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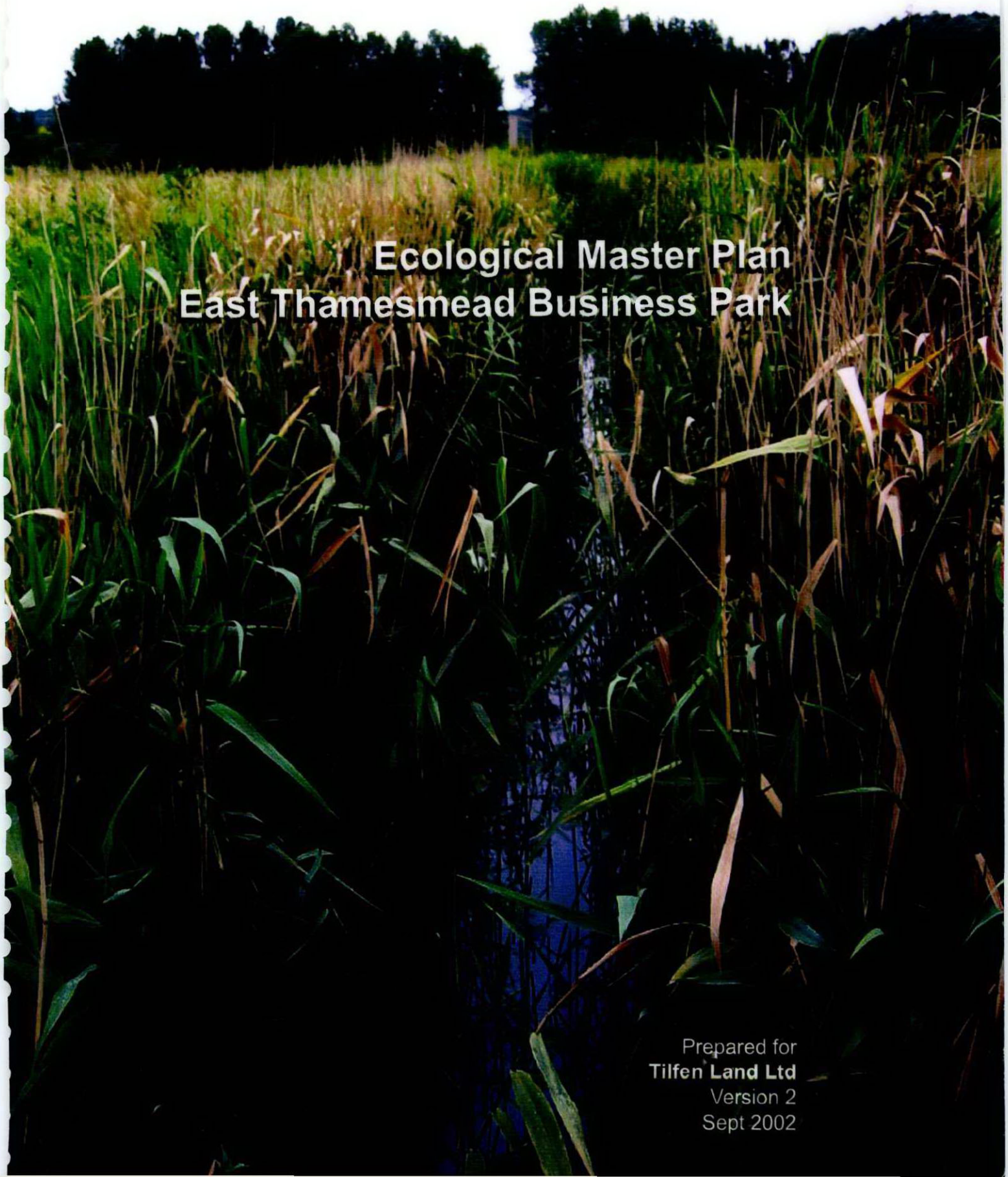

Ecological Master Plan
East Thamesmead Business Park

Prepared for
Tilfen Land Ltd
Version 2
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Scott Wilson

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CONTENTS

1. INTRODUCTION

Tilfen Land are submitting a planning application for a business park development on land to the south of Eastern Way in East Thamesmead. Scott Wilson were commissioned to undertake an audit of the existing ecological baseline and prepare a masterplan for the retained habitats on the site. The aim of the Masterplan is to evaluate the existing ecological resources and recommend measures to ensure that there is no net loss of value for nature conservation. Tilfen have also requested that where possible, a net gain in value for nature conservation should be obtained due to the business park development.

The site is allocated for light industrial development in the Bexley local plan and part of the site is subject to an existing planning permission for large warehousing. The proposed development will comprise a mixture of offices, light industrial units and storage facilities. In addition to the proposed development site the Masterplan covers the Great Breach Dyke and a triangle of land to the north of Eastern Way. The inclusion of these two areas provides further scope for habitat creation and improvement than would not be available within the development site alone.
The Ecological Masterplan presents the results of the ecological surveys. The methodology used to compile the surveys is in full compliance with international, national, metropolitan and borough legislation and guidance, and explained in full in the Ecological chapter (7) of the Environmental Impact Assessment for the application site. The Masterplan then sets out the suggested approach to mitigation and provision of compensation/ enhancement for nature conservation purposes within land owned by Tilfen in East Thamesmead. The Masterplan aims to provide an integrated approach towards ecological mitigation and will also ensure that habitat connectivity to surrounding land (particularly Erith Marshes to the north) is maximised.

This Ecological Masterplan provides objectives for habitat creation and enhancement in accordance with the national, London and Bexley Biodiversity Action Plans. In the long-term, the Ecological Masterplan will be implemented through a series of Management Plans which will provide detailed prescriptions and specifications for habitat creation and management of the habitat.

The approach taken by Tilfen to the provision of mitigation and compensation habitat is considered to be innovative and ground-breaking. The baseline ecological information obtained for the site from ecological surveys is considered to be exceptionally detailed and the habitat enhancement/ creation has been carefully planned and designed in order to provide effective links to the surrounding areas. As such, Scott Wilson believes that the business park is a good example of sustainable development.

Section 2 of this Masterplan describes the ecological baseline of the site and its environs in terms of designated habitat and the results of ecological surveys and desk study. Section 2 also describes consultation undertaken on the proposed business park whilst Section 3 presents the proposed business park development. Target habitats and species in the Bexley, London and National BAPs are described in Section 4 whilst habitat creation and enhancement measures are specified in Section 5. Section 6 provides a brief summary of measures required in the short-term to ensure compliance with nature conservation legislation.

2. ECOLOGICAL BASELINE

2.1. Consultation/Desk Study

During early 2002, Tilfen and Scott Wilson organised a series of meetings with ecological consultees. These meetings have resulted in the stated intention to share all survey data obtained on the site and its environs and enter into constructive dialogue regarding the site and proposed business park and potential mitigation and compensation measures. The following consultees have attended the meetings:

- Chris Strachan, London Wildlife Trust
- David Webb, Environment Agency
- Mike Waite, Greater London Authority
- Simon Geikie, Managing the Marshes
- Mike Brain, Ben Thomas, Bexley Council.

English Nature have also been invited to each meeting but have been unable to attend. In addition, the following background data on the site has been received:

- Kent Wildlife Trust botanical survey of Erith Marshes;
- The results of bat and amphibian surveys of Erith Marshes (from Managing the Marshes);
- Records from the Kent Reptile and Amphibian Group;
- Records from the London Bat Group; and
- Records of breeding birds from the London bird recorder.

Scott Wilson and Tilfen have also undertaken consultation with the local community in the form of a presentation to the Natural Environment Focus Group (NEFG). It is envisaged that this Ecological Masterplan will be circulated to all consultees (including the NEFG) for comments prior to finalisation.

7.1 Background data for the site and surrounding area was sought from the following organisations/individuals:

7.2

Organisation	Data requested
Managing the Marshes/Groundwork Trust	Great Crested Newt data for Erith Marshes Bat data for Erith Marshes and Southmere Park Breeding and wintering bird data for Erith Marshes Aquatic invertebrate data for Erith Marshes
Mr D McKenzie (Local Ornithological Recorder)	Ornithological records for Thamesmead
Mr D Miller	Ornithological records for Thamesmead
Ms.C Schmitt	London Bird report

2.2. Designated sites

Much of the site is designated as a Grade 2 Site of Borough Importance by the London Ecology Unit under the name "Southmere Park, reference Bx. BII2". The area designated is shown on Figure 2 although it should be noted that the proposed

development does not include the western part of the SBI including South Mere. The following description has been taken from the Bexley Wildlife Survey (1991):

Bx.BII **Southmere Park**

Grid Ref: TQ 480 801 Area 48.8 ha

Status: Metropolitan Open Land (part), Area of Special Character of Local Importance, Industrial Preferred Area (part), good status for water birds (NRA/ KTNC).

Habitats: Open water, broad-leaved woodland, semi-improved neutral grassland, parkland.

Description: An open space consisting of parkland and horse paddocks for the residential area of Thamesmead Town. The lake [South Mere] at the western end of the site is of interest for wintering and breeding water birds; mallard, tufted duck, coot, Canada goose and great crested grebe all breed (mainly confined to the specially-created island), and pochard join these in winter. Occasional visitors include cormorant, common tern and shoveler. Along the southern boundary of the site is a mature poplar *Populus nigra var. italica* plantation where common breeding birds include blue tit, great tit, mistle thrush and robin. The park and horse paddocks are adjacent to the Metropolitan Site M41 (Erith Marshes), and birds from there are occasionally seen on the open fields of this site.

Data: LEU Habitat Survey (1984/5), Bexley Wildlife Survey (1991) site nos 18486/18003 (non-inclusive); NRA/KTNC (1990/1 Marsh Dykes Ecology Survey and Ornithological Survey).

Southmere Park Site of Borough Importance immediately abuts the Erith Marshes Site of Metropolitan Importance (M41). The area designated is shown on Figure 2 and the following details are provided by the Bexley Wildlife Survey (LEU 1991):

M41 **Erith Marshes**

Grid Ref: TQ 490 802 Area: 120.6 ha

Status: Metropolitan Open Land (part), Area of Special Character of Local Importance Grade II (KTNC), Critically important dyke-system (NRA/KTNC).

Habitats: Grazing marsh (semi-improved neutral grassland and drainage dykes), scrub, open water.

Description: Mainly an important wet grassland site, with regionally rare plant species in both the meadows and drainage dykes. These include knotted hedge parsley (*Torilis nodosa*), corn parsley (*Petroselinum segetum*), strawberry clover (*Trifolium fragiferum*), marsh dock (*Rumex palustris*), lesser reedmace (*Typha angustifolia*), reflexed poa (*Puccinellia distans*), narrow-leaved water parsnip (*Berula erecta*), pink water speedwell (*Veronica catenata*) and unbranched bur-reed (*Sparganium emersum*). Sea wall grassland supports common stork's-bill (*Erodium cicutarium*) and narrow-leaved pepperwort (*Lepidium ruderale*).

The site is of particular importance for its bird fauna which includes breeding meadow pipit, yellow wagtail, stonechat, redshank, reed warbler and lapwing. Over-wintering species include various wildfowl and waders, such as pintail, ruff and snipe. Among the invertebrates present are several locally-distributed dragonflies including the black-tailed skimmer (*Orthetrum cancellatum*) and the emerald dragonfly (*Lestes sponsa*). The Orthopteran fauna (grasshoppers and crickets) includes both Roesel's (*Metrioptera roeselii*) and the great green bush-cricket (*Tettigonia viridissima*).

Data: LEU (1988) Handbook 8: London's Meadows and Pastures; LEU Habitat Survey (1984/5); Bexley Wildlife Survey (1991) site Nos 18020/ 18003 (non-inclusive); KTNC SNCI Survey (1989); LWT Bexley Wildlife Report; LWT (1986), A Wildlife Report – Halfway Reach and Belvedere Marshes; MWT Erith Marshes Management Plan; LWT/ Thamesmead, Erith Marshes – A Case for Conservation; NRA/ KTNC (1990/1), Marsh Dykes Ecology Study and Ornithological Study.

A large part of Erith Marshes north of the A2016 Eastern Way, is managed as a nature reserve by Thames Water.

2.3. Results of Ecological Surveys and Consultation

The proposed business park site and adjacent areas covered in the ecological surveys are illustrated on Figure 1. The areas covered by the ecological surveys have been sub-divided into the following sections for the purposes of describing the results:

- Grassland south and south west of Londis, including Cross Dyke 2 and Allders Dyke (Area 1);
- Woodland Way West (Area 2);
- Great Breach Dyke and Woodland Way East (Area 3);
- Small area of grassland east of Londis (Area 4); and
- Land north of Eastern Way (Area 5).

This section provides a summary of the results. Detailed assessment methodology and criteria utilised to determine the value of each resource along with detailed results are provided in Chapter 7 of Environmental Statement for the East Thamesmead Business Park, and the individual survey reports appended to the Ecological Assessment.

2.3.1. Plant communities and species

The site was surveyed using the extended version of the Phase 1 survey methodology[1]. Habitats present on the site are illustrated on Figure 3. Areas 1, 2 and 4 were surveyed in August 1998 (and the ditches were re-surveyed in June 2002). Areas 3 and 5 were surveyed in August 1991 and June 2002. For all habitats or areas of relatively homogenous vegetation, a species list was compiled and full species lists are provided in Appendix 1. The abundance of all species noted was recorded on the DAFOS scale:

D	dominant
A	abundant
F	frequent
O	occasional
S	scarce)

Where possible, homogenous stands of vegetation were placed within the appropriate community within the National Vegetation Classification[2] (NVC). The publication of *British Plant Communities* (Rodwell, 1991 *et seq.*) has provided a standard for the description of plant communities in this country and most vegetation sampled may now be attributed to an NVC type. The NVC provides some context to the frequency of occurrence of various communities within Britain and therefore provides a useful tool in evaluating the importance of habitats.

A detailed search was also undertaken within all sub-areas for rare and scarce vascular plant species.

Area 1

A large part of Area 1 is comprised of the common rank grassland community MG1 within the NVC which is characterised by the dominance of false oat-grass (*Arrhenatherum elatius*) and frequent cock's-foot (*Dactylis glomerata*). Other

[1] Nature Conservancy Council 1990 "Handbook for Phase 1 Habitat Survey"
[2] Rodwell, J (ed.) 1991: "British Plant Communities Volume 1: Woodlands and Scrub" (and subsequent volumes)

frequent species include soft brome (*Bromus hordaceous*), crested dogstail (*Cynosurus cristatus*), bristly ox-tongue (*Picris eichioides*), creeping thistle (*Cirsium arvense*) and common ragwort (*Senecio jacobea*).

