are protected species in the UK. The mature trees, woodland, hedgerows, scrub, semi-improved grassland and stream corridors on Site, as well as the woodland areas immediately adjacent to the Site boundary provide suitable habitat for foraging and commuting bats.  The Site as a whole is largely unlit, which increases its value for most bat species. However the dominant habitat, open intensively-managed arable land, is likely to be of limited value for all bat species.
Badger	The site supports badgers, including active and disused setts. Badgers and their sets are protected. Locations of these setts are set out in a confidential appendix to the Ecological Appraisal and have been incorporated into the design of the scheme.
Dormouse	The Site has suitable habitat for this protected species in hedgerows, woodland and scrub, with relatively good connectivity to suitable habitat in the wider landscape. Because of this, dormouse has been assumed to be present in all hedgerows at the Site in the ecology assessment and in the design of the scheme.
Water vole	Water vole, a protected species and a Species of Principal Importance (SPI) in England has been recorded historically from Hilfield Park Reservoir approximately 100 m south east of the western parcel. The Site has suitable habitat for this species in the streams and ditches, particularly in the Hilfield Brook in the western parcel and Aldenham Brook in the eastern parcel.

Hedgehog and Brown hare	The site currently has some suitability for these two SPIs. For the former this is largely limited to field boundaries, and the latter, open areas and field boundaries.
Breeding birds	The breeding bird survey found that the majority of the breeding birds within the Site are common and widespread species associated with woodland and farmland, although the site does support breeding SPIs including house sparrow and skylark and likely also supports further breeding SPIs including dunnock, linnet, reed bunting and song thrush. The majority of the nesting habitats are found within the hedgerows on Site or within the woodlands immediately adjacent to the Site. Skylark (four pairs within the Site) and non-native gamebirds are the only species recorded breeding within the open arable habitat within the Site.
Wintering birds	The arable farmland on Site has limited suitability for winter foraging by gulls, largely during or following ploughing. While the Site may attract a small proportion of foraging gulls associated with the Hilfield Park Reservoir Local Wildlife Site (LWS) on a sporadic basis (such as during ploughing or other agricultural activities which disturb the soil and uncover invertebrates), it is unlikely to regularly support a significant proportion of the roosts. The arable farmland on Site is not considered suitable for significant winter foraging by waders, due to its topography and drainage.
Amphibians	Surveys indicate that Ponds 2 and 4 support great crested newt which is a protected species and a SPI. The hedgerows, scrub, woodland and grassland on Site provide suitable terrestrial habitat for this species. These habitats and ponds may also support common toad which is a SPI. The hedgerows, scrub, woodland and grassland on Site provide suitable terrestrial habitat for these species.
Reptiles	Since it is dominated by arable land, the majority of the Site is unsuitable for reptiles, however small numbers of reptiles (such as slow worm, common lizard and grass snake) could be present in areas of rough grassland around hedgerows, ditches and ponds.
Plants and invertebrates	The value of the site for plants and invertebrates is limited to boundary features such as hedgerows and watercourses, and to woodland.

## 1.7. Nature Conservation Designations

No internationally or nationally designated sites are present within 10 km of the Site boundary.

Two statutory Local Nature Reserves (LNRs) are present within 2 km of the Site boundary. Hilfield Park LNR is approximately 200m south of the site, beyond Elstree Aerodrome, and is designated for its marshy reservoir margins of value for breeding warblers, butterflies and dragonflies. Stanmore Common LNR is 1.3 km south of the western parcel and is designated for its areas of woodland and heathland, as well as two ponds.

There are 35 non-statutory LWS within 2 km of the Site boundary. Land by Elstree Sub Station LWS is located adjacent to the north-west of the Site. Little Kendals LWS and Little Kendals Wood LWS are adjacent to the north-east and Wood North of Aldenham Park LWS is adjacent to the south-east, beyond butterfly lane.

## **1.8. Landscape Designations**

The Site is not located within, or adjacent to, any nationally designated landscapes such as National Parks or Areas of Outstanding Natural Beauty (AONB).

The nearest designated landscape are as follows:

- Aldenham House Grade II Registered Park and Garden; approximately 5m to the south of the eastern parcel). This is considered in detail as part of the heritage assessment, the results of which have informed the Landscape and Ecology Enhancement Plan.
- Chilterns AONB; approximately 10km to the west.

The Site is within The Greater London Green Belt, the effects of which are considered in the Planning Statement (Document Ref. R003).

## 1.9. Landscape Character

### 1.9.1. National Landscape Character

The Site is situated entirely within National Character Area (NCA) 111: Northern Thames Basin as identified in Natural England's National Character Area Profiles (2014).

The Northern Thames Basin Heaths NCA occupies a large area to the north of Greater London from Watford eastward to Southminster and Southend on Sea. Land within the east of this NCA forms part of the London Green Belt. In the west of this NCA, 20th-century development has given rise to large and densely settled conurbations including built forms of Watford, Enfield and Chigwell. Further east, including the Site, settlement is more dispersed although large towns such as Brentwood, Billericay and Brentwood are present. The far east of the NCA sees the transition into the coastal lowlands of the east coast.

Key characteristics of relevance to the Site include [*inter alia*]:

- *"The landform is varied with a wide plateau divided by river valleys. The prominent hills and ridges of the 'Bagshot Hills' are notable to the northwest and extensive tracts of flat land are found in the south."*
- *"Characteristic of the area is a layer of thick clay producing heavy, acidic soils, resulting in retention of considerable areas of ancient woodland."*
- *"Diverse landscape with a series of broad valleys containing the major rivers Ver, Colne and Lea, and slightly steeper valleys of the rivers Stour, Colne and Roman. Numerous springs rise at the base of the Bagshot Beds and several reservoirs are dotted throughout the area."*
- *"The pattern of woodlands is varied across the area and includes considerable ancient semi-natural woodland. Hertfordshire is heavily wooded in some areas as are parts of Essex, while other areas within Essex are more open in character. Significant areas of wood pasture and pollarded veteran trees are also present."*
- *"Mixed farming, with arable land predominating in the Hertfordshire plateaux, parts of the London Clay lowlands and Essex heathlands."*
- *"The diverse range of semi-natural habitats include ancient woodland, lowland heath and floodplain grazing marsh and provide important habitats for a wide range of species including great crested newt, water vole, dormouse and otter."*
- *"Rich archaeology including sites related to Roman occupation, with the Roman capital at Colchester and City of St Albans (Verulamium) and links to London. Landscape parklands surrounding 16th- and 17th-century rural estates and country houses built for London merchants are a particular feature in Hertfordshire."*
- *The medieval pattern of small villages and dispersed farming settlement remains central to the character of parts of Hertfordshire and Essex. Market towns have expanded over time as have the London suburbs and commuter settlements, with the creation of new settlements such as the pioneering garden city at Welwyn and the planned town at Basildon."*

The NCA profiles also include Statements of Environmental Opportunity (SEO). Of relevance to the Site, opportunities within this NCA include [*inter alia*]:

- *“SEO 1: Manage rivers and river valleys to protect and improve water quality and help to alleviate flooding in the downstream urban areas, while also helping to improve aquifer recharge and provide a sufficient store of water to meet future need, especially with predicted climatic changes. Conserve the riparian landscapes and habitats, for their recreational and educational amenity for their internationally significant ecological value.”*
- *“SEO 2: Manage the agricultural landscape and diverse range of soils which allow the Northern Thames Basin to be a major food provider, using methods and crops that retain and improve soil quality, water availability and biodiversity.”*
- *SEO 3: E Protect and appropriately manage the historic environment for its contribution to local character and sense of identity and as a framework for habitat restoration and sustainable development, ensuring high design standards (particularly in the London Green Belt) which respect the open and built character of the Thames Basin. Enhance and increase access between rural and urban areas through good green infrastructure links to allow local communities recreational, health and wellbeing benefits.”*
- *“SEO 4: Manage and expand the significant areas of broadleaf woodland and wood pasture, and increase tree cover within urban areas, for the green infrastructure links and important habitats that they provide, for the sense of tranquillity they bring, their ability to screen urban influences and their role in reducing heat island effect and sequestering and storing carbon.”*

### 1.9.2. Local Landscape Character

The landscape character of the Site and its surroundings are described and assessed in detail in the Landscape and Visual Impact Assessment (Document Ref. R018), which accompanies the planning application.

