

APPENDIX 10.10

THE BOWERS BUSINESS PARK PLOT AND LUGSDALE RAILWAY SIDINGS

BASELINE DESCRIPTION AND EVALUATION

1.0 Introduction – General Description

- 1.1 The surveys in 2002 included the habitats and vegetation of the area of disused railway sidings and associated land off Tan House Lane north of the disused St. Helens Canal and Widnes Warth Saltmarsh, about 200-500 metres east of the Mersey Gateway approach to the Ditton roundabout (**JNCC Habitat Survey Map 5**).
- 1.2 The land, of approximately 13 hectares, is bounded by industrial buildings in the north and Tan House Lane to the east. The survey revealed a large area of stockpiled sand and gravel to the south, beyond the railway line and extending to the St. Helens Canal.
- 1.3 The site was surveyed as four distinct areas, namely:-
- i. A semi-circular shaped area referred to as the Bowers Park Business Plot.
 - ii. The roundabout within the areas.
 - iii. An elongated area including railway sidings (Lugsdale railway sidings).
 - iv. A square area known as Lugsdale (North Lugsdale Field).

2.0 The Bowers Business Park Plot

- 2.1 This area, of 3.5 hectares, is bounded by railway lines in the south, industrial buildings to the north, a new road along the eastern side and a vegetated bund colonised by coarse grasses, tall herbs and scattered shrubs with young trees surrounding the eastern side of the area. There was dense Bramble on some of the slopes.
- 2.2 The flat grassland area within the area bounded by the bund and road contained four distinct vegetation types.
- Short Grassland*
- 2.3 The short grassland closest to the access road and roundabout consisted of many species characteristic of disturbed, calcicolous vegetation. The most frequent species include Creeping Fescue (*Festuca rubra*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Meadow Vetchling (*Lathyrus pratensis*), Creeping Cinquefoil (*Potentilla reptans*), Barren Brome (*Anisantha sterilis*), Squirreltail Fescue (*Vulpia bromoides*), Soft Brome (*Bromus hordeaceus*), Coltsfoot (*Tussilago farfara*), Annual Meadow-grass (*Poa annua*), Pineappleweed (*Matricaria discoidea*), White Clover (*Trifolium repens*), Yarrow (*Achillea millefolium*) and Teasel (*Dipsacus fullonum*) (**Table 1**).
- 2.4 The short grassland supported numerous butterflies including Common Blue, Large White, Meadow Brown, Small Tortoiseshell and Gatekeeper. The abundance of low growing legumes such as Meadow Vetchling, White Clover and Common Bird's-foot-trefoil provided important food

plants for the larvae of Common Blue. The large number of grass species provided suitable habitat for Meadow Brown and Gatekeeper butterfly larvae,

Tall Grassland

- 2.5 The taller and coarser grassland consisted of False Oat-grass (*Arrhenatherum elatius*), Cocksfoot (*Dactylis glomerata*), Yorkshire Fog (*Holcus lanatus*) and Common Couch (*Elytrigia repens*) with dense patches of Meadow Vetchling (**Table 1**), together with other commoner vegetation of disturbed ground.

Scattered Scrub

- 2.6 At the narrowest part of the grassland, west of the end of the access road, the scrub included Gorse (*Ulex europaeus*) and Broom (*Cytisus scoparius*) and a colony of Bee Orchids (*Ophrys apifera*). Various woody species were colonising the nearby limestone chippings.
- 2.7 Towards the road there is a transition to other woody species including Goat Willow (*Salix caprea*), Silver Birch (*Betula pendula*), Hawthorn (*Crataegus monogyna*), Sycamore (*Acer pseudoplatanus*), Alder (*Alnus glutinosa*) and White Poplar (*Populus alba*) trees growing on a pile of limestone chippings. Associated herbs included Weld (*Reseda lutea*), Nipplewort (*Lapsana communis*), Creeping Cinquefoil (*Potentilla reptans*) and Goat's-beard (*Tragopogon pratensis*).

Wet Grassland

- 2.8 At the southern extremity of the site was an area of wet ground colonised by dense stands of Soft Rush (*Juncus effusus*), Yorkshire Fog (*Holcus lanatus*), Reed Canary-grass (*Phalaris arundinacea*), Marsh Willowherb (*Epilobium palustre*) and Common Fleabane (*Pulicaria dysenterica*) with locally sparse vegetation of scattered Toad Rush (*Juncus bufonius*), Celery-leaved Buttercup (*Ranunculus sceleratus*) and Hard Rush (*Juncus inflexus*).
- 2.9 NVC communities in the Bowers Business Park Plot included:
- i. MG1 False Oat coarse grassland.
 - ii. MG10a Yorkshire Fog-Soft Rush (Soft Rush sub-community).
 - iii. MG10b Yorkshire Fog-Soft Rush (Hard Rush sub-community).
 - iv. S28 Reed Canary grass tall-herb fen.
 - v. W24 Bramble-Yorkshire Fog underscrub community.
 - vi. W23 Gorse-Bramble underscrub

