

APPENDIX 15.1

Vegetation & Hedgerow Survey Report

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1. Introduction

- 1.1 Atkins Limited was commissioned by Portsmouth County Council to undertake ecological surveys of an area of Dunsbury Hill Farm, Havant, Hampshire.
- 1.2 This report describes the results of a detailed vegetation and hedgerow survey of the habitats within the immediate areas that would be directly impacted by the scheme. The survey entailed:
- A detailed vegetation assessment of the grassland within fields in the south of the site, and survey of the site for notable plants.
 - An assessment to determine whether hedgerows at the site should be classified as Important Hedgerows under the Hedgerow Regulations; and
- 1.3 The vegetation survey uses quantitative sampling to relate stands of vegetation in a given area to a standardised set of identified vegetation community type established across the UK known as the National Vegetation Classification (NVC) system (Rodwell, ed. 1991, 1992). The NVC is used as it allows comparison between sites and evaluation of vegetation communities against their known distribution within the UK.

2. Methodology

Vegetation Survey

Determination of Survey Area

- 2.1 Three areas of grassland were selected for further detailed vegetation survey during the Phase 1 Habitat Survey: Dunsbury Hill grassland, The Lower Field and the Upper Field. The areas surveyed are shown on **Figure 15A.1**.

Date of Survey

- 2.2 The vegetation survey was carried out by a botanical specialist from Atkins on 24th May 2011.

General Botanical Survey

- 2.3 The initial task undertaken by the surveyor was a walkover of the survey areas, during which a general botanical survey was carried out. The aim of the general botanical survey was to make a cumulative list of plant species within the selected grassland along with their abundance using the DAFOR scale (Dominant, Abundant, Frequent, Occasional, and Rare).
- 2.4 In addition, a survey was made of the entire site for notable habitats or plant species, such as:
- Legally protected species, on Schedule 8 of the Wildlife & Countryside Act 1981 (as amended);
 - Habitats or Species of Principal Importance for the Conservation of Biodiversity in England listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006; and
 - Habitat or species of priority concern listed in the Hampshire Biodiversity Action Plan (BAP);

National Vegetation Classification Survey

- 2.5 A National Vegetation Classification survey was undertaken within a field in the south of the Scheme that will be directly affected by the construction of the link road, as it was recommended during the Phase 1 survey due to the various assemblage of plants recorded at this location. This field, referred to as Lower Field, was described as semi-improved neutral grassland in the Phase 1 Habitat Survey. The field is divided into two by a barbed wire fence, and one of the fields was grazed by horses.
- 2.6 Quantitative sampling was used to relate stands of vegetation in a given area to a standardised set of identified vegetation communities established across the UK, known as the National Vegetation Classification (NVC) system (Rodwell, ed., 1992). The NVC was used as it allows comparison between sites and evaluation of vegetation communities against their known distribution within the UK. The methodology below follows the standard methodology described in Rodwell (1992).
- 2.7 During an initial walkover of the survey area, the surveyor used their knowledge and experience to identify if there were more than one area of similar vegetation (homogenous stands) within the field that could be classified as separate grassland communities using the NVC system. The NVC community or sub-community present could be confirmed by taking samples of vegetation at different points within a stand. The identification of homogenous stands was valuable for making a decision on the number and location of sampling points used to determine the NVC community or communities.
- 2.8 Sampling points were selected subjectively with the aim of providing a typical selection of the plants within a homogenous stand. According to the standard methodology (Rodwell, 1992) five (or multiples of five) samples are recommended for each homogeneous stand. As the surveyor determined that the Lower Field consisted of one single homogenous stand (see 3.6 below), five samples were taken from within the field.
- 2.9 At each sampling point, a square plot (quadrat) 2 m x 2 m in size was marked out on the ground, within which presence and percentage cover of each plant species was recorded. Cover was taken as the vertical projection on to the ground of the extent of the living parts of the species. It was estimated using the Domin Scale, which groups percentage cover into ten ranges, the number (1-10) given as the estimate of percentage cover (see Table 5). Data from one quadrat was recorded at each sampling point.
- 2.10 The locations from which the samples were taken are shown on **Figure 15A.1**.

Data Analysis

- 2.11 The sample data was then analysed and the NVC community that proved the best fit for the sample was determined using the keys and written descriptions in the published NVC manuals (Rodwell, 1992; Cooper 1997).
- 2.12 The computer programme MATCH, created by the Unit of Vegetation Science at the University of Lancaster, was used to provide additional analysis and a similarity coefficient for the communities identified.