The Site is within LCA022: Borehamwood Plateau as identified within the South Hertfordshire Landscape Character Assessment which provides detailed character analysis for at the district level.

Key characteristics of LCA022 are identified as:

- *“gently undulating landform;*
- *pasture is dominant land use with arable secondary;*
- *a number of private schools set in mature landscaped grounds;*
- *Aldenham Park historic parkland with woodland and perimeter belts;*
- *two large reservoirs, i.e. Aldenham and Hilfield;*
- *Aldenham Country Park; and*
- *fragmentation and disruption by the M1/A41 corridor including pylons and associated built development.”*

Distinctive features are noted to be:

- *“Elstree aerodrome*

- *electricity transformer station; and*
- *Hilfield Castle”*

Guidelines for the management of the character area are ‘*improve and restore*’ being assessed as ‘poor condition’ and ‘moderate strength of character’. The following management guidelines are identified [*inter alia*]:

- *“support Watling Chase Community Forest in the realisation of its objectives for the area;*
- *promote the creation of new woods within the area;*
- *provide enhanced habitat and visual linkage through a substantially restored network of hedges and hedgerow trees;*
- *promote the creation of buffer zones between intensive arable production and important semi-natural habitats and the creation of links between semi-natural habitats*
- *promote both the creation of new ponds and the retention/enhancement for wildlife of existing ponds*
- *promote hedgerow restoration through locally appropriate measures including coppicing, laying and replanting/gapping-up*
- *promote the creation of new orchards, the use of traditional varieties of fruit and minimise the use of herbicides and pesticides*
- *retain and enhance parkland areas including Aldenham Park. Ensure new planting maintains age diversity.*
- *Landscape improvements should respect the historic context of existing features and the form and character of parkland and gardens. Ornamental species should only be used to replace damaged or over-mature specimens, where appropriate; and*
- *encourage reversion from arable uses to pasture and grassland.”*

These management guidelines have informed the LEMP and are illustrated spatially on **Figure 1**.

### 1.9.3. Green Arc Strategic Green Infrastructure Plan, 2011

The Green Arc Strategic Green Infrastructure Plan (GASGIP) provides overarching Green Infrastructure Guidance for Hertfordshire. Within this strategic document, the Site is identified within one of a number of ‘woodland arcs’ where the *“enhanced resilience to climate change & provision of linked landscape/habitat mosaics (copse, grassland, heathland & wet woodland/wetland), plus sustainable management”* (p.51) is encouraged.

### 1.9.4. Hertsmere Borough Green Infrastructure (HGIP) Plan, 2011

In addition to the GASGIP, the Hertfordshire Green Infrastructure Plan (HGIP) provides a further level of detail in relation to Green Infrastructure (GI). Within the HGIP, local GI links such as Aldenham Brook, the woodland at Hilfield Reservoir and connections north to south across Elstree Aerodrome are identified. Figure 3.1 of the GASGIP illustrates this spatially and is provided in **Appendix 1**. In particular, ‘Project 4: Aldenham and Bushy



Connections' is identified in the locality of the Site which identifies the following GI aspirations:

- *“Enhanced shared use car free access to key site of recreational focus (Aldenham & Hillfield Reservoirs) from principal residential areas.”*
- *“Improved connections to the London greenspace network via the London Loop (link to Project 5) - a network of promoted walking routes from other recreational/leisure foci, such as pubs on the route e.g. to the south of the existing Country Park. Links to Elstree & Parkland Links Project (project 2). Also enhanced signage from local railway stations e.g. Elstree & Borehamwood.”*
- *“Future landscape for Aldenham Country Park site -potential for future inward investment from the London Boroughs as this is a primary North London semi natural greenspace resource.”*
- *“Linked to an enhanced future offer/selling points for the site e.g. improved zoning to include greater level of space for informal recreation away from the wider, extending the urban farm to include local food, produce (expanded shop/cafe & revenue generating activity) & community garden/orchard, sustainably managed wet woodland to contribute to biomass production.”*
- *“Delivery of woodland planting & habitat creation to contribute to aims of WCCF Partnership Plan at the identified Gateway site (Aldenham Country Park) - woodland wildspace & enhancement of the greenway route/links to Bushey/A41 corridor through woodland planting.”*

## 2.0 Scheme Description

### 2.1. Development Proposals

The Site is to be developed as renewable led energy generating station comprising ground-mounted rows of non-reflective solar photovoltaic (PV) panels and battery-based electricity storage containers together with a substation; 16 inverter / transformer stations; two site access locations; internal access tracks; security measures; access gates; other ancillary infrastructure; and landscaping and biodiversity enhancements.

The Development proposes a number of landscape and biodiversity benefits, which would implement a lasting legacy during and after the duration of the Proposed Development.

The landscape and biodiversity benefits are illustrated spatially on **Figure 1: Landscape and Ecology Enhancement Plan**, and listed below:

#### Biodiversity and Landscape

- The creation of new habitats including parkland, grassland, orchard and scrub, managed primarily for biodiversity enhancement.
- The creation of a substantial area of low intervention grassland with scrub for skylark enhancement on the former landfill area (Fields 18, 19 and 20).
- The creation of landscape scale green corridors along Aldenham Brook in the eastern site parcel forming a key structuring element and connectivity to wider GI.
- The provision of Hilfield Brook green wedge in the western parcel creating a substantial green corridor for from Hilfield Lane to Elstree aerodrome, enhancing biodiversity and maintaining views to Hilfield Castle.
- The improved management of ponds on the western edge of Field 13 to improve habitat for great crested newts and restoration of two filled-in ponds between Fields 12 and 13 and near to Little Kendal's Wood.
- New structure planting including the reinstatement of historic hedgerows and creation of new hedgerows within Field 5 and within Field 1. Elsewhere new structure planting will create a new tree belt GI corridor along Butterfly Lane (Fields 19 and 20) and field boundary hedgerow and woodland stand connectivity enhancements through Fields 9, 10, 11, 13 and 16 linking Little Kendals Wood to woodland at Aldenham Park.
- The proposed solar panels will be confined to the existing individual field parcels using existing access points wherever possible to ensure a well-integrated scheme is implemented that causes minimal loss of existing vegetation on-Site.
- Existing field boundaries within and along the Site's boundaries will be positively managed (through the relaxation of cutting and new planting where required) to strengthen the existing vegetation to enhance the biodiversity within the Site and provide further screening of the Proposed Development.
- Positive management of field margins and fringe areas will improve existing biodiversity and be undertaken throughout the Site.

- Infill planting will be implemented (where necessary) to strengthen existing hedgerows along the Site's boundaries where it is presently sparse, such as adjacent to Butterfly Lane (Field 16) and adjacent to Watling Street (Field 14).
- The creation of small woodland and scrub copses within the Site to provide ecological nodes throughout the Site and linking to the wider existing landscape context.
- The creation of new areas of neutral grassland (as described through the UK Habitat Classification) throughout the Proposed Development, located beneath and around the solar arrays, within the security fences. These areas previously of arable land use will be converted into a grassland pasture with light grazing, improving the biodiversity from previous arable use and allowing the soil ecosystems to rest and restore over time in the absence of intensive agriculture use and nutrient loading.
- The creation of new areas of tussocky grassland are proposed within Fields 1 and 5 outside the security fencing as part of Hilfield Brook green wedge, enhancing biodiversity.

#### **Public amenity**

- Provision of two 'Nature Areas' with public access, interpretation board and picnic bench providing enhanced public amenity and recreation opportunities.
- Planting of an orchard in Field 7 with a variety of traditional native fruit and nut species.
- Provision of two new permissive footpaths within the Site; one around the eastern edge of Field 12 from the existing public right of way and linking to the Hertfordshire Way to the north of the Site; the other in Field 16 providing an alternative route avoiding Belstone FC football pitches.
- Retention of all existing Public Rights of Way (PROW) within the Site.
- Creation of new planting along the routes of the existing PROWs to both protect and enhance their recreational amenity.

