Welsh Government

M4 Corridor around Newport

Environmental Statement Volume 3: Appendix 10.4 National Vegetation Classification Survey 2014

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CVJV/AAR
3rd Floor
Longross Court,
47 Newport Road,
Cardiff
CF24 0AD

Ove Arup and Partners Ltd

M4 Corridor around Newport

NVC survey

August 2014

Sturgess Ecology

Contents

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Cover photographs: Left: Ebbw Saltmarsh; Right: New Dairy Farm.

This document has been produced for Ove Arup and Partners Ltd by:

Sturgess Ecology
12 Lon Ysgubor, Rhiwbina, Cardiff, CF14 6SG
e-mail: peter@sturgess-ecology.co.uk
Web: www.sturgess-ecology.co.uk

1. Introduction

Ove Arup and Partners Ltd (Arup) have commissioned Sturgess Ecology to undertake a survey of grassland, woodland and saltmarsh vegetation at selected sites along the possible route corridor of the M4 corridor around Newport.

Initial habitat surveys undertaken by Arup several years ago (2011/ 2012) identified several areas which were considered worthy of further botanical survey. This study presents the findings of surveys undertaken during May, June and July 2014, using a combination of walk-over survey and National Vegetation Classification (NVC) survey methods.

This document gives an outline of the methodology used and summarises the key findings. From these results, the report also provides a preliminary assessment of the biodiversity value of the habitats surveyed and makes recommendations for further assessment.

The 14 study sites were grouped as shown in Table 1. This also indicates the dates when each site was surveyed.

Table 1. Study sites, main habitats and survey dates.

Site	Habitats	Survey date(s)
1. Pound Hill	Grassland	20 May 2014
2. Berryhill Farm woodland	Woodland	20 May 2014
3. Great Pencarn, Duffryn	Derelict land with grassland and scrub	10/11 July 2014
4. Fox Covert	Scrub	20/21 May 2014
5. Lighthouse Road	Grassland	23 May 2014
6. New Dairy Farm	Grassland	21 May 2014
7. Ebbw seawall and saltmarsh	Grassland and saltmarsh	21 May 2014
8. Usk saltmarsh	Saltmarsh	29 May 2014
9. Solutia	Brownfield, scrub and grassland	2/3 July 2014
10. Broad Street Common	Grassland and scrub	4/12 June 2014
11. Green Moor brownfield land	Brownfield grassland and scrub	17 June 2014
12. Green Moor fields	Grassland	18 June 2014
13. Greenmoor Lane	Grassland	29 May 2014
14. Magor Road	Grassland and woodland	1 July 2014

Hedges and the aquatic and bank-side vegetation associated with reens and ditches are generally not covered within this report, as these surveys are being undertaken by others, although a few small water-bodies have been included in some sites.

2. Survey method

The objective of the study was to map and describe the plant communities within the selected sites using NVC methods.

The fieldwork and assessment were undertaken by Dr Peter Sturgess CEnv MCIEEM. He is an experienced botanist familiar with the flora of the Gwent Levels.

The survey work was carried out between 20 May and 11 July 2014. This is the optimal season for this type of survey. Within this period attempts were made to organise woodland site visits early in the season, and to visit hay-meadows before they were cut, and to survey grazed or unmanaged grassland later in June and July. The surveys will inevitably have overlooked some species, particularly those only occurring at low frequency, and/ or which cannot be reliably found or identified at the time of the survey, but should provide a reasonable account of the main species and plant communities at each site.

The weather during most of the visits was favourable for vegetation survey, but due to difficulties in arranging access, some sites had to be visited in wet weather, and this is likely to have reduced the number of species recorded. However, the surveys that were carried out during the rain would still have identified all of the main species and plant communities.

The survey was mainly undertaken using a simple walk-through method, walking through each site to examine and map the main vegetation types. The plant communities were plotted by eye onto an aerial photograph base plan. Photographs were also taken to illustrate the main vegetation types. Some small patches of habitats were not mapped, but where they were considered significant they were described by target notes or single quadrats. In some cases, where the vegetation is characterised by patchiness, it was not always possible to map the variation, but to describe the vegetation types as a mosaic of several plant communities.

The vegetation was delineated into approximately homogeneous stands of vegetation for mapping purposes. The plant communities of these stands were then examined in more detail by quadrat sampling, and described in terms of the published NVC communities (Rodwell, 1991, etc.). A total of 232 quadrats were recorded during the study. The quadrat surveys generally involved recording every species within square 2x2m sample areas, which were selected as being representative samples of the stand in which they occurred. A few features such as scrub vegetation and water bodies were not easily sampled using standard quadrat methodology, and these have been included within the community descriptions on the basis of brief descriptions and species lists. In some locations 4x4m quadrats were used to describe the ground flora of woodland and scrub communities.

The cover of every species within each quadrat was assessed using the Domin scale, as shown in Table 2. An estimate was also made of the percentage cover by vegetation and the approximate vegetation height (as an average through the quadrat).

Table 2. Domin scale for recording vegetation cover.

Percentage cover	Domin score
91-100%	10
76-90%	9
51-75%	8
34-50%	7
26-33%	6
11-25%	5
4-10%	4
<4% - many individuals	3
<4% - several individuals	2
<4% - few individuals	1
Associate species (within 1m of a quadrat)	A

The quadrats recorded from each similar plant community were grouped together into floristic tables for each site, mostly giving each broad vegetation type its own table. Following NVC methodology, the occurrence of each species within the group of quadrats was assigned a constancy score as indicated in Table 3. The species within each table were then listed in order of their constancy score. In some cases the tables include more variation than a conventional NVC table would, to show the range of variation within a whole field rather than representing strictly homogeneous stands of vegetation (e.g. some grassland mosaics have been collated into the same table, and tables for some fields also include one or two quadrats from damper field grips). This deviation from the standard method is considered appropriate in this case because the primary purpose of the study is to describe the flora at each site, rather than just to classify it. Vegetation can be very variable, and plant communities are often in a state of transition between two or more communities, perhaps due to natural succession, management changes or a gradation in environmental conditions, and some are very difficult to assign to published NVC communities. Some of the most diverse and interesting plant communities (e.g. in some brownfield sites) are hard to place within a published community, but this should not affect any evaluation of their nature conservation significance.

Table 3. Constancy scores for quadrat data.

Frequency within quadrats	Constancy Score
81 - 100%	V
61 - 80%	IV
41 - 60%	III
21 - 40%	II
1 - 20%	I
Associate species (A) only	

3. Survey findings

A list of the plant species recorded during the survey is presented in Appendix 1, which includes the scientific and common names for each species. This is based on the species recorded within each of the study areas. It is important to note that this should not be regarded as a comprehensive list for the whole study area (this is particularly relevant for the sites which are bordered by reens, because much of the botanical diversity of the Gwent Levels is present within the aquatic and bank-side vegetation). Common names are generally used for vascular plants mentioned in the text. However, NVC community titles are typically written using scientific names, so this has been done here for consistency with the published literature, and scientific names have been used in the tables and species lists.

The mapping is presented separately for each of the study areas. These broadly show the main blocks of different vegetation types, overlaid on an aerial photograph base to provide a context for the observations. Caution needs to be applied in interpreting the boundaries shown between the different vegetation stands as they have all been plotted by eye and very few have clearly defined edges. There is a high degree of variation within some communities and many of them merge gradually into one another. In some cases the stands of vegetation comprise a complex mosaic of two or more distinct communities (for example, meadows with a network of field-grips, resulting in a mix of wet and dry grassland types). The mapping therefore concentrates on the predominant NVC types, and the accompanying descriptions highlight the main communities and mosaics found in each site, very small patches of NVC communities (e.g. open vegetation communities in gateways) have generally not been mapped.

The locations of the quadrats are shown on the survey maps. The quadrats were sampled from communities dispersed widely across each site to help provide an indication of the range of variation. In most cases, a minimum of 5 quadrats was recorded for each main vegetation type.

The various study sites are described separately below. Each description discusses the main communities present, and the range of variation. The species in the tables are arranged in order of frequency, as denoted by the constancy score in the right-hand column. Species that were only recorded at low frequency and which were not present in quadrats are also presented, to give a more complete species list for each site.

Site 1: Pound Hill

This is a grassland site which lies on a gentle south-facing slope. It comprises two fields, which are both lightly grazed by horses. Ant hills are locally prominent, indicating that the fields have not been ploughed for many years. The grassland is variable in sward height and diversity, reflecting variations in the use of different parts by horses. There is patchy scrub in both fields, including Hawthorn, Dog Rose and Bramble. Most of the field margins are fringed by a belt of dense Bramble, with occasional Nettle.

In terms of the NVC, the grassland is best described as the MG5 *Cynosurus cristatus-Centaurea nigra* grassland. It is a moderately diverse example of the typical community, although there are a few less diverse patches which appear to have affinities with MG6 *Lolium perenne – Cynosurus cristatus* grassland, especially in areas used by the horses as latrines. The field margins grade into W24 *Rubus fruticosus-Holcus lanatus* underscrub. The quadrats were recorded from the main field, and most of the species noted outside the quadrats were associated with the transition to Bramble scrub at the margins.

Incidental observations within the field include Common Blue butterflies, and several Burnet Moth larvae. The field appears likely to support grassland fungi, such as waxcaps, but these would not be visible until later in the year.

The wooded banks adjacent to Pound Hill were outside the current study area, but species noted in passing included Three-nerved Sandwort, Twayblade, Bluebell, Wood Speedwell, Barren Strawberry, Honeysuckle, Hart's-tongue Fern, Soft Shield-fern, and locally abundant Primrose, suggesting that this is a relatively diverse woodland ground flora which may be worthy of further investigation.

Figure 1. MG5 grassland in larger field at Pound Hill, looking west.

Table 4. Pound Hill quadrat data

Quadrat	1	2	3	4	5	Frequency
Achillea millefolium	1	2	2	2	1	V
Agrostis capillaris	5	5	7	4	2	V
Anthoxanthum odoratum	6	4	7	4	7	V
Centaurea nigra	6	4	4	5	4	V
Cerastium fontanum	3	3	1	3	1	V
Festuca rubra	5	7	2	2	1	V
Holcus lanatus	4	2	4	7	6	V
Lotus corniculatus	6	6	4	2	2	V
Luzula campestris	2	4	4	3	2	V
Plantago lanceolata	4	2	4	5	6	V
Ranunculus acris	5	2	2		4	IV
Trifolium pratense	5	2	3	A	2	IV
Cynosurus cristatus	3	2	2			III
Prunella vulgaris	2	2		2		III
Ranunculus bulbosus		2	4		1	III
Ranunculus repens	4			2	3	III
Hypochaeris radicata		5	2			II
Rhytidiadelphus squarrosus	1	2				II
Senecio jacobaea	A	1	1	A	A	II
Stellaria graminea	2			1		II
Aphanes sp.		A	1			I
Brachythecium rutabulum	1					I
Calliergonella cuspidata	1					I
Dactylis glomerata				1		I
Fraxinus excelsior (s)	1					I
Heracleum sphondylium				1		I
Pilosella officinarum		2				I
Potentilla reptans		2				I
Pseudoscleropodium purum		1				I
Rubus fruticosus	2					I
Rumex acetosa	3					I
Sonchus oleraceus				2		I
Taraxacum sp.		2				I
Trifolium dubium		1				I
Trifolium repens	2					I
Viola riviniana		1				I
Kindbergia praelonga	A					
Vicia cracca		A				
Total species	**23**	**24**	**17**	**16**	**14**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**15**	**10**	**15**	**10**	**20**	

Additional species not present in quadrats from Pound Hill

Agrimonia eupatoria
Alliaria petiolata
Anagallis arvensis
Atrichum undulatum
Cardamine flexuosa
Cardamine pratensis
Carex flacca
Carex hirta
Centaurium erythraea
Cirsium vulgare
Corylus avellana (s)
Crataegus monogyna (s)
Digitalis purpurea
Geranium robertianum
Glechoma hederacea
Hyacinthoides non-scripta
Lathyrus pratensis
Leontodon hispidus
Leucanthemum vulgare
Lonicera periclymenum
Moerhingia trinervia
Poa trivialis
Potentilla anserina
Rosa canina
Rubus idaeus
Rumex sanguineus
Sambucus nigra
Silene dioica
Urtica dioica
Veronica chamaedrys
Veronica serpyllifolia
Vicia tetrasperma

Figure 2. MG5 grassland in smaller field at Pound Hill, looking west.

Site 2: Berryhill Farm woodland

This woodland has an extremely mixed character, varying from low diversity coniferous plantation on the east side of the wood, to mature broad-leaved woodland in the west side. It includes a small number of Oak trees of which two appear well over 100 years old. The conifer plantation is much younger and has a sparse ground flora of little botanical interest. No quadrats were recorded here because there was no ground flora to record. The broad-leaved parts of the wood have a dense woodland ground flora which is largely dominated by Nettles, but some parts in the west of the wood support a moderate assemblage of old woodland indicator species, including Bluebell, Moschatel, Thin-spiked Wood-sedge, Wood Sedge, Yellow Archangel, Dog's Mercury and Three-nerved Sandwort. Intermediate Polypody grows as an occasional epiphyte. A stream which flows through the western half of the wood is fringed by Alders and the ground flora beside it comprises tall-herb vegetation dominated by Meadowsweet, Greater Willowherb and Hemlock Water-dropwort. Some parts of the wood near the central track have been subject to tipping of refuse in recent years, and invasive plants including Indian Balsam and Montbretia are present in this area.

The woodland is rather patchy and has been subject to much modification over the years, so is difficult to place precisely within the NVC. The more natural broad-leaved parts on the west side of the central track can be broadly assigned to the NVC category W8 *Fraxinus excelsior – Acer campestre – Mercurialis perennis* woodland, *Geranium robertianum* sub-community (Quadrats 2 and 3). The hedge around the eastern edge of the plantation (Quadrat 5) also appears to be a fragmentary form of this community. The wetter Alder-dominated parts beside the stream (represented by Quadrat 4) show an affinity with the W6 *Alnus glutinosa- Urtica dioica* woodland. The dense coniferous plantation has no significant ground flora and cannot readily be placed into any NVC community. The sparse ground flora of the conifer margins and the slightly less dense mixed plantation (Quadrat 1) is broadly similar to the ground flora of a W21 *Crataegus monogyna – Hedera helix* scrub community, but this probably just reflects the dense shade and history of disturbance.

Figure 3. W8 woodland at Berryhill Farm, west of central track.

Figure 4. Remnant old Oak tree in plantation at Berryhill Farm.

Table 5. Berryhill Farm woodland ground flora quadrat data (4x4m quadrats)

Quadrat	1	2	3	4	5	Frequency
Galium aparine	2	4	3	2	1	V
Kindbergia praelonga	2	4	A		4	III
Circaea lutetiana	A	2	2		A	II
Crataegus monogyna (seedling)	A	A	1		2	II
Fraxinus excelsior	3	A	2			II
Hedera helix	3	2				II
Lamiastrum galeobdolon		1	2			II
Mercurialis perennis			2	1		II
Ranunculus ficaria	A		8	3		II
Ranunculus repens				7	1	II
Rubus fruticosus			A	1	4	II
Silene dioica		A	2	2		II
Veronica montana		A	2	1		II
Adoxa moschatellina		A		2		I
Alnus glutinosa			A	A	4	I
Apium nodiflorum				1		I
Arum maculatum	A	1				I
Atrichum undulatum					6	I
Brachythecium rutabulum		2				I
Cardamine flexuosa				1		I
Carex strigosa				2		I
Chrysosplenium oppositifolium				6		I
Cirsium palustre		A			1	I
Corylus avellana (s)		2				I
Dryopteris dilatata		1				I
Dryopteris filix-mas			A		2	I
Geranium robertianum		2				I
Hyacinthoides non-scripta			5		A	I
Hypnum cupressiforme	1					I
Impatiens glandulifera				4		I
Juncus effusus				2		I
Lysimachia nemorum				1		I
Oenanthe crocata				9		I
Picea sitchensis	7					I
Poa trivialis			A		1	I
Populus tremula (suckers)	3					I
Ranunculus acris				1		I
Salix cinerea (canopy)					8	I
Scrophularia nodosa		A			2	I
Stachys sylvatica				2		I
Stellaria media				1		I
Tamus communis		A			1	I
Urtica dioica		4				I
Geum urbanum		A				
Veronica beccabunga				A		
Sambucus nigra	A			A	A	
Taraxacum sp.					A	
Acer campestre	A					
Lythrum salicaria				A		
Polypodium interjectum				A		
Viola riviniana		A				
Veronica serpyllifolia					2	
Total species	**7**	**11**	**10**	**19**	**14**	

Additional species not present in quadrats at Berryhill Farm woodland

Acer pseudoplatanus
Alliaria petiolata
Angelica sylvestris
Anthriscus sylvestris
Athyrium filix-femina
Callitriche sp.
Carex pendula
Carex remota
Carex sylvatica
Crocosmia crocosmiiflora
Deschampsia cespitosa
Dryopteris affinis
Epilobium hirsutum
Festuca gigantea
Filipendula ulmaria
Fissidens taxifolius
Heracleum sphondylium
Holcus mollis
Ilex aquifolium
Lapsana communis
Lonicera periclymenum
Moerhingia trinervia
Pellia sp.
Phyllitis scolopendrium
Pinus cf radiata
Plagiomnium undulatum
Plantago major
Populus x canadensis
Prunus avium
Prunus padus
Prunus spinosa
Pseudotsuga menziesii
Quercus robur
Ribes sanguineus
Rosa arvensis
Rumex sanguineus
Salix fragilis
Polytrichastrum formosum
Rumex obtusifolius
Senecio jacobaea
Solanum dulcamara
Viburnum opulus

Figure 5. Sparsely vegetated plantation at Berryhill Farm.

Site 3. Great Pencarn, Duffryn

This land was managed as grazed pasture in the past, but subject to construction disturbance as preparation for industrial development during the late 1990s/ early 2000s, but it has been left largely undisturbed since then. The construction work that was undertaken included formation of several ponds and ditches, and the demolition of the buildings on the site which still remain as piles of rubble.

The main elements in the vegetation are tall ruderal herbs, coarse grassland, dense scrub, rushy grassland, and short, sparse vegetation with lichens on shallow stony soil, and wetland habitats. Many of the plant communities do not have distinct boundaries, so that different types of vegetation merge into one another as a series of mosaics across the site, often with very small-scale variations, reflecting the patchy nature of the disturbed ground conditions. For this reason the plant communities shown on the accompanying plan should only be regarded as a very broad generalisation.

The diversity of the habitats and the undisturbed nature of the site provides good conditions for a range of wildlife. Grass Snakes were seen in two places (1 at ST27638386 and 2 at ST28238401). In addition, the distinctive smell of Grass Snake was also noted near the rubble of the former farm buildings (ST28208373 and ST28248367). Many butterflies were observed incidentally during the survey, including Green-veined White, Marbled White, Peacock, Comma, Common Blue, Meadow Brown, Ringlet, Small Skipper, Large Skipper, Gatekeeper, Speckled Wood, Red Admiral and Small Tortoiseshell. Bird sightings included Moorhen, Reed Warbler, Linnet, Goldfinch, Swallow, Reed Bunting (by the pond at ST27918382) and Peregrine (mainly in flight over the tall industrial building to the north, and electricity towers to the south). Other incidental observations included Emperor and Common Darter Dragonflies, and Long-winged and Short-winged Cone-head Crickets.

Coarse grassland is the prevalent vegetation over large parts of the site, and although it is very variable in composition it is all loosely attributable to the NVC MG1 *Arrhenatherum elatius* grassland. The grassland in the north of the site tends to be drier and dominated by False Oat-grass, Yorkshire Fog and Red Fescue, locally merging into the short, sparse lichen-rich grassland on shallower soils. The grassland in the south and east of the site is mostly damper with a higher proportion of Couch, Timothy, Cock's-foot, and Creeping Thistle. The coarse grassland mostly has a relatively low diversity, but some parts support locally notable species including Grass Vetchling, Spiked Sedge and Great Lettuce.

Table 6. Quadrat data for MG1 grassland at Pencarn

Quadrat	2	4	5	6	7	8	15	19	21	24	Frequency
Holcus lanatus	4	2	8		7	8	9	9	4	9	V
Dactylis glomerata	9	4	A		8	4	2	1	5	A	IV
Ranunculus repens	2			2	2		5	6			III
Arrhenatherum elatius		7			4	8	4		4		III
Agrostis gigantea	2		4	2	2		2				III
Vicia hirsuta		1	1		1	1		4			III
Festuca rubra						5	1	6	6		II
Plantago lanceolata	2	2				2			3		II
Trifolium pratense			2		1	1			3		II
Vicia sativa						1		2	1	1	II
Elytrigia repens		2	4	9				A		6	II
Phleum pratense	A		6	1			2			2	II
Geranium dissectum	2	2				1	A			1	II
Ranunculus acris			2		1		1	A	1		II
Prunella vulgaris							1	2	2		II
Agrostis capillaris	2							8	6		II
Vicia tetrasperma	A						4	1		1	II
Centaurea nigra	2						4			1	II
Cirsium arvense		8	A		4		1			A	II
Cirsium vulgare					1	A	1		1		II
Rumex crispus	1						1	1			II
Cynosurus cristatus			A					6	2	1	II
Heracleum sphondylium		4			1		1				II
Calliergonella cuspidata							2		4		I
Taraxacum sp.						A	1	A	3		I
Centaurium erythraea								2	2		I
Trifolium repens			2			A		1			I
Senecio jacobaea						1		2	A		I
Crepis capillaris						1			1		I
Lolium perenne			2					1			I
Medicago lupulina	1								1		I
Picris echioides	1		A		A		1				I
Poa trivialis									2	2	I
Agrostis stolonifera			4								I
Juncus effusus				1							I
Trifolium dubium									1		I
Leontodon saxatilis									1		I
Cerastium fontanum									2		I

Juncus inflexus										4	I
Lotus corniculatus									4		I
Epilobium hirsutum		A			A		4			A	I
Hypochaeris radicata									1		I
Brachythecium rutabulum							2				I
Carex hirta										5	I
Rhytidiadelphus squarrosus									2		I
Rubus fruticosus	4	A					A		A	A	I
Urtica dioica		2									I
Anthoxanthum odoratum									2		I
Plantago major									2		I
Achillea millefolium								2			I
Agrimonia eupatoria								1			I
Carex otrubae										1	I
Carex riparia										2	I
Epilobium parviflorum										2	I
Lathyrus nissolia									1		I
Lathyrus pratensis		5									I
Mentha x verticillata	2										I
Pastinaca sativa									1		I
Persicaria amphibia				5							I
Senecio erucifolius									A	2	I
Tussilago farfara					2						I
Epilobium ciliatum							A				
Arctium minus						A					
Carex spicata										A	
Chamerion angustifolium					A						
Cornus sanguinea										A	
Hypericum perforatum									A		
Prunus spinosa								A		A	
Rosa canina							A				
Sonchus oleraceus						A					
Vicia cracca			A								
Total species	**13**	**11**	**10**	**6**	**12**	**11**	**20**	**17**	**28**	**15**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**40**	**100**	**70**	**45**	**50**	**50**	**35**	**50**	**40**	**60**	

Additional species not present in quadrats from MG1 grassland at Pencarn

Carex pendula
Convolvulus arvensis
Digitalis purpurea
Geranium molle
Kindbergia praelonga
Malva moschata
Oenothera biennis
Poa compressa
Potentilla anserina

(NB Many other species merge into the MG1 grassland as part of the mosaic of habitats, and species are only listed here if they are not listed elsewhere for other plant communities)

Figure 6. Coarse grassland at Pencarn.

An extensive area in the centre of the site has a shallow, gravelly soil which supports a short, relatively open grass sward with a high proportion of lichens (particularly *Cladonia rangiformis, Cladonia furcata,* and *Peltigera didactyla)* and mosses (including *Polytrichum juniperinum, Hypnum lacunosum* and *Racomitrium ericoides*). The shallow soil appears to favour drought-tolerant annual species, and these include the locally notable Wall Bedstraw, Common Cudweed and Small Cudweed. Unusually, these three are the dominant plant species in some patches, most notably at ST28148376. The surface of Dyffryn Lane supports a similar plant community. The survey was undertaken in hot weather in July after many early-flowering annual species had finished flowering and were dead and dry, so it is likely that some species in this grassland would have been missed.

This short grassland vegetation does not conform closely to any of the published NVC communities. It is probably nearest to U1 *Festuca ovina – Agrostis capillaris – Rumex acetosa* grassland, although it also has some similarities to calcareous and open vegetation communities.

Table 7. Quadrat data for sparse short grassland at Pencarn

Quadrat	1	9	10	11	12	16	Frequency
Centaurium erythraea		2	1	2	1	1	V
Festuca rubra	3		7	7	5	4	V
Taraxacum sp.	3	2	2	2	1	1	V
Trifolium dubium	3	3	2	5	7	2	V
Cladonia spp.		8	8	2	5		IV
Leontodon saxatilis		2	3	4	A	4	IV
Unidentified mosses	5			4	4	4	IV
Agrostis stolonifera			2	4	4		III
Holcus lanatus	2		2			5	III
Lotus corniculatus		2		4	4		III
Peltigera sp.		4		1	2		III
Senecio jacobaea	A	1	A	2	A	1	III
Trifolium repens		2	3			4	III
Aira caryophyllea			6		4		II
Calliergonella cuspidata				4		4	II
Cerastium semidecandrum			1			2	II
Conyza sp.	2	1					II
Crepis capillaris					1	2	II
Filago minima		3				4	II
Filago vulgaris		2				2	II
Hypnum lacunosum		4			1		II

Hypochaeris radicata				1	2		II
Medicago lupulina	4					2	II
Plantago lanceolata	4					1	II
Polytrichum juniperinum			4	1			II
Prunella vulgaris			1			6	II
Rhytidiadelphus squarrosus		2		2			II
Vulpia bromoides	4					1	II
Agrostis capillaris		4					I
Anthoxanthum odoratum				2	A		I
Arenaria serpyllifolia	4						I
Bellis perennis	3						I
Blackstonia perfoliata					4		I
Brachythecium rutabulum					1		I
Bromus hordeaceus						1	I
Bryum sp.					2		I
Catapodium rigidum	3						I
Cerastium fontanum		2	A				I
Cirsium vulgare						2	I
Dactylis glomerata	A		A	1	A		I
Encalypta streptocarpa				1			I
Epilobium ciliatum						2	I
Galium parisiense		4	A				I
Geranium dissectum						1	I
Hieracium sp.			2				I
Homalothecium lutescens					2		I
Luzula campestris					1		I
Picris echioides	1					A	I
Plantago major						2	I
Potentilla reptans						4	I
Ranunculus repens				2			I
Rubus fruticosus		A	A	A	A	2	I
Sagina apetala						2	I
Sagina procumbens						1	I
Trifolium pratense			1		A		I
Vicia sativa				1	A		I
Vulpia myuros						1	I
Arrhenatherum elatius	A						
Buddleja davidii	A						
Carex hirta	A						
Cynosurus cristatus	A						
Epilobium hirsutum	A						
Salix cinerea				A			
Total species	**13**	**17**	**15**	**20**	**18**	**28**	
Cover (%)	**80**	**90**	**90**	**90**	**95**	**95**	
Average sward height (cm)	**5**	**5**	**10**	**5**	**10**	**5**	

Additional species not present in quadrats from sparse short grassland at Pencarn

Aphanes sp.
Cerastium glomeratum
Cladonia furcata
Cladonia rangiformis
Gnaphalium uliginosum
Leontodon autumnalis
Leontodon hispidus
Peltigera didactyla
Pilosella aurantiaca
Pilosella officinarum
Polytrichastrum formosum
Racomitrium ericoides
Racomitrium ericoides
Saxifraga tridactylites

Figure 7. Short sparse grassland with lichens and cudweeds at Pencarn.

