



ARBOR VITAE

ECOLOGY • FORESTRY • LAND USE



BIODIVERSITY NET GAIN LAND AT OVERTON-ON-DEE

Project name: Overton-on-Dee, Wrexham

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Prepared by: Phillipa Stirling BSc MSc ACIEEM

Reviewed by: William Prestwood BSc Director

Requested by: Pickstock Homes

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EXECUTIVE SUMMARY

Planning permission will be sought for the construction of 44 new residential properties on a piece of land at Overton-on-Dee, Wrexham. Previous land use at the site has been agricultural, mainly grazing.

Arbor Vitae were commissioned by Pickstock Homes Ltd to undertake a Biodiversity Net Gain assessment. The Mandatory Biodiversity Metric has been used to calculate the existing and post-development habitat and hedgerow units.

The site is made up of 1.89ha of modified grassland, all of which will be lost. Existing native hedgerow and trees at the edges of the site will be retained and protected throughout work.

The proposals at the site will include the creation of 0.36ha of other neutral grassland, a wildlife pond measuring 150m², the planting of 52 native trees and 366m of species-rich native hedgerow.

The proposed development will deliver 4.44 habitat units and 7.64 linear units. Overall, the plans will create an on-site biodiversity net change of 0.66 area habitats, equating to a 17.57% gain. Plans will create on-site biodiversity net change of 2.70 linear habitats, equating to a 54.48% gain.

A summary of habitat creation and management is provided, with key points such as: reduced mowing regimes on the open grassland and no mowing between May and August to allow plants to flower and seed.

A full Management and Monitoring Plan will be required for the site, securing at least 30 years of on-going habitat supervision.

1 INTRODUCTION

1.1 BACKGROUND TO DEVELOPMENT

Planning permission will be sought for the construction of 44 new residential properties on a piece of land at Overton-on-Dee, Wrexham. Previous land use at the site has been agricultural, mainly grazing.

The village of Overton is located between Ellesmere and Wrexham, just over the north Shropshire border. The land surrounding the village is a mixture of agricultural arable, permanent pasture and semi-natural broadleaved woodland. The development site currently sits adjacent to existing residential properties at the west boundary.

Arbor Vitae were commissioned by Pickstock Homes Ltd to undertake a Biodiversity Net Gain assessment. The Mandatory Biodiversity Metric has been used to calculate the existing and post-development habitat and hedgerow units.

The assessment of habitat condition in relation to the completed development has been made in the context of there being ongoing management aligned to biodiversity objectives. Management will be supported by monitoring which will define; habitat status, record management outcomes and results-based changes to management. Habitat management will be undertaken for a minimum of 30 years, consistent with the requirements for BNG.

1.2 SCOPE OF SURVEY

The survey was designed to accomplish the following:

- Assess baseline habitats on site at the time of the survey,
- Provide relative condition assessment of each habitat parcel present,
- Provide an accurate habitat map of the site,
- Complete Biodiversity Net Gain Metric 4.0 baseline and, where possible, 'habitat creation' for areas, hedges and rivers.

2 SURVEY METHODOLOGY

2.1 DESK STUDY

An initial desk study was composed to gain background information regarding any protected species or designations within the area. The main sources of information were Cofnod, Magic Map and NBN Atlas.

Please refer to 'Preliminary Ecological Appraisal- Land at Overton-on-Dee V1, 3rd November 2022'.

3.2 SITE SURVEY

A site visit was made on 28/11/2023. The survey was carried out in accordance with:

Biodiversity Net Gain: Good Practice Principles for Development, A Practical Guide. CIEEM, 2019.

Biodiversity 4.0 User Guide.

3.3 DETAILED METHODS

Habitat information was gathered and recorded using the most up-to-date version of the Habitat Condition Assessment Sheets associated with the mandatory BNG Metric.

Condition assessments for habitat parcels were then completed in the office and all data consolidated into a central spreadsheet.

Habitat mapping was completed using QGIS 3.28.10 'Firenze'. Where available, OS Master Map data was obtained for the site and used as the starting point for mapping. Area and length measurements were calculated within the GIS software, confirmed using scaled maps/plans.

Habitat information was then input to the metric spreadsheet for 'baseline' tabs.

