# Land at Lotmead Farm

# Ecological Mitigation and Management Framework

Prepared by:
**The Environmental Dimension Partnership Ltd (EDP)**

On Behalf of:
**Ainscough Strategic Land**

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## Contents



## Appendices



## Plan



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# Section 1
# Introduction, Context and Purpose

1.1 This Ecological Mitigation and Management Framework (referred to hereafter as the 'EMMF') has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Ainscough Strategic Land (hereafter referred to as 'the Applicant').

1.2 The Applicant submitted an outline planning application for mixed use (mainly residential dwellings), with all matters reserved except for access, within a 169ha site situated at central point Ordnance Survey National Grid Reference SU 203 839, near Lotmead Farm, Swindon (the 'Application Site').

1.3 The Application Site lies within a strategic allocation, known as New Eastern Villages, as per the Swindon Borough Council (SBC) Local Plan adopted in March 2015 for the period until 2026.

1.4 The application (planning ref: S/OUT/19/0582) was supported by an Environmental Impact Assessment (EIA). The Ecological Impact Assessment (EcIA) of the proposed development was presented in Chapter 12 the Environmental Statement and included a number of Technical Appendices which set out the ecological baseline for the Application Site[1] [2]. A Phase 1 habitat plan from the EcIA showing the existing habitats and land use cover types is included in **Appendix EDP 1**.

1.5 EDP has provided input throughout the iterative design process so the masterplan, although illustrative, already reflects some important measures, suggested by EDP, to avoid, mitigate or compensate for ecological impacts as well as other measures designed to provide long-term ecological enhancements and biodiversity net gain in line with planning policy at the national and local level. In addition, the proposals will provide a net gain in woodland cover. See **Appendix EDP 2**.

1.6 This EMMF has been produced to address determination comments recently provided by the SBC Planning Ecologist during consideration of the application. In summary, further clarity/information on the broad principles for ecological mitigation and the broad areas where such mitigation would occur was required to inform determination. In addition, further clarity was required regarding cumulative impact assessment in the EcIA. At a meeting with the SBC Planning Ecologist on 20 June 2019, it was agreed that the production of an EMMF type document, and written clarification of cumulative impact assessment (see **Appendix EDP 3**), would address both requirements. Finally, the SBC Planning Ecologist requested that a landscape contractor review the EMMF to ensure it was viable to implement.

[1] EDP Ltd (2017). *Lotmead Farm Villages. Baseline Ecology Report.* EDP report ref. EDP1879_06f. Report to Ainscough Strategic Land.

[2] EDP Ltd (2017). *Lotmead Farm Villages. Phase 2 Ecology Surveys Report*. EDP report ref. EDP1879_17b. Report to Ainscough Strategic Land.

1.7 This EMMF has been prepared in the context of various SBC Local Plan policies and Supplementary Planning Documents (SPD) (see **Appendix EDP 4**). This includes the North Eastern Villages Green Infrastructure Strategy SPD, which required the '*retention and enhancement of the GI corridors, where possible of similar width to the developed villages'*. EDP considers that this EMMF demonstrates compliance with this and the Applicant's commitment to deliver the requirements of the other SBC Local Plan policies and Supplementary Planning Documents relating to biodiversity, where it is possible to do so within the confines of the Application Site. In doing so, EDP considers that the development proposals are compliant with local planning policy, and are also consistent with national planning policy.

1.8 This EMMF has been informed by consultation with Blue Wigwam Ltd in August 2019; a landscape contractor with significant experience of implementing mitigation strategies like that detailed in this EMMF. See: https://www.bluewigwam.com/. Blue Wigwam were asked by EDP to review a draft EMMF and highlight any fundamental design or operational constraints to its implementation or achievement of its objectives.

1.9 Blue Wigwam Ltd made a number of detailed design suggestions, but in summary were supportive of the EMMF, stating that: *''We believe it would be a strong contender for net gain of the biodiversity, ecology and landscape given a good design brief and the correct steer from Ecology and Landscape based experts as it refers to in the document.''*

1.10 The remainder of this document is structured as follows:

- **Section 2** describes the scope and overall aims of the EMMF, and responsibilities for its delivery;
- **Section 3** summarises the ecological and landscape features within the Application Site that are the focus of the EMMF;
- **Sections 4** to **7** provide an outline of the principles for construction-phase mitigation and habitat creation, and the subsequent ongoing management required to maintain features on-site;
- **Section 8** describes the monitoring requirements and timetable for activities; and
- **Section 9** provides an overall summary and conclusions.

# Section 2
# Scope, Overall Aim and Responsibilities

## Scope

2.1 This EMMF is intended to provide the outline framework for delivering ecological mitigation and management across the entire Application Site, including all green infrastructure, not just the 'biodiversity zones'. It consolidates ecological mitigation information provided in various documents (the EcIA, the Design and Access Statement and Green Infrastructure Parameters Plan) into one document to facilitate determination of the application submitted and demonstrate biodiversity gain.

2.2 The EMMF intends to provide a sufficient level of detail commensurate with an outline application and therefore contains only broad principles, broad parameters and broad areas for mitigation and management. Providing too much detail is not commensurate with an outline planning application and could be counterproductive whilst the detailed design stage (subject to Reserved Matters) is still evolving.

2.3 In doing the above, the requirements expressed by SBC are considered to be sufficiently addressed by this document.

2.4 The necessary detailed measures will be provided in a Landscape, Ecological and Arboricultural Management Plan document (LEAMP), or similar document, and accompanying each future Reserved Matters application to meet the requirement of a suitably worded condition attached to outline planning consent, for each phase of development. It is anticipated that each LEAMP will need to describe/demonstrate how it is consistent with the EMMF.

2.5 Future LEAMPs will include detailed soft landscaping measures (e.g. seed mixes, planting depths and mulch composition) and habitat maintenance (e.g. replacement, mowing, watering and pruning regimes), which are beyond the scope of this EMMF; however, this EMMF outlines broad habitat management principles to be taken forward to the LEAMP.

2.6 The precise phasing of the different development phases is not yet confirmed and therefore it is not possible to write an EMMF at this stage that identifies the location and timing for site-based activities in a chronologically linear fashion from year 1 to year 10. Instead, the EMMF provides a description of the broad measures required for any development phase from year 1 (when it commences) to year 10.

2.7 Assuming commencement of at least one development phase in the first year, the EMMF and subsequent LEAMP(s) will therefore cover a minimum ten-year period from commencement of the very first construction activity.

2.8 Each development phase may take several years to complete construction, and several development phases will occur over a period of many years. It will therefore be necessary for immediate aftercare/maintenance to occur in the first year of each development phase.

Thereafter, for each development phase, management will continue in perpetuity. The EMMF accounts for this.

2.9 The EMMF is structured to take into account the construction and post-development stages for each possible development phase. During the construction stage of any of the development phases, the measures described in this EMMF seek to protect, maintain and manage existing features of ecological value that are to be retained within the development. Following completion of each development phase, the measures described in this EMMF also seek to ensure that the ecological features retained/created or enhanced within the built development are retained and managed in perpetuity (during the post-development stage).

2.10 The EcIA for the proposed development took a focused suite of ecological features of District level value forward for assessment. Nonetheless, as acknowledged in the EcIA, the proposed development ensures there is no net loss to biodiversity as a whole and moreover the proposed development will ensure that a net gain in biodiversity is delivered. This has been achieved through primary ('intrinsic') mitigation that is inherent to the scheme design, which ensures adverse effects upon all protected species populations/assemblages and other features of less than District-value on site have been avoided/minimised and opportunities for their continued existence on site has been secured. This primary and additional secondary mitigation is discussed further in **Section 4** and **5**.

2.11 The specific mitigation measures within this EMMF will inform future protected species licences as required. These licences are currently administered by Natural England (NE). This EMMF also therefore provides a sufficient level of information for SBC to be satisfied that the development is capable of meeting the requirements of the protected species licensing derogation tests[3], to which it must give due consideration when determining planning applications.

2.12 The proposed Biodiversity Strategy Plan is shown on **Plan EDP 1** and the Green Infrastructure Parameter Plan (as submitted with the application) is shown on **Appendix EDP 2**. The Landscape and Ecology Chapters (which included Arboriculture) of the ES (and associated Technical Appendices) submitted in support of the application have informed this EMMF.

**Overall Aim**

2.13 The overall aim of this EMMF (and subsequent LEAMPs) is: *''to ensure that the overall Application Site supports ecological features of Local to District-level nature conservation value, thereby ensuring the overall Application Site makes a positive net contribution to local biodiversity."*

[3] As described in Regulation 53 of the *Conservation of Habitats and Species Regulation 2017* (as amended).

**Responsibilities**

2.14 The responsibility for carrying out the functions of this EMMF and subsequent LEAMPs will vary and will be confirmed within the LEAMPs. Nonetheless, for each phase of development, in principal, the responsibilities will be as follows:

- *Construction stage*: the protection of existing ecological interest features being retained, and creation of new habitats will be the responsibility of the Applicant, supported by specialists where appropriate[4], and are to be continued through to practical completion of construction;

- *Post-development stage (immediate aftercare/short term management up to Year 5)*: for each development phase, and depending upon construction timings, the responsibility for the immediate establishment and maintenance of retained and newly created habitats/structures may be with the Applicant. The Applicant would be supported by specialists, where appropriate, until the development phase is completed at which point the Applicant's nominated management/stewardship company would take over management; and

- *Post-development stage (longer term management year 6 to 10)*: for each development phase, by year 6 it is anticipated that all construction activities will be completed and the management of the retained and newly created habitats/structures will fall entirely to the Applicant's nominated management/ stewardship company.

2.15 Works impacting upon protected species will only commence once the relevant licence (if applicable)[5] has been granted by NE (whether by class licence or conventional licence route) and works must be undertaken in accordance with the Method Statement accompanying each licence. It will be the responsibility of the Applicant to ensure that the conditions of these licences are met, with support from the Ecological Clerk of Works.

2.16 The management scheme detailed within future LEAMPs will cover the provision, management, inspection, maintenance, repair and replacement as necessary, taking into account factors including ecological, landscape, arboricultural, social/educational/ recreational uses for the land.

4 Including Ecological Clerk of Works arboriculturists and landscape contractors

5 Mitigation licences are not available for certain protected species, like common and widespread reptiles

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# Section 3
# Summary of Ecological Baseline and Feature Objectives

3.1 The following ecological interest features, which are the subject of this EMMF, and which will therefore benefit from the measures described in this EMMF, are provided in **Table EDP 3.1**.

**Table EDP 3.1**: Ecological Interest Features Covered by the EMMF

| Feature | Key Attributes/Comments (based on latest (2017) surveys unless stated otherwise) | Statutorily Protected | Policy Value |
|---|---|---|---|
| Terrestrial habitats on site (broadleaved woodland; hedges and mature trees; semi-improved grassland, marshy grassland, tall ruderal and scrub) | Increases habitat diversity on site and contributes to local biodiversity, but typical of any lowland setting in England | × | Site to District |
| Aquatic habitats on site (ditches and ponds) | Increases habitat diversity on site and contributes to local biodiversity, but typical to any lowland setting in England | × | Local |
| Aquatic habitats off site (River Cole and its tributaries Dorcan Stream and Liden Brook) | Non-statutory designation (County Wildlife Site) adjacent to site west, north and east boundaries | × | County |
| Breeding bird assemblage on site | Six 'Red List' and six 'Amber List' bird species observed within the Site, but breeding on site in low numbers, typical of lowland farmland in England | ✓ (all wild bird species, their eggs and nests are protected by law) | Site |
| Roosting bats on site (confirmed roost) | Building B12<br>Confirmed small maternity roost of brown long eared (*Plecotus auritus*) and confirmed small non-maternity roost of soprano pipistrelle (*Pipistrellus pygmaeus*)<br><br>Confirmed small maternity roost of serotine (*Eptesicus serotinus*) (2014 surveys; but not recorded in 2017) | ✓ (animals and roosts)* | Local (brown long-eared and soprano pipistrelle)<br><br>District (serotine) |

| Feature | Key Attributes/Comments (based on latest (2017) surveys unless stated otherwise) | Statutorily Protected | Policy Value |
|---|---|---|---|
| | Building B16<br>Confirmed small non-maternity roost of common pipistrelle (*Pipistrellus pipistrellus*) | | Local |
| | Building 21<br>Confirmed small non-maternity roost of common pipistrelle | | Local |
| Navigating/foraging bat assemblage on site | 8 species including Nathusius pipistrelle and barbastelle; overall low to moderate levels of foraging activity onsite | ✓ (animals)* | Local |
| Dormouse (*Muscardinus avellanarius*) on site | Small population/ population/low numbers of individuals opportunistically foraging and/or dispersing through the Application Site, with sub-optimal opportunities for breeding and hibernation | ✓ (animals and habitat)* | Local |
| Otter (*Lutra lutra*) on and off site | Small population/low numbers of individuals on the Dorcan Stream, River Cole and Liden Brook | ✓ (animals and habitat)* | Local |
| Water vole (*Arvicola amphibious*) off site | Small population/low numbers of individuals on the River Cole and Liden Brook | ✓ (animals and habitat)* | Local |
| Great crested newt (*Triturus cristatus*) on site | A medium-sized metapopulation in Ponds P3 and P4 on site | ✓ (animals and habitat)* | District |
| Common and widespread reptiles on site | Including a high population of grass snake *Natrix natrix Helvetica* | ✓ (animals) | District |
| Assemblages of fish and aquatic invertebrates (River Cole and its tributaries) including a freshwater bryozoan (*Lophopus crystallinus*) off site[1] | The freshwater bryozoan is a red data list species | × | District to County |

| Feature | Key Attributes/Comments (based on latest (2017) surveys unless stated otherwise) | Statutorily Protected | Policy Value |
|---|---|---|---|
| Table Notes:<br>* habitat protected includes places of breeding, hibernation, rest, shelter or protection<br>[1] apart from crayfish surveys (in 2017), no aquatic surveys were undertaken by EDP for fish or aquatic invertebrates. No white-clawed crayfish were recorded in 2017 only signal crayfish. Environment Agency data from 2017 indicated the biological water quality of the River Cole system was poor. This is based upon fish and invertebrate data suggesting the fish and invertebrate assemblage is not likely to be particularly distinctive nor exceptional. Surveys for the bryozoan were undertaken by another consultant on the River Cole in 2009. | | | |