Figure 8. Short sparse grassland on surface of old Dyffryn Lane, Pencarn.

The site supports several areas of wet grassland, apparently formed on compacted ground with impeded drainage. Rushes are a common feature of this vegetation, but there is a high degree of variation. Most of the wet areas have a relatively open sward with a high proportion of mosses (especially *Calliergonella cuspidata*) and low-growing plants including Selfheal and Creeping Bent, often on shallow, damp soil, sometimes interspersed with young Grey Willow scrub. Most of this grassland is best categorised as MG10 *Holcus lanatus* - *Juncus effusus* rush pasture, although a few wet grassland areas with a taller sward and a much greater dominance by rushes appear to be developing towards M23 *Juncus effusus* – *Galium palustre* rush pasture. One distinct area in the south of the site is dominated by an almost pure stand of Greater Pond-sedge (ST28278361) and this is best classified as S6 *Carex riparia* swamp.

Table 8. Quadrat data for wet grassland at Pencarn

Quadrat	3	13	14	17	18	20	22	23	Frequency
Holcus lanatus	7	2	2	2	2	4	8	2	V
Juncus effusus	7	2	8	5	4	8	2	9	V
Agrostis stolonifera	2	4	5	4	6		4		IV
Calliergonella cuspidata	4	9	9	7	6		5		IV
Ranunculus repens	4	4		5	6	A	7		IV
Juncus articulatus		2	2	2	4				III
Lotus pedunculatus	4			A	4	2		8	III
Prunella vulgaris		A		6	1	4	2		III
Trifolium repens	4	2			4		7		III
Cerastium fontanum	2					2	1		II
Drepanocladus aduncus			2		2		5		II
Festuca rubra		2		A	4	2			II
Juncus inflexus	4	A				5	2	A	II
Agrostis capillaris						2	2		II
Arrhenatherum elatius	2					5			II
Bryum pseudotriquetrum				4	4				II
Carex hirta			2					2	II
Centaurium erythraea				1	2				II
Epilobium ciliatum	A		1				2		II
Leontodon autumnalis		2		1					II
Leontodon saxatilis				2	2		A		II
Lolium perenne		2		1					II
Phleum pratense						4		1	II
Rumex conglomeratus						1	1		II
Salix cinerea				2	1				II
Taraxacum sp.		2		A	1		A		II
Trifolium pratense	2	2			A				II
Vicia sativa	1				A	2			II
Vicia tetrasperma	2					2			II
Brachythecium rutabulum					2				I
Centaurea nigra	2								I
Cirsium palustre						2			I
Dactylis glomerata						2		A	I
Eleocharis palustris			8						I
Elytrigia repens								2	I
Epilobium palustre			1						I
Galium palustre				2					I
Hypochaeris radicata					1				I
Leontodon hispidus		1							I
Lotus corniculatus		2							I
Lythrum portula				4					I
Picris echioides	2								I
Plantago lanceolata	4					A			I
Poa trivialis						2			I
Rubus fruticosus						6			I
Rumex crispus			A				1		I
Sagina procumbens					1				I
Senecio jacobaea	1								I
Trifolium dubium					1				I
Trifolium hybridum					1				I
Veronica serpyllifolia						2			I
Agrostis gigantea							A		
Angelica sylvestris						A			
Cirsium arvense						A			
Epilobium hirsutum			A					A	
Galium aparine						A			
Geranium dissectum	A					A			
Persicaria hydropiper			A						
Phalaris arundinacea			A						
Typha latifolia			A						
Total species	**17**	**14**	**10**	**15**	**21**	**18**	**14**	**6**	
Cover (%)	**100**	**100**	**100**	**95**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**40**	**30**	**45**	**10**	**15**	**90**	**10**	**100**	

Figure 9. Rush-dominated wet grassland at Pencarn.

Figure 10. Greater Pond-sedge bed at Pencarn.

Figure 11. Dense tall-herb vegetation at Pencarn.

There are many stands of tall herb vegetation scattered around the site, mostly merging into the coarse grasslands. This community is generally dominated by Greater Willowherb, Nettle and Creeping Thistle, with Teasel locally frequent in the north of the site. The quadrat data was limited to a few stands of tall herbs in the main patches.

Table 9. Quadrat data for tall herb vegetation at Pencarn

Quadrat	25	26	27	Frequency
Epilobium hirsutum	10	10	8	V
Urtica dioica	4	2		IV
Arrhenatherum elatius			4	II
Calliergonella cuspidata	2			II
Cirsium arvense			7	II
Conyza sp.		2		II
Cornus sericea		1		II
Drepanocladus aduncus	2			II
Elytrigia repens	A		7	II
Festuca rubra			2	II
Galium palustre	4			II
Hypericum tetrapterum		1		II
Juncus effusus	A	2		II
Juncus inflexus	4			II
Lotus pedunculatus		2		II
Pulicaria dysenterica		3		II
Rumex sanguineus	2			II
Rumex conglomeratus		A		
Potentilla reptans		A		
Dipsacus fullonum		A		
Geranium robertianum	A			
Glechoma hederacea		A		
Rumex obtusifolius		A	A	
Total species	**7**	**8**	**5**	
Cover (%)	**100**	**100**	**100**	
Average sward height (cm)	**110**	**100**	**60**	

Figure 12. Remains of demolished buildings and garden planting at Pencarn.

Other areas of tall ruderal herbs are also present on tipped debris beside the road at the south-west boundary, and on the rubble piles of the former Pencarn Farm buildings and beside the northern boundary. The following species were recorded in these ruderal habitats. The Japanese Knotweed was located beside the roundabout at approximately ST28188360.

Species recorded on areas of rubble and tipped debris at Pencarn

Acer campestre
Achillea millefolium
Agrimonia eupatoria
Agrostis capillaris
Agrostis stolonifera
Alnus glutinosa
Arctium minus
Arrhenatherum elatius
Brachythecium rutabulum
Buddleja davidii
Calliergonella cuspidata
Calystegia sepium
Calystegia silvatica
Cardamine flexuosa
Centaurea nigra
Chamerion angustifolium
Cirsium arvense
Conyza sp.
Cornus sericea
Corylus avellana
Cotoneaster sp.
Crepis biennis
Crepis capillaris
Dactylis glomerata
Dipsacus fullonum
Dryopteris filix-mas
Elytrigia repens
Epilobium ciliatum
Epilobium hirsutum
Epilobium parviflorum
Epilobium sp.
Equisetum arvense
Fallopia japonica
Festuca rubra
Fraxinus excelsior
Galium aparine
Geranium robertianum
Geum urbanum
Glechoma hederacea
Hedera helix
Heracleum sphondylium
Hirschfeldia incana
Holcus lanatus
Hypericum perforatum
Hypericum tetrapterum
Iris pseudacorus
Lactuca serriola
Lactuca virosa
Lathyrus nissolia
Linaria purpurea
Lysimachia nummularium
Matricaria recutita
Medicago lupulina
Melilotus alba
Melilotus cf officinalis
Myosotis arvensis
Myosotis laxa
Phragmites australis
Picris echioides
Plantago lanceolata
Poa annua
Potentilla reptans
Primula vulgaris
Ranunculus repens
Reseda luteola
Ribes sp.
Rubus fruticosus
Rumex conglomeratus
Rumex obtusifolius
Rumex sanguineus
Salix alba
Salix caprea
Salix cinerea
Senecio erucifolius
Senecio jacobaea
Senecio vulgaris
Solanum dulcamara
Sonchus asper
Sonchus oleraceus
Stachys sylvatica
Tanacetum parthenium
Taraxacum sp.
Trifolium campestre
Trifolium dubium
Tripleurospermum inodorum
Typha latifolia
Urtica dioica

In addition to the ruderal habitats, several plant species remain from the former farmhouse garden at Pencarn.

Additional species remaining from former garden planting at Pencarn

Acer pseudoplatanus
Betula pendula
Betula pubescens
Cupressocyparis leylandii
Ficus carica
Forsythia x intermedia
Hypericum cf calycinum
Ligustrum ovalifolium
Melissa officinalis
Philadelphus coronarius
Prunus avium
Prunus cf domestica
Symphoricarpos albus

Figure 13. Pond at Pencarn with Bulrush, Common Reed and diverse marginal vegetation.

The ponds at Pencarn mostly appear to support shallow water which is dominated by either Common Reed or Bulrush. In some ponds there are drier areas which are becoming shaded by Grey Willow scrub. The ponds / reedbeds were only examined from the margins, where it was safe to do so without disturbing nesting birds. No quadrats were recorded. The species composition generally appeared very similar between the various ponds. Two of the ponds contained deeper water with Duckweed and Pondweed communities beyond the reed-covered margins (ST27838384 and ST27838384). These could not be surveyed effectively at the time of the survey and would benefit from further investigation after the bird nesting season.

The non-native species Australian Swamp-stonecrop/ New Zealand Pigmyweed was found in two ponds (at ST28368378 and ST28008368) and may also occur in others.

In terms of the NVC, the reed-dominated ponds are readily classified as S4 *Phragmites australis* swamp, and the Bulrush dominated ponds as S12 *Typha latifolia* swamp. The drier margins becoming invaded by Willow are developing towards W1 *Salix cinerea – Galium palustre* woodland. The open water areas appear to be the A2 *Lemna minor* community, and possibly also the A3 *Spirodela polyrhiza – Hydrocharis morsus-ranae* community.

Species recorded in ponds at Pencarn

Agrostis stolonifera
Alisma plantago-aquatica
Alnus glutinosa
Alopecurus geniculatus
Angelica sylvestris
Berula erecta
Buddleja davidii
Calliergonella cuspidata
Callitriche sp.
Caltha palustris
Carex acutiformis
Carex hirta
Carex riparia
Cirsium palustre
Crassula helmsii
Drepanocladus aduncus
Eleocharis palustris
Epilobium hirsutum
Epilobium parviflorum
Eupatorium cannabinum
Filipendula ulmaria
Galium palustre
Hypericum tetrapterum
Iris pseudacorus
Juncus conglomeratus
Juncus effusus
Juncus inflexus
Lathyrus sylvestris
Lemna minor
Lemna minuta
Lemna trisulca
Lotus pedunculatus
Lycopus europaeus
Lythrum portula
Lythrum salicaria
Marchantia polymorpha

Myosotis laxa
Phleum pratense
Phragmites australis
Poa trivialis
Potamogeton natans
Prunella vulgaris
Pulicaria dysenterica
Ranunculus repens
Salix alba
Salix cinerea
Salix viminalis
Solanum dulcamara
Spirodela polyrhiza
Trifolium hybridum
Typha latifolia
Veronica beccabunga

The Pencarn site includes several ditches which feed into the Percoed Reen to the south-west. They all support Common Reed, Reed Sweet-grass and Greater Willowherb and these are locally very dominant, leaving little room for lower-growing plants. Where the central parts of the ditches are more open, there are patches of open water vegetation, dominated by Duckweeds, including the notable species Greater Duckweed. Pondweed species, Nuttall's Waterweed and the locally notable Frog-bit and Arrowhead are also present in a few more open ditches, especially in the eastern ditch which is less choked by Reeds than the others. Frog-bit and Arrowhead were also observed in the Percoed Reen, adjacent to the southern boundary. The survey of the ditch flora was limited to observations made from the banks.

Parts of the channel beside the western boundary would be better described as a stream than a ditch, because it flows in a steeper channel over a gravelly bed. Its eastern bank is mostly fringed by Alder, Willow, Reed, Bramble and Hemlock Water-dropwort, but at the time of the survey, much of the west bank and channel had recently been mown, so it was not possible to gather much data here.

The ditches support a mix of several different plant communities, from tall herbs and reeds on the banks, to reed and swamp vegetation at the margins and aquatic communities in the areas of open water. The bank vegetation is generally made up of MG1 *Arrhenatherum elatius* grassland and OV26 *Epilobium hirsutum* tall herb vegetation. The fringes of the water are typically lined by S4 *Phragmites australis* swamp vegetation, and this sometimes extends across the whole channel. Some patches of deeper water are dominated by S5 *Glyceria maxima* swamp, which locally forms a floating mat right across the channel. Floating Sweet-grass and the notable species Water Whorl-grass also form a floating mat in a few small patches, usually with some Branched Bur-reed, and this vegetation is best assigned to S22 *Glyceria fluitans* water-margin vegetation. The Water Whorl-grass dominated sections may be attributable to the rather ill-defined S23 'Other water margin vegetation', (the published NVC S23 community includes mention of a '*Catabrosetum aquaticae*' community).

Species recorded in ditches at Pencarn

Alopecurus geniculatus
Berula erecta
Callitriche sp.
Carex otrubae
Carex riparia
Catabrosa aquatica
Cirsium palustre
Elodea nuttallii
Epilobium hirsutum
Epilobium palustre
Equisetum fluviatile
Filipendula ulmaria
Galium palustre
Glyceria fluitans
Glyceria maxima
Hydrocharis morsus-ranae
Iris pseudacorus
Juncus articulatus
Juncus effusus
Juncus inflexus
Lactuca serriola
Lemna minor
Lemna trisulca
Lotus pedunculatus
Oenanthe crocata
Phalaris arundinacea
Phragmites australis
Potamogeton crispus
Potamogeton natans
Potamogeton pusillus
Potamogeton sp.
Pulicaria dysenterica
Rubus fruticosus
Sagittaria sagittifolia
Sison amomum
Sparganium erectum
Spirodela polyrhiza
Stachys palustris
Typha latifolia
Urtica dioica

Figure 14. Ditch at Pencarn with diverse marginal and floating vegetation.

Figure 15. Ditch at Pencarn with fringe of Common Reed and open central channel.

Figure 16. Frog-bit and Arrowhead at Pencarn.

The areas of scrub at Pencarn are mostly young, and comprise scattered plants of Grey Willow and Bramble. However, there are a few blocks of very dense thorny scrub (in addition to the dense Willows in the ponds, and the former hedge and garden planting at Pencarn farm buildings described already). These are apparently remnants from former hedges and field margins, and they are mostly dominated by Bramble, Blackthorn and Hawthorn. Quadrat sampling was not undertaken in this scrub, but a species list was compiled for several of the main blocks of scrub. In terms of the NVC, the main blocks of dense scrub fall into the W22 *Prunus spinosa – Rubus fruticosus* scrub community, and this is typically fringed by W24 *Rubus fruticosus - Holcus lanatus* underscrub as it grades into the adjacent grassland. Much of the patchy Bramble scrub within the mosaic of MG1 grassland can also be referred to as W24 scrub.

Species recorded in scrub vegetation at Pencarn

Acer campestre
Acer pseudoplatanus
Cornus sanguinea
Cornus sericea
Corylus avellana
Cotoneaster cf franchetii
Cotoneaster horizontalis
Crataegus monogyna
Dactylis glomerata
Dryopteris dilatata
Dryopteris filix-mas
Epilobium hirsutum
Fragaria vesca
Fraxinus excelsior
Galium aparine
Geranium robertianum
Geum urbanum
Glechoma hederacea
Hedera helix
Humulus lupulus
Lathyrus sylvestris
Linaria vulgaris
Lonicera periclymenum
Malus pumila
Malva moschata
Poa trivialis
Populus alba
Populus tremula
Prunella vulgaris
Prunus domestica
Prunus spinosa
Pteridium aquilinum
Pyrus communis
Quercus robur
Rosa canina
Rubus fruticosus
Stachys sylvatica
Stellaria holostea
Ulmus glabra
Urtica dioica
Veronica chamaedrys
Viburnum opulus

Figure 17. Dense scrub developing from old hedges beside a disused lane at Pencarn.

Site 4. Fox Covert

The two parcels of land making up this site are low-lying strips of wetland vegetation either side of the railway line. These are almost entirely shaded by Grey Willow scrub, but there are also several older Oaks on drier ground at the margins. (These older trees might perhaps mark the position of old field boundaries.) The wettest parts appear to be inundated for most of the year, and they support emergent vegetation dominated by Greater Pond-sedge and Flag Iris. Away from the water, the vegetation is shaded by dense Grey Willow, with Elder and Bramble, and this has a species-poor ground flora dominated by dense Nettles. Japanese Knotweed is present at the south-western side of the southern block.

In terms of the NVC, the scrub generally conforms to W1 *Salix cinerea – Galium palustre* woodland. The quadrats were all taken from the drier parts, not from the standing water, and they therefore do not reflect the locally abundant Greater Pond-sedge and Flag Iris.

Table 10. Fox Covert scrub quadrat data (4x4m quadrats)

Quadrat	1	2	3	Frequency
Brachythecium rutabulum	3	2	2	V
Salix cinerea (canopy)	10	10	10	V
Urtica dioica	10	6	6	V
Galium aparine	2	3		III
Calystegia sepium		1		I
Cardamine flexuosa			3	I
Circaea lutetiana	2			I
Dryopteris dilatata	1	A		I
Epilobium hirsutum	1			I
Hedera helix		A	2	I
Heracleum sphondylium	1			I
Holcus lanatus	1			I
Kindbergia praelonga		2		I
Oenanthe crocata			1	I
Phyllitis scolopendrium	2			I
Poa trivialis		2		I
Ranunculus repens			1	I
Rubus fruticosus	2	A		I
Sambucus nigra		4		I
Moerhingia trinervia	A			
Total species	**11**	**8**	**7**	

Additional species not present in quadrats at Fox Covert

Athyrium filix-femina
Atrichum undulatum
Callitriche sp.
Carex remota
Carex riparia
Crataegus monogyna
Dryopteris filix-mas
Epipactis helleborine
Fallopia japonica
Galeopsis sp.
Galium palustre
Glyceria fluitans
Iris pseudacorus
Juncus effusus
Lemna trisulca
Mnium hornum
Myosotis sylvatica
Phragmites australis
Polytrichastrum formosum
Prunus spinosa
Quercus robur
Salix alba
Salix fragilis
Solanum dulcamara
Tamus communis
Ulmus sp.

Figure 18. Wet W1 woodland at Fox Covert, north of railway line.

Figure 19. Wet W1 woodland at Fox Covert, south of railway line.

Site 5. Lighthouse Road

This group of three fields are all managed for hay, and support a moderately diverse semi-improved neutral grassland flora. Meadow Brome is one of the dominant grasses in the largest of the fields, and this is a locally significant species in the context of the Gwent Levels. The fields have little variation within them, although there are several slightly lower-lying field-grips which tend to be dominated by Meadow Foxtail. The field grip in the western field supported a patch of open vegetation with local Marsh Yellow-cress, Floating Sweet-grass and Amphibious Bistort.

In terms of the NVC, the fields appear closest to MG7b *Lolium perenne – Poa trivialis* ley. However, the fields do not conform to this exactly because there is a notable lack of White Clover, and there are local transitions towards MG6b *Lolium perenne – Cynosurus cristatus* grassland, *Anthoxanthum odoratum* sub-community. The wetter parts of the fields, including the field-grips are best categorised as MG7d *Lolium perenne – Alopecurus pratensis* grassland. The drier parts of the smallest field support a slightly more species-

rich sward and appear to be developing towards MG5 *Centaurea nigra – Cynosurus cristatus* grassland (Quadrat 7). The disturbed and compacted ground near to the gateways grades into the OV21 *Poa annua – Plantago major* community.

Table 11. Lighthouse Road quadrat data

Quadrat	1	2	3	4	5	6	7	Frequency
Poa trivialis	10	7	4	6	6	8	6	V
Ranunculus acris	3	4	4	2	4	1	2	V
Holcus lanatus	5	8	4	7	4	4		V
Lolium perenne	2	4	4	5	8	8		V
Ranunculus repens		2	2	4	7		4	IV
Trifolium pratense		1	2	2	3	2		IV
Cerastium fontanum	2	1	2				1	III
Cynosurus cristatus		2	4	5	2			III
Rumex acetosa	2	1			5		2	III
Rumex crispus			1	1	2	1		III
Alopecurus pratensis	1					4	7	III
Anthoxanthum odoratum	1				5		5	III
Agrostis stolonifera	3		4					II
Alopecurus geniculatus				1		1		II
Bromus racemosus	4		9					II
Poa pratensis		2		4				II
Bromus hordeaceus	2							I
Cardamine pratensis					4			I
Centaurea nigra							2	I
Geranium dissectum					1			I
Lotus corniculatus							7	I
Persicaria amphibia				A		1		I
Prunus spinosa							1	I
Taraxacum sp.					1			I
Trifolium dubium							1	I
Carex hirta	A	A	A					
Lathyrus pratensis							A	
Total species	**11**	**10**	**11**	**10**	**13**	**9**	**11**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**35**	**30**	**25**	**25**	**30**	**35**	**30**	

Additional species not present in quadrats from Lighthouse Road

Calystegia sepium
Chenopodium album
Cirsium arvense
Epilobium hirsutum
Equisetum arvense
Heracleum sphondylium
Juncus bufonius
Juncus effusus
Juncus inflexus
Matricaria discoidea
Oenanthe crocata
Plantago major
Poa annua
Rorippa palustris
Rumex obtusifolius
Sonchus asper
Sonchus oleraceus
Trifolium repens
Urtica dioica
Vicia cracca
Vicia sativa

Figure 20. MG7b in largest field at Lighthouse Road.

Figure 21. Field grip with MG7d in western field, but with local Marsh Yellow-cress in more open area in foreground.

Figure 22. OV21 community in gateway.

Site 6. New Dairy Farm

Several of the fields selected for survey at New Dairy Farm had recently been reseeded with Perennial Rye-grass. These supported single-species swards which were not considered worthy of detailed survey. In terms of the NVC they can readily be classified as MG7 *Lolium perenne* ley.

The other fields had not been re-seeded recently and had been left ungrazed for hay. They are generally of limited floristic diversity but supported colourful displays of buttercups at the time of the survey. The fields are dominated by Rough Meadow-grass, with a high proportion of Meadow Foxtail, especially in damper areas. The vegetation broadly conforms to NVC community MG7b *Lolium perenne – Poa trivialis* ley, although the presence of Crested Dog's-tail and Common Knapweed in some parts indicates a degree of transition with MG6 *Lolium perenne – Cynosurus cristatus* grassland.

Quadrat 19 was recorded in a damp field-grip. The grips were generally dominated by taller grasses, sometimes including small amounts of Floating Sweet-grass. The field-grips can mostly be assigned to MG7d *Lolium perenne – Alopecurus pratensis* grassland, with some MG10b *Holcus lanatus – Juncus effusus* rush pasture, *Juncus inflexus* sub-community. Two patches of the locally notable plant Tubular Water-dropwort were present in field grips at approximately ST30728425 and ST30728423.

Table 12. Quadrat data from New Dairy Farm

Quadrat	16	17	18	19	20	Frequency
Carex hirta	4	4	1	4	4	V
Poa trivialis	8	7	5	6	4	V
Ranunculus repens	6	7	6	9	7	V
Alopecurus pratensis	4	7	2	A	5	IV
Anthoxanthum odoratum	2	4	5		4	IV
Lolium perenne	4	A	1	2	4	IV
Ranunculus acris	5	5	4		5	IV
Agrostis stolonifera	4			6	2	III
Cardamine pratensis		3	2	A	1	III
Cynosurus cristatus		4	5		3	III
Rumex acetosa		2	1		2	III
Trifolium pratense	A	4	2		2	III
Centaurea nigra		2	4			II
Holcus lanatus		4	4	A		II
Lotus corniculatus		2			2	II
Poa pratensis	A	2	4			II
Rumex crispus				1	1	II
Cerastium fontanum		1				I
Glyceria fluitans				5		I
Juncus inflexus		2				I
Senecio aquaticus		1				I
Vicia cracca		A			1	I
Alopecurus geniculatus	A					
Festuca rubra			A			
Rumex obtusifolius	A					
Total species	**8**	**17**	**14**	**7**	**15**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**30**	**20**	**20**	**40**	**20**	

Additional species not present in quadrats from New Dairy Farm

Chenopodium album
Cirsium arvense
Oenanthe fistulosa
Persicaria amphibia
Phragmites australis
Picris echioides
Plantago major
Senecio jacobaea
Taraxacum sp.

Figure 23. Recently sown MG7 Perennial Rye-grass ley.

Figure 24. MG7b vegetation in hay-meadow, with abundant Buttercups.

Figure 25. Tubular Water-dropwort in field-grip.

Site 7. Ebbw salt-marsh and seawall

The banks of the Ebbw are fringed with heavily sheep-grazed salt-marsh vegetation. The lower part of this is dominated by Sea Aster, Common Saltmarsh-grass, Sea Arrow-grass, English Scurvy-grass and Sea Milkwort, grading into Red Fescue higher up the bank. There are also small amounts of Common Reed, Greater Sea-spurrey and Wild Celery. Towards the north of the survey section the salt-marsh is reinforced by rock armouring, which also includes Sea Beet and Spear-leaved Orache. Most of the salt-marsh conforms to the NVC SM13 *Puccinellia maritima* salt-marsh, with a tendency towards the SM13b *Glaux maritima* sub-community, and this grades into SM11 *Aster tripolium* salt-marsh in the lowest parts.

Table 13. Quadrat data from Ebbw lower salt-marsh

Quadrat	1	4	7	12	14	Frequency
Aster tripolium	5	2	6	6	4	V
Glaux maritima	2	4	4	7	5	V
Puccinellia maritima	9	9	9	4	4	V
Triglochin maritimum		1	4	4	2	IV
Festuca rubra		2	A	5	8	III
Algae				2	2	II
Cochlearia anglica	2	5				II
Phragmites australis		2				I
Spergularia media				2	A	I
Agrostis stolonifera	A					
Apium graveolens				A		
Plantago coronopus				A		
Trifolium repens				A		
Total species	***4***	***7***	***4***	***7***	***6***	
Cover (%)	***90***	***100***	***90***	***90***	***90***	
Average sward height (cm)	***25***	***35***	***20***	***15***	***20***	

Additional species not present in quadrats from the Ebbw lower salt-marsh

Atriplex prostrata
Beta vulgaris
Juncus gerardii
Rumex crispus

Figure 26. Ebbw lower salt-marsh (grading to upper saltmarsh in left of picture) .

The upper part of the saltmarsh is a sheep-grazed flood-plain between the top of the bank and the base of the sea wall. This is dominated by Salt-marsh Rush and the notable species Bulbous Foxtail, with a patchy mix of other grassland species including Red Fescue, Rough Meadow-grass, White Clover, Crested Dog's-tail, and Perennial Rye-grass, and occasional Sea Arrow-grass, False Fox-sedge and Greater Sea-spurrey. In terms of the NVC this is best classified as SM16 *Juncus gerardii* saltmarsh.