Hedgerow Survey

- 2.13 Five hedgerows that are within the development site or on the boundary of the development site were inspected in May 2011 in relation to the wildlife and landscape criteria set out in Schedule 1, Part 2 of the Hedgerow Regulations 1997. These hedgerows were selected for further survey during the Phase 1 Habitat Survey, due to their potential to be 'important hedgerows' under the Regulations. The hedgerows were also assessed to see if they qualify as UK Biodiversity Action Plan priority habitats.

- 2.14 The hedgerows were surveyed on 24th May 2011. The survey methodology followed the guidelines in the *Hedgerow Survey Handbook* (DEFRA, 2007). Under these guidelines all five hedgerows surveyed fulfil the initial criteria that determine a 'true' hedgerow:
'any boundary line of trees or shrubs over 20m long and less than 5m wide at the base, provided that at one time the trees or shrubs were more or less continuous'.
- 2.15 During the survey, the following hedgerow features were recorded:
- Physical characteristics such as length, height, width or shrubby species, width of margins, presence of banks, walls or ditches;
 - The presence, number and spacing of standard trees;
 - The presence, number and width of gaps;
 - The number of connections with other hedgerows or woodland;
 - The adjacent land use and proximity of adjacent ecological features such as ponds, woodlands or parallel hedgerows;
 - The number of woody species and ground flora within a continuous 30 m section;
 - Evidence of use by animal species, in particular protected species; and
 - Evidence of past or recent management.
- 2.16 The location the hedgerows surveyed are shown on **Figure 15A.1**.
- 2.17 Following the survey the results were assessed against the wildlife and landscape criteria for determining 'important' hedgerows set out in Schedule 1, Part 2 of the Hedgerow Regulations 1997.
- 2.18 The ecological hedgerow surveys did not assess the heritage value of the hedgerows, under which they may also be classified as 'important'.

3. Results

Vegetation Survey

General Botanical Walkover Survey

- 3.1 During the initial walkover survey, a total of 107 plant species were recorded within the three fields surveyed. A full list of plant species recorded at the site can be found in Tables 1-3 below.
- 3.2 This section includes a description of the areas surveyed and full list of plant species identified during the general botanical survey of the three sites. Species nomenclature is based on Stace (2010).

Dunsbury Hill Grassland

- 3.3 This area is in the east of the site and is permanent grassland partly on an east facing slope. The area is adjacent to broadleaved woodland to the east. The slope has a typical, unmanaged, dry grassland community dominated by false-oat grass with scattered scrub. The lower part of the area is on damper soil where rushes and tufted hair-grass are occasional. A proportion of the grassland in the south of the area appears to have been subject to some management or disturbance recently that has resulted in patches of bare soil. Grassland species have re-colonised and silverweed, Yorkshire-fog and creeping buttercup are particularly abundant in this disturbed area.

Table 1 – Plant species list for Dunsbury Hill Grassland

Common name	Scientific name	Abundance (DAFOR)
Common Bent	<i>Agrostis capillaris</i>	Frequent
Meadow Foxtail	<i>Alopecurus pratensis</i>	Rare
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>	Occasional
False Oat-grass	<i>Arrhenatherum elatius</i>	Locally abundant
Soft-brome	<i>Bromus hordeaceus</i>	Rare
Hedge Bindweed	<i>Calystegia sepium</i>	Rare
Hairy Sedge	<i>Carex hirta</i>	Rare
Common Knapweed	<i>Centaurea nigra</i>	Occasional
Creeping Thistle	<i>Cirsium arvense</i>	Frequent
Marsh Thistle	<i>Cirsium palustre</i>	Frequent
Spear Thistle	<i>Cirsium vulgare</i>	Rare
Hawthorn	<i>Crataegus monogyna</i>	Occasional
Crosswort	<i>Cruciata laevipes</i>	Rare
Cock's-foot	<i>Dactylis glomerata</i>	Frequent
Tufted Hair-grass	<i>Deschampsia cespitosa</i>	Rare
a willowherb	<i>Epilobium</i> sp.	Rare
Field Horsetail	<i>Equisetum arvense</i>	Occasional
Common Hemp-nettle	<i>Galeopsis tetrahit</i>	Locally frequent
Cleavers	<i>Galium aparine</i>	Frequent
Cut-leaved Crane's-bill	<i>Geranium dissectum</i>	Rare
Ground-ivy	<i>Glechoma hederacea</i>	Rare
a sweet-grass	<i>Glyceria</i> sp.	Rare
Yorkshire-fog	<i>Holcus lanatus</i>	Locally abundant
Compact Rush	<i>Juncus conglomeratus</i>	Rare
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	Rare
Ribwort Plantain	<i>Plantago lanceolata</i>	Occasional
Smooth Meadow-grass	<i>Poa pratensis</i>	Occasional
Rough Meadow-grass	<i>Poa trivialis</i>	Occasional
Silverweed	<i>Potentilla anserina</i>	Locally abundant
Creeping Cinquefoil	<i>Potentilla reptans</i>	Rare
Blackthorn	<i>Prunus spinosa</i>	Occasional
Pedunculate Oak	<i>Quercus robur</i>	Occasional
Creeping Buttercup	<i>Ranunculus repens</i>	Locally frequent