The western section of Area 1 supports a perennial rye-grass (*Lolium perenne*), white clover (*Trifolium repens*) and smooth meadow-grass (*Poa pratensis*) sward within the sown MG7 *Lolium* ley community of the NVC. Several common herbs are frequent including common cats-ear (*Hypochaeris radicata*) and ribwort plantain (*Plantago lanceolata*). Meadow barley (*Hordeum secalinum*) is also occasional in the sward. The northern fenceline supports a narrow strip of rank MG1 grassland dominated by false oat-grass and scattered hawthorn (*Crataegus monogyna*) and elder (*Sambucus nigra*) bushes.

The ditches running south to north across Area 1 (Allders Dyke and Cross Dyke 2) are dominated by common reed (*Phragmites australis*) and can be placed within S4a of the NVC. Other species on the ditch margins include creeping bent (*Agrostis stolonifera*), false fox-sedge (*Carex otrubae*), plicate sweet-grass (*Glyceria notata*) and celery-leaved buttercup (*Ranunculus scleratus*) with occasional greater reedmace (*Typha latifolia*) in the ditch.

In terms of rare or scarce plants, the London-scarce round-leaved crane's-bill (*Geranium rotundifolium*) was recorded from Area 1 on the rubble heaps immediately to the north of Area 2.

Area 2

Area 2 (Woodland Way West) consists of four large blocks of poplar (*Populus sp*) and white willow (*Salix alba*) plantation reaching 30m in height in places. The understorey towards the western end is dominated by common rank grasses although further east, hawthorn and elder are both locally frequent. Margins of the blocks support alders (mostly native *Alnus glutinosa*, but also alien *Alnus incana*) and birch species (both *Betula pubescens* and *B. pendula*) all presumably of planted origin. The northern margin along the grassland interface supports scattered hawthorn scrub.
The western end of Woodland Way appears to be subject to seasonal flooding and was under water during May. Local residents confirmed it had flooded for the last 3 or 4 springs.
Japanese knotweed (*Fallopia japonica*) is present in the eastern section of Woodland Way (see Section 6 of this report).

An area of hardstanding south of the Londis depot (known as Manor Farm) supports a range of ruderal species which are common and wide-spread in southern England, including bramble (*Rubus fruticosus agg.*), mugwort (*Artemisia vulgaris*), field bindweed (*Convolvulus arvensis*), teasel (*Dipsacus fullonum*), knotgrass (*Polygonum aviculare*), fat-hen (*Chenopodium album*) and great plantain (*Plantago major*).

Area 3

Land to the west of the Great Breach Dyke in Area 3 is largely comprised of a combination of dry neutral and semi-improved grassland and planted woodland. The grassland is generally species poor with false oat-grass and perennial rye-grass co-

dominating the sward with occasional herbaceous species such as yarrow (*Achillea millefolium*), creeping buttercup (*Ranunculus repens*) and ribwort plantain (*Plantago lanceolata*). The competitive grassland species ragwort and creeping thistle are also abundant in areas.

A remnant section of sea wall runs to the west of the Great Breach Dyke and forms the boundary between Areas 3 and 4. Although plant species on the wall are similar to the surrounding grassland, the London scarcity knotted hedge parsley (*Torilis nodosa*) has been recorded from this area in the past.[3]

The woodland mainly comprises planted sycamore (*Acer pseudoplatanus*) with occasional aspen (*Populus tremula*) and willow (*Salix sp.*). The trees are estimated at being approximately 20 years old. Occasional scrub species (including elder, hawthorn and bramble) are also beginning to colonise under the canopy. The ground flora beneath the canopy closely resembles the grassland community with additional more shade tolerant species such as locally abundant nettle (*Urtica dioica*) and cleavers (*Galium aparine*).

An area of tall ruderal vegetation has established to the south east of the Great Breach Dyke and is dominated by species such as common nettle, creeping thistle (*Cirsium arvense*), great burdock (*Arctium lappa*), teasel (*Dipsacus fullonum*) and bramble (*Rubus fruticosus agg.*). In addition, a small patch of hawthorn (*Crataegus monogyna*), field maple (*Acer campestre*) and elder (*Sambucus nigra*) scrub lies within the south-western corner of Area 3.

The Great Breach Dyke itself supports a narrow fringe (ranging from 1.5 to 0.75 metres wide) of emergent marginal vegetation. The dominant marginal species are common reed, greater reedmace and great willowherb (*Epilobium hirsutum*). In addition, the following London-scarce species are present on the margins of the ditch:

Sea club-rush	*Bolboschoenus maritimus*
Knotted hedge parsley	*Torilis nodosa*
Round-fruited rush	*Juncus compressus*[4]

Area 4

Area 4 supports a rank perennial rye-grass ley with frequent tall herbs such as creeping thistle, spear thistle, and common ragwort. A seasonally-wet ditch runs from north to south across Area 4 and the London-scarce thread-leaved water crowfoot (*Ranunculus trichophyllus*) was recorded from this ditch in 2002.

Area 5

The survey in 1991 found that the majority of the triangle of land to the north of Eastern Way supported a pasture community typical of the grazing marshes of the Thames Estuary, dominated by meadow barley, crested dog's-tail (*Cynosurus cristatus*) and red fescue (*Festuca rubra*). However, in 2002, the community had changed to one dominated by a herb-poor dry neutral grassland community. False oat-grass and meadow barley (*Hordeum secalinum*) were co-dominant within the sward with other grass species such as perennial rye-grass (*Lolium perenne*), Timothy (*Phleum pratense*) and common bent (*Agrostis capillaris*) being locally frequent. Large stands of creeping thistle were also recorded.

[3] National Rivers Authority (1991)
[4] Requires ripe fruit later in the season to confirm identification.

Area 5 also supports dykes dominated by common reed, including Horse Head Dyke. The following locally scarce plants have also been recorded from Area 5 on the wall feature and within dykes:

Marsh Dock	*Rumex palustris*
Lesser water-parsnip	*Berula erecta*
Grey club-rush	*Schoenoplectus lacustris* ssp *tabernaemontani*
Sea club-rush	*Bolboschoenus maritimus*
Knotted hedge parsley	*Torilis nodosa*
Reflexed saltmarsh grass	*Puccinelia distans*
Round-fruited rush	*Juncus compressus*

Evaluation of botanical interest

The overall botanical interest of grassland and woodland in Areas 1, 2, 3 and 4 is low comprising species-poor rank grassland, mown *Lolium* leys and non-native broad-leaved plantation. The continuing presence of meadow barley (*Hordeum secalinum*) in small quantity in the west of Area 1 suggests that these fields have a long history of light grazing but have lost virtually all of their intrinsic interest with the cessation of grazing and the increasing prominence of coarse species. The retention of this species in an otherwise rank sward is characteristic of long-abandoned grazing marshes within the east Thames basin such as at the Inner Thames Marshes SSSI in Essex (John Archer, GLA, pers. com., 1992).

The grassland survey results from Area 5 indicate that the quality of the plant community has declined markedly over the last 10 years. The community has altered from one typical of the grazing marshes of the Thames Estuary, dominated by red fescue, crested dogstail and meadow barley, to one dominated by coarse and ruderal species including false oat-grass and creeping thistle. The continuing presence of meadow barley in an otherwise rank sward again suggests the habitat is characteristic of long-abandoned grazing marshes on the Thames Estuary. However, as for areas 1 to 4, the sward is now more characteristic of species-poor dry neutral grassland than of grazing marsh.

The suite of plant species in grassland and woodland habitat in Areas 1, to 5 is therefore evaluated to be of local (less than Borough) importance. However, the botanical interest of ditches in Areas 1 to 5 is likely to be of Metropolitan importance for nature conservation. In particular, ditches in Area 5 support seven species scarce in the London context and the Great Breach Dyke (south) supports three London-scarce species. Although Allders Dyke and Cross Dyke 2 do not support any London scarce species and the botanical diversity is lower than that of the Great Breach Dyke, all three ditches are part of the 'critically important dyke system' described by KTNC (National Rivers Authority, 1991) and represent long-standing features considered to be of some nature conservation value. The 1624 map of the 'Great Breach in Edith' shows the dykes more or less in the same positions seen today.[5]

2.3.2. Invertebrates

Areas 1 and 2 were surveyed by Colin Plant, an invertebrate specialist, in early September 1998. The time of year and the poor weather conditions on the survey date were unfavourable for the compilation of a large species list; effort was instead directed towards locating and evaluating invertebrate habitats and microhabitats present.

[5] London Ecology Unit file notes

Four basic types of invertebrate habitat were found within the survey area, including plantation woodland (Woodland Way), tall ruderal herbage, mown grassland and drainage ditches. The woodland structure of Woodland Way is poor, representing an even-aged plantation with poor light-penetration and minimal floral cover on the ground below. Edge habitats are present but these are also poorly structured and of only limited interest to invertebrate communities. Consequently, the real invertebrate interest is confined to the dead timber resource within the western end of Area 2. This habitat is potentially of significance to saproxylic invertebrates in a Metropolitan (Greater London) context.

The ruderal habitats represent the most important invertebrate feature of the site. The general area of eastern London along both sides of the River Thames - the East Thames Corridor - supports nationally significant assemblages of bees and wasps and the East Thamesmead site falls within this defined area. Although the site is of little or no importance as a breeding site for these insects, it is likely to represent an important source of nectar and pollen for a large number of generalist species and would be likely to generate a large species list if appropriate survey techniques were employed from May to July.

Allders Dyke and Cross Dyke 2 represent vestiges of the former marshland habitat and are somewhat degraded and overgrown with reeds in places. A poor species list was obtained by spot sampling in September 1998. The mown grassland area at the western end of the site has no apparent value to invertebrates.

In summary, Areas 1 and 2 are likely to be of metropolitan importance for terrestrial invertebrates.

2.3.3. Water voles

Water vole surveys were undertaken by Rob Strachan in 1999 and were repeated by Scott Wilson in July 2002. The location of the following characteristic field signs were recorded:

- **Latrines:** characteristic cylindrical droppings approximately 1cm long deposited in discrete piles.
- **Burrows**: typically a series of holes at the water's edge, occurring up to 3m from the water. Some may open below the waterline.
- **Nests**: may be found where vegetation is densely woven into the base of rushes, sedges or reeds.
- **Feeding stations**: feeding remains are deposited as a neat pile of chewed lengths of vegetation.
- **Other**: the presence of grazed lawns around land holes, footprints and runways (low tunnels pushed through the vegetation leading to the water's edge, favoured feeding areas or burrow entrances).

The ditches surveyed were divided into sections either according to distinct changes in the channel and bankside vegetation or according to physical barriers, such as roads. Each section was assessed in terms of its value for water voles according to the density and range of field signs recorded. A set of criteria was established to aid assessment of quality for water voles and to provide a semi-objective means of comparing the quality between the different areas. Each section of ditch was consequently given a grading of either excellent, good, fair, poor or no value for water voles.

The results and evaluation for each ditch are presented below:

Cross Dyke 2 (Areas 1 and 2)
The majority of the ditch provided fair to good habitat for water voles with a short stretch of excellent quality habitat. Cross Dyke 2 had shallow banks that were severely poached by horses. Despite the poaching, dense stands of common reed were present on the ditch margins and signs of water vole, including nests, were fairly plentiful.

Allders Dyke (Areas 1 and 2)
The majority of the ditch (with the exception of the short stretch of dry ditch within Woodland Way) provided excellent habitat for water voles. Although the ditch banks were badly poached by horses and stands of common reed on the margins were patchy in distribution, signs of water voles were numerous (27 latrines were recorded on the west bank of the ditch).

Ditch within Woodland Way (Area 2)
The ditch running from Allders Dyke along the north eastern edge of Woodland Way was dry at the time of survey and heavily shaded by trees and scrub. No signs of water voles were found during the survey and the ditch is considered to be of no value for water voles.

Great Breach Dyke (south) (Area 3)
Field signs recorded during the survey indicate a small population of water voles. The majority of the ditch was classified as poor habitat with occasional stretches of fair quality habitat for water voles. A stretch of the southern bank adjacent to Waldrist Way could not be accessed because of dense scrub: this habitat appeared to be of at least good quality for water voles. The Great Breach Dyke at present has steep banks which slope into a shallow berm at the mean water level. The ditch's banks and marginal areas of the bank are heavily poached by horses and the water vole population is therefore effectively constrained to the vegetation mat within the centre of the channel.[6]

Horsehead Dyke (Area 5)
The majority of the Horsehead Dyke provides good to excellent habitat for water voles. Abundant signs of water vole were found during the survey, including a total of 40 burrows. The majority of the ditch provided steep banks for burrowing with wide bands of dense marginal vegetation, including common reed and reedmace. The lack of poaching on the banks by horses would explain the higher quality of the habitat in Horsehead Dyke for water voles compared to the Great Breach Dyke (south).

Summary
Water voles were found to be present in most of the ditches across the site. Allders Dyke and Horsehead Dyke in particular were found to provide excellent habitat for water voles whilst Cross Dyke 2 provided good habitat. However, the amount of poaching by horses on ditch banks across the site was considered to be a limiting factor for the water vole population and the Great Breach Dyke south was particularly

[6] It should be noted that surveys undertaken by Managing the Marshes in 2001 found the Great Breach Dyke (south) to be of good quality for water voles. It is probable that the quality of the ditch for water voles has decreased substantially during the period up to the Scott Wilson survey in July 2002 due to the severity of poaching by horses.

badly affected. Such grazing not only damages the water vole burrow system but also reduces the amount of food and cover available for water voles. In the long term, water vole populations in ditches that provided excellent or good habitat at the time of survey (namely Allders Dyke and Cross Dyke 2) are also likely to be under threat due to horse poaching.

The water vole population on the site has therefore been estimated to be of borough to metropolitan importance given that the value of the habitat is sub-optimal due to lack of management and poaching by horses. Exclusion of horses from the ditches would be likely to increase the value of the site to metropolitan.

2.3.4. Birds

Breeding Birds

The site (including the Eastern Thamesmead Industrial Extension, Woodland Way, the Great Breach Dyke south and adjacent land and the northern triangle) was surveyed for birds using an adaptation of the common bird census (CBC) methodology of the British Trust for Ornithology (BTO). A total of 3 visits (in April, May and June 2002) were made to the site. A total of 10 transects were walked and contacts with birds (by sight or sound) were recorded on large-scale field maps. The three visits were undertaken in early morning and were made in good weather with wind speed no greater than Force Five. In addition to the breeding bird survey, records were made of foraging birds during a survey on 28th August 1998.