Table 14. Quadrat data from Ebbw upper salt-marsh

Quadrat	2	5	8	9	13	Frequency
Agrostis stolonifera	4	2	5	4	4	V
Juncus gerardii	6	4	7	9	10	V
Triglochin maritimum			7	3	2	III
Festuca rubra		2	6	A	2	III
Alopecurus bulbosus	6	4			6	III
Glaux maritima			A	6	4	II
Cynosurus cristatus	5	2				II
Lolium perenne	5	8				II
Trifolium repens	4	5			A	II
Poa annua	7	5				II
Bellis perennis	2	A				I
Cochlearia anglica					1	I
Senecio jacobaea	2					I
Leontodon hispidus		2				I
Alopecurus geniculatus		2				I
Hypochaeris radicata	1					I
Leontodon autumnalis					2	I
Carex hirta	A					
Carex otrubae	A					
Spergularia media				A	A	
Total species	**10**	**10**	**4**	**4**	**8**	
Cover (%)	**100**	**100**	**80**	**100**	**100**	
Average sward height (cm)	**15**	**15**	**5**	**10**	**15**	

Additional species not present in quadrats from the Ebbw upper salt-marsh

Aster tripolium
Puccinellia maritima
Rumex crispus
Juncus bufonius

Figure 27. Ebbw upper salt-marsh (with sea wall visible in left of picture).

The sea wall is also grazed by sheep and is dominated by Perennial-grass, Crested Dog's-tail and Rough Meadow-grass. It appears to support a relatively young sward which has been created by seeding but is gradually developing towards semi-improved grassland. In terms of the NVC, this is best classified as MG6 *Lolium perenne – Cynosurus cristatus* grassland. On the west side of the sea wall, the grassland grades into a low-lying strip of rush-dominated vegetation beside the track. This supports a low-diversity community dominated by Hard Rush, Rough Meadow-grass, Yorkshire Fog and Marsh Foxtail. In terms of the NVC, this strip is best described as MG10b *Holcus lanatus- Juncus effusus* rush pasture*, Juncus inflexus* sub-community. Quadrat 11 is an example of this vegetation.

Table 15. Quadrat data from Ebbw seawall

Quadrat	3	6	10	11	15	Frequency
Bellis perennis	2	4	4	3	2	V
Ranunculus acris	1	2	2	2	3	V
Cynosurus cristatus	4	5		4	2	IV
Lolium perenne	8	9	7	A	5	IV
Poa trivialis		4	7	8	7	IV
Trifolium repens	4		4	2	3	IV
Agrostis stolonifera	5	4			2	III
Cirsium vulgare	2		1		2	III
Plantago lanceolata	1	A	2		1	III
Prunella vulgaris	1	2	2			III
Trifolium pratense		1	2		1	III
Carex hirta	4	A			2	II
Picris echioides	2			1		II
Ranunculus repens	A	1	1			II
Senecio jacobaea	2	1				II
Anthoxanthum odoratum			2			I
Cirsium arvense	A	4				I
Geranium dissectum		1				I
Holcus lanatus				2		I
Juncus effusus				2		I
Juncus inflexus				7		I
Leontodon hispidus			1			I
Rumex crispus	2	A	A	A	A	I
Senecio aquaticus				1		I
Trifolium dubium			1			I
Alopecurus geniculatus				A		
Calliergonella cuspidata				A		
Carex otrubae				A		
Centaurea nigra				A		
Festuca rubra			A			
Poa annua		A				
Total species	**13**	**12**	**13**	**10**	**11**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**15**	**20**	**15**	**30**	**15**	

Additional species not present in quadrats from the Ebbw sea wall

Cerastium fontanum
Equisetum arvense
Lathyrus pratensis
Lotus corniculatus
Rosa canina
Rubus fruticosus
Taraxacum sp.
Urtica dioica

Figure 28. MG6 grassland on sea wall, with MG10b beside track in left of picture.

Site 8. Usk salt-marsh

The majority of the salt-marsh comprises a dense, very low diversity stand of Sea Couch. This conforms to the NVC community SM24 *Elytrigia atherica* saltmarsh. Several steeper sided creeks and low-lying areas within the saltmarsh are lined by a slightly more diverse mix of Common Saltmarsh-grass, English Scurvy-grass, Annual Sea-blite and Sea Arrow-grass. These can generally be assigned to the NVC community SM13 *Puccinellia maritima* salt-marsh. The seaward edge of the salt-marsh supports a rather patchy fringe of Sea Aster and Common Saltmarsh-grass, with localised Common Cord-grass. This appears to be a fragmented mix of SM13 with elements of SM6 *Spartina anglica* salt-marsh (Quadrats 3 and 6, shown in Table 17, are from Cord-grass patches).

Table 16. Quadrat data from Usk saltmarsh Sea Couch-dominated vegetation

Quadrat	1	5	8	11	13	Frequency
Atriplex prostrata	1	2	2	1	1	V
Elytrigia atherica	10	7	10	10	10	V
Aster tripolium		1		1	1	III
Puccinellia maritima				1		I
Suaeda maritima		2				I
Cochlearia anglica		4	A			I
Agrostis stolonifera	1					I
Festuca rubra		2				I
Total species	**3**	**6**	**2**	**4**	**3**	
Cover (%)	**100**	**80**	**100**	**100**	**100**	
Average sward height (cm)	**60**	**15**	**70**	**70**	**70**	

Additional species from the Sea Couch vegetation, not present in quadrats

Glaux maritima
Juncus gerardii
Phragmites australis
Plantago maritima
Triglochin maritimum

Figure 29. SM24 salt-marsh on Usk foreshore

Table 17. Quadrat data from Usk saltmarsh creeks and seaward edge

Quadrat	2	3	4	6	7	10	12	14	Frequency
Aster tripolium	3	4	2	4	1	2	5	2	V
Puccinellia maritima	4	5	9	8		10	2	10	V
Atriplex prostrata		1	2		4	1	4		IV
Suaeda maritima	2			4	2	1	A	A	III
Elytrigia atherica	3		1		A		2	A	II
Cochlearia anglica	7			A	5	A	5		II
Glaux maritima			4	A		1			II
Spartina anglica		8	A	6		A			II
Agrostis stolonifera							1		I
Triglochin maritimum			4			A			I
Plantago maritima				A					
Total species	**5**	**4**	**6**	**4**	**4**	**5**	**6**	**2**	
Cover (%)	**50**	**100**	**90**	**90**	**80**	**95**	**50**	**100**	
Average sward height (cm)	**10**	**40**	**15**	**15**	**15**	**10**	**10**	**10**	

Additional species from the saltmarsh creeks and seaward edge, not present in quadrats
Beta vulgaris *Festuca rubra*

Figure 30. SM13 salt-marsh vegetation at edge of creek, with abundant Scurvy-grass

Figure 31. SM13 and fragmentary SM6 salt-marsh vegetation at Usk foreshore

Towards the back of the salt-marsh there is a shallow water-filled pool, which is dominated by Saltmarsh Rush and Sea Arrow-grass, and a small quantity of Common Reed. It appears to be transitional between the SM24 community and SM16 *Juncus gerardii* Saltmarsh vegetation, but it is rather fragmented. This vegetation was represented by a single Quadrat (Quadrat 9). Aerial photography suggests that the community was previously more extensive, but at the time of the survey much of the rear of the marsh had been disturbed by machinery brought in to remove tidal debris and litter. Sea Club-rush and Sea Arrow-grass were present within some of the disturbed ground, perhaps indicating that this type of vegetation will re-establish in the low-lying parts of the disturbed strip. Other species common in the disturbed ground include Dittander and Spear-leaved Orache.

Table 18. Quadrat data from Usk saltmarsh pool

Quadrat	9
Juncus gerardii	10
Elytrigia atherica	3
Triglochin maritimum	2
Bolboschoenus maritimus	A
Glaux maritima	A
Phragmites australis	A
Total species	**3**
Cover (%)	**100**
Average sward height (cm)	**20**

Figure 32. Salt-marsh pool at Usk foreshore

The inland fringes of the saltmarsh mostly grade into a weedy mix of cleared scrub and ruderal vegetation. At the north of the selected study area there is a narrow strip beside the conveyor-belt between the jetty and the storage yard that supports sandy ground (from sand falling from the belt). This is developing a ruderal flora which includes a high proportion of Dittander, as well as typical sand dune species such as Restharrow, Thyme-leaved Sandwort, Fern-grass and Squirreltail Fescue.

Species observed in the disturbed and sandy areas at the rear edge of the Usk Foreshore

Agrostis stolonifera
Anagallis arvensis
Arenaria serpyllifolia
Arrhenatherum elatius
Artemisia vulgaris
Bellis perennis
Beta vulgaris
Calliergonella cuspidata
Carex otrubae
Catapodium rigidum
Centaurea nigra
Cirsium arvense
Clematis vitalba
Crataegus monogyna (s)
Dipsacus fullonum
Elytrigia atherica
Erigeron sp.
Eupatorium cannabinum
Festuca rubra
Galium aparine
Geranium dissectum
Geranium robertianum
Glechoma hederacea
Hedera helix
Hirschfeldia incana
Homalothecium lutescens
Hypericum perforatum
Lapsana communis
Lathyrus pratensis
Lepidium latifolium
Leucanthemum vulgare
Lotus corniculatus
Myosotis arvensis
Oenanthe crocata
Ononis repens
Pastinaca sativa
Persicaria hydropiper
Picris echioides
Plantago coronopus
Plantago lanceolata
Plantago major
Poa annua
Poa trivialis
Potentilla anserina
Prunella vulgaris
Prunus spinosa
Puccinellia maritima
Pulicaria dysenterica
Ranunculus acris
Rosa canina
Rubus fruticosus
Rumex crispus
Senecio jacobaea
Silene latifolia
Sison amomum
Sonchus arvensis
Sonchus asper
Sonchus oleraceus
Taraxacum sp.
Trifolium dubium
Trifolium pratense
Trifolium repens
Triglochin maritimum
Tripleurospermum inodorum
Urtica dioica
Vicia sativa
Vulpia bromoides

Figure 33. Dittander in sandy ground beside sand conveyor belt.

Site 9. Solutia

The area to the south-east of the Solutia works is a varied mix of grassland types, scrub and open vegetation communities. The Solutia land has been divided up into smaller blocks for descriptive purposes.

Vegetation within the Solutia security fenced land

The land within the works' security fenced area is a mosaic of sparse grassland, tall herbs and scrub, with several ponds, developed on inert landfill which has been left to natural successional processes for several years. A wind turbine was installed at the edge of this area several years ago. The vegetation survey focussed on the diverse community of grassland and ruderal herbs in the most open patches. The botanical diversity of the other habitats was much lower due to the density of the scrub, and considered less likely to support species of potential significance.

The most diverse vegetation occurs on the sparsely vegetated dry rubble and is characterised by a flower-rich mix including Teasel, Blue Fleabane, Common Centaury and Evening Primroses, with many small annual plants including the locally notable species Common Cudweed and Yellow-wort. Patchy Bramble and scattered young Willows are present through much of this habitat. The open patches appear to be partly maintained by Rabbit grazing.

The vegetation of the area appears to be changing quite rapidly through natural succession. The eastern margin supports dense Grey Willow scrub which was described as marshy grassland in previous habitat surveys. The current surveyor visited the site in 2006, prior to the construction of the wind turbine, and described this area as marshy grassland with patchy scrub, and locally common Southern Marsh Orchids. The ground flora under the willow canopy that now dominates the area is now largely bare because many of the grassland species have been shaded out. There are still a small number of orchids persisting in the shade, but most of these have not flowered this year. Quadrats 1 and 2 were recorded to represent this species-poor damp scrub vegetation. A plant list compiled in 2006 included several additional species from the drier parts of this site, which were not re-found during the present survey. The most notable of these included Pyramidal Orchid and Bee Orchid. It is possible that these may still occur at a low density in this area, but perhaps more likely they have been lost due to encroachment by dense scrub.

The surveyors were only able to examine the ponds from their margin, due to the density of reeds and scrub, and the presence of nesting birds (which included Cetti's Warbler and Reed Warbler). The number and diversity of plant species in the ponds appears to be of limited value, due to the dominance of Willow and Reed, Bulrush and Least Duckweed.

The flower-rich mix of grassland and scrub is ideal for insects, and incidental observations during the survey included Broad-bodied Chaser, Emperor Dragonfly, Black-tailed Skimmer, Marbled White, Meadow Brown, Ringlet, Large Skipper, Small Skipper, Scarlet Tiger, Yellow Shell and Cinnabar.

The diverse, patchy open vegetation does not readily fall into any of the published NVC communities, although it does have some affinity with calcareous grassland (e.g. CG7), fragmentary open vegetation communities (e.g. OV25), and even some sand dune vegetation (e.g. SD8, SD13). The difficulty in categorising this vegetation within the NVC should not diminish its value for nature conservation since it supports several locally uncommon plant species, and is likely to be of value to other types of wildlife, particularly insects and birds. The damp willow scrub is best classified as W1 *Salix cinerea – Galium palustre* woodland. This community merges into W24 *Rubus fruticosus – Holcus lanatus* underscrub in drier areas. A few patches of older scrub with Hawthorn appear to be developing into W21 *Crataegus monogyna – Hedera helix* scrub. The unshaded pond margins which are fringed by reed and Bulrush can be categorised as S4 *Phragmites australis* swamp and S12 *Typha latifolia* swamp respectively.

Table 19. Quadrat data from diverse brownfield grassland near Solutia wind turbine

Quadrat	3	4	5	6	7	Frequency
Rubus fruticosus	4	2	7	4	2	V
Centaurium erythraea	2	3	1	1	1	V
Cerastium glomeratum	2	2	1	1	1	V
Dipsacus fullonum	3	3	4	6	4	V
Epilobium ciliatum	3	2	2	3	2	V
Erigeron acer	1	2	2	3	2	V
Hypericum perforatum	3	5	3	1	2	V
Myosotis arvensis	2	1	1	2	2	V
Senecio jacobaea	2	1	2	2	4	V
Calliergonella cuspidata	4	2	A	2	2	IV
Blackstonia perfoliata	2	2	1	3		IV
Cerastium fontanum	2	1	2	1		IV
Cirsium arvense		1	2	2	4	IV
Holcus lanatus	2	2	2	1	A	IV
Homalothecium lutescens	4	2		2	2	IV
Oenothera biennis	3	2	2		2	IV
Prunella vulgaris	2	4	4	2		IV
Sagina apetala	2	2		1	3	IV
Agrostis capillaris			1	1	1	III
Cerastium semidecandrum	2	2			2	III
Geranium dissectum	1		1	1	A	III
Geranium molle	2	1	1			III
Pulicaria dysenterica	1	1	1	A	A	III
Tripleurospermum inodorum		2	1	1		III
Carex hirta	A	2	2		A	II
Conyza bilbaoana			2		4	II
Epilobium parviflorum		1	1			II
Epilobium sp.			2	1		II
Filago vulgaris		1	2			II
Glechoma hederacea	2	5				II
Ranunculus repens	2	1				II
Rosa canina	1	1	A	A		II
Veronica serpyllifolia	2				2	II
Agrostis stolonifera			2			I

Salix cinerea			A	2		I
Ajuga reptans		4				I
Buddleja davidii	2				A	I
Carex otrubae	1					I
Cirsium vulgare		A	A		1	I
Crataegus monogyna	1		A	A		I
Crepis capillaris			1			I
Erophila verna					1	I
Eupatorium cannabinum	1	A				I
Euphrasia cf nemorosa		4				I
Galium palustre		1			x	I
Hirschfeldia incana					1	I
Lathyrus sylvestris	1					I
Lotus corniculatus			1			I
Medicago lupulina		1				I
Peltigera cf hymenina		2				I
Picris echioides					1	I
Plantago major			1			I
Poa annua					3	I
Poa trivialis	1					I
Potentilla reptans		3				I
Primula vulgaris					2	I
Ranunculus acris			1			I
Rumex crispus					2	I
Sherardia arvensis				2		I
Sonchus arvensis			1			I
Sonchus oleraceus	1				X	I
Trifolium repens		2				I
Veronica arvensis				1		I
Vicia cracca		1				I
Vulpia bromoides				1		I
Cornus sanguinea		A	A			
Dactylis glomerata		A				
Dactylorhiza praetermissa						
Geranium robertianum	A					
Oenothera glazioviana					A	
Scrophularia auriculata	A					
Ulex europaeus		A				
Total species	**32**	**36**	**31**	**25**	**25**	
Cover (%)	**85**	**95**	**100**	**65**	**95**	
Average sward height (cm)	**10**	**30**	**45**	**35**	**25**	

Figure 34. Diverse brown-field vegetation beside Solutia wind turbine

Table 20. Quadrat data from young Willow scrub near Solutia wind turbine

Quadrat	1	2	Frequency
Agrostis stolonifera	1	1	V
Salix cinerea (canopy)	10	10	V
Lycopus europaeus	1	2	V
Brachythecium rutabulum		2	III
Calliergonella cuspidata		6	III
Cirsium palustre	1		III
Cornus sanguinea	1		III
Iris pseudacorus		1	III
Juncus acutiflorus	1		III
Juncus effusus	A	2	III
Juncus inflexus	2		III
Kindbergia praelonga	4		III
Prunus spinosa	2		III
Rubus fruticosus	1		III
Cardamine flexuosa	A		
Crataegus monogyna	A		
Dactylorhiza praetermissa	A	A	
Pulicaria dysenterica		A	
Total species	**10**	**7**	
Cover (%)	**100**	**100**	
Average height	**8-10m**	**8-10m**	

Additional species from the brownfield grassland and scrub, not present in quadrats

Achillea ptarmica (scrub margin)
Anthoxanthum odoratum
Arenaria serpyllifolia
Arrhenatherum elatius
Berula erecta (pond margins)
Betula pendula
Brachypodium sylvaticum
Cardamine flexuosa
Carex spicata
Chamerion angustifolium
Cotoneaster horizontalis
Drepanocladus aduncus
Eleocharis palustris (pond margins)
Epilobium hirsutum
Fragaria vesca
Juncus effusus (pond margins)
Juncus inflexus (pond margins)
Lemna minor (ponds)
Lemna minuta (ponds)
*Phragmites australis (*pond margins)
Potentilla anserina (pond margins)
Salix alba
Salix viminalis (pond margins)
Solanum dulcamara
Sparganium erectum (pond margins)
Typha latifolia (pond margins)
Urtica dioica
Valerianella carinata

Figure 35. Dense, young Willow scrub beside Solutia wind turbine

Figure 36. Shaded pond, south east of Solutia wind turbine

Ungrazed fields beside cycleway

A Sustrans cycleway runs through two fields to the south-east of the Solutia works, and these appear to be left largely unmanaged. They both support tall, tussocky grassland dominated by False Oat-grass and Meadow Foxtail, with patchy tall herbs and a few small scrubby trees. The sward is mostly species-poor, although some patches support a moderate range of herbs, with Tufted Vetch, Hogweed, Greater Bird's-foot Trefoil and Agrimony being locally prominent. Several old field grips support a slightly different flora (represented by Quadrat 11), with a higher proportion of rushes. There are few notable species within the main sward, although Pepper Saxifrage is present at very low density (single plants seen in both fields), and a few plants of Grass Vetchling are present in the western field.

The field margins are mostly fringed by dense Bramble and tall herbs, particularly Greater Willowherb and Nettle, with abundant Cleavers and Hedge Bindweed. This Bramble-dominated community was not examined in detail by quadrats because it was extremely dense and was not considered likely to support any plant species of nature conservation significance.

The presence of the cycle track prevents taller plants from smothering the low-growing species, and the edges of the track support the most diverse flora within these fields. The track adjoins a belt of Willow and Hawthorn scrub in the west of the area. A separate species list was recorded for the cycle track and scrub margin, because it is atypical of the rest of the fields. Locally notable plants observed beside the track include Grass Vetchling, Spiked Sedge, Southern Marsh-orchid and Stone Parsley.

The fields appear to be in a state of transition following the cessation of grazing in recent years. The grassland appears to be changing from a damp, rushy sward (possibly MG7d *Lolium perenne – Alopecurus pratensis* grassland or MG10 *Holcus lanatus – Juncus effusus* rush pasture) towards MG1 *Arrhenatherum elatius* grassland with patchy tall herbs resembling the OV24 *Urtica dioica – Galium aparine* community. The absence of Cock's-foot and continued presence of several typical rush-pasture species in the main sward indicates that the transition is far from complete. The scrubby margins would be categorised as W24 *Rubus fruticosus – Holcus lanatus* underscrub, grading into W21 *Crataegus monogyna – Hedera helix* scrub in the adjacent older hedges.

The tussocky grassland appears to provide a good habitat for common species of insects, with incidental sightings including Meadow Brown, Ringlet, Large Skipper, Small Skipper, Cinnabar Moth, Emperor Dragonfly and Black-tailed Skimmer. An adult Grass Snake was observed basking in the western field, and the sloughed skin of a young Grass Snake was found in the eastern field.

Table 21. Quadrat data from ungrazed fields beside Solutia cycleway

Quadrat	8	9	10	11	12	13	Frequency
Alopecurus pratensis	8	2	5	5	9	9	V
Arrhenatherum elatius	2	9	4	A	9	10	V
Galium aparine	1	9	4	A	2	2	V
Lotus pedunculatus	5		6	4	4	7	V
Rumex acetosa	2		2	1	2	2	V
Cirsium arvense	A	4	2		3	1	IV
Epilobium hirsutum	2		2	4		4	IV
Holcus lanatus	5		7	5	4		IV
Lathyrus pratensis	2		2	2	2		IV
Elytrigia repens	3	5	A	1			III
Eupatorium cannabinum	A	A	1	1		1	III
Juncus inflexus	5		1	8			III
Potentilla anserina	1		2	7			III
Urtica dioica	2	2				1	III
Agrostis stolonifera				2	2		II
Cerastium fontanum	2		A		2		II
Epilobium sp.	2			A	1		II
Heracleum sphondylium	1	2	A		A		II
Ranunculus repens				5		2	II
Solanum dulcamara	2				1		II
Vicia cracca	1	A	2	A			II
Calystegia sepium			1				I
Cardamine pratensis	1						I
Carex hirta	2						I
Cirsium palustre	1		A				I
Epilobium parviflorum					1		I
Galeopsis sp.			1				I
Geranium dissectum				1			I
Juncus acutiflorus				6			I
Poa trivialis						2	I
Potentilla reptans			1				I
Rumex sanguineus	1						I
Achillea ptarmica			A				
Centaurea nigra					A		
Ranunculus acris			A				
Silaum silaus						A	
Total species	**21**	**7**	**16**	**14**	**13**	**11**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**110**	**150**	**90**	**90**	**100**	**130**	

Additional species from fields beside cycleway, in main sward but not present in quadrats

Agrimonia eupatoria
Juncus conglomeratus
Persicaria amphibia
Pulicaria dysenterica
Rubus fruticosus
Vicia sativa
Vicia tetrasperma

Species recorded beside cycleway, in open ground and scrub margin

Achillea millefolium
Achillea ptarmica
Agrimonia eupatoria
Agrostis stolonifera
Alopecurus pratensis
Anthoxanthum odoratum
Arrhenatherum elatius
Bromus hordeaceus
Calystegia sepium
Cardamine pratensis
Carex hirta
Carex spicata
Centaurea nigra
Cerastium fontanum
Chamerion angustifolium
Cirsium arvense
Cirsium palustre
Crataegus monogyna
Cynosurus cristatus
Dactylis glomerata
Elytrigia repens
Epilobium hirsutum
Epilobium parviflorum
Epilobium sp.
Eupatorium cannabinum
Fraxinus excelsior
Galeopsis sp.
Galium aparine
Geranium dissectum
Geranium robertianum
Hedera helix
Heracleum sphondylium
Holcus lanatus
Hordeum secalinum
Hypericum perforatum
Juncus acutiflorus
Juncus conglomeratus
Juncus inflexus
Lathyrus nissolia
Lathyrus pratensis
Lolium perenne
Lotus pedunculatus
Medicago lupulina
Myosotis arvensis
Oenanthe crocata
Persicaria amphibia
Picris echioides
Poa trivialis
Potentilla anserina
Potentilla reptans
Prunus spinosa
Pulicaria dysenterica
Ranunculus acris
Ranunculus repens
Rubus fruticosus
Rumex acetosa
Rumex crispus
Rumex sanguineus
Salix alba
Salix caprea
Salix cinerea
Salix fragilis
Senecio erucifolius
Senecio jacobaea
Sison amomum
Solanum dulcamara
Torilis japonica
Trifolium pratense
Trifolium repens
Urtica dioica
Vicia cracca
Vicia hirsuta
Vicia sativa
Vicia tetrasperma
Vulpia myuros

Figure 37. Cycle track through ungrazed field.

Figure 38. Pepper Saxifrage persisting in low-diversity grassland.

Solutia hay-meadows

The group of fields immediately to the south-east of the works are managed as hay-meadows. Sharp-flowered Rush is a prominent component of the main sward, becoming dominant in the damper ground of the northern fields. All of these fields have conspicuous field-grips dominated by taller wetland vegetation. Locally notable plants in these fields include Brown Sedge and Sneezewort.

The vegetation in the wettest parts of these fields mostly conforms to the NVC M23a *Juncus effusus/ acutiflorus – Galium palustre* rush-pasture, *Juncus acutiflorus* sub-community. In drier parts this grades into MG10 *Holcus lanatus - Juncus effusus* rush pasture and MG7c *Lolium perenne – Alopecurus pratensis – Festuca pratensis* grassland. It also has elements of MG9 *Holcus lanatus – Deschampsia cespitosa* grassland, despite the main sward lacking Tufted Hair-grass.

Incidental observations is this area included a Grass Snake in the northern field, and moderate numbers of insects including Common Blue butterfly, Meadow Brown, Ringlet, Large Skipper butterflies and Straw Dot, Mother Shipton and Burnet Companion moths. Several plants of the nationally scarce plant Fine-leaved Water-dropwort were noted beside the reen crossing point to the northern field (grid ref ST34008538).

Figure 39. Solutia hay-meadow grassland.