3.2 The feature-specific objectives to achieve the stated aim in **Paragraph 2.13**, and against which the success of the EMMF and subsequent LEAMPs will be measured, are set out below:

- **Broad Objective 1**: Ensure the Application Site supports a coherent network of various terrestrial and aquatic habitats, including habitats of at least Local nature conservation value;

- **Broad Objective 2**: Ensure the Application Site supports the existence of the interest features/reasons for designation of the River Cole LWS and associated fish and aquatic invertebrate assemblages of at least District value;

- **Broad Objective 3**: Ensure the Application Site supports/provide opportunities for a breeding bird assemblage of at least Site value;

- **Broad Objective 4**: Ensure the Application Site supports/provide opportunities for an assemblage of roosting and navigating/foraging bats of at least Local value;

- **Broad Objective 5**: Ensure the Application Site supports/provide opportunities for a population of dormouse of at least Local value;

- **Broad Objective 6**: Ensure the Application Site supports/provide opportunities for a population of otter and water vole of at least Local value;

- **Broad Objective 7**: Ensure the Application Site supports/provide opportunities for a range of native amphibians including a metapopulation of great crested newt of at least District value; and

- **Broad Objective 8** Ensure the Application Site supports/provide opportunities for an assemblage of native reptiles of at least District value.

3.3 The specific, broad measures during the construction-stage and post-completion stage of each development phase, which are required to meet the above broad objectives, are provided in **Sections 4** to **7**.

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# Section 4
# Framework Ecological Construction Method Statement

4.1 This section sets out the appropriate working practices and safeguards to be deployed throughout the construction stage of each phase of development, including all associated enabling works, in order to protect the ecological interest features of the Application Site as discussed in **Section 3**.

4.2 This covers generic measures relating to ecological supervision, the protection of retained habitats, vegetation clearance and pollution prevention/control, along with feature-specific measures.

4.3 A Construction and Environment Management Plan (CEMP) will be produced by the construction contractor, which will include suitable mitigation measures to avoid/limit environmental impacts for each phase of development. It is anticipated that a suitably experienced Ecologist will provide input to the CEMP, in the form of an Ecological Construction Method Statement (ECMS) appended to the CEMP. It is anticipated that an ECMS/similar document will be conditioned as part of any grant of planning permission. The ECMS will include and may expand on the principles described below.

**Habitats – Generic Measures**

4.4 Industry-standard measures and good site practices are applicable to any development site and are required to avoid/minimise construction stage ecological effects occurring to habitats and fauna; this will be described in more detail in each ECMS/LEAMP (accompanied by drawings), for each phase of development. Nonetheless, in outline the measures will include (but not limited to):

- All Construction Contractor personnel to be given pre-commencement 'toolbox talks' regarding the ecologically sensitive features present within the Application Site and measures required to avoid/minimise impacts. Location and species-specific 'toolbox talks' will be undertaken where contractors will be made aware of the potential presence of animals on-site. This will be delivered by a suitably experienced and licenced ecologist (Ecological Clerk of Works). In all cases, these talks will cover the legal protection and working practices to avoid harming animals. The contractors will be informed that if any protected species are found when an Ecological Clerk of Works is not in attendance, they must not be handled, works must stop immediately in this area where safe to do so and advice must be sought immediately from the ecologist;

- Prior to any works commencing on the Application Site, a walkover survey is to be undertaken by a suitably experienced Ecological Clerk of Works to ensure that the status of the Application Site for habitats and species has not significantly altered since planning consent was granted, and to provide location-specific information for the preparation of an ECMS;

- Ecological Clerk of Works to review the validity of baseline ecology surveys for the Site in accordance with industry guidance, and provide a statement justifying need/scope of update surveys to inform mitigation;

- Construction activities affecting key habitats and species to be directly supervised by a licenced ecologist/Ecological Clerk of Works;

- Dust suppression measures to prevent site-derived dust being deposited on and off-site;

- Surface-water run-off prevention measures (for example temporary settlement lagoons and silt traps) to prevent run-off entering watercourses and waterbodies;

- Use of temporary exclusion barriers (such as tree protection and orange mesh fencing) and appropriate signage to delineate construction areas from sensitive habitats to be retained;

- Prohibition of construction activities within 8m of watercourses and waterbodies, or with specific working methodologies employed and supervised for any necessary works within this protection zone;

- Vegetation removal for temporary construction access limited as far as possible, and agreeing any areas to be affected, in advance, with the Ecological Clerk of Works;

- Trees affected by the development will be sensitively worked around to minimise adverse effects, in accordance with advice from a suitably experienced arboriculturist. This may include use of no-dig technologies where root protection areas (RPA) conflict with proposed hard surfaces, such as roads, footpaths and other hard landscaping. Inevitably some conflicts may arise whereby no-dig technology cannot be used. In these instances, hand digging under a watching brief can be implemented if appropriate to minimise any harm, when working within a designated RPA;

- Retained trees will be protected from development by the erection of protective fencing in accordance with BS 5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'. The fencing alignment will be identified by the Tree Protection Plans, as required by planning condition, and will account for the protection afforded to veteran trees/trees with veteran features in accordance with Natural England's Standing Advice[6];

- All enabling/construction works should be undertaken in accordance with pollution prevention guidance notes and publications. Pollution Prevention Guidelines (PPGs) are currently archived on the National Archives website[7], however, these are still downloadable and represent the most up-to-date good practice guidance notes; and

6 https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences

7 Available via: http://webarchive.nationalarchives.gov.uk/20140328084622/http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx

- If work is required outside of daylight hours, then temporary lighting should be directed away from buildings, watercourses, woodlands, mature trees and hedgerows.

4.5 Construction to be undertaken in accordance with pre-agreed timescales to avoid ecologically sensitive times of the year and in accordance with pre-agreed working methods, including (but not limited to):

- Establish Ecological Protection Zones (EPZs) around retained habitats; delineated with temporary visual barrier such as mesh fencing;

- Using delineated vehicular access routes pre-agreed with the ECoW;

- All excavations to be covered at night and sealed flush at ground level, or if this is not physically possible because the excavations are too large, then excavations to be left with a means of escape such as ensuring one side of each excavation is at no more than a 30º angle, or with a plank of wood laid at a 30º angle (or less) to allow any mammals that should fall into the excavations to escape;

- Excavations should be checked each morning before work commences within the excavation, to ensure trapped animals are not present; and

- Vegetation clearance to be undertaken outside key species-specific seasons, according to vegetation type removed and species likely impacted. Alternatively, the work would need to be supervised directly by the Ecological Clerk of Works.

**River Cole LWS (River Cole, Dorcan Stream, and Liden Brook) and Associated Fish/Aquatic Invertebrates**

4.6 Construction activities will be largely situated distant from the three watercourses with the exception of spatially discrete construction activities relating to any new outfall or new permanent bridge crossing.

4.7 The Principal Contractor will require an 'environmental permit' (formerly known as a flood defence consent) from the Environment Agency to allow construction activities at/within 8m of the channel.

4.8 The Principal Contractor will follow best practice pollution prevention measures to ensure changes to hydrological regime (water quality and quantity during construction) are avoided/minimised. This will include surface-water run-off prevention measures (for example temporary settlement lagoons and silt traps) to prevent run-off entering the LWS.

4.9 Temporarily disturbed ground will be reinstated and reseeded/replanted to the appropriate standard to ensure the banksides are stable and contain vegetation suitable for the LWS designation.

### Feature-specific Measures for Species/Assemblages

4.10 The remainder of this section provides additional measures for specific species/ assemblages over and above the measures described above. Optimal times of year to undertake site clearance works is illustrated in **Table EDP 4.1.**

**Table EDP 4.1:** Optimal Indicative Periods for Undertaking Site Clearance Works During Construction Stage*

| Task | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vegetation clearance - grassland[8] | ■ | ■ | ■ | | | | | | | | ■ | ■ |
| Above-ground clearance of hedgerows and scrub[9] | ■ | ■ | | | | | | | | | | ■ |
| Below-ground hedgerow clearance, including the removal of roots and/or stumps of shrubs and trees remaining[10] | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| Installation of tree protection fencing | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Removal of trees not identified with bat roosting potential[11] | ■ | ■ | | | | | | ■ | ■ | ■ | ■ | ■ |
| Demolition of buildings supporting bats roosts and removal of trees identified with bat roosting potential[12] | | | | | | | | | ■ | ■ | | |
| Installation of great crested newt exclusion fencing[13] | ■ | ■ | | | | | | | | ■ | ■ | ■ |
| Capture and exclusion of great crested newt within fencing | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| Destructive searching and vegetation clearance for great crested newt elsewhere[14] | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| Destructive searching, vegetation clearance and translocation for reptiles | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |

* Precise timings subject to change depending upon a number of factors including: licensing requirements, planning condition requirements, detailed design and construction programme.

[8] Assuming reptile/great crested newt hibernacula are absent.

[9] Undertaken outside of the dormouse active period and corresponds with the period outside the bird nesting season.

[10] Undertaken outside of the dormouse hibernation period (also avoids disturbance of potentially hibernating great crested newts).

[11] Undertaken outside the bird nesting season.

[12] Optimal to avoid the bird breeding season and the maternity and hibernation period for bats.

[13] Avoiding existing hibernacula. Undertaken prior to onset of main migrations period for great crested newts, to avoid their dispersal onto site before works commence. Installed 250m from breeding ponds (where this radius is on-site).

[14] Within 500m of breeding ponds.

***Breeding Birds***

4.11 Where there are no specific constraints relating to bats, the removal of trees should be undertaken outside of the bird breeding season (bird breeding season taken to be March to August inclusive).

4.12 The working methodology will ensure that hedgerow clearance is undertaken sensitively through the use of hand-held machinery, and sensitive works will also include specific times of year to avoid harm to dormice. Such timings will likely require the above-ground tree and hedgerow clearance to be undertaken during December to February inclusive, to avoid the main dormouse active season above ground-level and nesting bird season.

4.13 Should construction in open fields not commence over winter, then measures such as temporary installation of reflective tape on sticks, and the stick locations then rotated every week, will be implemented across open fields from March through to August inclusive to deter ground nesting birds. In addition, the Ecological Clerk of Works will walk construction areas prior to work commencing to confirm absence of nests or otherwise.

4.14 Should any active nest or nest under construction be found, then the nest should be left undisturbed until it is no longer occupied. If any nests are identified, appropriate buffer zones (usually approximately 5m) will be created around the nest, where work will cease until the young birds have fledged.

4.15 Subject to requirements in relation to roosting bats, the demolition of buildings and tree removal/surgery for structures supporting/offering the potential to support roosting bats will be undertaken under supervision where required, at an appropriate time of year (September/October is optimal to avoid the bird breeding season and the maternity and hibernation period for bats).

***Navigating/Foraging Bats***

4.16 No additional measures over and above the measures described above with respect to construction phase lighting are considered necessary. As construction stage impacts of temporary lighting will not occur across the whole site at any given time, there will continue to be dark and sheltered areas available for roosting bats during the construction stage, either through phases of development not yet completed (opportunities as existing), or phases of development completed (opportunities provided as mitigation/enhancements).

