Royal London Docks

Preliminary Ecological Assessment

November 2018

Derelict Millennium Mill and mute swans from Pontoon Dock ©M Waller

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Executive Summary

London Wildlife Trust (hereafter referred to as 'the Trust') was commissioned by Royal Docks Management Authority to carry out a Preliminary Ecological Appraisal of the Royal London Docks (hereafter referred to as 'the docks') and their immediate surroundings.

The aim of the survey is to provide baseline ecological information for the site. It will be used to determine the potential value of the site as a biodiversity resource. The main findings of the PEA are as follows:

- The site was identified to have a total of eight vegetation types present within the survey area: bare artificial habitat, standing water, ruderals, scrub, roughland[1] combination of semi-improved grassland, wet marginal habitat, and bare ground.
- The majority of the site was standing water which made up approximately 89ha (77%) of the survey area. Bare artificial habitat (buildings and floating and fixed pontoons) was the second most dominant habitat comprising of 8.92ha (8%) of the survey area.
- The waterbodies of the site are subject to the non-statutory Site of Importance for Nature Conservation (SINC) designation; a Site of Borough Importance for Nature Conservation (site Ne.BI10 *The Royal Docks and London City Airport*). This adjoins at the eastern end with a Site of Metropolitan Importance for Nature Conservation (site M031*River Thames and tidal tributaries*).
- The combination of the bare ground, roughland, ruderal and scrub habitats around the Pontoon Dock form a 21ha area of regionally (London) important amount of the '*Open Mosaic Habitats on Previously Developed Land'* UK habitat of Principal Importance (regionally known as priority habitat). None of this habitat was currently captured in the SINC designation.
- Vegetation. No protected plant species were observed during the survey. Five species of London notable plants were identified within the survey are these consist of four fern species: rustyback fern, wall-rue, common polypody and maidenhair spleenwort. The other notable species was Jersey cudweed. However, there is a **low** potential to support protected plant species.
- Breeding birds. Although the survey was undertaken outside the bird breeding season, suitable breeding habitat was identified on site. In particular the schedule 1 protected species peregrine kingfisher, black redstart and little ringed plover and notable, herring gull, linnet, house sparrow, dunnock and starling. Peregrine, kingfisher, herring gull, linnet, house sparrow, dunnock and starling was observed foraging during the survey. There is a **High** potential to support breeding birds.
- Bats. No bats or evidence of bats was observed during the survey. However, the derelict Millennium Mill building has a **High** potential to support bat roosts at any time of year.

[1] Roughland habitat is a vegetation type that is specifically used by the Greater London Authority habitat survey methodology and not by the standard Phase I methodology. It is composed of a complex mosaic of scrub, grasslands (typically semi-improved) and tall herb stands

- Reptiles. The site had **Medium** potential to support foraging reptiles due to the variety and extensive areas of vegetation.
- Invertebrates. No protected invertebrates were observed but the presence of a 21 ha area of '*Open Mosaic Habitats on Previously Developed Land*' a habitat known to support important invertebrate assemblages and the presence of several protected and 30 notable invertebrate species previously recorded within the 1 Km search area, indicate that there is a **High** potential for notable invertebrates to be present within the survey area.
- No other protected species were observed during the survey although common toad and badger have been previously recorded from the 1 Km search area. These and all other protected species have a low or negligible level likelihood of being present on site in any quantity.
- The current SINC boundary excludes the most bio-diverse terrestrial habitat on site: '*Open Mosaic Habitats on Previously Developed Land*' and ideally should be amended to include this, an area approximately 21ha in size.
- Recommendations to enhance the docks for wetland birds with reedbeds, tern rafts and wetland edge enhancements are likely to be constrained by the presence of the London City Airport and the risk of bird strikes. Smaller enhancements such as kingfisher and sand martin banks may be possible, along with the installation of various bird boxes.
- Enhancements to the dock banks may be delivered by the inclusion of small strips of wildlife plantings or ruderal strips along the tops in selected locations. These would benefit local invertebrates and add biodiversity value where there is currently very little.
- The site offers opportunities for engagement with wildlife via organised boat trips. Enhancement works around the docks could make these more viable. The high chance to see peregrine and kingfisher and other wetland species from a boat make this an attractive activity. The presence of the airport is also an attraction as part of the trip.
- Further surveys of breeding and wintering birds, invertebrates (terrestrial and aquatic), fish, reptiles and bats would be required to get a more comprehensive ideas of its overall biodiversity value.

1. Introduction

Background

1.1 London Wildlife Trust (hereafter referred to as 'the Trust') was commissioned by Royal Docks Management Authority to carry out a Preliminary Ecological Appraisal of the Royal London Docks (hereafter referred to as 'the docks') and their immediate surroundings.

Site context

1.2 The Royal London Docks consist of three main docks: Royal Victoria (compartment 4), Royal Albert (compartment 3) and King George V (compartment 2), and incorporates Pontoon Dock and Millennium Mills (compartment 5), and Gallions Point Marina (compartment 1). They consist of artificial large bodies of water connected at the eastern end to the River Thames via a series of locks within the London Borough of Newham, London E16. The surveyed area was approximately 115 ha in size and is located between the districts of Canning Town in the north-west and North Woolwich in the south-east. London City Airport was located between Royal Albert and King George V docks. The survey area also incorporated an area of derelict and disused land around Pontoon Dock which is connected to Royal Victoria Dock in Silvertown, a small area of land to the north of King George V Dock, and a small strip of land along the northern and eastern edges of the London City Airport. Maps of the entire area and its compartments can be found in Appendix 1.

1.3 The docks are designated as a non-statutory Site of Importance for Nature Conservation (SINC); a Site of Borough Grade I Importance for Nature Conservation (NeBI10 *The Royal Docks*). The Royal London Docks, Millennium Mills and London City Airport are also designated as areas of Open Space.

Aims of the survey

1.4 The aim of the survey is to provide baseline ecological information for the site. It will inform the Royal Docks Management Authority so that they can:

- identify its biodiversity value;
- review its current SINC designation;
- celebrate and promote its value;
- engage with local communities; and
- identify ways of enhancing its value.

1.5 This report is written to best practice guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM, 2017).

2. Methodology

Desktop study

2.1 An ecological data search was obtained from Greenspace Information for Greater London (GIGL) (Walker, 2018) which is compiled by eCountability Ltd. The data search obtained information from statutory sites, non-statutory sites, protected species, London invasive species, habitats and open space within 1 kilometre (1 Km) of the survey area boundary.

2.2 The ecological data search report is compiled using data held by GiGL at the time of the request. Note that GiGL does not currently hold comprehensive species data for all areas. Even where data is held, a lack of records for a species in a defined geographical area does not necessarily mean that the species does not occur there. This data search report is valid until 28th October 2019 for the site named above.

Habitat Survey methodology

2.4 A PEA of the site was carried out on the 2nd October 2018 from a boat. Habitats were described and mapped following the Greater London Authority (GLA) Habitat Survey methodology, which is an adaption of the Phase 1 Habitat survey methodology (JNCC, 2010), to London's specific habitats. Records of vascular plant species present on site were recorded in each defined compartment[2] and recorded a relative abundance value using the DAFOR[3] scale (where D = dominant, A = abundant, F= frequent, O = occasional and R = rare). Non-vascular plant species (e.g. mosses, algae) in London are usually not a determinant factor in habitat identification and were not recorded. A full list of plant species identifiable at the site during the survey, along with an assessment of their abundance, is provided in Appendix 2. Additional habitats that were not seen from the boat were mapped using aerial photographs on 9th October 2018. The site was also checked where possible for the presence of invasive plant species as listed in schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and categorised by the London Invasive Species Initiative (LISI)[4].

2.5 The survey was conducted by Tony Wileman who has a degree in Environmental Science, is an experienced ecologist competent in carrying out botanical surveys and a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Accompanying Tony, was Mike Waller who has a degree in Physical Geography, is also an experienced ecologist competent in carrying out botanical surveys and a graduate member of CIEEM. A habitat plan of the site is included in Appendix 1; photographs are presented in Appendix 4. Scientific names are given after the first

[2] Compartments were identified on site by being defined as broad largely contiguous habitats or specific named sites within the whole site
[3] A standard format for recording relative abundance (Dominant, Abundant, Frequent, Occasional, Rare).
[4] http://www.londonisi.org.uk/about-lisi/

mention of a species, thereafter, common names only are used. Nomenclature follows Stace (2010) for vascular plant species.

2.6 Complex taxa, such as *Taraxacum* (dandelions) and *Rubus* (brambles) are treated as aggregates as there is little value in distinguishing these for determining habitat types, especially in London.

2.7 Characteristic, rare and interesting plant species and assemblages were evaluated for conservation designations and assessed as to whether they were notable for the Greater London area. Notable is defined as species which were recorded from 15% or fewer of the 400 two-kilometre recording squares (tetrads) in Greater London in the *Flora of the London Area* (Burton 1983) and the author's experience of changes to London's plant species populations and distribution since 1983.

2.8 For national rarity of plants *The New Atlas of the British & Irish Flora* (Preston, Pearman & Dines, 2002) was referred to (where a taxon appearing in 150 or less 10x 10km squares was considered rare).

2.9 Fauna rarity is defined using the IUCN red lists and the Birds of Conservation Concern 4 (Eaton, M. et al, 2016).

Protected species assessment

2.10 The habitats at the site were evaluated as to their likelihood to provide sheltering, roosting, nesting and foraging habitat for a range of protected and/or notable species. The evaluation is based on the results of the desk top survey, any direct field observations made during the site survey, an assessment of the suitability of on-site and adjoining habitat for the species included, and information on the wider distribution of these species in the UK and locally. The relevant legislation and policies relating to protected species and habitats can be found here https://www.wildlifetrusts.org/uk-wildlife-law

2.11 The site was inspected for the presence or likely presence of all protected and notable species. The following species represent those considered most likely to be associated with the habitats present within the site:

- Roosting bats;
- Assessment of habitat suitable for breeding birds, such as mature trees, scrub, buildings and evidence of bird nesting (such as old nests, large deposits of faeces);
- Scrub/grassland mosaic and potential hibernation sites for widespread reptile species;
- sparsely vegetated areas suitable for invertebrates

2.12 The likelihood of occurrence is ranked as follows and relies on the findings of the current survey and an evaluation of existing data.

