

Land West of Yarnton

Biodiversity Net Gain Assessment

Including off-site habitat provision to benefit Skylark

December 2023

Quality Management	
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Project:	Land West of Yarnton
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Contact Details
<p>Aspect Ecology Ltd Hardwick Business Park Noral Way Banbury Oxfordshire OX16 2AF t 01295 279721 e info@aspect-ecology.com w www.aspect-ecology.com</p>

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1 Introduction

1.1 Background and Proposals

- 1.1.1 Aspect Ecology is advising Merton College Oxford in respect of ecological matters relating to land west of Yarnton, Oxfordshire.
- 1.1.2 The proposals are for the construction of up to 540 dwellings with associated access, landscaping and green open space.
- 1.1.3 Aspect Ecology has previously prepared a Biodiversity Net Gain (BNG) Assessment in May 2022 utilising the Biodiversity Metric 3.1 calculation tool¹ to inform the planning application (ref: 21/03522/OUT). Following the submission of this document, the BNG calculation tool has been updated to version 4.0. As such, an updated BNG Assessment has been undertaken using version 4.0 of the calculation tool developed by Natural England and informed by biodiversity net gain guidance developed by CIRIA, CIEEM and IEMA to ensure an up to date assessment is available.

1.2 Biodiversity Net Gain

Environment Act

- 1.2.1 The Environment Act establishes a comprehensive legal framework for environmental improvement within the UK, forming one of the key measures to deliver the vision set out under the 25 Year Environment Plan.
- 1.2.2 The Environment Act is intended to establish the structure for long-term environmental governance and accountability and includes key measures to drive improvements for nature. In particular, it lays the foundation for a Nature Recovery Network, and introduces a mandatory requirement for biodiversity net gain in the planning system, to ensure that new developments enhance biodiversity and create new green spaces for local communities to enjoy. This will require developments to deliver a 10% improvement in biodiversity value, albeit this will not be a legal requirement until the legislation is finalised, currently anticipated to be January 2024.

Good Practice Principles for Development

- 1.2.3 CIRIA, CIEEM and IEMA have developed a set of principles on good practice to achieve Biodiversity Net Gain², accompanied by a practical guide³. These principles provide a framework that helps improve the UK's biodiversity by contributing towards strategic priorities to conserve and enhance nature while progressing with sustainable development. They also provide a way for industry to show that projects follow good practice. Ten key principles are identified:

- 1) **Apply the Mitigation Hierarchy.** Do everything possible to first avoid and then minimise impacts on biodiversity. Only as a last resort, and in agreement with external decision-makers where possible, compensate for losses that cannot be avoided. If compensating for losses within the development footprint is not possible or does not

¹ Aspect Ecology (2022) Technical Note TN03: *Biodiversity Net Gain Assessment Using Defra Biodiversity Metric 3.1 Calculation Tool*.

² CIEEM, CIRIA, IEMA (2016) *Biodiversity Net Gain: Good practice principles for development*.

³ CIEEM, CIRIA, IEMA (2019) *Biodiversity Net Gain: Good practice principles for development. A practical guide*.

generate the most benefits for nature conservation, then offset biodiversity losses by gains elsewhere.

- 2) **Avoid losing biodiversity that cannot be offset by gains elsewhere.** Avoid impacts on irreplaceable biodiversity - these impacts cannot be offset to achieve No Net Loss or Net Gain.
- 3) **Be inclusive and equitable.** Engage stakeholders early, and involve them in designing, implementing, monitoring and evaluating the approach to Net Gain. Achieve Net Gain in partnership with stakeholders where possible, and share the benefits fairly among stakeholders.
- 4) **Address risks.** Mitigate difficulty, uncertainty and other risks to achieving Net Gain. Apply well-accepted ways to add contingency when calculating biodiversity losses and gains in order to account for any remaining risks, as well as to compensate for the time between the losses occurring and the gains being fully realised.
- 5) **Make a measurable Net Gain contribution.** Achieve a measurable, overall gain for biodiversity and the services ecosystems provide while directly contributing towards nature conservation priorities.
- 6) **Achieve the best outcomes for biodiversity.** Achieve the best outcomes for biodiversity by using robust, credible evidence and local knowledge to make clearly-justified choices when:
 - Delivering compensation that is ecologically equivalent in type, amount and condition, and that accounts for the location and timing of biodiversity losses
 - Compensating for losses of one type of biodiversity by providing a different type that delivers greater benefits for nature conservation
 - Achieving Net Gain locally to the development while also contributing towards nature conservation priorities at local, regional and national levels
 - Enhancing existing or creating new habitat
 - Enhancing ecological connectivity by creating more, bigger, better and joined areas for biodiversity
- 7) **Be additional.** Achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e. do not deliver something that would occur anyway).
- 8) **Create a Net Gain legacy.** Ensure Net Gain generates long-term benefits by:
 - Engaging stakeholders and jointly agreeing practical solutions that secure Net Gain in perpetuity
 - Planning for adaptive management and securing dedicated funding for long-term management
 - Designing Net Gain for biodiversity to be resilient to external factors, especially climate change
 - Mitigating risks from other land uses
 - Avoiding displacing harmful activities from one location to another
 - Supporting local-level management of Net Gain activities
- 9) **Optimise sustainability.** Prioritise Biodiversity Net Gain and, where possible, optimise the wider environmental benefits for a sustainable society and economy.
- 10) **Be transparent.** Communicate all Net Gain activities in a transparent and timely manner, sharing the learning with all stakeholders.

2 Methodology

2.1 Habitat Survey

- 2.1.1 As detailed within the Ecological Baseline⁴ and Addendum to the Environment Statement⁵, the site was originally subject to an extended phase 1 habitat survey in August 2018, with updated survey work conducted in April 2020 and September 2021 in order to ascertain the general ecological value of the land contained within the boundaries of the site and to identify the main habitats and ecological features present.
- 2.1.2 The site was surveyed based on standard Phase 1 Habitat Survey methodology⁶, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. The site was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified. The nomenclature used for plant species is based on the Botanical Society for the British Isles (BSBI) Checklist.
- 2.1.3 In line with guidance⁷, the fine scale minimum mapping unit (MMU) of 25m² in area or 5m in length has been used where possible / relevant.

2.2 Survey Constraints and Limitations

- 2.2.1 All of the species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent during different seasons. The Phase 1 habitat survey was undertaken within the optimal season and therefore a robust assessment of the habitats and botanical interest across the site could be made.