### 3.0 Management Objectives

This section sets out the management objectives for the key habitats, species, and functionality of the Site.

The following management objectives are proposed:

#### **Objective 1 – Enhance the biodiversity of the Site.**

The biodiversity value of the Site will be significantly enhanced with a biodiversity net gain overall of 39.54% net gain for habitat areas for the Site post development and 23.3% net gain for hedgerow. This is significantly higher than the target set by central government in the proposed Environment Act. These increases will primarily be achieved through new habitat creation via planting, which will include:

- parkland with individual trees;
- orchard comprising a variety of traditional native fruit and nut species;
- structure planting (including native species hedgerows with hedgerow trees);
- neutral grassland (including mixed sward grassland pasture for light grazing); and
- tussocky grassland with wildflowers; and
- low intervention skylark enhancement area; comprising grassland and scattered scrub.

In addition to habitat creation, existing habitats (e.g. grassland and hedgerows) will be enhanced through positive management and relaxation of management to improve habitat value and condition, including:

The enhancement of the biodiversity of the Site is demonstrated by the ‘Net Biodiversity Gain Statement’ contained within the Ecology Appraisal Report (Document Ref. 012).

#### **Objective 2 – Facilitate opportunity for engagement with the natural environment and renewable energy.**

Opportunities for the local community to engage with and learn about the natural environment will be provided. This will include provision of two informal, low-key nature areas within Field 13 centred on existing ponds which currently support great crested newt. The nature areas will include an interpretation board and picnic bench that would allow the local community to learn and engage with nature. Information will also be provided on the solar farm, climate change and the benefits of renewable energy.

Way-makers and interpretation boards will be provided at appropriate junctions of the existing footpaths, new permissive routes, or where they enter the Site to aid interpretation. Public consultation as part of the planning application has informed the location of these features the locations of which are shown in **Figure 1**.

**Objective 3 – Protect and enhance the existing characteristics and features of value of the Site including the field structure, mature trees, hedgerows and ditches.**

A strong network of habitats is present across the Site and will be retained by the Proposed Development. Key structuring components include the creation of ‘Aldenham Brook Green Corridor’ in the eastern parcel and ‘Hilfield Brook Green Wedge’ in the western parcel (**Figure 1**).

These features not only provide important visual screening functions but also habitat and connectivity for biodiversity. Existing hedgerows, which include large hedgerow trees, will be retained and managed via a rotational cutting regime with the objective of enhancing their biodiversity and landscape / screening value, by allowing them to reach a larger size than at present and to flower and fruit.

Ponds 2 and 4 in the north of the eastern parcel will be enhanced by removing the majority of encroaching vegetation and Pond 4 will be fenced with low woven fence to dissuade access by dogs. These measures will enhance their value for great crested newt.

Two former ponds on the boundary between Fields 12 and 14 will be restored by digging them out, or by providing adjacent ponds, to provide additional habitat for great crested newt.

This will ensure:

- Retention and enhancement of the existing field pattern and wildlife corridors both during operational lifespan of the development and following decommissioning;
- Protection of existing habitat for reptiles, amphibians, nesting birds, dormouse, foraging and roosting bats and other SPIs;
- Protection of existing ecological corridors along these features; and
- Protection of the functionality of the landscape and its watercourses. The enhancement of existing vegetation and the implementation of proposed planting will promote improved interception, evapotranspiration, infiltration rates, whilst also providing water quality treatment for surface water runoff before it enters the watercourses within and surrounding the Site.

**Objective 4 – Create a strong structural planting framework and protect, restore, enhance, and maintain the existing vegetation network.**

In addition to the retained field structure planting and features, further structural planting of hedgerows and woodland is proposed. This will ensure:

- An enhanced landscape structure with greatly improved GI corridors and connectivity around the Site and wider landscape.
- Enhanced screening of close views of the solar panels and associated built elements from PROWs, local roads (such as Butterfly Lane and Hilfield Lane) and other publicly accessible areas within and immediate adjacent to the Site. This will also mitigate the potential effects of glint and glare.

- Enhanced screening for middle-distance views from PROWs and other publicly accessible areas within the local landscape to the north, west and south of the Site. This will also mitigate the potential effects of glint and glare.
- A greater ability to mitigate against climate change impacts, such as flood events. Research<sup>1</sup> demonstrates that a comprehensive landscape strategy will maintain a solar farm site's existing hydrological response – with enhancement of existing planting and new planting promoting improved interception, evapotranspiration, infiltration rates alongside water quality treatment for surface water runoff before it enters watercourses. These increased hydrological rates will provide a betterment on existing runoff rates, which is beneficial in any future climate change scenarios.

Key structuring elements include:

- **Aldenham Brook Green Corridor**

Following the Aldenham Brook river southwest to northeast, Aldenham Brook Green Corridor is the main GI structuring feature of the eastern site parcel. Comprising a generous green corridor ranging between 30 to 95m in width, the corridor will be managed for biodiversity, including enhancement planting and selective scrub clearance of the river channel to improve riparian habitat.

Spurs running north and south from Aldenham Brook Green Corridor utilising existing hedgerows and enhanced with additional planting will provide ecological connections through the Site, connecting Little Kendals Wood in the north to ancient woodland at Aldenham Park in the south.

- **Hilfield Brook Green Wedge**

Hilfield Brook Green Wedge is the principal GI structuring feature of the western site parcel. Running from the A41 to the Elstree Aerodrome, the green wedge provides a continuous tract of countryside from the urban edge of Bushy, maintaining continuous views and connectivity to the wider countryside to the east.

The land will be managed as tussocky grassland with wildflowers providing habitat for skylark, amphibians reptiles, small mammals and pollinators and other invertebrates.

- **Parkland**

Two areas of parkland totalling just over 2.9ha is proposed in Fields 15 and Field 7 to maintain the visual amenity of neighbouring private dwellings. These areas will be punctuated by individual native oak trees that will, over time, mature to large specimen trees reflective of parkland at Aldenham House Registered Park and Garden to the south.

These areas would be seeded to a grassland mix and maintained through low intensity grazing.

- **Orchard**

The creation of an orchard is proposed in Field 7. This would comprise the planting of traditional fruit and nut trees (apple, pear, damson, plum, cherry, hazel, cob nut,

<sup>1</sup> Hydrologic Response of Solar Farms (Cook and McCuen, 2013), Journal of Hydrologic Engineering

walnut) in an informal arrangement. The existing footpath would remain allowing people to walk through and experience the orchard.

Opportunities for local groups, including Hertfordshire Wildlife Trust, to take an active role in the maintenance of the orchard will be explored.

- **Low Intervention and skylark enhancement area**

Located on former landfill, a large area (6.5ha) of Fields 18, 19 and 20 is given over for low intervention management for skylark habitat enhancement. This rough pasture area with scattered scrub will be enhanced by harrowing and seeding of a wildflower grassland mix (e.g. Emorsgate EM4 Meadow mixture for clay soils) and will thereafter be managed via low intensity grazing to maintain a grassland sward suitable for skylark nesting, avoiding grazing in the peak nesting season of April to June, and avoiding the use of fertilizers or herbicides. Areas of scrub towards the watercourse and edges will be maintained although some limited scrub planting to create greater diversity of habitat is envisaged.

### **Objective 5 – Create greater opportunities for protected species and species of conservation concern.**

Whilst the Site is currently of limited value to most protected or notable species (being dominated by arable habitats), the Proposed Development will seek to enhance opportunities for these where possible. The size of the Site provides opportunities for proposals that target specific species of interest as well as general creating wildlife corridors between areas. Enhancements for species will include:

- **Installation of 20 bat boxes to increase roosting opportunities.**

These will be installed on suitable hedgerow trees at the Site, particularly along the Aldenham Brook Green Corridor in the east of the Site. In addition, the proposed grassland areas, skylark enhancement area and the new hedgerow planting will provide increased foraging opportunities for bats.