***Roosting Bats***

*Site Clearance – Trees*

4.17 In the event that tree removal/surgery is required for trees offering potential to support roosting bats, the following measures are to be undertaken:

- Further ground-level visual assessments and aerial surveys of trees proposed for tree works (including off-site highways) will be undertaken by a licensed bat ecologist. This

is required as there is at least a ten-year period from construction of the first phase of development until completion of all development phases; which needs to be considered in view of the transitory nature of bat tree roosts, and full details of tree removal on-site are not defined at an outline stage. Additional surveys may be required (dusk/dawn surveys) where coverage during the aerial inspection is limited or the tree cannot be climbed for reason of health and safety;

- Following the surveys, the following mitigation strategy applies:

    - **Confirmed roosts**: tree works will be undertaken only following grant of a conventional European Protected Species (EPS) licence from Natural England or works undertaken under supervision of a licensed bat worker who holds a bat class licence (depending upon species and status of roosts present);

    - **High roost potential**: further detailed dusk/dawn surveys will be undertaken at the appropriate time of year (April to September). If confirmed roosts are present, then follow protocol as above (confirmed roosts). If no confirmed roosts then tree(s) will be removed under supervision of a licensed bat Ecologist, at an appropriate time of year (September/October is optimal to avoid the bird breeding season and the maternity and hibernation period for bats);

    - **Low to medium roost potential**: tree(s) will be removed under supervision of a licensed bat Ecologist, at an appropriate time of year (September/October is optimal to avoid the bird breeding season and the maternity and hibernation period for bats); and

    - If any bats are discovered during tree works (where roosts were not previously confirmed during surveys, only potential), owing to the strict legal protection afforded to bats and their roosts, works to the tree/s containing the bat roost/s must cease immediately (where safe to do so), and the licensed bat worker advise on a way forward in consultation with Natural England.

4.18 A 'soft felling' technique' will be used to trees to minimise risk of harming bats involving the following:

- Any bats required to be moved will be done so only by a licensed bat worker using gloves and a cloth bag to move the bats to the bat boxes. Injured bats will be immediately taken into care (as directed within Mitchell-Jones, 2004[15]);

- Tree felling will avoid cutting through any cracks, cavities, limb/knot holes or any other potential roosting features, i.e. by cutting above and below the feature when removing sections with suitable features;

- Any sections to be cut supporting suitable roosting features are to be suitably harnessed and supported before cutting using industry-standard rigging equipment,

[15] Mitchell-Jones, A.J, and McLeish, A.P. Ed., (2004), 3rd Edition Bat Workers' Manual, JNCC.

and gently lowered to the ground once cut, to avoid violent shaking of potential roosting features; and

- Any cut sections with potential roosting features are to be retained on site by one of the following methods:
    - Strapping to existing, retained mature trees and appropriately secured in position;
    - Retained on site at ground level within an area of retained woodland; and
    - Retained on site for minimum 48 hours, with potential entrances not blocked, i.e. facing away from ground, before they are removed or chipped.

4.19 Aerial surveys will be undertaken by a suitably experienced ecologist with a Natural England (NE) bat survey licence, arboricultural contractor with a NE bat survey licence, or with experience of working with bats and under the supervision of a NE bat survey licence holder.

*Site Clearance – Buildings*

4.20 The following measures are to be undertaken in respect of buildings with low bat roost potential:

- Further surveys (visual inspections and if required, dusk/dawn surveys) of all buildings requiring demolition/works will be undertaken by a licensed bat ecologist in the appropriate survey season before demolition. This is required as there is a ten-year period from construction of the first phase of development until completion of all development phases, which needs to be considered in view of the transitory nature of bat tree roosts, and full details of building works on-site are not defined at an outline stage;
- Buildings offering potential to support roosting bats will be demolished/worked on at an appropriate time of year for the roost potential/type that is present but as a default, an appropriate time of year for works would be September/October to avoid the bird breeding season and the maternity and hibernation period for bats); and
- If any bats are discovered during the surveys, owing to the strict legal protection afforded to bats and their roosts, then the grant of a conventional European Protected Species (EPS) licence from Natural England is likely to be required before works can be undertaken to the buildings continue, or works undertaken under supervision of a licensed bat worker who holds a bat class licence.

4.21 If there is no evidence of roosting bats during the surveys, works may proceed without an EPS licence. There may be a requirement for supervision of a licensed bat worker, and using a 'soft strip' sectional dismantlement technique where feasible for specific features such as for tiles and fascia boards, where residual low potential exists.

4.22 Any bats required to be moved will be done so only by a licensed bat worker using gloves and a cloth bag to move the bats to the bat boxes. Injured bats will be immediately taken into care (as directed within Mitchell-Jones, 2004[16]).

4.23 The bat box provision, which is described in **Section 5**, will be erected 1 month prior to the demolition of buildings to provide a suitable location for bats to be moved to by a licenced bat ecologist during demolition.

4.24 The temporary lighting measures above will ensure there is no unnecessary lighting of retained buildings which may support roosting bats.

***Dormouse***

4.25 The working methodology will ensure that any tree/hedgerow clearance is undertaken sensitively through the use of hand-held machinery, and sensitive works will also include specific times of year to avoid harm to dormice.

4.26 Such timings will likely require the above-ground tree and hedgerow clearance to be undertaken during December to February inclusive, to avoid the main dormouse active season above ground level, whilst taking care to avoid disturbing hibernating dormice at ground level. Thereafter, below-ground clearance, including the removal of roots and/or stumps of shrubs and trees remaining, or of buried rubble and spoil, should occur between the start of May to end of October to avoid the hibernation period.

4.27 The requirement for a Natural England EPS licence in advance of any vegetation clearance will depend on the final detailed stages of design and phasing of the development and associated landscaping. It is likely that limited areas of clearance, of habitats with poor suitability for dormouse breeding or hibernation, can be undertaken under a non-licensed method statement approach supervised by an Ecological Clerk of Works.

***Otter and Water Vole (River Cole, Dorcan Stream, Liden Brook)***

4.28 Spatially discrete construction activities relating to any new outfall or new permanent bridge crossing will only occur following a pre-commencement Ecological Clerk of Works survey of the work location and 50m upstream and downstream.

4.29 Should any otter couches, dens or holts be suspected or confirmed, or any water vole burrows be present, or there is a requirement to temporarily install structures in the channel for construction (e.g. dams or pumps), then the Ecological Clerk of Works will advise on a way forward which may include construction works proceeding under Natural England licence.

4.30 Should places for otter/water vole breeding, hibernation, rest, shelter or protection be absent during the survey, then the Ecological Clerk of Works will advise on a phased and careful approach to vegetation clearance within and adjacent to working areas on the banksides.

[16] Mitchell-Jones, A.J, and McLeish, A.P. Ed., (2004), 3rd Edition Bat Workers' Manual, JNCC.

4.31 The lighting strategy referred to above will ensure that otter will not be disturbed when it is active at night. The best practice pollution prevention measures described above will ensure changes to hydrological regime (water quality and quantity during construction) are avoided/minimised.

***Amphibians Including Great Crested Newt***

4.32 There is not currently a district licence in place across the Swindon area to allow for developers to mitigate and offset potential impacts upon great crested newts. However, this remains a viable mechanism for mitigating great crested newt impacts should it become available in advance of the development.

4.33 In the absence of district licencing, the following working measures are to be undertaken, subject to approval with Natural England through the mitigation licensing process, in order to avoid direct harm to any individuals that may be present during construction and ensure the favourable conservation status of the local population is maintained.

*Exclusion Fencing and Capture/Translocation (Within 250m of Breeding Ponds)*

4.34 Prior to the commencement of any site clearance works, a great crested newt 'receptor site' comprising the two existing breeding ponds and a zone of suitable terrestrial habitat around the ponds, will be identified, retained and enhanced, see **Section 5** and **Plan EDP 1**.

4.35 Temporary exclusion fencing will be installed around construction areas situated within approximately 250m of the breeding ponds to exclude great crested newts from working areas (if present); the fencing will be installed to coincide with existing features/boundaries rather than be installed at an arbitrary location. The receptor site will be situated outside the exclusion fencing. Newt fencing installation is to be undertaken in accordance with the English Nature (Natural England) (2001) 'Great Crested Newt Mitigation Guidelines' and under the direct supervision and instruction of the Ecological Clerk of Works. Temporary pitfall traps will be sunk into and flush with ground level at 10m spacings along the inside of amphibian fencing.

4.36 Careful consideration to the timing of newt fence installation is needed around the two breeding ponds, to minimise disruption to the newt migration to the ponds from surrounding terrestrial habitat. If newt fencing is programmed to occur in winter (October to February inclusive, prior to newt migration in March), then pitfall traps may need to be installed on the outside of perimeter newt fencing, so that newts can be translocated to the receptor site (thereby artificially facilitating the migration).

4.37 If newt fencing is programmed to occur in winter (October to February inclusive), any hibernacula along proposed fence-lines will need to be removed prior to the hibernation season (removed in the period March to October inclusive).

4.38 The installation of temporary fencing and pitfall traps will be followed by capture and exclusion for a defined period and during an appropriate time of year between mid-March and mid-October when newts are active. The pitfall trapping period is to be agreed through

the licensing process, but capture by pitfall trapping for a medium population is typically 60 days. Following a period of no-capture days (typically 5 clear days), a period of careful destructive searching and vegetation clearance of point features will occur within the newt fencing supervised by the Ecological Clerk of Works.

4.39 Captured newts will be translocated to the receptor site.

4.40 Upon satisfactory completion of capture and exclusion (as described above), as determined by the Ecological Clerk of Works, construction can be undertaken within the cleared areas.

4.41 Once installed, the newt fencing is to be monitored weekly by the Ecological Clerk of Works/nominated responsible operative, and any necessary repairs made immediately by the construction contractor/nominated landscape contractor.

4.42 Following completion of all ground works, the newt fencing shall be removed under the supervision of the Ecological Clerk of Works.

*Supervised Site Clearance (250m to 500m from Breeding Ponds)*

4.43 The remainder of the Application Site 250m to 500m from breeding ponds is unlikely to contain great crested newt due to the separation of these areas from breeding ponds (most newts occur within 250m of breeding ponds), and the low habitat suitability (mainly arable). Therefore no exclusion fencing will be installed in this zone, but will include the following measures (under mitigation licence):

- Hand searching and careful clearance of rubble/log piles in the newt active period (mid-March to mid-October) supervised by the Ecological Clerk of Works;
- Storage of building materials (e.g. hard-core, pipe work, timber) off the ground (e.g. on pallets) and moved sensitively being watchful for the potential presence of newts;
- Ensuring excavations are covered overnight or are checked each morning prior to continuing works;
- Careful phased vegetation clearance during mid-March to mid-October (initial clearance to no lower than 15cm above ground level, hand search by Ecological Clerk of Works, leave for minimum of 2 days, then clearance to ground level); and
- Captured newts will be translocated to the receptor site by the Ecological Clerk of Works.

*Supervised Site Clearance (>500m from Breeding Ponds)*

4.44 The mitigation licence will not cover land >500m from breeding ponds since it is not anticipated that newts will be encountered. Nonetheless, the Ecological Clerk of Works will be involved in overseeing careful phased vegetation clearance in respect of other animals

and will be able to advise on location-specific measures/approach if newts are suspected or encountered.

***Reptiles Including Grass Snake***

4.45 The combination of capture and translocation and 'habitat manipulation/passive dispersal' techniques described above will also be suitable for reptiles.

4.46 There will be a period of careful, progressive vegetation clearance followed by careful destructive searching at an appropriate time of year (between mid-March and mid-October) within construction areas where suitable terrestrial habitats occur, and will be supervised by the Ecological Clerk of Works. Any reptiles encountered will be translocated by hand by the Ecological Clerk of Works to nearby suitable terrestrial habitat.

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# Section 5
# Habitat Retention, Enhancement and Creation (Construction Stage)

5.1 This section sets out the appropriate habitat creation to be completed within the construction phase to ensure that appropriate measures to provide biodiversity enhancement and gain are implemented from the early stages of the scheme.

5.2 The following sections provide measures to show how the Application Site could support a coherent network of various terrestrial and aquatic habitats, including habitats of at least Local nature conservation value (**Broad Objective 1 and 2**) and supports/provide opportunities for a range of species assemblages and populations (**Broad Objectives 3-8**).

### Designing for Biodiversity and Intrinsic Mitigation

5.3 The built development will result in the permanent loss of approximately c.144ha of predominantly arable/improved grassland habitat of limited intrinsic nature conservation value within a site of c.169ha.

5.4 The design and layout of the proposed development has been refined through various iterations to ensure that potentially significant ecological effects are avoided or minimised, whilst ensuring opportunities for both Important Ecological Features (IEFs) and non-IEF species/species groups remain on site. In turn, the scheme will deliver biodiversity gains in accordance with local and national planning policy, and ensure that the local community's health and wellbeing is promoted by access to nature.

5.5 To achieve this, the proposed development (as shown on the Green Infrastructure Parameter Plan in **Appendix EDP 2** and on **Plan EDP 1**) incorporates approximately 91ha of Green Infrastructure (formal and informal open greenspace), which is 54% of available land within the Application Site. Of the 91ha, up to c.15 ha (11% of available land on site) would be retained, enhanced/created and managed specifically for biodiversity – see the orange outline areas on **Plan EDP 1**. Within the 15ha, habitats of at least Local intrinsic ecological value will be created and managed in perpetuity to replace the existing low value agricultural land. The proposals also include some 17ha of new woodland planting. The green infrastructure design will be refined at the detailed design stage.