3.4 PERSONNEL

The survey was carried out by Phillipa Stirling MSc ACIEEM: Ecologist.

Relevant BNG training courses completed:

- Biodiversity Net Gain: what do local authorities want?
- Calculating and Using Biodiversity Units with Metric 2.0

4+ Years of experience as an ecologist, regularly completing training courses to achieve 30 hours of Continuing Professional Development on an annual basis.

3.5 CONSTRAINTS

The survey was carried out at a time of year which is sub-optimal for vegetation surveys. However, due to the intensively managed nature of the land, an appropriate level of detail was available to classify the habitats on site. The timing of the survey work in no way undermines the results of the BNG assessment.

'Proposed' habitat mapping in QGIS using UKHab classification was not possible due to digital data not being available.

3 BASELINE CONDITIONS

3.1 EXISTING HABITAT

The UK Habitat Classification v2.01 is also used to classify habitats.

Modified grassland

The site is made up of 1.89ha of modified grassland. The grassland consists of a limited number of species such as: perennial ryegrass, annual meadow grass, cock's foot, Yorkshire fog, white clover, creeping buttercup, dandelion, ribwort plantain, broad leaved dock, shepherd's purse and chickweed. Species recorded were at no more than 5/6 species per metre squared. As such, the habitat fails criteria A of the low distinctiveness condition assessment sheet and therefore, scores 'poor' in terms of its condition assessment.

Native hedgerow

Hedge 1: borders the adjacent tennis courts and bowling green. Made up of hawthorn, blackthorn and ash with ivy and bramble growing through. The ground flora is limited to cleavers, creeping buttercup, common nettle and cock's foot. The hedge is cut into a uniform box profile. 148m in length and 'good' condition.

Hedge 2: a mature hedge dominated by hawthorn. Other species include: blackthorn, hazel, holly and sycamore. Ivy and bramble are present and the hedge is around 2m wide in places with hollow sections made by livestock seeking shelter. The ground flora is mostly bare, with some common nettle and arum recorded in localised patches. There are some early sycamore trees within this length of hedge which are in good condition. The hedge is tall (5m) and not kept in a box profile. 139m in length and 'good' condition.

Hedge 3: a species-poor hedge consisting of hawthorn and blackthorn with hazel, sycamore and elder present in low density. One mature oak tree present at the north end with multiple potential rooting features and an owl box mounted on the north side. 121m in length and 'good' condition.

Hedge 4: a hawthorn hedge which runs along the edge of a planted wood. Blackthorn, ivy and bramble present. Ground flora consisting of: cleavers and common nettle. 191m in length and 'good' condition.

3.2 GOOD PRACTICE PRINCIPLES

Principle	Justification of use in BNG assessment
Apply the mitigation hierarchy	Measures to avoid and minimise biodiversity loss and to rehabilitate/restore biodiversity affected by the project are: 1) defined and documented, 2) implemented and monitored; and 3) managed for the duration of the project's