Negligible – while presence cannot be absolutely discounted, the site includes very limited or poor quality habitat for a particular species or species group. No local returns from a data search, surrounding habitat considered unlikely to support wider populations of a species/species group. The site may also be outside or peripheral to known national range for a species,

Low – on-site habitat of poor to moderate quality for a given species/species group. Few or no returns from data search, but presence cannot be discounted on the basis of national distribution, nature of surrounding habitats, habitat fragmentation, recent on-site disturbance etc.

Medium – on-site habitat of moderate quality, providing all of the known key requirements of a given species/species group. Local returns from the data search, within national distribution, suitable surrounding habitat. Factors limiting the likelihood of occurrence may include small habitat area, habitat severance, and disturbance.

High – on-site habitat of high quality for a given species/species group. Local records provided by desk-top study. The site is within/peripheral to a national or regional stronghold. Good quality surrounding habitat and good connectivity.

Present – presence confirmed from the current survey or by recent, confirmed records.

2.13 The purpose of this assessment is to typically identify whether more comprehensive Phase 2 surveys for protected species might be recommended.

Conservation/Site evaluation

2.14 The site has been evaluated broadly following guidance issued by the CIEEM, according to a geographic scale (significance at the international level down to the site level) and using a range of criteria for assigning ecological value, as follows:

- Presence of sites or features designated for their nature conservation interest. Examples include internationally or nationally designated sites such as Special Areas of Conservation (SACs) and SSSIs, locally designated sites such as LNRs and SINCs;
- Biodiversity value, for example, habitats or species which are rare or uncommon, species rich assemblages, species which are endemic or on the edge of their range, large populations or concentrations of uncommon or threatened species, and/or plant communities that are typical of valued natural/semi-natural vegetation types;
- Potential value, as addressed by targets to increase the biodiversity value for example of SSSIs, international sites and some BAP species and habitats. If detailed plans exist to enhance the value of such areas then it may be appropriate to value them as if the intended resource already existed;
- Secondary and supporting value, for example, habitats or features which provide a buffer to valued features or which serve to link otherwise isolated features; and
- Presence of UK, London and/or Borough BAP habitats and species.

Survey limitations and data validity

2.15 The timing and weather conditions of the survey visit were considered adequate to characterise the habitats likely to be present on site and its use by birds, However, the late timing of the survey rendered it poor to fully identify a broad range of vascular plant species and observe invertebrates and very poor for breeding birds because it was outside the core breeding months (April-July). Much of the habitats away from the water edge were not seen from the boat. As a result, these habitats were not subject to scrutiny for species composition but are based on aerial surveys for their habitat descriptions and assumptions on composition given the authors knowledge of such habitats in

London and what was identified from the boat. Therefore some plant species would have been overlooked, especially spring and early summer flowering plants.

2.16 The amount of data revealed from the data search is dependent on information that has been submitted to the local Biological Records Centre. Although it can often reveal current and historical evidence of protected species occurring within or near to a site, and give an indication of the likelihood of a species occurring at a site, the records should not be considered as comprehensive. Consequently, a lack of records does not confirm absence of a species from an area. Instead, it may be the result of under-recording.

2.17 It should be noted that, whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation and prediction of the natural environment.

2.18 This preliminary ecological appraisal and protected species assessment does not constitute a full botanical survey, or a Phase 2 pre-construction survey that would include accurate GIS mapping for invasive or protected plant species.

2.19 The protected species assessment provides a preliminary view of the likelihood of protected species occurring on the site, based on the suitability of the habitat, known distribution of the species in the local area provided in response to our enquiries, and any direct evidence on the site. It should not be taken as providing a full and definitive survey of any protected species group. It is only valid at the time the survey was carried out. Additional surveys may be recommended if, on the basis of the preliminary assessment or during subsequent surveys, it is considered reasonably likely that other protected species may be present.

2.20 Despite these limitations, it is considered that this report reflects accurately the habitats present, their biodiversity values and the potential of the site to support protected and notable species.

3. Results

Desktop study

Statutory designated nature conservation sites

3.1 There were no sites of European or national statutory designation within the 1 Km search area.

Non-statutory designated nature conservation sites

3.2 A total of nine Sites of Importance for Nature Conservation (SINCs) and one Regionally Important Geological Site/Locally Important Geological Site (RIGS/LIGS) were identified within the search area. These are:

SINCs

- M031 River Thames and tidal tributaries (Site of Metropolitan Importance)
- NeBI08 Becton District Park and Newham City Farm (Site of Borough Grade I Importance)
- NeBI10 Royal Docks (Site of Borough Grade I Importance) **Most of site surveyed**
- NeBI17 Bow Creek Ecology Park (Site of Borough Grade I Importance)
- ThBI04 East India Dock Basin (Site of Borough Grade I Importance)
- GrBII07 Eastmoor Street Park (Site of Borough Grade II Importance)
- NeBII08 Becton Alps (Site of Borough Grade II Importance)
- NeL13 Fun Forest (Site of Local Importance)
- NeL14 Pylon Walk (Site of Local Importance)

RIGS/LIGS

- GLA 66 Tripcock Ness Submerged Forest (candidate LIGS)

3.3 As identified above the docks are designated as a non-statutory Site of Importance for Nature Conservation (SINC); a Site of Borough Grade I Importance for Nature Conservation (NeBI10 *The Royal Docks*). The SINC designation encompasses 93.36ha and the citation was last updated in February 2007 and currently states:

> *"The Royal Docks are huge areas of open water of considerable value for birds. Several pairs of common terns nest on rafts on Pontoon Dock, the southern extension of the Royal Victoria Dock, while other breeding species include mute swan, great crested grebe and tufted duck. Numbers of waterfowl increase in winter, especially in very hard weather when the brackish water of the docks makes them among the last water bodies to freeze. Peregrine falcons have nested on a nearby building, and regularly hunt over the docks."*

Protected and notable species

3.4 The table below lists the relevant[5] species that are protected, of principle importance (UK designation) or priority (London BAP) that have been recorded within the 1 Km search area in the last 10 years:

Species	Designation
Invertebrates	
Roman snail *Helix pomatia*	W&CA Schedule 5
A beetle *Brachinus* (*Brachynidius*) *sclopeta*	NERC Act Section 41 UK BAP London BAP
latticed heath *Chiasmia clathrata*	NERC Section 41 UK BAP London BAP
Jersey tiger *Euplagia quadripunctaria*	Hab&Spp Dir Annex 2
cinnabar moth *Tyria jacobaeae*	NERC Section 41 UK BAP London BAP
Amphibians	
common toad *Bufo bufo*	NERC Section 41 UK BAP London BAP
Birds	
scaup *Aythya marila*	NERC Section 41 UK BAP
common scoter *Melanitta nigra*	NERC Act Section 41 UK BAP
little egret *Egretta garzetta*	Bird Directive Annex 1
lapwing *Vanellus vanellus*	NERC Act Section 41 UK BAP London BAP
little ringed plover *Charadrius dubius*	W&CA Schedule 1
curlew *Numenius arquata*	NERC Act Section 41 UK BAP
herring gull *Larus argentatus*	London BAP
common tern *Sterna hirundo*	Birds Directive Annex 1
kingfisher *Alcedo atthis*	Bird Directive Annex 1 W&CA Schedule 1
peregrine *Falco peregrinus*	Bird Directive Annex 1 W&CA Schedule 1 London BAP
skylark *Alaudo arvensis*	NERC Section 41 UK BAP
sand martin *Riparia riparia*	London BAP
starling *Sturnus vulgaris*	London BAP

[5] Those species that are most likely to be utilising the site given its habitats, current condition and usage.

Species	Designation
song thrush *Turdus philomelos*	London BAP
spotted flycatcher *Muscicapa striata*	NERC Act Section 41 UK BAP London BAP
black redstart *Phoenicurus ochruros*	W&CA Schedule 1 London BAP
house sparrow *Passer domesticus*	NERC Act Section 41 UK BAP London BAP
dunnock *Prunella modularis*	London BAP
yellow wagtail *Motacilla flava*	London BAP
linnet *Linaria cannabina*	London BAP
lesser redpoll *Acanthis caberet*	NERC Section 41 UK BAP
reed bunting *Emberiza schoeniclus*	NERC Section 41 UK BAP London BAP
Mammals	
common seal *Phoca vitulina*	Hab&Spp Directive Annex 2
Eurasian badger *Meles meles*	Badger Act 1992
noctule bat *Nyctalus noctula*	Hab&Spp Directive Annex 4 Cons Regs 2010 Schedule 2 W&CA Schedule 5 NERC Act Section 41 UK BAP London BAP
pipistrelle *Pipistrellus pipistrellus*	Hab&Spp Directive Annex 4 Cons Regs 2010 Schedule 2 W&CA Schedule 5 NERC Act Section 41 London BAP
soprano pipstrelle *Pipistrellus pygmaeus*	Hab&Spp Directive Annex 4 Cons Regs 2010 Schedule 2 W&CA Schedule 5 NERC Act Section 41 UK BAP London BAP
Designations abbreviations: Hab&Spp: Habitat and Species Directive 1992 Cons Regs: Conservation (Natural Habitat. &c.) Regulations 2010 W&CA: Wildlife and Countryside Act 1981 (as amended) NERC: Natural Environment and Rural Communities Act 2066 (as amended) BAP: Biodiversity Action Plan	

3.4 In addition to the above, the following have also been recorded within the search area in the last 10 years as relevant species of local conservation concern, as nationally scarce or as red listed but have no other specific protections:

- Nine species of higher plant

long-stalked crane's-bill *Geranium columbarium*	crested hair-grass *Koeleria macrantha*	daffodil *Narcissus pseudonarcissus*
meadow crane's-bill *Geranium pratense*	dittander *Lepidium latifolium*	sainfoin *Onobrychis vicifolia*
sea-buckthorn *Hippophae rhamnoides*	narrow-leaved pepperwort *Lepidium ruderale*	ivy broomrape *Orobanche hederae*