5.6 Biodiversity net gain calculations undertaken for the Application Site (using the Environment Bank calculator v2 2019), shows that there is a net biodiversity gain for habitats (a score of +18.15) and linear features (a score of +17.75)[17]. See **Table EDP 5.1**.

[17] EDP (2019). *Land at Lotmead Farm, Swindon: Biodiversity Net Gain. Report to Ainscough Strategic Land*. EDP report ref. edp1879_R020.

**Table EDP5.1: Summary of Biodiversity Net gain Calculations for the Application Site**

| **Biodiversity Accounting Summary** | | |
|---|---|---|
| **Habitats** | **Area (ha)** | **Units** |
| **Net habitats Balance** | | **18.15** |
| **Linear Features** | **Length (km)** | **Units** |
| **Net Linear Balance** | | **17.75** |

5.7 The mitigation also focuses on ensuring a buffer between the three watercourses (River Cole, Dorcan Stream and Liden Brook) and built development; at its nearest point the built development is c.40m, and for the vast majority of the watercourse lengths, is significantly further away. See **Plan EDP 1.** This ensures that cohesive strategic green corridors permeate the Application Site, and connect to suitable off-site habitat, in accordance with the North Eastern Villages GI SPD. In turn these strategic GI corridors will safeguard the future of protected/notable species and ensure that they do not become isolated within developed areas.

5.8 Further key principles of the design incorporated into the proposals for the development include:

- Retention of all buildings that currently have moderate to high bat roost potential or confirmed bat roosts. Should future surveys reveal confirmed roosts in buildings currently exhibiting low potential but proposed to be demolished then appropriate mitigation will be designed and implemented with involvement from the Ecological Clerk of Works (and under mitigation licence here required);

- Retention, enhancement and appropriate long-term management of existing terrestrial habitats (other than arable/improved grassland)[18] and aquatic habitats on site (ditches and all waterbodies) and ensuring they are functionally connected in a coherent green network; and

- Creation of new habitats of principal importance for nature conservation (Priority Habitat-equivalents) within informal greenspace and subsequent appropriate management in perpetuity, including: Deciduous Woodland; Hedgerows, Lowland Meadows, and Floodplain Grazing Marsh totalling 25.3Ha (see **Table EDP 5.2** and **Plan EDP 1**);

**Table EDP 5.2**.: Priority Habitat-equivalents to be Created on Site

| **Priority Habitats** | **Within Biodiversity Zone (Ha)** | **Elsewhere On-site (Ha)** | **Totals (Ha)** |
|---|---|---|---|
| Deciduous Woodland | 3.5 | 13.6 | 17.1 |
| Lowland Meadows | 7.2 | 0 | 7.2 |
| Floodplain Grazing Marsh | 1.0 | 0 | 1.0 |
| Area sub-totals (Ha) | **11.7** | **13.6** | **25.3** |

[18] Existing habitats include: broadleaved woodland; hedges and mature trees; semi-improved grassland, marshy grassland, tall ruderal and scrub, ditches; ponds.

| Priority Habitats | Within Biodiversity Zone (Ha) | Elsewhere On-site (Ha) | Totals (Ha) |
|---|---|---|---|
| Hedgerows | 160m | 160m | 320m |

- It is considered that the site has sufficient flexibility to include the creation of a significantly greater quantum of hedgerows at the detailed design stage;

- Installation of a number of structures for birds, bats, otter, amphibians and reptiles (see below); bat and bird boxes on existing trees and on/within new buildings and existing trees;

- SuDS designed with variable shelf profiles and depths where possible and seeded with a range of plants according to variation in wetness and topography to provide a range of opportunities for invertebrates, and where permanent open water is proposed, amphibians and grass snake;

- Appropriately managed (restricted) public access to, and minimal lighting of parts of, the Application Site, which are being managed specifically for certain sensitive species/habitats (including the core area around the two GCN ponds in the centre of the site and the new north western area nature reserve for grass snake);

- Management in perpetuity by a nominated stewardship/management company in accordance with the future LEAMP(S); and

- Inclusion of circular ecological nature trails around the Application Site with interpretation signage linking up key areas to provide access to nature for human wellbeing.

5.9 The landscape design will be refined at the detailed design stage and will need to allow for management access, including personnel, machinery and, where applicable, livestock. Due consideration will be given to fencing and cattle grids accordingly, particularly within the floodplain gazing marsh habitat. There is considered to be sufficient flexibility in the design and space to allow for the creation of appropriate access and infrastructure to manage the flood plain grazing through grazing and/or cutting.

***Public Access***

5.10 Public access will be managed to prevent disturbance to ecologically sensitive areas such as nature reserve and biodiversity zones, while engaging the new residents with nature. The following measures will be used to manage accessibility at the detailed design stage:

- Selective planting of dense thorny bushes such as hawthorn and blackthorn and erection of fences to restrict access along the boundaries of sensitive habitats;

- Installation of motorbike interception gates at strategic points;

- Creation of a clearly demarcated network of footpaths;

- Wildlife interpretation boards to encourage community engagement; and
- Signs and bins to discourage littering and dog fowling.

5.11 It is considered that the quantum of Public Open Space and GI proposals offer sufficient flexibility to provide recreational opportunities for new residents while also retaining, enhancing and creating a network of wildlife rich habitats.

**Species Selection**

5.12 Some example species mixes for the different habitat types or provided below

***Proposed Hedgerow and Tree Planting***

5.13 A range of native trees and shrubs appropriate to the bio-geographical context of the Site (as derived from the species lists of local wildlife sites) has been suggested for the creation of habitats of ecological value within the development site.

5.14 Creation of new hedgerows, planting up of hedgerow gaps and tree planting will utilise native species where possible, as recommended in **Table EDP 5.3**, in order to strengthen the continuity of these wildlife corridors and their species diversity.

**Table EDP 5.3:** Range of Tree/Shrub Species Selected for Hedgerow and Tree Planting

| Common Name | Scientific Name | Shrubs/Hedgerow | Trees |
|---|---|---|---|
| Oak | *Quercus robur* | | ● |
| Hazel | *Corylus avellana* | | ● |
| Rowan | *Sorbus aucuparia* | | ● |
| Wild Service Tree | *Sorbus terminalis* | | ● |
| Crab Apple | *Malus sylvestris* | | ● |
| Ash | *Fraxinus Excelsior* | | ● |
| Small-leaved lime | *Tilia cordata* | | ● |
| Alder | *Alnus glutinosa* | | ● |
| Hornbeam | *Carpinus betulus* | | ● |
| Wild Cherry | *Prunus avium* | | ● |
| Field Maple | *Acer campestre* | ● | ● |
| Wych elm | *Ulmus glabra* | ● | ● |
| Blackthorn | *Prunus spinosa* | ● | |
| Hawthorn | *Crataegus monogyna* | ● | |
| Spindle | *Euonymous europaeus* | ● | |
| Privet | *Ligustrum vulgare* | ● | |
| Field Rose | *Rosa arvensis* | ● | |
| Guelder Rose | *Viburnum opulus* | ● | |
| Honeysuckle | *Lonicera periclymenum* | ● | |
| Wayfaring tree | *Viburnum lantana* | ● | |

| Common Name | Scientific Name | Shrubs/Hedgerow | Trees |
|---|---|---|---|
| Elder | *Sambucus nigra* | ● | |
| Dogwood | *Cornus sanguinea* | ● | |
| Holly | *Ilex aquifolium* | ● | |

5.15 Should supplementation of the ground flora be required to speed up the establishment of woodland/hedgerow habitat, then the following species are recommended: lords-and-ladies, bluebell (*Hyacinthoides non-scripta*), primrose (*Primula vulgaris*), hart's tongue fern (*Asplenium scolopendrium*), wood anemone and wood sorrel (*Oxalis acetosella*).

5.16 A mixture of native and non-native species will be used to balance functional landscape requirements and ecological enhancement opportunities around the housing plots, roadways and footpaths across the wider site.

***Long species-rich grassland***

5.17 Long areas of species-rich grassland will be created in areas of land adjacent to public open space. It is recommended that the grassland is created through seeding with a meadow grass mixture for loamy soils, such as Emorsgate Seeds EG5 seed mixture, or similar. The species included in this mix are detailed in **Table EDP 5.4**.

**Table EDP 5.4:** Species Included in Emorsgate Seeds EG5 Mix (or similar) – Recommended for Use in the Creation of Species-rich Long Grassland Areas

| Latin Name | Common Name |
|---|---|
| *Festuca rubra* | Slender-creeping Red-fescue |
| *Festuca Ovina* | Sheep's Fescue |
| *Anthroxanthum odoratum* | Sweet Vernal-grass |
| *Agrostis capillaris* | Common Bent |
| *Briza media* | Quaking Grass |
| *Cynosurus cristatus* | Crested Dogstail |
| *Phleum bertolonii* | Smaller Cat's-tail |
| *Trisetum flavescens* | Yellow Oat-grass |

***Wildflower Grassland Species Selection***

5.18 Species rich wildflower grassland will be created in the informal public open space areas adjacent to water bodies and along hedgerow boundaries to add seasonal colour and create important sources of nectar and pollen for bees, butterflies, hoverflies and other insects, while maintaining commuting/foraging corridors for protected species.

5.19 It is recommended that the following four seed mixes, or similar, are used to meet the different conditions on site:

- EM11 Cricklade North Meadow Flood Plain Meadow Seed Mix (harvested locally[19])
- WFG9 mix 'Wetland and Pond Areas';

[19] https://wildseed.co.uk/mixtures/view/69

- WFG8 'Hedgerows and Shaded Areas'; and
- WFG4 'Flowering Meadow' – suitable for neutral/loamy soils.

5.20 The species included in these mixes are detailed in **Tables EDP 5.5 - 5.8** respectively:

**Table EDP 5.5:** Species in Emorsgate Cricklade North Meadow EM11 Mix (or similar) – Recommended for Creation of Flood Plain Grazing Marsh

| Latin Name | Common Name |
|---|---|
| *Centaurea nigra* | Common Knapweed |
| *Cerastium fontanum* | Common Mouse-ear |
| *Filipendula ulmaria* | Meadowsweet |
| *Leontodon hispidus* | Rough Hawkbit |
| *Leucanthemum vulgare* | Oxeye Daisy |
| *Lotus corniculatus* | Birdsfoot Trefoil |
| *Medicago lupulina* | Black Medick |
| *Plantago lanceolata* | Ribwort Plantain |
| *Prunella vulgaris* | Selfheal |
| *Ranunculus acris* | Meadow Buttercup |
| *Ranunculus bulbosus* | Bulbous Buttercup |
| *Rhinanthus minor* | Yellow Rattle |
| *Rumex acetosa* | Common Sorrel |
| *Sanguisorba officinalis* | Great Burnet |
| *Silaum silaus* | Pepper Saxifrage |
| *Trifolium pratense* | Wild Red Clover |
| *Agrostis capillaris* | Common Bent |
| *Alopecurus pratensis* | Meadow Foxtail |
| *Anthoxanthum odoratum* | Sweet Vernal-grass |
| *Bromus commutatus* | Meadow Brome |
| *Cynosurus cristatus* | Crested Dogstail |
| *Dactylis glomerata* | Cocksfoot |
| *Festuca rubra* | Red Fescue |
| *Hordeum secalinum* | Meadow Barley |
| *Lolium perenne* | Perennial Ryegrass (w |
| *Trisetum flavescens* | Yellow Oat-grass (w |

**Table EDP 5.6:** Species in Germinal Seeds WFG 9 Mix (or similar) – Recommended for Creation of Flower-rich Wetland Grass Habitat

| Latin Name | Common Name |
|---|---|
| *Festuca rubra ssp litoralis* | Slender Creeping Red Fescue |
| *Cynosurus Cristatus* | Crested Dogstail |
| *Poa triviallis* | Rough Stalked Meadow Grass |
| *Festuca arundinacea* | Tall Fescue |
| *Deschampsia caespitosa* | Tufted Hair Grass |
| *Phleum bertolonii* | Small Leaved Timothy |
| *Ranunculus acris* | Meadow Buttercup |
| *Sanguisorba minor* | Salad Burnet |
| *Iris pseuidacorus* | Yellow Flag Iris |
| *Lythrum salicaria* | Loosetrife |
| *Lotus uliginosus* | Greater Birdsfoot |
| *Rhinanthus minor* | Yellow Rattle |
| *Sanguisorba officinalis* | Greater Burnet |
| *Leontodon autumnalis* | Autumn Hawkbit |
| *Lycopsus europaeus* | Gypsy Wort |
| *Lychnis flos-cuculi* | Ragged Robin |
| *Succisa pratensis* | Devilsbit Scabious |
| *Caltha palustrus* | Marsh Marigold |
| *Pulicaria dysenterica* | Common Fleabane |