2.3 Biodiversity Net Gain Assessment

- 2.3.1 To quantify the level of biodiversity net gain that can be delivered under the proposed development, the change in biodiversity value resulting from the scheme has been calculated using the Metric 4.0 calculation tool and associated user guide⁸. This takes account of the size, distinctiveness and ecological condition of existing and proposed habitat areas to provide a proxy measure of the present and forecast biodiversity value of a site, and therefore determine the overall change in biodiversity value. These calculations are detailed within the extracts provided at Appendix 5436/1.
- 2.3.2 To establish the habitat baseline, broad habitat areas have been identified based on the survey work undertaken at the site, with habitat condition assigned based on the guidance set out in the Technical Supplement⁹ and professional judgement.
- 2.3.3 The post-development habitat creation and enhancement is based on the drawing 'PR9 Framework Plan' (ref: DE234_12 rev. H). A number of assumptions have been made in terms of the detailed landscaping and management proposals, based on comparative

⁴ Aspect Ecology (2020) Ecological Baseline

⁵ Aspect Ecology (2022) Technical Note TN04: *Addendum to Chapter 8 of the Environment Statement (ES) – Ecology and Nature Conservation*

⁶ Joint Nature Conservation Committee (2010, as amended) '*Handbook for Phase 1 habitat survey: A technique for environmental audit.*'

⁷ The UK Habitat classification User Manual. Version 1.1. 2020

⁸ Natural England (March 2023) *Natural England Joint Publication JP039. Biodiversity Metric 4.0: User Guide.*

⁹ Natural England (March 2023) *Natural England Joint Publication JP039. The Biodiversity Metric 4.0: Technical Annex 1: Condition Assessment and Methodology.*

developments and what is realistic and feasible under the proposed land uses and landscape space types. Further details of assumptions made in populating the metric are provided at Chapter 4 below.

3 Habitats and Ecological Features

3.1 Overview

- 3.1.1 The site is dominated by arable, semi-improved grassland and improved grassland, with areas of woodland, tall ruderal and recolonising ground. Hedgerows are present across the site, in addition to a number of trees and ponds.
- 3.1.2 A full description of habitats is provided within the separate Ecological Baseline¹⁰ and Addendum to the Environment Statement¹¹, and illustrated on Plan 5436/BNG1. The results of the habitat condition assessment are set out at Appendix 5436/2.

¹⁰ Aspect Ecology (2020) Ecological Baseline

¹¹ Aspect Ecology (2022) Technical Note TN04: *Addendum to Chapter 8 of the Environment Statement (ES) – Ecology and Nature Conservation*

4 Post-development Habitats

4.1 Assumptions

4.1.1 When inputting the post-development habitat areas and condition to the Metric 4.0, the following assumptions have been made:

- Newly created habitat under the proposals will be managed appropriately to reach the assigned target condition (anticipated to be defined by a future management plan);
- Future management prescriptions at the site within areas of retained and proposed 'other neutral' grassland at the site will be subject to a traditional meadow management regime (including a hay cut after flowering in July / August), in order to meet all condition assessment criteria (including maintaining the presence of a minimum 10 species per m²) to qualify as this habitat type;
- Where woodland rides are to be provided, as the woodlands that they fall within will continue to have greater than 20% canopy cover as defined within the UK Forestry Standard (2023), they are assessed to form part of the 'community woodland'. However, as the individual scrub and grassland elements are greater than the MMU, they have been measured separately;
- New tree planting has been provided where considered appropriate, in line with the recommendations of paragraph 131 of the NPPF (2023); and
- It is anticipated that the majority of hedgerows at the site can be fully retained under the proposals. Areas of new hedgerow planting have been indicated in order to show the extent required to achieve a net gain, though the final detailed design may require some changes to their location.

4.2 Good Practice Principles for Development

4.2.1 Provided below is a summary of how biodiversity net gain good practice principles have been applied at the site:

- 1) Apply the Mitigation Hierarchy.** The mitigation hierarchy has been followed with the retention of the woodland, the majority of hedgerows, and siting the majority of development within arable habitat which is of lower relative ecological value. Some areas of this habitat are unavoidably lost to the development footprint, which are compensated for by new planting at the site. The majority of the habitat loss arises from low distinctiveness arable and grassland.
- 2) Avoid losing biodiversity that cannot be offset by gains elsewhere.** No irreplaceable habitats are lost. Where medium distinctiveness habitat is lost this is offset by new areas of medium distinctiveness habitat creation and enhancement.
- 3) Be inclusive and equitable.** Further discussions will be held as required, in order to maximise the ecological benefit under the detailed landscape design.
- 4) Address risks.** The Metric 4.0 has an inbuilt difficulty multiplier which allows for the time between losses and the gains to be incorporated into the final score.

- 5) **Make a measurable Net Gain contribution.** A measurable significant net gain is demonstrated by the Metric. In addition, faunal specific benefits will be provided by the scheme, which are not included within the metric.
- 6) **Achieve the best outcomes for biodiversity.** The existing woodland and, as far as practicable, the majority of hedgerows and areas of medium distinctiveness grassland will be retained at the site. Furthermore, the site will in general benefit from the enhancement of the retained grassland, and provision of additional grassland, native woodland, hedgerows, Sustainable Drainage Systems (SuDS), and generous new tree planting, far above the existing situation.
- 7) **Be additional.** The provision of new woodland, hedgerows, grassland, SuDS and tree planting at the site will create ecologically valuable habitats and improve connectivity for wildlife at the site, which would not otherwise occur without significant intervention. Furthermore, the inclusion of off-site enhancements to create a 6m wide arable field margin will create additional ecologically valuable habitats and provide a benefit for Skylark.
- 8) **Create a Net Gain legacy.** The retained woodland, retained and enhanced grassland, retained hedgerows, in combination with the new woodland, hedgerows, grassland, SuDS and tree planting, will be managed for the benefit of nature conservation for the lifetime of the development (likely to be secured by a planning condition).
- 9) **Optimise sustainability.** Overall the new habitats will provide an enhanced biodiversity network compared to the existing situation.
- 10) **Be transparent.** This report ensures the proposals are well communicated to stakeholders.

4.3 Strategic Significance

4.3.1 Strategic significance in the metric is assigned to give extra value to habitats that are located in optimal locations, or are of a type that meet local objectives for biodiversity. As the site does not fall within any Conservation Target Areas (CTA's), no strategic significance has been applied to the habitats pre or post-development of the site.

4.4 Updates from Biodiversity Metric 3.1

4.4.1 Following the publication of version 4.0 of the Biodiversity Metric, a number of associated guidance documents have been updated to reflect its evolving nature. As such, a number of changes have been incorporated into the updated BNG Assessment as detailed below:

- The previously identified 'other neutral grassland' and 'modified grassland' which was to be enhanced to create 'lowland mixed deciduous woodland' has been amended to state that it is lost and 'other woodland; broadleaved' created (in line with Section 3.2.3 of the User Guidance);
- Due to the existing 'modified grassland' in 'moderate' condition failing criterion 1 of version 4.0 of the metric (requiring 6-8 species per m² to achieve anything greater than 'poor' condition), it has been re-assigned to 'poor' condition;
- Where 'other woodland; mixed' was to be created, this has been updated to 'other woodland; broadleaved' to achieve an enhanced biodiversity outcome;

- Indicative woodland rides have been identified to provide a further enhancement to the community woodland and created through the use of other neutral grassland and mixed scrub to provide a valuable ecotone;
- Tree provision is now shown at the site; and
- The strategic significance multiplier has been set to ‘area / compensation not in local strategy / no local strategy’ in line with Section 4.3 above.