Common name	Scientific name	Abundance (DAFOR)
Common Sorrel	<i>Rumex acetosa</i>	Occasional
Broad-leaved Dock	<i>Rumex obtusifolius</i>	Frequent
Tall Fescue	<i>Schedonorus arundinaceus</i>	Rare
Common Figwort	<i>Scrophularia nodosa</i>	Occasional
Hoary Ragwort	<i>Senecio erucifolius</i>	Occasional
Smooth Sow-thistle	<i>Sonchus oleraceus</i>	Occasional
Hedge Woundwort	<i>Stachys sylvatica</i>	Rare
Lesser Stitchwort	<i>Stellaria graminea</i>	Frequent
Upright Hedge-parsley	<i>Torilis japonica</i>	Occasional
Red Clover	<i>Trifolium pratense</i>	Rare
Common Nettle	<i>Urtica dioica</i>	Occasional
Common Vetch	<i>Vicia sativa</i>	Frequent
Smooth Tare	<i>Vicia tetrasperma</i>	Frequent

Lower Field

- 3.4 This field is grazed pasture and has abundant stands of rushes, particularly hard rush. From the plant species present, it appears that the ground is waterlogged for much of the year. Such species that indicate these conditions that are present include rushes, creeping bent, common marsh-bedstraw, silverweed, greater bird's-foot-trefoil and common fleabane. There are also hollows where the ground may be permanently waterlogged where marsh foxtail, lesser spearwort and marsh woundwort are present. There are scattered young trees and shrubs of willow and birch. This field is relatively species-rich compared to other grasslands at the site.

Table 2 – Plant species list for Lower Field

Common name	Scientific name	Abundance (DAFOR)
Yarrow	<i>Achillea millefolium</i>	Rare
Common Bent	<i>Agrostis capillaris</i>	Occasional
Creeping Bent	<i>Agrostis stolonifera</i>	Locally abundant
Bugle	<i>Ajuga reptans</i>	Occasional
Marsh Foxtail	<i>Alopecurus geniculatus</i>	Locally frequent
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>	Occasional
Daisy	<i>Bellis perennis</i>	Frequent
Silver Birch	<i>Betula pendula</i>	Rare
False Brome	<i>Brachypodium sylvaticum</i>	Rare
a brome	<i>Bromus sp.</i>	Rare
Glaucous Sedge	<i>Carex flacca</i>	Occasional