**Table EDP 5.7:** Species in Germinal Seeds WFG 8 Mix (or similar) – Recommended for Creation of Wildflower-rich Shaded Habitats

| Latin Name | Common Name |
|---|---|
| *Festuca arundinacea* | Tall Fescue |
| *Festuca rubra ssp litoralis* | Slender Creeping Red Fescue |
| *Cynosurus cristatus* | Crested Dogstail |
| *Festuca rubra rubra* | Strong Creeping Red Fescue |
| *Poa memoralis* | Wood Meadow Grass |
| *Filipendula ulmaria* | Meadow Sweet |
| *Hyacinthoides non scripta* | Bluebell |
| *Iris pseudacorus* | Iris |
| *Myrrhis odorata* | Sweet Cicely |
| *Silene dioca* | Red Campion |
| *Agrostemma Githago* | Corncockle |
| *Chrysanthemum segetum* | Corn Marigold |
| *Galium mollugo* | Hedge Bedstraw |
| *Geum urbanum* | Wood Avens |
| *Silene alba* | White Campion |
| *Torillis japonica* | Hedge Parsley (Upright) |
| *Alliara petiolata* | Garlic Mustard |
| *Allium ursinum* | Ransoms |
| *Teucrium scorodonia* | Wood Sage |
| *Digitalis purpurea* | Foxglove |
| *Clematis vitalba* | Traveller's Joy |
| *Stachys officinalis* | Betony |
| *Lychnis flos–cuculi* | Ragged Robin |

**Table EDP 5.8:** Species in Germinal Seeds WFG 4 Mix (or similar) – Recommended for Creation of Flower-rich Grassland Habitat

| Latin Name | Common Name |
|---|---|
| *Festuca rubra ssp litoralis* | Slender Creeping Red Fescue |
| *Cynosurus cristatus* | Crested Dogstail |
| *Festuca rubra rubra* | Strong Creeping Red Fescue |
| *Festuca arundinicea* | Tall Fescue |
| *Onobrychis vicifolia* | Sainfoin |
| *Phleum bertolonii* | Small Leaved Timothy |
| *Leucanthemum vulgare* | Ox-eye daisy |
| *Lotus corniculatus* | Birdsfoot trefoil |
| *Plantago lanceolata* | Ribwort plantain |
| *Prunella vulgaris* | Self-heal |
| *Centaurea cyanus* | Common Knapweed |
| *Galium verum* | Lady's Bedstraw |
| *Linum usitatissimum* | Flax |
| *Ranunculus acris* | Meadow Buttercup |
| *Sanguisorba minor* | Salad Burnet |
| *Achillea millefolium* | Yarrow |
| *Medicago lupulina* | Black Medick |
| *Mililotus alba* | White Melliot |
| *Scabiosa columbaria* | Small Scabious |
| *Rhinanthus minor* | Yellow Rattle |
| *Vicia sativa* | Common Vetch |
| *Geranium pratense* | Meadow Cranesbill |
| *Lychnis flos-cuculi* | Ragged Robin |

### Feature-specific Measures for Species/Assemblages

5.21 The remainder of this section provides additional measures over and above the measures described above for specific species/assemblages, which are also shown on **Plan EDP 1**.

#### *Bird and Bat Box Provision*

5.22 The intrinsic primary mitigation designed into the proposed development primarily involves retention, enhancement and management of existing terrestrial and aquatic habitats on site as described above. In addition, with respect to roosting bats, those buildings with moderate to high bat roosting potential or confirmed bat roosts associated with Lotmead Farm and the dwellings adjacent to Wanborough Road will be retained.

5.23 Additional secondary mitigation and enhancement, prior to and during construction, will include installation of bat and bird boxes, In accordance with the advice given in the Town and Country Planning Association's (TCPAs) '*Biodiversity Positive: Eco-towns Biodiversity Worksheet 2009*', and in the Bat Conservation Trust's '*Biodiversity for Low and Zero Carbon Buildings: A Technical Guide for New Build 2010*'. **Table EDP 5.9** outlines the recommended bird and bat box provision in accordance with this guidance.

**Table EDP 5.9:** Bird and Bat Box Provision

| Potentially Appropriate Species | Recommended Number of Roosts/Nest Sites | Provision for 2600 Dwellings |
|---|---|---|
| Crevice dwelling bats | 1 in 20 structures | 130 |
| Bats requiring flight space | 1 in 5 public buildings (non-residential) | 3 |
| Swifts | 1 in 20 buildings | 130 |
| House martins | 1 in 50 buildings | 52 |
| House sparrows | 1 in 40 buildings | 65 |
| Starlings | 1 in 100 buildings | 26 |
| Swallows | 1 in 50 buildings | 52 |
| **Total** | | 458 (+75 boxes erected on trees – see below) |

5.24 The EclA also recommends that bird and bat boxes are provided within the development site on trees in order to maintain and enhance bird nesting and bat roosting opportunities. It is recommended that a further 75 roosting or nesting features are therefore installed across the Site on the mature trees rather than installed/integrated into buildings. In light of the species that are present, the following designs are recommended for erection of retained trees (in addition to the 458 boxes to be installed or integrated on buildings):

Birds (40 Number)

- 10 open fronted nesting boxes – suitable for species such as robin and pied wagtail;
- 22 small holed boxes of variable hole size – suitable for a wide range of species; and
- 8 large holed nest boxes – suitable for woodpeckers and owls.

Bats (35 Number)

- 14 Schwegler 2F General Purpose – suitable for small bats such as common pipistrelle, nathusius pipistrelle, daubenton's bat and common long-eared bat;
- 14 Schwegler 1FD General Purpose – suitable for small bats;
- 4 Schwegler 2FN Special Woodland – a larger box particularly successful in attracting noctule, to be planted within retained woodland;
- 3 Schwegler 1FS Large Colony Bat Box – especially for Noctule, Nathusius' Pipistrelle and Brown Long-eared; and
- 2 Schwelgler 1FW Hibernation Bat Box.

5.25 The provision of bird and bat nesting/roosting provision applicable to each phase of development will be calculated relative to the number of houses in accordance with the total numbers provided above. With respect to those boxes erected on trees, a greater

proportion of bat boxes will be provided, at the discretion of an ecologist, by those phases of development that include greater provisions of green space.

5.26 External bird and bat boxes will be installed prior to the completion of each phase of development works in accordance with the manufacturer's guidelines and positioned away from high areas of public and light disturbance facing onto areas of green space, particularly adjacent to newly created habitats. An ecologist will advise on the positioning and location of these boxes for each development phase.

5.27 It is proposed that the roosting provision for open flying species that requires a roof void (see **Table EDP 5.9**) is incorporated into the community, commercial and school buildings facing onto green space. The exact location and design will be advised upon by an ecologist.

5.28 A higher proportion of bat boxes erected on mature trees will be located within strategic green infrastructure in the western and south western areas of the site which is close to the existing roosts and provides a cohesive flight line through the Application Site to suitable habitat off-site (see **Plan EDP 1**).

5.29 Bird and bat boxes will be of 'woodcrete' construction (such as those manufactured by Schwegler Ltd.), unless integrated into buildings, to ensure their longevity and to minimise maintenance required. They will be strategically placed at sufficient heights to minimise the risk of public disturbance/vandalism.

***Foraging Bats and Lighting Design***

5.30 The intrinsic primary mitigation designed into the proposed development involves:

- Retention and enhancement with new planting of existing woodland and hedges which provide habitats for navigating and foraging bats in addition to flight lines from retained and new bat roost provision; and

- Provision of unlit 'dark zones' along green corridors, in particular the west, northern and eastern riverine corridors and central strategic routes north-south between the two village areas.

5.31 Additional secondary mitigation will include the implementation of a sensitive lighting scheme, to ensure bat foraging routes are not subject to inappropriate light levels. Such a design should be completed by a suitably experienced Lighting Consultant for each phase of development with input from the project ecologist. The strategy should be developed in accordance with the latest Bat Conservation Trust lighting guidance[20] and light lux level plans produced to demonstrate how light spill onto the 'dark zones' and wider GI have been avoided or minimised.

5.32 Within and immediately adjacent to the 'dark zones', and across the site where feasible, the following principles will be applied:

[20] Currently this is available at: https://www.bats.org.uk/news/2018/09/new-guidance-on-bats-and-lighting

- Avoidance of luminaires that generate upward light;
- Avoidance (where possible) of road lighting columns;
- Strong preference for luminaires that generate low level, downward facing light (e.g. lighting bollards). Where possible, these should also be shielded using hoods, cowls and/or louvres;
- Where lighting columns are required for public paths in open space and secondary roads, 'glare screens' should be incorporated to reduce light spill into the dark zone (and residences);
- Timing of street lighting should be carefully considered, and where possible, light levels should be reduced or switched off altogether during times of lower usage when bats would be active (e.g. 12 pm to 5:30 am);
- Low level bollard lighting should be utilised for all paths and secondary roads adjacent to the dark zones, if required for safety/security reasons;
- 'Warm' low intensity LED luminaires should be used to minimise light spill impacts;
- Minimising infrastructure breaks within retained or created vegetation to reduce the loss of habitat connectivity through implementation of 'wildlife hop-overs' where appropriate. These aim to create continuous and accessible canopies over the PRoW or smaller road breaks. The objective is to narrow the span of the break in hedgerows to sufficient width that a near continuous canopy can be provided across the gap. Existing large standard trees will be retained or planted either side of the route to provide a canopy height (c.4m) sufficient for vehicles to pass underneath. With time, the canopies would be encouraged to meet overhead forming connectivity; and
- Restricting the height and frequency of lighting at key strategic points where green roads or PRoW dissect hedgerows and utilising strategic planting to screen light spill at such points.

5.33 The final lighting scheme for each phase will be subject to a detailed design. Particular weight will be given to minimising light spill according to these design principles along the strategic 'dark zones', which represent key movement routes for bats and other wildlife across the wider landscape

***Dormouse***

5.34 The intrinsic primary mitigation designed into the proposed development to maintain the favourable conservation status of the species involves retention and enhancement of the hedge network in the north eastern section of the site where dormouse have been recorded, and new woodland planting along the entire eastern boundary. See **Plan EDP 1**. This allows for this species to continue using the Application Site, with access all along the eastern boundary, and ensures that the local population is not isolated by the built environment. Furthermore, this will strengthen the site's boundaries suitability for dormice,

thereby increasing the likelihood of interaction with populations across the wider landscape.

5.35 Additional secondary mitigation will include installing a minimum of 20 dormouse nest boxes which will be erected within the retained hedge network in the north east section of the site. See **Plan EDP 1**.

5.36 New hedge/scrub planting will include thorny species to create dense, thorny thickets and 'A-shaped' hedgerows with dense thorny bases. All other retained hedgerows will be managed in a similar manner to enhance their value to dormice. Areas of new woodland planting will incorporate a diverse mix of native tree and shrub species to benefit dormouse by providing a range of food and nest making opportunities.

5.37 It is acknowledged that in order to create pedestrian and vehicular access, gaps need to be created in hedgerows for road and path connections. Although the mitigation within the green corridors is in itself considered sufficient, the positioning of road and path routes has sought to use existing gaps in the hedgerows or sections of poorer quality vegetation to maintain connectivity within the Application Site where possible.

5.38 The number of breaks in the hedge network required for road connections has been kept to the minimum practicable, therefore minimising any possible fragmentation effect. In addition, the size of the gaps (c.5m maximum) is known to be crossable by dormice. Nonetheless, where possible, 'hop-overs' (points where the tree canopy is connected over the gap by strategic planting of tree specimens) will be installed/created along pedestrian/cycle ways where this delivers tangible connectivity benefit to the species.

***Otter and Water Vole***

5.39 The intrinsic primary mitigation designed into the proposed development involves establishing a significant buffer from the three main watercourses (River Cole, Dorcan Stream and Liden Brook); at its nearest point the built development is c.40m.

5.40 With regards to otter, additional secondary mitigation will include:

- The implementation of a sensitive lighting scheme (since otter are typically diurnal or nocturnal), particularly along the river and stream corridors; and

- Installation of a minimum of two otter-friendly culverts/bridges at the two access road crossing points along the north and west boundaries. (See **Plan EDP 1**) These bridges will be designed with clear open span structures that allow for the safe movement of otters and include a dry ledge for other wildlife to safely cross the stream.

***Amphibians Including Great Crested Newt***

5.41 The intrinsic primary mitigation designed into the proposed development involves retaining and enhancing the two GCN breeding ponds on site and retaining and enhancing a core area of terrestrial habitat around the ponds in the centre of the site. The ponds will also

continue to be connected to a wider green network (occurring on-site) to ensure newts do not become isolated by the proposed development. See **Plan EDP 1**.

5.42 Prior to the commencement of any site clearance works or construction, the core area will be enhanced as follows:

- Additional supplementary planting (hedge species), and installation of new fencing and a management access gate to create a restricted access area;
- Seeding and establishment of a tussocky native grassland seed mix; and
- Installation of a minimum of four new hibernacula within 50m of the ponds; design and composition as per design in English Nature's Great Crested Newt Mitigation Guidelines or equivalent standard.