- **Installation of 20 dormouse boxes to increase nesting opportunities.**

These will be installed on suitable hedgerow trees, particularly adjacent to and south and east of Little Kendal Wood in the east of the Site. In addition, the proposed new hedgerow planting will provide increased foraging and nesting resources for dormice.

- **Installation of two barn owl boxes to increase nesting opportunities.**

Two barn owl boxes will be installed on mature trees within the Site as advised by an ecologist, for example near Little Kendal Wood, or in the Aldenham Brook Green Corridor. These boxes will capitalise on the extensive areas of new and enhanced grassland that will provide increased foraging for barn owl.

- **Installation of mammal underpasses.**

The solar array fields will provide suitable habitat for a range of mammal species. Access for these under the security fencing will be provided to allow badger, brown hare, polecat and hedgehog to move through the Site and forage over the solar array grassland. Gaps of approximately 35 x 35 cm at ground level would allow for continued

use. As a minimum one such gap should be created on each side of each field being included in any fence.

- **Creation of grass piles.**

Grass cuttings will be heaped into habitat piles on boundaries, but at least 2m away from streams, ditches and ponds to provide egg laying habitat for grass snake. Cuttings will be removed from the main areas of wildflower planting, where the aspiration is to reduce soil nutrient levels, but can be formed into habitat piles on the edges of fields, scrub or woodland habitats, at least 2m from streams, ditches and ponds.

- **Creation of ground nesting opportunities for skylark.**

A recognised area (Fields 18, 19 and 20) will be given over for the primary purpose of skylark habitat enhancement. This low intervention area is on the site of the former landfill and will be managed through grazing and cutting to maintain a low rough grassland sward with occasional scrub to encourage skylark nesting. There will be no grazing or cutting in this field during the peak breeding season of 1 April to 31 July each year.

Other areas of tussocky grassland with wildflowers, including Hilfield Brook Green Wedge will be created and managed as a late cut hay meadow to provide further nesting opportunities for skylark.

### **Objective 6 – Protect public amenity from Public Rights of Way.**

A number of PROWs run through and around the Site. An important objective of the LEMP is to minimise where possible the perceived detrimental impacts of the Proposed Development on the recreational amenity and engage / celebrate the benefits of solar energy. This has been addressed by:

- Creation of new native species planting along existing routes to screen and filter close views to the Proposed Development, comprising dense linear screening planting to include lower lever shrubs and tall hedgerow trees.
- Allowance of generous offsets of security fencing and panels of at least 5m either side of existing PROW and planting with wildflowers to maintain visual amenity and openness from these routes and avoid perceived channelling / tunnelling.
- Siting of security fencing behind new structure planting to reduce visual impact.
- Implementation of interpretation boards at appropriate junctions of PROWs within the Site, which will allow for opportunities to better understand the positive contribution the Proposed Development will make in adapting to climate change.



## 4.0 Required Works

This section sets out the required works to help to ensure the objectives detailed in **Section 3.0 – Management Objectives** can be achieved. Works will be undertaken in accordance with the following plans and reports:

- Landscape and Ecology Enhancement Plan (**Figure 1**)
- Ecological Appraisal Report (including Biodiversity Net Gain Statement) (Document Ref. 012).
- Landscape and Visual Impact Assessment (Document Ref. 018)

All habitat creation and landscape requirements will be detailed in specifications for implementation by the appointed contractors / Site managers.

### 4.1. Pre-Construction and Construction

All new planting should be sourced from a reputable UK based provider who are able to demonstrate UK provenance of planting stock and adhere to all relevant biohazard controls including LI Technical Note 1/15 Pests and Disease Threats.

All new planting must be certified disease and pest free from the chosen supplier(s). Planting is to be undertaken in suitable planting conditions. All new tree planting will be undertaken in accordance with the BS8545:2014 'Trees: from Nursery to Independence in the Landscape – Recommendations' document.

Areas of bare earth and scarification as a result of the construction that occur outside the solar panel area (i.e. outside the security fencing), and area of former arable land within hedgerow and stream buffer areas are to be resown with a suitable mix of grassland species to encourage sward diversity (e.g. Emorsgate EM4 Meadow Mixture for Clay Soils or equivalent). Such bare areas within the security fencing, to be sheep-grazed, are to be sown with Emorsgate EM1 Basic General Purpose meadow mixture.

The 'Nature Areas' (located in Field 13) would be positively managed to enhance existing grassland ecology and interface with the pond to improve great crested newt terrestrial habitat. New amenity features including new picnic benches and interpretation boards are also proposed.

Bat boxes will be installed on mature trees in suitable hedgerow trees at the Site, particularly along the Aldenham Brook Green Corridor in the east of the Site. This will consist of 20 general purpose bat boxes which would be used by a range of species. These will be the 2F Schwegler Bat Box or 2FN Schwegler Bat Box, Vivara Pro WoodStone Bat Box or similar. Bat boxes are to be located and installed with due regard to the safety of staff installing them, and to the current and future safety of land management staff and members of the public.

Twenty dormouse boxes (standard specification) will be installed on suitable hedgerow trees and woodland within the Site, particularly adjacent to Little Kendals Wood.

Two tree-mounted barn owl boxes (following the Barn Owl Trusts recommended design) will be installed on two suitable trees within the Site, as advised by a suitably experienced ecologist.

Mammal underpasses will be provided at regular intervals within security fencing to allow access for badger and other small mammals across the Site, with a minimum of two access points on each field-to-field boundary.

## 4.2. Operational Management

### 4.2.1. Aldenham Brook Green Corridor

Following Aldenham Brook, Aldenham Brook Green Corridor is the principal structuring GI component in the eastern site parcel. Extending approximately 1.2km and approximately 30m – 95m in width, the corridor runs northeast from Aldenham Road to Watling Street. Two spurs run from the main corridor following existing field boundaries which will be enhanced with additional planting connecting habitats at to the north at Little Kendals Wood; and to the south at Aldenham Park.

The green corridor will contain two nature areas centred on the two existing ponds. These will each comprise a low-key information board and picnic bench area allowing for quiet interaction with the natural environment.

Two amphibian hibernacula (habitat mounds that provide hibernation sites) will be constructed on current arable land, one adjacent to each of the two existing ponds. These will comprise mounds (c. 3 m in diameter) of untreated logs and inert brick rubble, with a covering of topsoil (and seeded with a wildflower grassland mix as per adjacent areas of arable land within the nature area).

Two dry ponds that have filled in over-time both on the boundary between Fields 12 and 13 will be restored through digging out to allow these to naturally re-fill, or equivalent ponds will be constructed in nearby locations within the green corridor. Ponds at this location will provide additional breeding habitat for the great crested newt populations in Ponds 2 and 4, and for other amphibians. These new ponds will not be lined and may only be seasonally wet. This will not prevent them from providing valuable habitat. A small amount of initial planting with suitable native plant species will be carried out (e.g. water forget-me-not *Myosotic scorpioides* and water starwort *Callitriche stagnalis*).

Vegetation along the green corridor will managed as tussocky grassland with wildflowers and some areas of scrub (up to 5% of the area) with low management intervention. There will be no use of fertilisers or herbicides. Selective clearance of scrub from the watercourse will enhance its biodiversity value.

### 4.2.2. Hilfield Brook Green Wedge

Hilfield Brook Green Wedge is a key structuring component of the Proposed Development, providing landscape screening and biodiversity connectivity through the spine of the eastern parcel along restricted Byway Bushy 036 and 038.

This corridor will comprise a substantial (approximately 6ha) tract of undeveloped land, maintaining a continuous green corridor from the A41 to Elstree Aerodrome. The land will be managed as tussocky grassland with wildflowers enhancing the biodiversity value of the Site and providing habitat for birds, reptiles and small mammals. The grassland will be cut once a year and arisings removed to habitat piles on the boundary areas (at least 2m away from streams, ditches and ponds) to reduce soil nutrient levels. There will be no use of fertilisers or herbicides. Small areas of scrub (up to 5% of the area will be allowed to develop).

The wedge has been designed to allow views to be retained through to Hilfield Castle, a local landmark and wider countryside to the east. Additional screen planting in the form of native hedgerows is proposed to along the northern and southern edges of the wedge to screen views of the Proposed Development.