Common name	Scientific name	Abundance (DAFOR)
Hairy Sedge	<i>Carex hirta</i>	Frequent
Oval Sedge	<i>Carex leporina</i>	Occasional
Carnation Sedge	<i>Carex panicea</i>	Rare
False fox-sedge	<i>Carex otrubae</i>	Occasional
Common Knapweed	<i>Centaurea nigra</i>	Frequent
Common Centaury	<i>Centaureum erythraea</i>	Rare
Common Mouse-ear	<i>Cerastium fontanum</i>	Occasional
Creeping Thistle	<i>Cirsium arvense</i>	Rare
Crosswort	<i>Cruciata laevipes</i>	Rare
Crested Dog's-tail	<i>Cynosurus cristatus</i>	Frequent
Cock's-foot	<i>Dactylis glomerata</i>	Occasional
Common Spotted-orchid	<i>Dactylorhiza fuchsii</i>	Rare
a willowherb	<i>Epilobium</i> sp.	Rare
Red Fescue	<i>Festuca rubra</i> agg.	Rare
Lesser Spearwort	<i>Ranunculus flammula</i>	Locally frequent
Common Marsh-bedstraw	<i>Galium palustre</i>	Rare
Dyer's Greweed	<i>Genista tinctoria</i>	Rare
Cut-leaved Crane's-bill	<i>Geranium dissectum</i>	Rare
a sweet-grass	<i>Glyceria</i> sp.	Rare
Ivy	<i>Hedera helix</i>	Rare
Yorkshire-fog	<i>Holcus lanatus</i>	Occasional
Cat's-ear	<i>Hypochaeris radicata</i>	Rare
Jointed Rush	<i>Juncus articulatus</i>	Occasional
Compact Rush	<i>Juncus conglomeratus</i>	Occasional
Soft-rush	<i>Juncus effusus</i>	Occasional
Hard Rush	<i>Juncus inflexus</i>	Abundant
Grass Vetchling	<i>Lathyrus nissolia</i>	Rare
Lesser Hawkbit	<i>Leontodon saxatilis</i>	Locally abundant
Oxeye Daisy	<i>Leucanthemum vulgare</i>	Rare
Perennial Rye-grass	<i>Lolium perenne</i>	Occasional
Honeysuckle	<i>Lonicera periclymenum</i>	Rare
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	Frequent
Greater Bird's-foot-trefoil	<i>Lotus pedunculatus</i>	Rare

Common name	Scientific name	Abundance (DAFOR)
Heath Wood-rush	<i>Luzula multiflora</i>	Rare
Water Mint	<i>Mentha aquatica</i>	Rare
Red Bartsia	<i>Odontites vernus</i>	Occasional
Ribwort Plantain	<i>Plantago lanceolata</i>	Occasional
Greater plantain	<i>Plantago major</i>	Rare
Annual Meadow-grass	<i>Poa annua</i>	Rare
Smooth Meadow-grass	<i>Poa pratensis</i>	Rare
Rough Meadow-grass	<i>Poa trivialis</i>	Frequent
Aspen	<i>Populus tremula</i>	Rare
Silverweed	<i>Potentilla anserina</i>	Frequent
Tormentil	<i>Potentilla erecta</i>	Locally abundant
Creeping Cinquefoil	<i>Potentilla reptans</i>	Frequent
Selfheal	<i>Prunella vulgaris</i>	Frequent
Blackthorn	<i>Prunus spinosa</i>	Rare
Common Fleabane	<i>Pulicaria dysenterica</i>	Frequent
Pedunculate Oak	<i>Quercus robur</i>	Rare
Meadow Buttercup	<i>Ranunculus acris</i>	Frequent
Creeping Buttercup	<i>Ranunculus repens</i>	Frequent
Bramble	<i>Rubus fruticosus</i> agg.	Occasional
Sheep's Sorrel	<i>Rumex acetosella</i>	Occasional
Curled Dock	<i>Rumex crispus</i>	Occasional
Broad-leaved Dock	<i>Rumex obtusifolius</i>	Occasional
Grey Willow	<i>Salix cinerea</i>	Occasional
Hoary Ragwort	<i>Senecio erucifolius</i>	Frequent
Common Ragwort	<i>Senecio jacobaea</i>	Occasional
Marsh Woundwort	<i>Stachys palustris</i>	Rare
Lesser Stitchwort	<i>Stellaria graminea</i>	Rare
Dandelion	<i>Taraxacum</i> agg.	Rare
Wood Sage	<i>Teucrium scorodonia</i>	Rare
Lesser Trefoil	<i>Trifolium dubium</i>	Rare
Red Clover	<i>Trifolium pratense</i>	Occasional
White Clover	<i>Trifolium repens</i>	Frequent
Colt's-foot	<i>Tussilago farfara</i>	Rare

Common name	Scientific name	Abundance (DAFOR)
Common Nettle	<i>Urtica dioica</i>	Rare
Germander Speedwell	<i>Veronica chamaedrys</i>	Rare
Thyme-leaved Speedwell	<i>Veronica serpyllifolia</i>	Occasional
Tufted Vetch	<i>Vicia cracca</i>	Rare
Common Vetch	<i>Vicia sativa</i>	Occasional

Upper Field

- 3.5 This field is north of Lower Field on the opposite side of the Hermitage Stream. It is characterised by a profusion of common spotted-orchids that are flowering in the late spring/early summer. The grassland is on relatively dry ground compared to the Lower Field, and similarly species-rich. A number of common meadow species are present in the field, such as meadow foxtail, common bent, common knapweed, bird's-foot-trefoil and meadow vetchling. False-oat grass is only occasional indicating that the grassland is frequently mown or is grazed.