4.4.2 Although the existing other neutral grassland is of ‘poor’ condition when assessed against the condition assessment criteria detailed within version 4.0 of the Metric, to accord with the condition assignment in version 3.1 of the Metric which registered it to ‘moderate’ condition due to the presence of an indicator species, this has also been upgraded to ‘moderate’ to ensure consistency with the previous assessment approach and provide a conservative assessment.

4.5 Habitat Type and Condition

4.5.1 A summary of post-development habitat creation is set out in Tables 4.1 – 4.4 below, illustrated on Plan 5436/BNG2, and with an assessment of the habitat condition assessment criteria set out at Appendix 5436/2.

Table 4.1. Post-development Habitat Enhancement (on-site)

Habitat Change	Condition Change	Condition Rationale
Grassland: Modified Grassland → Grassland: Other Neutral Grassland and Grassland: Other Neutral Grassland → Grassland: Other Neutral Grassland	Moderate → Good	<p>The existing modified grassland and other neutral grassland will be retained throughout the areas of public open and enhanced to other neutral grassland in ‘good’ condition. Through scarification, over-seeding with a suitable wildflower mix and implementation of traditional hay-meadow management (including a hay cut after flowering in July / August) and potential maintenance through low-intensity grazing within open areas, it is anticipated that this habitat will meet all condition assessment criteria as detailed below such that it achieves a ‘good’ condition:</p> <ul style="list-style-type: none"> - A: the grassland is anticipated to be a good representation of other neutral grassland through the seeding of an appropriate wildflower mix and the management detailed above; - B: a varied sward height is anticipated to be readily achievable through the management detailed above; - C: the cover of bare ground of between 1-5% is anticipated to be achievable through the natural colonisation of fauna such as Rabbits and formal paths. Should colonisation not occur or the level of bare ground provided by the paths be insufficient, this could be

		<p>achieved through creating scrapes throughout the grassland;</p> <ul style="list-style-type: none"> - D: the management detailed above will ensure that the cover of Bracken is less than 20% and the cover of scrub is less than 5%; - E: the ongoing management (including the removal of arisings) will ensure that nutrient levels are kept low such that indicators of sub-optimal conditions account for less than 5% of the total area. Furthermore, the maintenance of paths is anticipated to prevent excessive poaching or other physical damage; and - F: through the above management and seeding with an appropriate wildflower mix, a diversity of 10 or more vascular plant species per m² is considered to be readily achievable. Should this target not be being achieved, this can be rectified through remediation measures such as the planting of Yellow Rattle to reduce the abundance of grasses.
Lakes: Ponds (Non-Priority Habitat) → Lakes: Ponds (Non-Priority Habitat)	Moderate → Good	The retained standing water features will be enhanced through the introduction of an appropriate management regime to encourage a diverse and abundant aquatic flora to develop, including emergent, submerged and floating plants. This will involve management of bankside vegetation to reduce shading and may involve planting of new native species within the features. On this basis, it is considered that the features will meet all assessment criteria for this habitat type and achieve a 'good' condition.

Table 4.2. Post-development Habitat Enhancement (off-site)

Habitat Change	Condition Change	Condition Rationale
Cropland: Cereal Crops → Cropland: Arable Field Margins Game Bird Mix	Low → Medium	A 6m arable field margin ¹² will be created within off-site arable land located at the south-western site boundary. To maximise the benefit of this habitat for Skylark, a suitable seed mix such as 'wild bird seed mixture (HF02) ¹³ or similar could be utilised. This is anticipated to provide important foraging and nesting resources and be subject to ecologically sensitive management to benefit Skylark <i>Alauda arvensis</i> .

¹² UK Biodiversity Action Plan Priority Habitat Descriptions – Arable Field Margins. UK Biodiversity Action Plan. BRIG (ed. Ant Maddock) 2008.

¹³ see specification within 'Climate Change Adaptation Manual: Evidence to Support Nature Conservation In a Changing Climate – Part 9 Arable Field Margins' Natural England. 2020

Table 4.3. Post-development Habitat Creation (on-site)

Habitat	Target Condition	Condition Rationale
Woodland and Forest: Other Woodland; Broadleaved	Moderate	The scheme will include areas of new woodland planting comprising a diverse mix of native species. It is anticipated that the woodland will meet the majority of the assessment criteria, with the exception of those relating to veteran / ancient trees. As such, the woodland is considered likely to achieve a 'moderate' condition.
Grassland: Other Neutral Grassland	Good	<p>Areas of wildflower grassland will be created within the site, including a number of meadows and a woodland ride. The grassland will be managed based on ecological principles using traditional hay-meadow management techniques (including a hay cut after flowering in July / August) with the option of low-intensity grazing of the aftermath within open areas. On this basis, it is anticipated that this habitat will meet all condition assessment criteria as detailed below such that it achieves a 'good' condition:</p> <ul style="list-style-type: none"> - A: the grassland is anticipated to be a good representation of other neutral grassland through the seeding of an appropriate wildflower mix and the management detailed above; - B: a varied sward height is anticipated to be readily achievable through the management detailed above; - C: the cover of bare ground of between 1-5% is anticipated to be achievable through the natural colonisation of fauna such as Rabbits and formal paths. Should colonisation not occur or the level of bare ground provided by the paths be insufficient, this could be achieved through creating scrapes throughout the grassland; - D: the management detailed above will ensure that the cover of Bracken is less than 20% and the cover of scrub is less than 5%; - E: the ongoing management (including the removal of arisings) will ensure that nutrient levels are kept low such that indicators of sub-optimal conditions account for less than 5% of the total area. Furthermore, the maintenance of paths is anticipated to prevent excessive poaching or other physical damage; and