A full breeding bird species list is provided in Appendix 2. A total of 43 species were recorded during the breeding bird survey and of these, 36 species were thought likely to be breeding. The remaining seven species were passage migrants (yellow wagtail, wheatear), foraging visitors (grey heron, swift, swallow, linnet) or lingering winter visitors (gadwall).

Of the 36 species thought to be breeding, three are red-listed and four are amber listed by the RSPB as "Birds of Conservation Concern". These are summarised in Table 2.1 below. No nationally rare or scarce breeding species were recorded during the survey. Species are considered notable in this context either because of their inclusion on the list of Birds of Conservation Concern due to a national decline in population levels or because numbers present on the site comprise a significant component of the London population (usually more than 1% of the London population).

Table 2.1: Summary of Bird Survey results (red and amber species)

	RSPB List	Area 1	Area 2	Area 3	Area 5
Skylark	Red	2 territories			1 territory
Song Thrush	Red		2 territories	1 territory	1 territory
Reed Bunting	Red	1 territory			1 territory
Green Woodpecker	Amber		1 territory		
Stonechat	Amber	1 territory			
Dunnock	Amber	1 territory	3 territories	3 territories	1 territory
Goldfinch	Amber		1 territory		

In addition to the red and amber listed species, a total of 12 species can also be regarded as being as of note within the London context. The most important breeding species in the London context is Stonechat with 22 pairs at just 8 sites within the London Natural History Society (LNHS) recording area (London Bird Report 1998). The pair of stonechats within the survey area perched frequently along the fenceline and scattered hawthorns west of the Londis warehouse but are more likely to have bred in scrub to the north of this.

The London wide baseline data for bird species is poorer for the commoner species although waterbirds tend to be counted monitored more effectively than more widespread species of woodlands and scrub. For this reason it has been judged inappropriate to classify into the categories of London "rare" or "scarce" species based upon these counts, especially given that in some cases these values might contradict the status afforded to the species by the London Bird Report (LBR) authors. Instead, in Table 2.2 the LBR status and a summation of given pairs or territories is presented for the scarcer species in order to give some context to the results of the survey.

Table 2.2: Summary of Bird Survey results

	Area 1	Area 2	Area 3	Area 5	1998 London Bird Report
Little Grebe				2 pairs	126 pairs "widespread"
Mute Swan				1 pair bred	101 pairs "common"
Tufted Duck				2 pairs	232 pairs "regular breeder"
Cuckoo				1 male	"widely reported"
Green Woodpecker		1 territory			150 localities "common"
Skylark	2 territories			1 territory	323 pairs "common"
Meadow Pipit	1 territory				175 pairs "common but increasingly localised
Song Thrush		2 territories	1 territory	1 territory	245 territories "common"
Stonechat	1 territory				22 pairs at 8 sites "localised"
Reed Warbler	4 territories	2 territories	4 territories	5-6 territories	1020 territories (usually less) "common"
Linnet	foraging visitor		foraging visitor	foraging visitor	"common"
Reed Bunting	1 territory			1 territory	291 territories "common"

Records provided by Des McKenzie (the inner London Bird Recorder) are in accordance with the results of the breeding bird survey undertaken in 2002. Records of breeding riparian species included mute swan, little grebe, Canada goose, tufted duck, moorhen, coot, sedge warbler, reed warbler and reed bunting. Records

provided by Des McKenzie generate a similar list of common woodland species breeding on the site including whitethroat, lesser whitethorat, green woodpecker, blue tit, blackcap, chiff chaff, chaffinch and willow warbler. Other breeding birds recorded included skylark, meadow pipit and stonechat. The records provide an extra breeding species for the site: linnet. The linnet is on the red list of Birds of Conservation Concern (RSPB, 1996) but is a relatively common species in London.

Evaluation of breeding bird interest

Woodland Way (Area 2) supports a range of common bird species including whitethroat, wren, robin, dunnock, great spotted woodpecker, great tit and blue tit. Whilst song thrush (on the red list of Birds of Conservation Concern, RSPB *et al* 1996) and blackbird and green woodpecker (on the amber list) are breeding within Woodland Way, the numbers present on the site do not constitute more than 1% of the London population. Woodland Way is consequently evaluated to be of Borough importance for breeding birds.

Grassland within Area 1 and 5 (the East Thamesmead Industrial Extension) supports skylark which is a red list species on the list of Birds of Conservation Concern. The skylark also has a Species Action Plan within both the Bexley and the national Biodiversity Action Plan due to the rapid decline in population levels over the last 50 years. However, the numbers breeding on site (2 pairs) are significantly less than 1% of the London population. A pair of meadow pipits were recorded as breeding on grassland within Area 1, although this is also significantly less than 1% of the London population. The pair of breeding stonechats recorded from scrub along the northern boundary of Area 1 represents 4.5% of the London population. The territory of the pair found along the fenceline of Area 1 is presumed to lie mostly to the north of the fenceline although they are still likely to forage over Area 1, particularly in areas close to the fence. Area 1 is therefore judged to be of Metropolitan importance for stonechat although this is qualified by the aforementioned context, particularly with regard to any future landtake impacts.

The network of ditches across the site, particularly the Great Breach Dyke (Area 3) and ditches within the Northern Triangle to the north of Eastern Way (Area 5) are also of Metropolitan Importance for breeding birds. The ditch network supports one red list species, reed bunting, which also has a Species Action Plan in the national Biodiversity Action Plan due to the rapid decline in population levels over the last 50 years. In addition, the ditch network supports several species in numbers which may be significant in a London context, including little grebe, tufted duck, mute swan, moorhen, coot, mallard, reed warbler and cuckoo.

All of the four areas surveyed (Areas 1, 2, 3 and 5) are judged likely to be of possible Borough importance for various species, based on their likely populations in the Borough context although this cannot be confirmed.

Foraging birds

In August 1998, a flock of goldfinches (*Carduelis carduelis*) comprising 120 to 150 birds was recorded on thistles in Area 1. Although the breeding bird survey demonstrates that few goldfinches breed on the site (one pair at most), the large post-breeding flock observed is significant. The fields support a large population of thistles (*Cirsium sp.*), the favoured food plant of the species, and this, combined with a relative lack of disturbance is the reason for the presence of the flock. The flock is evaluated to be of probable metropolitan importance.

2.3.5. *Bats*

Methodology

A survey of foraging bats and potential bat roosts was undertaken by John Drewett in May 2002. Trees were inspected using close focusing binoculars for any potential cavities that could act as roost sites, including:

- cracks and crevices;
- loose bark;
- holes (including rot holes, boss holes and woodpecker holes);
- splits, perhaps resulting from drought or lightening strikes; and
- an absence of branches and vegetation immediately below and surrounding the cavity entrance.

Although bats may occupy a cavity and leave no visible external evidence, field signs of bats can be found where there is a roost. Consequently, special attention was given to any evidence found that bats may be using a particular hole. Such evidence included:

- dark stains running down the tree, below the hole;
- stains around the hole resulting from the deposition of oil secretions in bat fur;
- bat droppings below or within the hole;
- odours or noise characteristic of bats coming from within the hole; and
- scratch marks around the hole entrance (resulting from bat claw holds).

Visits were made to the site at dusk and dawn during the period 9th to 13th May. A Stag Bat Box III bat detector was used to locate and identify bats. The bat detector was set at 50 kilohertz and was regularly tuned up and down from 20 to 50 khz to ensure that all species of bat were detected.

The London Bat Group and Managing the Marshes were also asked to provide data of bat records on the site.

This survey was conducted over a 5 day period by an experienced bat surveyor. Although this is early in the season for conduction roost surveys, the absence of suitable roosting habitat on the site means that it is not considered to be a significant limitation. The weather conditions during the survey was mild and bats were recorded during each visit, suggesting that the survey gives a fair representation of bat activity at the site.

Results

Desk Study

Managing the Marshes provided one record of serotines (*Eptesicus serotinus)* using the corridor on the edge of Woodland Way.

Field Survey

The roost survey revealed that although Area 2 (Woodland Way west) has a good number of tall trees, these had not attained a size which has allowed the development of rot holes or loose bark. The site as a whole was considered to provide virtually no opportunities for roosting bats.

Records provided by Managing the Marshes (Groundwork Trust, Kent) suggest that Woodland Way is utilised as a commuter route by serotines (*Eptesicus serotinus*) and noctules (*Nyctalus noctula*). Eight serotines and one noctule were recorded on 17th April 2002.

Three species of bat were recorded during the foraging survey in May including common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), and noctule. Most observations were concentrated along Woodland Way west (Area 2) with one or two bats foraging over ditches (including Cross Dyke 2, Allders Dyke, Great Breach Dyke south and the ditch to the north of Horsehead Dyke). The smaller pipistrelles in particular, tended to follow linear features such as woodland edges and ditches when foraging. Bats were not observed at the site until at least half an hour after sunset, suggesting that they had probably travelled some distance from their roosts.

Bats have undergone a major decline in numbers over the past 50 years. Due to the severity of the decline, bats receive complete protection under the Conservation (Natural Habitats & C.) Regulations 1994. Pipistrelle bats have a species action plan in the national BAP whilst all bats are covered under a species action plan in the London and Bexley BAPs. BAP's have recently been awarded legislative force under the Countryside and Rights of Way Act (2000).

The site was considered to offer limited potential for foraging bats and no more than five bats were observed during any survey period. Despite the mild conditions during the survey period, only small numbers of flying insects were observed and the lack of prey is likely to account for the small numbers of bats recorded. The lack of invertebrates probably results from the extensive horse grazing on the site. The site is therefore considered to be of borough importance at most for foraging bats but Woodland Way may be of borough to metropolitan importance as a commuter route for larger bats such as serotines and noctules.

2.3.6. Reptiles

Desk Study
No previous records of reptiles for the site were provided.

Field Survey
A total of 450 corrugated iron sheets, corrugated bitumen sheets, roofing felt and carpet tiles measuring approximately 1m x 1m were distributed around Woodland Way (Area 2) and the Eastern Thamesmead Industrial Estate Extension site (Area 1). The sheets provide artificial refuges for reptiles and provide an effective method of surveying particularly in areas with few easily checked natural refuges. In addition to their use as refuges, they act as preferential basking sites since the materials are quick to warm in the sun.

The sheets were placed on the ground in suitable locations within, and at the interface of, grassland and scrub habitat. The sheets were also placed in various orientations in order to catch the sun at different times of the day.

The sheets were set out in early April 2002 and checked a total of 11 times in April and May. Sheets were only checked during periods of sunshine and, if the day is

sunny and hot throughout, they will be checked only between 8-10am and 4.30-6.30. The best survey conditions are often on warm showery days with short periods of intense sunshine which focus the windows available for basking.

All 450 sheets were then transferred to land adjacent to the Great Breach Dyke Areas 3 and 4) and to the northern triangle (Area 5). The survey was repeated on these sites during the same windows of time and under the same weather conditions outlined above. A further 11 visits were undertaken during this part of the survey.

A total of four grass snakes (*Natrix natrix*) and one slow-worm (*Anguis fragilis*) were recorded during the reptile survey. Three grass snakes were seen within Woodland Way (Area 2); one next to the pool at the western end of this wooded strip and the second at the wood/field boundary. Another was seen in the Manor Farm site. The fourth grass snake was seen in Area 3. [7] These results are in accordance with the Kent Reptile and Amphibian Group (KRAG) records which state that grass snake is present on Erith Marshes to the north.

The single slow-worm was observed in late May, on the northern edge of Woodland Way, south of the Londis depot. This slow-worm was located underneath a piece of installed refugia, in amongst a pocket of herbs and bramble.

The results of the survey indicate that the site contains important habitat for grass snakes and slow worm, mainly in the drainage dykes, rough grassland, scrub/herb pockets and wet woodland. The site is contiguous with Erith Marshes to the north which could well be a stronghold for grass snakes in the London Borough of Bexley. The grassland fields within the Eastern Thamesmead Industrial Extension are also considered to provide habitat for reptiles although none were found in this area during the survey. Grass snakes and slow-worms are both likely to be found within these grazed fields, and may utilise all areas of this habitat during the course of the year.

Although no common lizards (*Lacerta vivipara*) were seen during the survey, suitable habitat also exists for this species on the site adjacent to the drainage dykes and in rough grassland, rubble piles/ made ground and scrub/herb pockets. It is probable that a population of common lizards is present on the site.

2.3.7. Amphibians

Desk Study

Although no formal records were available relating to smooth newts Managing the Marshes have reported that they have recorded *'more than 100 individuals each time we have visited over the past three years'.*

Field Survey

The survey covered all ditches within Areas 1 to 5 and within 500m of the Eastern Thamesmead Industrial Extension. Torching was undertaken on the site for a total of 8 nights. This method involved searching for amphibians at night by shining a torch (minimum 50,000 candlepower) in the water body. The entire margins of the water bodies to be surveyed were walked and torch surveys were only carried out under suitable weather conditions (ie night-time air temperature of more than 5^0C, no/ little wind and no rain).

[7] A further four grass snakes were seen during the water vole survey on two successive days in Area 3 adjacent to the Great Breach Dyke and on ruderal habitat adjacent to Waldrist Way.

Bottle trapping was utilised on the Cross Dyke 2, Allders Dyke and ditches in Woodland Way. Bottle traps made from 2-litre plastic bottles were set on the ditch margins and left overnight. A density of one trap per 2m of bankside was used over sample 10m stretches of ditch. Both banks were surveyed and no less than 100 traps were used per ditch. Three trapping sessions were undertaken on each ditch (a total of six nights across the site). Trapping was only undertaken where the night-time air temperature was more than 5^0C.

The Kent Reptile and Amphibian Group database was consulted for records of amphibians in the area. The Managing the Marshes project has also been contacted with a request to supply results of amphibian surveys undertaken on Erith Marshes.

No great crested newts were found during either the torch counts or the bottle trapping exercise despite the intensive nature of the survey. No historical records of great crested newt on the site or on Erith Marshes to the north were found during the data search. In addition, no other local herpetological experts had any records of great crested newts within Erith Marshes.

During the survey, smooth newts were recorded on a number of ditches and on the pool within Woodland Way. The bottle trapping revealed good numbers of smooth newts on the Allders Dyke (between 11 and 18 caught over three nights), but fewer on Cross Dyke 2 (between 3 and 4 newts caught over three nights only).

