APPENDIX 10.9

NORBURY WOOD AND MARSH LOCAL WILDLIFE SITE AND LOCAL NATURE RESERVE, AND OXMOOOR WOOD AND PONDS LOCAL NATURE RESERVE

BASELINE DESCRIPTION AND EVALUATION

1.0 Introduction – General Description

- 1.1 Norbury Marsh (**Figure 10**) incorporates Oxmoor Local Nature Reserve which is situated on the south side of the Manchester Ship Canal only a little over 100 metres from the Upper Mersey Estuary and only 0.7 kilometre south-east of the Power Station Lagoons.
- 1.2 The Local Nature Reserve and the surrounding area consist of a mixture of open water habitats including a fairly large man-made pond, two drainage ditches and an outflow connected to the Manchester Ship Canal. Other vegetation and habitats include wetland vegetation, notably Common Reed and Bulrush tall-swamp, rush-pasture, coarse grassland and densely planted scrub.

2.0 Description of the Habitats and Vegetation

Horse Pasture adjacent to the Manchester Ship Canal (Oxmoor 1)

- 2.1 The field adjacent to the Ship Canal (**Figure 10**) is semi-improved grassland grazed by horses. At the time of survey the grassland was tall and dense. Abundant species include Cocksfoot (*Dactylis glomerata*), Cow Parsley (*Anthriscus sylvestris*), Crested Dogstail (*Cynosurus cristatus*), Yarrow (*Achillea millefolium*), Creeping Fescue (*Festuca rubra*), Ribwort Plantain (*Plantago lanceolata*) and Creeping Buttercup (*Ranunculus repens*) (**Table 1**). Frequent grasses include Meadow Foxtail (*Alopecurus pratensis*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Soft Brome (*Bromus hordeaceus*), Perennial Ryegrass (*Lolium perenne*) and Annual Meadow-grass (*Poa annua*) with associated forbs such as Red Clover (*Trifolium pratense*), Creeping Cinquefoil (*Potentilla reptans*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Common Mouse-ear (*Cerastium fontanum*) and Daisy (*Bellis perennis*).
- 2.2 Species of note in this field include a fairly large area of abundant and almost dominant Butterbur (*Petasites hybridus*) with associated Hairy Sedge (*Carex hirta*), Hogweed (*Heracleum sphondylium*) and Hemlock Water Dropwort (*Oenanthe crocata*). There are also frequent stands of Common Knapweed (*Centaurea nigra*) throughout the field.
- 2.3 The grassland of field represents the MG6 Perennial Ryegrass-Crested Dogstail mesotrophic grassland community of the NVC.
- 2.4 The strip of land closest to the Ship Canal is more disturbed and colonised by ruderal species such as Greater Plantain (*Plantago major*), Knotgrass (*Polygonum aviculare*), Creeping Thistle (*Cirsium arvense*), Yarrow, False Oat-grass (*Arrhenatherum elatius*) and Cocksfoot grass. This grassland is more characteristic of the MG1 False Oat-grass coarse grassland community.
- 2.5 Many Skylarks were heard over this grassland and there were frequent Meadow Brown butterflies.
- 2.6 A small ditch marks the southern edge of the field. The slope down to the ditch supports very

abundant Meadowsweet (*Filipendula ulmaria*) and Reed Canary-grass (*Phalaris arundinacea*), with Bramble (*Rubus fruticosus*) and stands of Rosebay Willowherb (*Chamerion angustifolium*) closer to the top of the bank. There are also scattered Hawthorn (*Crataegus monogyna*) and Elder (*Sambucus nigra*) shrubs lining the ditch. The ditch bank vegetation represents the W24 Bramble-Yorkshire Fog underscrub and the OV27 Rosebay Willowherb tall-herb NVC communities.

2.7 There was evidence of Water Voles along the ditch.

Field Between Two Ditches (Oxmoor 2)

- 2.8 This semi-improved grassland (**Figure 10**) is situated at a lower level than the previously described horse pasture. The vegetation is characteristic of wetter ground as there is a high frequency of Soft Rush (*Juncus effusus*), Creeping Buttercup, Curled Dock (*Rumex crispus*) and local Hairy Sedge plus Cuckoo-flower (*Cardamine pratensis*) (**Table 2**). The wetter areas of grassland are the MG10 Yorkshire Fog-Soft Rush community of the NVC.
- 2.9 The remainder of the grassland is the MG6 Perennial Ryegrass-Crested Dogstail grassland. Abundant species include Sweet Vernal-grass, Soft Brome, Creeping Fescue, Crested Dogstail, Cocksfoot, Perennial Ryegrass, Reed Canary-grass and legume species such as Bush Vetch (*Vicia sepium*), Meadow Vetchling (*Lathyrus pratensis*) and Common Vetch (*Vicia sativa*).
- 2.10 The Keckwick Brook tributary appears to be good Water Vole (*Arvicola terrestris*) habitat because the banks are steep and formed from a muddy substratum, and the dense vegetation extends to the water surface. No holes were visible during the survey on the 27th May 2002, but the water level was high as a result of high rainfall but chewed vegetation was evident.
- 2.11 Species along the banks of the brook include Reed Canary-grass, Broad-leaved Willowherb (*Epilobium montanum*), Hogweed, False Oat-grass, Creeping Thistle, Bramble, Male Fern (*Dryopteris filix-mas*) and scattered Hawthorn shrubs.

