

London Gateway Logistics Park Local Development Order 2

Appendix 4: Ecological Mitigation and Management Plan (EMMP)



December 2024

London Gateway Park Local Development Order 2

Ecological Mitigation and Management Plan

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Chapter 1: Introduction

1.1 DP World London Gateway is a deep-water port and logistics park with associated infrastructure that has been partially constructed on the north bank of the Thames Estuary, at the former oil refinery site at Shell Haven near Stanford-le-Hope (Grid reference: TQ 70781 81874).

1.2 The Logistic Park is already partially operational and comprises commercial uses, primarily B8 (storage and distribution uses). On-site habitat corridors comprising of a swale ditch network adjacent to the primary road network have been created. As the site has been developed, the Logistics Park has been cleared of ecological interest and species present on the site translocated to various receptor sites in the vicinity.

1.3 Up to 321,450m² of remaining commercial floorspace is permitted to come forward on the undeveloped plots under the Local Development Order 2 (LDO2), 412, 326m² already having been completed or committed on the site under LDO1 (2012) and LDO1.5 (February 2024) out of a total of 733,776m² permitted by LDO2.

1.4 The London Gateway Ecological Mitigation and Management Plan (EMMP) forms part of the London Gateway LDO2 and must be read in conjunction with it.

1.5 This document provides a framework for compliance identifying mitigation, management, surveillance, and monitoring protocols for terrestrial ecology in the off-site habitat creation areas (refer to Figure 1). The management protocols shall apply also to any on-site habitat creation areas.

1.6 There remains an on-going requirement to ensure that the receptor sites and habitat enhancement areas are monitored and managed appropriately in accordance with the terms of the licences. This EMMP is a compilation of all of the relevant Natural England licence method statements in place at London Gateway Park Development Ltd (LGPD).

1.7 At the time of writing this EMMP, the active Natural England licences are as follows:

Great crested newt (*Triturus cristatus*) (GCN):

- 2023-66150-EPS-MIT; and
- 2014-2083-EPS-MIT-5.

Water vole (*Arvicola amphibius*):

- 2021-54311-SCI-SCI-4;
- 2023-63909-SPM-WLM-1; and
- 2023-65948-SPM-WLM.

1.8 Some of these mitigation licences may expire, and new ones may be granted during the ten-year period that LDO2 is valid. At all times, mitigation and monitoring outlined in the relevant up-to-date method statements and/or licence conditions will be enforced notwithstanding what is set out in this EMMP as of February 2024.

1.9 The Code of Construction Practice (CoCP) sets out procedures that shall be followed if species are encountered during the construction phase.

1.10 The EMMP does not avoid the need to obtain any necessary environmental permit.

Environmental Advisory Group

1.11 The Environmental Advisory Group (EAG) (formerly known as the Ecological Advisory Group) established by LGPDL has been meeting since 2008. The EAG shall continue to operate for the duration of the LDO.

1.12 The EAG consists of representatives from statutory and non-statutory groups including the Environment Agency, Natural England, the Port of London Authority, the Marine Management Organisation, Thurrock Council, Royal Society for the Protection of Birds (RSPB), and the LGPDL Environmental Assurance Team.

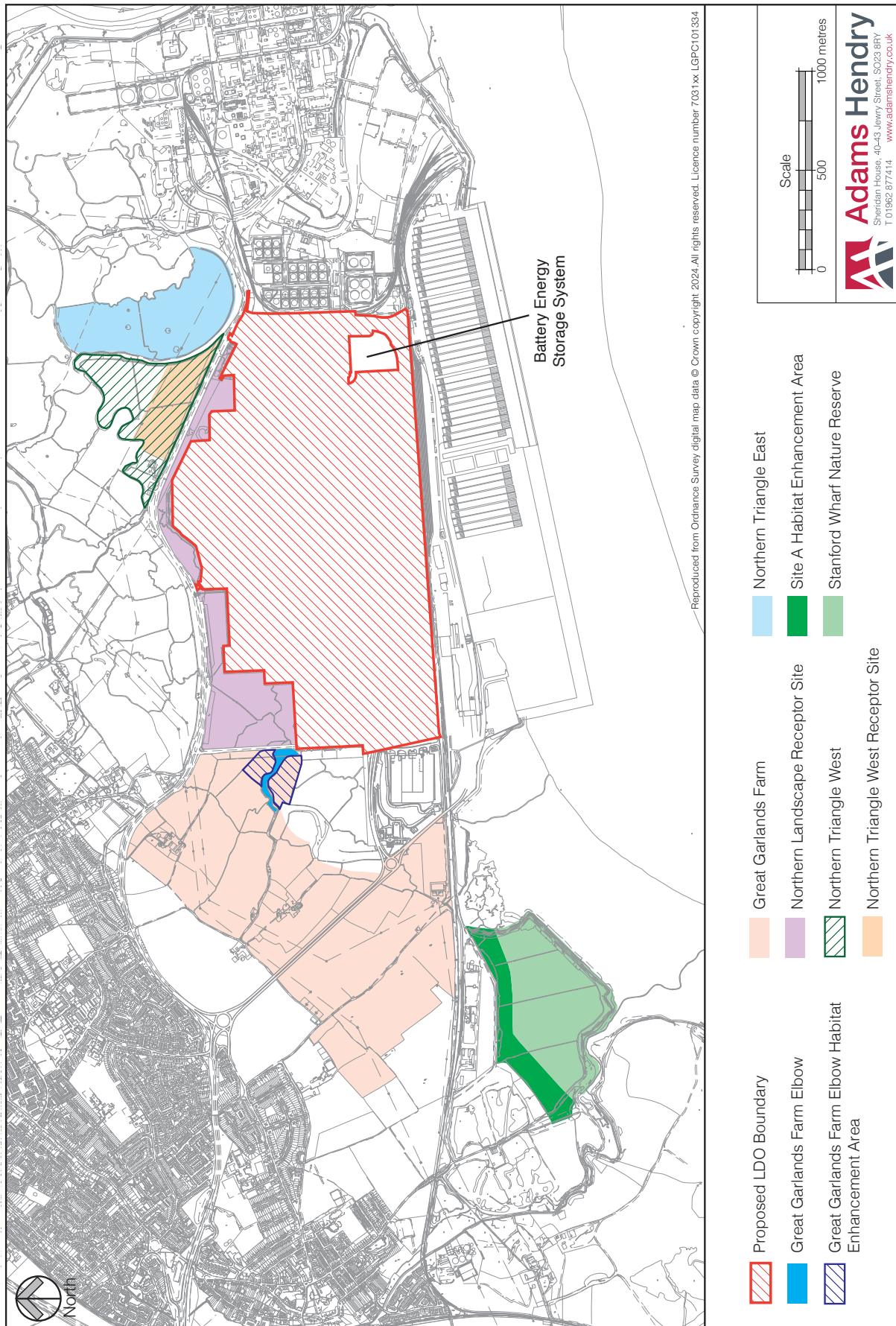
1.13 The EAG shall act in accordance with the terms of reference set out in the constitution included at Appendix 3.