3.0 Roundabout at the Bowers Business Park Area

- 3.1 There was natural colonisation of parts of the roundabout area by coarse grassland and tall-herb vegetation. Abundant species included False Oat-grass, Creeping Fescue, Rosebay Willowherb (*Chamerion angustifolium*), Silverweed (*Potentilla anserina*), Lesser Trefoil (*Trifolium dubium*) and Tufted Vetch (*Vicia cracca*) (**Table 2**). Frequent species included Creeping Cinquefoil, Meadow Vetchling and Common Vetch (*Vicia sativa*).
- 3.2 Dense Bramble and rose bushes provided good small bird breeding habitat and the areas of shorter grassland with abundant legumes were good butterfly breeding habitats.

4.0 The Railway Sidings South of Lugsdale

4.1 This elongated area of about 7.0 hectares extends from the gate and entrance off Tan House Lane west along the railway track to the access road of the Bowers Business Park.

4.2 This railway sidings area was colonised by calcicolous plant communities of noteworthy species including orchids (**Table 3**), some of which are uncommon in Cheshire. The area to the north of the railway track is colonised by coarse and unimproved grassland with scattered shrubs and wetland patches.

Railway Sidings and the Eastern Extremity of the Area

4.3 The concrete area extending into the site from the mound was colonised by short vegetation including a local abundance of Black Medick (*Medicago lupulina*), Squirreltail Fescue (*Vulpia bromoides*), Lesser Trefoil and White Clover (*Trifolium repens*) (**Table 3**). Species of significance here included Common Centaury (*Centaureum erythraea*) and Yellow-wort (*Blackstonia perfoliata*). Further west into the site was taller and coarser grassland.

The Railway Tracks

4.4 The vegetation on the railway sleepers and limestone chippings was very sparse, the most abundant species being Herb Robert (*Geranium robertianum*).

4.5 In patches throughout the field were areas of shorter grassland, possibly where calcareous waste has been deposited in the past. Plants characteristic of these areas included Common Bird's-foot-trefoil and very local Bee Orchids (*Orchis apifera*).

4.6 An area of wet ground extended from a wet ditch to the west of the site. The wet ditch was colonised by Bulrush (*Typha latifolia*), Marsh Foxtail (*Alopecurus geniculatus*), Floating Sweet-grass (*Glyceria fluitans*), Creeping Bent, Creeping Buttercup, and algae. The marginal wetland vegetation extending from the ditch included Soft Rush, Glaucous Sedge (*Carex flacca*) and Hairy Sedge (*Carex hirta*). Beyond was grassland with abundant Creeping Bent, Hard Rush and Silverweed.

4.7 At the western end of the site the ground was less disturbed, with more advanced development of coarse grassland containing umbellifers. Butterflies were extremely abundant here due to the abundance of larval food plants such as Common Bird's-foot-trefoil and the large amount of open grassland and other legumes. Species noted included Common Blue, Meadow Brown, Small Tortoiseshell, Gatekeeper, Cinnabar and 6-Spot Burnet moths. Other abundant invertebrates included numerous spider nurseries in the grassland, anthills and grasshoppers. The vegetation is grazed by rabbits.

4.8 NVC communities of this land included:-

- i. MG1 False Oat-grass coarse grassland community.
- ii. MG11 Creeping Fescue-Creeping Bent-Silverweed inundation grassland.
- iii. MG10 Yorkshire Fog-Soft Rush (Hard Rush sub-community) wet grassland.
- iv. W24 Bramble-Yorkshire Fog underscrub community.
- v. W25 Bracken-Bramble underscrub community.
- vi. OV26 Great Willowherb tall-herb community.
- vii. OV24 Common Nettle-Cleavers tall-herb community.

- viii. S12 Bulrush tall-swamp community

5.0 Lugsdale Field

- 5.1 This square grassland had been grazed by horses. The majority of the grassland consisted of common grass species such as Common Bent, Creeping Bent, False Oat-grass, Perennial Ryegrass and Creeping Fescue (**Table 4**). Herb species amongst the short-grazed grasses included frequent Lesser Trefoil, Hairy Tare (*Vicia hirsuta*), Tufted Vetch, White Clover, Creeping Buttercup, Creeping Cinquefoil and Ribwort Plantain. Forb species that occur very locally here included Bladder Campion (*Silene vulgaris*), Bittersweet (*Solanum dulcamara*), Hedge Woundwort (*Stachys sylvatica*), Orange Hawkweed (*Pilosella aurantiaca*) and Bee Orchid.
- 5.2 There was an area of wetter ground colonised by Soft Rush, Remote Sedge (*Carex remota*), Hairy Sedge, Hard Rush, Common Spike-rush (*Eleocharis palustris*) and a small stand of Common Reed (*Phragmites australis*). NVC communities were:-
 - i. MG1 False Oat-grass coarse grassland community.
 - ii. W24 Bramble-Yorkshire Fog underscrub community.
 - iii. MG10 Yorkshire Fog-Soft Rush wet grassland community.
 - iv. S4 Common Reed tall-swamp community
- 5.3 The field was ideal for breeding Lapwings which were seen during this survey and during the fortnightly breeding bird surveys.