The evening torch counts also detected smooth newts on the pool at the west end of Woodland Way, as well as on the Allders Dyke, Cross Dyke 2, Horsehead Dyke and the Great Breach Dyke (south). The woodland pool and the Allders Dyke held the highest number of newts during this particular survey (up to 10 and 7 respectively). These results are in accordance with the Kent Reptile and Amphibian Group (KRAG) records which state that smooth newt is present on Erith Marshes to the north.

Ditches across the site therefore support a large population of smooth newts. Allders Dyke in particular was of high quality for smooth newts. The site is therefore assessed as being of borough importance for smooth newts, taking into account both the widespread nature of the species and their inclusion in the Bexley Biodiversity Action Plan.

2.3.8. Other species of interest

Managing the Marshes reported that the site provides habitat for harvest mice and water shrews. Water shrews are likely to be present in the ditch corridors but may also use grassland, woodland and scrub habitat across the site. Harvest mice are likely to use tall fen vegetation, including common reed for nesting but may also be present in tall grassland and bramble patches across the site.

2.3.9. *Summary of Nature Conservation Interest*

The existing interest of the site is summarised in Table 2.2.

Table 2.2. Existing Nature Conservation Interest of the site

Resource	Sub-area of the site	Interest	Comments
Plant species	Areas 3 and 5 (dykes only)	Metropolitan	7 species scarce in a London context were recorded in Area 5 and 3 species scarce in a London context were recorded in the Great Breach Dyke.
Terrestrial invertebrates	Areas 1 and 2	Metropolitan	Dead wood habitat for saproxylic invertebrates in Woodland Way. Ruderal foraging habitat for aculeate hymenoptera.
Breeding birds	Grassland within Area 1	Metropolitan	Due to the presence of a breeding pair of stonechat.
	Dykes within Areas 1, 3 and 5	Metropolitan	Breeding birds include reed warbler, reed bunting, little grebe, tufted duck, mute swan and cuckoo.
	Area 2, Area 3, Area 5	Borough	Supports a range of common species.
Water vole	Areas 1, 3 and 5	Borough to metropolitan	Size of the population is limited by horse poaching. Habitat within Areas 1 and 3 in particular is sub-optimal.
Bats	Areas 1, 2, 3 and 5	Borough	No roost sites. Site is utilised by noctule, serotine and both species of pipistrelle for foraging (mainly along dykes and Woodland Way). Woodland Way likely to act as a commuting corridor.
Reptiles	Areas 1, 2, 3 and 5	Borough	Slow worm and grass snake population.
Amphibians	Areas 1, 2, 3 and 5	Borough	Populations of smooth newt found in most ditches

3. PROPOSED BUSINESS PARK DEVELOPMENT

Much of Area 1 is allocated within the Bexley Unitary Development Plan for industrial development. Tilfen propose to construct a Business Park within Area 1 in two phases. Development will be aimed at warehousing and the hi-tech end of the market. A detailed layout of the proposed Business Park scheme has been submitted as part of the planning application.

Information from ecological surveys and consultation (see Section 2 above) has informed the design of the Business Park from an early stage. Retention of the critical dyke network is a key design criterion as these dykes are long-standing features of considerable value for nature conservation. A further design criterion is ensuring connectivity of habitats, particularly to Erith Marshes to the north, and therefore maximising the value of retained and created habitats on the site.

Nevertheless, grassland of Metropolitan importance for breeding birds and terrestrial invertebrates will be lost as a result of the proposed Business Park scheme. In addition, it is possible that this grassland was formerly grazing marsh, a habitat which has declined dramatically in extent along the Thames estuary over the course of the last century. Consequently, it has been recognised that extensive ecological mitigation is required to mitigate for the loss of the grassland.

Figure 4 illustrates the habitats to be retained and habitats to be created across land owned by Tilfen in East Thamesmead. Large areas of land will be managed for nature conservation purposes as mitigation for the proposed Business Park site, including Woodland Way (Area 2), the Great Breach Dyke and adjacent land (Area 3) and land within the Northern Triangle (Area 5).

The ecological mitigation will involve enhancement of habitats already present across the site, including grazing marsh grassland in Area 5, the dyke system (including Cross Dyke 2, the Great Breach Dyke and Horsehead Dyke) and woodland and scrub within Woodland Way. The ecological mitigation will also involve creation of new habitats including the following:

- An extensive wetland area on the site of the currently contaminated Manor Farm;
- A backwater and wetland area linked to the Great Breach Dyke;
- Several backwater areas linked to the Great Breach Dyke north and Horsehead Dyke in Area 5;
- Two new ditches to replace the loss of part of Allders Dyke; and
- Extensive areas of scrub and grassland mosaic.

Section 4 below outlines the BAP species and habitats which have been targeted in this Masterplan and Section 5 supplies detail on the location and extent of habitats to be provided across the site. Section 5 also provides details of practical implementation of this masterplan together with initiatives for environmental education. Section 6 provides brief details of the short-term ecological mitigation required to ensure compliance with protected species legislation.

4. TARGET BAP HABITATS AND SPECIES

Biodiversity, short for biological diversity, is the variety of life forms all over the world. It encompasses the whole range of mammals, birds, reptiles, amphibians, fish, invertebrates, plants, lower plants and fungi as well as their habitats. As a direct result of the Earth Summit in Rio de Janeiro in 1992, the UK Biodiversity Action Plan was published in 1994. The UK BAP sets out the strategy for implementing the Convention on Biological Diversity to which the UK is a signatory. Although the Report provides the national framework for biodiversity, it also emphasises the importance of local action through Local Biodiversity Action Plans. As a result, the London Biodiversity Action Plan (BAP) was launched in February 2001 and the Bexley BAP in 2002.

Habitat creation and enhancement proposals for Woodland Way, the Business Park site, the Great Breach Dyke and the northern triangle will target habitats and species which have been identified within the Bexley, London or the national Biodiversity Action Plans (BAPs) and which are typical of the Thamesmead area. As well as contributing to Bexley, London and national BAP targets it is considered that these habitats will be the most successful in terms of long-term establishment on the site, and will require a level of management and maintenance which can be met realistically. Habitats and species which have Biodiversity Action Plans at either the Bexley, London or the national level are summarised in Tables 4.1 and 4.2 below.

Table 4.1. Biodiversity Action Plan Habitats targeted within this Masterplan

BAP	Habitat Action Plan	BAP aims and objectives	How the BAP aims and objectives are met through this Masterplan (see Section 5).
National, London and Bexley	Broadleaved, Mixed and Yew Woodland	Includes patches of scrub of above 0.25 ha which forms a continuous canopy. The overall aims of the London woodland BAP are 'to conserve, enhance and increase London's woodland for the benefit of biodiversity', 'to significantly increase the area of woodland in London' and 'to increase the sustainable economic use of woodland in London'. The overall aim of the Bexley Woodland BAP is 'to protect existing woodland and increase woodland cover within Bexley' and 'to increase the biodiversity of existing and proposed woodland'.	The biodiversity value of woodland within Woodland Way will be increased through gradual replacement of non-native species with native species typical of woodland communities in the London area. Extensive new areas of scrub will also contribute to increasing the area of habitat included in this category.
National	Wet woodland (covered in the Woodland BAP for London and Bexley – see above).	Wet woodland occurs on poorly drained or seasonally wet soils, usually with alder, willows and birch as the dominant tree species. Key objectives of the national BAP include "Complete establishment of a further 3,375 ha of wet woodland on unwooded sites or by conversion of plantations by 2015"; and "Achieve favourable condition over 50% of the total resource of wet woodlands by 2010".	The existing woodland plantation in the west of Woodland Way will be converted to wet woodland of high biodiversity value. The management of the wet woodland will aim to achieve "favourable condition" by 2010.
National, London and Bexley	Grazing marsh	Grazing marsh is defined as periodically inundated pasture or meadow with ditches which maintain the water levels, containing standing brackish or fresh water. The ditches are especially rich in plants and invertebrates. One of the key objectives of the National BAP is to "Rehabilitate 10,000 ha of grazing marsh habitat which has become too dry, or is intensively managed, by the year 2000." The London BAP for grazing marsh has not yet been produced. One of the aims of the Bexley BAP is "To identify and protect existing grazing marsh and its associated flora and fauna within Bexley".	The dry grassland in Area 5 represents degraded grazing marsh. The management of this area will be aimed at restoring the dry grassland to grazing marsh in favourable condition. This habitat will be particularly important for ground-nesting birds such as yellow wagtail and meadow pipit as well as grazing marsh plants and invertebrates.
National	Standing Open Water	Includes ditches with open water and covers the open water zone	Ditches across the site will be enhanced to

and Bexley	and Canals (covered as Rivers and Standing Waters in Bexley BAP).	with submerged and floating vegetation and water fringe vegetation. No national BAP prepared to-date. Bexley Habitat Action Plan currently under production.	increase their value for plants, invertebrates, breeding wildfowl and other birds such as reed warblers and water voles. Plants and invertebrates that will be aimed at include species typical of Erith Marshes to the north (see Section 2 above). Extensive wetland areas and backwaters will also be created across the site.
National, London, Bexley	Reedbed	Reedbeds are wetlands dominated by stands of the common reed *Phragmites australis*. The national BAP focuses on "priority" reedbed areas over 2 ha in size (reedbeds of this size are not likely to be created on the site). The London BAP has yet to be prepared. Objectives of the Bexley BAP are to "Protect and maintain the existing area of reedbed in the Borough"; and to "Increase the areas of reedbeds, by expansion of existing areas and creation of new areas, where opportunities arise, in the Borough."	Bexley has about 10% of London's reedbeds, of which the majority are on Erith Marshes/ Crossness nature reserve. As such, stands of common reed along ditches on the site are valuable in both the metropolitan and borough context. Existing stands of common reed will be retained and the total reedbed area across the site will increase through the creation of extensive wetland areas and new ditches.
National, Bexley	Ancient and/ or Species-rich Hedgerows	Species-rich hedgerows may be defined as those which contain 5 or more native species on average in a 30m length. One of the aims of the Bexley BAP is to "Reverse the loss of hedgerows in Bexley".	Creation of new hedgerows along the ditch corridors and along the northern boundary of the Business Park will increase the total length of hedgerow in Bexley and therefore help to reverse the decline in total hedgerow length.

Table 4.2. Biodiversity Action Plan Species targeted within this Management Plan

BAP	Species Action Plan	Summary of Species Status	BAP aims and objectives	How the BAP aims and objectives are met through this Masterplan (see Section 5).
London and Bexley	Stag beetle (*Lucanus cervus*)	A species reliant on dead wood to complete its life cycle. London is nationally significant for the populations it supports (approximately 30% of the 1998 national records were from the	One of the aims of the London BAP is "To protect, conserve and enhance where appropriate the nationally important populations of stag beetle in London and their distribution". One of the aims of the Bexley BAP is "To significantly increase	The retention of dead wood habitat within Area 3 adjacent to the Great Breach Dyke and Area 2 (western end of Woodland Way) will provide nesting habitat for stag beetles. Provision of stag beetle loggeries may contribute to the target of increasing stag beetle populations in

		capital). Nationally, stag beetle distribution has significantly contracted in recent years.	populations of stag beetles in Bexley."	Bexley.
London, Bexley and National	Water vole (*Arvicola terrestris*)	A species reliant on the presence of healthy waterside habitats and their associated plant communities. The water vole is the most rapidly declining animal in Britain with an 88% loss to the national population between 1991 and 1998 (Strachan *et al*, 2000). Water vole has disappeared from over 72% of sites in Greater London since 1997 (London Mammal Group, 1998).	One of the objectives of the London BAP is "To conserve London's water vole population and increase their range for the benefit of current and future generations." The objective of the Bexley BAP is "To conserve existing water vole populations and increase their range and numbers through safeguarding and improving suitable habitat."	Habitat will be enhanced for water voles on existing ditches, primarily through exclusion of horses and introduction of a sensitive management regime. Extensive new habitat for water voles in the form of wetlands, backwaters and new ditches will be created across the site.
National and Bexley	Skylark (*Alauda arvensis*)	Although the skylark is one of the most widespread birds of the British Isles with over 2 million breeding pairs, the UK breeding population on lowland farmland declined by 54% between 1969 and 1991. The rate of decline in Bexley is thought to reflect the national decline. On the Red list of Birds of Conservation Concern (RSPB *et al* 1996).	The objectives of the National BAP include the following: "Maintain present breeding numbers, wintering numbers and distribution throughout the UK"; and "Protect the Skylark's habitat, particularly during the breeding season." One of the objectives of the Bexley BAP is "To increase the available habitat and therefore increase the breeding population of skylarks."	Available habitat for skylarks due to the Business Park scheme is likely to decrease due to the loss of grassland in Area 1. However, grassland in Area 5 will be managed as grazing marsh and one of the management objectives for this area will be to provide habitat for skylarks.
National	Bullfinch (*Pyrrhula pyrrhula*)	A species closely associated with scrub habitats which has seen a national decline through the Common Bird Census Monitoring (75% decline on	The objectives of the national BAP are: "In the short term, halt or reverse the decline in numbers of the bullfinch by the year 2003..."; and "In the long term, see a sustained recovery in numbers".	New hedgerows and extensive scrub areas created across the site will provide habitat for bullfinch.