Overflow (wet grassland) (Oxmoor 3)

- 2.12 The land to the south of the ditch includes an excavated basin (**Figure 10**) which is believed to be used for the storage of floodwater. This area of wetland has been managed by Halton Borough Council and planted. The description and species list of this area relate to conditions in May 2002 but this area is variable and the planting which had taken place during the summer will increase the species diversity.
- 2.13 The majority of this area closest to the ditch is a mosaic of tall-swamp vegetation including Common Reed (*Phragmites australis*) and Bulrush which represent the S4 Common Reed and S12 Bulrush swamp communities of the NVC respectively. The remainder of the wet grassland on the hard and cohesive soil includes Soft Rush, Hard Rush (*Juncus inflexus*), Yorkshire Fog, Tufted Hair-grass, Ribwort Plantain, Common Knapweed, Creeping Buttercup, Cuckoo-flower and sedge species including Hairy Sedge and Glaucous Sedge (*Carex flacca*) (**Table 3**).
- 2.14 This assemblage of species on the disturbed ground is the MG10 Yorkshire Fog-Soft Rush grassland with scattered patches of S28 Reed Canary-grass tall-herb fen community. Species of note are Southern Marsh Orchid (*Dactylorhiza praetermissa*) hybrids. There are reports that Marsh Helleborine (*Epipactis palustris*) had been planted here.
- 2.15 Bulrush (*Typha latifolia*) and Common Reed surround the man-made pond at the eastern end of the wet grassland; the only aquatic vegetation noted in the present survey includes Common Duckweed (*Lemna minor*). The pond has steep sides and a number of waterfowl species were present amongst the reeds including Moorhen and Mallard.

- 2.16 The area of open water to the north of the pumping station (**Figure 10**) is surrounded by a dense stand of Common Reed. Reed Warbler and Sedge Warbler were audible here. Other vegetation around the water includes, on disturbed ground, Redshank (*Persicaria maculosa*), Celery-leaved Buttercup (*Ranunculus sceleratus*) and Scentless Mayweed (*Tripleurospermum inodorum*). There are also scattered Hawthorn and Goat Willow (Salix caprea) shrubs around the margins. MG1 False Oat-grass coarse grassland with a variety of tall herbs such as Hemlock (*Conium maculatum*), Common Mugwort (*Artemisia vulgaris*), Rosebay Willowherb and Fleabane (*Pulicaria dysenterica*) surrounds the open water and there are mown pathways into the grassland.
- 2.17 Along the northern edge of the water is a small area of grassland with very abundant vetch species including Tufted Vetch (*Vicia cracca*) and Meadow Vetchling. This grassland is suitable for populations of breeding butterflies.

Disturbed Area Adjacent to the Manchester Ship Canal (Oxmoor 4)

- At the time of survey excavation works were being carried out in the Oxmoor 4 (**Figure 4**) area. The area that was accessible has been colonised by ruderal species including abundant False Oat-grass, Hogweed, Redshank, Butterbur, Hairy Tare (*Vicia hirsuta*), Tufted Vetch, Scentless Mayweed, Hedge Woundwort (*Stachys sylvatica*), Bramble and Creeping Cinquefoil (**Table 4**). Frequent associates include Common Bent (*Agrostis capillaris*), Soft Brome, Common Couchgrass (*Elytrigia repens*), Field Horsetail (*Equisetum arvense*), Ribwort Plantain and Lesser Trefoil. (*Trifolium dubium*) Closer to the Ship Canal are scattered shrubs of Gorse (*Ulex europaeus*), Broom (*Cytisus scoparius*), Hawthorn and Goat Willow.
- 2.19 There is a small pool in this area but the water was stagnant and appeared to be polluted as there was a green film over the water surface.

Land to the West of the Concrete Outlet Channel (Oxmoor 5)

- 2.20 The land to the west of the concrete outlet channel extending from the pumping station into the Ship Canal (**Figure 10**) is covered by mown grassland, scrub, tall-herb and tall swamp vegetation.
- 2.21 Adjacent to the concrete sluice is an area of developing MG1 False Oat-grass grassland. Abundant species here include Great Willowherb, Field Horsetail, Cocksfoot, Tufted Hair-grass, False Oat-grass, Creeping Bent (*Agrostis stolonifera*) and Sweet Vernal-grass (**Table 5**). There is a small patch of more calcareous waste which supports Yellow-wort (*Blackstonia perfoliata*) and Goat's Beard (*Tragopogon pratensis*).
- 2.22 Further west from the grassland is a patch of scrub; woody species here include Sycamore (*Acer ssudoplatanus*), Hawthorn, Goat Willow and Alder. Extending west from the scrub is a tall and dense area of Common Reed tall-swamp and MG1 coarse grassland. The remainder of the Ship Canal bank is mown grassland with metal grids and brick structures throughout. Directly on the bank is a strip of young Silver Birch (*Betula pendula*) trees and scattered within the mown grassland are planted Silver Birch, Alder, Hawthorn and Elder.

Grassland off Pembroke Court (Oxmoor 6)

- 2.23 This small area of grassland (**Figure 10**) has developed by the colonisation of tipped waste, presumably from the construction of the surrounding offices. There is a marginal wet area along the fence to the pumping station that is colonised by Reed Canary-grass, Broad-leaved Willowherb, Soft Rush and Goat Willow saplings.
- 2.24 The grassland consists of abundant Bush Vetch, Creeping Fescue, Common Bent, Hard Rush, Tufted Hair-grass, Yorkshire Fog, Common Bird's-foot-trefoil, Daisy and Ragwort (*Senecio*

jacobaea) (**Table 6**). Frequent species include Dandelion (*Taraxacum officinale*), Coltsfoot, Common Cat's-ear (*Hypochaeris radicata*), White Clover (Trifolium repens), Creeping Buttercup and Creeping Thistle. Notable species include Perforate St. John's Wort (*Hypericum perforatum*), Common Knapweed, Common Centaury (*Centaurium erythraea*), Yellow-wort and Southern Marsh Orchid.