6.0 Evaluation of the Business Park Plot and Railway Sidings Areas

- 6.1 The area had botanical and butterfly interests which were assessed as being transient due to the early stages of colonisation of the plant communities and the likelihood of loss to development. However the interests were significant in an urban context because wildlife habitats are relatively scarce in built-up areas.
- 6.2 Plant communities and species of the types present have potential value for the enhancement of sites affected by the Mersey Gateway, such as the translocation of Bee Orchids and other plant species to the Manchester Ship Canal Local Wildlife Site. Naturally colonised urban sites of the type examined may also provide a local source of native species for restoration by seed collection and large-scale translocation using turf transfer and macro-turfing.
- 6.3 It is also necessary to identify and examine areas such as vacant and disused land close to the Mersey Gateway, or land awaiting development, which may be required for construction-related activities. The use of such land must comply with the requirements of the *Wildlife and Countryside Act 1981*(as amended) to protect breeding wild birds and to avoid the spread of alien and invasive species such as Japanese Knotweed, in the wild.

TABLES OF SPECIES LISTS

TABLE 1 THE PLANT SPECIES COMPOSITION OF THE BOWERS BUSINESS PARK PLOT

Site map: North-west
Grid square = 515850

Survey date = 25/06/02
Total vegetation cover = 95%

Scientific name	Common name	Abundance	Cover
Woody species			
<i>Acer campestre</i>	Field Maple	VL	<1%
<i>Acer pseudoplatanus</i>	Sycamore	VL	<1%
<i>Alnus glutinosa</i>	Alder	VL	<1%
<i>Betula pendula</i>	Silver Birch	VLF	2%
<i>Buddleja davidii</i>	Butterfly-bush	VL	<1%
<i>Cornus sanguinea</i>	Dogwood	VL	<1%
<i>Crataegus monogyna</i>	Hawthorn	LF	10%
<i>Cytisus scoparius</i>	Broom	VLF	2%
<i>Fraxinus excelsior</i>	Ash	VL	<1%
<i>Laburnum anagyroides</i>	Laburnum	VL	<1%
<i>Larix deciduas</i>	Common Larch	VL	<1%
<i>Ligustrum ovalifolium</i>	Garden Privet	VL	<1%
<i>Pinus sylvestris</i>	Scot's Pine	VL	<1%
<i>Populus alba</i>	White Poplar	VL	<1%
<i>Prunus laurocerasus</i>	Cherry-laurel	VL	<1%
<i>Rosa canina</i>	Dog Rose	VL	<1%
<i>Salix caprea</i>	Goat Willow	VLF	5%
<i>Salix viminalis</i>	Osier	VL	<1%
<i>Sambucus nigra</i>	Elder	VL	<1%
<i>Ulex europaeus</i>	Gorse	VLA	5%
<i>Viburnum opulus</i>	Guelder Rose	VL	<1%
Monocotyledon species			
<i>Agrostis capillaris</i>	Common Bent	VLF	2%
<i>Agrostis stolonifera</i>	Creeping Bent	LF	2%
<i>Anisantha sterilis</i>	Barren Brome	VL	<1%
<i>Arrhenatherum elatius</i>	False Oat-grass	VA*	20%
<i>Bromus hordeaceus</i>	Soft Brome	LF	<1%
<i>Dactylis glomerata</i>	Cocksfoot	A*	5%
<i>Elytrigia repens</i>	Common Couch	VL	<1%
<i>Festuca rubra</i>	Creeping Fescue	LA*	3%
<i>Holcus lanatus</i>	Yorkshire Fog	LA*	5%
<i>Holcus mollis</i>	Creeping Soft-grass	VL	<1%
<i>Juncus bulbosus</i>	Bulbous Rush	VLF	<1%
<i>Juncus conglomeratus</i>	Compact Rush	VL	<1%
<i>Juncus effusus</i>	Soft Rush	VLF	1%
<i>Juncus inflexus</i>	Hard Rush	LF	5%
<i>Lolium perenne</i>	Perennial Ryegrass	LA	1%
<i>Ophrys apifrea</i>	Bee Orchid	VL	<1%