		farmland and 45% in woodland between 1968 and 1991). On the Red list of Birds of Conservation Concern (RSPB *et al* 1996).		
National and Bexley	Song thrush (*Turdus philomelos)*	A species closely associated with scrub habitats which has seen a national decline through the Common Bird Census Monitoring (it has more than halved in numbers over the past 25 years). On the Red list of Birds of Conservation Concern (RSPB *et al* 1996).	The objectives of the national BAP include the following: "Halt the decline in numbers of song thrush in the UK by the year 2000"; and "Maintain the range and population levels of song thrush and where possible restore them to that of the 1970 estimate." The objective of the Bexley BAP is "To increase the available habitat and therefore increase the breeding population of song thrushes."	Habitat for song thrush will be retained in Woodland Way. In addition, the creation of extensive areas of scrub habitat will also provide new nesting habitat for song thrush.
National	Reed Bunting (*Emberiza schoeniclus*)	A species typically associated with reedbeds which also occurs along ditches and overgrown hedgerows. The population has declined by over 50% from its mid-1970s level. On the Red list of Birds of Conservation Concern (RSPB *et al* 1996).	The objectives of the national BAP are: "In the short-term, halt or reverse the decline in numbers of the reed bunting by the year 2003"; and "In the long term, see a sustained recovery in numbers."	Current habitat for reed bunting on the site (including ditches with dense marginal vegetation) will be retained. In addition, new habitat suitable for reed bunting will be created across the site, including new ditches and wetlands with dense common reed and other marginal vegetation and hedgerows.
National	Linnet (*Carduelis cannabina*)	A species associated with weedy fields, hedgerows, gorse thickets, heathland and scrub. Numbers declined by 56% on farmland between 1968 and 1991. On the Red list of Birds of Conservation Concern (RSPB *et al* 1996).	The objectives of the national BAP are: "In the short-term, halt or reverse the decline in numbers of the linnet by the year 2003"; and "In the long term, see a sustained recovery in numbers."	Linnets have been observed foraging on the site but are not currently thought to be breeding on the site. The areas of scrub to be created on the site would provide suitable breeding habitat for linnets.
National, London and	Bats	Eight bat species are known to be breeding in Greater London. Evidence suggests that there is an	The objectives of the National BAP are: "Maintain existing populations and range of pipistrelles and restore populations to pre-	The site does not currently provide roosting habitat for bats although Woodland Way provides a commuting route for noctules and

Bexley.		overall decline in populations of all bat species in the UK. Both species of the pipistrelle are thought to have declined by an estimated 70% between 1978 and 1993.	1970 numbers." The objective of the London BAP is "To reverse the current population declines in London's bats." The objective of the Bexley BAP is "To protect existing and increase numbers of colonies in Bexley."	serotines and limited foraging habitat for both species of pipistrelle. The commuting route will be retained. Roosting habitat for bats will be provided by the erection of bat boxes, or similar structures in Woodland Way. In addition, extensive new foraging areas for bats will be provided by the creation of new wetland areas, including the Manor Wetland within Woodland Way.
Bexley	Newts	All native amphibians are in decline as a result of habitat loss and fragmentation. The species found within ditches on the site, the smooth newt (*Triturus vulgaris*), is the most wide-spread and common of the newt species in the UK and Bexley.	The objectives of the Bexley BAP are: "To maintain the present range, distribution and viability of existing populations" and; "To increase the number of suitable terrestrial habitat and the number of ponds within suitable habitat."	All existing ditches supporting smooth newts (with the exception of Allders Dyke which will be recreated) will be retained across the site. Extensive areas of new wetland will also be created and therefore the existing smooth newt population should grow substantially in size.

Not all species targeted in this ecological masterplan have Species Action Plans and they have therefore not been listed in the table above. For example, the results of surveys presented in Section 2 indicate that the site is important for breeding birds such as reed warbler and meadow pipit and wildfowl such as little grebe and moorhen. Therefore, in addition to the BAP species listed above, the following species and/ or species groups will also be targeted in this Management Plan as they are typical of the Thamesmead area and habitat on the site can be enhanced to support them:

- Reptiles, including common lizard (*Lacerta vivipara*), slow worm (*Anguis fragilis*) and grass snake (*Natrix natrix*). Reptiles require a combination of tall grass and scrub and areas of shorter sward or bare ground which provide both cover and basking sites. Grass snakes often hunt in water and are therefore often associated with water features such as ponds or ditches. Slow worms and common lizard are commonly found on areas of made ground which provides crevices between rubble for hibernation. Existing areas of scrub and grassland will be retained on the site and extensive new areas of scrub-grassland mosaic will be created to provide further habitat for reptiles. Egg-laying and hibernacula sites for grass snakes will also be provided across the site.

- Goldfinch (*Carduelis carduelis*). Sizeable goldfinch flocks have been observed foraging on land to the south of the site due to the presence of thistle (Cirsium sp.), their favoured foodplant (Scott Wilson, 1998). Goldfinch is on the amber list of Birds of Conservation Concern (RSPB et al 1996). Suitable foraging habitat, containing appropriate seed bearing plants as a food source for goldfinch will be provided within areas of scrub and grassland mosaic.

- Breeding birds including reed warbler, little grebe, cuckoo, tufted duck, stonechat, green woodpecker and great spotted woodpecker. Woodland habitat within Area 2 will be retained to support a range of common species including the woodpeckers, blackcap and willow warbler. The existing ditch habitat will be retained on the site and extensive areas of new wetland created to increase the habitat available for wildfowl and reed warblers. New scrub-grassland mosaics adjacent to the Great Breach Dyke will provide breeding habitat for stonechat.

- This masterplan focuses on invertebrate assemblages from three different habitats:

    1. Saproylic invertebrates of dead wood which will be encouraged by retaining dead wood at the western end of Woodland Way and adjacent to the Great Breach Dyke south; a recommended target is 30 m^3 per Ha. Log piles to create habitat for stag beetles should be made up of 3-5 metre lengths of wood.
    2. Ruderal vegetation and grassland utilised as foraging habitat for the Thames estuary metapopulation of aculeate hymenoptera – areas of ruderal vegetation will be provided within the extensive grassland-scrub mosaic to be created across the site. This habitat in conjunction with the grazing marsh grassland to be provided in Area 5 will also provide habitat for invertebrates typical of Thames Estuary grazing marshes such as Roesel's cricket (*Metrioptera roeselii*) and the great green bush-cricket (*Tettigonia viridissima*); and
    3. Aquatic invertebrates typical of grazing marsh ditches, including dragonflies such as the black-tailed skimmer (*Orthetrum cancellatum*) and the emerald dragonfly (*Lestes sponsa*). The existing ditch network will be retained and enhanced through sensitive management and new ditches along with new wetlands and backwaters will be created across the site to provide further habitat for aquatic invertebrates.

- Water shrew (*Neomys fodiens*) has been recorded in the past from Erith Marshes (Managing the Marshes, Pers. com.). Water shrews are frequently found by ponds and drainage ditches but have also been recorded up to 3km from water in deciduous woodland, hedgerows and grassland. Retention of the existing ditch network and creation of extensive new areas of wetland will ensure the viability of the water shrew population across the site in the long term.

- Harvest mouse has also been recorded in the past from Erith Marshes (Managing the Marshes, Pers. com.). The harvest mouse favours areas of tall, dense vegetation, particularly long grass, reedbeds, rushes, grassy hedgerows, ditches and bramble patches. Suitable habitat will be created for harvest mouse including grassland scrub mosaic with some tall ruderal vegetation and areas of dense reed on ditches and within wetlands.

5. PROPOSED HABITAT CREATION AND ENHANCEMENT

The main focus of the Ecological Masterplan is to create a mosaic of habitats across land owned by Tilfen in East Thamesmead that are appropriate to the local context, that provide connectivity to surrounding habitat, particularly Erith Marshes to the north and that provide maximum value for biodiversity. Figure 4 illustrates the mosaic of retained and newly created habitats proposed across the site.

The priority of the Masterplan is centred on grazing marsh characteristic of Erith Marshes to the north and thought to have been the historic use of much of the site. Management will be focused particularly on the dykes where the nature conservation value of grazing marsh is usually concentrated but also on management of grassland communities. In the grazing marsh context, habitat creation will aim to create features complimentary to existing ditches including new ditches and wetlands with extensive marginal/ swamp communities.

In Woodland Way, the Masterplan focuses on gradually replacing non-native poplar plantations with native species typical to the London area, retaining the well-structured woodland edge where it exists, creating a better-structured woodland edge where it doesn't and providing glades with scrub edges. The Masterplan also specifies the creation of grassland and scrub mosaics which are aimed at complimenting both the woodland habitat and the network of ditches and wetlands.

This Ecological Masterplan will be implemented through a series of Management Plans which will provide detailed prescriptions and specifications for habitat creation and management of the habitat in the long-term. The Management Plans will be written to cover a ten-year period. The Management Plans will also include requirements for annual monitoring so that the condition of the habitat can be recorded and adjustments made to the management regime accordingly. A Management Plan has already been prepared for the Great Breach Dyke (south), although it is likely that this will require revision following the results of ecological surveys undertaken in 2002.

The Management Plans will include specifications aimed at providing environmental education. It is envisaged that a series of interpretation boards illustrating the wildlife present on the site will be provided in a showroom adjacent to Manor Farm Wetland and on nature trails throughout Woodland Way.

5.1. Ditches

The 'critically important dyke network' (including Horsehead Dyke, Great Breach Dyke and Cross Dyke 2) will be retained across the site. In addition, the following habitat creation measures will be undertaken:

- Allders Dyke will be re-created in a new course to the west of the Londis site and connected to the northern stretch of Allders Dyke in the Thames Water land. In response to concerns raised by Thames Water, the newly created ditch will contain a break, similar to that in Cross Dyke 2, to ensure that water is not drawn away from the Thameswater's Crossness Nature Reserve.
- A new ditch will be created linking a wetland area in Woodland Way (see below) with the Great Breach Dyke.
- Two new ditches totalling approximately 350m will be created in Area 5. The ditches will follow the course of historical ditch features, although care will be taken to avoid damage to archaeological features recorded on the site.

The above proposals will result in the creation of a total of 770m of new ditch.

Most ditches will be created and/ or managed as grazing marsh ditches, although the new ditch to the north of Woodland Way will be designed with a variety of channel features and will be bordered by scrub and woodland. The two ditches running through the Business Park site (Allders Dyke and Cross Dyke 2) will have a substantial grassland buffer zone, (20m for Allders Dyke and 30m for Cross Dyke 2), which will be managed for nature conservation purposes.

New ditches will be created with a variety of cross-sectional profiles. The majority of the banks will have a wide berm at the toe of the slope just below the water level, aimed at encouraging the establishment of a dense fringe of marginal vegetation. Such marginal vegetation provides ideal conditions for water voles as well as habitat for breeding birds such as reed warbler, reed bunting and waterfowl

The focus of mitigation works on existing ditches will be to enhance their value for water voles, rare and scarce plants typical of Erith Marshes to the north (including marsh dock, lesser reedmace, reflexed poa, narrow-leaved water parsnip, pink water speedwell and unbranched bur-reed), breeding birds, grass snakes, smooth newts, water shrews and invertebrates. Some careful reprofiling of the existing ditches may be required to create a variety of bank profiles, particularly where extensive horse poaching has destroyed the bank structure. However, any reprofiling would be undertaken in a sensitive manner and large sections of each ditch would be left intact to provide refuges for water voles. The main focus of management of the ditches is likely to involve exclusion of horses to prevent excessive poaching and a sensitive mowing and dredging regime. All ditches will incorporate a substantial grassland buffer zone/corridor which will be approximately 20 metres wide.

The management of the ditches, for example cutting and dredging, will take place rotationally. Management practices such as desilting and cutting of vegetation at the bank tops will avoid damage to water vole habitat.

5.2. Wetlands and backwaters

A large wetland area will be created on the site of Manor Farm in the north of Woodland Way. A backwater will also be created linked to the Great Breach Dyke (Area 3).

A variety of cross-sectional profiles, ranging from shallow slopes to steep and / or stepped banks with wide berms at the toe of the slope, will be created on the wetland edges. The wetland areas will be designed to maximise the areas of swamp and marginal vegetation. Planting of the new wetland areas will be fairly sparse to

encourage natural colonisation by plants typical of Erith Marshes, including London scarce species such as sea club-rush, lesser water-parsnip and round-fruited rush.

The wetland areas will compliment the grazing marsh habitat and will provide extensive habitat for invertebrates and plants typical of Erith Marshes in addition to habitat for water voles, water shrews, breeding birds such as reed warblers and waterfowl, smooth newts, grass snakes and fen habitat for harvest mice. It is envisaged that egg-laying sites for grass snakes could be created adjacent to wetland areas. The Manor Farm wetland in particular, will create foraging habitat for serotine and noctule bats which currently use Woodland Way as a commuting route.

5.3. Grazing marsh grassland

Grassland in the northern triangle (Area 5) currently constitutes dry neutral grassland characteristic of degraded grazing marsh. The area was surveyed 10 years ago and it is evident that the quality of the grazing marsh grassland has declined dramatically over this period. Consequently, enhancement of this area will focus on implementing a management regime suitable for grazing marshes. All management of grassland will be undertaken in consultation with the warden of the Thames Water nature reserve located to the west and north of the northern triangle. It is possible that the northern triangle could be incorporated into and managed as part of the nature reserve in conjunction with the payment of an annual sum of money.

Several small scrapes will be created across grassland in the northern triangle. The resulting ground level within the scrapes will be just above the water table. It is envisaged that the scrapes will be seasonally inundated with water. Creation of the scrapes is aimed at encouraging colonisation of wetland and marsh plants such as celery-leaved buttercup, marsh dock and divided sedge (*Carex divisa*) as well as providing high tide roosts for wintering waders. In order to ensure that a hydrological regime appropriate for a grazing marsh is established across the site, it may be necessary to manipulate water levels in the ditches via a system of sluices.

Management of the grassland will comprise implementation of a grazing regime. The grazing regime is likely to be aimed at restoring the grazing marsh grassland in the first instance. Ideally the grazing marsh will be stocked with cattle, although it is likely that horses will be more readily available. If cattle are not available, light grazing by horses will be supplemented by cutting or by hand removal of vigorous species such as false oat-grass during the first year of management. This will permit the colonisation of finer, less-competitive species such as red fescue and crested dogs-tail. The trampling action of hooves will also help to break up the litter layer and open up the sward, allowing short-lived species to recolonise.

It should be noted that high stocking densities may cause poaching damage to the ditch banks. Such poaching damage may have adverse effects on the water vole population: overgrazing reduces the amount of food and cover available for water voles and causes further damage by compacting the soil and damaging the burrow system. To reduce this problem, specific drinking points will be created using fencing on the Great Breach Dyke East and Horsehead Dyke

In the long-term, low numbers of stock will be kept on the northern triangle (Area 5) between May and September. The grazing regime will aim to maintain a diverse grassland sward with a high percentage of finer grasses and herbaceous species. A monitoring system will be put in place to ensure that both over and under-grazing of the site do not occur. In contrast, implementation of a horses grazing regime in the Allders Dyke, Cross Dyke 2 and Great Breach South corridors is unlikely to be practicable. As such, a mowing regime will be implemented in these grassland areas, also aimed at reducing the dominance of coarse species and allowing the establishment of a more diverse grassland sward.

In addition to restoring a typical Thames estuary grazing marsh grassland community on the site, the management regime outline above will provide habitat for terrestrial invertebrates associated with grazing marsh such as Roesel's bush cricket and ground-nesting birds such as skylark, yellow wagtail and meadow pipit.