- Twenty nine species of invertebrate

wasp spider *Argiope bruennichi*	A beetle *Calanthus ambiguus*	A true fly *Volucella zonaria*
A spider *Nigma walckenaeri*	A beetle *Dasytes plumbeus*	yellow-legged mining bee *Andrena flavipes*
A spider *Xerolycosa nemoralis*	Adonis ladybird *Hippodamia variegata*	ornate tailed digger wasp *Cerceris rybyensis*
red-eyed damselfly *Erythromma najas*	flax flea beetle *Longitarsus parvulus*	hairy-legged mining bee *Dasypoda hirtipes*
ruddy darter *Sympetrum sanguineum*	A beetle *Micropiontus campestris*	A cuckoo wasp *Hedychridium roseum*
A true bug *Asiraca clavicornis*	A beetle *Ophonus azureus*	A cuckoo wasp *Hedychrum niemelai*
A true bug *Taphropeltus hamulatus*	A beetle *Platyderus depressus*	large yellow-faced bee *Hylaeus signatus*
A beetle *Agrilus viridis*	A beetle *Polydrusus formosus*	A bee *Nomada fucata*
A beetle *Aulacobaris picicornis*	A beetle *Pseudostyphlus pillumus*	bee wolf *Philanthus triangulum*
A beetle *Brucela rufipes*	marbled white *Melanargia galathea*	

- Thirty species of birds

mute swan *Cygnus alor*	water rail *Rallus aquaticus*	rook *Corvus frugilegus*
shelduck *Tadorna tadorna*	ringed plover *Charadrius hiaticula*	swallow *Hirundo rustica*
pintail *Anas acuta*	dunlin *Calidris alpina*	house martin *Delichon urbicum*
shoveler *Anas clypeata*	redshank *Tringa totanus*	willow warbler *Phylloscopus trochilus*
teal *Anas crecca*	snipe *Gallinago gallinago*	goldcrest *Regulus regulus*
wigeon *Anas penelope*	lesser black-backed gull *Larus fuscus*	mistle thrush *Turdus viscivorus*
gadwall *Anas strepera*	black tern *Chlidonias niger*	stonechat *Saxicola rubicola*
goldeneye *Bucephala clangula*	stock dove *Columba oenas*	meadow pipit *Anthus pratensis*
long-tailed duck *Clangula hyemalis*	swift *Apus apus*	grey wagtail *Motacilla cinerea*
grey heron *Ardea cinerea*	kestrel *Falco tinnunculus*	brambling *Fringilla montifringilla*

Invasive species

3.5 The table below lists the known invasive species present within the 1 Km search area in the last 10 years that are listed on the London Invasive Species Initiative (LISI).

Species	
Higher plants	**Animals**
tree-of-heaven *Ailanthuus altissima*	Chinese mitten crab *Eriacheir sinensis*
butterfly-bush *Buddleja davidii*	ring-necked parakeet *Psittacula krameri*
entire-leaved cotoneaster *Cotoneaster integrifolius*	muntjac *Muntiacus reevesi*
montbretia *Crocosmia x crocosmiflora*	
Japanese knotweed *Fallopia japonica*	
goat's-rue *Galega officinalis*	
green alkanet P*entaglottis sempervirens*	
cherry laurel *Prunus laurocerasus*	
false-acacia *Robinia pseudoacacia*	
snowberry *Symphoricarpos albus*	

Greater London Authority habitat survey

3.6 The survey identified that the docks were predominantly made up of areas of open water with concrete banks. Adjoining sections of land were composed of largely ruderals growing on either soils or derelict bare artificial habitat, roughland and scrub. One area of semi-improved grassland was also present along with paths, roads and buildings of bare artificial habitat.

3.7 Most of the docks were inaccessible to the public although some banksides and bridges are accessible. The docks themselves are used for boating and water sports such as kayaking and rowing, although most activity takes place in the Marina, at the western end of the Royal Albert Dock from the London Regatta Centre and in Royal Victoria Dock at the western end from the Royal Victoria Dock Watersports Centre. The site and immediate banks was surveyed from a boat provided by Royal Docks Management Authority while areas away from the dock banks were surveyed (by habitat only) using aerial photographs.

3.8 A total of eight habitats present within the survey area: bare artificial habitat, standing water, ruderals, scrub, roughland, semi-improved grassland, wet marginal habitat, and bare ground. The bare artificial habitat has been sub-divided into four: bare artificial habitat, buildings and static boats, floating and fixed pontoons and bridges with footings in water, and the ruderal habitat into two: ruderals and ruderals on bare artificial habitat, to make the maps more readable and these habitats more identifiable.

3.9 The majority of the site was standing water which made up approximately 89ha (77%) of the survey area. Bare artificial habitat (incorporating buildings and floating and fixed pontoons) was the second most dominant habitat comprising of 8.92ha (8%) of the survey area.

3.10 A description of the key habitats within the survey area are provided below, and maps of the habitats are presented in Appendix 1.

Standing water

3.11 The standing water habitat consisted of entirely man-made concrete dock basins that are full of water. They were connected to the River Thames via a series of locks at the eastern end of Royal Albert and King George V docks and were tidal influenced. The water level in the docks was controlled via the locks and a series of sluices. They were largely of deep water with a few areas of shallow water where there were slipways and neighbouring building supports.

Bare artificial habitat

3.12 This habitat incorporates all the hard surfaces of the site excluding those that had become extensively covered in ruderals. This included buildings, paths, roads, bridges, pontoons (both floating and fixed), the dock banksides, lock gates and other man-made structures including floating 'buildings'. Most of this habitat was largely free from any vegetation. However, a number of species were recorded in cracks and crevices scattered thoroughout. These included: pellitory-of-the-wall *Parietaria Judaica*, common chickweed *Stellaria media*, , perennial wall rocket *Diplotaxis tenuifolia*, hoary mustard *Hirschfeldia incana*, shepherd's-purse *Capsella bursa-pastoris*, ivy *Hedera helix*, red dead-nettle *Lamium purpureum*, ribwort, greater, and buck's-horn plantains *Plantago lanceolata*, *P. major* and *P. coronopus*, butterfly-bush *Buddleja davidii*, groundsel *Senecio vulgaris*, Canadian and Guernsey fleabane *Conyza canadensis* and *C. sumatrensis* and the grasses red and sheep's fescue *Festuca rubra* and *F. ovina*, perennial rye-grass *Lolium perenne*, rat's-tail fescue *Vulpia myuros* and annual meadow-grass *Poa annua*. Six fern species were also present in this habitat growing on the dock bank walls. These were male-fern *Dryopteris filix-mas*, hart's-tongue *Asplenium scolopendrium* and the London notable species rustyback fern *Asplenium ceterach*, maidenhair spleenwort *Asplenium trichomanes*, common polypody *Polypodium vulgare* and wall-rue *Asplenium ruta-muraria*. All six species were present in Target Note area H, while hart's-tongue and common polypody were particularly prevalent in Target Note area C. The derelict Millennium Mill building (Target Note area G) is covered in more detail below.

Ruderals

3.13 This habitat was dominated by a mix of tall and short ruderal species and was both located on soils and on bare artificial habitats. In the latter case it was distinguished from the bare artificial habitat in that species were more extensive in coverage. Species in this habitat included all those found in the bare artificial habitat above but were composed of a wider variety of species including common nettle *Urtica dioica*, fat-hen *Chenopodium album*, common mouse-ear *Cerastium fontanum*, broad-leaved dock *Rumex obtusifolius*, knotgrass species *Polygonum sp*., common mallow *Malva sylvestris*, hairy bitter-cress *Cardamine hirsuta*, weld *Reseda luteola*, creeping cinquefoil *Potentilla reptans*, various clovers *Trifolium spp*., wild carrot *Daucus carota* black horehound *Ballota nigra*, common toadflax *Linaria vulgaris*, speedwells *Veronica spp*., ragworts *Senecio spp*., dandelion species group *Taraxacum* agg., smooth and prickly sow-thistles *Sonchus oleraceus* and *S. asper* and a wider range of grasses including

Yorkshire-fog *Holcus lanatus*, false-oat-grass *Arrhenatherum elatius* and cock's-foot *Dactylis glomerata*. This habitat also supported some small young shrubs of goat and grey willow *Salix caprea* and *S. cinerea*, silver birch *Betula pendula*, bramble species group *Rubus agg*, and butterfly-bush. The London notable Jersey cudweed *Gnaphalium luteoalbum* was present within this habitat in Target Note area E while Target Note area D was particularly prolific in common toadflax. The mosaic habitats composed of mostly ruderals (Target Note Area F) are covered in more detail below.

Scrub

3.14 Scrub habitat within the survey area was dominated by bramble and butterfly-bush with scattered shrubs of elder *Sambucus nigra*, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, gorse *Ulex europaeus*, roses *Rosa spp*., and willows *Salix spp*. Young trees of silver birch, ash *Fraxinus excelsior*, oaks *Quercus spp*., poplars *Populus spp*., tree-of-heaven *Ailanthus altissima* and false acacia *Robinia pseudoacacia* were also present.

Roughland

3.15 The roughland habitat was a complex mosaic habitat of grasslands, scrub, tall herbs and ruderals. It was composed of most of the species mentioned in the ruderals and scrub habitats but was largely composed of hoary mustard, common nettle, broad-leaved dock, wild carrot, black horehound, ragworts with shrubs of bramble, elder, hawthorn, blackthorn, roses, and willows along with the grasses red fescue, Yorkshire-fog, false-oat-grass and cock's-foot.

Semi-improved grassland

3.16 The semi-improved grassland was dominated by a mix of red fescue, perennial rye-grass, Yorkshire-fog and false oat-grass and contained a number of typical semi-improved grassland herb species including common mallow, common knapweed *Centaurea nigra* and hogweed *Heracleum sphondylium*.