The vegetation will comprise native species including but not restricted to blackthorn, hawthorn, hazel, guelder rose, spindle, crab apple, holly, cherry, oak, and birch. This new planting along with management of existing field boundary vegetation will provide much improved and distinct habitat connectivity through the Site. Vegetation will be inspected quarterly and pruned when necessary outside the nesting bird season (March – September) to maintain the PROW passage and operational performance of the Proposed Development.

#### 4.2.3. Parkland

Approximately 2.9ha of parkland in the eastern field parcel (Fields 7 and 15) is proposed to maintain an immediate rural outlook for residential dwellings in these areas. The parkland would be sown with a suitable wildflower grass mix (such as Emorsgate EM2 Standard general purpose meadow mixture or EM4 Meadow mixture for clay soils) and punctuated with individual oak tree planting (standards or larger), reflective of the neighbouring parkland of Aldenham Park and other private educational institutions.

Management of the parkland will be by low intensity grazing. It is not possible to prescribe exact stocking levels for low intensity grazing, but these should be low enough to give variation in grassland sward structure, with coarse tussocky vegetation being maintained in at least some areas of each field. There will be no use of fertilisers or herbicides.

#### 4.2.4. Orchard

The creation of an orchard (0.7ha) is proposed in Field 7. This would comprise the planting of traditional fruit and nut trees (apple, pear, damson, plum, cherry, hazel, cob nut, walnut) in an informal arrangement. The existing Footpath Aldenham 042 would remain allowing people to walk through and experience the orchard.

Opportunities for local groups, including Hertfordshire Wildlife Trust and Watling Chase Community Forest, to take an active role in the maintenance of the orchard will be explored.

#### 4.2.5. Low intervention skylark enhancement area

Located on former landfill, a large area (6.5ha) of Field 18 and 20 and all of Field 19 is given over for low intervention management for skylark habitat enhancement. This rough pasture area with scattered scrub will be remain low intensively managed with grazing (and cutting if necessary) maintaining a low grassland sward for skylark nesting. Scrub towards the watercourse and on the field margins will be maintained and enhanced through some limited scrub planting to create greater species diversity. Cutting back of scrub will be required every five to 10 years to prevent excessive encroachment.

The area would be managed primarily through grazing, suitably time to avoid impacts to ground nesting skylarks, with up to a maximum of two annual cuts if considered necessary to main the suitability of the sward for grazing. The key management action will be to avoid any grazing or mowing in the peak breeding season for skylark, of 1 April to 31 July, and to avoid any use of fertiliser or herbicides.

#### 4.2.6. Planting Typologies

##### 4.2.6.1 Structure Planting and Boundary Hedgerow Enhancement

Approximately 3km of new structure planting and / or boundary hedgerow enhancement is proposed throughout the Site. This includes new hedgerows with hedgerow trees, infilling of existing hedgerows, widening and reinforcing of existing hedgerows and linear new tree belts. The primary function of these is visual screening but equally allows for greater biodiversity and GI habitat connectivity. As such there is a greater emphasis on creating a dense woody understorey to restrict views both in winter and summer to screen views.

The vegetation will comprise native species including but not restricted to blackthorn, hawthorn, hazel, guelder rose, purging buckthorn, spindle, hazel, holly, crab apple, alder, silver birch, field maple, wild cherry, rowan, oak, and willow. This new planting will be managed to create dense visual screening at low levels with trees allowed to grow out and mature to full size.

Where appropriate next to PROWs, trees and hedgerows will be inspected quarterly and pruned when necessary to maintain the PROW passage and operational performance of the Proposed Development. Trees will be visually inspected on an annual basis by a suitably qualified arborist to ensure risks to the public and / or infrastructure are managed appropriately. Dead or dying trees will be retained where possible subject to risk assessment to provide dead wood habitat. Larger log cuttings will be removed and stacked securely to provide deadwood habitat throughout the Site. Any tree or limb removal will be preceded by an inspection to determine whether it is suitable for roosting bats. Should features be present, an appropriate survey effort will be carried out to determine whether roosts are present.

New structure planting will be planted as a triple row of whips protected with tree guards adjacent to PROW. Guards will be removed when trees or shrubs are self-supporting (normally after two to three years).

The new plantings will be maintained in the first three years to ensure establishment. Plantings will be selectively pruned in Years 1 and 3 to promote growth and vigour. Any losses will be replaced, and new plantings will be kept free of weeds.

Once established, the new hedgerows will be allowed to grow into tall, thick, mature hedgerows. Hedgerow structure will be maintained by cutting back the sides of the hedges to maintain access and encourage strong growth at the base of the hedges. This would be rotation of three to five years. Hedgerow works will be undertaken outside of the bird nesting season (March – August inclusive) and will be cut at the end of the winter period to ensure fruit and seeds remain in place a food source during the winter months

#### 4.2.6.2 Neutral Grassland

Neutral Grassland will account for approximately 79ha of land within the Site, located within the security fencing, under and around the solar arrays. Formerly in arable use these areas will be re-seeded and converted to pastureland for low intensity sheep grazing, and consequently will improve the biodiversity value, reduce the nutrient load and subsequent eutrophication of adjacent watercourses and allow the soils to recover over the 35 year life span of the Proposed Development.

The species diversity of these areas will be enhanced through the sowing of a mixture of native grass and wildflower species suitable for a neutral soil type and including species tolerant of shading from the solar panels with long term management to reduce the nutrient loading in the soil.

A suitable seed mix would be Emorsgate EM1 Basic General Purpose meadow mixture, which includes a range of fine-leaved grasses (common bent, crested dog's-tail, red fescue, small cat's-tail and smooth-stalked meadow-grass) and herbs (yarrow, common knapweed, wild carrot, field scabious, oxeye daisy, wild parsnip, ribwort plantain, salad burnet, red campion and bladder campion).

It is not possible to prescribe exact stocking levels for low intensity grazing, but these should be low enough to give variation in grassland sward structure, with coarse tussocky vegetation being maintained in at least some areas of each field.

If no grazing is performed, the grassland between the panels will be cut every two years on rotation, in late summer (August) after setting of seed, with only half of the grassland at the site being cut in any one year. All arisings will be collected and removed or used to create habitat piles in the margins of the grassland, at least 2m away from streams, ditches and ponds.

#### 4.2.6.3 Tussocky Grassland with Wildflowers

Tussocky grassland will account for approximately 24.1ha of land, mainly in Hilfield Brook Green Wedge proposed along the western fringe of Field 6, outside the security fencing. This grassland will provide structure suitable for a wide range of mammals, invertebrates, amphibians and reptiles.

A suitable seed mix would be Emorsgate EM10F Tussock mixture which contains a range of tussock forming grasses and a wide range of wildflowers able to compete with these grasses.

Tussocky grassland will be cut once every two years on rotation in late summer (August) after setting of seed. There will be no other cutting (thus allowing a tussock structure to develop) and not more than 50% of the area will be cut in any one year, allowing a good proportion of the habitat structure to be maintained over winter every year. All arisings will be collected and used to create habitat piles in the margins of the fields (at least 2m away from streams, ditches and ponds).

#### 4.2.7. Field Margins outside of Security Fencing

Areas not identified for specific enhancement on the **Landscape and Ecology Enhancement Plan (Figure 1)** outside of the security fencing will be left to grow out., except on strips or areas of former arable land, which will be cultivated and seeded with a suitable wildflower grassland seed mix (such as Emorsgate EM2 Standard general purpose meadow mixture or EM4 Meadow mixture for clay soils). Periodic pruning of vegetation will be undertaken to ensure the operation performance of the Proposed Development, but some scrub (up to 10% of the area) will be allowed to grow. Grasses will be allowed to grow tall adjacent to the base of field boundaries to improve habitat biodiversity and connectivity.

Cutting of these areas will be undertaken at the end of the winter period to ensure fruit and seeds remain in place a food source during the winter months (i.e. in early February).

## **5.0 Management Programme (work schedule)**

### **5.1. General Management**

The following general management will be undertaken across the whole of the Site.