	impacts. For example, maintain records of the consideration of alternatives as evidence of avoidance measures implemented.
Avoid losing biodiversity that cannot be offset elsewhere	Project documents describe any impacts to irreplaceable and vulnerable biodiversity resources, e.g., permanent loss or damage to semi-natural ancient woodland, ancient climax vegetation communities, veteran trees, endemic and internationally rare species that cannot be replaced within reasonable timeframes. Projects with impacts on irreplaceable habitats cannot achieve BNG. These projects should demonstrate where biodiversity compensation has been provided but cannot claim project-wide achievement of BNG. These projects should transparently and comprehensively refer to the impacts on irreplaceable habitats in communications and reports.
Be inclusive and equitable	Evidence of input from and consultation with nature conservation bodies, the local community, the local planning authority and other relevant stakeholders. (NB: For smaller scale projects, this may be part of the planning consultation process). Terms of Reference for any Stakeholder Partnerships are agreed and published, with the roles and responsibilities of members clearly defined.
Address risk	Evidence that BNG has been achieved within the project. Sources of risk and uncertainty in design and implementation of mitigation are documented. Identify risks that may present themselves during the 30-year management period and how these should be dealt with.
Make a measurable net gain contribution	Suitable metric is used for all habitat impacts quantified relative to the 'pre-project' condition of each habitat. Gains anticipated from habitat creation, enhancement and positive management are quantified relative to the predicted condition in the absence of BNG activities.
Achieve the best outcomes for biodiversity	Evidence is provided that BNG commitments contribute (now or in the future) to regional and national conservation goals, e.g., Local Nature Recovery Strategies. Provide evidence that the BNG design has considered where it is possible to contribute to supporting priority species populations. Provide evidence to show where additionality has been proven within the built environment and what gains are achieved.
Be additional	Evidence is provided that the conservation gains were caused by project activities and would not have occurred in other circumstances
Create a net gain legacy	Evidence is provided that those responsible for implementing project biodiversity management have the requisite management and technical capacity for their specified roles. Key Performance Indicators are set for biodiversity features affected by the project and specific, measurable and time-bounded targets for indicating conservation success are clearly stated. Evidence is provided that any reasonably foreseeable future developments that might affect longterm commitments to biodiversity, including developments by third parties, have been considered. Evidence that legal and financial mechanisms are in place to guarantee the financial and institutional viability of all biodiversity management for a minimum 30 years or at least the duration of the project's impacts. Evidence is provided that management is adapted, where necessary, throughout implementation to deliver the agreed conservation outcomes and monitoring is in place to identify risks to achieving specified outcomes. Evidence that the design has considered where it is possible to create features for species, in particular, priority species.
Optimise sustainability	Evidence provided that the project prioritises BNG targets, but then seeks opportunities for gains for the wider environment, the community and the economy.
Be transparent	The commitment to BNG is stated by the project developer in a publicly available document. Results of project audits are publicly available where claims of BNG are made at relevant project stages, including project closure and any deviations from original design specifications are clearly stated. Evidence that the best available scientific knowledge and methods have been used in BNG design and implementation and knowledge is transferred back to the scientific community.

4 PROPOSED DESIGN

4.1 AREA HABITATS

All modified grassland on the site will be lost to the development.

Other neutral grassland

The landscape proposals for the new development will include areas of Public Open Space, to be seeded with native, species-rich grassland. The habitat will cover an area of 0.3602ha within the site boundary.

The proposed habitat has **medium distinctiveness** and will be maintained in **moderate** condition.

Individual tree

A total of 52 native trees will be planted throughout the scheme. Trees are assumed to be 'small' after 30 years. A total canopy cover of 0.2117ha will be provided with tree planting.

The proposed habitat has **medium distinctiveness** and will be maintained in **moderate** condition.

Developed land; sealed surface

Houses, roads, footpaths and driveways will occupy approximately 0.8932ha of land within the site boundary.

The proposed habitat has **very low distinctiveness** and its condition is not applicable.

Vegetated garden

Front and rear gardens will account for 0.6201ha of land within the site boundary.

The proposed habitat has **low distinctiveness** and its condition is not applicable.

Ponds (non-priority habitat)

One wildlife pond will be created at the south east corner of the site. The pond will measure 150m².

The proposed habitat has **medium distinctiveness** and will be maintained in **moderate** condition.

4.2 LINEAR HABITATS

Hedgerow

All hedgerows will be retained and protected throughout work at the site.

Hedge 1-4 currently provides **low distinctiveness** and will be maintained in **good** condition.

Species-rich native hedgerow

A total of 366m of new hedgerow planting will take place throughout the site, including between properties and along roadsides.

The proposed habitat has **medium distinctiveness** and will be maintained in **moderate** condition.

4.4 STRATEGIC SIGNIFICANCE

The site lies at the eastern edge of the existing settlement of Overton-on-Dee. The land to be developed is intensively managed, with little ecological diversity except for the boundary hedge features.

Following the completion of the development, the ecological context will permanently change and the habitats that will be located within the site have been assigned low strategic significance.

The proposed habitat creation has been designed to provide as much habitat continuity and linear landscape links, providing additional corridors for wildlife along the east boundary. The retention of all hedgerow features and healthy trees will provide good habitat connectivity in perpetuity.

5 BNG METRIC RESULTS

5.1 HABITAT BASELINE

In total, the current site has an ecological baseline of **3.78** area habitat units, of which **100%** will be lost under the current plans.

The site provides **4.95** native hedgerow units, all of which will be retained as part of the plans.