Continued

TABLE 1 CONTINUED

Scientific name	Common name	Abundance	Cover
<i>Phalaris arundinacea</i>	Reed Canary-grass	VLF	1%
<i>Phleum pratense</i>	Timothy	VL	<1%
<i>Poa annua</i>	Annual Meadow-grass	LF	5%
<i>Poa pratensis</i>	Smooth-stalked Meadow-grass	LF	5%
<i>Poa trivialis</i>	Rough-stalked Meadow-grass	LF	5%
<i>Vulpia bromoides</i>	Squirreltail Fescue	LVA	1%
Dicotyledon species			
<i>Achillea millefolium</i>	Yarrow	VLA	2%
<i>Allaria petiolata</i>	Garlic Mustard	VL	<1%
<i>Artemisia vulgaris</i>	Mugwort	LF	1%
<i>Aster novi-belgii.</i>	Michaelmas Daisy	VL	<1%
<i>Bellis perennis</i>	Daisy	VL	<1%
<i>Cerastium fontanum</i>	Common Mouse-ear	VL	<1%
<i>Chamerion angustifolium</i>	Rosebay Willowherb	VLF	1%
<i>Calystegia sepium</i>	Hedge Bindweed	LF	<1%
<i>Centaurea nigra</i>	Common Knapweed	VLA	2%
<i>Cirsium arvense</i>	Creeping Thistle	LF	2%
<i>Cirsium vulgare</i>	Spear Thistle	LF	2%
<i>Cotoneaster</i> sp.	Cotoneaster species	VL	<1%
<i>Crepis biennis</i>	Rough Hawk's-beard	VL	<1%
<i>Crepis capillaris</i>	Smooth Hawk's-beard	VL	<1%
<i>Digitalis purpurea</i>	Foxglove	VL	<1%
<i>Dipsacus fullonum</i>	Teasel	VLF	<1%
<i>Epilobium hirsutum</i>	Great Willowherb	LF	<1%
<i>Epilobium palustre</i>	Marsh Willowherb	VL	<1%
<i>Epilobium parviflorum</i>	Hoary Willowherb	R	<1%
<i>Equisetum arvense</i>	Field Horsetail	VLA/LF	2%
<i>Eupatorium cannabinum</i>	Hemp-agrimony	VL	<1%
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill	VL	<1%
<i>Geranium molle</i>	Dove's-foot Crane's-bill	VLF	1%
<i>Heracleum sphondylium</i>	Hogweed	VLF	3%
<i>Hypericum perforatum</i>	Perforate St. John's-wort	VLA	2%
<i>Hypochaeris radicata</i>	Common Cat's-ear	VL	<1%
<i>Lapsana communis</i>	Nipplewort	VL	<1%
<i>Lathyrus pratensis</i>	Meadow Vetchling	LVA	5%
<i>Leucanthemum vulgare</i>	Ox-eye Daisy	VLF	<1%
<i>Linaria vulgaris</i>	Common Toadflax	VL	<1%
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil	VLA	2%
<i>Malva sylvestris</i>	Common Mallow	VL	<1%
<i>Matricaria discoidea</i>	Pineappleweed	VL	<1%
<i>Melilotus officinalis</i>	Ribbed Melilot	VLA	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	LF	<1%
<i>Plantago major</i>	Greater Plantain	VL	<1%
<i>Polygonum persicaria</i>	Knotgrass	VL	<1%
<i>Potentilla anserina</i>	Silverweed	R	<1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	VLA	2%

Continued

TABLE 1 CONTINUED

Scientific name	Common name	Abundance	Cover
<i>Prunella vulgaris</i>	Self-heal	VL	<1%
<i>Pulicaria dysenterica</i>	Common Fleabane	VLA	2%
<i>Ranunculus acris</i>	Meadow Buttercup	VL	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	VL	<1%
<i>Ranunculus sceleratus</i>	Celery-leaved Buttercup	VL	<1%
<i>Reseda lutea</i>	Wild Mignonette	VL	<1%
<i>Reseda luteola</i>	Weld	VLF	<1%
<i>Rubus fruticosus</i>	Bramble	LA	8%
<i>Rumex crispus</i>	Curled Dock	LF	1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	LF	<1%
<i>Senecio jacobaea</i>	Common Ragwort	F*	1%
<i>Senecio squalidus</i>	Oxford Ragwort	VL	<1%
<i>Silene dioica</i>	Red Campion	VLA	<1%
<i>Sinapis arvensis</i>	Charlock	VL	<1%
<i>Sisymbrium officinale</i>	Hedge Mustard	VL	<1%
<i>Sonchus oleraceus</i>	Smooth Sow-thistle	VL	<1%
<i>Sonchus palustris</i>	Marsh Sow-thistle	VL	<1%
<i>Stachys sylvatica</i>	Hedge Woundwort	VLF	1%
<i>Taraxacum officinale</i>	Dandelion	O	<1%
<i>Tragopogon pratensis</i>	Goat's-beard	VL	<1%
<i>Trifolium dubium</i>	Lesser Trefoil	VA*	15%
<i>Trifolium medium</i>	Zig-zag Clover	VA	2%
<i>Trifolium pratense</i>	Red Clover	VA*	5%
<i>Trifolium repens</i>	White Clover	LA*	3%
<i>Tripleurospermum inodorum</i>	Scentless Mayweed	VLF	1%
<i>Tussilago farfara</i>	Coltsfoot	VLF	<1%
<i>Urtica dioica</i>	Common Nettle	LF	1%
<i>Vicia cracca</i>	Tufted Vetch	VLA	2%
<i>Vicia hirsuta</i>	Hairy Tare	VLA	1%
<i>Vicia sativa</i>	Common Vetch	LA	1%