5.43 Additional secondary mitigation to ensure safe passage of great crested newts (and other animals) and prevent individuals becoming trapped, will include the following (locations shown on **Plan EDP 1**):

- Use of SUDs to take road-run-off over engineered solutions wherever feasible within 250m of ponds:
- Installation of a minimum of nine subterranean amphibian tunnels underneath the road where a new road crosses an existing or new blue or green corridor (hedge or ditch);
- Installation of permanent amphibian fencing panels in targeted locations to channel newts in the direction of these tunnels; and
- The installation of 'amphibian-friendly' kerbs, gully pots with gully pot ladders where the lie within 250m of ponds to allow amphibians to escape) and other design features (e.g. drains without sumps) along roads.

5.44 Additional enhancement opportunities for amphibians (and indeed grass snake) will include enhancing three existing ponds (See **Plan EDP 1**) and the creation of a new wildlife friendly pond near to the existing ponds. The precise dimensions, physical profile and native aquatic/marginal planting will be specified in the LEAMP(S) but each of the ponds will be enhanced as follows:

- Spatial extent to be restored to a minimum of 40m$^2$ up to the extent as shown on Ordnance Survey maps;
- No deeper than around 1.2m; and
- Will have a variable water depth and shelf profile (aiming for a ratio of 80% shallow water, 0.3m to 0.5m, to 20% deep water, up to 1.2m, within each pond).

5.45 These three ponds will also continue to be connected to a wider green network (occurring on-site) to ensure amphibians do not become isolated by the proposed development. See **Plan EDP 1**.

5.46 The new pond will be located in close proximity to the existing pond and be designed according to the following wildlife-friendly design principles:

- Water depth should be variable throughout the pond including shallow areas but predominantly of up to 30cm, and should also include small areas with water depths of greater than 1m, where feasible, to prevent the establishment of emergent plants and maintain an area of open water suitable for submerged and floating plants;
- Include areas of shallow water all year round;
- Utilise irregular shapes to maximize 'edge habitats' for biodiversity;
- Include a broad, undulating, 'draw-down' zone around the margins with long low-angled banks (this draw-down zone will be ever-changing as water levels rise/fall naturally, and is a rich habitat for plants and invertebrates, and a feeding area for birds and small mammals);
- Incorporate shallow sloping margins with a broad, almost flat zone near the pond edge; and
- Include underwater bars or shoals – organic sediments do not accumulate on top of submerged shoals and bars, and so submerged plants can root into the mineral soils – thereby increasing aquatic plant diversity and supporting plant growth.

5.47 Further enhancement opportunities for amphibians will include installing log piles and grass cutting piles at key locations around the site within 50 - 100m of ponds (either outside the flood zone or on raised mounds within the flood zone).

***Reptiles Including Grass Snake***

5.48 The intrinsic primary mitigation designed into the proposed development involves retaining, enhancing and managing a range of existing habitats across the site, and space within which to create new suitable habitats including Lowland Meadows as described above.

5.49 In particular, there will be emphasis on enhancing core areas of the site where grass snake have been recorded (i.e. the Dorcan Stream riparian corridor, the north west corner of the site around the waterbody, and around the two GCN ponds in the centre of the site). Prior to the commencement of any site clearance works or construction, the core areas will be enhanced as follows:

- Additional supplementary planting (hedge species);

- Seeding and establishment of a tussocky native grassland seed mix; and

- Installation of a number of log piles and grass cutting piles (either outside the flood zone or on raised mounds within the flood zone).

5.50 The areas will also continue to be connected to a wider green network (occurring on-site) to ensure reptiles do not become isolated by the proposed development. See **Plan EDP 1**.

5.51 Additional secondary mitigation will include:

- Installing the subterranean amphibian tunnels, permanent directional fencing and kerb design mentioned above for amphibians which will also benefit reptiles; and,

- Undertaking the additional enhancements to three existing ponds mentioned above for amphibians which will also benefit grass snake.

# Section 6
# Establishment/Short-Term Management Principles for Each Phase – Years 1-5 (Post-Development Stage)

6.1 For each development phase, the following section sets out broad management and maintenance principles for the immediate aftercare (establishment)/short-term management of retained and newly created habitats, and structures for faunal species.

**Habitat Specific Principles and Measures**

***Newly Created Habitats***

6.2 Within the Proposed Development, the following Priority Habitat-equivalents will be created: Deciduous Woodland; Hedgerows, Lowland Meadows, and Floodplain Grazing Marsh.

6.3 All newly created habitats must show sufficient progress in each year after creation towards meeting the principles described below for year 5.

6.4 At the end of the 5-year establishment period, newly planted Deciduous Woodland-equivalent Priority Habitat, species rich-hedgerows, individual trees and shrubs should display the following characteristics:

- An overall increase in spatial extent compared to the pre-construction stage;
- Securely rooted, upright, free from wind-rock and able to have stakes and ties removed;
- Healthy and free of disease; replace with new native specimens if required;
- Free from damage by animal browsing or maintenance activity; replace with new native specimens if required;
- Poses good form with any crossing branches or other defects having been rectified through the correct formative pruning;
- For new hedgerows, persistence of thorny species to create dense, thorny thickets and pruning to promote an 'A-shaped' hedgerow with dense thorny bases;
- To have put on significant new growth demonstrating successful establishment; and,
- Free of vandalism, pollution and rubbish.

6.5 At the end of the 5-year establishment period, newly created Lowland Meadows-equivalent areas should display the following characteristics:

- An overall increase in spatial extent compared to the pre-construction stage;
- A balanced mix of desirable non-competitive native grasses and a good diversity of native wild flowers establishing, where grasses do not dominate the sward; undertake re-seeding if required;
- Largely free from invasive weeds or undesirable species; undertake hand pulling/selective spraying if required; and
- Fully established in all areas with limited thin/bare patches;

6.6 At the end of the 5-year establishment period, newly created Floodplain Grazing Marsh-equivalent should display the following characteristics:

- An overall increase in spatial extent compared to the pre-construction stage;
- A well-developed sward of native marshy grasses and rushes (but rushes not dominating), with a selection of native wild flowers; undertake re-seeding if required;
- Largely free from invasive/ undesirable weed species; undertake hand pulling/ selective spraying if required;
- Fully established in all areas with limited thin/bare patches; and
- Suitable access and infrastructure, including fencing and, where necessary, cattle grids, that allow for the appropriate management of the grassland.

6.7 At the end of the 5-year establishment period, newly created Ponds should display the following characteristics:

- An overall increase in spatial extent compared to the pre-construction stage;
- Well-developed aquatic vegetation but not dominating the open water (less than 40% cover); additional plug planting of aquatic/marginal vegetation if colonisation has been slower than anticipated/desirable specimens have failed to take;
- Some shading by trees/scrub is acceptable, but not dominating the open water; undertake scrub clearance if it is beginning to dominate;
- Good visual water quality (turbidity minimal); and,
- Free of vandalism, pollution and rubbish.

***Retained and Enhanced Habitats***

6.8 For retained habitats, at the end of the 5-year establishment period, retained/enhanced habitats should:

- Exhibit no reduction in spatial extent;
- Be rubbish/pollution/vandalism free; and
- Exhibit no reduction in native species-composition nor vigour (as informed by surveys).

**Species Specific Principles and Measures**

6.9 During each year following installation and up to the end of the 5-year period, the following species-specific mitigation and enhancement measures will have been installed and be fully functional (or replaced/repaired as required if not):

- A minimum of 20 Schwegler bird boxes (or similar high-quality design) installed on mature trees in green corridors;
- A minimum of six Schwegler 1FS large colony bat boxes (or similar high-quality design) installed on mature trees in green corridors OR a minimum of six integrated bat boxes installed into walls of six new buildings (Habibat/Ibstock/Schwegler or equivalent high-quality design); 1 per building;
- Additional Schwegler 1FF bat boxes (or similar high-quality design) on mature trees in green corridors;
- A minimum of 10 dormouse nest boxes will be erected within the existing hedge network;
- A minimum of nine small animal crossings across strategic road infrastructure;
- A minimum of two otter-friendly culverts/bridges[21] for the two strategic access roads across the Dorcan Stream and River Cole;
- A minimum of four great crested newt hibernacula created within 50m of the two GCN breeding ponds in the centre of the site; and,
- Additional log piles/grass cutting piles within 50 – 100m of all waterbodies on site (either outside the flood zone or on raised mounds).

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[21] Assuming that the design of the two river crossing points is in fact a bridge/culvert design in the channel and not a fly-over design on vertical supports set back from the river channel which otherwise is unlikely to impede otter movements.

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# Section 7
# Longer-Term Management Principles for Each Phase – Years 6 to 10 (Post-Development Stage)

7.1 For each development phase, between Year 6 and 10, longer-term management activities will largely involve a continuation of the management principles described in **Section 6** under the Applicant's nominated management/stewardship company.

7.2 However, across the Application Site the main focus will be to ensure that retained and newly created habitats function as a contiguous and coherent green network across all development phases.

7.3 As development is completed and dwellings become occupied, the appropriate management of public access through installation and continued maintenance of clearly defined paths, fencing and planting including the inclusion of ecological nature trails linking up key areas, will be vital. Certain areas of the Application Site that are informal greenspaces, particularly the area around the two GCN ponds in the centre of the site, will require restricted access.

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# Section 8
# Monitoring

8.1 Periodic monitoring visits/site inspections will be vital to ensure that any remedial measures are identified to ensure that the broad objectives of the EMMF and the future LEAMP(s) are being met. These would need to be more frequent in the first few years for each phase and can be tailored down as time progresses and features become established.

8.2 It is anticipated that monitoring visits for each phase of development will be undertaken by suitably experienced operatives, with input from a suitably experienced/ licenced/accredited ecologist and arboriculturist as required. The specific frequency will be specified in the LEAMP(s), but is expected to be as follows:

- Quarterly walkover in Year 1;
- Bi-annual walkover in Year 2;
- Annual walkover in Years 3 to 10; and
- Species surveys to be undertaken at four yearly intervals.

8.3 Further monitoring requirements may be required as part of protected species licences.

8.4 Annual monitoring reports will be submitted to SBC.

8.5 Any remedial measures identified would need to be implemented at the appropriate time of year or within several months if there are no seasonal constraints.

8.6 It is envisaged that detailed management and maintenance tasks within the future LEAMP(s) will be formally reviewed at Year 5 of the first development phase with any necessary changes required incorporated into a revised LEAMP(s).

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# Section 9
# Summary and Conclusions

9.1 This Ecological Mitigation and Management Framework (EMMF) has been produced to address comments provided by the Swindon Borough Council (SBC) Planning Ecologist in consideration of the outline application submitted for the proposed development of Land at Lotmead (the Application Site). In summary, further clarity/information on the broad principles for ecological mitigation and the broad areas where such mitigation would occur, was required to inform determination. The scope of the EMMF and the points to be addressed were discussed and agreed during a meeting between SBC, EDP and Turleys on 27 January 2017.

9.2 EDP has provided input throughout the iterative design process so the masterplan, although illustrative, already reflects some important measures suggested by EDP, to avoid, mitigate or compensate for ecological impacts as well as other measures designed to provide long-term ecological enhancements.

9.3 The EMMF provides a sufficient level of detail commensurate with an outline application and therefore contains only broad principles, broad parameters and broad areas for ecological mitigation and management of the various habitats and species of interest on the Application Site.

9.4 The mitigation measures within this EMMF will inform future protected species licences as required. These licences are administered by Natural England. This EMMF also therefore provides a sufficient level of information for SBC to be satisfied that the development is capable of meeting the requirements of the three protected species licensing derogation tests, and material considerations, to which it has regard when determining planning applications.

9.5 In conclusion, the determination requirements expressed by SBC are considered to be sufficiently addressed by this EMMF. This document provides the framework for ensuring that the proposed development delivers a net biodiversity gain, as demonstrated by net gain calculations undertaken for the proposed development by EDP, ensuring compliance with national and local planning policy. The EMMF forms a proportionate and appropriate basis for LEAMP(S), or similar documents, accompanying future Reserved Matters applications for future development phases to meet the requirement of a suitably worded condition attached to outline planning consent.