Table 22. Quadrat data from Solutia hay-meadows

Quadrat	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Freq.
Alopecurus pratensis	2	2	7	A	8	3	6	6		3	8	2	7	7	V
Anthoxanthum odoratum	8	3	4	6	5	7	8	6	9	2	6	8	8	9	V
Holcus lanatus	4	3	5	7	4	3	2	8	4	4	7	6	4	4	V
Lathyrus pratensis	2	3	2	3	2	1	1	1	2			2	2	2	V
Rumex acetosa	4	4	4	5	4	3	2	A	2		4	3	1	3	V
Agrostis stolonifera	4	4	3	2				6	5	5	2	4	2	4	IV
Festuca rubra	7	6	7	7		9	8	4	6			7	8	8	IV
Ranunculus acris	2	4	4	2	A	A	2		2		2	1	2	3	IV
Juncus acutiflorus		9	8	7	4			5	5	9		7	4	A	IV
Arrhenatherum elatius			4	4		4	4		A		2			2	III
Agrostis capillaris						5	4							6	II
Centaurea nigra	A	4		A			1		1						II
Cirsium palustre	4	1					1		A				1		II
Dactylis glomerata						2	4	A	4					1	II
Lotus corniculatus	4	2					2					2	A		II
Lotus pedunculatus		5	2	A	A	4	A		4		4			A	II
Phragmites australis					8					7	5				II
Ranunculus repens	4	2	4	A											II
Vicia cracca	A	4		4	A	A			1					2	II
Achillea ptarmica		2		7					A						I
Calystegia sepium				4							1				I
Carex disticha										2					I
Carex hirta	A			1		A			A					A	I
Carex nigra										4					I
Carex ovalis	A					A			4	2	A				I
Cerastium fontanum					2				A					1	I
Elytrigia repens										2					I
Festuca pratensis			4	A					4						I
Juncus conglomeratus	1		A									A			I
Juncus effusus	A					A			2				3		I
Luzula campestris							4						2		I
Persicaria amphibia										6					I
Poa trivialis					4										I
Cirsium arvense							A								
Quercus robur														A	
Rosa canina				A											
Rumex crispus	A								A						
Salix cinerea	A														
Stellaria graminea	A								A						
Taraxacum sp.													A		
Trifolium pratense							A								
Vicia sativa									A						
Total species	**12**	**16**	**13**	**13**	**9**	**10**	**14**	**7**	**15**	**11**	**10**	**10**	**12**	**13**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**40**	**60**	**90**	**60**	**110**	**40**	**40**	**60**	**50**	**80**	**50**	**45**	**50**	**30**	

Additional species from hay-meadows, in main sward but not present in quadrats

Cardamine pratensis
Deschampsia cespitosa
Dipsacus fullonum
Festuca arundinacea
Geranium dissectum
Heracleum sphondylium
Juncus inflexus
Lythrum salicaria
Potentilla reptans
Prunus spinosa
Pulicaria dysenterica
Rubus fruticosus

A small triangular plantation beside the security fence at the western edge of the area is dominated by tall Hybrid Black-poplar, White Willow and Alder, with Blackthorn locally dominant where it grades into older hedgerows. The ground flora is dominated by Bramble and Nettles.

Species in small triangular plantation adjoining hay-meadows

Alnus glutinosa
Athyrium filix-femina
Atrichum undulatum
Brachythecium rutabulum
Cardamine pratensis
Cirsium palustre
Dryopteris dilatata
Dryopteris filix-mas
Epilobium montanum
Epilobium parviflorum
Fissidens taxifolius
Hedera helix
Holcus lanatus
Juncus effusus
Kindbergia praelonga
Lathyrus sylvestris
Persicaria amphibia
Phragmites australis
Poa trivialis
Populus x canadensis
Prunus spinosa
Ranunculus acris
Ranunculus repens
Rubus fruticosus
Salix alba
Senecio jacobaea

Figure 40. Small broad-leaved plantation beside hay-meadow grassland.

Grazed pasture east of Solutia

The group of fields west of Nash Road support relatively species-poor semi-improved grassland vegetation. Most were grazed by sheep at the time of the survey; the northern one was closed for hay but supported very similar vegetation. The main species in the sward include Rough Meadow-grass, Perennial Rye-grass, Yorkshire Fog and Meadow Foxtail and there are relatively few herbs. Locally notable grasses which occur patchily within these fields include Meadow Barley and Meadow Brome. A single young plant of Pepper Saxifrage was observed in the northern field. (It was relatively early in the year, and the plant was still very small, so it is possible that others may also be present but not visible at the time of the survey). Most of the field-grips are shallow and quite dry, and not very different from the main sward, but a few deeper, damper ones (e.g. Quadrats 36 and 37) support vegetation that includes more wetland elements, including Sharp-flowered Rush and Floating Sweet-grass. The largest ditch in the southern field also includes occasional Common Spike-rush and Common Reed.

These fields can mostly be assigned to the NVC MG6b *Lolium perenne – Cynosurus cristatus* grassland, *Anthoxanthum odoratum* sub-community. However, the sward is rather patchy and the least diverse parts are best categorised as MG7b *Lolium perenne – Poa trivialis* grassland. The damper field grips include transitions to fragmentary M23 *Juncus effusus/ acutiflorus – Galium palustre* rush pasture.

A small field beside Nash Road, by the house at the eastern corner of the area is fenced off and ungrazed. This is dominated by tall ruderal herbs and coarse grasses, particularly Nettles, Cock's-foot, Rough Meadow-grass and Couch. The field is represented by Quadrats 41, 42 and 43. This area was probably once similar to the rest of the main field but in the absence of grazing is developing towards the NVC MG1 *Arrhenatherum elatius* grassland.

Table 23. Quadrat data from grazed pasture east of Solutia

Quadrat	28	29	30	31	32	33	34	35	36	37	38	39	40	Freq.
Alopecurus pratensis	2	5	4		2	A	2	2	4	2	2	4	5	V
Holcus lanatus	5	4	5	8	6	5	9	9	6	4	5	4	7	V
Lolium perenne	7	8	2	A	4	2	2	3	7		8	8	7	V
Poa trivialis	7	4	4	8	7	2	5	7	7	6	6	2	4	V
Anthoxanthum odoratum	5	2	5		5	6	4		7		8	4	5	IV
Carex hirta		4	4	2			A	2		4	4	2	2	IV
Cynosurus cristatus	5	2	2		2	6	A					8	4	III
Ranunculus repens	4	5	6				1	A	4		1	2		III
Bromus racemosus	8	5	7											II
Dactylis glomerata				4		2	2	2				2		II
Hordeum secalinum					5	4					5	3	A	II
Ranunculus acris	2	A	2						A	A	A	1	A	II
Rumex acetosa	2	A	2						1		1			II
Trifolium pratense	2	A	1		4						A	2	A	II
Trifolium repens	1		A		4		A	4			1	4	A	II
Agrostis capillaris	2													I
Agrostis stolonifera					2	A								I
Alopecurus geniculatus			2							8				I
Cerastium fontanum						1		A			A			I
Cirsium arvense				1			1	A						I
Glyceria fluitans			2							9				I
Juncus acutiflorus									2	2				I
Juncus effusus										2				I
Juncus inflexus													1	I
Lotus corniculatus	4		4											I
Persicaria amphibia										1				I
Rumex crispus				1							A			I
Silaum silaus		1												I
Taraxacum sp.												1		I
Trifolium dubium	2		A											I
Bromus hordeaceus	A													
Carex ovalis										A				
Total species	**15**	**10**	**15**	**6**	**10**	**8**	**8**	**7**	**8**	**9**	**10**	**14**	**8**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**60**	**50**	**40**	**40**	**30**	**30**	**35**	**25**	**25**	**40**	**20**	**15**	**15**	

Additional species from pasture east of Solutia, not present in quadrats

Cirsium vulgare
Crataegus monogyna
Eleocharis palustris
Juncus bufonius
Phragmites australis
Prunus spinosa
Rosa canina
Stachys sylvatica
Urtica dioica
Vicia cracca

Figure 41. Pasture east of Solutia.

Table 24. Quadrat data from small field beside Nash Road

Quadrat	41	42	43	Frequency
Poa trivialis	4	6	4	V
Urtica dioica	5	9	1	V
Alopecurus pratensis	4	A	4	IV
Arrhenatherum elatius		2	5	IV
Dactylis glomerata	8	A	10	IV
Elytrigia repens	8	A	2	IV
Galium aparine	5	8		IV
Geranium dissectum		4		II
Ranunculus acris	1		A	II
Ranunculus repens	A		2	II
Rumex obtusifolius	1			II
Vicia sativa			1	II
Cirsium arvense	A			
Epilobium hirsutum		A		
Sisymbrium officinale		A		
Total species	**8**	**5**	**8**	
Cover (%)	**100**	**100**	**100**	
Average sward height (cm)	**70**	**100**	**80**	

Additional species from small field at Nash Road, not present in quadrats

Carex hirta
Cerastium fontanum
Cirsium vulgare
Oenanthe crocata
Potentilla reptans
Rumex acetosa
Salix cinerea

A small plantation adjoins Nash Road at the east of the area. This is dominated by young broadleaved trees, including Field Maple, Hornbeam, Ash, Oak, Spindle and Hawthorn. The sparse ground flora has a high proportion of Nettle, Yorkshire Fog and Hogweed. The ground flora bears a loose resemblance to the ground flora of W24 *Rubus fruticosus* - *Holcus lanatus* scrub.

Species recorded in small plantation beside Nash Road

Alliaria petiolata
Alopecurus pratensis
Carex remota
Carpinus betulus
Chaerophyllum temulum
Crataegus monogyna (s)
Dactylis glomerata
Euonymus europaeus
Fissidens taxifolius
Fraxinus excelsior
Glechoma hederacea
Heracleum sphondylium
Holcus lanatus
Kindbergia praelonga
Poa trivialis
Prunus avium
Prunus spinosa
Quercus robur
Ranunculus acris
Ranunculus repens
Rosa canina
Rubus fruticosus
Rumex obtusifolius
Rumex sanguineus
Salix alba
Salix cinerea
Sambucus nigra
Sison amomum
Stachys sylvatica
Urtica dioica
Vicia sepium

Figure 42. Plantation beside Nash Road.

Site 10. Broad Street Common

The study area at Broad Street Common can be divided into two main parts. The northern part comprises damp, horse-grazed pasture, and the southern part supports a patchy mosaic of drier grassland and scrub, which is developing on brown-field land which still includes the remains of several paths and buildings. The pasture and brownfield land are considered separately in the following summary.

The pasture habitat comprises three damp, rushy fields, with a clearly defined network of field-grips. The main sward has a rather limited range of species, as it is dominated by Rough Meadow-grass and Meadow Foxtail. In terms of the NVC the majority of the area appears to be intermediate between MG7c *Lolium perenne – Alopecurus pratensis – Festuca pratensis* grassland, and MG10 *Holcus lanatus – Juncus effusus* rush pasture, often as a mosaic reflecting the pattern of field grips, with MG10 occupying the damper parts. Drier areas, represented by Quadrats 1 and 4 are closest to MG6 *Lolium perenne - Cynosurus cristatus* grassland, although they are not a good match with this community because Perennial Rye-grass is quite scarce. The eastern edge of the northern field is the driest area and this supports a strong population of the notable species Corky-fruited Water-dropwort, and several Southern Marsh-orchids.

Table 25. Quadrat data from pasture habitat at Broad Street Common

Quadrat	1	4	5	7	9	10	11	13	15	16	17	Freq.
Agrostis stolonifera	4	5		2	4	6	4	2	8	2	2	V
Alopecurus pratensis	2	2	8	4	4	5		2	2	5	4	V
Anthoxanthum odoratum	5	5	2	6	2	4	2	2	3	4	4	V
Carex hirta	4	6	4	6	8	6	8	8	5	6	9	V
Holcus lanatus		4	6	7	8	7	2	8	2	6	2	V
Poa trivialis	A		8	7	5	5	4	7	2	4	3	V
Ranunculus acris	5	6	2	4	2	4	5	A	2	4	6	V
Ranunculus repens	4	2	2	5	6	8	8	4	6	7	7	V
Rumex acetosa		1	1	1	2	4		1	A	3	A	IV
Cynosurus cristatus	4	7	A				2		4	2	4	III
Lotus pedunculatus		4	5			2		7		6		III
Trifolium repens	5	5					A		2	2	4	III
Cerastium fontanum			1			1					1	II
Cirsium arvense	A			4		4		A		1	1	II
Juncus effusus	A	3					4		2	A		II
Juncus inflexus							2	5		A	1	II
Taraxacum sp.	2	1								1		II
Trifolium pratense	5	2				A	4		A	2	A	II
Carex flacca	2											I
Centaurea nigra	2	A				A						I
Cirsium palustre										1		I
Epilobium hirsutum								2				I
Festuca pratensis	2	2										I
Hordeum secalinum	A	1								2		I
Juncus acutiflorus	A	3						A	A			I
Lathyrus pratensis	2											I
Lolium perenne		1										I
Lotus corniculatus	7											I
Oenanthe pimpinelloides	6											I
Pulicaria dysenterica											1	I
Rumex obtusifolius							1					I
Alopecurus geniculatus				A								
Bellis perennis											A	
Dactylorhiza praetermissa	A											
Plantago major							A					
Total species	**16**	**18**	**10**	**10**	**9**	**12**	**12**	**11**	**11**	**17**	**14**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**15**	**20**	**30**	**35**	**40**	**30**	**25**	**60**	**10**	**30**	**45**	

Figure 43. Damp horse-grazed pasture at Broad Street Common

Quadrats 2 and 3 are from wet parts of the northern field, which are dominated by Sharp-flowered Rush. This community is best categorised as M23a *Juncus acutiflorus – Galium palustre* rush pasture.

Table 26. Quadrat data from Sharp-flowered Rush patches at Broad Street Common

Quadrat	2	3	Frequency
Alopecurus pratensis	4	5	V
Anthoxanthum odoratum	6	6	V
Carex hirta	2	2	V
Holcus lanatus	4	2	V
Juncus acutiflorus	10	10	V
Lathyrus pratensis	2	2	V
Lotus pedunculatus	8	6	V
Poa trivialis	4	3	V
Ranunculus acris	2	4	V
Ranunculus repens	4	6	V
Taraxacum sp.	2	1	V
Agrostis stolonifera	2		III
Cynosurus cristatus	4		III
Equisetum arvense	2		III
Festuca pratensis		4	III
Hordeum secalinum	2		III
Juncus effusus	2		III
Oenanthe pimpinelloides	4		III
Rumex acetosa	A	2	III
Centaurea nigra	A		
Glyceria fluitans		A	
Trifolium pratense	A		
Total species	**17**	**13**	
Cover (%)	**100**	**100**	
Average sward height (cm)	**40**	**60**	

The field grips were categorised separately from the rest of the field. They are mainly dominated by Floating Sweet-grass, grading into Creeping Bent, Hairy Sedge, Amphibious Bistort and rushes at the margins. This community is classified in the NVC as S22 *Glyceria fluitans* water-margin vegetation. A few of the shallower grips have little or no Floating Sweet-grass and these are better classified as MG13 *Agrostis stolonifera – Alopecurus geniculatus* grassland.

Table 27. Quadrat data from field grips at Broad Street Common

Quadrat	6	8	12	14	Frequency
Glyceria fluitans	9	9	9	8	V
Carex hirta	2	2	2		IV
Ranunculus repens	1		2	2	IV
Agrostis stolonifera	4		2		III
Juncus inflexus	2	2	A	A	III
Persicaria hydropiper	A		2	2	III
Rumex crispus	1		A	1	III
Alisma plantago-aquatica			1		II
Carex otrubae				1	II
Eleocharis palustris				8	II
Epilobium ciliatum		1			II
Epilobium parviflorum			A	1	II
Juncus bufonius			1		II
Juncus effusus			A	4	II
Lysimachia nummularium	1				II
Myosotis laxa				1	II
Alopecurus geniculatus			A		

Alopecurus pratensis		A	A		
Juncus acutiflorus			A		
Poa trivialis				A	
Ranunculus acris	A	A	A		
Total species	**7**	**4**	**7**	**9**	
Cover (%)	**100**	**100**	**100**	**100**	

Additional species not present in quadrats from the Broad Street Common pasture

Bromus racemosus
Calliergonella cuspidata
Equisetum arvense
Cerastium glomeratum
Cirsium vulgare
Coronopus didymus
Dactylorhiza fuchsii
Galium palustre
Heracleum sphondylium
Iris pseudacorus
Juncus articulatus
Matricaria discoidea
Oenanthe crocata
Phragmites australis
Poa annua
Potentilla anserina
Potentilla reptans
Prunella vulgaris
Prunus spinosa
Ranunculus flammula
Rosa canina
Rubus fruticosus
Salix cinerea
Vicia cracca
Vicia sativa

The brownfield land at Broad Street Common is a very complex mosaic, with many different types of vegetation merging into one another, creating a wide range in vegetation height and diversity. The area is grazed by horses, with some favoured areas grazed very short, and others left largely undisturbed. Several areas of long grass and tall ruderal herbs are present especially in the south and west, and near to the scrub boundaries. The most botanically diverse patches tended to be the sheltered grassland patches in the east of the area.

Most notably, the area supports hundreds of plants of Corky-fruited Water-dropwort, scattered patchily throughout the shorter grassland habitats. Other locally uncommon species include Long-stalked Crane's-bill and Hairy St.John's-wort, mainly in grassland in the east of the area, and Narrow-leaved Everlasting-pea scrambling in scrub-margins in the centre and eastern parts.

The varied habitat structure and botanical diversity of the brownfield area makes it a good habitat for a range of invertebrates, and numerous butterflies and moths were noted during the site visit. These incidental observations included Common Blue Butterfly, Burnet Companion, Meadow Brown, Red Admiral and Hairy Dragonfly. The site also appears to have high potential for Grass Snakes.

In terms of the NVC, the grassland areas include a mix of several vegetation communities, with many degrees of transitions between them, so it is difficult to assign clearly defined communities. The main elements in the taller grassland are MG6 *Lolium perenne – Cynosurus cristatus* grassland and MG1 *Arrhenatherum elatius* grassland, which merge into tall ruderal vegetation, largely dominated by Nettles, which are best categorised as OV24 *Urtica dioica – Galium aparine* community. Where it is more heavily grazed, the MG6 locally merges with MG5 *Centaurea nigra- Cynosurus cristatus* grassland, especially in the east of the area, where Common Bird's-foot Trefoil is locally very abundant. Some of the more heavily trampled tracks and horse-feeding areas grade into open vegetation similar to the OV12 *Poa annua - Myosotis arvensis* and OV19 *Poa annua – Tripleurospermum inodorum* communities.

Table 28. Broad Street Common brownfield land quadrat data from grassland areas

Quadrat	18	19	21	22	23	24	25	26	27	33	Freq.
Poa trivialis	5	8	8	4	5	4	2	2	4	A	V
Potentilla reptans	2		4	6	5	5	6	2	4	4	V
Cerastium fontanum	A		2	2	2	4	2	3	3	3	IV
Holcus lanatus	7	5	9	4			4	7	4	2	IV
Lolium perenne	1	2		4	2	1	1			7	IV
Ranunculus repens	2	2	2	4			2	2		4	IV
Geranium dissectum	2		4	A	4	5				2	III
Lotus corniculatus				2	2	A	4	8	8		III
Plantago major					1	2		1	1	1	III
Taraxacum sp.				1	1	1	1	1	1		III
Trifolium pratense	4	A		2			1	1	2	1	III
Trifolium repens	2					6	5	2	A	8	III
Achillea millefolium			1	5						1	II
Agrostis capillaris				2			4	2			II
Anthoxanthum odoratum					7	2	1	A			II
Bellis perennis					4	5	1				II
Carex hirta				A			1	2		2	II
Cirsium arvense	1		1			1				A	II
Cynosurus cristatus					6	A	4	A	2		II
Festuca rubra				A		1	6	7	8		II
Leontodon hispidus					1	1	2	1			II
Myosotis arvensis	A			A	1	1	2			A	II
Plantago lanceolata				1				4	3		II
Prunella vulgaris						1	2		A	2	II
Ranunculus acris		1			1	A		2	1		II
Rumex acetosa					2		2	2	2		II
Rumex crispus		2			A	1		A		1	II
Senecio jacobaea					1		2	A	4		II
Sherardia arvensis								2	4	1	II
Sonchus asper			1		1	1					II
Verbena officinalis					A	1	1			1	II
Agrostis stolonifera		4				4					I
Alopecurus geniculatus						2					I
Alopecurus pratensis		4									I
Anagallis arvensis	A				5	5				A	I
Arctium minus										1	I
Arrhenatherum elatius	2				A			2			I
Brachythecium rutabulum					1						I
Bromus racemosus					4		1				I
Cardamine pratensis					1						I
Centaurea nigra			1								I
Centaurium erythraea							1				I
Cirsium vulgare						1					I
Dactylis glomerata		4		4		A					I
Elytrigia repens		6									I
Epilobium ciliatum						1					I
Epilobium parviflorum						1					I
Galium aparine	2		A	A							I
Geranium molle								1			I
Glechoma hederacea	2										I
Hedera helix				A			1				I
Hordeum secalinum					3	6					I
Hypericum perforatum				A			1	A	2		I
Juncus bufonius						3					I
Medicago lupulina					1					1	I
Oenanthe pimpinelloides			2		4						I
Pilosella officinarum								2			I
Poa annua						2				2	I
Quercus robur							1				I
Rubus fruticosus	5	A					2	A	A		I
Rumex acetosella									2		I

Rumex sanguineus	2										I
Sisymbrium officinale	A				1						I
Sonchus oleraceus	1									1	I
Stellaria graminea							1	3			I
Torilis japonica				4							I
Trifolium dubium								A	2		I
Urtica dioica	2		4								I
Veronica arvensis				A	1						I
Veronica chamaedrys							2	2	A		I
Veronica persica						1					I
Veronica serpyllifolia						2					I
Vicia hirsuta	2										I
Vicia sativa	2										I
Vulpia bromoides									4		I
Angelica sylvestris	A										
Bromus hordeaceus										A	
Carex spicata								A			
Clematis vitalba	A			A			A				
Crataegus monogyna								A			
Heracleum sphondylium		A									
Juncus inflexus						A					
Lathyrus nissolia							A				
Lathyrus pratensis	A										
Potentilla anserina	A	A									
Rosa canina								A			
Rumex obtusifolius		A									
Trisetum flavescens								A			
Verbascum thapsus							A				
Total species	**18**	**10**	**12**	**14**	**26**	**29**	**30**	**23**	**19**	**19**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**60**	**40**	**100**	**20**	**35**	**15**	**40**	**40**	**40**	**5**	

Table 29. Broad Street Common brownfield land quadrat data from nettle patches

Quadrat	20	25	Frequency
Cirsium arvense	1	1	V
Galium aparine	2	4	V
Poa trivialis	5	4	V
Urtica dioica	10	10	V
Elytrigia repens	2		III
Holcus lanatus		4	III
Ranunculus acris		1	III
Ranunculus repens		1	III
Rumex obtusifolius		2	III
Sisymbrium officinale	1		III
Sonchus oleraceus	1		III
Torilis japonica		1	III
Rubus fruticosus		A	
Total species	**7**	**9**	
Cover (%)	**100**	**100**	
Average sward height (cm)	**150**	**110**	

Figure 44. Brownfield vegetation mosaic at Broad Street Common

Figure 45. Corky-fruited Water-dropwort at Broad Street Common

The scrub habitats at Broad Street Common are very variable, and no attempt was made to map different scrub communities separately. Light scrub merging gradually into the grassland margins typically includes many of the grassland species in its ground flora, while longer established, denser canopies support a less diverse flora dominated by Nettles, Ivy and mosses. The main canopy species tend to be Silver Birch, Hawthorn and Grey Willow. The areas with a canopy of older Hawthorns is readily categorised as NVC typical W21 *Crataegus monogyna – Hedera helix* scrub. The younger scrub is a less well developed variation of this community, possibly best assigned to the W21c *Brachypodium sylvaticum* sub-community, and to W24 *Rubus fruticosus – Holcus lanatus* underscrub. Some areas include ornamental trees and shrubs from former garden planting, with an avenue of Cypress trees being a particularly obvious feature that extends right across the site.

Table 30. Broad Street Common brownfield land data from scrub (4x4m quadrats)

Quadrat	28	29	30	31	32	34	Freq.
Galium aparine	1	A	2	3	2	2	V
Hedera helix	7	2	2	4		9	V
Kindbergia praelonga	4	2	9		9	5	V
Rubus fruticosus	2	9		1	10	5	V
Plagiomnium undulatum	2	2	2			2	IV
Urtica dioica	1		9	10	4		IV
Crataegus monogyna	10	2	10				III
Epilobium montanum	1	2		1			III
Geranium robertianum		1	2	1			III
Poa trivialis	1		2	2			III
Rumex sanguineus	1		1	1			III
Brachythecium rutabulum		4				1	II
Dactylis glomerata		2				1	II
Fragaria vesca		2	1				II
Fraxinus excelsior		2				2	II
Phyllitis scolopendrium		2				4	II
Prunella vulgaris	2		2				II
Ranunculus repens	2		2				II
Sambucus nigra	1		2				II
Arum maculatum	1						I
Betula pendula		9					I
Brachypodium sylvaticum				1			I
Calliergonella cuspidata		2					I
Carex spicata		1					I
Cladonia sp.		1					I
Dryopteris dilatata					1		I
Dryopteris filix-mas					2		I
Festuca rubra		2					I
Fissidens taxifolius	1						I
Glechoma hederacea	1						I
Hieracium sp.		1					I
Holcus lanatus	1						I
Lophocolea bidentata		2					I
Lotus corniculatus		2					I
Malus pumila				1			I
Myosotis arvensis	A				1		I
Pseudoscleropodium purum		4					I
Pteridium aquilinum		1					I
Rosa canina	A				4	A	I
Salix cinerea		A				10	I
Stachys sylvatica				4			I
Tamus communis	2	A					I
Taraxacum sp.		1					I
Thamnobryum alopecurum					1		I
Veronica chamaedrys	A		1				I
Veronica serpyllifolia	2						I
Arrhenatherum elatius		A					
Chamaecyparis lawsoniana		A	A				
Corylus avellana (s)		A					
Eupatorium cannabinum					A		
Hypericum hirsutum	A						
Hypericum perforatum		A					
Polypodium interjectum		A					
Rumex obtusifolius	A						
Salix alba				A			
Salix caprea						A	
Senecio erucifolius		A					
Sison amomum	A						
Total species	**19**	**23**	**14**	**11**	**9**	**10**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	
Average height	**6-7m**	**8-10m**	**8-10m**	**20m**	**10m**	**12-14m**	

Additional species not present in quadrats from Broad Street Common brownfield land

Acer pseudoplatanus
Agrimonia eupatoria
Anthriscus sylvestris
Aphanes australis
Arenaria serpyllifolia
Buddleja davidii
Capsella bursa-pastoris
Carex otrubae
Cerastium glomeratum
Chamerion angustifolium
Circaea lutetiana
Cornus sanguinea
Coronopus didymus
Cotoneaster horizontalis
Crepis capillaris
Digitalis purpurea
Dipsacus fullonum
Epilobium hirsutum
Equisetum telmateia
Geranium columbinum
Geum urbanum
Hypnum cupressiforme
Hypnum lacunosum
Lapsana communis
Lathyrus sylvestris
Leucanthemum vulgare
Ligustrum vulgare
Linum catharticum
Lonicera periclymenum
Matricaria discoidea
Medicago arabica
Melissa officinalis
Oenanthe crocata
Pastinaca sativa
Persicaria maculosa
Polygonum aviculare
Prunus spinosa
Pulicaria dysenterica
Rubus idaeus
Rumex conglomeratus
Sagina apetala
Salix fragilis
Solanum dulcamara
Tragopogon pratensis
Trifolium campestre
Tripleurospermum inodorum
Vicia cracca
Vicia tetrasperma

Figure 46. Scrub growing over building foundations at Broad Street Common

Site 11. Green Moor brownfield land

The Green Moor brown-field land has been used in industrial operations by the steelworks in the past, but it appears to have been ungrazed in recent years and has developed a diverse mix of grassland and scrub.