Table 3 – Plant species list for Upper Field

Common name	Scientific name	Abundance (DAFOR)
Yarrow	<i>Achillea millefolium</i>	Rare
Agrimony	<i>Agrimonia eupatoria</i>	Occasional
Creeping Bent	<i>Agrostis stolonifera</i>	Frequent
Meadow Foxtail	<i>Alopecurus pratensis</i>	Abundant
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>	Occasional
False Oat-grass	<i>Arrhenatherum elatius</i>	Occasional
Daisy	<i>Bellis perennis</i>	Occasional
Soft-brome	<i>Bromus hordeaceus</i>	Rare
Common Knapweed	<i>Centaurea nigra</i>	Frequent
Creeping Thistle	<i>Cirsium arvense</i>	Occasional
Crested Dog's-tail	<i>Cynosurus cristatus</i>	Frequent
Cock's-foot	<i>Dactylis glomerata</i>	Occasional
Common Spotted-orchid	<i>Dactylorhiza fuchsii</i>	Frequent
Wild Carrot	<i>Daucus carota</i>	Rare
Tufted Hair-grass	<i>Deschampsia cespitosa</i>	Rare
Field Horsetail	<i>Equisetum arvense</i>	Frequent
Red Fescue	<i>Festuca rubra</i> agg.	Rare
Cut-leaved Crane's-bill	<i>Geranium dissectum</i>	Frequent
Yorkshire-fog	<i>Holcus lanatus</i>	Occasional

Common name	Scientific name	Abundance (DAFOR)
Cat's-ear	<i>Hypochaeris radicata</i>	Rare
Soft-rush	<i>Juncus effusus</i>	Rare
Grass Vetchling	<i>Lathyrus nissolia</i>	Frequent
Meadow Vetchling	<i>Lathyrus pratensis</i>	Rare
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	Rare
Ribwort Plantain	<i>Plantago lanceolata</i>	Occasional
Smooth Meadow-grass	<i>Poa pratensis</i>	Rare
Rough Meadow-grass	<i>Poa trivialis</i>	Frequent
Silverweed	<i>Potentilla anserina</i>	Occasional
Creeping Cinquefoil	<i>Potentilla reptans</i>	Frequent
Common Fleabane	<i>Pulicaria dysenterica</i>	Frequent
Meadow Buttercup	<i>Ranunculus acris</i>	Frequent
Curled Dock	<i>Rumex crispus</i>	Occasional
Hoary Ragwort	<i>Senecio erucifolius</i>	Occasional
Lesser Stitchwort	<i>Stellaria graminea</i>	Frequent
Upright Hedge-parsley	<i>Torilis japonica</i>	Occasional
Lesser Trefoil	<i>Trifolium dubium</i>	Occasional
White Clover	<i>Trifolium repens</i>	Frequent
Tufted Vetch	<i>Vicia cracca</i>	Occasional
Hairy Tare	<i>Vicia hirsuta</i>	Rare
Common Vetch	<i>Vicia sativa</i>	Frequent
Smooth Tare	<i>Vicia tetrasperma</i>	Rare

Detailed Vegetation Sampling of Lower Field

- 3.6 It was determined during a walkover of the Lower Field that the grassland habitat was similar in species composition and could be recognised as a single homogenous stand covering the whole field, and in the view of the surveyor was likely to all relate to the same NVC community. The decision was taken to locate five sampling points within the field, at which data from a single quadrat would be recorded. Four quadrats were located near to the centre of the Lower Field, and one quadrat (Quadrat 4) was located in the north of the field. The south of the field was wooded and shaded by trees (therefore did not have a grassland vegetation community). It was identified that other communities may be present in the drier area of the field or wet hollows that were too small to be surveyed in detail (Quadrat 1 was positioned in one of the hollows, and Quadrat 4 in a drier area).
- 3.7 The sampling process generated a list of plant species and associated abundance for each quadrat. The frequency of occurrence of each species across the five quadrats was also measured. The list of species for each quadrat, frequency and abundance (shown as the range of abundance values, low-high) are presented in Table 4 below.