- 2.25 There is a virtually dried-out stream on the eastern edge of the grassland that is colonised by Common Reed, Bulrush, Reed Canary-grass, Broad-leaved Willowherb, Yorkshire Fog, scattered Crack Willow (Salix fragilis) scrub, Common Nettle (Urtica dioica) and Cleavers (Galium aparine).
- 2.26 The two wetter areas contain the S12 Bulrush tall-swamp, S4 Common Reed tall-swamp and reedbeds, and S28 Reed Canary-grass tall-herb fen NVC communities.
- 2.27 To the east of the grassland is a small area of planted scrub. Woody species here are Hawthorn, Crack Willow, Alder, Wild Cherry (*Prunus avium*), Scot's Pine, Silver Birch and Beech (*Fagus sylvatica*). Alder is more frequent near the stream by the Common Reed and Bulrush tall-swamp. The field layer consists of Common Nettle, Cleavers and Creeping Buttercup.
- 2.28 There is a path through the plantation with associated clearings and patches of MG1 False Oatgrass coarse grassland, MG9 Tufted Hairgrass-Yorkshire Fog coarse grassland, and MG10 Yorkshire Fog-Soft Rush wet grassland. The clearings also provide sheltered areas and butterflies including Peacock were abundant.

Wet Woodland (Oxmoor 7)

- The land to the south of the mown grassland and to the west of the office buildings (**Figure 10**) includes an area of landscaped vegetation adjacent to the buildings; this comprises trimmed hedges of Box (*Buxus sempervirons*), Dogwood (*Cornus sanguinea*) and Laburnum (*Laburnum anagyroides*). Beyond this is a track leading to Warrington Road; along the western side of the track is a hedge of Hawthorn, Blackthorn (*Prunus spinosa*) and Holly (*Ilex aquifolium*) with a field layer of Hogweed, Common Nettle, Yorkshire Fog, Hedge Bindweed (*Calystegia sepium*), Cocksfoot and Bramble.
- 2.30 On either side of the above track is wet and young Alder woodland. This woodland is very dark and dense, and has received no recent management. There is a mosaic of pools and small areas of stagnant water, some of which contained Common Duckweed (*Lemna minor*).
- 2.31 The most abundant woody species is Alder with associated Goat Willow and Crack Willow (**Table 6**). The field layer is an abundant and dense growth of Common Nettle with Red Campion (*Silene dioica*), Reed Canary-grass, Yorkshire Fog, Common Reed, False Oat-grass, Hard Fern (*Blechnum spicant*) and Gypsywort (*Lycopus europaeus*). Frequent species in the clearings in the canopy include Creeping Buttercup, Hogweed, Cleavers and Hedge Bindweed. There is a heronry in this woodland.

3.0 Evaluation of Norbury Marsh LWS, Oxmoor LNR and the Surrounding Area

- 3.1 Norbury Marsh LWS and Oxmoor LNR are of importance in an urban context for their vegetation including calcicolous grassland, reedbeds, and vegetation mosaics including scrub. There are Water Voles, breeding bird and butterfly interests.
- 3.2 Also of interest and importance are a good mollusc fauna, wolf spiders, breeding birds including Skylarks,
- 3.3 Botanical interests include orchids, Yellow Rattle (*Rhinanthus minor*) and Yellow-wort.

- 3.4 The most significant feature is the wet Alder woodland which is a good representative of Habitat of Principal Importance. It is also of importance for its heronry which is likely to increase in size.
- 3.5 The urban location of the site and its proximity to the Upper Estuary enhance the importance of the site. The site is of substantive importance and easily qualifies as a Local Wildlife Site and Local Nature Reserve, and is of importance in a Cheshire context.

TABLES OF SPECIES

TABLE 1. THE PLANT SPECIES COMPOSITION OF THE HORSE PASTURE TO THE NORTH OF THE BROOK

Map: south-east Survey date = 27/05/02

Grid square: 555840

Scientific name	Common name	Abundance	Cover
Monocotyledon species			
Alopecurus pratensis	Meadow Foxtail	LF	5%
Anthoxanthum odoratum	Sweet Vernal-grass	LF	8%
Bromus hordeaceus	Soft Brome	-: F*	4%
Carex sp.	Sedge species	LF	5%
Cynosurus cristatus	Crested Dogstail	 F*	5%
Dactylis glomerata	Cocksfoot	VA/LD*	25%
Festuca rubra	Creeping Fescue	F/LA*	6%
Holcus lanatus	Yorkshire Fog	O*	4%
Lolium perenne	Perennial Ryegrass	F*	15%
Luzula campestris	Field Wood-rush	LF	2%
Poa annua	Annual Meadow-grass	 LF	4%
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Dicotyledon species			
Achillea millefolium	Yarrow	LF/LA*	<1%
Anthriscus sylvestris	Cow Parsley	VA/LD*	10%
Bellis perennis	Daisy	F*	1%
Centaurea nigra	Common Knapweed	LF	2%
Cerastium fontanum	Common Mouse-ear	F*	1%
Cirsium arvense	Creeping Thistle	VF	1%
Cirsium vulgare	Spear Thistle	LVA	3%
Equisetum arvense	Field Horsetail	F*	2%
Heracleum sphondylium	Hogweed	0	2%
Lathyrus pratensis	Meadow Vetchling	LF	<1%
Lotus corniculatus	Common Bird's-foot-trefoil	LVF	3%
Petasites hybridus	Butterbur	VLA	<1%
Plantago lanceolata	Ribwort Plantain	LVA	1%
Plantago major	Greater Plantain	F/LF*	1%
Potentilla reptans	Creeping Cinquefoil	LVF	<1%
Ranunculus acris	Meadow Buttercup	O*	1%
Ranunculus repens	Creeping Buttercup	LA	1%
Rubus fruticosus	Bramble	0	3%
Rumex acetosa	Common Sorrel	O*	2%
Rumex crispus	Curled Dock	O*	2%
Senecio jacobaea	Ragwort	0	<1%
Taraxacum officinale	Dandelion	0	<1%
Trifolium pratense	Red Clover	LF	1%
Trifolium repens	White Clover	LVA	1%
Urtica dioica	Common Nettle	F	2%
Veronica chamaedrys	Germander Speedwell	0	<1%
Vicia sativa	Common Vetch	0	2%

