



ARBOR VITAE

ECOLOGY • FORESTRY • LAND USE

Project name: Wynnstay Technology Park, Ruabon, Wrexham

Document title: Habitat Management Plan

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Prepared by: Phillipa Stirling MSc ACIEEM

Reviewed by: William Prestwood BSc Director

Requested by: WPA

1 Introduction

Planning permission has been granted for: Erection of 43 affordable dwellings with associated parking. Ecological survey work has been carried out at the site by Greenscape Environmental, to include an 'Ecological Appraisal, reference: 2298 1911R', 'Phase 2 Survey Results, reference: 2298 2007R' and an addendum in the form of a letter, reference: 2298 2003L.

According to report 2298 1911R, habitats on site include: bare ground, tall ruderal vegetation, scattered scrub and broadleaved woodland around the periphery. The proposals will result in the loss of 0.7ha of bare ground, 0.7ha of sparsely vegetated ground and 0.13ha of mixed scrub.

1 Background

Phase 2 surveys included butterflies. The Dingy Skipper had been recorded at this site in 2005 & 2007 but since then, conditions have changed significantly. The species was not recorded during surveys in 2020.

The report by Greenscape Environmental (2020) concluded: "Butterfly species found on site included large white (*Pieris brassicae*), small tortoiseshell (*Aglais urticae*), comma (*Polygonia c-album*), ringlet (*Aphantopus hyperantus*), meadow brown (*Maniola jurtina*) and orange-tip (*Anthocharis cardamines*). Butterfly sightings peaked on 22nd June, with all species (except orange-tip) found in one visit. All other visits were limited to large white and orange-tip.

The records of dingy skipper on site were of significant concern during the public consultation. The lack of dingy skipper presence on site during the peak times (May-June) suggests the historic records are no longer accurate and truly representative."

The following ecology-related condition has been included with the consent:

33. No part of the development shall commence until a scheme for the long term management, maintenance and responsibility for the proposed butterfly mitigation areas, as shown approved plan no. 18/1786/03 Rev H shall be submitted to and approved in writing by, the Local Planning Authority. The management plan as is approved shall be fully implemented in accordance with the details for the life of the development.

2.1 Aims and objectives of management

1. Maintain and enhance existing woodland and adjacent areas at the north boundary of the site, specifically for butterfly species.
2. Create and maintain an area of herbaceous food plants, suitable for butterfly species.
3. Enhance the quality of existing open areas and grassland at the north boundary of the site through over seeding with a wildflower mix.

2.2 Appropriate management options for achieving aims and objectives

Broadleaved woodland

Existing woodland along the north boundary will be retained and protected throughout all work on site. The area measures approximately 600m². Supplementary under planting within open areas of the woodland will be carried out to provide suitable egg-laying and food plant species which a range of butterflies will use.

All tree planting to be carried out will be done so during the first available planting season upon completion of development within the vicinity of the north boundary. Tree planting will take place between November and March when plants are dormant and ground moisture levels are high.

Trees/shrubs will be planted at 3m x 3m density using 80/100cm bare root plants. All plants will be fitted with appropriate tree guard and support stake. Species to be planted as per Table 6.4 of report 2298 1911R:

Table 6.4. Woody foodplant species

Common name	Latin name	Flowering period	Butterfly life stage
Plum	<i>Prunus domestica</i>	Mar - Apr	Adult
Pear	<i>Pyrus spp.</i>	Mar - Apr	Adult
Cherry	<i>Prunus spp.</i>	Mar - Apr	Adult
Apple	<i>Malus domestica</i>	Mar - Apr	Adult
Rose	<i>Rosa spp.</i>	May - Jun	Adult
Hawthorn	<i>Crataegus monogyna</i>	May - Jun	Adult
Blackthorn	<i>Prunus spinosa</i>	-	Larvae
Oak	<i>Quercus robur</i>	-	Larvae
Holly	<i>Ilex aquifolium</i>	-	Larvae

The base of all tree planting will be covered with bark mulch in order to suppress the growth of competing vegetation.

Guards and canes to be removed from the trees from year 8-10, provided the plants are established and not at risk from browsing pressure.

Key management points:

- Artificial or natural fertilizer will not be used within the woodland area to avoid the development of undesirable ground flora which thrive in high nutrient environments.

Herbaceous food plants

An area of approximately 250m² will be planted with a mosaic of herbaceous perennial plants, to include the following Table 6.3 from report 2298 1911R:

Table 6.3. Herbaceous foodplant species

Common name	Latin name	Flowering period	Butterfly life stage
Common bird's-foot-trefoil*	<i>Lotus corniculatus</i>	May - Sept	Larvae and adult
Greater birds-foot-trefoil*	<i>L. pedunculatus</i>	Jun - Aug	Larvae and adult
Nettle	<i>Urtica dioica</i>	-	Larvae
Garlic mustard	<i>Alliaria petiolata</i>	Apr - Jun	Larvae
Buddleja	<i>Buddleja davidii</i>	Jul - Aug	Adult
Purple top	<i>Verbena bonariensis</i>	Aug - Oct	Adult
Marjoram	<i>Origanum majorana</i>	Jun - Sept	Adult
Thistle	<i>Rubus fruticosus</i>	Jul - Nov	Adult
Bramble	<i>Cardus & Cirsium spp.</i>	Jul - Nov	Adult

*Used by Dingy Skippers

All plants will be planted as either plugs (bird's foot trefoil species) or 2L potted plants (purple top, marjoram, and thistle). Buddleja will be planted as 5L potted plants. Species such as nettle and garlic mustard will be allowed to colonise the area naturally, from nearby seed sources.