		<ul style="list-style-type: none"> - F: through the above management and seeding with an appropriate wildflower mix, a diversity of 10 or more vascular plant species per m² is considered to be readily achievable. Should this target not be being achieved, this can be rectified through remediation measures such as the planting of Yellow Rattle to reduce the abundance of grasses.
Grassland: Other Neutral Grassland	Moderate	<p>Areas of wildflower grassland will be created in greenspaces in proximity of the development. The grassland will be managed based on ecological principles using traditional hay-meadow management techniques (including a hay cut after flowering in July / August). However, due to the smaller overall areas and as these will fall in close proximity to the build development, a 'moderate' condition has been selected on a precautionary basis. This is on the basis of passing condition assessment criteria A, B and D as detailed below:</p> <ul style="list-style-type: none"> - A: the grassland is anticipated to be a good representation of other neutral grassland through the seeding of an appropriate wildflower mix and the management detailed above; - B: a varied sward height is anticipated to be readily achievable through the management detailed above; and - D: the management detailed above will ensure that the cover of Bracken is less than 20% and the cover of scrub is less than 5%. <p>In reality, the management will aim to achieve a higher condition and meet more condition assessment criteria, albeit a 'moderate' condition has been utilised within the Metric to provide a conservative assessment.</p>
Heathland and shrub: Mixed scrub	Good	<p>Areas of native scrub planting will be included within woodland rides, which will include a minimum of three woody species. No invasive or undesirable species to be included. A well-developed edge and good age range can be developed over time and planting will be intersected with a glade through the centre comprising other neutral grassland. The scrub is therefore expected to achieve a 'good' condition.</p>
Urban: Sustainable Urban Drainage	Moderate	<p>Numerous sustainable urban drainage features are to be created as part of the proposed development and it is anticipated that they will meet two of the three</p>

		core condition assessment criteria for this habitat type and will therefore achieve a score of 'moderate'.
Urban: Developed Land; Sealed Surface	N/A	No assessment required. <i>Note: Area coded accounts for 70% of the residential area, the remaining 30% of residential area is coded as 'Urban: Vegetated Garden'.</i>
Urban: Vegetated Garden	N/A	No assessment required. <i>Note: Area coded accounts for 30% of residential area, the remaining 70% is coded as 'Urban: Developed Land' Sealed Surface</i>
Urban – Urban tree	Moderate	Native trees to be planted throughout the site within areas of open space, expected to achieve a 'moderate' condition within 30 years with suitable management.
Urban – Urban tree	Poor	Non-native species / cultivars to be planted within and adjacent to the built development, considered unlikely to exceed a 'poor' condition within 30 years.

Table 4.4. Post-development Linear Feature (Hedgerow) Creation (on-site)

Habitat	Target Condition	Condition Rationale
Species-rich Native Hedgerow with Trees	Moderate	New native hedgerow planting will be undertaken at the site as part of the proposed development, connecting with existing hedgerows and other habitats to enhance connectivity within and around the site. The hedgerows will be managed based on ecological principles and it is considered that the hedgerows will meet the majority of the condition assessment criteria, with the exception of those relating to mature standard trees. As such, a condition of 'moderate' is considered achievable.

5 Biodiversity Net Gain Assessment Results

5.1 Metric calculation

5.1.1 The data from the baseline habitat survey work and the proposed habitat enhancement and creation works have been coded into the Metric.

5.1.2 In summary, the Metric indicates that the development will result in a 40.76 (14.46%) gain in habitat units and a 12.74 (14.56%) gain in hedgerow units with all trading rules satisfied. The results are illustrated down in Table 5.1 below:

Table 5.1 Net gain assessment results

Unit Type	Change in Units	% Change
Habitats	40.76	14.46%
Hedgerows	12.74	14.56%

5.2 Additional benefits not captured by the Metric

Faunal Benefits

5.2.1 Further biodiversity benefits will be provided by faunal enhancements, for example through the provision of new bat and bird boxes (at a ratio of one per dwelling), hedgehog domes, amphibian and reptile hibernacula and bee bricks (which can be secured via suitably worded planning conditions). Furthermore, the enhancement of off-site land to create a 6m wide field margin managed for the benefit of Skylark is anticipated to provide a significant benefit to the species¹⁴ alongside other fauna. Such faunal enhancements are not quantified under the Metric as this deals with habitats alone and does not address faunal benefits. In addition, the value of a number of new gardens will likely be of higher value than the stipulated condition under the Metric.

In perpetuity management

5.2.2 Notwithstanding that the standard for management of BNG land within the Environment Act 2021 is 30 years, in this instance, the applicant has agreed that management of the new green open space will be provided for the lifetime of the development. An organisation with considerable experience will be selected for delivering the habitat creation and management at the site for this period. It is anticipated that the mechanism for funding of the management of the green open space for the lifetime of the development will be agreed at the reserved matters stage as part of a future application. The details can be secured by imposing a suitable condition on the outline planning consent, for example as part of a Landscape and Ecological Management Plan (LEMP).

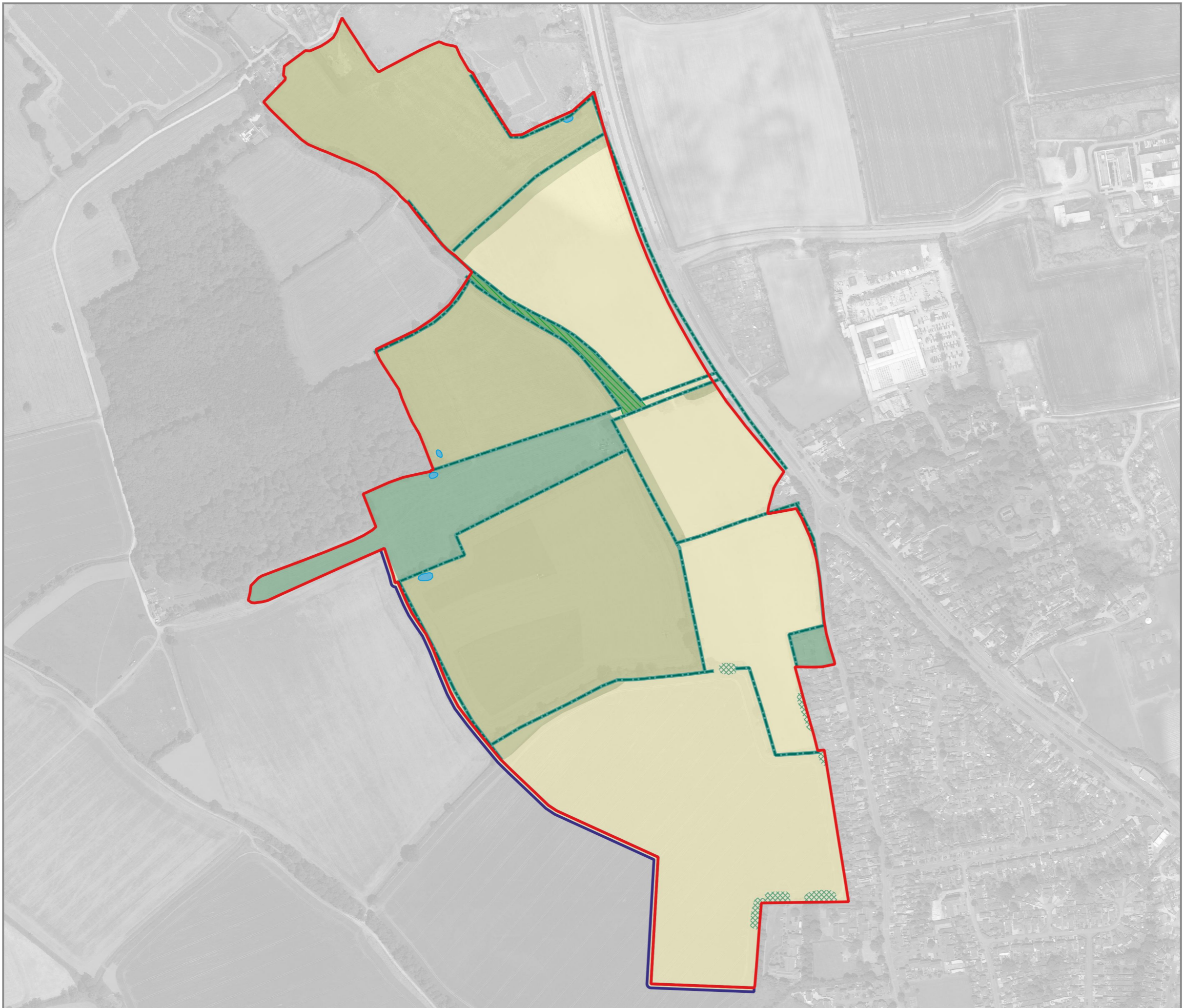
¹⁴ Field margins as foraging habitat for skylarks (*Alauda arvensis*) in the breeding season. Kuiper et al . Agriculture, Ecosystems & Environment. Vol. 170. P10-15. April 2013