Wet marginal habitat

3.17 This habitat existed where the water level was shallow and largely consisted of rocky gravels and broken concrete and brick etc. Water mint *Mentha aquatica* was present in small numbers as were some aquatic algae species. Some taller ruderals of common nettle, hoary mustard, common mallow were also present here.

Bare ground

3.18 This habitat was not observed and is based on aerial surveys only. It is thought to be largely unvegetated but may have contained a few species of those typical of the ruderals habitat.

Key Target Notes

3.19 The Target note areas C, D, E and H were discussed within the habitat descriptions above. Target note areas A, B, F, and G are discussed below.

Target Note area A

3.20 This area consisted of a small area of wet marginal habitat around the base of a slipway for boats within the Gallions Point Marina. During the survey a single kingfisher *Alcedo atthis* was observed in this area and is said to be a regular occurrence in this area (pers. conv.). The presence of shallow water would make this area particular attractive for kingfisher to hunt for small fish and aquatic invertebrates. The area does not however support breeding opportunities for kingfisher, a fully protected species under schedule 1 of the Wildlife and Countryside Act (WCA) 1981 (as amended), but it is possible that breeding habitat is nearby.

Target Note area B

3.21 This area within the Gallions Point Marina appeared to be the most attractive area for wetland birds within the whole area with 23 great crested grebe *Podiceps cristatus*, several tufted duck *Aythya fuligula*, coot *Fulica atra* and mallard *Anas platyrhynchos* congregating here. The reasons for congregating in this particular location is unknown but may be a consequence of deliberate disturbance from the London City Airport and a proximity to food. In addition at the time of the survey some 15 black-headed gull *Chroicocephalus ridibundus* and a single common gull *Larus canus* were using the pontoon here as a daytime roost and resting area. The presence of plentiful excreta on the pontoon suggests that the gulls and duck species regularly use this pontoon as a roosting site.

Target Note area F

3.22 This area surrounding the Pontoon Dock is an area of former development that has been mostly left to become derelict. As a consequence it has developed into a mosaic of ruderals, bare artificial habitat, bare ground and scrub habitats. Collectively this entire area fulfils the criteria for the NERC Act Section 41 priority habitat '*Open Mosaic Habitats on Previously Developed Land*'[6] habitat of Principal Importance. This habitat is known to be particularly important for a wide variety of invertebrates including a number of protected species. The habitats are also important for various declining bird species such as the linnet *Linaria cannabina*, and the black redstart *Phoenicurus ochruros*, a schedule 1 of the WCA 1981 (as amended) species and also reptiles. A small group of linnets were observed in the area during the survey.

Target Note area G

3.23 The large and derelict Millennium Mill building is located within the Pontoon Dock area and was observed to be providing a resting site for a peregrine *Falco peregrinus* during the survey. The building itself was mostly windowless and stood high above the surrounding landscape making it perfect for breeding peregrine, a schedule 1 of the WCA 1981 (as amended) species. Furthermore, the building had a '*hanging garden'* of butterfly-bush on its north face and is ideally located for breeding black redstart and also for bats, although neither of these were observed during the survey.

[6] http://jncc.defra.gov.uk/pdf/UKBAP_BAPHabitats-40-OMH-2010.pdf

Incidental fauna sightings

3.24 Several fauna species were seen during the survey. They are listed in Appendix 3.

Protected species assessment

Bats

3.25 Records for bats were returned by the data search. No bats or evidence of bats was observed during the survey. However, the derelict Millennium Mill building has a **High** potential to support bat roosts at any time of year. Other buildings were not assessed for bats due to access restrictions.

Breeding Birds

3.26 Numerous records for birds were returned by the desk study. Several bird species were observed including the Wildlife and Countryside Act 1981 (as amended) schedule 1 protected species peregrine and kingfisher. There is suitable habitat present for both species to breed within the survey area along with suitable habitat for a variety of other species including herring gull, linnet, house sparrow, dunnock, starling, black redstart and little ringed plover (the latter two fully protected). Herring gull, linnet, house sparrow, dunnock and starling were observed during the survey. Recommendations in relation to schedule 1 bird species Kingfisher, black redstart, peregrine and little ringed plover Are provided in section 4.8. A full list of bird species observed can be found in Appendix 3.

Reptiles

3.27 No records were returned by the desk study. No reptiles were observed during the survey However, habitat on site including ruderal, bare ground and scrub provides suitable foraging and hibernating for these species. The potential was at least a **Medium** potential for reptiles to be present within the survey area.

Invertebrates

3.28 Numerous records were returned by the desk study. No protected invertebrates were observed but the presence of a significant area of '*Open Mosaic Habitats on Previously Developed Land*' a habitat known to support important invertebrate assemblages and the presence of several protected and 30 notable invertebrate species previously recorded within a 1 Km search area around the survey area, indicate that there is a **High** potential for notable invertebrates to be present within the survey area.

Other protected species

3.29 No other protected species was observed during the survey. Common toad *Bufo bufo* and badger *Meles meles* have been recorded from the 1 Km search area. Other than the large and predominantly deep water docks, no permanent waterbodies were recorded on the site so it is unlikely that toads breed on site, however as a species known to move considerable distances post breeding, and that there was plentiful suitable habitat then there is a **Medium** potential for this species to occur on site with any regularity.

3.30 Badgers are also a species that is known to travel long distances and can occur even in very urban areas. It is unlikely that the site supports a sett but it cannot be ruled out without a more detailed survey. Food resources for badgers would be plentiful on site

but the habitat is generally sub-optimal therefore there is a **Low** potential for badger to be present on site with any regularity.

3.31 The lack of any suitable waterbodies for common frog, great crested newt, water vole and otter would rule these species as a **Negligible** potential for occurring on site with any regularity.

3.32 All other protected species are highly unlikely to occur on site as the current conditions and habitats are not suitable.

Conservation/site evaluation

3.33 The broader waterbodies of the site are subject to the non-statutory designation of a Site of Importance for Nature Conservation (SINC); a Site of Borough Importance for Nature Conservation (site NeBI10 *The Royal Docks*) which adjoins at the eastern end with a Site of Metropolitan Importance for Nature Conservation (M031 *The River Thames and tidal tributaries*). The site has been designated for its large bodies of water which are important for a number of breeding and wintering water birds and that peregrine regularly hunts and sometimes breeds within the area, although its potential breeding sites are not included within the SINC designated area.

3.34 A regionally (London) significant amount of the '*Open Mosaic Habitats on Previously Developed Land'* UK priority habitat is present on site. This habitat is typically subject to proposed development issues and none of this habitat is currently captured in the SINC designation. It is unknown if any is subject to current planning permission or allocated for development in any Development Plans.

3.35 The habitats on site were suitable for a small range of noteworthy species, particularly invertebrates and birds including Species of Principal Importance and Newham and London BAP species, as reported in the desk study or recorded during the survey, as follows:

- Peregrine, black redstart and kingfisher probably breed on site and are both fully protected. The site is regionally important for peregrine and black redstart while locally important for kingfisher;
- A number of bird species including linnet, house sparrow and starling and other widespread but declining species of birds that are also species of conservation concern are on site[7];
- Common and soprano pipistrelle and noctule bats, are recorded on site as from the data search;
- The site is locally important for a number of fern species

3.36 The habitats on site and populations of the above species are likely to be of **Regional** (London) value only. It is possible that the site could support rare invertebrate species, diverse invertebrate assemblages or large populations of noteworthy invertebrate species. Other than invertebrates it is unlikely to support rare species, diverse assemblages or large populations of any noteworthy species.

[7] Birds of Conservation Concern - amber list / red list (Eaton *et al*., 2015)

4. Conclusions and recommendations

Conclusions

4.1 From the results it can be concluded that the '*Open Mosaic Habitats on Previously Developed Land'* habitat around the Pontoon Docks and the derelict Millennium Mill building is probably the most valuable habitat on site. The reasons for this are that their isolation from disturbance and their largely ruderal composition make them particularly valuable for invertebrates including several specialist species. This in turn attracts plentiful birds including a number of specialist and declining bird species like black redstart and linnet.

4.2 The water bodies, although important for birds, the presence and activities of the London City Airport, where deliberate bird scaring and shooting to ensure aircraft safety takes place will dissuade the use of the water for many species. These water bodies may, however, be important for aquatic species such as fish but data on what species are using them is very limited.

4.3 The site overall is known to be important for the following species or groups of species:

- Birds such as kingfisher, peregrine, black redstart, linnet, wintering great crested and little grebes; and
- London notable ferns on the dock walls

4.4 For other protected or notable species, it not possible to determine the value of the site without further survey. For this reason, the following surveys have been recommended:

- Reptile survey – focused around the Pontoon Dock ruderal area
- Invertebrate survey – focused around Pontoon Dock ruderal area
- Fish survey
- Aquatic invertebrates survey
- Breeding and wintering bird surveys; and
- Bat survey – particularly Millennium Mill building and other buildings if redevelopment is proposed;

4.5 If boat trips are proposed or buildings refurbished as part of enhancing the site for local communities and visitors, then appropriate survey and mitigation would be required in order to ensure no adverse impacts on protected species. These include:

- Schedule 1 bird species: kingfisher, peregrine, little ringed plover and black redstart; and
- Roosting bats in buildings and foraging across the site.

Recommendations

Designated nature conservation sites

4.6 The survey identified biodiverse habitat adjacent to the current SINC designation that is currently not included in that designation. This adjacent habitat complements the existing habit within the designation and supports several of the species that the site is designated for including peregrine. The boundary of the current SINC was last updated in 2007 and includes sections that are now aircraft stands for the London City Airport. These require amendments to the SINC boundary. Furthermore, the airport is currently expanding to remove further sections of the King George V dock to accommodate for a taxiway alongside the existing runway[8]. This will likely decrease the overall area of the current SINC boundary.