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

TABLE 2. THE PLANT SPECIES COMPOSITION OF THE VEGETATION OF THE MIDDLE FIELD BETWEEN THE TWO BROOKS

Map: south-east Grid square = 540835 **Survey date** = 27/05/02

Scientific name	Common name	Abundance	Cover
Monocotyledon species			
Anthoxanthum odoratum	Sweet Vernal-grass	VA*	5%
Bromus hordeaceus	Soft Brome	LVA	8%
Carex hirta	Hairy Sedge	0	2%
Cynosurus cristatus	Crested Dogstail	VA*	10%
Dactylis glomerata	Cocksfoot	VA/LD*	15%
Holcus lanatus	Yorkshire Fog	0	<1%
Holcus mollis	Creeping Soft-grass	0	<1%
Festuca rubra	Creeping Fescue	VA*	5%
Juncus effusus	Soft Rush	LA/F*	5%
Lolium perenne	Perennial Ryegrass	LVA/F*	10%
Phalaris arundinacea	Reed Canary-grass	LVA	3%
Poa annua	Annual Meadow-grass	F*	1%
Dicotyledon species			
Anthriscus sylvestris	Cow Parsley	VF*	1%
Bellis perennis	Daisy	F*	<1%
Cardamine pratensis	Cuckoo-flower	VL	<1%
Centaurea nigra	Common Knapweed	LVF	5%
Cerastium fontanum	Common Mouse-ear	LVF	<1%
Cirsium arvense	Creeping Thistle	VF*	2%
Cirsium vulgare	Spear Thistle	0	<1%
Equisetum arvense	Field Horsetail	F*	1%
Filipendula ulmaria	Meadowsweet	0	1%
Geranium dissectum	Cut-leaved Cranesbill	0	1%
Heracleum sphondylium	Hogweed	F*	1%
Hypochaeris radicata	Common Cat's-ear	F*	1%
Lathyrus pratensis	Meadow Vetchling	0	1%
Lotus corniculatus	Common Bird's-foot-trefoil	0	<1%
Petasites hybridus	Butterbur	VL	<1%
Plantago lanceolata	Ribwort Plantain	F*	2%
Pulicaria dysenterica.	Fleabane	LVF	2%
Ranunculus acris	Meadow Buttercup	VA*	2%
Ranunculus repens	Creeping Buttercup	LF/LA	5%
Rubus fruticosus	Bramble	0	<1%
Rumex crispus	Curled Dock	F*	1%
Rumex obtusifolius	Broad-leaved Dock	0	<1%
Taraxacum officinale	Dandelion	0	<1%
Trifolium pratense	Red Clover	VF*	2%
Trifolium repens	White Clover	F*	1%
Tussilago farfara	Coltsfoot	F	1%
Vicia sativa	Common Vetch	LF/VA*	2%
Vicia sepium	Bush Vetch	LVA/F*	<1%

TABLE 2 CONTINUED

Scientific name	Common name	Abundance	Cover
Along the brook			
Epilobium montanum	Broad-leaved Willowherb	VL	<1%
Phalaris arundinacea	Reed Canary-grass	VLF	<1%
Geranium robertianum	Herb Robert	LF	5%
Crataegus monogyna	Hawthorn	VLA	2%
Dryopteris filix-mas	Male Fern	LA	10%
Sonchus oleraceus	Smooth Sow-thistle	LF	2%
Cirsium arvense	Creeping Thistle	LF	5%

 $\label{eq:condition} \begin{tabular}{ll} \textbf{Key to abbreviations}: & D = Dominant, & COD = Co-dominant, & A = Abundant, & F = Frequent, & O = Occasional, & L = Local/locally, & R = Rare, & V = Very, & *=Constant species & Constant species$