5.4. Woodland

The majority of woodland on the site is currently concentrated in Woodland Way (Area 2). This area is predominantly comprised of non-native poplars with some willows and alder at the wetter western end. There are also some blocks of hawthorn and elder scrub within Area 2, particularly on the northern and southern edge of Woodland Way.

It is proposed to retain the woodland habitat within Woodland Way as the area has developed nature conservation interest for breeding birds and as a commuting route for serotine and noctule bats. The main management focus for this area will be to gradually thin-out the non-native tree species and replace them with species appropriate to the soil type and drainage conditions and typical of communities found in London. The other management objective will be to create a more diverse structure within the woodland, including woodland edges, glades and an understorey.

All management will be undertaken gradually in a sensitive manner. It is envisaged that replacement of non-native trees would take place over a period of more than ten years. Planting of trees within the eastern end of Woodland Way will aim to replicate the ash-maple community typical of moist neutral soils in London (London Biodiversity Partnership, 2002) which is characterised by the NVC W8 *Fraxinus excelsior – Acer campestre* community. Dominant species in the canopy would be ash (*Fraxinus excelsior*) and field maple (*Acer campestre*) with some hornbeam (*Carpinus betulus*) and silver birch (*Betula pendula*). Tree species in the understorey would be dominated by hazel (*Coryllus avellana*) and small-leaved lime (*Tilia cordata*) with hawthorn (*Crataegus mongyna*) and elder (*Sambucus nigra*). Once the understorey is established, it would be managed as a rotational coppice.

Much of the northern and southern edge of Woodland Way is currently characterised by hawthorn and elder scrub interspersed with grassland. The scrub and grassland mosaic provides good habitat for reptiles and as such, the scrub edge of Woodland Way will be retained where possible. The scrub edge is likely to be lost on the north eastern edge of Woodland Way during creation of the new ditch. This woodland edge will be recreated as a scrub-grassland mosaic (see below) in order to provide habitat for reptiles. In addition, several glades will be created within Woodland Way. These will have a structured edge gradually decreasing in height from the shrub layer to tall ruderal herbs. These glades will increase the diversity in the ground flora and the terrestrial invertebrate community, as well as providing further habitat for reptiles.

Where possible, artificial hibernacula for grass snakes will also be provided in the vicinity of the glades.

The western end of Woodland Way is wet and periodically waterlogged. The key objective for this part of the site is to establish a wet woodland. Existing willows (including white willow [*Salix alba*], goat willow [*Salix caprea*] and grey willow [*Salix cinerea*]) will be retained. All existing dead wood will also be retained in this part of the site as it provides a valuable habitat for saprophytic invertebrates. Alder (*Alnus glutinosa*) and crack willow (*Salix fragilis*) will be planted to fill any gaps in order to create a structurally-diverse woodland. A ground flora characteristic of the NVC W5 *Alnus glutinosa – Carex paniculata* will be encouraged and it is likely that species such as greater tussock sedge (*Carex paniculata*), lesser pond-sedge (*Carex acutiformis*), meadowsweet (*Filipendula ulmaria*) and marsh thistle (*Cirsium palustre*) will be planted.

The resulting woodland in Area 2 will continue to provide breeding habitat for common woodland birds and a commuting route for bats. The woodland will also provide habitat for reptiles. Roosting habitat for bats will also be created through the erection of bat boxes.

5.5. Scrub and grassland mosaic

A scrub-grassland mosaic will be established on land adjacent to the Great Breach Dyke south (Area 3) and within glades and on the edges of Woodland Way (Area 2). Sycamore trees will be removed from land adjacent to the Great Breach Dyke, although all dead trees will remain *in-situ* as they provide valuable habitat for stag beetles and other saproxylic invertebrates. Loggeries will also be provided in these areas to increase the habitat available to stag beetles.

The dominant scrub species in all areas across the site are likely to be hawthorn and elder. Regular maintenance of the scrub-grassland mosaics will be required to prevent the scrub from completely dominating these areas.

The scrub-grassland mosaics will provide valuable habitat for reptiles, nesting habitat for birds such as stonechat and bullfinch and terrestrial foraging habitat for smooth newts. Egg laying sites for grass snakes and refuges for slow worms, grass snakes and common lizards will be provided within these areas. The scrub- grassland mosaics will also comprise some ruderal species which will ensure that a diverse terrestrial invertebrate community is retained on the site and will supply foraging habitat for goldfinches.

5.6. Hedgerows

Hedgerows will be provided along the northern edge of the Business Park and along the edges of the ditch corridors (within the development footprint). Hedgerows will be species-rich and will include species such as wych elm (*Ulmus glabra*), hawthorn, field maple, elder, hazel and crab apple (*Malus sylvestris*).

In combination with a tall ruderal margin, the hedgerows will provide green links across the Business Park site. In addition to providing habitat for breeding birds, hedgerows associated with tall grassland will provide habitat for harvest mice.

6. SHORT TERM ECOLOGICAL MITIGATION

Although the habitat management and creation measures outlined in Section 5 will enhance the nature conservation value of the site in the long term, in the short term, further measures are required to ensure compliance with nature conservation legislation. Such compliance measures will be required for water voles, reptiles, breeding birds and Japanese knotweed and are outlined below.

6.1. Water voles

Water vole populations in Britain have suffered a long-term decline due to habitat degradation and loss resulting in fragmentation and isolation of populations and increased vulnerability to predation pressure from American Mink. As a result of this steep decline in population numbers, the water vole has received legal protection since 1998 as a result of its inclusion on Schedule 5 of the Wildlife and Countryside Act (1981) (as amended). Water voles are protected by Section 9 (4) of the Act which protects the water vole's places of shelter or protection but does not protect the voles themselves. Under the Act, it is an offence to intentionally:

- damage or destroy or obstruct access to any structure or place which water voles use for shelter or protection
- disturb water voles while they are using such a place

Part of the proposals for the Business Park site involve filling in the existing Allders Dyke to the south of Londis and creating a new ditch (the new Allders Dyke) as mitigation further to the east that links into the surrounding dyke system.

A water vole translocation exercise will be undertaken prior to the infilling of the existing stretch of Allder's Dyke into the newly created dyke. A stretch of approximately 130m of the new ditch will be created at least a year in advance of the development to allow at least one growing season for marginal planting to establish. Watervoles will be translocated directly from the existing stretch of Allders Dyke into the new ditch. Release pens will be used to minimise the risk of predation whilst the watervoles establish a burrow system. The new watercourse will be completely fenced and remain isolated from the rest of the system during vegetation establishment and for a set period after release of translocated animals in order to prevent colonisation by other populations.

Trapping is likely to be required over a 2-3 week period: it is recommended that trapping is undertaken daily until no water voles have been caught for a period of 4 days.

It is likely that trapping will be required in conjunction with water vole fencing and habitat degradation to prevent water voles from returning to the ditch. Habitat degradation should commence as soon as trapping is complete. All vegetation should be stripped using metal blade strimmers within the exclusion zone up to a distance of 10m from the water's edge. Existing burrows will be identified and marked prior to strimming to be kept open after the vegetation has been cut so that any water voles remaining are not accidentally buried. The exclusion zone should then be fenced with marine plywood buried to the depth of the water level. A second trapping exercise should be undertaken for several days after the exclusion zone has been established to ensure no water voles are trapped in the ditch. The existing stretch of Allders Dyke will be infilled immediately following the second trapping exercise to ensure that there is no re-colonisation.

It is recommended that the above works are supervised by an ecologist who should be responsible for ensuring that no water voles remain in the ditch prior to infilling. It is recommended that infilling is undertaken immediately the ecologist has declared the exclusion zone to be free of water voles.

Watervole populations in Cross Dyke 1 and Cross Dyke 2 will be protected by erecting a suitably constructed wildlife fence om on the outer edge of the ditch corridors prior to the commencement of development activities.

6.2. Reptiles

Grass snake, common lizard and slow worm are on Schedule 5 of the Wildlife and Countryside Act (1981) (as amended). They are protected by Section 9 (1) of the Act and it is illegal to intentionally kill, injure or take these reptile species.

The results of the reptile survey (see Section 2) indicated that all three species may be present across the site. However no animals were recorded in grassland in Area 1 during the reptile survey and the majority of quality habitat for reptiles is felt to exist along the ditch corridors (particularly in Area 3) and in Woodland Way. Consequently, it is felt that reptile fencing combined with a trapping exercise is not required during vegetation clearance and construction of the Business Park in Area 1.

However, it is recommended that all clearance of vegetation is undertaken outside the reptile hibernation period (reptiles hibernate from November to March). If works are required during this time, an ecological watching brief is recommended to avoid potential hibernacula where possible and to dismantle hibernacula under the supervision of the ecologist if necessary. The watching brief ecologist must be present on-site prior to commencement of works to mark out potential hibernacula. If works are to take place outside the hibernation period, all site personnel should be made aware of the risk of finding reptiles and their legal protection. Any reptiles encountered should be allowed to escape to nearby adjacent habitat. It is recommended that vegetation clearance commences at one end of the site and subsequent work is undertaken in one direction only to allow reptiles to escape and to prevent animals becoming marooned in a central island of vegetation that will eventually be lost.

All reptile and amphibian refugia will be fenced during winter and the animals caught will be re-located to the riparian areas of the watercourses, where suitable habitat conditions have been developed, in late spring. The fencing around the watercourses and the vegetation (see fencing for water voles above) can be designed and maintained in such a way as to minimise escapes. Refugia will then be carefully dismantled, preferably by hand in late spring, and animals, including amphibians, removed to the receptor areas. The exclusion fencing around the development area are not likely to be required once vegetation clearance has been conducted as long as the site is kept clear of vegetation.

6.3. Amphibians

Although unsubstantiated by data Allders Dyke is suspected to be a breeding site for smooth newts. Although the species does not receive statutory protection good practice will be observed and the population translocated to the new Allders Dyke This will be conducted in conjunction with the watervole translocation, prior to infilling of the ditch.

6.4. Breeding Birds

Birds are protected under Section 1 of the Wildlife and Countryside Act and it is illegal to kill, injure or take any wild bird, to take, damage or destroy the nest of any wild bird or to take or destroy an egg of any wild bird.

As such, it is recommended that all vegetation clearance (including vegetation within ditches) is undertaken outside the bird breeding season (the period mid-March to August). Should vegetation clearance be required during this period, this must be undertaken under the supervision of an ecologist.

6.5. Bats

At present this Ecological Masterplan is accompanying outlined planning permission. Therefore precise details of the lighting requirements are not as yet defined. If lighting is required to run along the boundary of woodland way and the proposed road, this could be disruptive to bats and possibly birds, insects, glow-worms and mayfly. To reduce the glare leuvered (hooded), low ultra-violet or lights with filters will be considered.

6.6. Japanese knotweed

Japanese knotweed is on Schedule 9 of the Wildlife and Countryside Act and it is illegal to cause it to grow in the wild (or to cause its spread). Ideally, the stands in Woodland Way should be eradicated through a herbicide treatment programme over a 2 year period. Should there be a need during construction to disturb soil in the vicinity of the stands , any soil within 7m of the outer edge of the stand, and to a depth of 2m should be considered 'contaminated'. Contaminated soil should either be disposed of as 'special waste', or buried on site to a depth of 5m. Alternatively, plant fragments and soil could be burnt in a designated 'sterile area' on-site. Appropriate disinfection procedures must be employed to prevent fragments of the plant being carried off the site on wheels or tracks. The entire procedure should be supervised by an ecologist.

6.5 Monitoring

Best practice with regard to translocation of animals, in this case water voles, would include a suitable scale monitoring exercise that should incorporate measurement of survivorship, breeding success and recruitment in the receptor area. Translocation individuals, and their offspring, identified by PIT tags should be monitored using field sign surveys and live trapping for a set period post mitigation.

Suitable monitoring of bird activity should be conducted post construction to provide a measure of the affect on these animals.

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APPENDIX 1. PLANT SPECIES LIST.

Species recorded in Area 1 (during 1998 and 2002 survey)		
Common Name	**Scientific name**	**DAFOR score**
Herbs and grasses		
Common couch	*Agropyron repens*	LF
Creeping bent	*Agrostis stolonifera*	LF
Meadow foxtail	*Alopecurus pratensis*	S
Burdock	*Arctium lappa*	O
False oat-grass	*Arrhenatherum elatius*	O-LF
Intermediate winter-cress	*Barbarea intermedia*	S (few plants on spoil heap)
Soft brome	*Bromus hordaceus*	LF
Creeping thistle	*Cirsium arvense*	LA (east)
Spear thistle	*Cirsium vulgare*	F
Field bindweed	*Convolvulus arvensis*	R
Crested dog'stail	*Cynosurus cristatus*	LD
Cock's-foot	*Dactylis glomerata*	O - LF
Tufted hair-grass	*Deschampsia cespitosa*	LF (damp north east corner)
Teasel	*Dipsacus fullonum*	R
Tall fescue	*Festuca arundinacea*	LD (east)
Red fescue	*Festuca rubra*	O
Round-leaved crane's-bill	*Geranium rotundifolium*	S (few plants on spoil heap)
Hoary mustard	*Hirschfeldia incana*	LF (spoil heaps)
Meadow barley	*Hordeum secalinum*	O - LF
Common cat's-ear	*Hypochaeris radicata*	A
Prickly lettuce	*Lactuca serriola**	LF
Grass vetchling	*Lathyrus nissolia*	S; small patch only
Perennial rye-grass	*Lolium perenne*	D (west)
Common bird's-foot-trefoil	*Lotus corniculatus*	S
Spotted medick	*Medicago arabica*	O
Black medick	*Medicago lupulina*	R
Timothy	*Phleum pratense*	LF
Bristly ox-tongue	*Picris eichiodes*	LF
Hawkweed ox-tongue	*Picris hieracioides*	LF
Ribwort plantain	*Plantago lancoelata*	F
Creeping cinquefoil	*Potentilla reptans*	R
Creeping buttercup	*Ranunculus repens*	A
Curled dock	*Rumex crispus*	O
Ragwort	*Senecio jacobea*	A
Common comfrey	*Syphytum officinale*	F
Dandelion	*Taraxacum officinale agg.*	R
Red clover	*Trifolium pratense*	R
White clover	*Trifolium repens*	LD (west)
Scentless mayweed	*Tripleurospermum inodorum*	R
Common nettle	*Urtica dioica*	R
Ditches		
Creeping bent	*Agrostis stolonifera*	LD
False fox-sedge	*Carex otrubae*	LF
Spiked sedge	*Carex spicata*	S (1 plant on bank slope)
Great willowherb	*Epilobium hirsutum*	R