The Green Moor brown-field land comprises a series of low-lying former fields or pools, which are divided by a series of raised trackways, apparently largely formed from slag material. The areas selected for the vegetation survey are two low-lying fields which both support a complex mosaic of flower-rich grassland and Grey Willow and Hawthorn scrub, and patchy Common Reed. The grassland includes a large number of Marsh Orchids, which included Common Spotted Orchid, Southern Marsh Orchid and numerous hybrids. There are also hundreds of plants of Pepper Saxifrage. Other locally significant species occurring more patchily include Narrow-leaved Bird's-foot Trefoil, Brown Sedge and Tubular

Water-dropwort. Many butterflies and moths were noted incidentally in this area, including Common Blue, 6 spot-Burnet Moth and Comma, and several Common Frogs were also seen. The habitat appears likely to support good numbers of Grass Snakes. Several larval webs of the nationally notable Small Eggar Moth were seen in the Hawthorn scrub, and Small Ranunculus Moth larvae are likely to be present on the locally abundant Great Lettuce at the edge of the tracks later in the summer. Observations of the surrounding area suggest that other nearby post-industrial parts of Green Moor support similarly diverse brown-field habitats.

The vegetation survey focussed on the diverse grassland parts of the main fields, and some from the grassy strip beside the central reen. Some quadrats were taken from rush-dominated wetland habitats (Quadrats 9, 10, 11, 13 and 14) and one quadrat (Quadrat 12) was recorded in reedbed. Cetti's Warbler, Reed Warbler and Sedge Warbler were singing from the reed-dominated areas, so these habitats were left undisturbed and observations limited to the margins. The scrub vegetation was not investigated in detail but the ground flora generally appears quite similar to the more open areas, but less diverse and with Hawthorn, Dog Rose and Bramble forming the main canopy species.

The main areas of damp grassland do not appear to conform easily to the published NVC communities. Some species suggest a strong affinity with MG5 *Centaurea nigra – Cynosurus cristatus* grassland, particularly quadrats from the track (Quadrats 1, 2 and 3), which include Knapweed and Crested Dog's-tail. The main area has elements of MG10b *Holcus lanatus – Juncus effusus* rush pasture *Juncus inflexus* sub-community. However, it is not typical of either community, possibly due to the base-rich soil associated with the industrial site, and the lack of grazing. (Most grasslands are maintained by grazing, so this ungrazed habitat is inevitably in a transitional status as it develops into scrub woodland). It is important to note that not fitting into a simple NVC category should not detract from the high nature conservation value of this diverse and unusual grassland.

Table 31. Green Moor brownfield area: quadrat data from damp grassland areas

Quadrat	1	2	3	4	5	6	7	8	14	15	16	17	Freq.
Holcus lanatus	4	4	7	2	2	1	2	2		2	1		V
Calliergonella cuspidata	4			2		6	5	4	1	4		4	IV
Agrostis stolonifera	4	4	2		4	5	9	8	1				IV
Lotus corniculatus	7	8	6	3	6	7	3	4					IV
Pulicaria dysenterica				10	7	9	4	1		7	9	9	IV
Carex hirta	2	2	6	2	2				A	2	1		III
Juncus inflexus	2			4		A			8	1	4	7	III
Festuca rubra		2	2		5	2	2	4					III
Juncus effusus				2		6				9	6	2	III
Agrimonia eupatoria	1	2	1				1	1					III
Centaurea nigra	2	2	3		2		1						III
Lathyrus pratensis	2	2	2	A		2	2						III
Ranunculus repens	5	2	A		2	A	2	4					III
Rumex acetosa	2	A	2	2		2	1	A					III
Carex otrubae				1					2	1	2		II
Crataegus monogyna	A	A	A	A	1	1	1	1		A	A	A	II
Cirsium palustre					2	A	2			A	1	1	II
Cynosurus cristatus	5	4	5					3					II
Dactylorhiza sp.	2		1	1	A			2					II
Plantago lanceolata	3	4	4					2					II
Poa trivialis	6	7	5			2	A				A		II
Ranunculus acris	2	A	1				1	4				A	II
Trifolium pratense	2	2	2					2					II
Anthoxanthum odoratum	4	2	6										II
Carex flacca	4		4	1									II
Dactylis glomerata	2	2	1										II
Eupatorium cannabinum										2	2	1	II
Festuca pratensis	4	2	5										II

Filipendula ulmaria	2	5	2										II
Lolium perenne	4	6	2										II
Prunella vulgaris	4	4	1										II
Senecio erucifolius					4		2	2					II
Silaum silaus		2			2	A		2					II
Trifolium repens	2	3	5										II
Vicia cracca			2	A	2							1	II
Alopecurus pratensis			2		1								I
Angelica sylvestris	A			1								2	I
Dactylorhiza fuchsii	2	1								A			I
Dactylorhiza praetermissa						A	1			1			I
Elytrigia repens						1						1	I
Epilobium hirsutum						A			A	A	1	1	I
Equisetum arvense	2	3											I
Hordeum secalinum			2		2								I
Leontodon autumnalis							1	1					I
Leucanthemum vulgare							4	2					I
Lotus pedunculatus										1	4		I
Lythrum salicaria				2						4			I
Rosa canina				A			1	2					I
Rumex crispus	A	1		2									I
Galium palustre										A	4		I
Mentha aquatica									2				I
Rubus fruticosus							A		2				I
Carex nigra										4			I
Carex ovalis						1							I
Cerastium fontanum			1										I
Cirsium arvense										1			I
Cirsium vulgare						1							I
Daucus carota						1							I
Epilobium sp.						1							I
Geranium dissectum	1												I
Glyceria maxima									8				I
Lathyrus sylvestris												2	I
Lotus glaber								2					I
Luzula campestris								2					I
Malus pumila								1					I
Potentilla anserina						2							I
Stellaria graminea		2											I
Taraxacum sp.	1												I
Trifolium dubium	1												I
Vicia hirsuta								1					I
Vicia sativa	A					1							I
Vicia tetrasperma										1	A		I
Epilobium palustre									A				
Arrhenatherum elatius	A		A										
Oenanthe crocata	A	A	A										
Carex riparia			A										
Cerastium glomeratum							A						
Festuca arundinacea							A						
Galium aparine											A	A	
Rumex conglomeratus				A									
Stachys palustris			A										
Torilis japonica	A												
Phyllitis scolopendrium											A		
Salix cinerea									A				
Total species	**30**	**25**	**27**	**14**	**15**	**18**	**19**	**23**	**7**	**14**	**11**	**11**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**40**	**40**	**50**	**40**	**30**	**55**	**50**	**40**	**80**	**50**	**50**	**60**	

The majority of the wettest grassland is dominated by rushes and appears to have affinities with M23 *Juncus effusus/ acutiflorus – Galium palustre* mire and M27 *Filipendula ulmaria - Angelica sylvestris* mire. However, it is not typical of either community, having a relatively high proportion of Hard Rush, and is probably best regarded as a transitional community which will in time become Grey Willow scrub (probably W1 *Salix cinerea – Galium palustre* woodland, like much of the scrub at the damp margins). In deeper water it grades into S4 *Phragmites australis* swamp (represented by Quadrat 12), and also locally towards a fragmentary S13 *Typha latifolia* swamp community. Local patches of the wetland vegetation are dominated by single-species stands of *Carex disticha* and *Carex acutiformis*.

Table 32. Green Moor brownfield area: quadrat data from wetter areas

Quadrat	9	10	11	12	13	14	Frequency
Species							
Juncus effusus	2	8	9	2	4		V
Juncus inflexus	10	6		1	8	8	V
Solanum dulcamara	2	3	3	2	1		V
Epilobium palustre	2	2	2		2	A	IV
Calliergonella cuspidata	4	5				1	III
Carex otrubae	1				1	2	III
Mentha aquatica	1					2	II
Rubus fruticosus					1	2	II
Agrostis stolonifera						1	I
Alopecurus pratensis			A		1		I
Angelica sylvestris	1						I
Crataegus monogyna	1				A		I
Drepanocladus aduncus			5				I
Galium palustre					1		I
Glyceria maxima						8	I
Juncus acutiflorus					4		I
Lemna minor				3			I
Lycopus europaeus					2		I
Phragmites australis				10			I
Scutellaria minor		1					I
Typha latifolia	A	3	A				I
Carex hirta			A			A	
Eleocharis palustris		A					
Epilobium hirsutum						A	
Filipendula ulmaria	A						
Lychnis flos-cuculi		A					
Salix cinerea						A	
Total species	**9**	**7**	**4**	**5**	**10**	**7**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**110**	**120**	**100**	**300**	**110**	**80**	

Additional species not present in quadrats from the Green Moor brownfield land

Acer pseudoplatanus
Achillea millefolium
Apium nodiflorum
Berula erecta
Carex acutiformis
Carex disticha
Carex nigra
Carex remota
Chamerion angustifolium
Dryopteris filix-mas
Festuca pratensis
Glyceria fluitans
Heracleum sphondylium
Iris pseudacorus
Juncus conglomeratus
Lathyrus sylvestris
Leontodon hispidus
Ligustrum vulgare
Myosotis laxa
Oenanthe fistulosa
Persicaria amphibia
Phalaris arundinacea
Plantago major
Polystichum setiferum
Populus x canadensis
Potentilla reptans
Prunus spinosa
Quercus robur
Rumex sanguineus
Salix alba
Salix caprea
Salix fragilis
Tamus communis
Tussilago farfara
Urtica dioica
Viscum album

Incidental observations of the raised tracks adjacent to the study area indicate that they support an open vegetation characterised by a high proportion of Biting Stonecrop, Thyme-leaved Sandwort, Rue-leaved Saxifrage and Squirreltail Fescue. The locally notable species Great Lettuce is abundant at some of the track-sides. The vegetation does not readily conform to any of the published NVC communities, although it has affinities with some sand-dune and open vegetation communities. The difficulty in finding an easy fit for this vegetation may be because the chemical composition of the substratum is not like any natural soils in this area.

Species recorded from the open vegetation community of the Green Moor brownfield tracks

Alliaria petiolata
Arenaria serpyllifolia
Arrhenatherum elatius
Barbula convoluta
Bromus hordeaceus
Buddleja davidii
Carex flacca
Catapodium rigidum
Cerastium glomeratum
Cerastium semidecandrum
Chamerion angustifolium
Cirsium vulgare
Conium maculatum
Daucus carota
Dipsacus fullonum
Epilobium ciliatum
Epilobium hirsutum
Epilobium parviflorum
Epilobium sp.
Festuca rubra
Fumaria officinalis
Geranium dissectum
Geranium molle
Geranium robertianum
Hedera helix
Hirschfeldia incana
Holcus lanatus
Homalothecium lutescens
Hypericum perforatum
Hypnum lacunosum
Inula conyzae
Lactuca virosa
Leucanthemum vulgare
Linum catharticum
Medicago lupulina
Myosotis arvensis
Oenothera sp.
Papaver rhoeas
Peltigera cf hymenina
Poa trivialis
Rubus fruticosus
Sagina apetala
Sambucus nigra
Saxifraga tridactylites
Sedum acre
Sonchus asper
Sonchus oleraceus
Tripleurospermum inodorum
Urtica dioica
Verbascum thapsus
Veronica arvensis
Vulpia bromoides
Vulpia myuros

Figure 47. Open Vegetation community on raised track formed from slag.

Site 12. Green Moor fields

The Green Moor fields are managed as cattle-grazed pasture and contain a mix of wet and dry areas. The majority of the drier grassland in the fields is best categorised as MG7 *Lolium perenne – Poa trivialis* grassland, and as such it is fairly typical of much of the cattle-grazed pasture on the Gwent Levels. Meadow Barley is common in most of the fields. Meadow Brome is another species of local interest in this vegetation, but it appears to be limited to small patches within the most northerly of the fields (ST396859). Crested Dog's-tail is generally rare in this community, but its presence in a few areas indicates that these are in transition to MG6 *Lolium perenne – Cynosurus cristatus* grassland. Some rather localised areas appear even more diverse, with a higher proportion of herbs, including Bird's-foot Trefoil, Common Knapweed, Meadow Vetchling and Red Clover, and these appear to be in transition to MG5 *Cynosurus cristatus – Centaurea nigra* grassland, especially in the narrow fringe of grassland adjoining Middle Road Reen. Quadrats 5 and 7 are taken from some of these more diverse swards. A few coarser, weedy patches, characterised by concentrations of Nettles and Thistles, are developing towards NVC community MG1 *Arrhenatherum elatius* grassland, especially at the field margins. Quadrats 3 and 21 are taken from coarser patches which are progressing towards this vegetation type.

The wetter parts of the fields are dominated by rushes and Creeping Bent. Hard Rush is the most frequent rush, but Soft Rush is locally dominant in some large patches and Sharp-flowered Rush is very locally dominant in one small part of the northern field, represented by Quadrat 19. The damp grassland with rushes mostly conforms to the NVC MG10 *Holcus lanatus – Juncus effusus* rush pasture community, with much of it readily assigned to the MG10b *Juncus inflexus* sub-community (such as Quadrats 12 and 14). The edges of the damp areas show a gradual transition with the adjacent MG7 community, while the wettest parts appear to be closer to M23 *Juncus effusus / acutiflorus – Galium palustre* rush pasture (e.g. Quadrats 17, 18 and 19). Tubular Water-dropwort is locally common in the wettest parts of the rushy ground in the north-eastern fields. Some damp areas, such as field-grips, do not support rushes, but are dominated by Creeping Bent and Floating Sweet-grass, with frequent Marsh Foxtail. This vegetation is best assigned to the NVC MG13 *Agrostis stolonifera – Alopecurus geniculatus* grassland, with S22 *Glyceria fluitans* water-margin vegetation in the wettest areas. Quadrats 9, 10 and 11 are good examples of this community.

Mistletoe is locally common on Hybrid Black Poplars in some of the field boundaries. Another incidental observation was the presence of Arrowhead in the surrounding reens.

Figure 48. MG7 at Green Moor fields (Mistletoe visible in tall Poplars in background)

Table 33. Green Moor fields quadrat data for drier grassland areas

Quadrat	1	2	3	4	5	7	8	15	20	21	22	Freq.
Alopecurus pratensis	4	4	7	3	4	5	6	5	5	5	2	V
Holcus lanatus	8	4	5	5	6	4	7	8	8			V
Hordeum secalinum	6	4	4	8	5	1	5	4	6		4	V
Lolium perenne	2	4	4	2	4	1	5	4	2		5	V
Poa trivialis	2	4	6	4	4	3	4	6	2	7	4	V
Ranunculus acris	4	3	2	2	4	2	2	4	2	1	1	V
Ranunculus repens	4	A	5	1	2	6	7	2	7		1	V
Carex hirta	2			1	3	2		1	2	A	2	IV
Dactylis glomerata	2	4	5	A		1		4		5	2	IV
Agrostis stolonifera		7		4			4	4	2			III
Geranium dissectum			4			2			1	1	1	III
Rumex acetosa				1	3	2		1	2			III
Anthoxanthum odoratum	4			3	4	4			A			II
Cirsium arvense		2	1					A		2		II
Elytrigia repens		4	4					2		2		II
Trifolium repens					3	2					4	II
Agrostis capillaris	3				4							I
Arrhenatherum elatius			4							8		I
Bellis perennis											1	I
Bromus hordeaceus						4					1	I
Bromus racemosus									7			I
Cardamine pratensis						1						I
Centaurea nigra					2	1						I
Cerastium fontanum			A		2							I
Cirsium palustre						1						I
Cynosurus cristatus					2						6	I
Festuca rubra					4	4						I
Galium aparine			4									I
Juncus effusus				4		6		A				I
Juncus inflexus						2			2			I
Lathyrus pratensis						3				3		I
Lotus corniculatus											2	I
Medicago lupulina											1	I
Picris echioides											1	I
Rosa canina											1	I
Rubus fruticosus											1	I
Rumex conglomeratus								A	A		1	I
Rumex crispus		1		A		2			A	A		I
Senecio erucifolius											1	I
Taraxacum sp.			1								1	I
Trifolium pratense						2					3	I
Urtica dioica			7							2		I
Vicia cracca						1					A	I
Vicia sativa									A		1	I
Cirsium vulgare										A	A	
Eupatorium cannabinum											A	
Sonchus oleraceus											A	
Total species	**11**	**11**	**15**	**12**	**16**	**23**	**8**	**12**	**13**	**10**	**22**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**40**	**50**	**100**	**50**	**40**	**110**	**40**	**30**	**100**	**80**	**40**	

Table 34. Green Moor fields quadrat data for wetter grassland areas

Quadrat	6	9	10	11	12	13	14	16	17	18	19	23	Freq.
Juncus inflexus		1	A	2	10	7	10	7	4	6	1	7	V
Agrostis stolonifera	8	8	4	6		7	A	1			2	4	IV
Carex hirta	2	2	4	5	2					2	2	2	IV
Holcus lanatus	5	A	A	1	1	1	2	A	A	4	8	4	IV
Poa trivialis	3	5	6	7					1	4	5	5	IV
Glyceria fluitans			4	1		6		4	6	2			III
Ranunculus repens	A	4	2	6	1	1	A		1			3	III
Rumex conglomeratus	A				1	1	2	2	A	1	1	A	III
Alopecurus geniculatus		3	1							1	1		II
Alopecurus pratensis	9		1							5	6		II
Bromus racemosus										2	5	2	II
Carex otrubae						2	A	2	A	2			II
Elytrigia repens					2		2	2		1			II
Hordeum secalinum	3										6	2	II
Juncus effusus	9							6	5				II
Lolium perenne	A		5	2						1	1		II
Potentilla anserina					3	A	1		1		2		II
Ranunculus acris		A	A		A					1	2	2	II
Rumex crispus				A	1	1	1	A		3			II
Bromus hordeaceus							1						I
Calliergonella cuspidata								2	2				I
Cardamine pratensis							1	1					I
Centaurea nigra											1		I
Cirsium palustre											1		I
Cynosurus cristatus												5	1
Eleocharis palustris									5		A		I
Epilobium hirsutum					1								I
Galium palustre							2			A			I
Juncus acutiflorus											9		I
Juncus articulatus									2				I
Lathyrus pratensis												1	I
Lemna minor							A	3	2				I
Lycopus europaeus									2				I
Myosotis laxa								2		A			I
Persicaria amphibia	4												I
Phalaris arundinacea	1												I
Plantago major											1		I
Pulicaria dysenterica								2	A		2		I
Rumex acetosa	3				1								I
Solanum dulcamara					2		A	1	A				I
Trifolium repens											2	2	I
Carex riparia												A	
Cerastium fontanum												A	
Cirsium arvense					A								
Epilobium sp.							A						
Eupatorium cannabinum					A								
Oenanthe fistulosa									A				
Rumex sanguineus										A			
Urtica dioica	A												
Total species	**10**	**6**	**8**	**8**	**11**	**8**	**9**	**13**	**11**	**14**	**19**	**12**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**120**	**20**	**25**	**20**	**120**	**60**	**120**	**100**	**110**	**80**	**100**	**60**	

Additional species not present in quadrats from the Green Moor fields

Epilobium parviflorum
Heracleum sphondylium
Juncus bufonius
Plantago lanceolata
Polygonum aviculare
Populus x canadensis
Prunella vulgaris
Prunus spinosa
Rumex obtusifolius
Salix alba
Salix cinerea
Salix fragilis
Sambucus nigra
Tripleurospermum inodorum
Viscum album

Figure 49. M23 rush pasture at Green Moor fields

Figure 50. MG6 and MG10 vegetation beside Middle Road Reen

Site 13. Greenmoor Lane

These two fields support good examples of meadows which have received only low levels of agricultural improvement.

The western field appears to have been ungrazed for several seasons, and is dominated by tall grasses and herbs, particularly tussocky Purple Moor-grass, and local beds of Greater Pond-sedge. Other common species include Meadowsweet, Flag Iris, Reed Canary-grass, Greater Bird's-foot Trefoil, Angelica, Hemp Agrimony and Amphibious Bistort. Scattered scrub species, especially near the margins, include Grey Willow, Bramble and Hawthorn and Dog Rose. Despite the apparent lack of recent management the field supports a relatively diverse flora, including locally significant species Meadow Rue, Brown Sedge, Yellow Loosestrife and Purple Loosestrife. A Grass Snake was observed in the tussocky grassland in the north-east of this field. This field has a very patchy flora, but the main elements of the vegetation broadly conform to M27 *Filipendula ulmaria – Angelica sylvestris* mire, M24 *Cirsium dissectum – Molinia caerulea* fen-meadow, and S6 *Carex riparia* swamp

The small part of the field north of Stutwall Reen represented by Quadrat 1 supports taller, denser grasses and herbs, with a higher proportion of ruderal plants and no locally uncommon species. This generally conforms to MG1 *Arrhenatherum elatius* grassland, although it still includes elements of former wetland vegetation. In the north-east corner of this strip the vegetation comprises a patch of low-diversity scrub community of Grey Willow, Crack Willow, Nettle and Bramble, which can be broadly classified as W1 *Salix cinerea – Galium palustre* woodland.

Table 35. Quadrat data for Greenmoor Lane western field

Quadrat	1	2	3	4	5	6	7	8	9	Frequency
Angelica sylvestris		4	4			2	2	2	1	III
Lotus pedunculatus		4	4	4	2	4			4	III
Molinia caerulea		4	4	A	4	10	6	5		III
Urtica dioica	2		A	1	A	2	4	4	2	III
Persicaria amphibia	2		2	2	1		2			III
Filipendula ulmaria	2						2	4	2	II
Galium aparine	A		2		A	2		2	2	II
Juncus acutiflorus		8					2	6	2	II
Juncus effusus		1	A		2		1	6		II
Carex riparia			8	9	5		A			II
Lythrum salicaria		2	A		2	2			A	II
Solanum dulcamara		A	2	4				3		II
Ajuga reptans							2		1	I
Cirsium palustre						1	2	A	A	I
Galeopsis sp.		1				1				I
Poa trivialis	4								4	I
Rumex acetosa								2	2	I
Alopecurus pratensis									2	I
Anisantha sterilis	2									I
Arrhenatherum elatius	2									I
Calystegia sepium									1	I
Cirsium arvense	2									I
Dactylis glomerata	9									I
Epilobium hirsutum	2									I
Festuca rubra									4	I
Galium palustre									1	I
Glyceria maxima							6			I
Hypericum tetrapterum							2			I
Lychnis flos-cuculi		2						A		I
Persicaria hydropiper								2		I
Pulicaria dysenterica									2	I
Thalictrum flavum					4					I

Oenanthe crocata					A					
Festuca arundinacea	A									
Heracleum sphondylium	A	A							A	
Iris pseudacorus	A				A		A			
Phalaris arundinacea	A							A		
Vicia sativa	A									
Cardamine pratensis								A		
Carex hirta						A				
Crataegus monogyna (s)						A				
Holcus lanatus									A	
Lathyrus pratensis					A					
Lysimachia vulgaris					A					
Rosa canina						A				
Salix cinerea						A			A	
Vicia cracca						A				
Total species	**9**	**8**	**7**	**5**	**7**	**8**	**11**	**10**	**14**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**90**	**120**	**60**	**65**	**70**	**60**	**70**	**50**	**45**	

Additional species not present in quadrats from the Greenmoor Lane western field

Achillea millefolium
Brassica rapa
Carex disticha
Stachys sylvatica
Valeriana officinalis
Anthriscus sylvestris
Artemisia vulgaris
Centaurea nigra
Chamerion angustifolium
Dryopteris dilatata
Equisetum fluviatile
Eupatorium cannabinum
Geranium dissectum
Hedera helix
Myosotis laxa
Picris echioides
Ranunculus acris
Rubus fruticosus
Rumex conglomeratus
Rumex crispus
Rumex hydrolapathum
Scutellaria galericulata
Sonchus arvensis
Vicia hirsuta

Figure 51. MG24 /MG27 fen meadow mosaic at Greenmoor Lane western field

Figure 52. Meadow Rue at Greenmoor Lane western field

The eastern field has been managed by more recent grazing, although the grazing had not commenced this season. The dominant plants within the field include Sharp-flowered Rush, Meadow Buttercup, Sweet Vernal-grass, Rough Meadow-grass, Creeping Buttercup. Locally significant plants include Meadow Thistle, Brown Sedge and Carnation Sedge, which all occur in good numbers, scattered throughout the field. A series of low-lying field-grips is present; this was easily visible in May by the relatively low density of buttercup flowers when compared with the other parts of the sward. The field-grips support a rush-dominated wetland flora, and this merges gradually into the adjacent drier grassland. The vegetation can be broadly classified as transitional between MG10 *Holcus lanatus – Juncus effusus* rush pasture and M23 *Juncus effusus/ acutiflorus – Galium palustre* rush pasture. The widespread presence of Meadow Thistle and Carnation sedge in some parts adds strong elements of M24 *Molinia caerulea – Cirsium dissectum* fen-meadow, but with the notable absence of Purple Moor-grass. The smaller portion of the field to the north of Stutwall Reen supports a broadly similar mix of habitats, but it appears to have been subject to greater levels of agricultural improvement and disturbance and does not contain the same density of uncommon species.

Figure 53. MG10/ M23 rush pasture at Greenmoor Lane eastern field

Figure 54. Meadow Thistle at Greenmoor Lane eastern field

Table 36. Quadrat data for Greenmoor Lane eastern field

Quadrat	10	11	12	13	14	15	16	17	18	19	Freq.
Holcus lanatus	7	5	9	4	4	4	1	4	4	5	V
Agrostis stolonifera	2	5	4	3			2	A	2	2	IV
Anthoxanthum odoratum		A		5	8	8	3	6	4	6	IV
Juncus acutiflorus		5		8	2	6	9	8	8	7	IV
Poa trivialis	4	2	5	4			4		2	2	IV
Ranunculus acris		2		2	4	4	1	2	2	6	IV
Ranunculus flammula		4		3	2	2	4	2	1	2	IV
Rumex acetosa	2	A	1	2	2	A	A	1	2	4	IV
Alopecurus pratensis	7	5	2	4			2				III
Cardamine pratensis				2	1	1	2	A	1	3	III
Carex hirta		2	2	2	2				A	1	III
Carex panicea					6	7	4	5	4	2	III
Cynosurus cristatus				2	1	1	2		1	2	III
Ranunculus repens	7	8	9	4			A	1			III
Alopecurus geniculatus		2	1	A			1				II
Carex demissa								2		2	II
Carex nigra							2		A	1	II
Carex ovalis		4					1	A		2	II
Cerastium fontanum	A		1			1			A	A	II
Festuca rubra						4		1			II
Galium palustre		2			2		A	A	3	4	II
Glyceria fluitans		5		4			4			1	II
Juncus effusus	1	4	2	A							II
Lotus corniculatus					6	4					II
Potentilla anserina				1		1					II
Rumex obtusifolius	2		1								II
Senecio aquaticus				A	3			2	1	A	II
Trifolium repens			1			1				2	II
Brachythecium rutabulum										1	I
Calliergonella cuspidata					2						I
Carex disticha							4	A	A		I
Carex riparia									8		I
Centaurea nigra					4						I
Cirsium arvense	2										I
Cirsium dissectum						4					I
Cirsium palustre		A			A					1	I
Luzula campestris								2			I
Lychnis flos-cuculi										4	I

Lycopus europaeus	2										I
Lythrum salicaria										1	I
Persicaria amphibia	A			1							I
Prunella vulgaris	1						A			A	I
Rumex conglomeratus		1									I
Taraxacum sp.					2	A					I
Cerastium glomeratum				A							
Epilobium montanum								A			
Glyceria maxima	A										
Lolium perenne	A										
Lotus pedunculatus		A									
Rubus fruticosus		A									
Urtica dioica		A									
Total species	**11**	**15**	**12**	**16**	**16**	**14**	**16**	**12**	**14**	**22**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**60**	**50**	**40**	**40**	**50**	**30**	**40**	**40**	**60**	**50**	

Additional species not present in quadrats from the Greenmoor Lane eastern field

Caltha palustris
Calystegia sepium
Coronopus didymus
Eleocharis palustris
Epilobium hirsutum
Filipendula ulmaria
Galium aparine
Hydrocotyle vulgaris
Iris pseudacorus
Juncus bufonius
Lathyrus pratensis
Matricaria discoidea
Myosotis laxa
Plantago major
Polygonum aviculare
Trifolium dubium
Trifolium pratense
Veronica persica

Site 14. Magor Road

The Magor Road study area is a diffuse collection of habitats which are broken down into separate blocks for reporting purposes.