5.2 PROPOSED HABITAT

The proposed development will deliver **4.44** habitat units and **7.64** linear units.

Overall, the plans will create an on-site biodiversity net change of **+0.66** area habitats, equating to a **17.57% gain**. Plans will create on-site biodiversity net change of **+2.70** linear habitats, equating to a **54.48% gain**.

See 'The Statutory Biodiversity Metric Calculation Tool – Overton'.

5.3 PROJECT IMPLEMENTATION PLAN

High-level detail regarding habitat creation is provided within this section but a full Management and Monitoring Plan will be required.

Landscape planting schedules

Habitat	Planting schedules
Other neutral grassland	The areas of open space throughout the site will be seeded with a UK native mixture of grasses and wildflowers. The habitat created will be representative of the UKHab g3c ONG code, specifically g3c6 Lolium-Cynosurus. This will provide a slightly more robust grassland sward, able to withstand moderate use. The sward should contain ryegrasses, white clover and timothy at no more than 40% cover. Other grasses to be included: crested dog's tail, common bent, sweet vernal grass, soft-brome and yellow oat-grass. Herbaceous plants forming 50% of the sward to include: meadow buttercup, knapweed, bird's foot trefoil, self-heal, yarrow, red clover, daisy, sorrel.
Individual tree	Rowan (12), wild cherry (12), field maple (11), silver birch (10), pedunculate oak (5) and small-leaved lime (x2). Note: oak and lime will require planting in large open space. All trees will be planted as root-ball, 1.2m.
Developed land; sealed surface	-
Vegetated garden	All lawns will be seeded with a commercial grass mixture.
Ponds (non-priority habitat)	A small number of aquatic plants will be used to begin the establishment of the pond. Water mint (2), marsh marigold (2), lesser pond sedge (2), purple loosestrife (4) and ragged robin (2). All plants supplied as bare root-ball, 1L pots.
Species-rich native hedge	Hawthorn (50%), hazel (10%), holly (5%), oak (10%), field maple (5%), elder (5%), wild privet (5%), dogwood (5%), Guelder rose (5%).

Management proposals

Habitat	Management proposals summary
Other neutral grassland	Reduced mowing regime between May and August to allow herbaceous plants to flower and seed. 10cm minimum height for mowing. All arising material removed. Mowing no more than once per month.
Individual tree	Maintain base free from competing plants. Ensure guards remain intact and effective.
Developed land; sealed surface	-
Vegetated garden	-
Ponds (non-priority habitat)	Wildlife pond to be fenced for safety. Minimal intervention proposed.

	De-silting, if necessary. Removal of plants such as <i>Typha</i> to prevent domination of pond.
Species-rich native hedge	Maintain base free from competing plants. Ensure guards remain intact and effective. Formative pruning in years 2-5 to start forming shape. Allow hedges around housing to reach up to 2m in height. Allow hedges adjacent to open space to reach 3m in height. Annual cutting in January/February to provide foliage and berries for as long as possible.

Timetable for implementation

Habitat	Theoretical timetable
Other neutral grassland	Areas to be seeded prepared alongside development at internal phase. Seeding to take place when it can be confirmed that no disturbance of the habitat will take place.
Individual tree	Planting once all building work is complete.
Developed land; sealed surface	Start date to be confirmed.
Vegetated garden	Lawn creation upon completion of external build.
Ponds (non-priority habitat)	Pond created whilst preparatory works for grassland creation are underway.
Species-rich native hedge	Planting once all building work is complete.
Timetable to be updated once permission granted.	

Responsible persons

Pickstock Homes Ltd will ultimately be responsible for ensuring that all habitat creation, management and monitoring is adhered to in full.

7 REFERENCES

BS 8683 - Process for designing and implementing Biodiversity Net Gain – Specification. The British Standards Institution 2021

CIEEM (2017) Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

CIEEM (2018), Guidelines for ecological impact assessment in the UK and Ireland. September 2019 Update 1.1.

CIEEM, CIRIA, IEMA (2016) Biodiversity net gain. Good practice principles for development.

CIEEM, CIRIA, IEMA (2019) Biodiversity net gain. Good practice principles for development. A practical guide. CIRIA C776a. London, 2019.