Plicate sweet-grass	*Glyceria notata*	VLD
Common reed	*Phragmites australis*	D
Celery-leaved buttercup	*Ranunculus scleratus*	O
Clustered dock	*Rumex conglomeratus*	R
Common reedmace	*Typha latifolia*	O
Trees and shrubs		
Maple sp	*Acer species**	R
Bladder-senna	*Colutea arborescens**	R
Hawthorn	*Crataegus monogyna*	R
Dog rose	*Rosa canina*	R
Bramble	*Rubus fruticosus agg.*	R
Elder	*Sambucus nigra*	R
*indicates non-native species		

Species recorded in Area 2 (during 1998 survey)		
Common Name	**Scientific name**	**DAFOR score**
Woodland Way		
Herbs and grasses		
Creeping bent	*Agrostis stolonifera*	LD
Horse-radish	*Armoracia rusticana*	LA
False oat-grass	*Arrhenatherum elatius*	LD
Trees and shrubs		
Sycamore	*Acer pseudoplatanus**	LF
Maple sp	*Acer species**	
Alder	*Alnus glutinosa*	LF
Grey alder	*Alnus incana*	R
Silver birch	*Betula pendula*	O
Hybrid birch	*Betula x*	R
Hawthorn	*Crataegus monogyna*	LD
Poplar	*Populus sp*	LD
Plum	*Prunus domestica*	R
Blackthorn	*Prunus spinosa*	O
Bramble	*Rubus fruticosus agg.*	LD
White willow	*Salix alba*	LD
Goat willow	*Salix caprea*	R
Grey willow	*Salix cinerea*	O
Elder	*Sambucus nigra*	LF
Manor Farm		
Herbs and grasses		
Mugwort	*Artemisia vulgaris*	LF
Hastate-leaved orache	*Atriplex prostrata*	O
Hedge bindweed	*Calystegia sepium*	O
Shepherd's purse	*Capsella bursa-pastoris*	O
Fat-hen	*Chenopodium album*	O
Field bindweed	*Convolvulus arvensis*	F
Canadian fleabane	*Conyza canadensis**	O
Sumatran fleabane	*Conyza sumatrensis**	R

Teasel	*Dipsacus fullonum*	R
Tall fescue	*Festuca arundinacea*	R
Wall barley	*Hordeum murinum*	R
Prickly lettuce	*Lactuca serriola**	F
Great lettuce	*Lactuca virosa**	R
Perennial rye-grass	*Lolium perenne*	LF
Common mallow	*Malva sylvestris*	R
Knotgrass	*Polygonum aviculare*	F
Great plantain	*Plantago major*	F
Hedge mustard	*Sisymbrium officinalis*	R
Smooth sow-thistle	*Sonchus oleraceus*	O
Trees and shrubs		
Bramble	*Rubus fruticosus agg.*	O
*indicates non-native species		

Species recorded in Area 3 (during 2002 survey)		
Common Name	**Scientific name**	**DAFOR score**
Herbs and grasses		
Yarrow	*Achillea millefolium*	LF
Common bent	*Agrostis capillaris*	F
Creeping bent	*Agrostis stolonifera*	F
Greater Burdock	*Arctium lappa*	O (LD in south east of Area 3)
False oat grass	*Arrhenatherum elatius*	A
Mugwort	*Artemisia vulgaris*	LA
Soft brome	*Bromus hordaceus*	F
Creeping thistle	*Cirsium arvense*	LD
Spear thistle	*Cirsium vulgare*	LA
Field bindweed	*Convolvulus arvensis*	F
Cock's-foot	*Dactylis glomerata*	F
Wild carrot	*Daucus carota*	O
Teasel	*Dipsacus fullonum*	O
Dove's-foot crane's-bill	*Geranium molle*	O
Hogweed	*Heracleum sphondylium*	O
Yorkshire-fog	*Holcus lanatus*	O
Meadow barley	*Hordeum secalinum*	LA
Perforate St John's-wort	*Hypericum perforatum*	O
Dead red nettle	*Lamium purpureum*	LA
Ox-eye daisy	*Leucanthemum vulgare*	LA
Perennial rye grass	*Lolium perenne*	A
Common mallow	*Malva sylvestris*	F
Spotted medick	*Medicago arabica*	O
Black medick	*Medicago lupulina*	O
Common cow-wheat	*Melampyrum pratense*	LF
Ribbed melliot	*Meliotus officinalis*	O
Field poppy	*Papaver rhoes*	LF
Timothy	*Phleum pratense*	O
Ribwort plantain	*Plantago lanceolata*	F

Creeping cinquefoil	*Potentilla reptans*	LA
Creeping buttercup	*Ranunculus repens*	LF
Curled dock	*Rumex crispus*	F
Common ragwort	*Senecio jacobaea*	F
Hedge mustard	*Sisymbrium officinale*	F
Prickly sow thistle	*Sonchus asper*	O
Dandelion	*Taraxacum officinale agg.*	F
Red clover	*Trifolium pratense*	
White clover	*Trifolium repens*	A
Common nettle	*Urtica dioica*	LD
Common vetch	*Vicia sativa*	O
Trees and shrubs		
Field maple	*Acer campestre*	O
Sycamore	*Acer pseudoplatanus*	LF
Hawthorn	*Crataegus monogyna*	O
Aspen	*Populus tremula*	LF
Bramble	*Rubus fruticosus agg.*	LA
Willow sp.	*Salix sp.*	LF
Elder	*Sambucus nigra*	O
Great Breach Dyke		
Creeping bent	*Agrostis stolonifera*	LD in inundation zone
Common water-plantain	*Alisma plantago-aquatica*	S
Fool's water-cress	*Apium nodiflorum*	LF
Sea club-rush	*Bolboschoenus maritimus*	LD
Water-starwort	*Callitriche sp*	S-LD
False fox-sedge	*Carex otrubae*	O
Greater pond-sedge	*Carex riparia*	O
Common spike-rush	*Eleocharis palustris*	LD in patches
Great willowherb	*Epilobium hirsutum*	F
Sweet-grass	*Glyceria sp*	LF
Round-fruited rush	*Juncus compressus*	few scattered clumps; all features point to this species, ripe fruit needed
Soft rush	*Juncus effusus*	LF
Common reed	*Phragmites australis*	D
Celery-leaved buttercup	*Ranunculus sceleratus*	O-LF
Clustered dock	*Rumex conglomeratus*	LF
Knotted hedge-parsley	*Torilis nodosa*	S (one plant on bank slope)
Common reedmace	*Typha latifolia*	LD

Species recorded in Area 4 (during 1998 and 2002 survey)		
Common Name	**Scientific name**	**DAFOR score**
Herbs and grasses		
Creeping thistle	*Cirsium arvense*	F
Spear thistle	*Cirsium vulgare*	LA
Teasel	*Dipsacus fullonum*	O
Perennial rye-grass	*Lolium perenne*	LF
Ribwort plantain	*Plantago lancoelata*	F
Curled dock	*Rumex crispus*	S
Ragwort	*Senecio jacobea*	LA
Scentless mayweed	*Tripleurospermum inodorum*	F

Ditch		
Creeping bent	*Agrostis stolonifera*	D
Common water-plantain	*Alisma plantago-aquatica*	O
Celery-leaved buttercup	*Ranunculus scleratus*	O-LF
Thread-leaved water-crowfoot	*Ranunculus trichophyllus*	A

Species recorded in Area 5 (during 2002 survey)		
Common Name	**Scientific name**	**DAFOR score**
Herbs and grasses		
Yarrow	*Achillea millefolium*	LF
Common bent	*Agrostis capillaris*	F
False oat-grass	*Arrhenatherum elatius*	D
Daisy	*Bellis perennis*	O
Soft brome	*Bromus hordaceus*	F
Creeping thistle	*Cirsium arvense*	LD
Spear thistle	*Cirsium vulgare*	O
Field bind weed	*Convolvulus arvensis*	F
Smooth hawk's-beard	*Crepis capillaris*	R
Cock's-foot	*Dactylis glomerata*	A
Red fescue	*Festuca rubra*	LA
Yorkshire-fog	*Holcus lanatus*	O
Meadow barley	*Hordeum secalinum*	LD
Perennial rye-grass	*Lolium perenne*	LD/F
Common bird's-foot trefoil	*Lotus corniculatus*	R
Black medick	*Medicago lupulina*	LF
Timothy	*Phleum pratense*	F
Bristly ox-tongue	*Picris echioides*	R
Ribwort plantain	*Plantago lanceolata*	LF
Greater plantain	*Plantago major*	LA
Creeping cinquefoil	*Potentilla reptans*	O
Creeping buttercup	*Ranunculus repens*	LA
Common ragwort	*Senecio jacobea*	O
Goat's-beard	*Tragopogon pratensis agg.*	O
White clover	*Trifolium pratense*	LF
Red clover	*Trifolium pratense*	LF
Scentless mayweed	*Tripleurospermum inodorum*	LF
Trees and shrubs		
Hawthorn	*Crataegus monogyna*	LD
Alder	*Alnus glutinosa*	O
Ditches		
Creeping bent	*Agrostis stolonifera*	LD in innundation zone
Sea club-rush	*Bolboschoenus maritimus*	LD
Water-starwort	*Callitriche sp*	S-LD
False fox-sedge	*Carex otrubae*	LD at margin
Yellow flag	*Iris pseudacorus*	LF
Round-fruited rush	*Juncus compressus*	few scattered clumps; all features point to this species, ripe fruit needed
Soft rush	*Juncus effusus*	O
Common reed	*Phragmites australis*	LD
Reflexed saltmarsh-grass	*Puccinelia distans*	LA
Celery-leaved buttercup	*Ranunculus scleratus*	O

Clustered dock	*Rumex conglomeratus*	LF
Common reed-mace	*Typha latifolia*	LD

APPENDIX 2. BREEDING BIRD LIST

Breeding Birds Recorded on site in June

Thamesmead Bird Survey Results	Woodland Way (Area 2)	Area 1	Area 3 (Great Breach Dyke)	Area 5 (Northern Triangle)
	Transect 1-2	Transect 3-4	Transect 5-6	Transect 7a-7-8-9
Little Grebe			1 ad (from north side)	2 pairs + 1 young
Mute Swan				1 pair + 3 YG
Mallard				1 fem + 8yg +1fem
Tufted Duck				2 pairs (no young seen)
Coot			1	3 pairs (no young seen)
Moorhen			2 (pair??)	3 pairs
Wood Pigeon	2			5
Green Woodpecker	1 singing			
Great spotted Woodpecker	2		1	1juv in dead tree
Swift	20 over			10 over lake
Skylark		2 singing males		
Meadow Pipit		1 flushed		
Blackbird	1 singing		2 calling	2 calling
Song Thrush	2 singing		1 singing	1 singing
Robin	3 singing	1 adjacent		
Stonechat		1 pair in hedge		
Dunnock			3 singing	1 singing
wren	4 singing		4 singing	1 singing
Blue Tit	2 calling			
Long-tailed tit				1 in hedge
Blackcap	1 singing			1 singing
Whitethroat	1 singing	1 adjacent	1 fem +yg	
Chiffchaff	2 singing			
Reed Warbler	2 singing	2 singing	4 singing	5 singing, 1 alarm calling
Goldfinch	1			
Greenfinch			1 singing	
Chaffinch				1 singing male
Reed Bunting				1 singing male
Starling	1			
Jay	1			
Carrion Crow	1	1	2	
Magpie	1		pair + yg	
Cuckoo				1 singing male

Breeding Birds Recorded in May

Thamesmead Bird Survey Results	Woodland Way (Area 2)	Area 1	Area 3 (Great Breach Dyke)	Area 5 (Northern Triangle)
	Transect 1-2	Transect 3-4	Transect 5-6	Transect 7a-7-8-9
Little Grebe				2 calling birds
Mute Swan				1 male
Canada Goose				pair + 1
Mallard	1hybrid type		fem + 12 yg	3 males
Gadwall				1 male
Tufted Duck			pair	5male, 1 female
Grey Heron		1 adjacent		
Coot			pair (nest)	pair (nest) + 4
Moorhen				2 seen
Wood Pigeon	3 flushed		5 flushed	7 flushed
Skylark		2 male onsite + 2 adj		1 male on site
Meadow Pipit		1sm		
Blackbird	2 sm	1 adjacent	1 sm	
Song Thrush	1 sm	1 adjacent		
Robin	4 sm			1 sm
Dunnock			1 sm	
wren	9 sm		3 sm	
Great Tit	1		pair	
Blue Tit	3		1	
Blackcap	3 sm			1 sm
Whitethroat	2 sm	1 adjacent		
Reed Warbler	2sm		2sm	3sm
Goldfinch				1 flushed
Greenfinch	2sm			
Chaffinch	1sm			1 sm
Reed Bunting				1 male
Starling	2	10	100	
Carrion Crow	1	20adj		
Magpie			1	
Mistle Thrush	1 sm			

Appendix 2. Breeding Birds
Breeding Birds Recorded in April 2002

Thamesmead Bird Survey Results	Woodland Way (Area 2)	Area 1	Area 3 (Great Breach Dyke)	Area 5 (Northern Triangle)
	Transect 1-2	Transect 3-4	Transect 5-6	Transect 7a-7-8-9
Little Grebe				1 calling
Mute Swan				2 (pair)
Canada Goose				2 (pair)
Mallard			2	4 (2 pairs)
Gadwall				6 (3 pairs)
Tufted Duck				2 (pair)
Grey Heron				1
Coot			2	3
Moorhen	1 (ditch)		2	3
Wood Pigeon	28 birds	3	5	13
Green Woodpecker	2 seen		2 seen	
Great spotted Woodpecker	1 heard calling			
Swift	2 overhead			
Swallow	2 overhead			
Skylark		3 sm +2		1 sm
Meadow Pipit		1 sm		1
Yellow Wagtail		1 male		1 male
Pied Wagtail	1			
Blackbird	3 sm + 3		1 sm	
Song Thrush	1 sm		1 sm	
Robin	4 sm		1sm	
Stonechat		2 (pair)		
Wheatear		1		
Dunnock	3 sm	1 sm	2 sm	1 sm
wren	5 sm		2 sm	1 sm
Great Tit	2 sm +1		2 sm +1	1
Blue Tit		1	1	
Long-tailed tit			2 (pair)	
Blackcap	4 sm		2 sm	1 sm
Whitethroat	4 sm	1 sm	1 sm	2 sm
Chiffchaff	3 sm			
Reed Warbler	1 (ditch)	4 sm (ditch)		2 (sm)
Goldfinch	1			
Greenfinch	2 sm +1		2 sm	
Chaffinch	1 sm			
Linnet		4	2	1
Reed Bunting		1 sm		
Starling	2	6	8	2
Jay	1			
Carrion Crow	6	11	3	
Magpie	6		1	4