The largest of the fields (ST419874) had been ploughed and planted with Maize since being selected for survey, so the observations were limited to collating a species-list around the field perimeter. A few Agrimony plants may have been remnants of the former grassland flora, but most of the species seen are typical hedge and verge species, and a few garden plants from adjacent houses, and it was not possible to determine what NVC community would have been present from these.

Species observed around field perimeter of large field south of Magor Road (ST419874)

Acer campestre
Agrimonia eupatoria
Agrostis capillaris
Agrostis gigantea
Agrostis stolonifera
Alopecurus pratensis
Anagallis arvensis
Anthriscus sylvestris
Arrhenatherum elatius
Brachypodium sylvaticum
Bromus hordeaceus
Carex hirta
Centaurea nigra
Cerastium fontanum
Cerastium tomentosum
Chamerion angustifolium
Chenopodium album
Cirsium arvense
Clematis vitalba
Convolvulus arvensis
Cornus sanguinea
Cotoneaster sp.
Crataegus monogyna
Crepis capillaris
Dactylis glomerata
Elytrigia repens
Epilobium hirsutum
Euphorbia helioscopia
Festuca rubra
Fumaria officinalis
Galium aparine
Galium mollugo
Geranium dissectum
Geum urbanum
Glechoma hederacea
Hedera helix
Heracleum sphondylium
Holcus lanatus
Ilex aquifolium
Lathyrus pratensis

Lolium perenne
Lysimachia punctata
Persicaria maculosa
Phleum pratense
Plantago lanceolata
Poa trivialis
Potentilla reptans
Prunella vulgaris
Prunus spinosa
Pteridium aquilinum
Quercus robur
Ranunculus acris
Ranunculus repens
Ribes sanguineus
Rubus fruticosus
Rumex obtusifolius
Rumex sanguineus
Senecio jacobaea
Silene dioica
Solanum dulcamara
Sonchus asper
Trifolium repens
Tripleurospermum inodorum
Trisetum flavescens
Urtica dioica
Veronica persica

Figure 55. Maize Field at Magor Road

The small ungrazed field (ST41808749) to the west of the Maize field appears to be a former horse paddock which is reverting to unmanaged coarse grassland. It is dominated by Yorkshire Fog, Rough Meadow-grass and White Clover, with Sorrel, Ribwort Plantain and Common Knapweed scattered throughout the sward. It appears that grazing has only recently been withdrawn from the field, and the vegetation is in a state of early transition from a MG6 *Lolium perenne – Cynosurus cristatus* grassland (which is still represented reasonably well by Quadrat 1) towards MG1 *Arrhenatherum elatius* grassland.

Incidental fauna observation in this small field included Meadow Brown, Ringlet and Small Skipper butterflies, Cinnabar moths, Dark Bush-crickets and many grasshoppers.

Table 37. Quadrat data for small ungrazed field south of Magor Road (ST41808749)

Quadrat	1	2	3	4	5	Frequency
Agrostis capillaris	2	6	8	6	4	V
Centaurea nigra	4	4	5	5	4	V
Holcus lanatus	2	8	8	9	9	V
Poa trivialis	4	4	4	2	2	V
Ranunculus repens	9	6	2	2	2	V
Anthoxanthum odoratum	4	7	5	4	3	V
Stellaria graminea	1	3	2	2	2	V
Plantago lanceolata	4	2	4	2		IV
Ranunculus acris	2	2	3	2	A	IV
Trifolium repens	7	4	5	2		IV
Rumex acetosa		1	2	3	A	III
Alopecurus pratensis		1			2	II
Arrhenatherum elatius				1		I
Bromus hordeaceus	2					I
Cerastium fontanum			1			I
Cirsium arvense		1				I
Festuca rubra	1					I
Geranium dissectum	1				A	I
Lathyrus pratensis		2				I
Lolium perenne	7					I
Rumex obtusifolius	A			A	1	I
Senecio jacobaea	A		2			I
Cynosurus cristatus	2					I
Vicia sativa	2					I
Crepis capillaris			A			
Heracleum sphondylium		A			A	
Total species	**16**	**14**	**13**	**12**	**9**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**25**	**90**	**50**	**65**	**70**	

Additional species not present in quadrats in the small ungrazed field at Magor Road

Agrostis stolonifera
Anagallis arvensis
Juncus bufonius
Veronica serpyllifolia

Figure 56. Small ungrazed field at Magor Road

The woodland at Magor Road is formed around a disused quarry, and includes a mix of trees and scrub which appears to have arisen by natural succession, and garden trees and shrubs which appear to have been planted. The canopy has a variable mix of species, with the most prominent ones including Ash, Sycamore, Lime and Hornbeam, with Elm, Hawthorn and Cherry Laurel dominant in some of the more scrubby areas. There is apparently no management by grazing or cutting, and much of the woodland has a dense shrub-layer, including Bramble, Snowberry, Elm and Wild Privet. The topography is locally very steep, reflecting the former quarrying, but there are no significant rock outcrops or unshaded areas. Some parts of the woodland have been used for small-scale tipping, mostly of soil and branches. Badger activity is evident through much of the woodland.

The predominance and variety of planted trees in the canopy makes it difficult to place the woodland neatly within the NVC. The ground flora mostly conforms to W21 *Crataegus monogyna – Hedera helix* scrub, with a strong tendency towards the W21a *Hedera helix-Urtica dioica* sub-community, although the areas of ornamental shrubs do not fit well with any of the published communities. A few areas have elements more typical of older woodland. They appear closest to the W8 *Fraxinus excelsior – Acer campestre – Mercurialis perennis* woodland, but are a relatively poor match with the published community.

Table 38. Quadrat data for woodland at Magor Road

Quadrat	6	7	8	9	Frequency
Hedera helix	10	10	5	10	V
Crataegus monogyna	5	10		1	IV
Arum maculatum	1	1			III
Circaea lutetiana			9	4	III
Phyllitis scolopendrium	4		2		III
Rubus fruticosus	2			4	III
Urtica dioica	1	A	A	5	III
Acer pseudoplatanus			A	10	II
Carex sylvatica				1	II
Cornus sanguinea	A			2	II
Fraxinus excelsior		1			II
Kindbergia praelonga	4			A	II
Polystichum setiferum			5		II
Primula vulgaris				1	II
Prunus cf domestica	5				II
Prunus spinosa		1			II
Ribes sanguineus				2	II
Sambucus nigra		A	6		II
Tamus communis	1				II
Thamnobryum alopecurum			6		II
Ulmus minor	1				II
Viola hirta				1	II
Carpinus betulus				A	
Fagus sylvatica				A	
Geranium robertianum				A	
Geum urbanum				A	
Rubus idaeus				A	
Symphoricarpos albus				A	
Total species	**10**	**5**	**6**	**11**	
Cover (%)	**100**	**100**	**100**	**100**	
Average height (m)	**10m**	**10m**	**15m**	**20m**	

Additional species not present in quadrats in the woodland at Magor Road

Acer campestre
Aesculus hippocastanum
Alliaria petiolata
Anthriscus sylvestris
Arrhenatherum elatius
Brachypodium sylvaticum
Brachythecium rutabulum
Clematis vitalba
Corylus avellana (s)
Fissidens taxifolius
Galium aparine
Galium mollugo
Geranium lucens
Ilex aquifolium
Lapsana communis
Laurus nobilis
Leucanthemum vulgare
Petasites fragrans
Poa trivialis
Prunus avium
Prunus laurocerasus
Quercus robur
Ribes uva-crispa
Rosa canina
Rumex sanguineus
Taxus baccata
Tilia x europaea

Figure 57. Woodland at Magor Road

The northern ungrazed field at Magor Road does not appear to have been grazed or cut for several years, and the sward has become dominated by coarse grasses and tall herbs (particularly Nettle and Amphibious Bistort). A few very localised patches support a slightly more diverse flora, perhaps representing a remnant of the former plant community when the field was grazed. Quadrat 11 was taken from one of these patches, associated with an animal path. Locally prominent Nettle, Horse Radish and Black Bent might perhaps indicate former cultivation.

The vegetation does not appear to be a good match for the published NVC communities but appears to be in transition from a MG6 *Lolium perenne – Cynosurus cristatus* grassland (represented by Quadrat 11) or MG7b *Poa trivialis* grassland to MG1 *Arrhenatherum elatius* grassland. The dense Nettle patches can be assigned to the OV24 *Urtica dioica – Galium aparine* community.

Incidental fauna observations in this ungrazed field included Small Tortoiseshell, Comma, Meadow Brown butterflies, and 5-spot Burnet Moth. Another feature of interest beyond the main sward was the presence of two old Wych Elms in the eastern hedge.

Table 39. Quadrat data for northern ungrazed field at Magor Road (ST421877)

Quadrat	10	11	12	13	14	Frequency
Species						
Holcus lanatus	9	7	2	8	7	V
Poa trivialis	5	6	5	5	6	V
Ranunculus repens	4	2	4	2	8	V
Persicaria amphibia	9		9	5	6	IV
Trifolium repens	4	4		2	7	IV
Agrostis capillaris	2	5		6		III
Cerastium fontanum		1		1	2	III
Lolium perenne	6	4		6	A	III
Ranunculus acris	A	2		2	1	III
Alopecurus pratensis		2	2			II
Dactylis glomerata	2		2		A	II
Heracleum sphondylium	1		2			II
Plantago lanceolata		4		7		II
Potentilla anserina	5	4				II
Rumex acetosa		3		1	A	II
Stellaria graminea		2		2	A	II
Agrostis gigantea	2					I
Anthoxanthum odoratum		5				I
Armoracia rusticana					4	I
Cirsium arvense		A		1	A	I
Convolvulus arvensis	2					I
Cynosurus cristatus		2				I
Elytrigia repens			4			I
Galium aparine			2			I
Lathyrus pratensis			4			I
Phleum pratense	1					I
Prunella vulgaris		2				I
Rumex obtusifolius	2					I
Rumex sanguineus			2	A		I
Taraxacum sp.				1		I
Trifolium pratense		5				I
Urtica dioica			6			I
Centaurea nigra		A				
Geranium dissectum					A	
Total species	**14**	**17**	**12**	**14**	**8**	
Cover (%)	**100**	**100**	**100**	**100**	**100**	
Average sward height (cm)	**70**	**60**	**120**	**50**	**60**	

Additional species not present in quadrats in the ungrazed northern field at Magor Road

Achillea millefolium
Calystegia silvatica
Cirsium vulgare
Plantago major
Polygonum aviculare
Stellaria media
Veronica persica

Figure 58. Ungrazed northern field at Magor Road

4. Evaluation

The nature conservation value of the various plant communities was assessed using a geographical frame of reference, based on the 'Guidelines for Ecological Impact Assessment' (IEEM, 2006). This is summarised in Table 40. Many of the sites are within the Gwent Levels Site of Special Scientific Interest (SSSI) and should therefore be considered important in a national context if taken as a whole. However, the principal SSSI interest is associated with the ditches and many of the terrestrial habitats could be considered to be of lower nature conservation value if examined separately.

Table 40: Evaluation of habitats

Level of Value	Habitats
International	Areas designated as Special Areas of Conservation (SAC), Special Protection Areas (SPA) or Ramsar sites in response to European Directives and International Conventions.
National	Areas designated as Sites of Special Scientific Interest (SSSI), National Nature Reserve (NNR), or equivalent for key areas, habitats and plant communities.
Regional	Areas of habitat of suitable size and quality to be considered for notification as SSSI (based on the Guidelines for the Selection of Biological SSSIs). Extensive areas of UK Biodiversity Action Plan (UK BAP) Priority Habitats. Extensive areas designated for Species and Natural Environment & Rural Communities Act 2006: Section 42 Habitats of Principle Importance for the Conservation of Biological Diversity (S42 Priority Habitat).
County	Areas of UK BAP Priority habitats and extensive areas of Local Biodiversity Action Plan (LBAP) habitats; areas of Ancient Woodland. Local Wildlife Sites Guidance.
District/Local	Areas of LBAP habitat. Important hedgerows classified under The Hedgerow Regulations 1997. Any non-designated habitat assemblage of moderate biodiversity value.

Overview of the main habitat types within the selected sites

Grassland habitats

The majority of the grassland included within the study area is managed as grazed pasture, some of which is left ungrazed during the spring to provide a hay crop. This is mostly classified as MG6 and MG7 grassland, and it mostly has a fairly low botanical diversity. A few of the species in these grasslands are considered locally significant, such as Meadow Brome and Meadow Barley. Sometimes the interest is limited to a few patches within fields, for example the orchids and Corky-fruited Water-dropwort at Broad Street Common, or Tubular Water-dropwort in the field grips at New Dairy Farm.

The most diverse grasslands within the surveyed sites tend to be those which are wetter and have been subject to lower levels of agricultural improvement. Within the survey areas, the main damp grassland types are MG10 and MG23 rush pasture, which often form a transition with the adjacent grasslands. The most diverse examples of damp grassland are at Greenmoor Lane, where the grasslands form a transition to M27 mire and M24 fen-meadow, with notable species including Meadow Thistle, Meadow Rue, Purple Moor-grass and Brown Sedge. These fields would qualify as the UK BAP/ S42 Priority Habitat Lowland Meadow.

Several grasslands appear to have received little or no recent management. These mainly belong to the MG1 community, being dominated by one or two species of coarse grass and tall ruderal herbs. These are largely of limited value for their flora, but a few sites have notable species persisting from when they were grazed, for example Pepper Saxifrage in the overgrown fields beside the cycleway at Solutia.

The pasture sites within the Gwent Levels would qualify as the S42 and UK BAP Priority Habitat 'Coastal and floodplain grazing marsh' if considered together with the network of ditches. The grassland is of value in this context, even though its botanical diversity is limited, because it provides habitat for other UK BAP/ S42 priority species including Lapwing.

MG5 grassland is only present in a few of the selected sites; the largest of these is at Pound Hill. The Wildlife Sites Guidelines indicate that all examples of MG5 grassland should be considered for selection. The grassland at Pound Hill would qualify as the UK BAP/ S42 Priority Habitat Lowland Meadow. It is feasible that this site may also be important for its grassland fungi.

Brownfield sites

Vegetation regenerating on brownfield land at several sites typically comprises a mosaic of grassland and scrub, but are difficult to place precisely within the published NVC communities. The sparse vegetation on gravelly soils on the selected brownfield sites generally supports a diverse mix of annuals, usually grading into MG1 grassland or scrub, and often including notable species. Each of the brownfield sites surveyed supports locally notable annual species, for example Pencarn supports a distinctive community with Common Cudweed, Small Cudweed and Wall Bedstraw.

Brownfield land is often formed on man-modified substrata, such as concrete rubble at Solutia and steelworks slag at Green Moor, and this can sometimes create conditions that favour unusual plant communities and locally notable species. The most striking example of this within the surveyed sites is at Green Moor, where the low-lying damp grassland bordered by slag supports hundreds of Marsh Orchid and Pepper Saxifrage plants and also the locally notable Narrow-leaved Bird's-foot Trefoil, and Great Lettuce is locally abundant on several of the track margins.

The diverse brownfield habitats included in the current survey would all qualify as the UK BAP Priority Habitat 'Open mosaic habitats on previously developed land'.

Wetlands

The Gwent Levels SSSI is primarily designated for its extensive and diverse network of reens and ditches, and although the reens were not covered within this study, several smaller ditches, field grips and ponds were recorded. A few notable plants were noted incidentally in reens adjacent to the current study areas, including Fine-leaved Water-dropwort at Solutia and Arrowhead at Pencarn and Green Moor. The ditches constitute an important element of the UK BAP/ S42 priority habitat 'Coastal and floodplain grazing marsh'.

The aquatic plant communities of the ponds and ditches contribute to the overall value of the SSSI, and in some cases they support similar vegetation, for example, the ditches at Pencarn include small sections with Frog-bit and Arrowhead, and some with pondweed and duckweed communities, including Greater Duckweed. One section of ditch at Pencarn supports a patch of Water Whorl-grass S23 community. However, these are the exception, and most of the ponds and ditches in the study area are dominated by relatively species-poor Common Reed (S4 reedbed) or Bulrush (S12 swamp), and field grips by species-poor MG13 grassland and S22 water-margin vegetation. Several wetlands are becoming heavily shaded by dense Grey Willow W1 scrub, most notably at Fox Covert. All examples of Reedbed and other tall herb swamp would qualify as S42 and UK BAP Priority Habitat.

Saltmarsh

The study included saltmarsh beside the Ebbw and the Usk. Both support important stands of typical saltmarsh vegetation which includes locally uncommon species, and would qualify as UK BAP and S42 Priority Habitat. Both sites are fringed by SM13 saltmarsh vegetation in their lower parts, but the grazed upper parts of the Ebbw supports short SM16 saltmarsh vegetation, including the nationally scarce Bulbous Foxtail, while the ungrazed upper parts of the Usk saltmarsh site are dominated by much taller Sea Couch SM24 vegetation.

Woodland and scrub

The study only included a few areas of woodland, and all them have been significantly modified by human activity such as construction, tipping and planting of non-native species. Only the woodland at Berryhill Farm retains large mature Oak trees and significant patches with ancient woodland indicator species, resembling W8 woodland, but even here these features are in a relatively poor condition, with the ground flora having to compete with non-native invasive species, tipping and dense Nettles. The small woodland at Magor Road has a few elements of W8 woodland but it has been substantially modified and generally has more in common with W21 scrub. The roadside bank at Pound Hill was outside the current study area, but this appeared to have a diverse woodland ground flora worthy of further investigation.

Several small areas of plantation are present in the study areas, particularly at Berryhill Farm and Solutia, but these generally have little value for their ground flora. Similarly, the scrub vegetation at the selected sites is relatively species poor, mostly belonging to the W21 and W22 scrub communities, and species-poor W1 Grey Willow woodland in wetter areas, with the most extensive area of this at Fox Covert.

Of the woodlands included in the current study, only a small part of Berryhill Farm Woodland could be considered to constitute UK BAP / Section 42 Priority Habitat.

Occurrence of notable species within the selected sites

The presence of national or locally rare species is an important consideration in evaluating plant communities. The following table summarises the occurrence of notable species within the selected study areas, using list of Rare, Scarce and Declining species from the Guidelines for the Selection of Wildlife Sites in South Wales. Sites supporting one or more of the guidelines' Primary Species or five or more Contributory Species can be considered significant in a county context.

The Wildlife Sites criteria also states that sites should be considered for selection if they support species listed as Nationally Scarce, Nationally Rare, Vulnerable, Endangered or Critically Endangered in the Red Data Book (Cheffing, C.M. & Farrell L. (Eds.) 2005) (RDB species) or are included on the List of Species and Habitats of Principle Importance for the Conservation of Biological Diversity (S42). The Welsh Red Data Book for Vascular Plants (Dines, 2008) has re-evaluated the status of certain species in a Welsh Context. The species to which these apply are indicated in Table 41 below.

Table 41: Summary of Primary and Contributory Species observations

Species / RDB status	Pound Hill	Berryhill Farm woodland	Great Pencarn, Duffryn	Fox Covert	Lighthouse Road	New Dairy Farm	Ebbw seawall / saltmarsh	Usk saltmarsh	Solutia	Broad Street Common	Green Moor brownfield	Green Moor fields	Greenmoor Lane	Magor Road
PRIMARY SPECIES														
Alopecurus bulbosus (LC)							+							
Catabrosa aquatica (LC)			+											
Crepis biennis (LC)			+											
Filago vulgaris (NT/ **VU***)			+						+					
Galium parisiense (NS/VU)			+											
Hydrocharis morsus-ranae (VU)			+											
Lactuca virosa (LC)			+								+			
Lepidium latifolium (NS/LC)								+						
Lotus glaber (LC/ **NT***)											+			
Oenanthe aquatica (LC)									(+)					
Oenanthe fistulosa (VU/ S42)						+					+	+		
Oenanthe pimpinelloides (LC/**CR***)										+				
Sagittaria sagittifolia (LC/ **VU***)			+									(+)		
Thalictrum flavum (LC)													+	
CONTRIBUTORY SPECIES														
Apium graveolens (LC)							+							
Blackstonia perfoliata (LC)			+						+					
Bromus racemosus (LC)					+				+	+		+		
Carex disticha (LC)									+		+		+	
Carex strigosa (LC)		+												
Filago minima (LC)			+											
Hordeum secalinum (LC)									+	+	+	+		
Lathyrus nissolia (LC)			+						+	+				
Lathyrus sylvestris (LC)			+						+	+	+			
Lemna trisulca (LC)			+	+										
Medicago arabica (LC)										+				
Ophrys apifera (LC)			+											
Potamogeton pusillus (LC)			+											
Rumex hydrolapathum (LC)													+	
Silaum silaus (LC)									+		+			
Sison amomum (LC)			+					+		+				
Spergularia media (LC)							+							
Spirodela polyrhiza (LC)			+											
Ulmus minor (LC)														+
Valerianella carinata (LC)									+					
Viscum album (LC)											+	+		

Status abbreviations: Nationally Scarce (NS), Nationally Rare (NR), Vulnerable (VU), Endangered (EN) or Critically Endangered (CR) in the Red Data Book. Where different, from the GB RDB, the status in the Welsh RDB is shown in Bold and marked with an asterisk.

(NB The records of Arrowhead at Green Moor Fields and Fine-leaved Water-dropwort at Solutia were incidental observations from the adjacent reens rather than in the formal study area for this assessment, so these have not been included in the evaluation of the terrestrial habitats at these sites).

In this case several sites meet these notable species criteria for county significance, as follows:

- Great Pencarn (7 Primary, 9 Contributory species)
- New Dairy Farm (1 Primary species)
- Ebbw Saltmarsh (1 Primary, 2 Contributory species)
- Usk Saltmarsh (1 Primary, 1 Contributory species)
- Solutia (1 Primary, 8 Contributory species)
- Broad Street Common (1 Primary, 6 Contributory species)
- Green Moor Brownfield land (3 Primary, 5 Contributory species)
- Green Moor Fields (1 Primary, 3 Contributory species)
- Greenmoor Lane (1 Primary, 2 Contributory species).

Summary evaluation

Taking account of the presence of Priority Habitat and notable species, an overall evaluation of the vegetation at each site is presented in Table 42.

Table 42: Summary of Primary and Contributory Species observations

Site	Level of value	Reason
Pound Hill	District	Priority grassland habitat, but with only moderate diversity (may be County value if important for fungi).
Berryhill Farm woodland	District	Ancient woodland. Some parts could be considered County value, but most of the habitat is in very poor condition.
Great Pencarn, Duffryn	County	Priority habitat. Good numbers of notable species, particularly large population of Common and Small Cudweed.
Fox Covert	Local	Moderate diversity in shaded wet scrub/ swamp community.
Lighthouse Road	Local	Hay meadow/ pasture with high proportion of Meadow Brome.
New Dairy Farm	District	Flower-rich hay meadow/ pasture, with 2 small patches of Tubular Water-dropwort.
Ebbw seawall and saltmarsh	County	Priority saltmarsh habitat, and abundant Bulbous Foxtail.
Usk saltmarsh	County	Priority saltmarsh habitat, with occasional Dittander.
Solutia	County	Priority habitat and good numbers of notable species. (However, there is variation within the site, with some of the grazed pasture and scrub only of local value).
Broad Street Common	County	Priority habitat and good numbers of notable species, particularly the strong population of Corky-fruited Water-dropwort.
Green Moor brownfield land	County	Unusual post-industrial flora, but counted as Priority Habitat and with good numbers of notable species.
Green Moor fields	District	Mostly low diversity pasture, but with several notable species, including small patches with Tubular Water-dropwort.
Greenmoor Lane	County	Priority habitat. Diverse meadow flora with notable species including Meadow Rue. Purple Moor-grass is also locally important as it is uncommon within the Gwent Levels.
Magor Road	Local	Mostly not considered significant, but a few features such as the woodland and hedges are of limited value.

Appendix 1. Plant species list

The following list summarises the plant species recorded on the sites described in this report, giving the scientific and common names for each one. The list should not be considered a comprehensive list of plant species within these area, and many more could probably be recorded if the sites were re-visited, especially if searching at different times of year, or if species from the adjacent reens and hedges were included. Only the most abundant and prominent mosses and liverworts occurring on the ground have been listed here, and a specialist survey would undoubtedly confirm the presence of many more species, particularly at the brownfield and woodland sites.