4.7 Given these potential changes to the SINC boundaries and area, and the recognition that wildlife valuable habitat not included in the SINC is present on site, it is suggested that the current SINC boundary is extended to include all areas within the survey area of this report. Any proposed changes to the SINC boundary are the responsibility of the Local Planning Authority who would contact any landowners and responsible parties and scrutinise the proposed changes with regards to planning policies and any local development plans[9]. The Greater London Authority's guidance for the review and adoption of SINCs suggests reviews between 5-10 years. This site was last reviewed in 2007.

Birds

4.8 Several Wildlife and Countryside Act 1981 (as amended) Schedule1 bird species were identified during the survey or have been recorded within the 1km search area. Under this legislation it is an offence to intentionally or recklessly disturb these species at, on or near an 'active' nest. This legislation must be considered when undertaking activities during the bird breeding season (March - September) and would include activities that intend to only observe these species.

4.9 The water bodies could be enhanced with the provision of more marginal habitat around the shallows of the site. This could be comprised of small reedbeds or areas of shallow vegetated inundated muds to attract birds like reed warbler, reed bunting, wading birds and provide more breeding opportunity for ducks and grebes. In addition areas of gravels as islands just above the waterline could also be beneficial to birds such as the little ringed plover which need undisturbed gravels away from predatory animals to breed on. The provision of tern rafts could also benefit the birdlife of the area.

[8] https://www.londoncityairport.com/thefuture and https://assets.ctfassets.net/qgj4kbqgcch2/GYpJEdG1KokUu8MMWcWW6/6fd47003758ffe695978fcd638b37911/London_City_Airport_Master_Plan_2006.pdf

[9] Mayor of London (2013). *Process for selecting and confirming Sites of Importance for Nature Conservation (SINCs) in Greater London*, Advice Note, Greater London Authority.

4.10 All of these enhancements are related to water birds that could attract species that the London City Airport Limited would view as increasing the risk of bird strike to aircraft, thus increasing the risk to the public[10]. These proposals as a result may not be viable options.

4.11 The potential to provide artificial breeding opportunities for kingfisher and sand martin both Newham BAP priority species with the provision of a kingfisher or sand martin bank may not present as many problems as those suggestions above.

4.12 Where feasible it may be possible to erect bird boxes. These can be on buildings, on upright features such lamp posts or even on the dock banks themselves. The type of box and its position would need to be researched to ensure installation would be viable.

Invertebrates and flowering plants

4.13 Strips of vegetation could be provided along the tops of select dock banks. These strips would consist of shallow (5-7cm deep) boxes composed of a hard material that have been filled with a loamy sand. These boxes could then be either seeded or planted with a variety of wildflowers (in areas of public view) or allowed to seed naturally (away from public view). Both would be beneficial to invertebrate species and could break up the monotony of the mostly grey concrete banks. The provision of invertebrate banks or invertebrate boxes incorporated into the design of these features would enhance this even further.

Management

4.14 Management of habitats is key to ensure that they remain in good condition. This is particularly relevant in urban areas, where natural ecological controls are often absent. One area of particular importance with regards to the London docks site is the maintenance of the dock banks. Periodic repairs of the dock banks are expected but where possible vegetation growing in cracks and between slabs, brickwork and stone work and lichens and algae growing on the surfaces should not be removed. The ferns growing along the dock banks are of particular importance in London and the expanse of undisturbed surface areas make the dock walls important for lichens with several species in large colonies observed there. Algal blooms and other vegetation of brackish water along with associated aquatic invertebrates on the dock walls at and under the water level help to maintain a healthy aquatic environment and should also be maintained where feasibly possible.

Access

4.15 Most of the site falls within an Area of Deficiency (AOD) in terms of access to nature[11]. Opportunities for engagement with wildlife via organised boat trips are possible and enhancement works around the docks could make these more viable. The high chance to see peregrine and kingfisher and other wetland species from a boat make this an

[10] LCA state: *LCY's Aerodrome Safeguarding Team will continue to review all development applications within a designated 13km zone and, where appropriate, will object to any that are deemed to pose a risk to safe flying, for example, by the attraction of large birds to new landscaping areas.*

[11] Detailed Sites & Policies Development Plan Document (LB Newham 2017) pg 85

attractive activity. The presence of the airport and the landscape surrounding the docks and their history are also an attraction as part of the trip.

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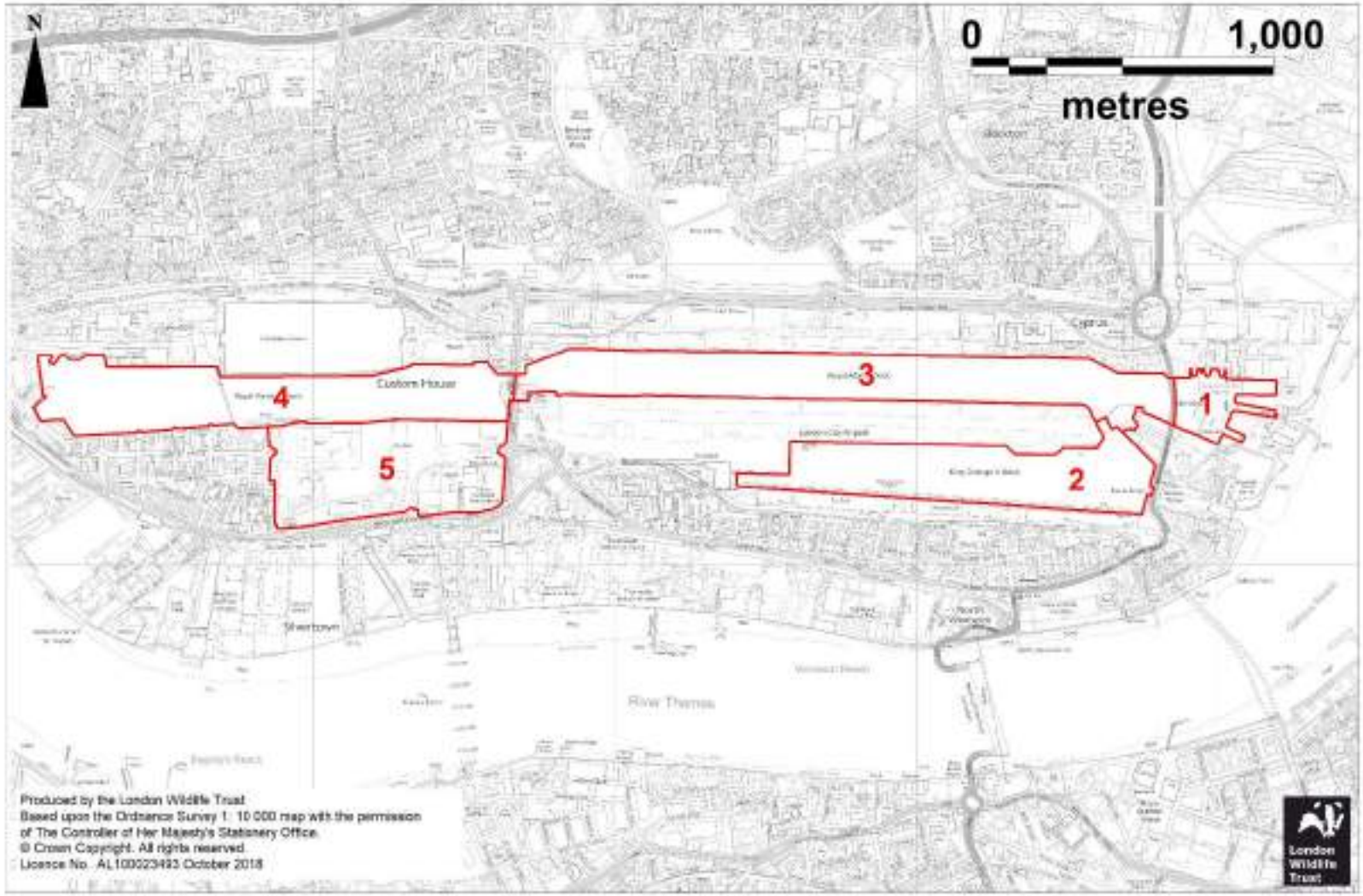
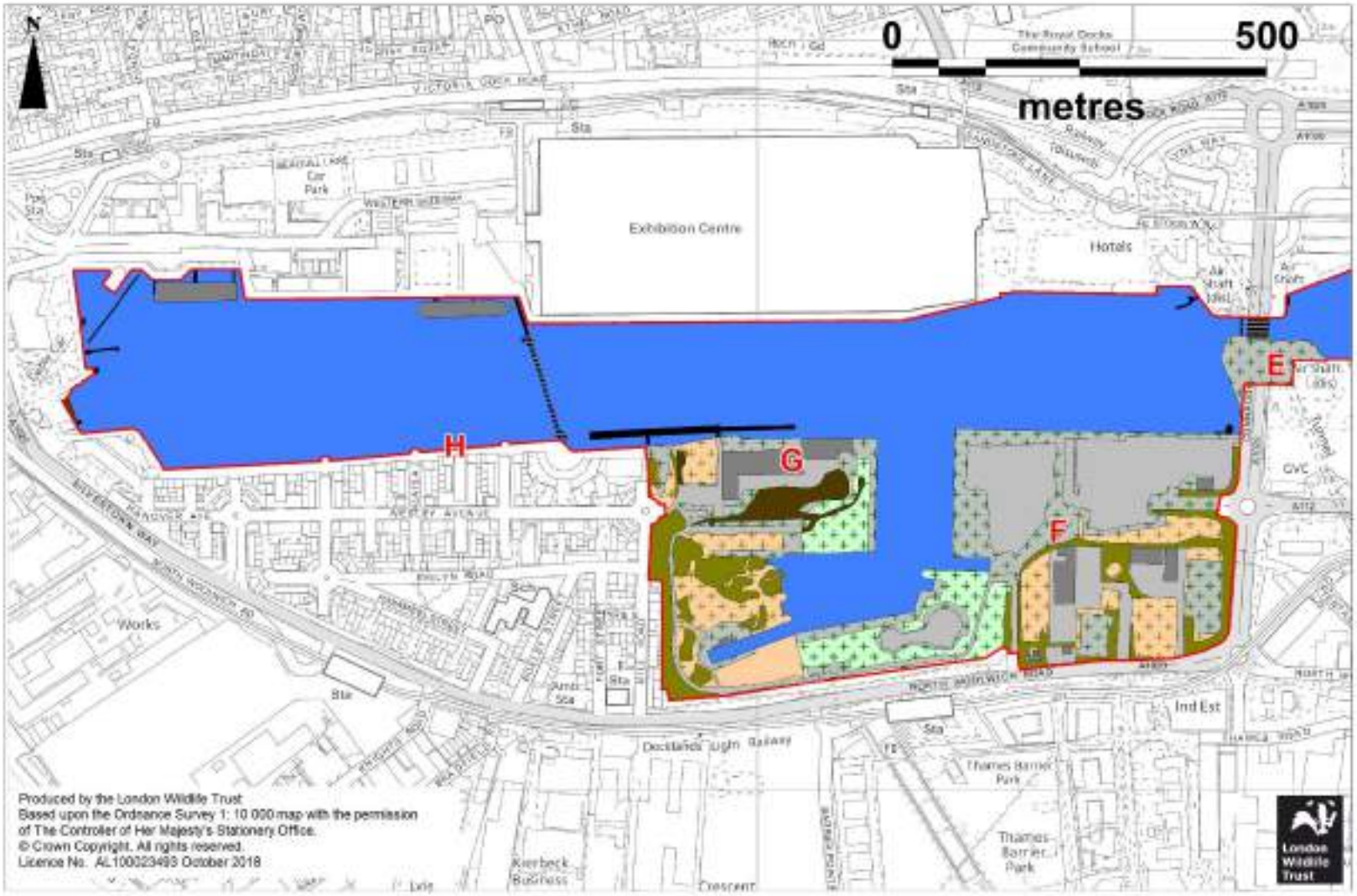
6. Appendices