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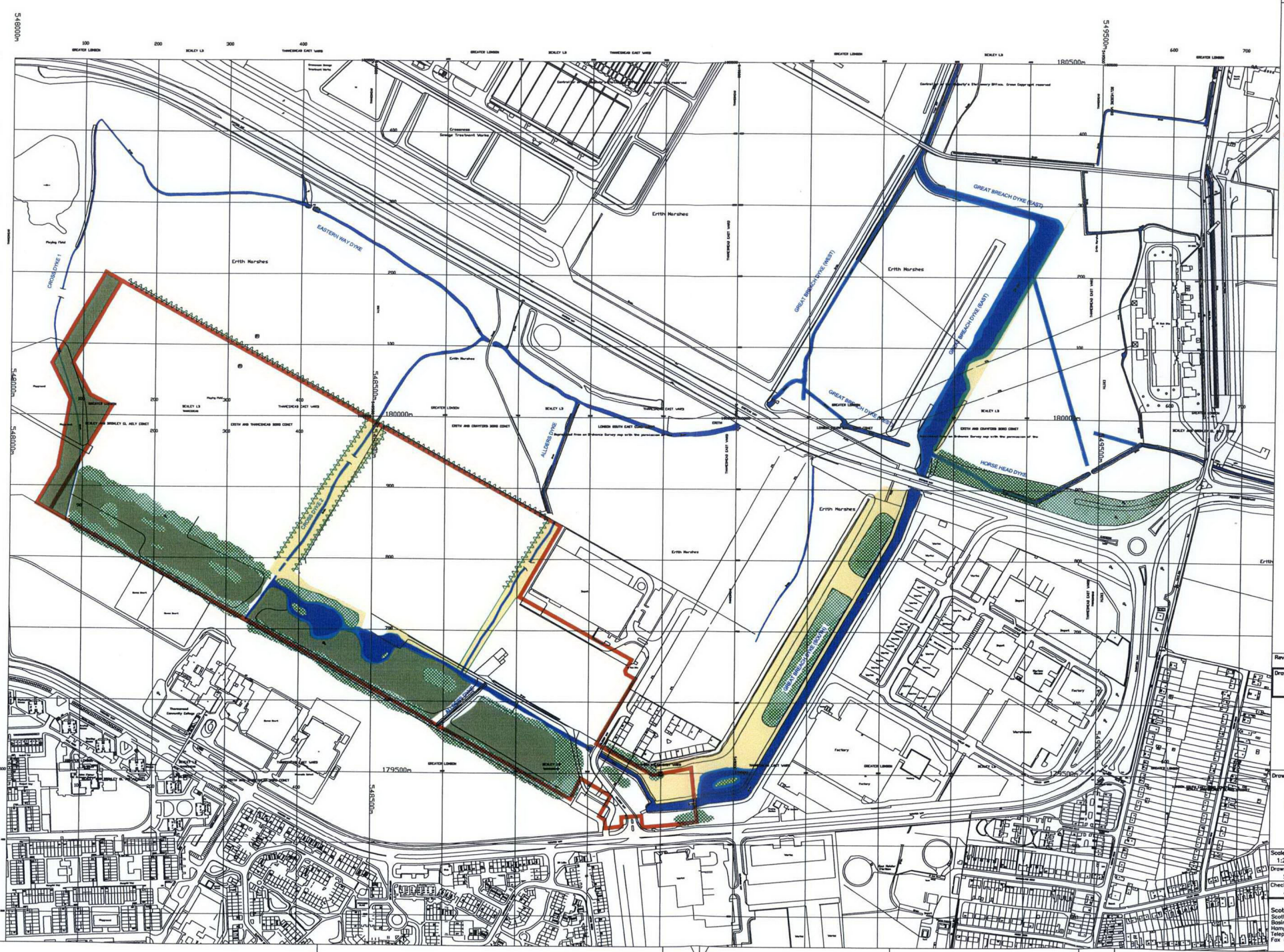

Revision Details	By / Check	Date	Suffix

Drawing Number D100444/004 Revision A

EAST THAMESMEAD BUSINESS PARK

Drawing Title

FIGURE 4
NEW AND RETAINED HABITATS

Scale at A1 1:2500			
Drawn SB	Detailed		Approved
Check JF	Tech Check	Det Check	Date SEPT 02

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NOTES

KEY

- AREA 1
- AREA 2
- AREA 3
- AREA 4
- AREA 5
- SITE BOUNDARY

Revision Details	By / Check	Date	Suffix

Drawing Number D100444/001 Revision

EAST THAMESMEAD BUSINESS PARK

Drawing Title

FIGURE 1
ECOLOGICAL MASTER PLAN STUDY AREAS

Scale at A1 1:5000		
Drawn SB	Detailed	Approved
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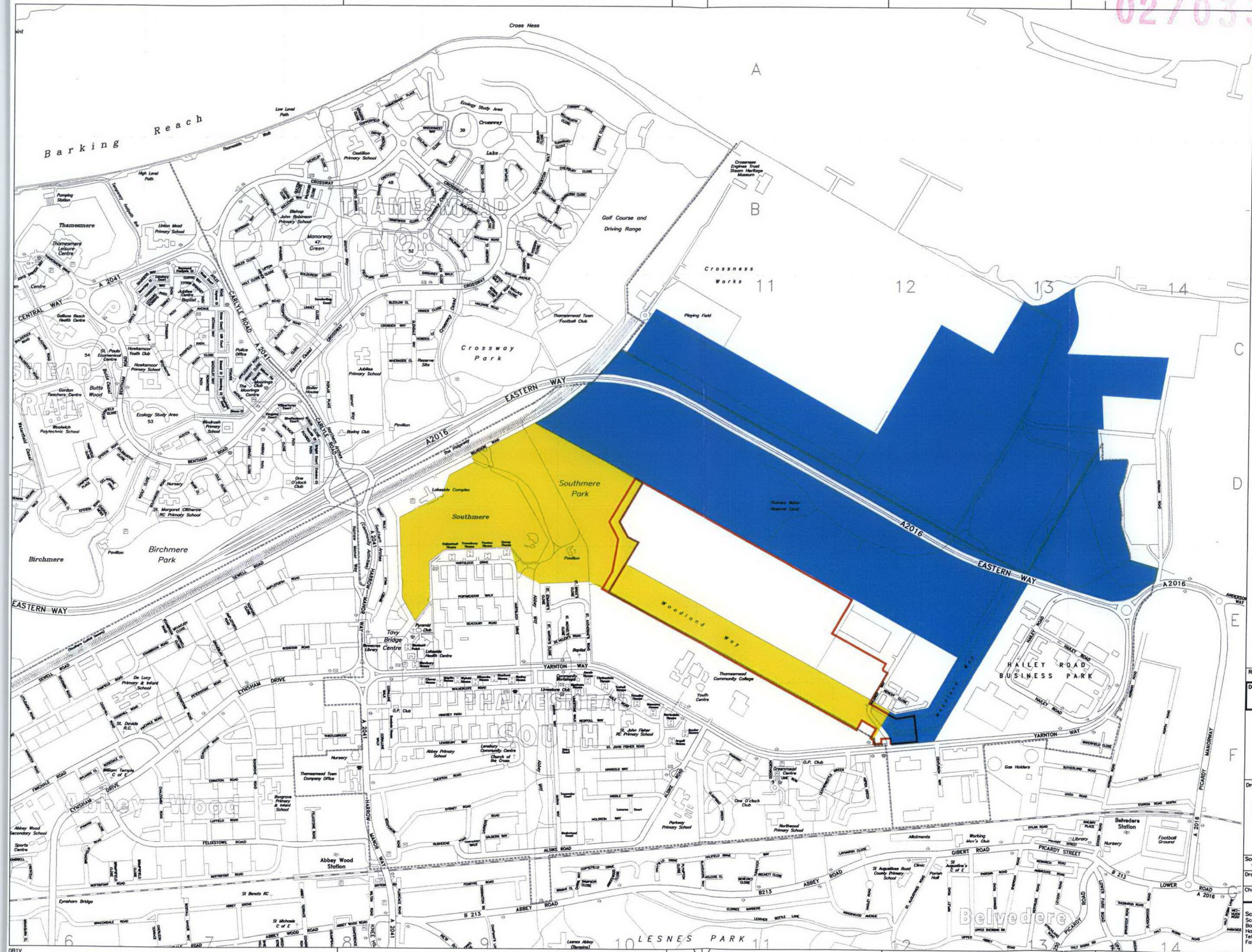

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NOTES

KEY

- M41 ERITH MARSHES AREA OF METROPOLITAN IMPORTANCE FOR NATURE CONSERVATION
- BX. B112 SOUTHMERE PARK AREA OF BOROUGH IMPORTANCE FOR NATURE CONSERVATION

Revision Details	By / Check	Date	Suffix

Drawing Number D100444/002 Revision A

EAST THAMESMEAD BUSINESS PARK

Drawing Title

FIGURE 2
LOCATION OF SITES OF IMPORTANCE FOR NATURE CONSERVATION ADJACENT TO THE PROPOSED DEVELOPMENT

Scale at A1 1:5000			
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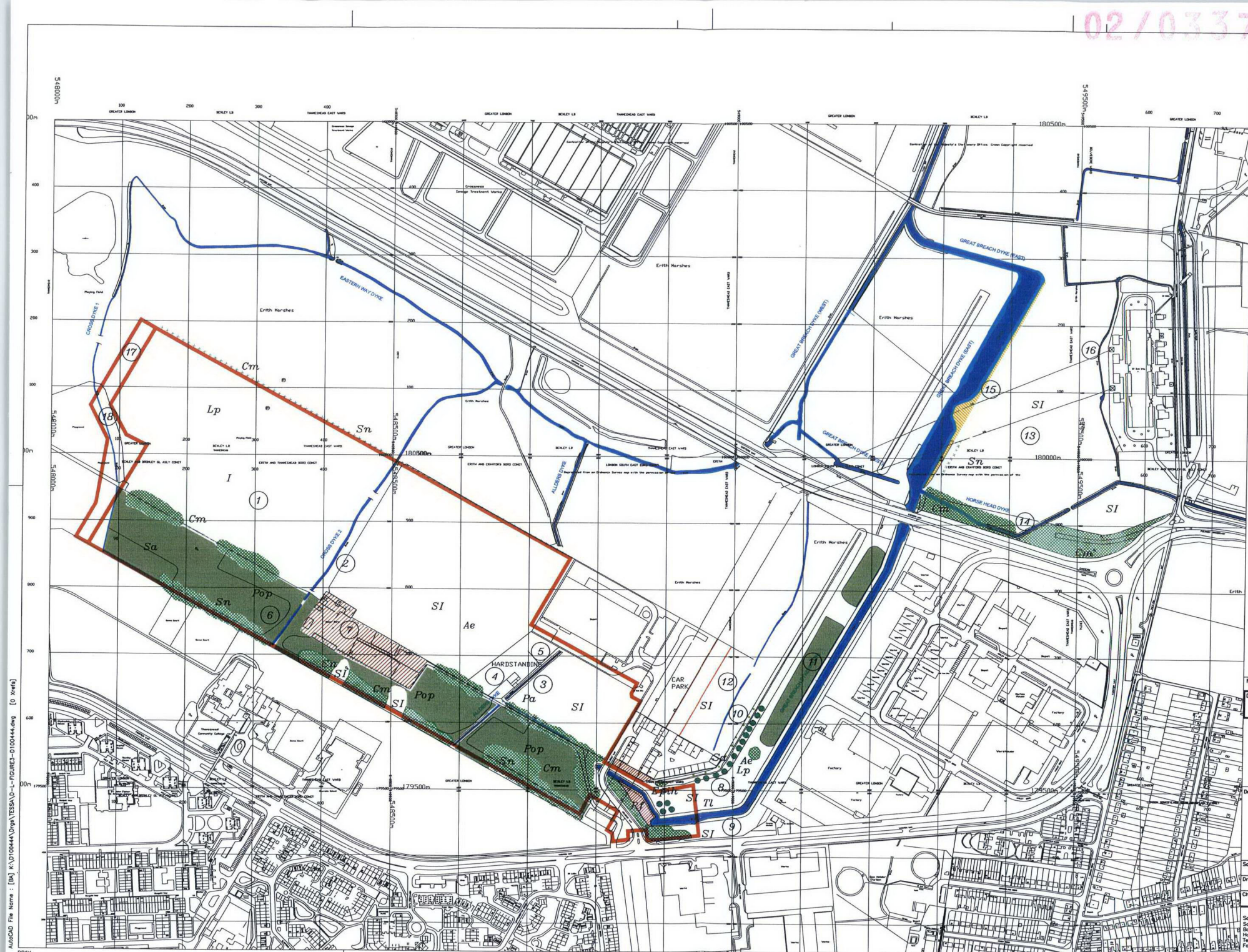

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NOTES

KEY

- SITE BOUNDARY
- FENCE
- SWAMP
- OPEN WATER
- SI POOR SEMI-IMPROVED GRASSLAND
- BROAD-LEAVED WOODLAND
- TALL RUDERAL VEGETATION
- MARSHY GRASSLAND
- DENSE SCRUB
- SCATTERED SCRUB
- SCATTERED TREES
- (17) TARGET NOTE NUMBER

Ae Arrhenatherum elatius
Lp Lolium perenne
Rf Rubus fruticosus agg.
Sa Salix alba
Cm Crataegus monogyna
Sn Sambucus nigra
Ag Alnus glutinosa
Pop Populus sp.
Fjap Fallopia japonica
Tl Typha latifolia
Epih Epilobium hirsutum
Ps Phragmites australis

Revision Details	By / Check	Date	Suffix

Drawing Number D100444/003 Revision

EAST THAMESMEAD BUSINESS PARK

Drawing Title

FIGURE 3 PHASE 1 HABITAT MAP

Scale at A1 1:2500

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SB			
Check	Tech Check	Det Check	Date
JF			SEPT 02

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