TABLE 3. THE PLANT SPECIES COMPOSITION OF THE WET GRASSLAND ADJACENT TO LIDL

Map: South-east Grid square = 555840 **Survey date** = 27/05/02

Scientific name	Common name	Abundance	Cover
Woody species Betula pendula Quercus robur Salix cinerea	Silver Birch sapling Oak seedling Common Sallow	VL R F	<1% <1% 2%
Monocotyledon species Agrostis capillaris Agrostis stolonifera Alopecurus pratensis Anthoxanthum odoratum Carex flacca Carex hirta Carex sp. Cynosurus cristatus Dactylorhiza hybrid Dactylorhiza praetermissa Deschampsia cespitosa Festuca rubra Juncus effusus Juncus inflexus Phalaris arundinacea Phragmites australis Typha latifolia	Common Bent Creeping Bent Meadow Foxtail Sweet Vernal-grass Glaucous sedge Hairy Sedge Sedge species Crested Dogstail Hybrid Southern Marsh Orchid Southern Marsh Orchid Tufted Hair-grass Creeping Fescue Soft Rush Hard Rush Reed Canary-grass Common Reed Bulrush	VLF VLF LF LF LVF VA* R O C LF VF* VA* LVA VA/LD* LF LVF/VLD	1% 1% 3% 2% 2% 3% 5% <1% <1% 4% 10% 5% 15% 2% 5%
Dicotyledon species Bellis perennis Cardamine pratensis Centaurea nigra Chamerion angustifolium Cirsium arvense Cirsium palustre Cirsium vulgare Equisetum arvense Geranium dissectum Hypochaeris radicata Lotus corniculatus Myosotis scorpioides Plantago lanceolata Potentilla reptans Prunella vulgaris Pulicaria dysenterica Ranunculus acris	Daisy Cuckoo-flower Common Knapweed Rosebay Willowherb Creeping Thistle Marsh Thistle Spear Thistle Field Horsetail Cut-leaved Cranesbill Common Cat's-ear Common Bird's-foot-trefoil Water Forget-me-not Ribwort Plantain Creeping Cinquefoil Self-heal Fleabane Meadow Buttercup	R LF VA/LA* LF VF* VL LF F* R F* LF LF E* R VL LVF F*	<1% 4% 3% 4% 2% <1% 2% <1% 2% 2% <1% 2% 2% 3% 2% 3% 3% <1% 3%

TABLE 3 CONTINUED

Scientific name	Common name	Abundance	Cover
Ranunculus flammula	Lesser Spearwort	VL	<1%
Rubus fruticosus	Bramble .	VL	2%
Rumex acetosa	Common Sorrel	F*	2%
Rumex acetosella	Sheep's Sorrel	VLF	<1%
Rumex crispus	Curled Dock	F*	2%
Rumex obtusifolius	Broad-leaved Dock	0	1%
Silene dioica	Red Campion	R	<1%
Taraxacum officinale	Dandelion .	R	<1%
Trifolium pratense	Red Clover	F*	4%
Tussilago farfara	Coltsfoot	LF	2%
Vicia sativa	Common Vetch	LF	2%

 $\label{eq:condition} \begin{tabular}{ll} \textbf{Key to abbreviations}: & D = Dominant, & COD = Co-dominant, & A = Abundant, & F = Frequent, & O = Occasional, & L = Local/locally, & R = Rare, & V = Very, & *=constant species & Code & Co$

TABLE 4. THE PLANT SPECIES COMPOSITION OF AREA 4 –THE MANCHESTER SHIP CANAL BANK AT OXMOOR

Map: South-east Survey date = 10/07/02

Grid square = 555840

Scientific name	Common name	Abundance	Cover
Woody species Crataegus monogyna Cytisus scoparius Salix caprea Sambucus nigra Ulex europaeus	Hawthorn Broom Goat Willow Elder Gorse	LF VL LF VL VL	2% <1% 3% <1% <1%
Monocotyledon species Agrostis capillaris Anthoxanthum odoratum Arrhenatherum elatius Bromus hordeaceus Carex hirta Cynosurus cristatus Dactylis glomerata Deschampsia cespitosa Elytrigia repens Festuca rubra Holcus lanatus Juncus bulbosus Juncus inflexus Lolium perenne Phalaris arundinacea Phragmites australis Poa annua	Common Bent Sweet Vernal grass False Oat-grass Soft Brome Hairy Sedge Crested Dogstail Cocksfoot Tufted Hair-grass Common Couch Creeping Fescue Yorkshire Fog Bulbous Rush Hard Rush Perennial Ryegrass Reed Canary-grass Common Reed Annual Meadow-grass	LF VL LA LF VL VLA LA LF LF LF LA VL VL	2% <1% 10% <1% <1% <2% 5% 1% 2% 3% 1% <1% <1% <1% <1% <1% <1% <1% <1%
Dicotyledon species Achillea millefolium Anthriscus sylvestris Artemisia vulgaris Bellis perennis Calystegia sepium Capsella bursa-pastoris Centaurea nigra Chamerion angustifolium Cirsium arvensis Cirsium palustre Crepis capillaris Dryopteris dilitata Epilobium palustre Equisetum arvense	Yarrow Cow Parsley Mugwort Daisy Hedge Bindweed Shepherd's Purse Common Knapweed Rosebay Willowherb Creeping Thistle Marsh Thistle Smooth Cat's-ear Male Fern Marsh Willowherb Field Horsetail	VL VLF VL LF VL LF VL LA VL LF R VL LF	<1% <1% <1% <1% <1% <1% 3% <1% 5% <1% -1% <1% <1% <1% <1%