All planting will take place during the first spring (March/April) available after works begin on site. Where required, peat-free compost will be used as a supplementary planting material. All new planting will be mulched, to suppress competition from other plants.

Grassland and wildflowers

An area of approximately 550m² will be subject to part re-seeding along the south facing slope of the landscape bund along the north boundary. Areas of existing vegetation will be scarified using a machinery mounted rake/tines. 50% bare earth will need to be established before new seed can be introduced. The aim will be to de-compact the existing soil layer, to allow new seed to establish. All areas which are seeded will be rolled to finish to ensure that all seed is in good contact with the soil.

Wildflower seed will be sown at a rate of 2.5g/1m² or 10kg/1 acre. Seed mix will be chosen based on the soil type in the area. A suitable mix has been identified as BFS 9 Country Meadow Wildflower Mix from British Flora. All re-seeding work will take place in either September or March when the ground is moist, but not waterlogged.

Areas of bare earth will be maintained throughout the grassland areas, scraping of the lower parts of the landscape bund will be completed on an annual basis. Approximately 200m² of this area will be maintained as bare soil or sparsely vegetated land.

All grassland areas which are to be over-seeded will be mown during the first year in order to control annual weeds. Ongoing maintenance of the grassland areas will be minimal e.g. strim once every 2 years. All material will be removed from site.

Bird's foot trefoil species will make up around 75% of the grassland sward. The following plant species are required as a minimum:

Table 5.1. Core grass species

Common Name	Latin Name
Common Bent	<i>Agrostis capillaris</i>
Red Fescue	<i>Festuca rubra</i>
Cock's Foot	<i>Dactylis glomerata</i>
Yorkshire Fog	<i>Holcus lanatus</i>

Table 5.2. Core forb species

Common Name	Latin Name
Bird's-foot Trefoil	<i>Lotus corniculatus</i>
Yellow rattle	<i>Rhinanthus minor</i>
Buttercup sp.	<i>Ranunculus sp.</i>
Fleabane	<i>Pulicaria dysenterica</i>
Kidney Vetch	<i>Anthyllus vulneraria</i>
Wild Marjoram	<i>Origanum vulgare</i>
Mouse-ear hawkweed	<i>Hieracium pilosella</i>
Black knapweed	<i>Centaurea nigra</i>

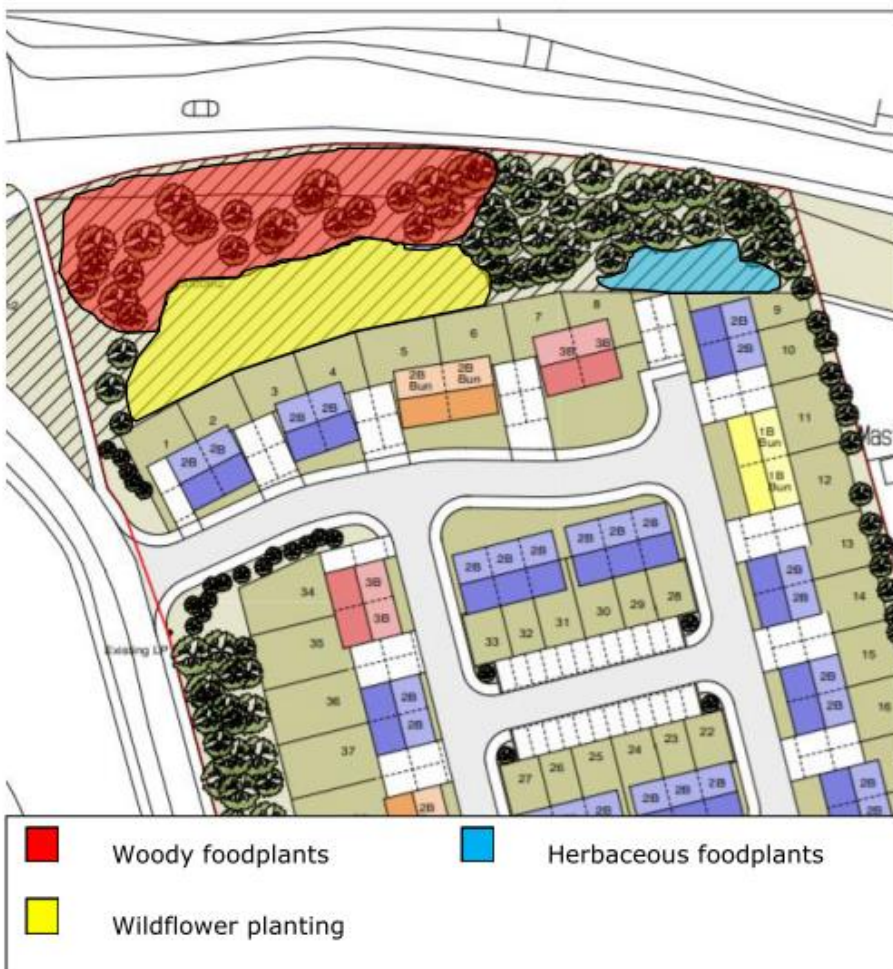


Figure 6.1. Planting locations

Extract of Figure 6.1 from Greenscape Environmental's report (ref:2298 1911R).