Appendix 1: Maps

London Docks location and compartment map

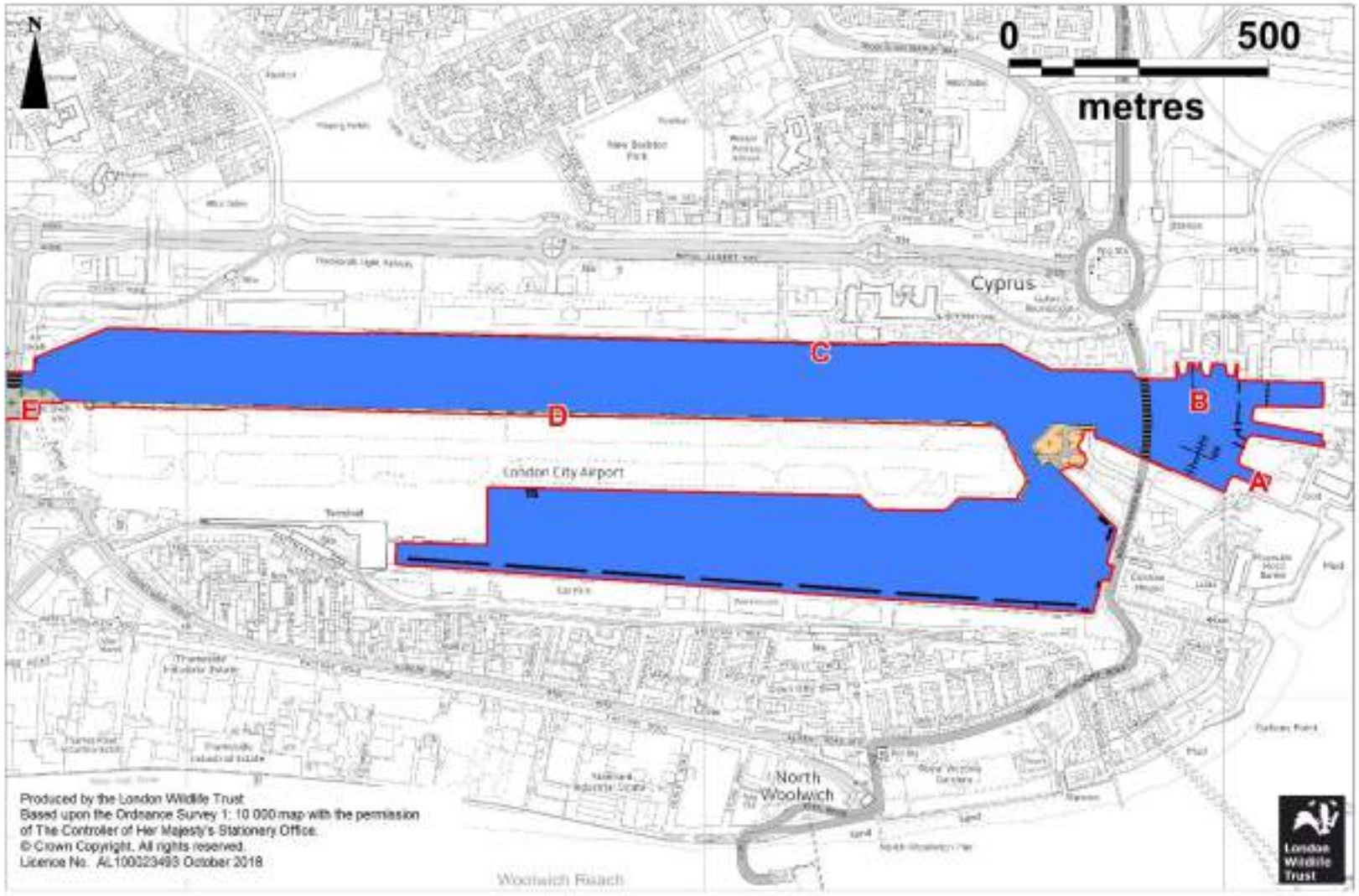


London Docks habitat map - Royal Victoria Dock

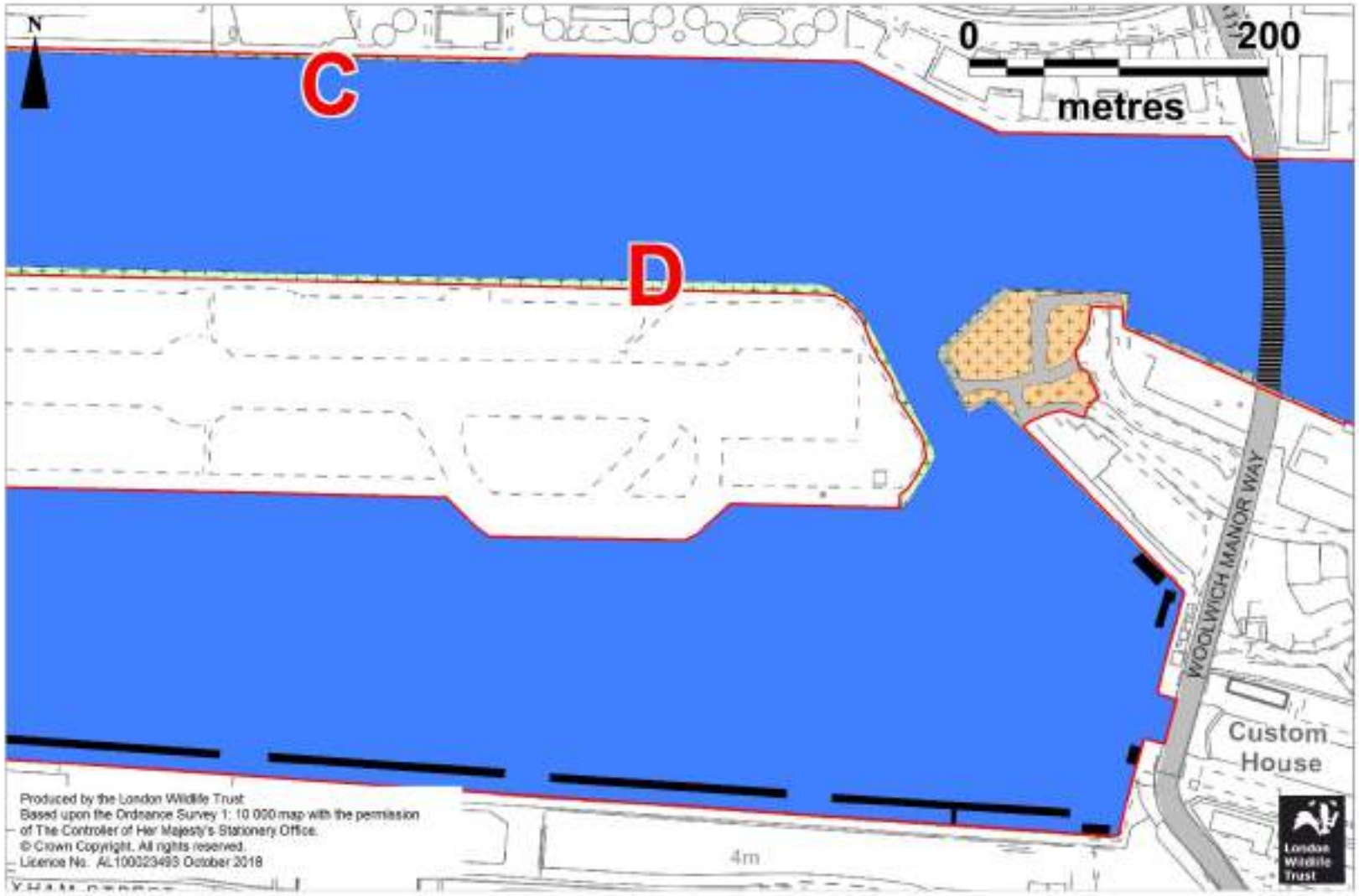


London Docks habitat map - Pontoon Dock and Millennium Mill area

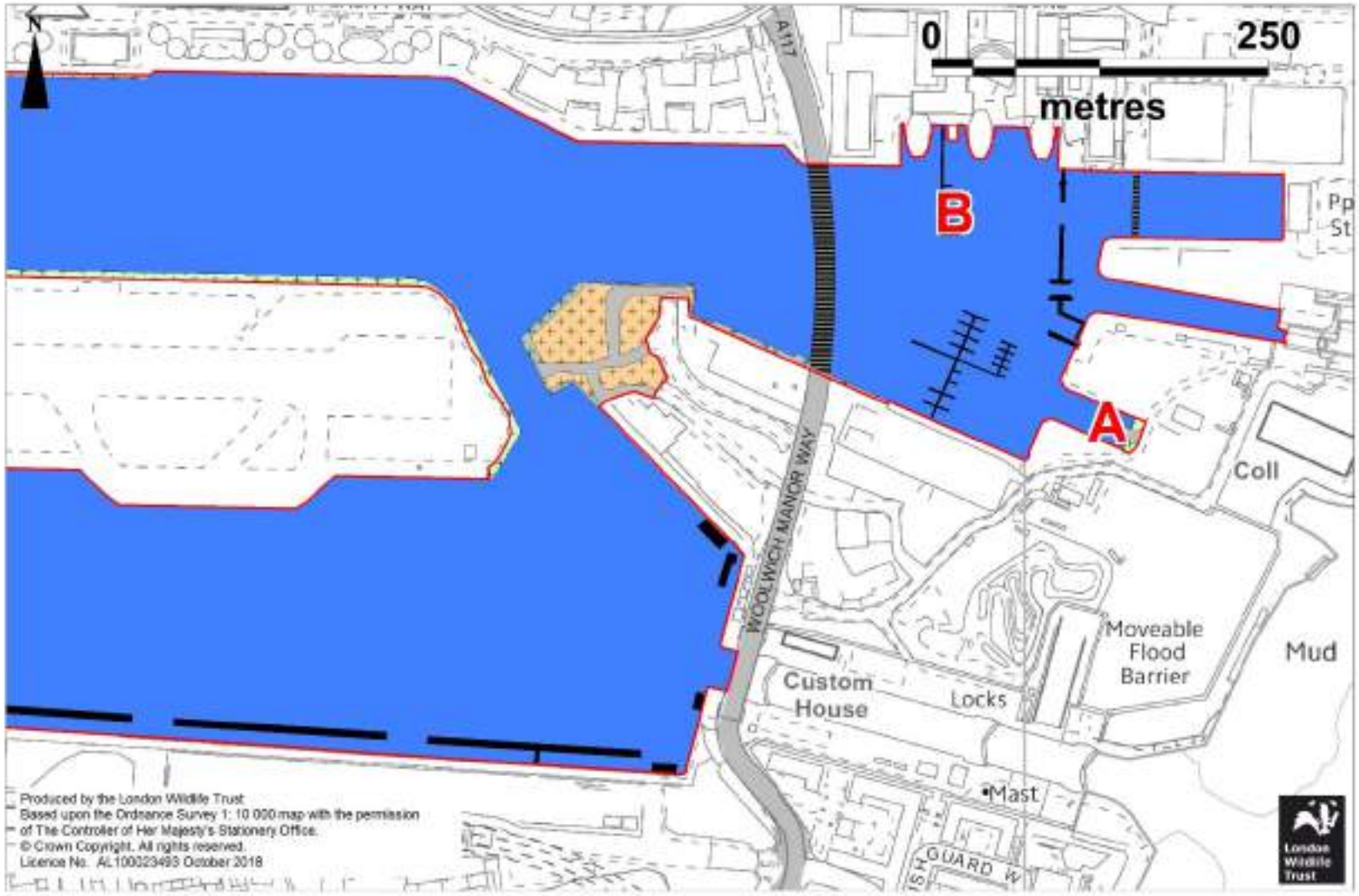