TABLE 4 CONTINUED

Scientific name	Common name	Abundance	Cover
Eupatorium cannabinum	Hemp-agrimony	VL	<1%
Filipendula ulmaria	Meadowsweet	VL	<1%
Galium aparine	Cleavers	VL	<1%
Geranium dissectum	Cut-leaved Crane's-bill	VL	<1%
Heracleaum sphondylium	Hogweed	LA	<1%
Lathyrus pratensis	Meadow Vetchling	LF	3%
Matricaria discoidea	Pineappleweed	VL	<1%
Polygonum aviculare	Knotgrass	VL	<1%
Persicaria persicaria	Redshank	VLA	3%
Petasites hybridus	Butterbur	LA	2%
Plantago lanceolata	Ribwort Plantain	LF	<1%
Plantago major	Greater Plantain	LF	<1%
Potentilla anserina	Silverweed	LF	1%
Potentilla reptans	Creeping Cinquefoil	VLA	2%
Prunella vulgaris	Self-heal	VL	<1%
Pulicaria dysenterica	Common Fleabane	VL	<1%
Ranunculus acris	Meadow Buttercup	VL	<1%
Ranunculus sceleratus	Celery-leaved Buttercup	VL	<1%
Reseda luteola	Weld	R	<1%
Rhinanthus minor	Yellow Rattle	VL	<1%
Rubus fruticosus	Bramble	LA	5%
Rumex crispus	Curled Dock	VL	<1%
Rumex obtusifolius	Broad-leaved Dock	VL	<1%
Senecio jacobaea	Ragwort	VL	<1%
Smyrnium olusatrum	Alexanders	VL	<1%
Solanum dulcamara	Bittersweet	VL	<1%
Sonchus arvensis	Perennial Sow-thistle	VL	<1%
Sonchus oleraceus	Smooth Sow-thistle	VL	<1%
Stachys sylvatica	Hedge Woundwort	VLA	<1%
Stellaria graminea	Lesser Stitchwort	VL	<1%
Taraxacum officinale	Dandelion	LF	1%
Tragopogon pratensis	Goat's-beard	VL	<1%
Trifolium dubium	Lesser Trefoil	LF	2%
Trifolium pratense	Red Clover	VL	<1%
Trifolium repens	White Clover	LF	2%
Tripleurospermum	Scentless Mayweed	LA	3%
inodorum			
Tussilago farfara	Coltsfoot	LF	2%
Urtica dioica	Common Nettle	VL	<1%
Vicia cracca	Tufted Vetch	LA	3%
Vicia hirsuta	Hairy Tare	LA	1%

 $\label{eq:condition} \begin{array}{ll} \textbf{Key to abbreviations} \colon & D = Dominant, \ COD = Co-dominant, \ A = Abundant, \ F = Frequent, \\ O = Occasional, \ L = Local/locally, \ R = Rare, \ V = Very, \ ^*=Constant \ species \\ \end{array}$

TABLE 5. THE SPECIES COMPOSITION OF THE VEGETATION OF AREA 6 – THE WESTERN SIDE OF THE OUTLET PIPE

Map: South-east Grid square = 555840 **Survey date** = 10/07/02

Scientific name	Common name	Abundance	Cover
Woody species			
Acer psuedoplatanus	Sycamore	LA	5%
Alnus glutinosa	Alder	VL	<1%
Betula pendula	Silver Birch	LF	2%
Crataegus monogyna	Hawthorn	VLA	5%
Cytisus scoparius	Broom	VL VL	<1%
Salix caprea	Goat Willow	LF	3%
Salix fragilis	Crack Willow	VL	<1%
Sambucus nigra	Elder	VL	<1%
Monocotyledon species			
Agrostis capillaris	Common Bent	VLF	<1%
Agrostis stolonifera	Creeping Bent	VLA	3%
Anthoxanthum odoratum	Sweet Vernal-grass	VLA	2%
Arrhenatherum elatius	False Oat-grass	LA*	20%
Cynosurus cristatus	Crested Dogstail	VLF	<1%
Dactylis glomerata	Cocksfoot	LA*	8%
Deschampsia cespitosa	Tufted Hair-grass	LA*	8%
Festuca pratensis	Meadow Fescue	VL	<1%
Festuca praterisis	Creeping Fescue	VLF	2%
Juncus acutiflorus	Sharp-flowered Rush	VLI VL	<1%
Juncus acumorus Juncus bufonius	Toad Rush	VL VLA	<1%
Juncus effusus	Soft Rush	VL	<1%
Juncus inflexus	Hard Rush	VL	<1%
Lolium perenne	Perennial Ryegrass	VLF	<1%
Phalaris arundinacea	Reed Canary-grass	LA	5%
Phragmites australis	Common Reed	LA	20%
Poa trivialis	Rough-stalked Meadow-grass	VL	<1%
Dicotyledon species			
Achillea millefolium	Yarrow	VL	<1%
Aegopodium podagraria	Ground Elder	VL	<1%
Artemisia vulgaris	Mugwort	VL	<1%
Bellis perennis	Daisy	VL	<1%
Blackstonia perfoliata	Yellow-wort	VLF	<1%
Calystegia sepium	Hedge Bindweed	VLF	<1%
Centaurea nigra	Common Knapweed	VLF	<1%
Cernaurea riigra Cerastium fontanum	Common Mouse-ear	VL	<1%
		VL LF	<1% 5%
Cirsium arvense	Creeping Thistle		
Crepis capillaris	Smooth Cat's-ear	VLF	<1%
Crepis paludosa	Marsh Hawksbeard	VL	<1%
Epilobium hirsutum	Great Willowherb	VLA	3%
Epilobium palustre	Marsh Willowherb	VL	<1%