Key to abbreviations: D = Dominant, COD = Co-dominant, A = Abundant, F = Frequent, O = Occasional, L = Local/locally, R = Rare, V = Very, * = Constant species

TABLE 2. THE PLANT SPECIES COMPOSITION OF THE ROUNDABOUT VEGETATION AT BOWERS BUSINESS PARK

Site map: North-west
Grid square = 520850

Survey date = 25/06/02
Total vegetation cover = 90%

Scientific name	Common name	Abundance	Cover
Woody species			
	White rose	LA	15%
<i>Laburnum anagyroides</i>	Laburnum	VL	2%
<i>Ligustrum ovalifolium</i>	Garden Privet	LF	5%
<i>Salix caprea</i>	Goat Willow	VL	<1%
Monocotyledon species			
<i>Agrostis capillaris</i>	Common Bent	VL	<1%
<i>Arrhenatherum elatius</i>	False Oat-grass	LA/F*	10%
<i>Bromus hordeaceus</i>	Soft Brome	LF	2%
<i>Dactylis glomerata</i>	Cocksfoot	VL	3%
<i>Festuca ovina</i>	Sheep's Fescue	LF	5%
<i>Festuca rubra</i>	Creeping Fescue	VA*	10%
<i>Holcus lanatus</i>	Yorkshire Fog	LF	<1%
<i>Lolium perenne</i>	Perennial Ryegrass	LF	2%
<i>Poa annua</i>	Annual Meadow-grass	VL	<1%
<i>Poa pratensis</i>	Smooth-stalked Meadow-grass	LF/A*	5%
Dicotyledon species			
<i>Bellis perennis</i>	Daisy	O	<1%
<i>Calystegia sepium</i>	Hedge Bindweed	LA*	3%
<i>Chamerion angustifolium</i>	Rosebay Willowherb	VLA	3%
<i>Crepis capillaris</i>	Smooth Hawk's-beard	O	<1%
<i>Epilobium palustre</i>	Marsh Willowherb	VL	<1%
<i>Epilobium parviflorum</i>	Hoary Willowherb	R	<1%
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill	VL	<1%
<i>Hypochaeris radicata</i>	Common Cat's-ear	LF	<1%
<i>Lathyrus pratensis</i>	Meadow Vetchling	LA/F*	5%
<i>Leontodon hispidus</i>	Rough Hawkbit	VL	<1%
<i>Medicago lupulina</i>	Black Medick	VLF	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	VL	<1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	LF	3%
<i>Potentilla anserina</i>	Silverweed	VLA	5%
<i>Rubus fruticosus</i>	Bramble	LF	5%
<i>Senecio jacobaea</i>	Ragwort	O	<1%
<i>Sonchus oleraceus</i>	Smooth Sow-thistle	R	<1%
<i>Sonchus palustris</i>	Marsh Sow-thistle	R	<1%
<i>Stachys sylvatica</i>	Hedge Woundwort	VLF	<1%
<i>Taraxacum officinale</i>	Dandelion	VL	2%
<i>Trifolium dubium</i>	Lesser Trefoil	LA*	2%

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TABLE 2. CONTINUED

Scientific name	Common name	Abundance	Cover
<i>Vicia cracca</i>	Tufted Vetch	VLA	2%
<i>Vicia hirsuta</i>	Hairy Tare	VLA	1%
<i>Vicia sativa</i>	Common Vetch	LF	2%
<i>Vicia sepium</i>	Bush Vetch	O	<1%

Key to abbreviations: D = Dominant, COD = Co-dominant, A = Abundant, F = Frequent, O = Occasional, L = Local/locally, R = Rare, V = Very, * = Constant species.