Table 1. Annual work schedule for habitat creation and maintenance, Year 1-10. To be used for annual monitoring audit.

Activity	Year									
	1	2	3	4	5	6	7	8	9	10
Woodland										
Planting of trees and shrubs on site.	*									
Check health of all trees planted.	*	*	*	*	*					
Replace any loss of trees.	*	*	*	*	*					
Retain tree bases free from undesirable species e.g. dock, thistle, and nettle. Manual removal if present.	*	*	*	*	*					
Removal of spiral guards upon establishment of trees.								*	*	*
Herbaceous planting										
Planting of all herbaceous plant.	*									
Replacement of any losses.	*	*	*	*	*					
Removal of undesirable species.	*	*	*	*	*					
Neutral grassland										
Scarify/harrow areas to be over-seeded to reveal 50% bare ground.	*									
Sow appropriate wildflower mix at agreed density, followed by rolling.	*									
Mow during the first year of establishment to control annual weeds.	*									
Mow once every 2 years in October allow all flowering plants to bloom, drop seed and provide egg-laying opportunities for butterfly species. Remove all cuttings.		*	*	*	*	*	*	*	*	*
Check presence and % cover of shrubs and bramble. Instigate management if coverage is more than 20% of the grassland area.		*	*	*	*	*	*	*	*	*

Table 2. Annual work schedule for habitat creation and maintenance, Year 11-25. To be used for annual monitoring audit.

	Year														
Activity	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Woodland															
Check health of all trees planted.	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Neutral grassland															
Mow once every 2 years in October allow all flowering plants to bloom, drop seed and provide egg-laying opportunities for butterfly species. Remove all cuttings.	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Check presence and % cover of shrubs and bramble. Instigate management if coverage is more than 20% of the grassland area.	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

2.3 Monitoring scheme

Management Table 1 & 2 will be used for on-site assessment and annual monitoring.

Castlemead Group Limited will arrange on-site management who will carry out annual assessments, based on the monitoring scheme provided in this document.

Botanical survey work of the grassland habitat will be provided by Arbor Vitae Environment Ltd.

2.4 Remedial/contingency measures

Potential issue	Solution
Tree ties restricting growth, causing damage to bark.	Ensure rubber tree ties are used to reduce risk of damage until they are removed.
Browsing damage caused to hedge and tree plants by rabbits etc.	If spiral guards are no effective, mesh rabbit netting will be installed around sections of trees/plants.
% cover of shrubs or bracken exceeding 20% in meadow.	Instigate cutting/removal of woody species and bracken.
Excessive shade around the margins of the wildflower areas.	Trees/hedge to be pruned to remove a reasonable amount of vegetation, as appropriate.
This table provides the most likely issues to arise during management on site and is by no means exhaustive. All other issues which may arise will be identified and addressed, as necessary.	

2.5 Feedback mechanism in order to alter management prescriptions based on monitoring outcome

If monitoring demonstrates that the desired habitat outcomes are not being met, Arbor Vitae Environment Ltd will be consulted and amendments to the management schedule will be made, based on site conditions.

E.g. Species diversity of the neutral grassland/wildflower meadow does not provide desired species and cover. Management options would be considered, depending on the likely cause, including: re-seeding, turf-stripping, manual removal of undesirable species.

Remedial actions will be discussed with Arbor Vitae Environment Ltd before they are carried out, to ensure the work is suitable and proportionate.

Table 3. Personnel responsible for implementation of the plan.

Responsibility	Person/s	Contact details
Compliance with planning conditions relating to nature conservation.	Castlemead Group Ltd	Abenbury House, 17 Wilkinson Business Park, Clywedog Road South, Wrexham, LL13 9AE jodonnell@castlemeadgroup.co.uk
Implementation of all habitat creation measures on site.	Castlemead Group Ltd	Abenbury House, 17 Wilkinson Business Park, Clywedog Road South, Wrexham, LL13 9AE
Annual management of habitats on site.	Castlemead Group Ltd	Wales & West Housing Association 77 Parc Ty Glas, Llanishen, Cardiff CF14 5DU
Annual monitoring/audit of on-site habitats.	Castlemead Group Ltd Arbor Vitae Environment Ltd	Wales & West Housing Association 77 Parc Ty Glas, Llanishen, Cardiff CF14 5DU Lower Betton Farm, Cross Houses, Shrewsbury, SY5 6JD Info@arborvitae.uk.com