TABLE 5 CONTINUED

Scientific name	Common name	Abundance	Cover
Equisetum arvense	Field Horsetail	VLA	1%
Eupatorium cannabinum	Hemp-agrimony	VL	<1%
Filipendula ulmaria	Meadowsweet	VLF	<1%
Galium aparine	Cleavers	LF	2%
Geranium dissectum	Cut-leaved Crane's-bill	VL	<1%
Geranium robertianum	Herb Robert	VL	<1%
Heracleum sphondylium	Hogweed	LF	1%
Holcus lanatus	Yorkshire Fog	LA*	5%
Hypericium perforatum	Perforate St. John's Wort	VL	<1%
Hypochaeris radicata	Common Cat's-ear	VL	<1%
Lathyrus pratensis	Meadow Vetchling	LA*	5%
Lemna minor	Common Duckweed	VLF	<1%
Polygonum aviculare	Knotgrass	VL	<1%
Persicaria maculosa	Redshank	VLA	2%
Plantago lanceolata	Ribwort Plantain	VLF	<1%
Potentilla anserina	Silverweed	VL	<1%
Potentilla reptans	Creeping Cinquefoil	VLA	3%
Prunella vulgaris	Self-heal	LF	1%
Ranunculus repens	Creeping Buttercup	VLF	<1%
Rhinanthus minor	Yellow Rattle	VL	<1%
Rubus frutiscosus	Bramble	VLF	2%
Rumex crispus	Curled Dock	VL	<1%
Rumex obtusifolius	Broad-leaved Dock	VL	<1%
Senecio jacobaea	Ragwort	VL	<1%
Silene dioica	Red Campion	VL	<1%
Smyrnium olusatrum	Alexanders	VL	<1%
Sonchus arvensis	Perennial Sow-thistle	VL	<1%
Stachys sylvatica	Hedge Woundwort	VLF	<1%
Taraxacum officinale	Dandelion	LF	1%
Tragopogon pratensis	Goat's-beard	VL	<1%
Trifolium dubium	Lesser Trefoil	VL	<1%
Trifolium medium	Zig-zag Clover	VL	<1%
Trifolium pratense	Red Clover	VLF	<1%
Trifolium repens	White Clover	LF	2%
Tussilago farfara	Coltsfoot	LF	2%
Urtica dioica	Common Nettle	LF	1%
Vicia cracca	Tufted Vetch	LA	5%
Vicia hirsuta	Hairy Tare	VL	<1%
Vicia sepium	Common Vetch	VL	<1%

TABLE 6. THE PLANT SPECIES COMPOSITION OF THE GRASSLAND OFF PEMBROKE COURT

Map: South-east Grid square = 555840

Survey date = 27/05/02

Scientific name	Common name	Abundance	Cover
Woody species Betula pendula Quercus robur sapling Salix cinerea	Silver Birch Pendunculate Oak sapling Common Sallow	R F R	<1% 2% <1%
Monocotyledon species Bromus hordeaceus Cynosurus cristatus Dactylorhiza praetermissa Dactylis glomerata Deschampsia cespitosa Festuca ovina Festuca pratensis Festuca rubra Holcus lanatus Juncus inflexus Lolium perenne Luzula campestris Nardus stricta Phalaris arundinacea Poa annua Poa trivialis Poa pratensis Typha latifolia Vulpia bromoides	Soft Brome Crested Dogstail Southern Marsh Orchid Cocksfoot Tufted Hair-grass Sheep's Fescue Meadow Fescue Creeping Fescue Yorkshire Fog Hard Rush Perennial Ryegrass Field Wood-rush Mat grass Reed Canary-grass Annual Meadow-grass Rough-stalked Meadow-grass Smooth-stalked Meadow-grass Bulrush Squirrel-tail Fescue	F* LA O VL VLF VA* LA VA/LD* VLF LA/VLD VL	10% 4% <1% <1% 7% 5% 40% 6% 2% 1% <1% <1% <1% <1% <1% <1% <1% <1% <1%
Dicotyledon species Artemsia vulgaris Bellis perennis Blackstonia perfoliata Cerastium fontanum Centaurium erythraea Chamerion angustifolium Cirsium arvense Cirsium vulgare Dryopteris filix-mas Epilobium parviflorum Epilobium palustre Equisetum arvense Hypericum perforatum Hypochaeris radicata Lapsana communis Lotus corniculatus	Mugwort Daisy Yellow-wort Common Mouse-ear Common Centaury Rosebay Willowherb Creeping Thistle Spear Thistle Male Fern Hoary Willowherb Marsh Willowherb Field Horsetail Perforate St. Johns Wort Common Cat's-ear Nipplewort Common Bird's-foot-trefoil	R VL LF F* VLA F* VL R VL VL VF/LA* R VF* O R	<1% 2% 1!% 5% 2% 3% 3% <1% <1% <1% <1% 2% 2% 3%