- 3.8 From this table of results it can be seen that seven species (hard rush, creeping cinquefoil, common fleabane, silverweed, hairy sedge, meadow buttercup and daisy) had the highest frequency, occurring in four quadrats. Three species (hard rush, creeping cinquefoil and common fleabane) share the highest abundance level recorded within a single quadrat, which was 8 on the Domin Scale (see Table 5).
- 3.9 The majority of the grassland within the Lower Field is classified with reasonable confidence as MG10b *Holcus lanatus*-*Juncus effusus* (Yorkshire fog-soft rush) rush pasture, *Juncus inflexus* (hard rush) sub-community (Rodwell, 1992), albeit a rather species-rich form. Other NVC communities are present in small stands, including MG5a *Cynosurus cristatus*-*Centaurea nigra* (crested dog's tail-common knapweed) grassland, *Lathyrus pratensis* (meadow vetchling) sub-community in drier areas, and MG13 *Agrostis stolonifera*-*Alopecurus geniculatus* (creeping bent-marsh foxtail) grassland in wet hollows.
- 3.10 MATCH determined that the grassland community MG10b was most similar to the samples taken as a whole with a coefficient of similarity of 44.5%, the highest coefficient calculated for the sample set consisting of the data from all five quadrats.
- 3.11 Analysis using MATCH was also carried out on the data from each of the quadrats individually. Quadrat 1 alone was most similar to the community MG13 *Agrostis stolonifera*-*Alopecurus geniculatus* grassland, with a similarity co-efficient of 44.5%; whereas Quadrat 4 alone was most similar to the grassland community MG5 *Cynosurus cristatus*-*Centaurea nigra* grassland, *Lathyrus pratensis* sub-community, with a similarity co-efficient of 32.8%.
- 3.12 Table 4 below includes the data recorded within each quadrat taken during the detailed vegetation survey of the Lower Field.

Table 4 – National Vegetation Classification constancy table for quadrats sampled in the Lower Field (Fr. = frequency of occurrence within a sample; Abun. = range of abundance)

Common name	Scientific name	Quadrat number					F.	Abun.	
		1	2	3	4	5		Low	High
Hard rush	<i>Juncus inflexus</i>		8	8	5	6	4	5	8
Creeping cinquefoil	<i>Potentilla reptans</i>		7	8	8	5	4	5	8
Common fleabane	<i>Pulicaria dysenterica</i>		8	7	4	1	4	1	8
Silverweed	<i>Potentilla anserina</i>	1	5	4		5	4	1	5
Hairy sedge	<i>Carex hirta</i>	2	2	2		4	4	2	4
Meadow buttercup	<i>Ranunculus acris</i>		3	2	2	2	4	2	3
Daisy	<i>Bellis perennis</i>		2	1	3	1	4	1	3
Creeping buttercup	<i>Ranunculus repens</i>	4	4			4	3	4	4
Smooth meadow-grass	<i>Poa pratensis</i>			3	3	2	3	2	3
False fox-sedge	<i>Carex otrubae</i>		2		2	1	3	1	2
Common knapweed	<i>Centaurea nigra</i>		2	1	1		3	1	2
Curled dock	<i>Rumex crispus</i>		1	1		1	3	1	1
Marsh foxtail	<i>Alopecurus geniculatus</i>	5				5	2	5	5
White clover	<i>Trifolium repens</i>		4			2	2	2	4
Red clover	<i>Trifolium pratense</i>		1		3		2	1	3
a sweet-grass	<i>Glyceria</i> sp.	2			1		2	1	2
Glaucous sedge	<i>Carex flacca</i>		1	1			2	1	1
Greater plantain	<i>Plantago major</i>		1	1			2	1	1
Hoary ragwort	<i>Senecio erucifolius</i>			1		1	2	1	1
Creeping bent	<i>Agrostis stolonifera</i>	7					1	7	7
Jointed rush	<i>Juncus articulatus</i>	5					1	5	5
Lesser spearwort	<i>Ranunculus flammula</i>	5					1	5	5
Crested dog's-tail	<i>Cynosurus cristatus</i>				4		1	4	4
Soft-rush	<i>Juncus effusus</i>	4					1	4	4
Common bird's-foot-trefoil	<i>Lotus corniculatus</i>				4		1	4	4