6 Summary and Conclusions

- 6.1.1 Aspect Ecology is advising Merton College Oxford in respect of ecological matters relating to land west of Yarnton, Oxfordshire proposed for new residential development.
- 6.1.2 To inform the application, Aspect Ecology has undertaken an updated BNG assessment to determine the level of biodiversity net gain that could be achieved under the scheme, based on the Metric 4.0 calculation tool.
- 6.1.3 The metric demonstrates that a 14.46% biodiversity net gain is achieved in habitat units and 14.56% in hedgerow units.

Plan 5436/BNG1:

Pre-development Habitats



- Key:
- Site Boundary
 - Off-site Land within Applicant's Control
 - Cereal crops
 - Other neutral grassland
 - Modified grassland
 - Other woodland; broadleaved
 - Mixed scrub
 - Ponds (non-priority habitat)
 - Native hedgerow



Aspect Ecology Limited - West Court - Hardwick Business Park
 Noral Way - Banbury - Oxfordshire - OX16 2AF
 01295 279721 - info@aspect-ecology.com - www.aspect-ecology.com

Land West of Yarnton PROJECT

Pre-development Habitats TITLE

5436/BNG1 DRAWING NO.

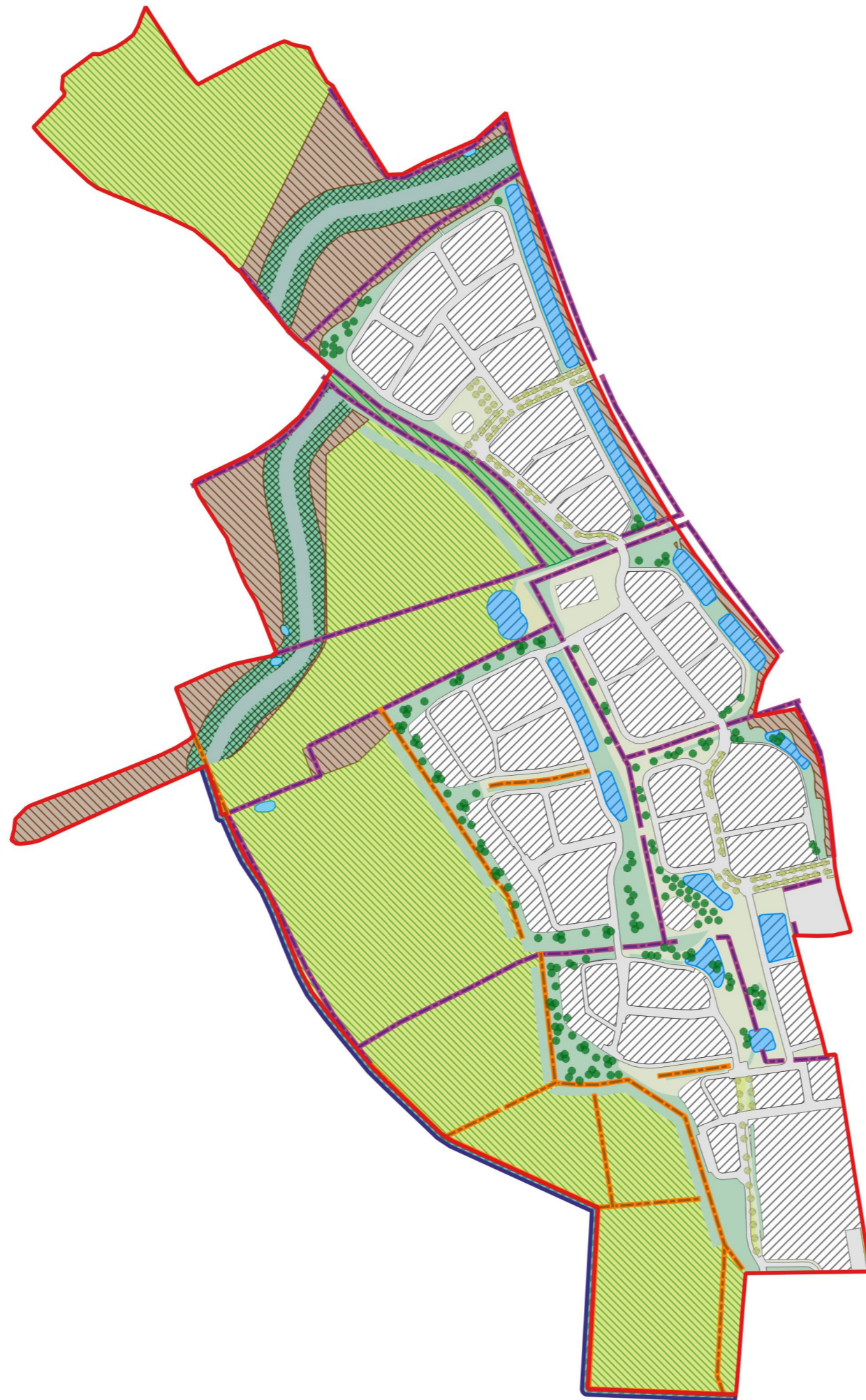
J/JP REV

December 2023 DATE



Plan 5436/BNG2:

Post-development Habitats



- Key:**
- Site Boundary
 - Off-site Land within Applicant's Control
 - Proposed Other neutral grassland - Woodland Ride
 - Other neutral grassland
 - Other neutral grassland - Meadowland
 - Retained Other woodland; broadleaved
 - Proposed Other woodland; broadleaved
 - Proposed Mixed scrub
 - Sustainable drainage system
 - Retained Ponds (non-priority habitat)
 - Retained Native hedgerow
 - Proposed Native hedgerow
 - Urban Trees (moderate condition) [184]
 - Urban Trees (poor condition) [93]
- Urban -suburban mosaic of developed natural surface, comprising:**
- Modified grassland
 - Open Space
 - Developed land; sealed surface: Hardstanding
 - Houses & Gardens
- Off-site Habitat**
- Cereal Crops Enhanced to Arable Field Margins Game Bird Mix



Aspect Ecology Limited - West Court - Hardwick Business Park
 Noral Way - Banbury - Oxfordshire - OX16 2AF
 01295 279721 - info@aspect-ecology.com - www.aspect-ecology.com

Land West of Yarnton	PROJECT
Post-development Habitats	TITLE
5436/BNG2	DRAWING NO.
J/JP	REV
December 2023	DATE



Appendix 5436/1:

Metric 4.0 Calculation Tool Extracts

Land West of Yarmton

Return to results menu

Headline Results

Scroll down for final results ▲

On-site baseline	Habitat units	281.91	
	Hedgerow units	87.52	
	Watercourse units	0.00	
On-site post-intervention <small>(Including habitat retention, creation & enhancement)</small>	Habitat units	321.52	
	Hedgerow units	100.26	
	Watercourse units	0.00	
On-site net change <small>(units & percentage)</small>	Habitat units	39.62	14.05%
	Hedgerow units	12.74	14.56%
	Watercourse units	0.00	0.00%
Off-site baseline	Habitat units	1.19	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site post-intervention <small>(Including habitat retention, creation & enhancement)</small>	Habitat units	2.34	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site net change <small>(units & percentage)</small>	Habitat units	1.15	96.50%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%
Combined net unit change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	Habitat units	40.76	
	Hedgerow units	12.74	
	Watercourse units	0.00	
Spatial risk multiplier (SRM) deductions	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
FINAL RESULTS			
Total net unit change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	Habitat units	40.76	
	Hedgerow units	12.74	
	Watercourse units	0.00	
Total net % change <small>(Including all on-site & off-site habitat retention, creation & enhancement)</small>	Habitat units	14.46%	
	Hedgerow units	14.56%	
	Watercourse units	0.00%	
Trading rules satisfied?	Yes ✓		

Unit Type	Target	Baseline Units	Units Required	Unit Deficit
Habitat units	10.00%	281.91	310.10	0.00
Hedgerow units	10.00%	87.52	96.27	0.00
Watercourse units	10.00%	0.00	0.00	0.00

Unit requirement met or surpassed ✓
 Unit requirement met or surpassed ✓
 Unit requirement met or surpassed ✓

Project Name: Land West of Yarnton Map Reference:
A-1 On-Site Habitat Baseline

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Area habitat summary	
Total Net Unit Change	40.76
Total Net % Change	14.46%
Trading Rules Satisfied	Yes ✓

Ref	Existing area habitats			Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Ecological baseline
	Broad Habitat	Habitat Type	Area (hectares)					
1	Cropland	Cereal crops	27.6558	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	55.31
2	Grassland	Modified grassland	2.9288	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	5.86
3	Grassland	Modified grassland	1.85	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	3.70
4	Grassland	Other neutral grassland	16.4211	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required ≥	131.37
5	Grassland	Other neutral grassland	5.2407	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required ≥	41.93
6	Heathland and shrub	Mixed scrub	0.3111	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required ≥	1.24
7	Woodland and forest	Other woodland; broadleaved	0.5894	Medium	Good	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required ≥	7.07
8	Lakes	Ponds (non-priority habitat)	0.0457	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required ≥	0.37
9	Grassland	Other neutral grassland	4.3827	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required ≥	35.06
10								
11								
12								
13								
14								
Total habitat area			59.43					281.91
Site Area (Excluding area of individual trees and Green walls)			59.43					

Retention category biodiversity value						Bespoke compensation agreed for unacceptable losses	Comments		
Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area habitat lost	Units lost		User comments	Consenting body comments	GIS reference number
		0.00	0.00	27.66	55.31	Arable land			
	2.7415	0.00	5.48	0.19	0.37	Improved Grassland - to be enhanced where retained			
		0.00	0.00	1.85	3.70	Improved Grassland - to be enhanced where retained			
	8.2613	0.00	66.09	8.16	65.28				
		0.00	0.00	5.24	41.93				
		0.00	0.00	0.31	1.24				
0.5894		7.07	0.00	0.00	0.00				
	0.0457	0.00	0.37	0.00	0.00				
	4.3827	0.00	35.06	0.00	0.00	Northern field			
0.59	15.43	7.07	107.00	43.40	167.63				

Total area lost (excluding area of individual trees and Green walls)	43.40
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Project Name: Land West of Yarnton Map Reference:
A-2 On-Site Habitat Creation

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Area habitat summary	
Total Net Unit Change	40.76
Total Net % Change	14.46%
Trading Rules Satisfied	Yes ✓
Area Check (excluding individual trees and green walls)	Area Acceptable ✓

Broad Habitat	Proposed habitat	Area (hectares)	Post development/ post intervention habitats						Habitat units delivered	Comments		GIS reference number
			Distinctiveness	Condition	Strategic significance	Temporal multiplier	Difficulty	User comments		Consenting body comments		
Woodland and forest	Other woodland; broadleaved	1.2711	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	15	Low	5.96	Other woodland planting		
Grassland	Other neutral grassland	3.886	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	5	Low	26.02	Grassland on development edge managed ecologically		
Grassland	Other neutral grassland	7.043	Medium	Good	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	10	Low	59.19	Restored meadowland		
Urban	Sustainable drainage system	2.8081	Low	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	3	Medium	6.76	SuDS		
Urban	Developed land; sealed surface	5.0187	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Medium	0.00	Roads		
Urban	Developed land; sealed surface	1.5557	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Medium	0.00	Sports area for School		
Urban	Developed land; sealed surface	10.34201	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Medium	0.00	Residential - seal surface @ 70% of area		
Urban	Vegetated garden	4.43229	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	8.55	Residential - gardens and green spaces @ 30% of area		
Woodland and forest	Other woodland; broadleaved	0.35	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	15	Low	1.64	Community woodland		
Woodland and forest	Other woodland; broadleaved	3.1954	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	15	Low	14.98	Community woodland		
Heathland and shrub	Mixed scrub	2.4	Medium	Good	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	10	Low	20.17	Woodland ride through community woodland		
Individual trees	Urban tree	0.7492	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	27	Low	2.29	Urban trees in green spaces		
Grassland	Other neutral grassland	1.1	Medium	Good	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	10	Low	9.24	Woodland ride through community woodland		
Individual trees	Urban tree	0.3786	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	10	Low	1.06	Urban trees adjacent to roads		
Total habitat area		44.53							155.86			