TABLE 3. THE PLANT SPECIES COMPOSITION OF THE VEGETATION OF THE SOUTH LUGSDALE RAILWAY SIDINGS

Site map: North-west
Grid square = 520850

Survey date = 27/06/02
Total vegetation cover = 95%

Scientific name	Common name	Abundance	Cover
Woody species			
<i>Acer psuedoplatanus</i>	Sycamore	VL	<1%
<i>Betula pendula</i>	Silver Birch	VL	<1%
<i>Buddleja davidii</i>	Butterfly-bush	VL	<1%
<i>Cornus sanguinea</i>	Dogwood	VL	<1%
<i>Crataegus monogyna</i>	Hawthorn	LF	<1%
<i>Cyticus scoparius</i>	Broom	VL	<1%
<i>Quercus robur</i>	Pendunculate Oak	VL	<1%
<i>Rosa canina</i>	Dog Rose	VL	<1%
<i>Salix caprea</i>	Goat Willow	VLA	10%
<i>Sambucus nigra</i>	Elder	VL	<1%
<i>Sorbus aucuparia</i>	Rowan	VL	<1%
<i>Sorbus intermedia</i>	Swedish Whitebeam	VL	<1%
<i>Ulex europaeus</i>	Gorse	VL	<1%
Monocotyledon species			
<i>Agrostis capillaris</i>	Common Bent	LF*	5%
<i>Agrostis stolonifera</i>	Creeping Bent	LA*	1%
<i>Alopecurus geniculatus</i>	Marsh Foxtail	VLF	<1%
<i>Alopecurus pratensis</i>	Meadow Foxtail	LF	<1%
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	VL	<1%
<i>Arrhenatherum elatius</i>	False Oat-grass	LF	10%
<i>Bromus hordeaceus</i>	Soft Brome	R	<1%
<i>Carex flacca</i>	Glaucous Sedge	VLA	5%
<i>Carex hirta</i>	Hairy Sedge	VLF	<1%
<i>Dactylis glomerata</i>	Cocksfoot	LA*	10%
<i>Dactylorhiza praetermissa</i>	Southern Marsh Orchid	VL	<1%
<i>Festuca ovina</i>	Sheep's Fescue	LF	3%
<i>Festuca pratensis</i>	Meadow Fescue	VL	<1%
<i>Festuca rubra</i>	Creeping Fescue	VLA*	5%
<i>Glyceria fluitans</i>	Floating Sweet-grass	LVA	1%
<i>Holcus lanatus</i>	Yorkshire fog	VA*	25%
<i>Juncus articulatus</i>	Jointed Rush	VL	<1%
<i>Juncus conglomeratus</i>	Compact Rush	VLA	5%
<i>Juncus effusus</i>	Soft Rush	VL	<1%
<i>Juncus inflexus</i>	Hard Rush	VLA	10%
<i>Lolium perenne</i>	Perennial Ryegrass	VLF	2%
<i>Ophrys apifera</i>	Bee Orchid	LF	<1%
<i>Phalaris arundinacea</i>	Reed Canary-grass	VL	<1%
<i>Phleum pratense</i>	Timothy	VL	<1%
<i>Poa annua</i>	Annual Meadow-grass	LF	5%
<i>Poa pratensis</i>	Smooth-stalked Meadow-grass	VLA	5%

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TABLE 3. CONTINUED

Scientific name	Common name	Abundance	Cover
<i>Poa trivialis</i>	Rough-stalked Meadow grass	VLA	5%
<i>Typha latifolia</i>	Bulrush	VL	<1%
<i>Vulpia bromoides</i>	Squirreltail Fescue	VLA*	5%
Dicotyledon species			
<i>Achillea millefolium</i>	Yarrow	VLF	<1%
<i>Aegopodium podagraria</i>	Ground Elder	VL	<1%
<i>Artemisia vulgaris</i>	Mugwort	VL	<1%
<i>Aster</i> sp.	Aster species	VLF	1%
<i>Aster novi-belgii</i>	Michaelmas Daisy	VLF	<1%
<i>Blackstonia perfoliata</i>	Yellow-wort	VLF	<1%
<i>Calystegia sepium</i>	Hedge Bindweed	LA	1%
<i>Centaurea nigra</i>	Common Knapweed	VLF	5%
<i>Cerastium fontanum</i>	Common Mouse-ear	LF	<1%
<i>Chamerion angustifolium</i>	Rosebay Willowherb	VLF	<1%
<i>Cirsium arvense</i>	Creeping Thistle	VLF	2%
<i>Cirsium vulgare</i>	Spear Thistle	VLF	2%
<i>Crepis capillaris</i>	Smooth Cat's-ear	VL	<1%
<i>Daucus carota</i>	Wild Carrot	VLF	<1%
<i>Digitalis purpurea</i>	Foxglove	VLF	<1%
<i>Dipsacus fullonum</i>	Teasel	VL	<1%
<i>Epilobium hirsutum</i>	Great Willowherb	VLA	5%
<i>Epilobium montanum</i>	Broad-leaved Willowherb	VL	<1%
<i>Epilobium palustre</i>	Marsh Willowherb	VLF	<1%
<i>Epilobium parviflorum</i>	Hoary Willowherb	R	<1%
<i>Equisetum arvense</i>	Field Horsetail	VLF	3%
<i>Eupatorium cannabinum</i>	Hemp-agrimony	VLF	2%
<i>Galium aparine</i>	Cleavers	VLF	<1%
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill	VL	<1%
<i>Geranium molle</i>	Dove's-foot Crane's-bill	VL	<1%
<i>Geranium robertianum</i>	Herb Robert	LF/A*	<1%
<i>Heracleum sphondylium</i>	Hogweed	LF	2%
<i>Hypericum perforatum</i>	Perforate St. John's-wort	VLA	3%
<i>Hypochaeris radicata</i>	Common Cat's-ear	VL	<1%
<i>Lapsana communis</i>	Nipplewort	VL	<1%
<i>Lathyrus pratensis</i>	Meadow Vetchling	VLA	6%
<i>Linaria vulgaris</i>	Common Toadflax	VLF	<1%
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil	VLA*	2%
<i>Malva sylvestris</i>	Common Mallow	VL	<1%
<i>Medicago lupulina</i>	Black Medick	VLA	10%
<i>Melilotus officinalis</i>	Ribbed Melilot	VLA	5%
<i>Mosses</i>		VLA	10%
<i>Papaver somniferum</i>	Opium Poppy	VL	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	LF	3%
<i>Plantago major</i>	Greater Plantain	O	<1%
<i>Persicaria maculosa</i>	Redshank	VLF	<1%
<i>Potentilla anserina</i>	Silverweed	VLF/A*	1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	VLF	2%