Common name	Scientific name	Quadrat number					F.	Abun.	
		1	2	3	4	5		Low	High
Rough meadow-grass	<i>Poa trivialis</i>		4				1	4	4
Compact rush	<i>Juncus conglomeratus</i>	2					1	2	2
Perennial rye-grass	<i>Lolium perenne</i>				2		1	2	2
Greater bird's-foot-trefoil	<i>Lotus pedunculatus</i>				2		1	2	2
Selfheal	<i>Prunella vulgaris</i>				2		1	2	2
Tufted vetch	<i>Vicia cracca</i>			2			1	2	2
Bugle	<i>Ajuga reptans</i>			1			1	1	1
Soft brome	<i>Bromus hordeaceus.</i>		1				1	1	1
Oval sedge	<i>Carex leporina</i>				1		1	1	1
Common mouse-ear	<i>Cerastium fontanum</i>			1			1	1	1
Common spotted-orchid	<i>Dactylorhiza fuchsii</i>		1				1	1	1
Common marsh-bedstraw	<i>Galium palustre</i>					1	1	1	1
Red bartsia	<i>Odontites vernus</i>				1		1	1	1
Ribwort plantain	<i>Plantago lanceolata</i>					1	1	1	1
Pedunculate oak	<i>Quercus robur</i>				1		1	1	1
Common ragwort	<i>Senecio jacobaea</i>		1				1	1	1
Dandelion	<i>Taraxacum agg.</i>		1				1	1	1
Common nettle	<i>Urtica dioica</i>			1			1	1	1
Thyme-leaved speedwell	<i>Veronica serpyllifolia</i>					1	1	1	1
Common vetch	<i>Vicia sativa</i>		1				1	1	1

Table 5 –Percentage cover values with corresponding Domin Values

Percentage Cover	DOMIN Value
<4 few individuals	1
<4 some individuals	2
<4 many individuals	3
4-10%	4
11-25%	5
26-33%	6
34-50%	7
51-75%	8
76-90%	9
91-100%	10

Hedgerow Survey

Description of Hedgerows

3.13 The locations of the Hedgerows surveyed are shown on Figure 15A.1.

Hedgerow 1 (Long Hedge)

3.14 This hedgerow is orientated north-south and forms the boundary between two fallow fields in the west of the site. It is approximately five metres in height on average and four metres wide and composed almost entirely of hawthorn, with grey willow, pedunculate oak, field maple, blackthorn and ash occasional. The marginal vegetation at the base extends 1-1.5 m from the hedgerow and the most abundant species present are common nettle, hogweed, false oat-grass, ground-ivy and bracken. Bush vetch and crosswort are also present, but

rare. The hedgerow is intact, apart from gaps at either end for farm access. There have been hazel dormice recorded nesting in this hedgerow, and yellowhammer and whitethroat were also seen within the hedgerow during the survey.

Hedgerow 2 (Adder Hedge)

- 3.15 This hedgerow is present in the south of the site and is orientated east-west. It is intact (except for gates at either end) and forms the boundary between a fallow field and pasture grazed occasionally by horses. It is approximately four metres in height on average and two metres wide and composed of hawthorn, with pedunculate oak rare. There are wide (2 m) margins dominated by bramble and common nettle, but with crosswort, and hedge bedstraw also present.

Hedgerow 3 (Park Lane Long Hedge)

- 3.16 This hedgerow is alongside Park Road in the centre of the site, orientated north-south. There is a fallow field to the west (across Park Road) and an arable field to the east. The hedgerow is approximately four metres in height on average and four metres wide with a wide 1.5 m margin on the western side and a narrow 0.5 m margin on the eastern side. The hedgerow is situated on a bank and there is a dry ditch on the western side.
- 3.17 Woody species include hawthorn, hazel, pedunculate oak, blackthorn and gorse, with bramble, bracken and false oat-grass abundant in the margins. The western margin is relatively species rich with perforate St. John's-wort, hemp agrimony, crosswort, foxglove, meadow vetchling, lesser stitchwort, white campion, and common figwort all present.
- 3.18 This hedgerow has wide gaps which prevent any connection with other hedgerows. Yellowhammer and whitethroat were recorded within the hedgerow during the survey.

Hedgerow 4 (Park Lane Short Hedge)

- 3.19 This hedgerow is present in the north of the site and is orientated east-west. It is connected to H1 and intact in the eastern section, but there is a wide gap in the western section. Adjacent fields are arable to the north, and fallow to the south. The hedgerow is approximately four metres in height on average and three metres wide and composed of hawthorn, with a mature pedunculate oak trees present. There are margins 1.5 m wide at the base, dominated by bramble, common nettle and bracken.