London Docks habitat map - Royal Albert and King George V Docks



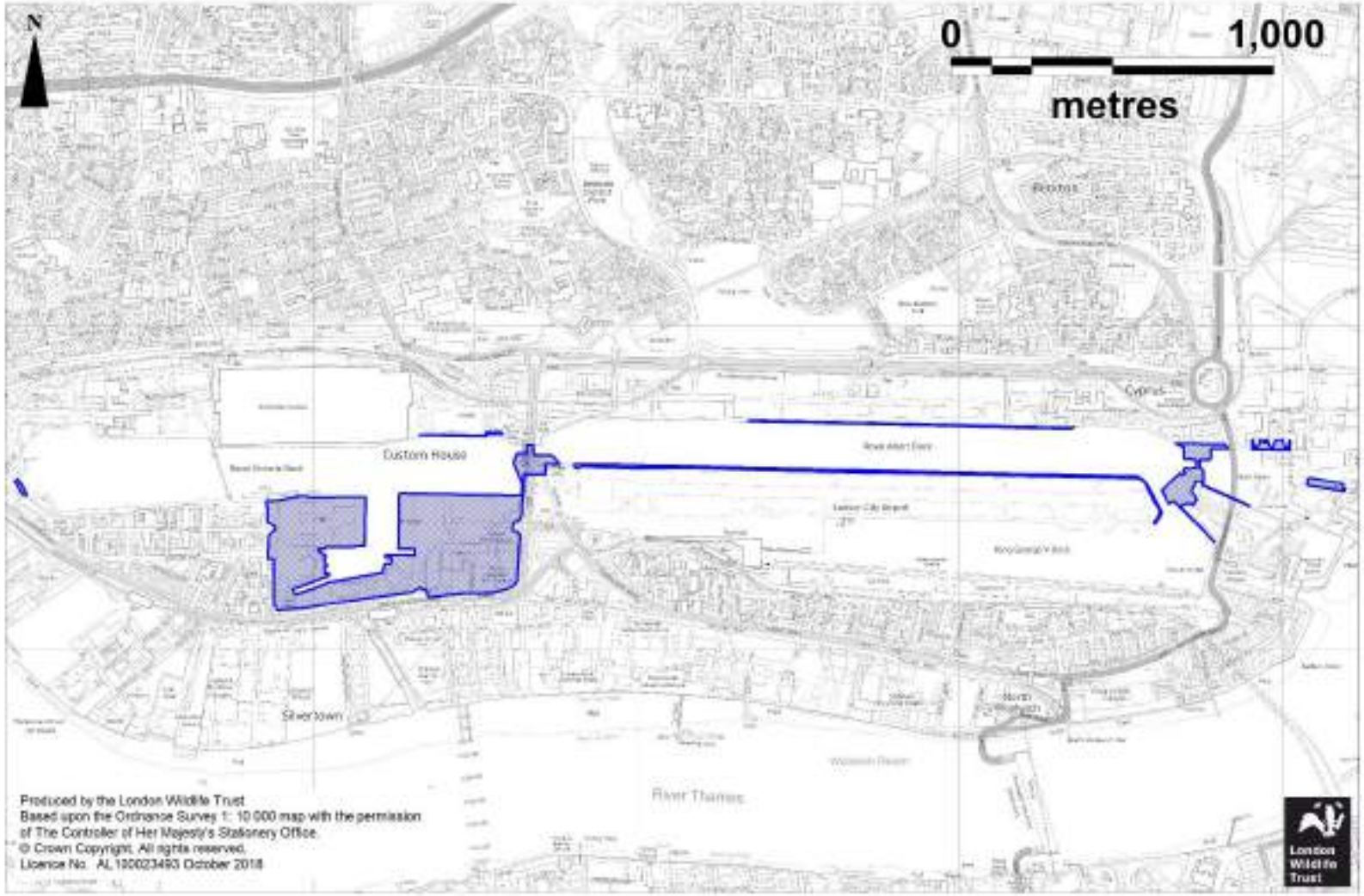
London Docks habitat map - Royal Albert and King George V Docks detail



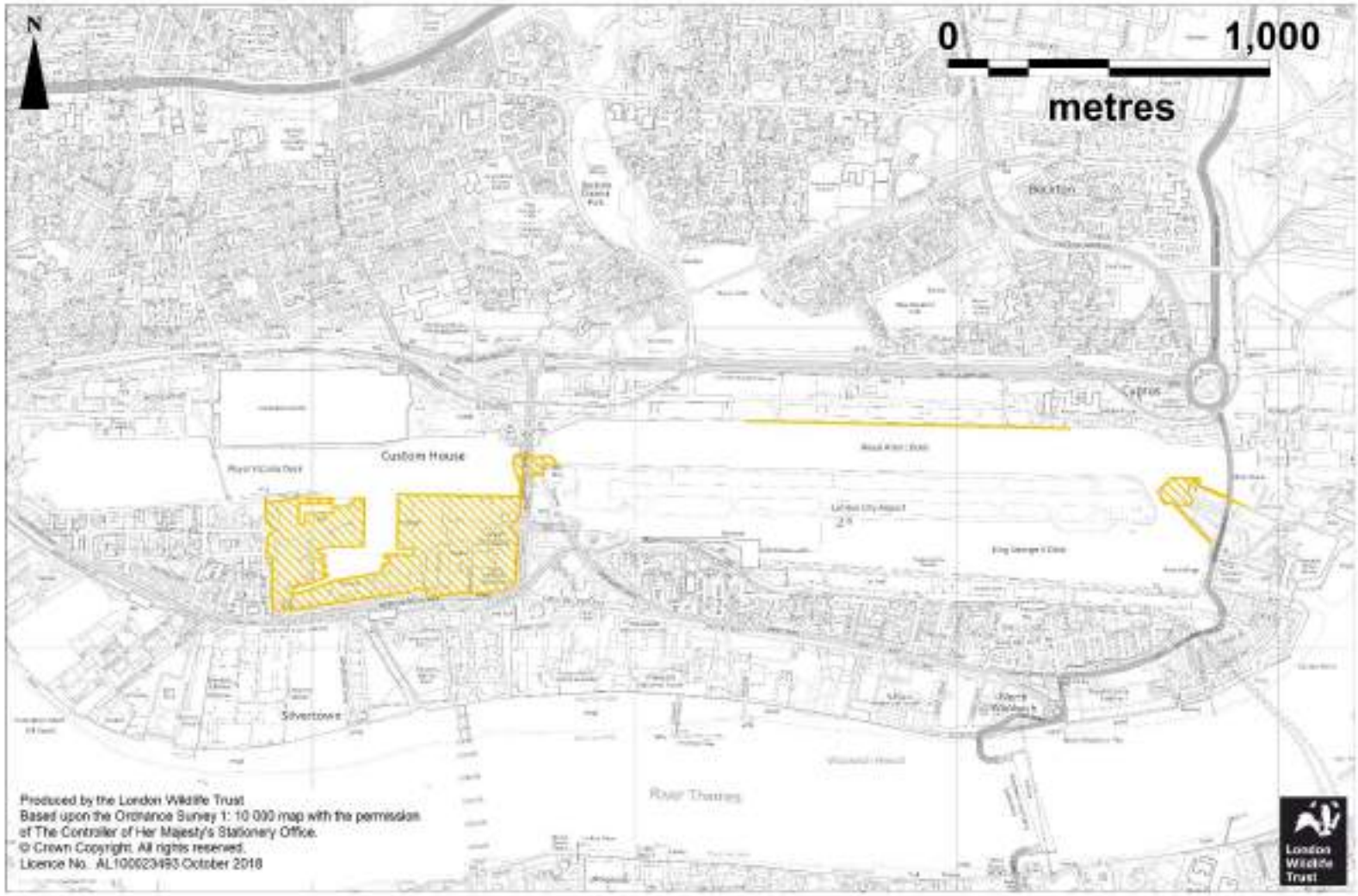
London Docks habitat map - Gallions Point Marina