#### **5.1.1. Pest and Disease Control**

All plant material shall be inspected for the presence of any pests or disease occurring on the Site and appropriate action shall be taken to remedy the disease and eradicate pests.

All materials used in connection with these works shall be of an approved type and be applied and used in accordance with the conditions for the use of herbicides which will be outlined in the specification documents at construction stage.

#### **5.1.2. Public Rights of Way**

PROWs through the Site will be maintained to allow unhindered passage during the construction, operational and decommissioning phases. Vegetation will be checked periodically and pruned where necessary to maintain an obstruction free route. Gates will be checked to ensure they are safe and operationally effective. Repair and replacement of gates will be undertaken as and when required.

#### **5.1.3. Fencing**

All internal and perimeter fencing for the development will be regularly checked to ensure it is safe and fit for purpose. Repairs and replacement of fencing will be made as soon as practically possible as and when required.

#### **5.1.4. Maintenance of Tree Supports**

Supporting tree stakes, ties and tree guards where used will be maintained in good condition, replaced as necessary and removed when trees are self-supporting (normally after two to three years).

Tree ties will be adjusted for tightness as necessary to avoid strangulation of the stem.

#### **5.1.5. Control of Litter / Vandalism**

Grounds maintenance will be delivered throughout the Proposed Development. The Proposed Development will be kept clean and litter free. Response to acts of vandalism or graffiti will be dealt swiftly with repair or replacement implemented as soon as practically possible.

#### **5.1.6. Avoidance of fertiliser and herbicides**

In order to maximise the biodiversity value of the site, and avoid water pollution, fertiliser use will be avoided on all parts of the site, including areas used for productive purposes (such as orchards or grazing land).

Herbicide use will be avoided on all parts of the site, except for spot applications used to control invasive weed species, and only then when this is considered absolutely necessary. Any herbicide application will be carried out by suitably licensed persons following appropriate guidance and legislation.



## 5.2. Specific Management

Table 3 shows the programme of operational maintenance and management for the development.

Table 3: Management programme

Management Prescription	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5+
<b>Existing Hedgerows</b>						
Relaxation of management to allow hedgerows to mature and grow out. Pruning or mechanical cutting if required to maintain operational performance undertaken in later winter (February), inspections to monitor health of trees and to remove dead, dying or diseased wood where necessary. Chippings to be removed. Cutting of any particular hedgerow should not take place more than once every three years, and a maximum of one third of the hedgerows at the site should be cut in any one year.	✓	✓	✓	✓	✓	✓
Planting of new native shrub species as indicated in <b>Figure 1</b> to gap up and strengthen existing hedgerows.	✓					
<b>Proposed Structure Planting</b>						
Annual inspection and pruning as required to maintain operational performance. Pruning if required to be undertaken and in late winter (February) to allow fruit and seed to remain in place overwinter. Cut wood to be stacked in piles and retained on site where possible. Following formative pruning (e.g. after four or so years) cutting of any particular plants should not take place more than once every three years, and a maximum of one third of the structure planting at the site should be cut in any one year.	✓	✓	✓	✓	✓	✓
Selective thinning as required to allow healthy development of larger trees.						✓
<b>Parkland</b>						

<b>Management Prescription</b>	<b>Year 0</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5+</b>
Sowing of seed mix (surface sown) on to cultivated soil in autumn or spring.	✓					
Planting of individual oak trees (standards or above)	✓					
Low-intensity grazing (on rotation between each field) following establishment.		✓	✓	✓	✓	✓
One annual hay cut if grazing unavailable in that year, to be carried out in August.		✓	✓	✓	✓	✓
<b>Orchard</b>						
Planting of fruit and nut trees	✓					
Low intensity grazing following establishment		✓	✓	✓	✓	✓
One annual hay cut if grazing unavailable in that year, to be carried out in August.		✓	✓	✓	✓	✓
Annual inspection and pruning of trees as required		✓	✓	✓	✓	✓
<b>Low intervention Skylark Enhancement Area</b>						
Selective planting of scrub and structure planting and harrowing and overseeding of grassland with a wildflower grassland mix in Autumn or Spring	✓					
Low-intensity grazing by livestock, but no grazing between 1 April and 31 July.	✓	✓	✓	✓	✓	✓
One or two cuts if necessary to maintain sward suitability for grazing. No cutting between 01 April and 31 July.	✓	✓	✓	✓	✓	✓
Cutting back of scrub every 2 to 3 years.			✓		✓	
<b>Neutral Grassland (within security fencing)</b>						
Sowing of seed mix on surface of cultivated soil in Autumn or Spring	✓					
Low-intensity grazing (on rotation between each field) following establishment.			✓	✓	✓	✓

<b>Management Prescription</b>	<b>Year 0</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5+</b>
If grazing is not available, one annual cut in August or September can be used to maintain the grassland.						
Bi-annual visual inspections to ensure no substantial areas of bare ground have developed. Re-seeding will be undertaken (surface sown) in the successive autumn or spring months to re-establish the grassland.		✓	✓	✓	✓	✓
<b>Tussocky Grassland with Wildflowers</b>						
Sowing of seed (surface sown) in on to cultivated soil in Autumn or Spring, where bare ground is currently present. Where existing grassland is present, cutting of the existing sward to c. 30 – 50mm high) followed by scarification/harrowing where applicable to expose up to 50% bare soil. Seed then to be sown by surface broadcasting in Autumn or Spring.		✓				
Single late summer cut in August every two years to c. 50mm high to allow seeds to set. No more than half of this habitat across the site to be cut in any one year. Removal of arisings and creation of habitat piles at margins.		✓	✓	✓	✓	✓
<b>Reinstated Ponds</b>						
Digging of ponds in winter (November to February) by light excavator		✓				
Planting of marginal species (Spring)		✓				
Removal of vegetation and degrading with light excavator during winter as required (November to February)			✓	✓	✓	✓
<b>Nature Areas, Interpretation Boards and Waymarkers</b>						
Creation of two amphibian hibernacula near to ponds	✓					
Maintain area litter free. Regular quarterly inspection and replacement of any damaged or vandalised	✓	✓	✓	✓	✓	✓

<b>Management Prescription</b>	<b>Year 0</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5+</b>
interpretation boards as soon as possible.						
<b>Monitoring and Review</b>						
Review of LEMP and amendment of management regime if required		✓	✓			✓

## **6.0 Roles, Responsibilities and Monitoring**

### **6.1 Roles and Responsibilities**

This LEMP incorporates objectives and prescriptions for the approach to be adopted in the maintenance and management of the Proposed Development.

The aim is to promote a sensitive management approach, which protects and improves the landscape and visual amenity value of the Site, enhances biodiversity and is compatible with the Proposed Development.

The management and maintenance of the Proposed Development will be undertaken by a private landscape management company appointed by Elstree Green Ltd.

The successful contractor will be required to manage and maintain the landscapes of the Proposed Development in accordance with this LEMP. Elstree Green Ltd shall satisfy themselves the appointed contractor is fit and capable of undertaking the management tasks as detailed within this LEMP.

Details of the appointed contractor will be provided to Hertsmere Borough Council. Contact details of the appointed contract will also be provided at suitable locations within the Site.

### **6.2 Monitoring**

The LEMP is a dynamic document that should be reviewed regularly and developed or amended as circumstances change and the Site evolves.

Monitoring of the LEMP will be undertaken annually in the first two years then every five years by a suitably qualified ecologist and landscape architect and a written report produced.