Scientific name	Common name
Vascular plants	
Acer campestre	Field Maple
Acer pseudoplatanus	Sycamore
Achillea millefolium	Yarrow
Achillea ptarmica	Sneezewort
Adoxa moschatellina	Moschatel
Aesculus hippocastanum	Horse Chestnut
Agrimonia eupatoria	Agrimony
Agrostis capillaris	Common Bent
Agrostis gigantea	Black Bent
Agrostis stolonifera	Creeping Bent
Aira caryophyllea	Silver Hair-grass
Ajuga reptans	Bugle
Alisma plantago-aquatica	Common Water-plantain
Alliaria petiolata	Garlic Mustard
Alnus glutinosa	Alder
Alopecurus bulbosus	Bulbous Foxtail
Alopecurus geniculatus	Marsh Foxtail
Alopecurus pratensis	Meadow Foxtail
Anagallis arvensis	Scarlet Pimpernel
Angelica sylvestris	Angelica
Anisantha sterilis	Barren Brome
Anthoxanthum odoratum	Sweet Vernal-grass
Anthriscus sylvestris	Cow Parsley
Aphanes sp.	Parsley Piert
Apium graveolens	Wild Celery
Apium nodiflorum	Fool's Water-cress
Arctium minus	Lesser Burdock
Arenaria serpyllifolia	Thyme-leaved Sandwort
Armoracia rusticana	Horse Radish
Arrhenatherum elatius	False Oat-grass
Artemisia vulgaris	Mugwort
Arum maculatum	Lords and Ladies
Aster tripolium	Sea Aster
Athyrium filix-femina	Lady Fern
Atriplex prostrata	Spear-leaved Orache
Bellis perennis	Daisy
Berula erecta	Lesser Water-parsnip
Beta vulgaris	Sea Beet
Betula pendula	Silver Birch
Betula pubescens	Downy Birch
Blackstonia perfoliata	Yellow-wort
Bolboschoenus maritimus	Sea Club-rush
Brachypodium sylvaticum	False Brome

Scientific name	Common name
Brassica rapa	Wild Turnip
Bromus hordeaceus	Soft Brome
Bromus racemosus	Smooth Brome
Buddleja davidii	Butterfly Bush
Callitriche sp.	Water Starwort
Caltha palustris	Marsh Marigold
Calystegia sepium	Hedge Bindweed
Calystegia silvatica	Large Bindweed
Capsella bursa-pastoris	Shepherd's Purse
Cardamine flexuosa	Wavy Bittercress
Cardamine pratensis	Cuckoo-flower
Carex acutiformis	Lesser Pond-sedge
Carex caryophyllea	Spring Sedge
Carex demissa	Common Yellow-sedge
Carex disticha	Brown Sedge
Carex flacca	Glaucous Sedge
Carex hirta	Hairy Sedge
Carex nigra	Common Sedge
Carex otrubae	False Fox-sedge
Carex ovalis	Oval Sedge
Carex panicea	Carnation Sedge
Carex pendula	Pendulous Sedge
Carex remota	Remote Sedge
Carex riparia	Greater Pond-sedge
Carex spicata	Spiked Sedge
Carex strigosa	Thin-spiked Wood-sedge
Carex sylvatica	Wood Sedge
Carpinus betulus	Hornbeam
Catabrosa aquatica	Whorl-grass
Catapodium rigidum	Fern-grass
Centaurea nigra	Common Knapweed
Centaurium erythraea	Common Centaury
Cerastium fontanum	Common Mouse-ear
Cerastium glomeratum	Sticky Mouse-ear
Cerastium semidecandrum	Little Mouse-ear
Cerastium tomentosum	Snow-in-summer
Chaerophyllum temulum	Rough Chervil
Chamaecyparis lawsoniana	Lawson Cypress
Chamerion angustifolium	Rose-bay Willowherb
Chenopodium album	Fat Hen
Chrysosplenium oppositifolium	Opposite-leaved Golden-saxifrage
Circaea lutetiana	Enchanter's Nightshade
Cirsium arvense	Creeping Thistle
Cirsium dissectum	Meadow Thistle
Cirsium palustre	Marsh Thistle
Cirsium vulgare	Spear Thistle
Clematis vitalba	Traveller's Joy
Cochlearia anglica	English Scurvy-grass
Conium maculatum	Hemlock
Convolvulus arvensis	Field Bindweed
Conyza bilbaoana	Bilbao Fleabane
Conyza sp.	Fleabane (indeterminate)
Cornus sanguinea	Dogwood
Cornus sericea	Red-osier Dogwood
Coronopus didymus	Lesser Swine-cress
Corylus avellana	Hazel
Cotoneaster franchetii	Franchet's Cotoneaster
Cotoneaster horizontalis	Wall Cotoneaster

Scientific name	Common name
Cotoneaster sp.	Cotoneaster (indeterminate)
Crassula helmsii	New Zealand Pigmyweed
Crataegus monogyna	Hawthorn
Crepis biennis	Rough Hawk's-beard
Crepis capillaris	Smooth Hawk's-beard
Crocosmia crocosmiiflora	Montbretia
Cupressocyparis leylandii	Leyland Cypress
Cynosurus cristatus	Crested Dog's-tail
Dactylis glomerata	Cock's-foot
Dactylorhiza fuchsii	Common Spotted-orchid
Dactylorhiza praetermissa	Southern Marsh-orchid
Dactylorhiza sp.	Marsh Orchid (indeterminate)
Daucus carota	Wild Carrot
Deschampsia cespitosa	Tufted Hair-grass
Digitalis purpurea	Foxglove
Dipsacus fullonum	Teasel
Dryopteris affinis	Scaly Male-fern
Dryopteris dilatata	Broad Buckler-fern
Dryopteris filix-mas	Male Fern
Eleocharis palustris	Common Spike-rush
Elodea nuttallii	Nuttall's Waterweed
Elytrigia atherica	Sea Couch
Elytrigia repens	Couch
Epilobium ciliatum	American Willowherb
Epilobium hirsutum	Greater Willowherb
Epilobium montanum	Broad-leaved Willowherb
Epilobium palustre	Marsh Willowherb
Epilobium parviflorum	Hoary Willowherb
Epilobium sp.	Willowherb (indeterminate)
Equisetum arvense	Field Horsetail
Equisetum fluviatile	Water Horsetail
Equisetum telmateia	Great Horsetail
Erigeron acer	Blue Fleabane
Erophila verna	Common Whitlowgrass
Euonymus europaeus	Spindle
Eupatorium cannabinum	Hemp Agrimony
Euphrasia sp	Eyebright
Fagus sylvatica	Beech
Fallopia japonica	Japanese Knotweed
Festuca arundinacea	Tall Fescue
Festuca gigantea	Giant Fescue
Festuca pratensis	Meadow Fescue
Festuca rubra	Red Fescue
Ficus carica	Fig
Filago minima	Small Cudweed
Filago vulgaris	Common Cudweed
Filipendula ulmaria	Meadowsweet
Forsythia x intermedia	Forsythia
Fragaria vesca	Wild Strawberry
Fraxinus excelsior	Ash
Fumaria officinalis	Common Fumitory
Galeopsis sp.	Hemp-nettle
Galium aparine	Cleavers
Galium mollugo	Hedge Bedstraw
Galium palustre	Marsh Bedstraw
Galium parisiense	Wall Bedstraw
Geranium columbinum	Long-stalked Crane's-bill
Geranium dissectum	Cut-leaved Crane's-bill

Scientific name	Common name
Geranium lucens	Shining Crane's-bill
Geranium robertianum	Herb Robert
Geum urbanum	Wood Avens
Glaux maritima	Sea Milkwort
Glechoma hederacea	Ground Ivy
Glyceria fluitans	Floating Sweet-grass
Glyceria maxima	Reed Sweet-grass
Gnaphalium uliginosum	Marsh Cudweed
Hedera helix	Ivy
Heracleum sphondylium	Hogweed
Hieracium sp.	Hawkweed (indeterminate)
Hirschfeldia incana	Hoary Mustard
Holcus lanatus	Yorkshire Fog
Holcus mollis	Creeping Soft-grass
Hordeum secalinum	Meadow Barley
Humulus lupulus	Wild Hop
Hyacinthoides non-scripta	Bluebell
Hydrocharis morsus-ranae	Frog-bit
Hydrocotyle vulgaris	Marsh Pennywort
Hypericum cf calycinum	Rose-of-Sharon
Hypericum hirsutum	Hairy St.John's-wort
Hypericum perforatum	Perforate St.John's-wort
Hypericum tetrapterum	Square-stalked St.John's-wort
Hypochaeris radicata	Common Cat's-ear
Ilex aquifolium	Holly
Impatiens glandulifera	Indian Balsam
Inula conyzae	Ploughman's Spikenard
Iris pseudacorus	Yellow Iris
Juncus acutiflorus	Sharp-flowered Rush
Juncus articulatus	Jointed Rush
Juncus bufonius	Toad Rush
Juncus conglomeratus	Compact Rush
Juncus effusus	Soft Rush
Juncus gerardii	Salt-marsh Rush
Juncus inflexus	Hard Rush
Lactuca serriola	Prickly Lettuce
Lactuca virosa	Great Lettuce
Lamiastrum galeobdolon	Yellow Archangel
Lapsana communis	Nipplewort
Lathyrus nissolia	Grass Vetchling
Lathyrus pratensis	Meadow Vetchling
Lathyrus sylvestris	Narrow-leaved Everlasting-pea
Laurus nobilis	Bay
Lemna minor	Common Duckweed
Lemna minuta	Least Duckweed
Lemna trisulca	Ivy-leaved Duckweed
Leontodon autumnalis	Autumn Hawkbit
Leontodon hispidus	Rough Hawkbit
Leontodon saxatilis	Lesser Hawkbit
Lepidium latifolium	Dittander
Leucanthemum vulgare	Ox-eye Daisy
Ligustrum ovalifolium	Garden Privet
Ligustrum vulgare	Wild Privet
Linaria purpurea	Purple Toadflax
Linaria vulgaris	Common Toadflax
Linum catharticum	Fairy Flax
Listera ovata	Twayblade
Lolium perenne	Perennial Rye-grass

Scientific name	Common name
Lonicera periclymenum	Honeysuckle
Lotus corniculatus	Common Bird's-foot Trefoil
Lotus glaber	Narrow-leaved Bird's-foot Trefoil
Lotus pedunculatus	Greater Bird's-foot Trefoil
Luzula campestris	Field Wood-rush
Lychnis flos-cuculi	Ragged Robin
Lycopus europaeus	Gypsywort
Lysimachia nemorum	Wood Pimpernel
Lysimachia nummularium	Creeping Jenny
Lysimachia punctata	Dotted Loosestrife
Lysimachia vulgaris	Yellow Loosestrife
Lythrum portula	Water Purslane
Lythrum salicaria	Purple Loosestrife
Malus pumila	Apple
Malva moschata	Musk Mallow
Matricaria discoidea	Pineappleweed
Matricaria recutita	Scented Mayweed
Medicago lupulina	Black Medick
Melilotus alba	White Melilot
Melilotus cf officinalis	Ribbed Melilot
Melissa officinalis	Balm
Mentha aquatica	Water Mint
Mentha x verticillata	Whorled Mint
Mercurialis perennis	Dog's Mercury
Moerhingia trinervia	Three-nerved Sandwort
Molinia caerulea	Purple Moor-grass
Myosotis arvensis	Field Forget-me-not
Myosotis laxa	Tufted Forget-me-not
Myosotis sylvatica	Wood Forget-me-not
Oenanthe crocata	Hemlock Water-dropwort
Oenanthe fistulosa	Tubular Water-dropwort
Oenanthe pimpinelloides	Corky-fruited Water-dropwort
Oenothera biennis	Common Evening-primrose
Oenothera glazioviana	Large-flowered Evening-primrose
Oenothera sp.	Evening-primrose (indeterminate)
Ononis repens	Restharrow
Ophrys apifera	Bee Orchid
Papaver rhoeas	Common Poppy
Pastinaca sativa	Wild Parsnip
Persicaria amphibia	Amphibious Bistort
Persicaria hydropiper	Water-pepper
Persicaria maculosa	Redshank
Petasites fragrans	Winter Heliotrope
Phalaris arundinacea	Reed Canary-grass
Philadelphus coronarius	Mock Orange
Phleum pratense	Timothy
Phragmites australis	Common Reed
Phyllitis scolopendrium	Hart's-tongue Fern
Picea sitchensis	Sitka Spruce
Picris echioides	Bristly Ox-tongue
Pilosella aurantiaca	Fox-and-cubs
Pilosella officinarum	Mouse-ear Hawkweed
Pinus cf radiata	Monterey Pine
Plantago coronopus	Buck's-horn Plantain
Plantago lanceolata	Ribwort Plantain
Plantago major	Greater Plantain
Plantago maritima	Sea Plantain
Poa annua	Annual Meadow-grass

Scientific name	Common name
Poa compressa	Flattened Meadow-grass
Poa pratensis	Smooth Meadow-grass
Poa trivialis	Rough Meadow-grass
Polygonum aviculare	Knotgrass
Polypodium interjectum	Intermediate Polypody
Polystichum setiferum	Soft Shield-fern
Populus alba	White Poplar
Populus tremula	Aspen
Populus x canadensis	Hybrid Black-poplar
Potamogeton crispus	Curled Pondweed
Potamogeton natans	Broad-leaved Pondweed
Potamogeton pusillus	Lesser Pondweed
Potamogeton sp.	Pondweed (indeterminate)
Potentilla anserina	Silverweed
Potentilla palustris	Marsh Cinquefoil
Potentilla reptans	Creeping Cinquefoil
Primula vulgaris	Primrose
Prunella vulgaris	Selfheal
Prunus avium	Wild Cherry
Prunus cf domestica	Wild Plum
Prunus laurocerasus	Cherry Plum
Prunus padus	Bird Cherry
Prunus spinosa	Blackthorn
Pseudoscleropodium purum	Neat Feather-moss
Pseudotsuga menziesii	Douglas Fir
Pteridium aquilinum	Bracken
Puccinellia maritima	Common Saltmarsh-grass
Pulicaria dysenterica	Fleabane
Pyrus communis	Pear
Quercus robur	Pedunculate Oak
Ranunculus acris	Meadow Buttercup
Ranunculus bulbosus	Bulbous Buttercup
Ranunculus ficaria	Lesser Celandine
Ranunculus flammula	Lesser Spearwort
Ranunculus repens	Creeping Buttercup
Reseda luteola	Weld
Rhinanthus minor	Yellow Rattle
Ribes sanguineus	Redcurrant
Ribes sp.	Currant (indeterminate)
Ribes uva-crispa	Gooseberry
Rorippa palustris	Marsh Yellow-cress
Rosa arvensis	Field Rose
Rosa canina	Dog Rose
Rubus fruticosus	Bramble
Rubus idaeus	Wild Raspberry
Rumex acetosa	Common Sorrel
Rumex acetosella	Sheep's Sorrel
Rumex conglomeratus	Clustered Dock
Rumex crispus	Curled Dock
Rumex hydrolapathum	Water-dock
Rumex obtusifolius	Broad-leaved Dock
Rumex sanguineus	Wood Dock
Sagina apetala	Annual Pearlwort
Sagina procumbens	Procumbent Pearlwort
Sagittaria sagittifolia	Arrowhead
Salix alba	White Willow
Salix caprea	Goat Willow
Salix cinerea	Grey Willow

Scientific name	Common name
Salix fragilis	Crack Willow
Salix viminalis	Osier
Sambucus nigra	Elder
Saxifraga tridactylites	Rue-leaved Saxifrage
Scrophularia auriculata	Water Figwort
Scrophularia nodosa	Common Figwort
Scutellaria galericulata	Skullcap
Scutellaria minor	Lesser Skullcap
Sedum acre	Biting Stonecrop
Senecio aquaticus	Marsh Ragwort
Senecio erucifolius	Hoary Ragwort
Senecio jacobaea	Ragwort
Senecio vulgaris	Groundsel
Sherardia arvensis	Field Madder
Silaum silaus	Pepper Saxifrage
Silene dioica	Red Campion
Silene latifolia	White Campion
Sison amomum	Stone Parsley
Sisymbrium officinale	Hedge Mustard
Sonchus arvensis	Perennial Sow-thistle
Sonchus asper	Prickly Sow-thistle
Sonchus oleraceus	Soft Sow-thistle
Sparganium erectum	Branched Bur-reed
Spartina anglica	Common Cord-grass
Spergularia media	Greater Sea-spurrey
Spirodela polyrhiza	Greater Duckweed
Stachys palustris	Marsh Woundwort
Stachys sylvatica	Hedge Woundwort
Stellaria graminea	Lesser Stitchwort
Stellaria media	Common Chickweed
Suaeda maritima	Annual Sea-blite
Symphoricarpos albus	Snowberry
Tamus communis	Black Bryony
Tanacetum parthenium	Feverfew
Taraxacum sp.	Dandelion
Taxus baccata	Yew
Thalictrum flavum	Common Meadow-rue
Tilia x europaea	Lime
Torilis japonica	Upright Hedge-parsley
Tragopogon pratensis	Goat's-beard
Trifolium campestre	Hop Trefoil
Trifolium dubium	Lesser Trefoil
Trifolium hybridum	Alsike Clover
Trifolium pratense	Red Clover
Trifolium repens	White Clover
Triglochin maritimum	Sea Arrow-grass
Tripleurospermum inodorum	Scentless Mayweed
Trisetum flavescens	Yellow Oat-grass
Tussilago farfara	Colt's-foot
Typha latifolia	Bulrush
Ulex europaeus	Common Gorse
Ulmus glabra	Wych Elm
Ulmus minor	Small-leaved Elm
Ulmus sp.	Elm (indeterminate)
Urtica dioica	Nettle
Valeriana officinalis	Valerian
Valerianella carinata	Keeled-fruited Corn-salad
Verbascum thapsus	Great Mullein

Scientific name	Common name
Verbena officinalis	Vervain
Veronica arvensis	Wall Speedwell
Veronica beccabunga	Brooklime
Veronica chamaedrys	Germander Speedwell
Veronica montana	Wood Speedwell
Veronica persica	Common Field-speedwell
Veronica serpyllifolia	Thyme-leaved Speedwell
Viburnum opulus	Guelder Rose
Vicia cracca	Tufted Vetch
Vicia hirsuta	Hairy Tare
Vicia sativa	Common Vetch
Vicia sepium	Bush Vetch
Vicia tetrasperma	Smooth Tare
Viola hirta	Hairy Tare
Viola riviniana	Common Dog-violet
Viscum album	Mistletoe
Vulpia bromoides	Squirreltail Fescue
Vulpia myuros	Rat's-tail Fescue

Mosses and liverworts (prominent species only)

Atrichum undulatum	Common Smooth-cap
Barbula convoluta	Lesser Bird's-claw beard-moss
Brachythecium rutabulum	Rough-stalked Feather-moss
Bryum capillare	Capillary Thread-moss
Bryum pseudotriquetrum	Marsh Bryum
Bryum sp.	Bryum sp. (indeterminate)
Calliergonella cuspidata	Pointed Spear-moss
Drepanocladus aduncus	Kneiff's Hook-moss
Encalypta streptocarpa	Spiral extinguisher-moss
Fissidens adianthoides	Maidenhair Pocket-moss
Fissidens taxifolius	Common Pocket-moss
Homalothecium lutescens	Yellow Feather-moss
Hypnum cupressiforme sl	Cypress-leaved Plait-moss
Hypnum lacunosum	Great Plait-moss
Kindbergia praelonga	Common Feather-moss
Lophocolea bidentata	Bifid Crestwort
Marchantia polymorpha	Common Liverwort
Mnium hornum	Swan's-neck Thyme-moss
Pellia sp.	Pellia (indeterminate)
Plagiomnium undulatum	Hart's-tongue Thyme-moss
Polytrichastrum formosum	Bank Hair-cap
Polytrichum juniperinum	Juniper Hair-cap
Racomitrium ericoides	Dense Fringe-moss
Rhytidiadelphus squarrosus	Springy Turf-moss
Thamnobryum alopecurum	Fox-tail Feather-moss

Lichens (prominent species on soil only)

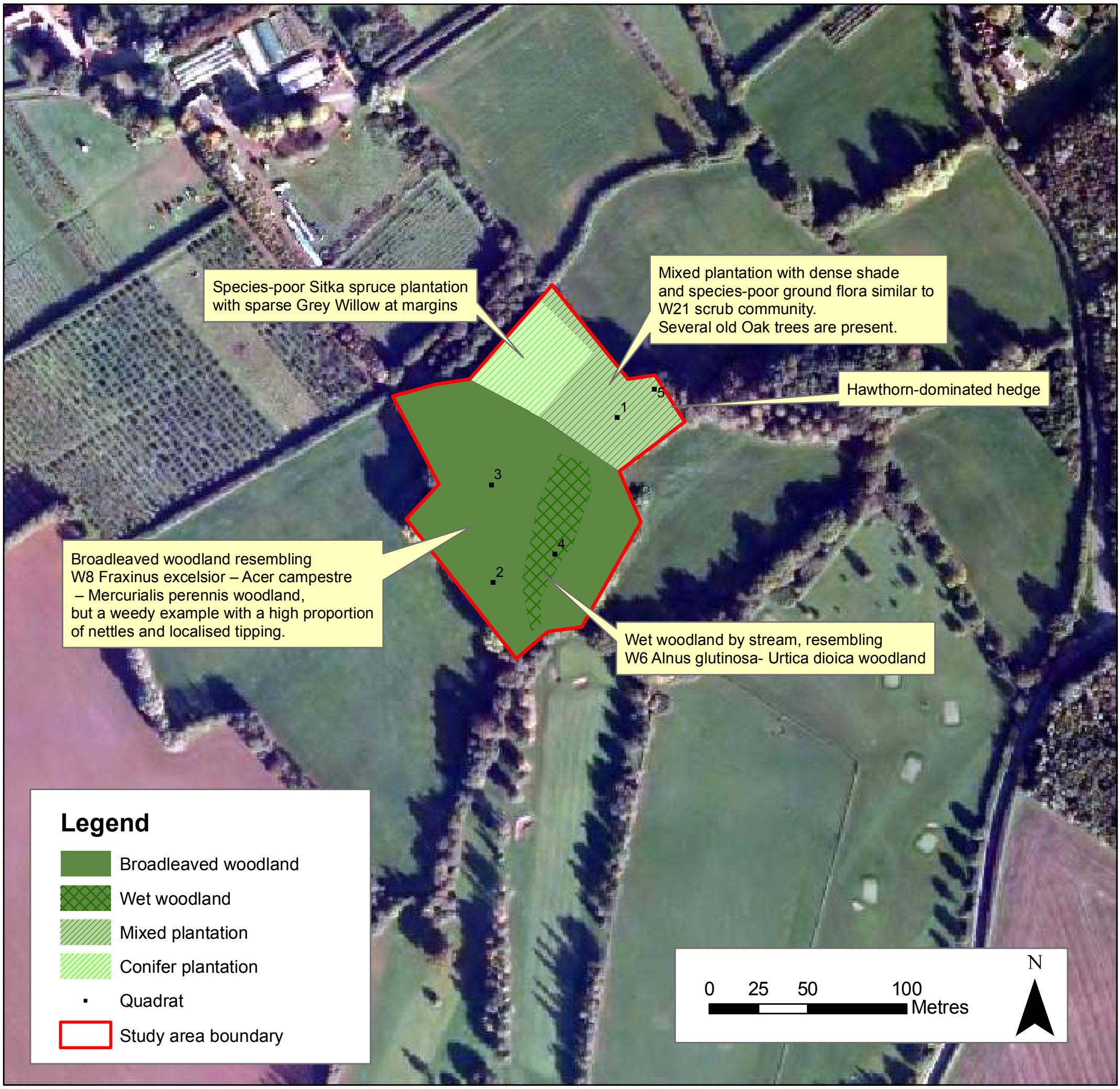
Cladonia furcata	Lichen
Cladonia rangiformis	Lichen
Cladonia sp.	Lichen
Peltigera didactyla	Lichen
Peltigera cf hymenina	Lichen
Peltigera sp.	Lichen

Appendix 2. Vegetation maps

(See separate map-sheets)

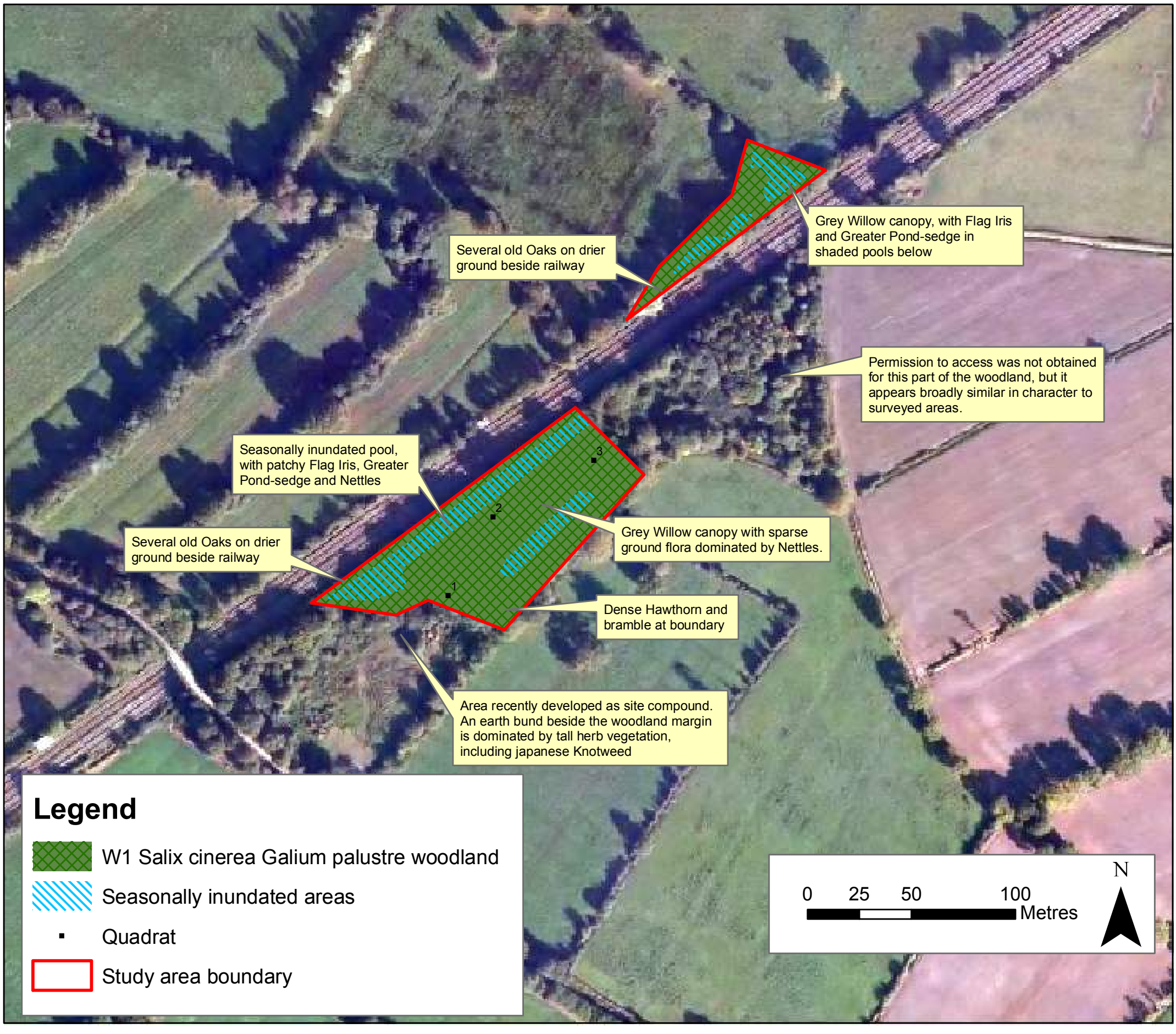
1. Pound Hill
2. Berryhill Farm woodland
3. Great Pencarn, Duffryn
4. Fox Covert
5. Lighthouse Road
6. New Dairy Farm
7. Ebbw seawall and saltmarsh
8. Usk saltmarsh
9. Solutia
10. Broad Street Common
11. Green Moor brownfield land
12. Green Moor fields
13. Greenmoor Lane
14. Magor Road