Continued

TABLE 3. CONTINUED

Scientific name	Common name	Abundance	Cover
<i>Prunella vulgaris</i>	Self-heal	VLF	1%
<i>Pteridium aquilinum</i>	Bracken	VLD	1%
<i>Pulicaria dysenterica</i>	Common Fleabane	LF	1%
<i>Ranunculus repens</i>	Creeping Buttercup	LF	<1%
<i>Reseda lutea</i>	Wild Mignonette	VL	<1%
<i>Reseda luteola</i>	Weld	VL	<1%
<i>Rhinanthus minor</i>	Yellow Rattle	VL	<1%
<i>Rubus fruticosus</i>	Bramble	VLA	5%
<i>Rumex conglomeratus</i>	Clustered Dock	VL	<1%
<i>Rumex crispus</i>	Curled Dock	LF	1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	VL	<1%
<i>Sagina procumbens</i>	Procumbent Pearlwort	VL	<1%
<i>Senecio jacobaea</i>	Ragwort	LF	2%
<i>Senecio squadalis</i>	Oxford Ragwort	VL	<1%
<i>Sisymbrium officinale</i>	Hedge Mustard	R	<1%
<i>Solanum dulcamara</i>	Bittersweet	VL	<1%
<i>Sonchus arvensis</i>	Perennial Sow-thistle	VL	<1%
<i>Sonchus oleraceus</i>	Smooth Sow-thistle	VLF	<1%
<i>Stachys sylvatica</i>	Hedge Woundwort	VL	<1%
<i>Tanacetum parthenium</i>	Feverfew	VL	<1%
<i>Taraxacum officinale</i>	Dandelion	O	<1%
<i>Tragopogon pratense</i>	Goat's-beard	VL	<1%
<i>Trifolium medium</i>	Zig-zag Clover	LF	<1%
<i>Trifolium pratense</i>	Red Clover	O	<1%
<i>Trifolium repens</i>	White Clover	O	<1%
<i>Tussilago farfara</i>	Coltsfoot	VLF	<1%
<i>Urtica dioica</i>	Common Nettle	VLF	<1%
<i>Verbascum nigrum</i>	Dark Mullein	VL	<1%
<i>Veronica arvensis</i>	Wall Speedwell	VL	<1%
<i>Veronica hederifolia</i>	Ivy-leaved Speedwell	VL	<1%
<i>Vicia cracca</i>	Tufted Vetch	LF/A*	5%
<i>Vicia hisuta</i>	Hairy Tare	LF	<1%
<i>Vicia sativa</i>	Common Vetch	LF	<1%
<i>Vicia sepium</i>	Bush Vetch	LF	<1%

Key to abbreviations: D = Dominant, COD = Co-dominant, F = Frequent, O = Occasional, L = Local/locally, V = Very, R = Rare, * = Constant species