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# Appendix EDP 1
# Extended Phase 1 Survey Plan
# (edp1879_d078 11 January 2019 JTF/GM)

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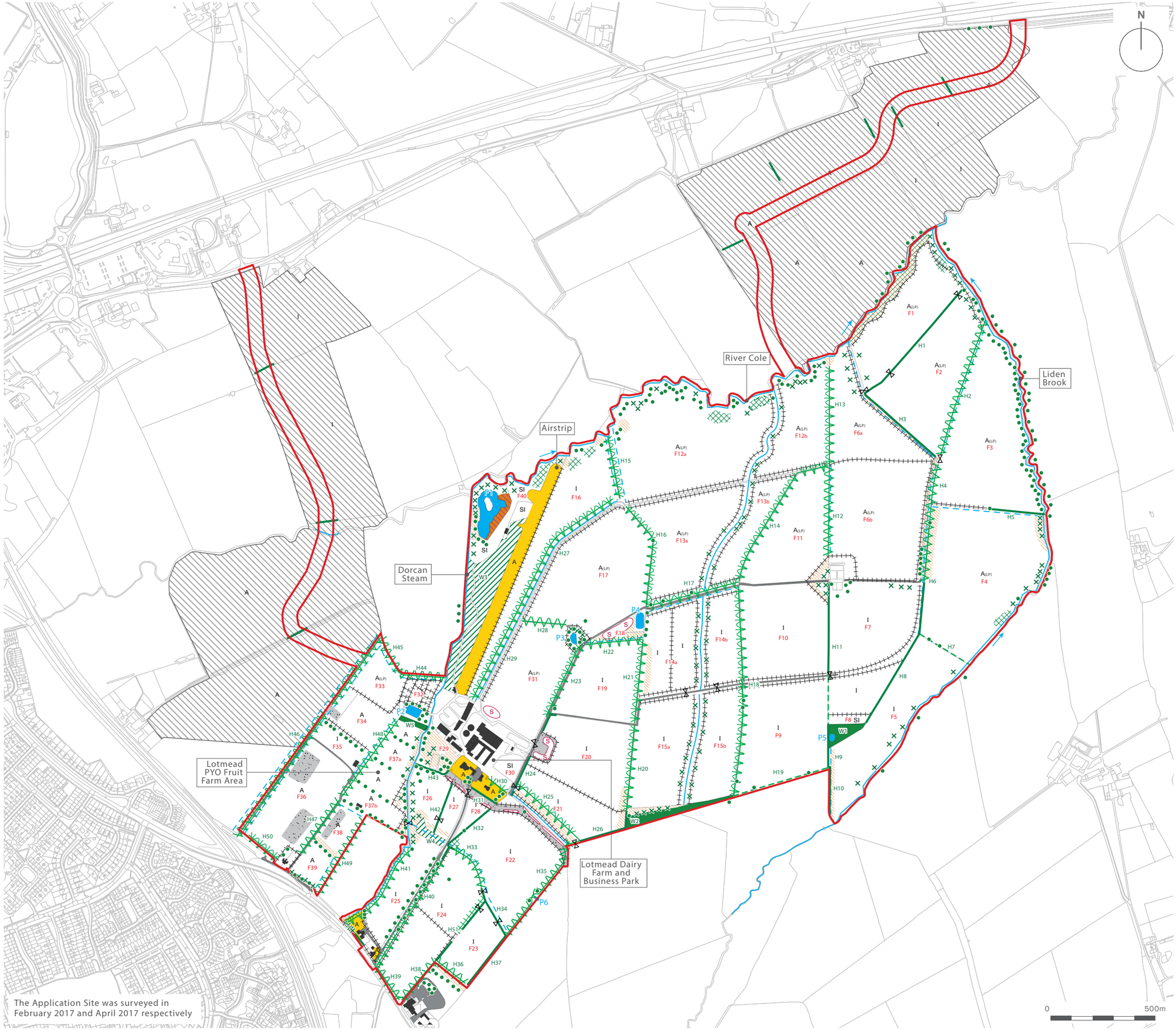


The Application Site was surveyed in February 2017 and April 2017 respectively

- Site Boundary
- Broad-leaved Semi-natural Woodland
- Broad-leaved Plantation
- Mature Broad-leaved Tree
- F1 — Field Number
- H1 — Hedgerow Number
- W1 — Woodland Parcel Identifier
- Intact Species Rich Hedgerow
- Intact Species Rich Hedgerow and Trees
- Intact Species Poor Hedgerow with Trees
- Intact Species Poor Hedgerow
- Defunct Species Poor Hedgerow
- S — Spoil Heap
- Tall Ruderal
- Dense Continuous Scrub
- Dense Scrub / Tall Ruderal Mosaic
- Scattered Scrub
- A — Arable Grassland
- A(LP) — Arable Ley Grassland (Dominated by *Lolium Perenne*)
- A — Amenity Grassland
- I — Improved Grassland
- SI — Poor Semi-improved Grassland
- Marshy Grassland
- Water Body
- F1 — Pond Reference
- Watercourse
- Dry Ditch
- Building
- Post-rail Fence
- Hardstanding
- Bare Ground
- No access was available at time of survey

client
**Ainscough Strategic Land**

project title
LOTMEAD FARM villages

drawing title
**Figure 12.3: Extended Phase 1 Survey Plan 2017**

| | | | |
|---|---|---|---|
| **date** | 11 JANUARY 2019 | **drawn by** | JTF |
| **drawing number** | edp1879_d078 | **checked** | GM |
| **scale** | Refer to scale bar | **QA** | LB |

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# Appendix EDP 2
# GI Parameters Plan – Planet Intelligent Environments

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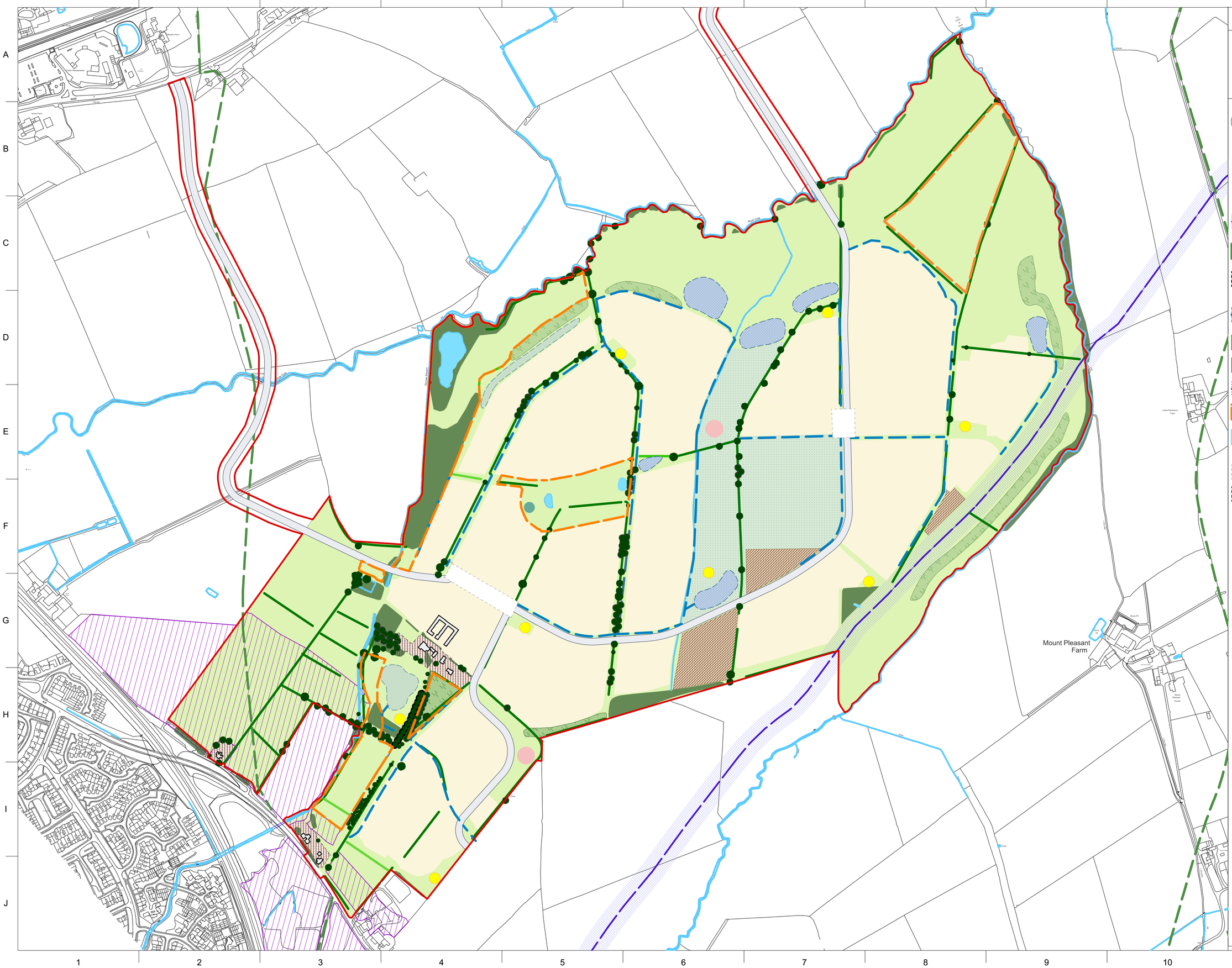




**NOTE:**

1. Do not scale from this drawing. Always work to noted dimensions.
2. All dimensions are in millimetres unless otherwise stated.
3. All setting out, levels and dimensions to be agreed on site.
4. The dimensions of all materials must be checked on site before being laid out.
5. This drawing must be read with the relevant specification clauses and detail drawings.
6. Order of construction and setting out to be agreed on site.

## KEY

- **Green Space - 83.9 ha** includes: retained green spaces and habitats, new biodiversity zones, open space and general recreation areas, grassland, structural planting and SUDS
- **Existing Vegetation** includes: woodland, hedgerows and trees
- **Proposed Vegetation - 3.1 ha** includes: woodland, hedgerows and trees
- **Sports Hub - 10.5 ha** includes: playing pitches (7.2 ha) and additional outdoor sports facilities (0.4 ha)
- **Proposed SUDS** includes: attenuation basins and swales
- **Allotments - 2.6 ha**
- **Scheduled Monument**
- **Safeguarded Canal Alignment** includes 50m buffer zone
- **Biodiversity Zones - 15.4 ha**
- **Existing Waterbodies** includes streams, ponds and drainage ditches
- **Existing Plot** to be retained
- **Pedestrian Priority Zone**

**Safeguarded Play Space**

- Neighbourhood Equipped Area for Play (NEAP) - indicative location
- Locally Landscaped Area for Play (LLAP) - indicative location
- Locally Equipped Area for Play (LEAP) - indicative location

Overall Green Infrastructure Quantum
**97 ha**

| Issue | Date | Status | Drawn | Apprvd. |
|---|---|---|---|---|
| 03 | 08.01.19 | For comment | CJ | AR |
| 02 | 20.12.18 | For comment | CJ | AR |
| 01 | 14.12.18 | For comment | CJ | AR |

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| | |
|---|---|
| Client | Ainscough Strategic Land |
| Project | PL1461.1 East Swindon Lotmead Villages |
| Drg Title | Parameter Plan Green Infrastructure |

| Created on | Created by | Approved by |
|---|---|---|
| 08.01.19 | CJ | AR |

| Scale | Size | Status |
|---|---|---|
| 1:5000 | A2 | Comments |

Drg No.
**PL1461.1-PLA-00-XX-DR-U-0008-S3-P03**

# Appendix EDP 3
# Additional Clarification of Cumulative Impact Assessment

A3.1 The purpose of this appendix is to provide additional clarification requested by the SBC Planning Ecologist regarding cumulative impact assessment; specifically, why a cumulative assessment was not undertaken for each ecological receptor on site.

### Intra-project Effects

A3.2 As described in the EcIA, the only Important Ecological Feature taken forward for cumulative assessment was the River Cole LWS (the River Cole and its major tributaries Liden Brook and Dorcan Stream). This is because there is potential for a clear intra-project effect (because the same feature/receptor is assessed in more than one chapter). For the reasons described in the EcIA, this was deemed by EDP to be a **not significant**, neutral, cumulative, residual effect.

### Inter-project Effects

A3.3 Cumulative effects upon all ecological receptors was considered at a coarse level in relation to other residential/commercial schemes around the New Eastern Villages allocation, as stated in the EcIA.

A3.4 Except for the River Cole LWS and associated features, a detailed cumulative impact assessment was considered in the EcIA not to be required for each ecological feature on the Lotmead site, for a combination of the following reasons (see also **Table EDP A3.1**):

1) Reason 1: The feature is not mobile therefore no cumulative displacement effect across the New Eastern Villages allocation would occur;

2) Reason 2: The development on other sites in the NEV allocation do not compromise the ability of the Lotmead site to deliver net biodiversity gain benefitting habitats and species;

3) Reason 3: The feature is below the EcIA threshold (set at District-value) adopted by EDP for the detailed assessment;

4) Reason 4: National and local planning policy requires each development within the NEV allocation to deliver net biodiversity gain for each site; and

5) Reason 5: The Lotmead Site sits within the NEV adopted allocation such that Swindon Borough Council has already accepted the development in principle (including cumulative effects) of various developments within the NEV.