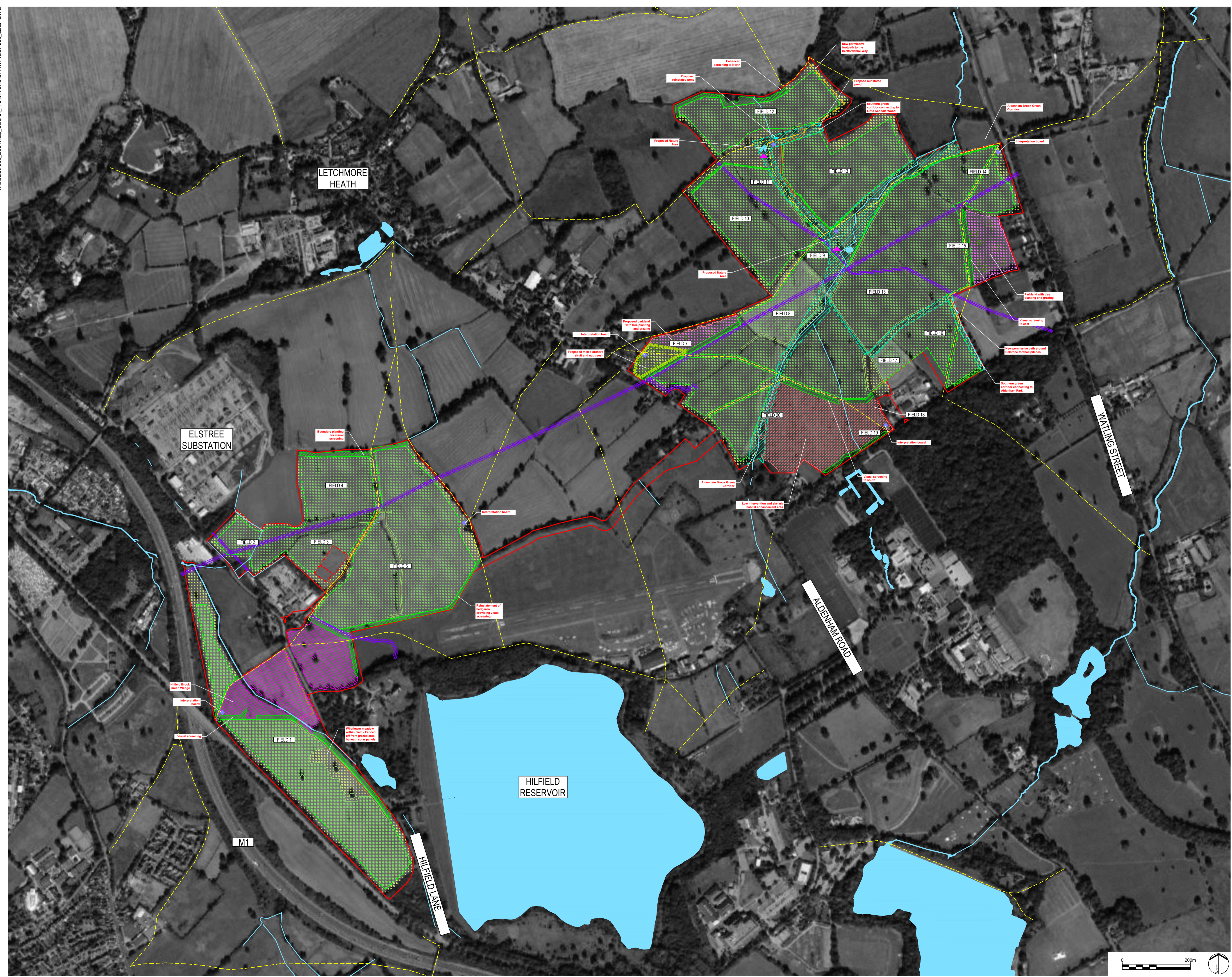
Where the delivery of the LEMP is not being met for whatever reason(s), appropriate action will be identified and taken to rectify failings. This may entail making changes to specification of planting species if these are failing to establish successfully. Equally, where successes are identified, these should be promoted further, and lessons learned from both successes and failures fed into the next iteration of the LEMP.

## 7.0 References

- South Hertfordshire Landscape Character Assessment (2001) Hertfordshire County Council
- Hertsmere Green Infrastructure Plan (2011) Land Use Consultants
- Green Arc Strategic Green Infrastructure Plan (with Hertfordshire) (2011) Land Use Consultants
- Hertsmere Borough Council South, EIA Screening for Proposed Solar Farm and Battery Storage at Land North Of Butterfly Lane, Land Surrounding Hilfield Farm And Land East Of Hilfield Lane Aldenham Hertfordshire (Ref. 20/1183/EI1)
- Ecological Appraisal Report (including Biodiversity Net Gain Statement) (Ref. R012) undertaken by BSG Ecology.
- Landscape and Visual Impact Assessment (Document Ref. R018) undertaken by LDA Design.
- Flood Risk Assessment and Drainage Strategy (Document Ref. R010) undertaken by RMA.
- Statement of Community Involvement (Document Ref. R014) undertaken by Alpaca Communications.

**Figures**

**Figure 1: Landscape and Ecology Enhancement Plan**



- LEGEND**
- Site boundary
  - Public Right of Way (footpath)
  - Underground Services and Easement
  - Waterbody
  - Watercourse
  - Proposed Solar Farm Features**
    - Solar Panels
    - Fence
    - Access Gates
    - Access Roads
  - Proposed Landscape and Ecological Features**
    - Existing vegetation (managed and enhanced where required)
    - Indicative proposed large trees (Parkland areas)
    - New screening structure planting (31,262 sq. m)
    - Neutral grassland (within security fencing - 796,791 sq. m)
    - Parkland (29,880 sq. m)
    - Tussocky grassland with wildflowers (175,328 sq. m)
    - Low intervention and skylark habitat enhancement area (65,753 sq. m)
    - Hillfield Brook green wedge Tussocky grassland with wildflowers (60,637 sq. m)
    - Orchard (7,129 sq. m)
    - Aldenham Brook green corridor and linkages (2.4km)
    - Proposed pond
    - Proposed ecology hibernaculum
    - Permissive path (576 lin. m)
    - Proposed Interpretation Board

REV.	DESCRIPTION	APP. DATE
E	Red line amended. Additional structure planting	BC 18/12/20
D	Hibernaculum, redline and additional labels added	BC 14/12/20
C	Permissive path and reinstated ponds added	BC 30/11/20
B	Structure planting to Butterfly Lane	BC 24/11/20
A	Amends	BC 20/11/20

**LDA DESIGN**

PROJECT TITLE  
**HILLFIELD SOLAR FARM AND BATTERY STORAGE**

DRAWING TITLE  
**Landscape and Ecology Enhancement Plan**

ISSUED BY	Oxford	T: 01865 887 050	
DATE	19.11.2020	DRAWN	SG/GE
SCALE/RAI	1:5,000	CHECKED	BC
STATUS	Planning	APPROVED	AK

**DWG. NO 7533\_012**

No dimensions are to be scaled from this drawing. All dimensions are to be checked on site. Area measurements for indicative purposes only.