Map 1. Pound Hill

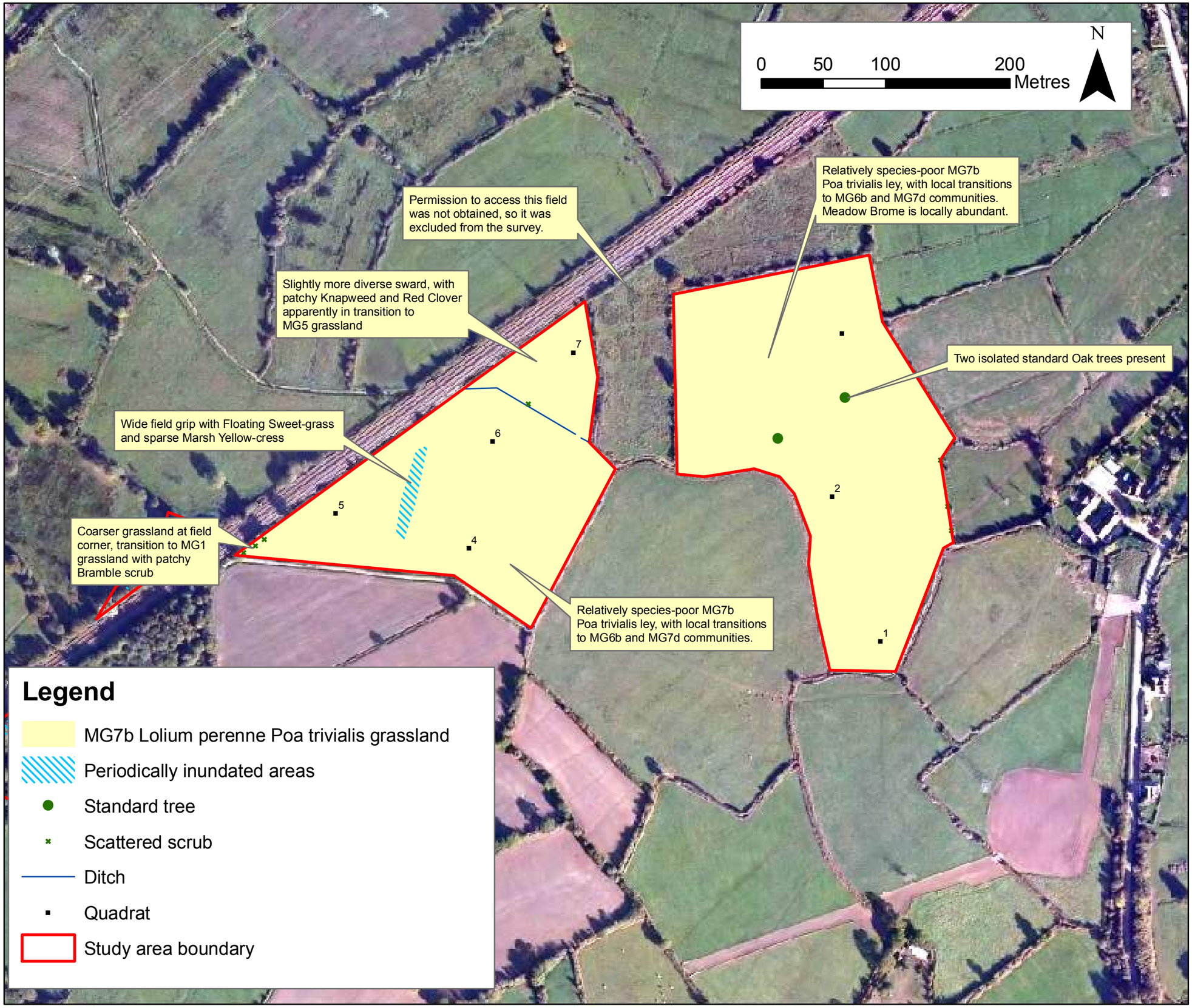


Map 2. Berryhill Farm woodland

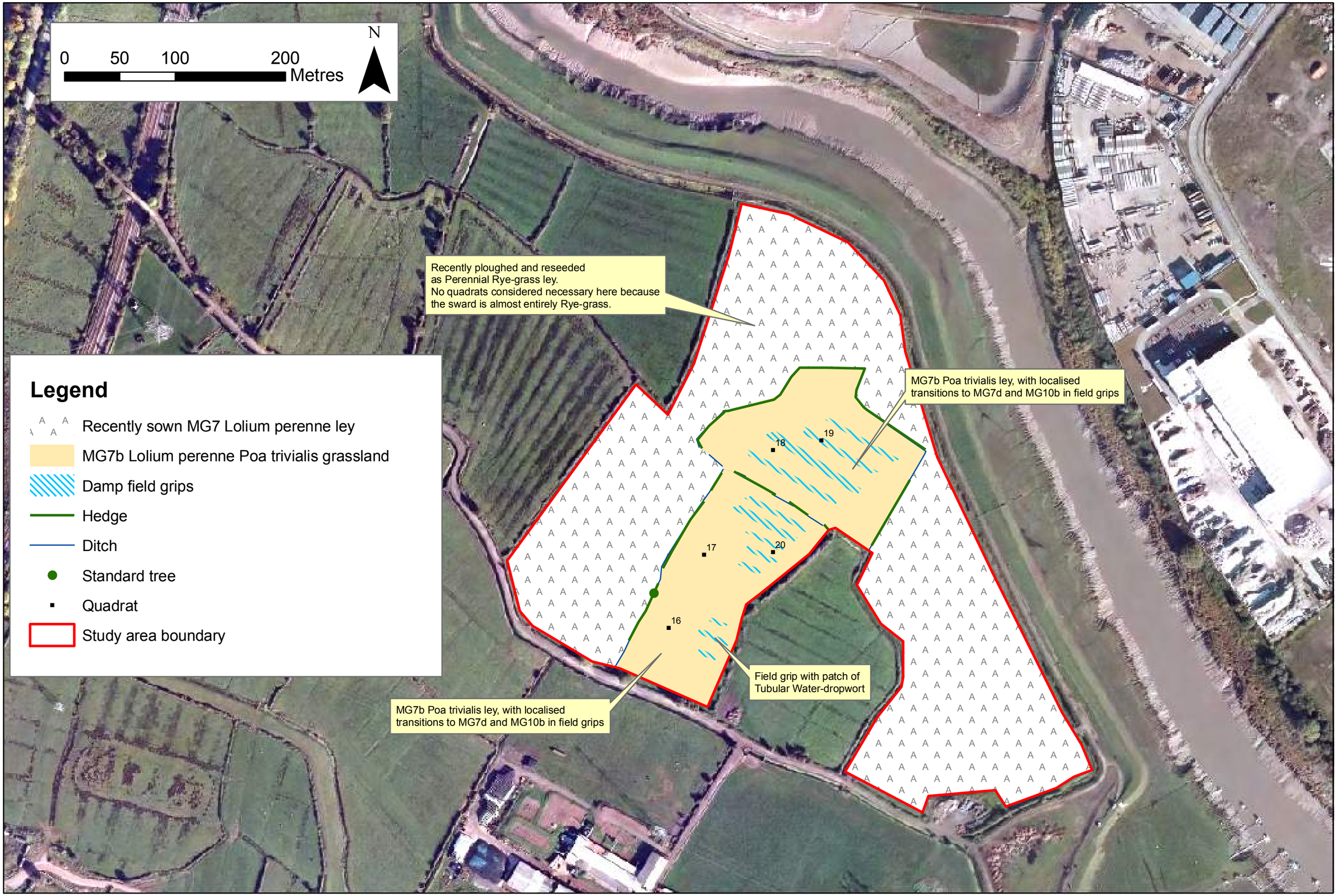
Map 3. Great Pencarn, Duffryn



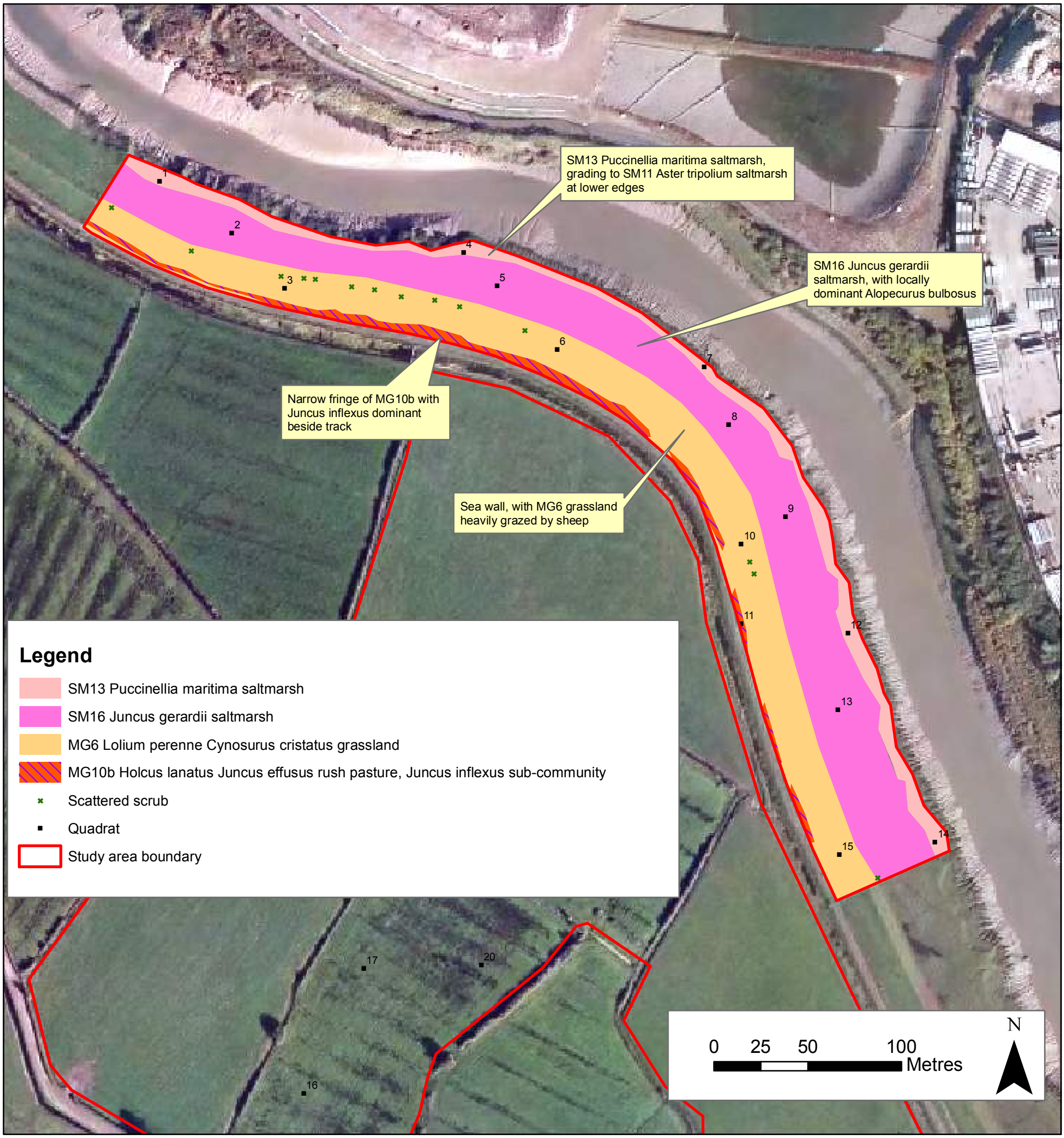
Map 4. Fox Covert



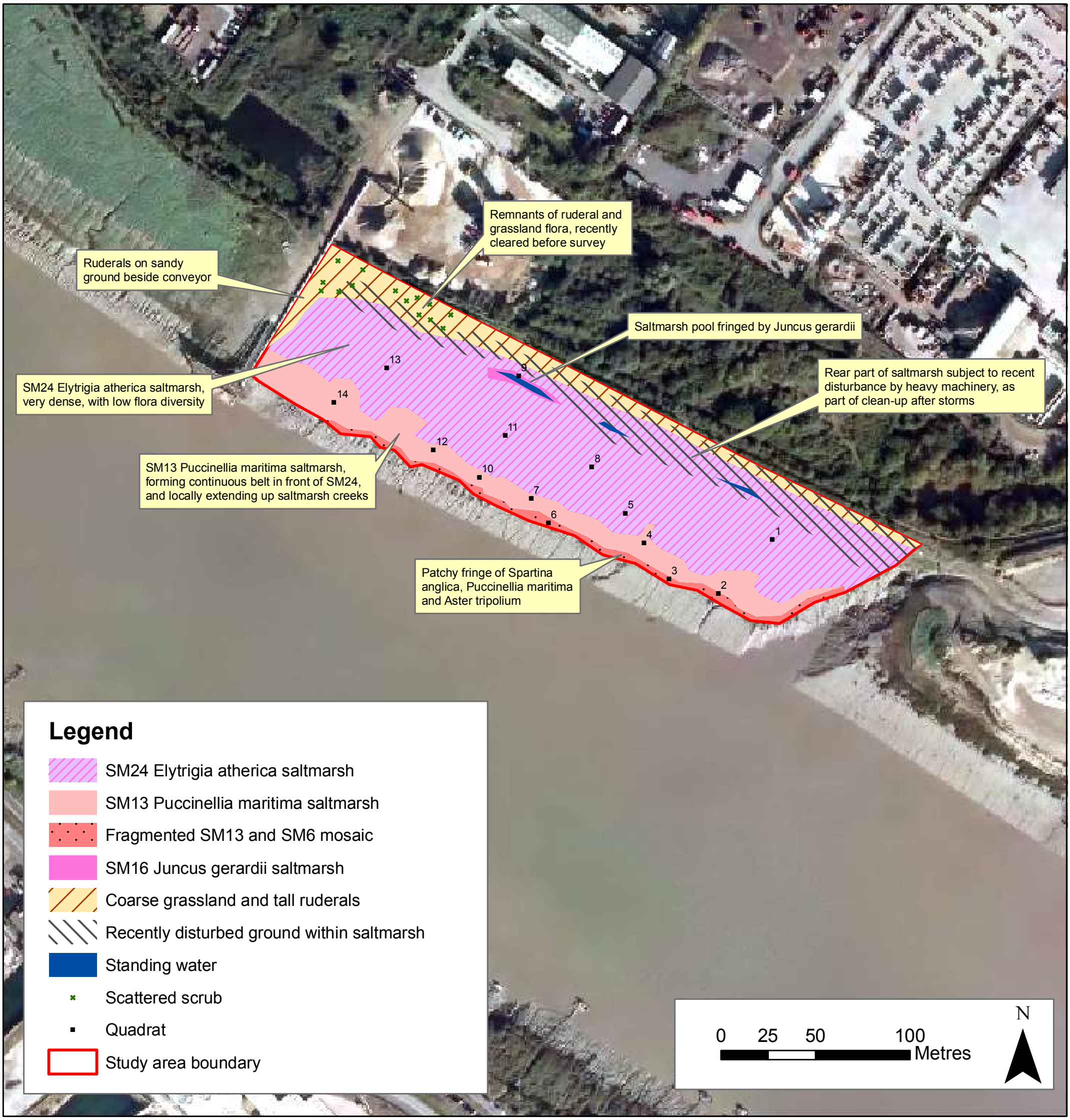
Map 5. Lighthouse Road



Map 6. New Dairy Farm



Map 7. Ebbw saltmarsh and sea-wall



Map 8. Usk saltmarsh

Several plants of Fine-leaved Water-dropwort observed in ditch

The wettest of the hay-meadows, mostly M23a Juncus effusus/ acutiflorus – Galium palustre rush-pasture, Juncus acutiflorus sub-community

Broad-leaved plantation with scrubby understorey

Dense Grey Willow scrub

Shaded ponds at edge of tipped rubble

Mosaic of scrub and species-rich ephemeral and grassland vegetation

Pond with fringing Bulrush and Common Reed, largely shaded by Grey Willow, not accessible for survey

Hay-meadows with damp field grips, forming a mosaic of MG10, MG23 and MG7c grassland.

Mostly MG7b Lolium perenne Poa trivialis grassland, locally grading to MG6b, and to MG10 in some field grips.

Broad-leaved plantation with sparse ground flora

Mainly MG6b Lolium perenne – Cynosurus cristatus grassland, Anthoxanthum odoratum sub-community, grading to MG7 in some species poor patches, and MG10 in field-grips.

Ungrazed former pasture with MG1 grassland with tall ruderals and local areas of disturbed ground

Ungrazed former pasture, in transition to MG1 grassland with patchy tall herbs and scattered scrub

Ungrazed former pasture, in transition to MG1 grassland with patchy tall herbs and scattered scrub

0 50 100 200 Metres

N

Legend

- MG1 Arrhenatherum elatius grassland
- MG6 Lolium perenne Cynosurus cristatus grassland
- MG7b Lolium perenne Poa trivialis grassland
- Rush pasture
- Sparse grassland and ruderals
- Scattered scrub
- Open water
- Reedbed and swamp vegetation
- Fence
- Ditch
- W1 Salix cinerea Galium palustre woodland
- Broadleaved plantation
- Mature hedge
- Dense bramble scrub
- Quadrat
- Study area boundary

Map 9. Solutia

0 50 100 200 Metres

N

Damp field transitional between MG10 Holcus lanatus – Juncus effusus rush pasture, and MG6 / MG7c Lolium perenne – Alopecurus pratensis – Festuca pratensis grassland.

Damp area with M23a Juncus acutiflorus Galium palustre rush pasture

The drier eastern side of the field shows transiton to MG6 grassland and supports locally abundant Corky-fruited Water-dropwort

Damp field with transitions between MG10 Holcus lanatus – Juncus effusus rush pasture, and MG6 / MG7c Lolium perenne – Alopecurus pratensis – Festuca pratensis grassland.

S22 Glyceria fluitans water-margin vegetation in main field-grips

Damp area with M23a Juncus acutiflorus Galium palustre rush pasture

Damp field with transitions between MG10 MG6 and MG7c grassland, with occasional Corky-fruited Water-dropwort.

Dense scrub, mainly dominated by Grey Willow, Bramble and Hawthorn

Relatively diverse mosaic of MG5, MG6 and MG1 grassland, with locally abundant Bird's-foot Trefoil and Long-stalked Crane's-bill.

Mosaic of MG1 and MG6 with patchy tall ruderals, particularly nettles

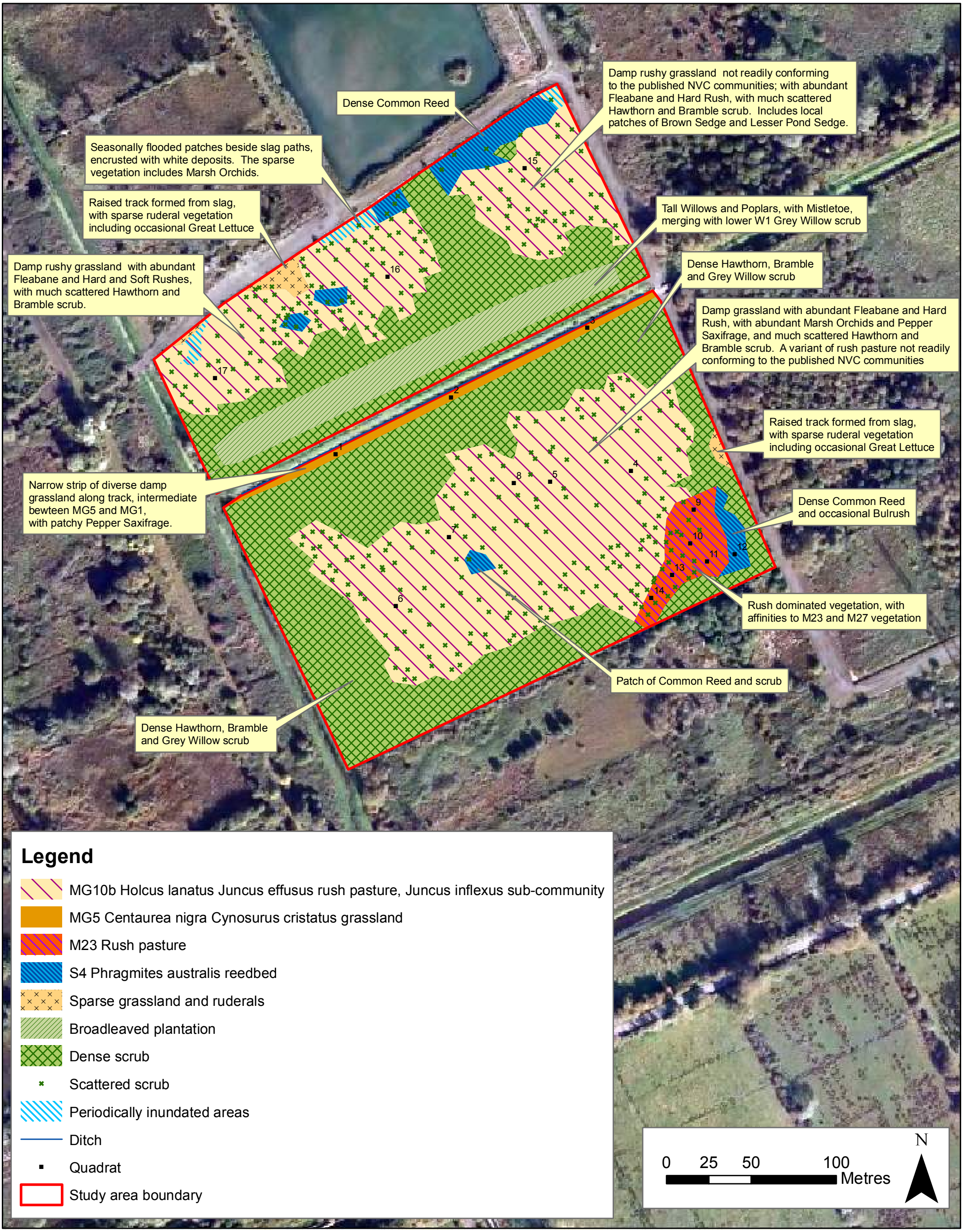
Dense scrub, mainly dominated by Hawthorn and Bramble

Sparse ruderals on paths and open central area, with patchy mix of MG1, MG6, OV12 and OV19 communities.

Legend

- MG5 Centaurea nigra Cynosurus cristatus grassland
- MG6 Lolium perenne Cynosurus cristatus grassland
- MG10 Holcus lanatus Juncus effusus rush pasture
- Mosaic of MG1 and MG6 with patchy tall ruderals
- M23 Juncus acutiflorus Galium palustre rush pasture
- Field grips, mainly S22 Glyceria fluitans water-margin vegetation
- Sparse grass and ruderal mosaic
- Dense scrub
- Scattered scrub
- Hedge
- Conifer plantation
- Building
- Ditch
- Quadrat
- Study area boundary

Map 10. Broadstreet Common



Map 11. Green Moor brownfield land

Mosaic of bramble scrub, developing MG1 grassland and tall herbs

Row of mature Hybrid Black Poplars with abundant Mistletoe

Strip of M23 rush pasture, with occasionalTubular Water-dropwort

Species-poor MG7b grassland, with patchy Smooth Brome

Large patch of species-poor rush pasture dominated by Soft Rush

Bank with MG6 grassland, grading into MG10 rush pasture towards foot of slope beside reen

Species-poor MG7b grassland, dominated by Rough Meadow-grass, with local weedy patches, especially near the field margins

Strip of M23 rush pasture, with occasionalTubular Water-dropwort in eastern part

Arrowhead noted in adjacent reens

Shallow depressions with low-growing MG13 and S22 wetland vegetation

Bank with MG6 grassland, locally grading to MG5. Gradually merging with MG10 rush pasture towards foot of slope beside reen

Species-poor MG7b grassland, dominated by Rough Meadow-grass

Legend

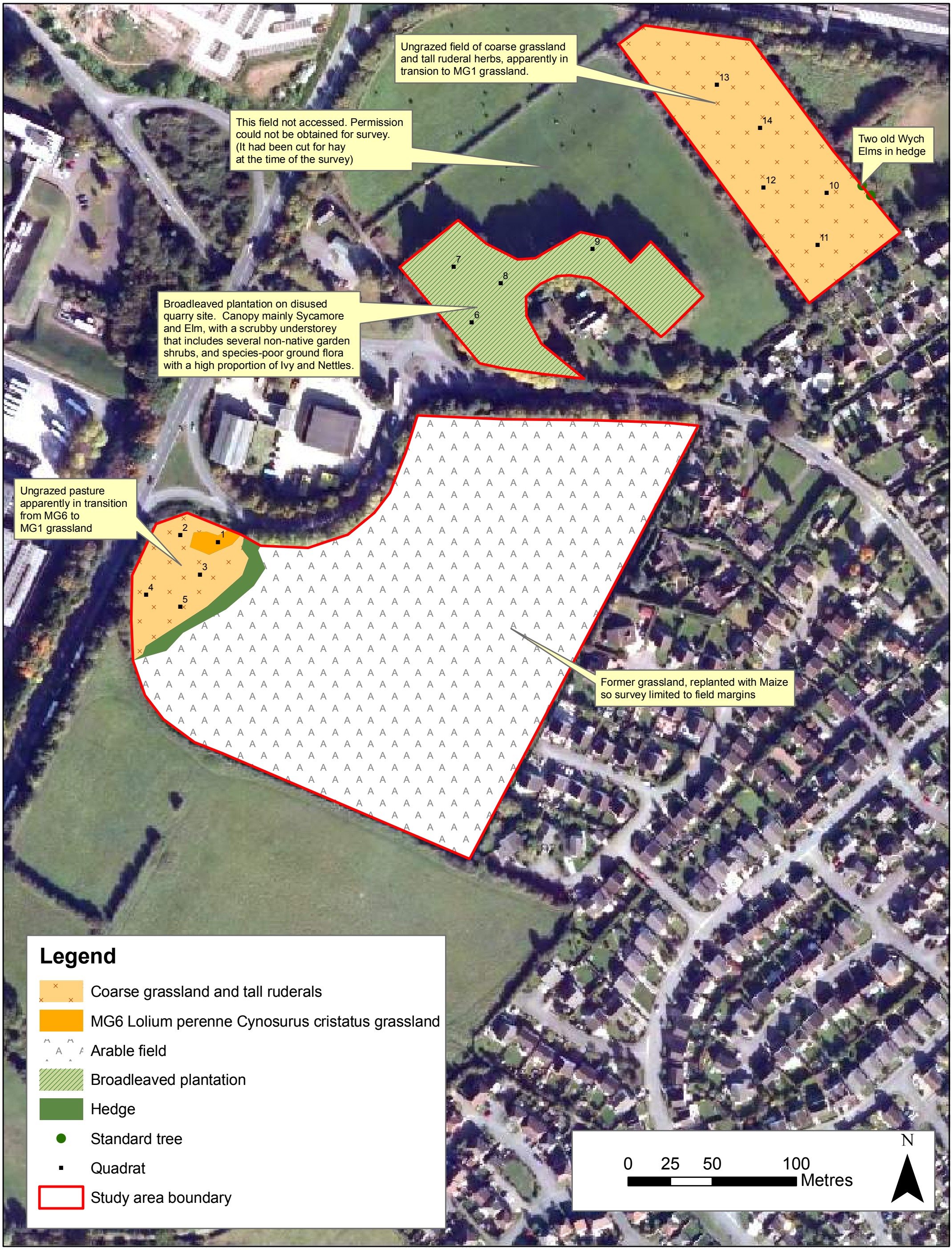
- MG1 coarse grassland with tall ruderals
- MG6 Lolium perenne Cynosurus cristatus grassland
- MG7b Lolium perenne Poa trivialis grassland
- MG10 Holcus lanatus Juncus effusus rush pasture
- M23 Juncus effusus Galium palustre Rush pasture
- Damp areas with MG13 and S22 vegetation
- Hedge
- Dense scrub
- Scattered scrub
- Standard tree
- Ditch
- Quadrat
- Study area boundary

0 50 100 200 Metres

N

Map 12. Green Moor fields

Map 13. Greenmoor Lane



Map 14. Magor Road