TABLE 4. THE PLANT SPECIES COMPOSITION OF THE GRASSLAND OF THE NORTH LUGSDALE FIELD

Site map: North-west
Grid square = 520850

Survey date = 25/06/02
Total vegetation cover = 95%

Scientific name	Common name	Abundance	Cover
Woody species			
<i>Acer psuedoplatanus</i>	Sycamore	VL	<1%
<i>Buddleja davidii</i>	Butterfly-bush	VL	<1%
<i>Crataegus monogyna</i>	Hawthorn	VLA	5%
<i>Fraxinus excelsior</i>	Ash	VL	<1%
<i>Laburnum anagyroides</i>	Laburnum	VL	<1%
<i>Rosa canina</i>	Dog Rose	VL	<1%
<i>Salix cinerea</i>	Common Sallow	LF	2%
<i>Salix caprea</i>	Goat Willow	LA/F*	10%
<i>Salix fragilis</i>	Crack Willow	VL	<1%
<i>Salix viminalis</i>	Osier	VL	<1%
Monocotyledon species			
<i>Agrostis capillaris</i>	Common Bent	LF	5%
<i>Agrostis stolonifera</i>	Creeping Bent	LF	5%
<i>Arrhenatherum elatius</i>	False Oat-grass	VA*	20%
<i>Carex hirta</i>	Hairy Sedge	VLA	3%
<i>Carex remota</i>	Remote Sedge	VL	<1%
<i>Dactylis glomerata</i>	Cocksfoot	LF	2%
<i>Eleocharis palustris</i>	Common Spike-rush	VLF	1%
<i>Elytrigia repens</i>	Common Couch grass	VL	<1%
<i>Festuca rubra</i>	Creeping Fescue	LF*	5%
<i>Holcus lanatus</i>	Yorkshire Fog	LF*	2%
<i>Juncus effusus</i>	Soft Rush	VLF	<1%
<i>Juncus inflexus</i>	Hard Rush	VLF	3%
<i>Lolium perenne</i>	Perennial Ryegrass	LF	3%
<i>Orphrys apifera</i>	Bee Orchid	R	<1%
<i>Phleum pratense</i>	Timothy	VLF	1%
<i>Phragmites australis</i>	Common Reed	VLA	2%
<i>Poa annua</i>	Annual Meadow-grass	VL	<1%
<i>Poa trivialis</i>	Rough-stalked Meadow-grass	LF	1%
Dicotyledon species			
<i>Achillea millefolium</i>	Yarrow	VLF	<1%
<i>Artemisia vulgaris</i>	Mugwort	LF	1%
<i>Centaurea nigra</i>	Common Knapweed	VLF	<1%
<i>Centranthus ruber</i>	Red Valerian	VL	<1%
<i>Cerastium fontanum</i>	Common Mouse-ear	VLF	<1%
<i>Cirsium arvense</i>	Creeping Thistle	LF	2%
<i>Crepis capillaris</i>	Smooth Cat's Ear	VL	<1%
<i>Epilobium hirsutum</i>	Great Willowherb	VLF	2%
<i>Equisetum arvense</i>	Field Horsetail	VLF	<1%

Continued

TABLE 4. CONTINUED

Scientific name	Common name	Abundance	Cover
<i>Galeobdolon tetrahit</i>	Common Hemp-nettle	VL	<1%
<i>Galium aparine</i>	Cleavers	VL	<1%
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill	O	<1%
<i>Geranium robertianum</i>	Herb Robert	VL	<1%
<i>Heracleum sphondylium</i>	Hogweed	VLF	1%
<i>Lathyrus pratensis</i>	Meadow Vetchling	VLF	1%
<i>Lavatera arborea</i>	Tree Mallow	VL	<1%
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil	VLF	<1%
<i>Malva sylvestris</i>	Common Mallow	VL	<1%
<i>Persicaria maculosa</i>	Redshank	VL	<1%
<i>Pilosella aurantiacum</i>	Orange Hawkweed	R	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	VA*	10%
<i>Plantago major</i>	Greater Plantain	O	<1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	LF	3%
<i>Prunella vulgaris</i>	Self-heal	VL	<1%
<i>Pulicaria dysenterica</i>	Common Fleabane	LF	2%
<i>Ranunculus repens</i>	Creeping Buttercup	LF	3%
<i>Rubus fruticosus</i>	Bramble	LF	2%
<i>Rumex acetosa</i>	Common Sorrel	VLF	<1%
<i>Rumex conglomeratus</i>	Clustered Dock	O	<1%
<i>Sedum reflexum</i>	Reflexed Stonecrop	VLF	<1%
<i>Senecio jacobaea</i>	Common Ragwort	VLF	<1%
<i>Silene dioica</i>	Red Campion	VL	<1%
<i>Silene vulgaris</i>	Bladder Campion	R	<1%
<i>Solanum dulcamara</i>	Bittersweet	VL	<1%
<i>Sonchus arvensis</i>	Perennial Sow-thistle	VL	<1%
<i>Sonchus oleraceus</i>	Smooth Sow-thistle	VL	<1%
<i>Stachys sylvatica</i>	Hedge Woundwort	VL	<1%
<i>Taraxacum officinale</i>	Dandelion	VL	<1%
<i>Trifolium dubium</i>	Lesser Trefoil	LF	5%
<i>Trifolium medium</i>	Zig-zag Clover	VL	<1%
<i>Trifolium pratense</i>	Red Clover	VLF	1%
<i>Trifolium repens</i>	White Clover	LF	2%
<i>Tussilago farfara</i>	Coltsfoot	VLF	2%
<i>Urtica dioica</i>	Common Nettle	LF	1%
<i>Vicia cracca</i>	Tufted Vetch	LF	1%
<i>Vicia hirsute</i>	Hairy Tare	VLA	2%
<i>Vicia sativa</i>	Common Vetch	LF	2%

Key to abbreviations: D = Dominant, COD = Co-dominant, A = Abundant, F = Frequent, O = Occasional, L = Local/locally, R = Rare, V = Very, * = Constant species