Royal London Docks: Surveyed areas outside SINC designation



Royal London Docks: Areas identified as Open Mosaic Habitats on Previously Developed Land



Appendix 2: Vascular Plant species list

Scientific name	Common name	Species abundance in each area (DAFOR Scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare)					Notes
		Gallions Point Marina (Compartment 1	King George V Dock (Compartment 2)	Royal Albert Dock (Compartment 3)	Royal Victoria Dock Compartment 4)	Pontoon Dock and Millennium Mill Compartment 5)	
Acer pseudoplatanus	sycamore					O	
Achillea millefolium	yarrow	R	R	O		O	
Agrostis capillaris	common bent	R	R	O		O	
Ailanthus altissima	tree-of-heaven					R	Invasive
Arctium minus	lesser burdock					R	
Arrhenatherum elatius	false oat-grass	R	R	R		O	
Artemisia vulgaris	mugwort					R	
Asplenium ceterach	rustyback fern				R		London notable
Asplenium ruta-muraria	wall-rue		R	R	O		London notable
Asplenium scolopendrium	hart's-tongue fern	R	O	O	O	R	
Asplenium trichomanes	maidenhair spleenwort			R	R	R	London notable
Aster novi-begii agg	Michaelmas-daisy					R	
Ballota nigra	black horehound	R		R		R	
Bellis perennis	daisy			R			

Betula pendula	silver birch		R			R	
Buddleja davidii	butterfly-bush	R	R	R	R	A	invasive
Capsella bursa-pastoris	shepherd's-purse	R	R	O	R	R	
Cardamine hirsuta	hairy bitter-cress			R			
Centaurea nigra	common knapweed					O	
Cerastium fontanum	common mouse-ear			R			
Chamerion angustifolium	rosebay willowherb			R			
Chenopodium album	fat-hen	R		R	R	R	
Cirsium arvense	creeping thistle	R		R		O	
Cirsium vulgare	spear thistle			R			
Conyza canadensis	Canadian fleabane	O	R	O	O	O	
Conyza sumatrensis	Guernsey fleabane	R		R		O	
Crataegus monogyna	hawthorn					O	
Dactylis glomerata	cock's-foot		R	O	R	O	
Daucus carota	wild carrot	R	R	R	R		
Diplotaxis tenuifolia	perennial wall-rocket	O	O	R		R	
Dipsacus fullonum	teasel					R	
Dryopteris filix-mas	male fern	R		R	O	R	
Epilobium sp.	willowherb species	R		R		O	
Festuca ovina	sheep's fescue			O		R	
Festuca rubra sp.	red fescue type species	O	R	O	O	O	
Ficaria verna	lesser celandine						

Fraxinus excelsior	ash					R	
Geranium sp.	crane's-bill species			R	R		
Gnaphalium luteoalbum	Jersey cudweed			O	O		London notable
Hedera helix	ivy	R	R		R	O	
Helminthotheca echioides	bristly ox-tongue	R		R		R	
Heracleum sphondylium	hogweed					O	
Hirschfeldia incana	hoary mustard	O	R	O		O	
Holcus lanatus	Yorkshire-fog	O	R	F	R	R	
Hypochaeris radicata	cat's-ear			R			
Lamium purpureum	red dead-nettle	R	R	R		R	
Linaria purpurea	purple toadflax			R			
Linaria vulgaris	common toadflax			A			
Lolium perenne	perennial rye-grass	O	R	F	R	O	
Malva sylvestris	common mallow	R		R		R	
Medicago sativa sativa	lucerne		O	O		O	
Mentha aquatica	water mint	R					
Parietaria judaica	pellitory-of-the-wall	R	O	R	R	R	
Picris hieracioides	hawkweed oxtongue	R		R		R	
Plantago coronopus	buck's-horn plantain	R	R	O		O	
Plantago lanceolata	ribwort plantain	R	R	O	R	O	
Plantago major	greater plantain	R		O			
Poa annua	annual meadow-grass	R	R	O	R	O	

Polygonum sp	knotgrass species			R			
Polypodium vulgare	common polypody	R	R	O	O	R	London notable
Populus sp.	poplar species					R	
Potentilla reptans	creeping cinquefoil			R			
Prunus spinosa	blackthorn					O	
Quercus S	oak species					R	
Reseda luteola	weld			R			
Robinia pseudoacacia	false-acacia					R	invasive
Rosa sp.	rose species					O	
Rubus fruticosus agg	bramble species group	R	R	R	R	A	
Rumex obtusifolius	broad-leaved dock	R	R			O	
Salix caprea	goat willow			R		R	
Salix cinerea	grey willow					R	
Salix sp.	willow species					R	
Sambucus nigra	elder					R	
Sedum sp	stonecrop species				R	O	
Senecio inequidans	narrow-leaved ragwort			R	R		
Senecio jacobaea	common ragwort	O	R	O		O	
Senecio vulgaris	groundsel	R		O		R	

Sisymbrium officinale	hedge mustard			R		R	
Solanum nigrum	black nightshade	R		R			
Sonchus asper	prickly sow-thistle			R		R	
Sonchus oleraceus	perennial sow-thistle	R	R	R	R	O	
Stellaria media	common chickweed	R	R	R	R	R	
Taraxacum sp.	dandelion species	R	R	R			
Trifolium pratense	red clover			R			
Trifolium repens	white clover			R			
Ulex europaeus	gorse					R	
Urtica dioica	common nettle	R		R	O		
Verionica sp.	speedwell species		R	R			
Vulpia myuros	rat's-tail fescue	R		R		O	
Unidentified ornamental shrubs and trees						R	

Appendix 3: Fauna list

Common name	Scientific name	Notes
Invertebrates		
Acorn barnacle species	Unknown	Scattered in all areas along tideline
Mollusc species probably zebra mussel	N/A	In King George V Dock on concrete pontoons along southern edge
A marine worm	N/A	Scattered in all areas just below tideline. Worms using calcareous tubes
Birds		
Canada goose	*Branta canadensis*	Single adult in Pontoon Dock
mute swan	*Cygnus olor*	Pair in Pontoon dock
mallard	*Anas platyrhynchos*	Several pairs in Gallions Point Marina and at western end of Royal Victoria Dock
tufted duck	*Aythya fuligula*	Two pairs in Gallions Point Marina
little grebe	*Tachybaptus ruficollis*	Singles in King George V and Pontoon Docks
great crested grebe	*Podiceps cristatus*	23 in Gallions Point Marina
cormorant	*Phalacrocorax carbo*	Five in Gallions Point Marina
moorhen	*Gallinula chloropus*	Two in Gallions Point Marina and one in Pontoon dock
coot	*Fulica atra*	Several in Gallions Point Marina and at western end of Royal Victoria Dock
black-headed gull	*Chroicocephalus ridibundus*	Common throughout and often roosting in in Gallions Point Marina and at western end of Royal Victoria Dock
common gull	*Larus canus*	Single in Gallions Point Marina
great black-backed gull	*Larus marinus*	single flying over site
herring gull	*Larus argentatus*	several birds flying around site
feral pigeon	*Columba livia* (domesticated)	Several birds around site and on neighbouring buildings
wood pigeon	*Columba palumbus*	Several birds around site and on neighbouring buildings
kingfisher	*Alcedo atthis*	Single bird Gallions Point Marina

Common name	**Scientific name**	**Notes**
peregrine	*Falco peregrinus*	Single male on Millennium Mill and harassed by three magpie
magpie	*Pica pica*	Several around Pontoon dock and Millennium Mill
blue tit	*Cyanistes caeruleus*	Two birds seen around Pontoon Dock
great tit	*Parus major*	Single seen around Pontoon Dock
wren	*Troglodytes troglodytes*	Single bird heard around Pontoon Dock
starling	*Sturnus vulgaris*	A few birds seen flying around site
blackbird	*Turdus merula*	A few birds seen around Pontoon Dock
house sparrow	*Passer domesticus*	Small number around Millennium Mill
dunnock	*Prunella modularis*	Two birds at Millennium Mills
linnet	*Linaria cannabina*	Small flock around Pontoon Dock
goldfinch	*Carduelis carduelis*	Small flock around Pontoon Dock

Appendix 4: Photographs

Typical dock bank along eastern edge of Royal Albert Dock ©M Waller

Ruderal vegetation along bank tops ©M Waller

Butterfly bush *'hanging garden'* on side of Millennium Mill ©M Waller

Rustyback fern London notable fern ©M Waller

Wall-rue, London notable fern ©M Waller

hart's-tongue fern ©M Waller

Open Mosaic Habitat of Previously Developed Land habitat around Pontoon Dock and Millennium Mill derelict building ©M Waller