**Table EDP A3.1**: Ecological Interest Features and Rationale for Cumulative Assessment

| Feature | Statutorily Protected | Policy Value | EDP Rational for Cumulative Assessment |
|---|---|---|---|
| Terrestrial habitats on site | × | Site to District | Cumulative assessment not required for Reasons 1, 2, 4 and 5 |
| Aquatic habitats on site | × | Local | Cumulative assessment not required for Reasons 1, 2, 4 and 5 |
| Aquatic habitats off site (River Cole LWS) and associated fauna | × | Up to County | Cumulative assessment undertaken in the EcIA; principally because three proposed developments in the NEV allocation (including Lotmead) would discharge into the LWS |
| Breeding bird assemblage on site | ✓ | Site | Cumulative assessment not required for Reasons 2, 3, 4 and 5 |
| Roosting bats on site | ✓ | Local | Cumulative assessment not required for Reasons 2, 3, 4 and 5 |
| Navigating/foraging bat assemblage on site | ✓ | Local | Cumulative assessment not required for Reasons 2, 3, 4 and 5 |
| Dormouse on site | ✓ | Local | Cumulative assessment not required for Reasons 2, 3, 4 and 5 |
| Otter on and off site (adjacent) | ✓ | Local | Cumulative assessment not required for Reasons 2, 3, 4 and 5 |
| Water vole off site (adjacent) | ✓ | Local | Cumulative assessment not required for Reasons 2, 3, 4 and 5 |
| Great crested newt on site | ✓ | District | Cumulative assessment not required for Reasons 2, 4 and 5 |
| Common and widespread reptiles on site | ✓ | District | Cumulative assessment not required for Reasons 2, 4 and 5 |

# Appendix EDP 4
# Summary of Relevant Local Plan Policy Context

A4.1 This EMMF has been prepared in the context of various Local Plan policies and Supplementary Planning Documents.

A4.2 SBC's New Eastern Villages (NEV) Green Infrastructure Supplementary Planning Document (SPD) (2017)[22] which places emphasis on a number of key biodiversity considerations, including:

- *''The creation of well connected, resilient, ecological corridors of floodplain meadow, marshland, wetland, woodland, scrub and grassland habitats alongside the River Cole tributaries.'';*
- The River Cole representing *''...an important wildlife corridor, linking Swindon urban area with the surrounding countryside and supporting associated riparian, meadow and woodland priority habitats along its length. It is important to maintain the integrity and ecological status of the riparian and adjacent habitats to safeguard these important corridors and their associated wildlife...'';*
- Protecting, enhancing and sensitively managing riparian habitats, leaving some areas not accessible by people or dogs;
- Restoring meadows and wet woodland habitats in the floodplains;
- Incorporating sufficient buffers;
- Ensuring ecological connectivity with the wider landscape is maintained; and
- Demonstrating net biodiversity gain.

A4.3 In addition, Strategic Policy SD1 in the adopted Swindon Borough Local Plan 2011-2026 (SBC, 2015) requires sustainable development to respect, conserve and enhance the natural environment. Other draft policies are contained within the Local Plan which provide for the protection and enhancement of the natural environment, as follows:

- Policy EN1, which requires for development to protect and enhance green infrastructure, including the protection and integration of existing trees, hedges and woodland;
- Policy EN2, which requires a net increase in tree cover through new planting (Community Forests); and

[22] Available at: https://www.swindon.gov.uk/info/20134/new_eastern_villages/872/nev_planning_policy_and_guidance/2

- Policy EN4, which requires that negative impacts upon biodiversity are avoided, through sensitive layout, inclusion of buffers and ecological connectivity with the wider environment. Also requires that damage or disturbance to local sites will generally be unacceptable, other than in exceptional circumstances. All development, where appropriate shall protect and enhance biodiversity and provide net local biodiversity gain, or provide suitable mitigation and compensation.

A4.4 Policy NC3 New Eastern Villages – including Rowborough and South Marston Village Expansion, which requires *"an extensive green infrastructure network that maximises opportunities for habitat connectivity and enhanced biodiversity including extending the River Cole green infrastructure corridor and connecting with Nightingale Wood."*

A4.5 Finally, the NEV Planning Obligations SPD (SBC, 2016) requires that biodiversity, including the River Cole Corridor and River Cole Meadow County Wildlife Sites, are protected, integrated and enhanced. The SPD also reiterates the requirements of policies EN4 and NC3.

# Plans

**Plan EDP 1** Ecological Mitigation and Management Strategy: Habitat Retention and Creation of Priority Habitats
(edp1879/d083a 21 August 2019 GY/GM)

**Plan EDP 2** Ecological Mitigation Strategy: Species Measures
(edp1879/d084a 21 August 2019 GY/GM)

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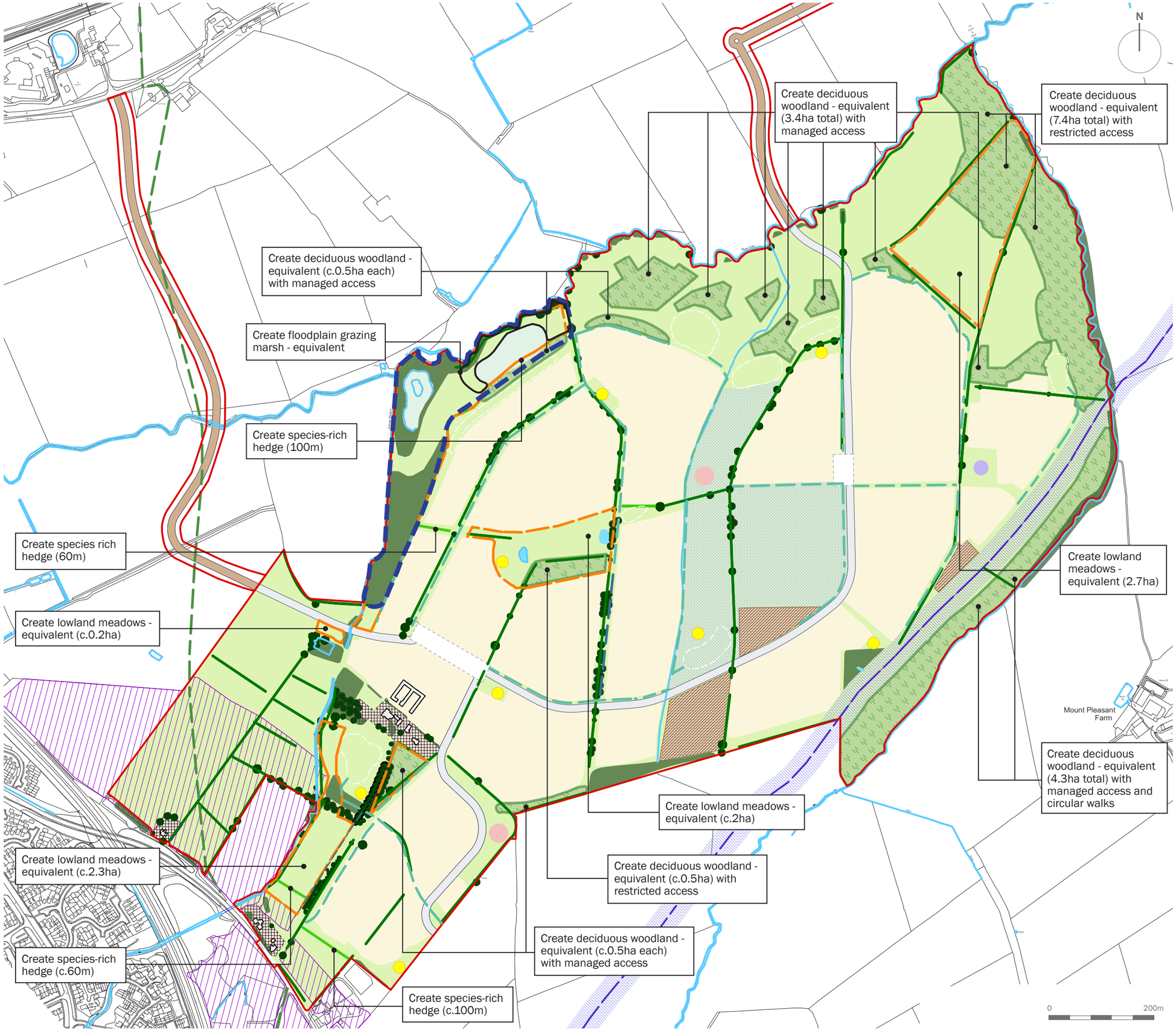


Site Boundary

Green Space - 62.29ha
Includes: retained green spaces and habitats, new biodiversity zones, open space and general recreation and play areas, grassland, structural planting and SUDS

Existing Vegetation
Includes: woodland, hedgerows and trees

Proposed Woodland - 17.14ha
Includes: woodland, hedgerows and trees

Sports Hub - 9.74ha
Includes: playing pitches (7.4ha) and additional formal sports facilities (0.4ha)

Proposed Secondary Drainage Feature

Land Safeguarded for Tertiary Drainage Feature

Recreational Lakes

Allotments - 2.59ha

Scheduled Monument

Safeguarded Canal Alignment
includes 50m buffer zone and canal to be delivered by third party

Biodiversity Zones - 15.4ha

Existing Waterbodies
includes streams, ponds and drainage ditches

Vehicular Route to be Delivered by Third Parties

Existing Plot
to be retained

Pedestrian Priority Zone

Neighbourhood Equipped Area for Play (NEAP) - indicative location

Neighbourhood/Locally Equipped Area for Play (NLEAP) - indicative location

Locally Equipped Area for Play (LEAP) - indicative location

Proposed New Nature Reserve/Country Park with Managed Access and Circular Walks

client
**Ainscough Strategic Land**

project title
**Land at Lotmead Farm, Swindon**

drawing title
**Plan EDP 1: Ecology Mitigation Strategy: Habitat Retention and Creation of Priority Habitats**

| | | | |
|---|---|---|---|
| date | **21 AUGUST 2019** | drawn by | **GY** |
| drawing number | **edp1879_d083a** | checked | **GM** |
| scale | **1:7,500 @ A3** | QA | **RB** |


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Bat/Bird Box Requirements:
- Min. 20no. high quality bird boxes
- Min. 6no. high quality large colony bat boxes or integrated building bat boxes (6 buildings)
- 10no. high quality swift/swallow nest cups on buildings

Core great crested newt zone containing two enhanced waterbodies (ponds P2 and P3), 4 new hibernaculae, newly created deciduous woodland and lowland meadows equivalent habitats, restricted access (new planting/fencing). Zone connected to wider green infrastructure.

Creation of new lake, new floodplain grazing marsh, tree and shrub planting and new log piles/grass piles benefiting grass snake (and a range of other species). Managed access.

Indicative locations for at least 10 new dormouse nest boxes.

Indicative location for new bat and bird boxes.

Existing waterbody (pond P2) enhanced for amphibians and grass snake. Install log piles/grass piles within 50-100m of pond.

Additional woodland planting benefiting breeding birds, roosting and foraging bats, and dormouse.

Indicative location for new bat and bird boxes.

Existing waterbody (pond P5) enhanced for amphibians and grass snake. Install log piles/grass piles within 50-100m of pond.

Indicative location for new bat and bird boxes.

Existing waterbody (pond P6) enhanced for amphibians and grass snake. Install log piles/grass piles within 50-100m of pond.

Indicative location for integrated bat boxes and swift/swallow nest cups.

Buildings with medium/high bat roost potential or confirmed roosts retained.

Mount Pleasant Farm

N

0 200m

- Site Boundary
- Green Space - 62.29ha
  Includes: retained green spaces and habitats, new biodiversity zones, open space and general recreation and play areas, grassland, structural planting and SUDS
- Existing Vegetation
  Includes: woodland, hedgerows and trees. Locations for additional bat and bird boxes
- Proposed Woodland - 17.14ha
  Includes: woodland, hedgerows and trees
- Sports Hub - 9.74ha
  Includes: playing pitches (7.4ha) and additional formal sports facilities (0.4ha)
- Proposed Secondary Drainage Feature
- Land Safeguarded for Tertiary Drainage Feature
- Recreational Lakes
- Allotments - 2.59ha
- Scheduled Monument
- Safeguarded Canal Alignment
  includes 50m buffer zone and canal to be delivered by third party
- Biodiversity Zones - 15.4ha
- Existing Waterbodies
  includes streams, ponds and drainage ditches
- Vehicular Route to be Delivered by Third Parties
- Existing Plot to be retained
- Pedestrian Priority Zone
- Neighbourhood Equipped Area for Play (NEAP) - indicative location
- Neighbourhood/Locally Equipped Area for Play (NLEAP) - indicative location
- Locally Equipped Area for Play (LEAP) - indicative location
- Areas of Focus for a Bat Sensitive Lighting Strategy Where Development is Adjacent to Bat Foraging Habitat
- Small Animal Crossing Underpass Locations
- Otter-friendly culvert/bridge underpass locations

client
**Ainscough Strategic Land**

project title
**Land at Lotmead Farm, Swindon**

drawing title
**Plan EDP 2: Ecology Mitigation Strategy: Species Measures**

| | | | |
|---|---|---|---|
| date | **21 AUGUST 2019** | drawn by | **GY** |
| drawing number | **edp1879_d084a** | checked | **GM** |
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