Natural England (2021) The Biodiversity Metric 3.0 (JP039)

FIGURE 1 LOCATION

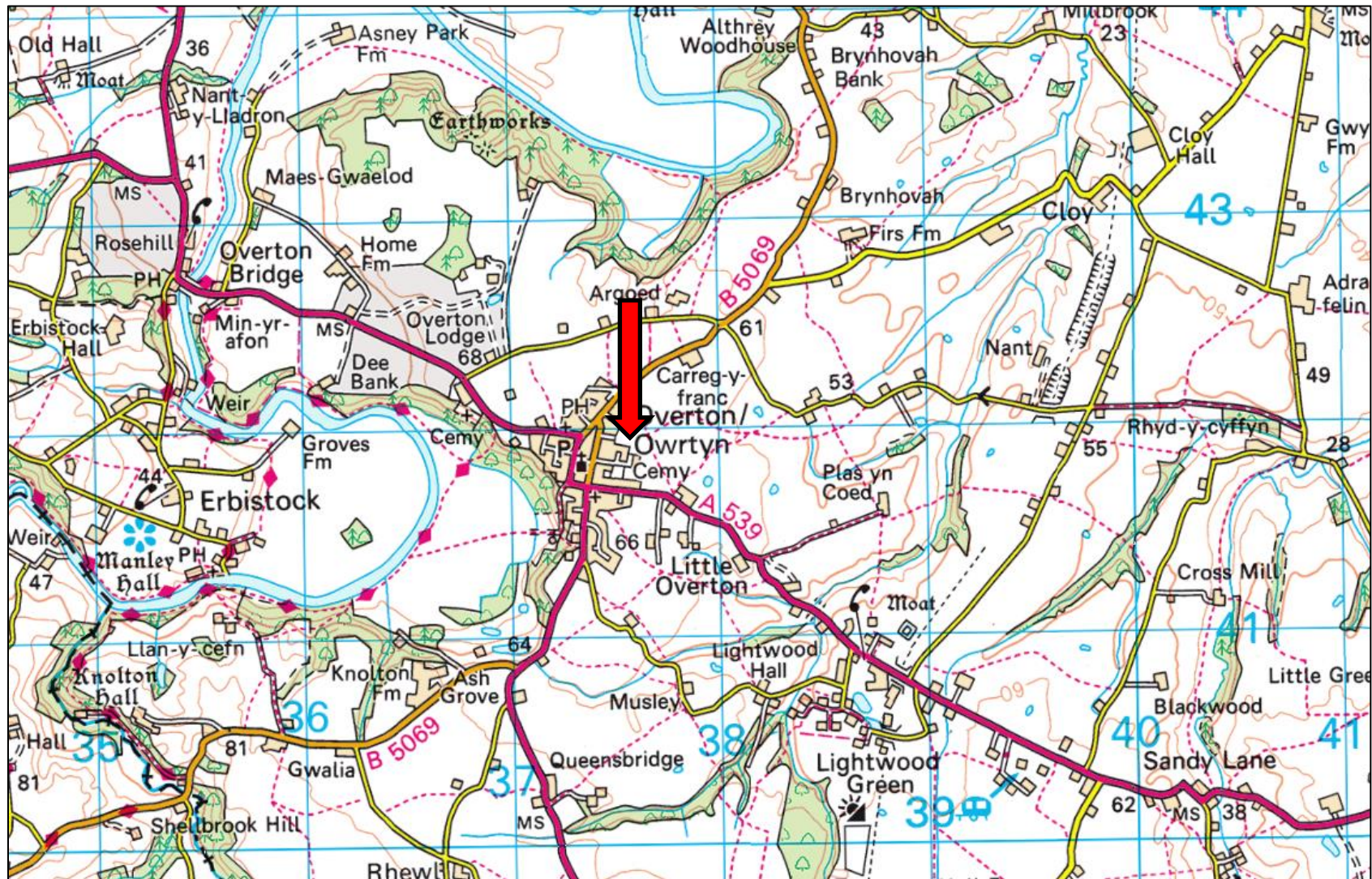


FIGURE 2 AERIAL PHOTOGRAPH



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FIGURE 3 BASELINE HABITAT MAP



[illegible]

APPENDIX 1 PHOTOGRAPHS



The site. Hedge 3 pictured



Hedge 1



Hedge 2



Hedge 4