TABLE 6. CONTINUED

Scientific name	Common name	Abundance	Cover
Medicago lupulina Myosotis arvensis Plantago lanceolata Plantago minor Ranunculus acris Ranunculus repens Rhinanthus minor Pesicaria maculosa Prunella vulgaris Pulicaria dysenterica Rubus fruticosus Rumex crispus Senecio jacobaea Silene dioica Sonchus arvensis Sonchus oleraceus Sorghum halepense Taraxacum officinale Tragopogon pratensis Trifolium dubium Trifolium pratense	Black Medick Field Forget-me-not Ribwort Plantain Greater Plantain Meadow Buttercup Creeping Buttercup Yellow Rattle Redshank Self-heal Common Fleabane Bramble Curled Dock Ragwort Red Campion Perennial Sow-thistle Smooth Sow-thistle Great Millet Dandelion Goat's-beard Lesser Trefoil Red Clover	VF/LA* VL O O O LVA/D* VLF VL VLA VL O/LF VLF VLF VLF VLF VLF VLF VLF VLF VLF V	10% 2% 2% <1% 4% 6% <1% <1% <1% <1% <1% <1% <1% <1% <1% <1
Trifolium repens Trifolium medium Tussilago farfara Vicia cracca Vicia hirsuta Vicia sativa Vicia sepium Wetter area	White Clover Zig-zag Clover Coltsfoot Tufted Vetch Hairy Tare Common Vetch Bush Vetch	VL VL LF VL VF* O F*	3% <1% 4% <1% 2% 4% 3%
Bromus hordeaceus Carex disticha Carex hirta Chamerion angustifolium Dactylorhiza praetermissa Deschampsia cespitosa Epilobium hirsutum Juncus effusus Juncus inflexus Phalaris arundinacea Rumex crispus Salix fragilis Silene dioica Pesicaria maculosa Typha latifolia Juncus conglomeratus Tussilago farfara	Soft Brome Brown Sedge Hairy Sedge Rosebay Willowherb Southern Marsh Orchid Tufted Hair-grass Great Willowherb Soft Rush Hard Rush Reed Canary-grass Curled Dock Crack Willow Red Campion Redshank Bulrush Compact Rush Coltsfoot	LA LVA VA O VLF VA* LA LA LA O LA VL VLF VLF VL	

 $\label{eq:condition} \begin{tabular}{ll} \textbf{Key to abbreviations}: & D = Dominant, \ COD = Co-dominant, \ A = Abundant, \ F = Frequent, \\ O = Occasional, \ L = Local/locally, \ R = Rare, \ V = Very. \ ^*=Constant \ species \\ \end{tabular}$

TABLE 7. THE PLANT SPECIES COMPOSITION OF THE WET WOODLAND (NORBURY WOOD) AND ADJACENT HEDGEROW

Map: South-east Survey date = 27/05/02

Grid square = 540835

Scientific name	Common name	Abundance	Cover
Woody species Alnus glutinosa Salix caprea Salix fragilis	Alder Goat Willow Crack Willow	VA/LD* VLF LF	70% 3% 1%
Monocotyledon species Agrostis stolonifera Arrhenatherum elatius Elytrigia repens Holcus lanatus Juncus inflexus Phalaris arundinacea Phragmites australis	Creeping Bent False Oat-grass Common Couch-grass Yorkshire Fog Hard Rush Reed Canary-grass Common Reed	LF LA VL LF VL VLF LA	3% 10% <1% 5% <1% 2% 3%
Dicotyledon species Calystegia sepium Chamerion angustfolium Cirsium arvense Epilobium hirsutum Epilobium palustris Galium aparine Geranium dissectum Geranium robertianum Heracleum sphondylium Lemna minor Lycopus europaeus Potentilla reptans Ranunculus repens Rubus fruticosus Rumex obtusifolius Silene dioica Stachys sylvatica Taraxacum officinale Tussilago farfara Urtica dioica	Hedge Bindweed Rosebay Willowherb Creeping Thistle Great Willowherb Marsh Willowherb Cleavers Cut-leaved Cranesbill Herb Robert Hogweed Common Duckweed Gipsywort Creeping Cinquefoil Creeping Buttercup Bramble Broad-leaved Dock Red Campion Hedge Woundwort Dandelion Coltsfoot Common Nettle	LF VL VLF VLF VL VL VLF VL VLF VL VLF VL VLF VL VLF VLF	2% <1% <1% 2% 1% 1% <1% <1% <1% <1% <1% <1% <1% <1%
Hedgerow			
Woody Species Acer pseudoplatanus Crataegus monogyna Ilex aquifolium	Sycamore Hawthorn Holly	LF VA/LD* LF	1% 70% 5%

TABLE 7. CONTINUED

Scientific name	Common name	Abundance	Cover
Herb species			
Agrostis stolonifera	Creeping Bent	LF	2%
Arrhenatherum elatius	False Oat-grass	LF	5%
Artemisia vulgaris	Mugwort	VL	<1%
Calystegia sepium	Hedge Bindweed	LF	2%
Dactylis glomerata	Cocksfoot	LF	5%
Epilobium palustre	Marsh Willowherb	VL	1%
Equisetum arvense	Field Horsetail	VL	<1%
Festuca rubra	Creeping Fescue	VL	<1%
Galium aparine	Cleavers	LF	3%
Geranium dissectum	Cut-leaved Cranesbill	VL	<1%
Heracleum sphondylium	Hogweed	LVA/F*	40%
Holcus lanatus	Yorkshire Fog	LF	5%
Lathyrus pratensis	Meadow Vetchling	VL	<1%
Lolium perenne	Perennial Ryegrass	LF	3%
Phleum pratense	Timothy	VL	<1%
Plantago lanceolata	Ribwort Plantain	LF	2%
Poa anuua	Annual Meadow-grass	VL	<1%
Prunella vulgaris	Self-heal	LF	1%
Rubus fruticosus	Bramble	LF	5%
Silene dioica	Red Campion	LF	1%
Taraxacum officinale	Dandelion .	VLF	2%
Trifolium dubium	Lesser Trefoil	VL	<1%
Trifolium repens	White Clover	VL	<1%
Urtica dioica	Common Nettle	VLA	5%
Vicia cracca	Tufted Vetch	VL	<1%

 $\label{eq:condition} \begin{tabular}{ll} \textbf{Key to abbreviations}: & D = Dominant, COD = Co-dominant, A = Abundant, F = Frequent, O = Occasional, L = Local/locally, R = Rare, V = Very, *=constant species \\ \end{tabular}$