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 Sources: Ordnance Survey



## **Appendix**

### **Appendix 1: Extracts from Hertsmere Green Infrastructure Plan (2011)**

# Hertfordshire Green Infrastructure Plans - Hertsmere

## Figure 3.1: Proposed Green Infrastructure Network

### Key

Proposals

↔ Strategic link

↔ Local link

**1** Green infrastructure projects

Farmland conservation/enhancement and landscape restoration zone

Wetland habitat zone

Woodland enhancement zone

Small-scale landscapes - conservation zone

Existing

Long distance and promoted routes

Rivers

Accessible open space

**G** Watling Chase gateway site

Woodland

Main settlements

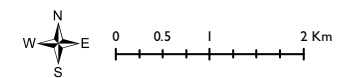
Watling Chase Community Forest

Barriers

Major road network

Railway

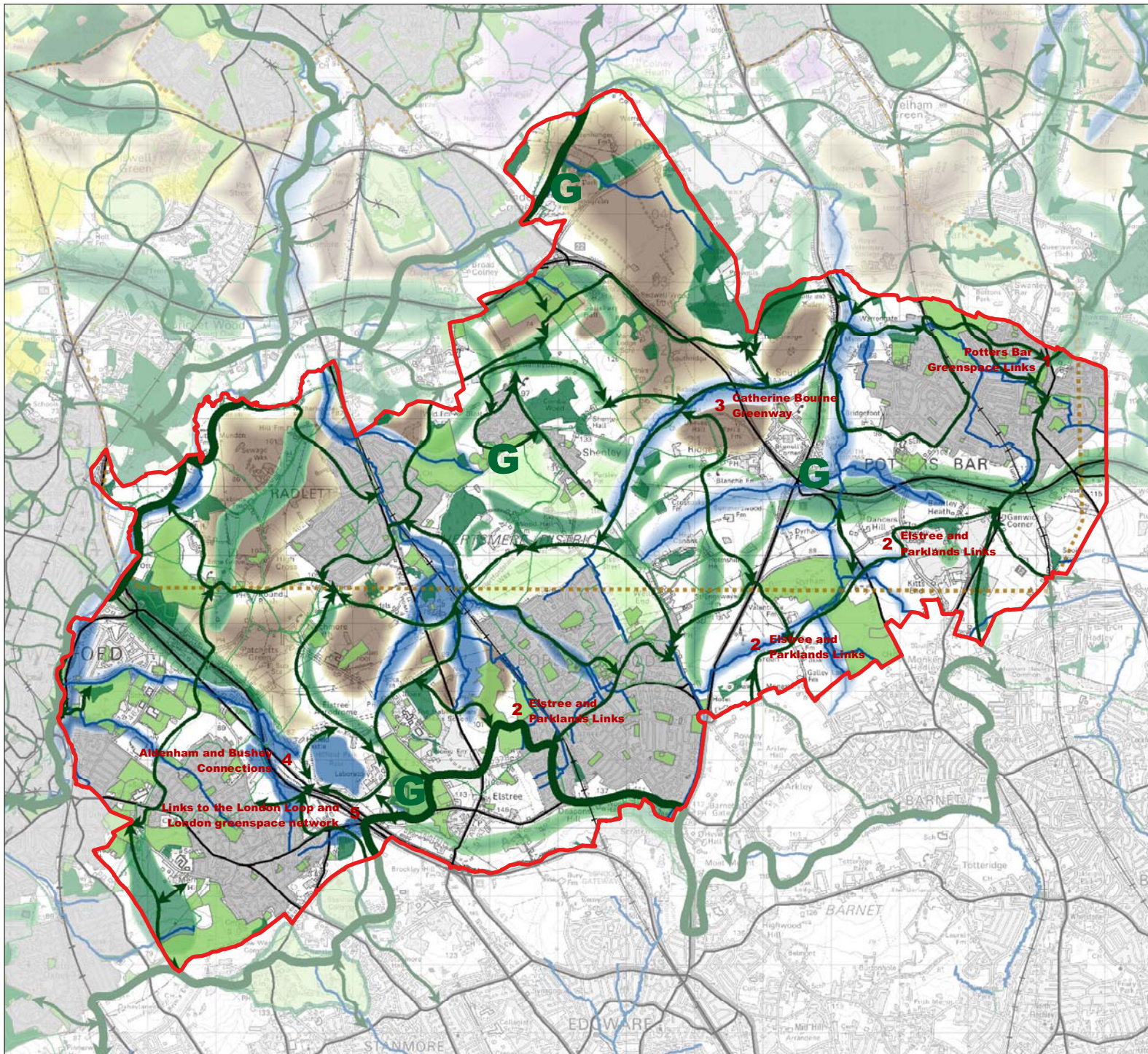
Disused Railway



**DRAFT**

Date: 16/03/2011

Revision:

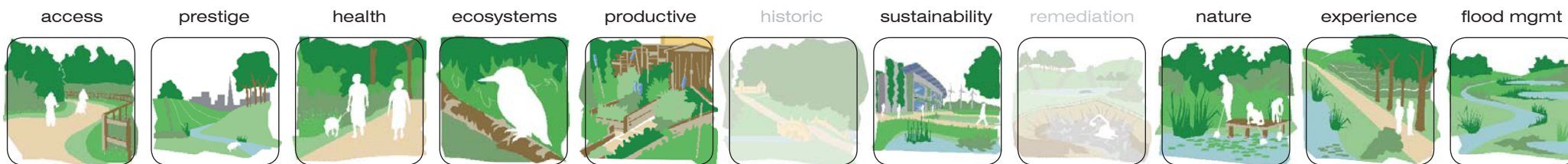
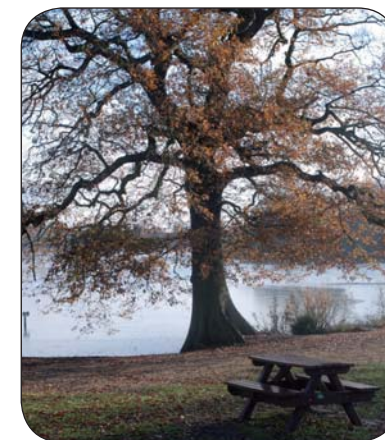


**PROJECT : 4. Aldenham & Bushey connections**



**Peri urban wildspace-** Brief description / snapshot of the project :

- Enhanced shared use car free access to key site of recreational focus (Aldenham & Hillfield Reservoirs) from principal residential areas
- Improved connections to the London greenspace network via the London Loop (link to Project 5) - a network of promoted walking routes from other recreational/leisure foci, such as pubs on the route e.g. to the south of the existing Country Park. Links to Elstree & Parkland Links Project (project 2). Also enhanced signage from local railway stations e.g. Elstree & Borehamwood
- Future landscape for Aldenham Country Park site -potential for future inward investment from the London Boroughs as this is a primary North London semi natural greenspace resource. Linked to an enhanced future offer/selling points for the site e.g. improved zoning to include greater level of space for informal recreation away from the wider, extending the urban farm to include local food, produce (expanded shop/cafe & revenue generating activity) & community garden/orchard, sustainably managed wet woodland to contribute to biomass production
- Delivery of woodland planting & habitat creation to contribute to aims of WCCF Partnership Plan at the identified Gateway site (Aldenham Country Park) - woodland wildspace & enhancement of the greenway route/links to Bushey/A41 corridor through woodland planting



**PLANS / POLICIES / PROGRAMMES WHICH THE PROJECT CAN HELP DELIVER :** Can deliver some of the aspirations for a WCCF Partnership Gateway Site & for the Aldenham Plateau WCCF Partnership character area (creation of enhanced woodland wildspace). Also complementary to Hertsmere's Greenways & Health Walks programmes & to delivery of Herts ROWIP objectives. Can secure enhanced links with All London Green Grid & with adjacent London Boroughs.

**ISSUES ASSOCIATED WITH DELIVERY :** Legalities/dedication issues. Need for land ownership liaison & negotiation, in relation to enhanced greenway links (access rights/wayleaves etc) & also through Higher Level Stewardship & Woodland Grant Schemes take up, to deliver capital works for landscape & access improvement (including woodland planting as part of the Bushey link). Need for joined up working with the London Boroughs to secure a sustainable future for Aldenham Country Park, including resources to manage & keep open, dedication of enhanced & better promoted greenway links & enhanced revenue offer/rejuvenation of facilities. Work with existing Friends Group (Aldenham Country Park). Subject to viability of pooled resources, is likely that future proposal for Aldenham Country Park would form part of a package let to a facilities contractor, as a commercial concern, for ongoing management.

**DELIVERY PARTNERS & MONITORING MECHANISMS :** Hertfordshire County Council, Hertsmere Borough & the 5 Boroughs taking the All London Green Grid forward in North London (Harrow/Hillingdon/Camden/Barnet/Brent). Watling Chase Community Forest Partnership. Also landowners, Natural England & Forestry Commission in relation to greenway links. At the Aldenham site, there is considerable scope for community/local schools/volunteers involvement to help with management activity (e.g. tree/orchard planting -focus for events/activities), as well as existing Friends Group. Also through work with local green teams, volunteer groups such as BTCV or through rehabilitation activities.

**WHAT HAPPENS NEXT? PRIORITY / RANKING :** In view of the current situation at Aldenham (March 2011) & its value as a community & wider North London greenspace resource & the fact that health & safety could rapidly become an issue without appropriate resourcing, this is a high priority project. Liaison with the adjacent London Boroughs should take place as soon as possible regarding possible collaboration/resource pooling, as the site could also link well to ALGG's proposed Regional Park on the northern London boundary e.g. that Aldenham could form a key part of that function/could connect to this.