Site Area (Excluding area of individual trees and Green walls)	43.40
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Project Name: Land West of Yarnton Map Reference:
A-3 On-Site Habitat Enhancement

Area habitat summary	
Total Net Unit Change	40.78
Total Net % Change	14.48%
Trading Rules Satisfied	Yes ✓

Condense / Show Columns Condense / Show Rows

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Post development/ post intervention habitats																		
Baseline ref	Baseline habitats	Proposed Habitat (Pre-populated but can be overridden)		Change in distinctiveness and condition			Area (hectares)	Distinctiveness	Condition	Strategic significance		Temporal risk multiplier		Difficulty risk multipliers	Habitat units delivered	Comments		GIS reference number
	Baseline habitat	Proposed Broad Habitat	Proposed habitat	Distinctiveness change	Condition change	Strategic significance				Standard or adjusted time to target condition	Final time to target condition (years)	Final difficulty of enhancement	User comments			Consenting body comments		
2	Grassland - Modified grassland	Grassland	Other neutral grassland	Low - Medium	Lower Distinctiveness Habitat - Good	2.7415	Medium	Good	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	15	Low	21.55	Grassland enhanced				
4	Grassland - Other neutral grassland	Grassland	Other neutral grassland	Medium - Medium	Moderate - Good	8.2613	Medium	Good	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	10	Low	89.23	Grassland enhanced				
8	Lakes - Ponds (non-priority habitat)	Lakes	Ponds (non-priority habitat)	Medium - Medium	Moderate - Good	0.0457	Medium	Good	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	4	Medium	0.47	Retained standing water features enhanced				
9	Grassland - Other neutral grassland	Grassland	Other neutral grassland	Medium - Medium	Moderate - Good	4.3827	Medium	Good	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	10	Low	47.34	Grassland enhanced				
						Total habitat area	18.43						188.99					

Project Name: Land West of Yarnton Map Reference:
B-1 On-Site Hedge Baseline

Hedgerow summary	
Total Net Unit Change	12.74
Total Net % Change	14.56%
Trading Rules Satisfied	Yes ✓

Condense / Show Rows

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Baseline ref	Hedge number	Existing hedgerow habitats		Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Ecological baseline Total hedgerow units	Retention category biodiversity value						Comments		GIS reference number
		Hedgerow type	Length (km)						Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost	User comments	Consenting body comments	
1		Species-rich native hedgerow with trees	4.862	High	Good	Area/compensation not in local strategy/ no local strategy	Like for like or better	87.52	4.596		82.73	0.00	0.27	4.79			
2																	
3																	
4																	
5																	
6			4.86					87.52	4.60	0.00	82.73	0.00	0.27	4.79			

Project Name: Land West of Yarnton Map Reference:
B-2 On-Site Hedge Creation

Hedgerow summary	
Total Net Unit Change	12.74
Total Net % Change	14.56%
Trading Rules Satisfied	Yes ✓

Condense / Show Columns Condense / Show Rows

Main Menu Instructions

Baseline ref	New hedge number	Proposed habitats		Distinctiveness	Condition	Strategic significance	Temporal multiplier		Difficulty risk multipliers	Hedge units delivered	Comments		GIS reference number
		Habitat type	Length (km)				Standard or adjusted time to target condition	Final time to target condition (years)			Final difficulty of creation	User comments	
1		Species-rich native hedgerow with trees	2.086	High	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	10	Low	17.53	Re-instatement of historic hedgerows		
2													
3													
4													
5													
6			2.09							17.53			

Project Name: Land West of Yarrton Map Reference:	
D-1 Off-Site Habitat Baseline	
Condense / Show Columns	Condense / Show Rows
Main Menu	Instructions

Area habitat summary	
Total Net Unit Change	40.76
Total Net % Change	14.46%
Trading Rules Satisfied	Yes ✓

Baseline ref	Existing area habitats			Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Spatial risk multiplier	Ecological baseline	Retention category biodiversity value						Bespoke compensation agreed for unacceptible losses	Comments			
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Condition	Strategic significance		Spatial risk category	Total habitat units	Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area lost	Units lost		User comments	Consenting body comments	GIS reference number	Off-site reference
1	Cropland	Cereal crops	0.5945	Low	Condition Assessment N/A	Area compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	Compensation inside LPA boundary or NCA of impact site	1.19											
2																				
3																				
4																				
5																				
6																				
Total habitat area			0.59	Total Site baseline			1.19	Total area lost (excluding area of Urban trees and Green walls)						0.00						
Site Area (Excluding area of individual trees and Green walls)			0.59							Total area lost (excluding area of Urban trees and Green walls)						0.00				

Project Name: Land West of Yarrton Map Reference:	
D-3 Off-Site Habitat Enhancement	
Condense / Show Columns	Condense / Show Rows
Main Menu	Instructions

Area habitat summary	
Total Net Unit Change	40.76
Total Net % Change	14.46%
Trading Rules Satisfied	Yes ✓

Baseline ref	Baseline habitats	Proposed Habitat (Pre-Populated but can be overridden)		Change in distinctiveness and condition		Area ha	Distinctiveness	Condition	Post development/ post intervention habitats			Spatial risk multiplier	Habitat units delivered	Comments							
	Baseline habitat	Proposed Broad Habitat	Proposed Habitat	Distinctiveness change	Condition change				Strategic significance	Temporal multiplier	Difficulty multipliers			Spatial risk category	User comments	Consenting body comments	GIS reference number	Off-site reference			
1	Cropland - Cereal crops	Cropland	Arable field margins game bird mix	Low - Medium	Lower Distinctiveness Habitat - Condition Assessment N/A	0.5945	Medium	Condition Assessment N/A	Area compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	2.34	Enhanced to create 6m wide field margins for livestock							
Total habitat area						0.59							Total habitat area delivered				2.34				

Appendix 5436/2:

Habitat Condition Assessment Summary

HABITAT CONDITION ASSESSMENT MATRIX FOR METRIC 4.0

PROJECT NAME: Land West of Yarnton

PROJECT NUMBER: 5436



Habitat type/criteria		Feature Reference			
		Pre-development		Post-development	
<i>Grassland (low distinctiveness)</i>					
A	6-8 species per m2, including 2+ forbs (N.B. review other grassland types where 9+ species (excluding undesirable species), or species are characteristic of higher quality grassland)	Fail			
B	Varied sward height (>20% less than 7cm, >20% more than 7cm)	Fail			
C	Less than 20% scrub	Pass			
D	Less than 5% subject to physical damage (excessive poaching, machinery use/storage etc)	Pass			
E	Cover of bare ground between 1 and 10%	Pass			
F	Less than 20% bracken	Pass			
G	Absence of Sch9 invasive species	Pass			
Condition		Poor			
<i>Grassland (medium distinctiveness and above)</i>					
		Pre-development	Post-development		
A	Closely matches characteristics of specific habitat type	Fail	Pass	Pass	
B	Varied sward height (>20% less than 7cm, >20% more than 7cm)	Fail	Pass	Pass	
C	Cover of bare ground between 1 and 5%	Pass	Pass	Fail	
D	Less than 20% bracken and 5% scrub	Pass	Pass	Pass	
E	Absence of Sch9 invasive species and less than 5% combined undesirable species (C Thistle, Sp Thistle, Docks, Nettle, C Buttercup, G Plantain, W Clover, Cow Parsley) or physical damage (excessive poaching, machinery use/storage etc)	Pass	Pass	Fail	
F	Non-acid grasslands: 10 or more species per m2 (not including Sch9 or undesirable species). <i>Mark as N/A if acid grassland, otherwise to be completed.</i>	Pass	Pass	Fail	
Condition		Poor	Good	Moderate	
		Upgraded to Moderate			
<i>Pond</i>					
		Pre-development	Post-development		
A	Good water quality with clear water and no obvious signs of pollution. Turbidity acceptable if grazed by livestock.	Pass	Pass		
B	Semi-natural habitat (moderate distinctiveness or above) at least 10m from pond edge for entire perimeter.	Pass	Pass		
C	Less than 10% duckweed or filamentous algae	Pass	Pass		
D	Pond not artificially connected to other waterbodies (e.g. agricultural ditches or artificial pipework)	Pass	Pass		
E	Pond water levels able to fluctuate naturally throughout year - no obvious dams, pumps or pipework	Pass	Pass		
F	Absence of non-native plant and animal species	Pass	Pass		
G	Pond is not artificially stocked with fish. If naturally contains fish is a native fish assemblage at low densities.	Pass	Pass		
H	Non-woodland ponds only: Emergent, submerged or floating plants cover at least 50% of pond area that is less than 3m deep	Fail	Pass		
I	Non-woodland ponds only: Less than 50% of pond surface shaded by woody bankside species	Pass	Pass		
Condition		Moderate	Good		

		Pre-development	Post-development			
Scrub						
A	Habitat is a good representation of UKHab description. At least 80% of scrub is native with at least 3 woody species, with no one species more than 75% cover (except Hazel, Juniper, Sea Buckthorn and Box)	Fail	Pass			
B	Good age range with seedlings, saplings, young shrubs and mature shrubs present	Fail	Pass			
C	Absence of Sch9 invasive species and less than 5% undesirable species (non-native conifers, Tree-of-Heaven, Holm Oak, Turkey Oak, Cherry Laurel, Snowberry, Shalton, American Skunk Cabbage, Buddleia, Cotoneaster, Spanish Bluebell, Hybrid Bluebell)	Fail	Pass			
D	Scrub has well developed edge with scattered scrub and tall grassland/herbs present between scrub and adjacent habitats	Fail	Pass			
E	Clearings, glades or rides present providing sheltered edges	Fail	Pass			
Condition		Poor	Good			
Woodland (assign scores of 3/2/1 accordingly)						
		Pre-development	Post-development			
A	Three/two/one age classes present (across whole woodland)	2	2			
B	No significant browsing/browsing across no more than 40% of woodland/browsing across more than 40% of woodland	3	3			
C	No invasive species/Rhododendron or Laurel absent, other species less than 10% cover/Rhododendron or Laurel present, other species more than 10% cover	3	3			
D	5+ native tree or shrub species (more than 5m height)/3-4 native tree or shrub species/up to 2 native tree or shrub species (average per 10m radius survey plot, across woodland parcel)	3	3			
E	More than 80% canopy trees and understorey shrubs are native/50-80% are native/less than 50% are native	3	3			
F	Less than 20% temporary open space, or 10-20% temporary open space if woodland over 10ha/21-40% temporary open space/more than 40% temporary open space (e.g. glades, rides, footpaths, areas of clearfell)	3	3			
G	Three/one-two/none classes of regeneration present - trees 4-7cm dbh; saplings/seedlings; advanced coppice regrowth	2	2			
H	Tree mortality less than 10%, no pests, diseases or crown dieback/11-25% mortality, low risk pests, diseases or crown dieback/more than 25% mortality, high risk pests or diseases	3	2			
I	Ground flora - recognisable NVC plant community strongly characterised by AWI/recognisable NVC plant community present/no recognisable NVC community	2	1			
J	Woodland vertical structure (average per 10m radius survey plot) - three or more storeys/two storeys/one or less storey (upper, middle, lower, shrub layer or complex)	2	2			
K	2+ veteran trees per ha/1 veteran tree per ha/no veteran trees	3	1			
L	50% of survey plots have standing deadwood, large dead branches, stems and stumps/25-50% deadwood/less than 25% deadwood	1	1			
M	No nutrient enrichment or damaged ground/less than 1ha nutrient enrichment or 20% damaged ground/more than 1ha nutrient enrichment or 20% damaged ground	2	3			
Condition		Moderate	Moderate			

<i>Urban / Sparsely vegetated land - ruderal/ephemeral</i>		Pre-development		Post-development	
A	Varied vegetation structure providing opportunities for vertebrates and invertebrates to live, eat and breed. No more than 80% of area comprises a single structural habitat component or vegetation type (i.e. scrub, grassland, herbs).			Fail	
B	Supports different plant species that are beneficial for wildlife			Pass	
C	Sch9 invasive species and other to the detriment of native wildlife cover less than 5% of total vegetated area.			Pass	
	- Complete absence of Sch9 invasive species.			Pass	
D1	Open mosaic habitat on previously developed land only: Forms a mosaic of at least four early successional communities (annuals; mosses/liverworts; lichens; ruderals; inundation species; open grassland; flower-rich grassland; heathland) PLUS bare substrate				
D2	Open mosaic habitat on previously developed land only: Contains pools of water such as permanent and ephemeral waterbodies				
E1	Bioswale and SUDS only: Plant species are mostly native. If non-native species are present these are not detrimental to the habitat/native wildlife.			Pass	
E2	Bioswale and SUDS only: Vegetation comprised of plant species suited to wetland or riparian situations.			Pass	
F	Intensive green roofs: Minimum of 50% native and non-native wildflowers, 70% of roof is soil and vegetation (including water features)				
G	Biodiverse green roofs: Varied depth of 80-150mm with at least 50% at 150mm, seeded/pre-prepared with wildflowers and sedums.				
	- Some additional habitat such as sand piles, logs etc are present				
Condition				Moderate	

ecology • landscape planning • arboriculture



Aspect Ecology Ltd
West Court
Hardwick Business Park
Noral Way
Banbury
Oxfordshire OX16 2AF

T: 01295 279721
E: info@aspect-ecology.com
W: www.aspect-ecology.com