Hedgerow 5 (Dunsbury Hill Wood hedgerow)

- 3.20 This hedgerow is on the north-eastern boundary of the site and runs parallel to a bridle path (on the southern side) that had at the time of the survey been recently surfaced. It is orientated east-west. The adjacent land use is arable on both the northern and southern sides. The hedgerow connects to scrub that surrounds a pond at its western end and to woodland at its eastern end. It is approximately four metres in height on average and four metres wide with narrow 0.5 m margins, and is situated on a bank.
- 3.21 Woody species present include blackthorn, elder, hawthorn, wild privet, ash and grey willow. Standard pedunculate oak trees present in the centre of the hedgerow shade this section. The margins have common nettle, cleavers, ivy, bramble, garlic mustard, wood avens, hedge woundwort, false oat-grass, hogweed, bracken and honeysuckle.

Assessment of the Importance of the Hedgerows Surveyed under the Hedgerow Regulations

3.22 Table 5 below lists the relevant criteria for determining if the hedgerows surveyed are 'important' hedgerows under the Hedgerow Regulations.

Table 6 – Assessment of the hedgerows surveyed against the criteria in Schedule 1, Part 2, Wildlife and Landscape of the Hedgerow Regulations 1997

Ref.	Length (m)	Width (m)	No. woody species /30m	No. woodland species	Proportion of gaps	No. standard trees	Presence of ditch, bank or wall	Presence of adjacent rights of way	Connections (with points scored)	Other notable features
Long Hedge	345	4	6	1	<10%	2	Dry ditch present	None	Connects to hedgerows at either end (2 points)	Hazel dormouse present
Adder Hedge	160	2	1	0	<10%	0	None	None	Connects to woodland at either end (4 points)	
Park Lane Long Hedge	250	4	4	1	>10%	3	Dry ditch and bank present	Road used as Public Path (Park Road) adjacent to the western side	No connections where gaps <10m (0 points)	
Park Lane Long Hedge	220	3	2	0	>10%	0	None	None	Connects to hedgerows at either end (2 points)	
Dunsbury Hill Wood hedgerow	240	4	7	3	<10%	4	Bank present	Parallel bridleway on southern side	Connects to a pond and woodland (4 points)	

- 3.23 As a result of the assessment, three of the hedgerows surveyed (Long Hedge, Park Lane Long Hedge and Dunsbury Hill Wood Hedgerow) qualify as 'important' hedgerows in respect of the wildlife and landscape criteria set out in Schedule 1 of the Hedgerow Regulations (1997).
- 3.24 The Long Hedge traverses the site from north to south between Beech Wood and Park Lane. This hedgerow qualifies as important due to the presence of dormice (a species listed on Schedule 5 of the Wildlife and Countryside Act 1981, as amended).
- 3.25 Park Lane Long Hedge is adjacent to Park Lane (bridleway 123) in the east of the site; and Dunsbury Hill Wood Hedgerow is adjacent to bridleway 120 in the north of the site. These two hedgerows qualify as important hedgerows due to their situation adjacent to bridleways, and the presence of other features such as banks, ditches and the number of woody species.

4. Discussion and Conclusions

- 4.1 Using the Phase 1 Habitat Survey (JNCC 2010) classification, the habitats surveyed at the site are described as semi-improved neutral grassland.
- 4.2 The grassland NVC communities MG10b and MG13 are typical of poorly-drained pastures and frequent in the south-eastern lowland. The grassland community MG5a is typical of more species-rich pastures and meadows and occurs throughout the British lowlands but has become rare due to agricultural improvement (Rodwell, 1992). However, the extent of this community at the site is small due to the generally damp underlying soil conditions.
- 4.3 No notable habitats or plant species (referred to in paragraph 2.4) were identified at the site during the survey.
- 4.4 All hedgerows consisting predominantly (at least 80%) of at least one native woody species of tree/shrub are a Priority Habitat in the UK BAP and hedgerows are included in the list of species and habitats of principal importance for the conservation of biodiversity under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Three of the hedgerows surveyed (Long Hedge, Park Lane Long Hedge and Dunsbury Hill Wood Hedgerow) also qualify as 'important' hedgerows in respect of the wildlife and landscape criteria set out in Schedule 1 of the Hedgerow Regulations (1997).
- 4.5 Proposed mitigation measures are discussed in the Ecology chapter of the ES.

5. References

- Cooper, E. A. (1997) *Summary descriptions of National Vegetation Classification grassland and montane communities*: UK Nature Conservation Series No. 14. Joint Nature Conservation Committee, Peterborough
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