Content of this Document

1.14 This document includes a section on each of the following species groups:

- Great crested newt;
- Wintering birds;
- Breeding birds;
- Invertebrates;
- Water voles; and
- Reptiles.

Figure 1: Off-site Habitat Creation Areas



Chapter 2: Habitat Creation and Management

2.1 Receptor sites at London Gateway have been designed to incorporate both aquatic and terrestrial habitat features, which will be managed to create optimal conditions for great crested newts, and at the same time benefitting other species including invertebrates, reptiles and birds.

2.2 Terrestrial and aquatic habitat enhancement for great crested newts at the receptor sites and habitat enhancement areas has included the creation of coarse grassland areas, scrub areas, dry ditch features, log piles, stone pile hibernacula and ponds. The extent (numbers and areas) of habitat creation works is shown in Table 2.1.

Table 2.1: Extent of habitat creation works for great crested newts at London Gateway receptor sites and habitat enhancement areas

Receptor Site	Habitat	Approximate No. or Area
Great Garlands Farm Elbow Receptor Site (1.35ha)	Ponds	2 (0.05ha)
	Grassland	1.0ha
	Scrub	0.3ha
	Log Piles	8
	Artificial Hibernacula	8
Great Garlands Farm Elbow Habitat Enhancement Area (4.4ha)	Grassland	4.4ha
	Log Piles	4
Northern Triangle East GCN Receptor Site (27ha)	Ponds	24 (0.65ha)
	Grassland	20ha
	Dry Ditches	27
	Scrub	5.5ha
	Log Piles	24
	Artificial Hibernacula	24
Northern Triangle West GCN Receptor Site (~5ha)	Ponds	4 (0.1ha)
	Grassland	3.5ha
	Scrub	1.4ha
	Log Piles	8
	Artificial Hibernacula	8
Northern Landscape Receptor Site (30.5ha)	Ponds	22 (0.59ha)
	Grassland	23.71ha
	Scrub and Trees	6.2ha
	Log Piles	22
	Artificial Hibernacula	22
Stanford Wharf Nature Reserve Enhancement Area (10ha)	Ponds	2 (0.1ha)
	Grassland/Brownfield	9.9ha
	Woodland edge	500m
	Log Piles	2
	Hibernacula	2
Access Road Receptor Site (1.5ha)	Ponds	3 (0.1ha)
	Grassland	1.4ha
	Log piles	5
	Hibernacula	5
Off Site Rail Bend Enhancements (2.08ha)	Scrub	2.08ha
	Log Piles	6
	Hibernacula	6

2.3 The receptor sites shall be managed and maintained in accordance with the measures set out Amendment 14 of the Great Crested Newt Ecological Habitat Management and Maintenance Plan (EHMMP). A summary of the most recent amendment is provided in Appendix 2. The EHMMP is a live document that is subject to amendments through the great crested newt mitigation licencing process with Natural England. The maintenance and management of the receptor sites will be enforced in line with the most update to date great crested newt licence which may change from that outlined in Appendix 2 relevant as of February 2024.

2.4 In addition to the off-site receptor sites, habitat corridors have been created on-site, within the LDO2 boundary. These consist of a swale ditch network, that make up of sloped grassland banks, which transition into dense reed before reaching the open water.

2.5 Although primarily for the benefit of great crested newts, the management of habitats will benefit wintering birds, breeding birds, invertebrates, water voles and reptiles. Only additional habitat creation and management from what is outlined in Table 2.1 and Appendix 2, is specified in each of the species chapters, to avoid repetition.

Chapter 3: Great Crested Newts

3.1 This chapter sets out management, monitoring and surveillance measures for great crested newts, consistent with those set out in Amendment 14 of the Great Crested Newt EHMMP (see Appendix 2) which has been approved by Natural England.

Management and Maintenance

Great Crested Newt Population Monitoring (of the Off Site Habitat Creation Areas)

3.2 Water bodies created for great crested newts shall be monitored in accordance with the conditions outlined in the relevant mitigation licence.

3.3 The survey methodology shall follow that in the English Nature Great Crested Newt Mitigation Guidelines . Six visits shall be conducted each year using the range of standard survey techniques, as appropriate to each water body to provide population size class data for each water body.

3.4 The EHMMP will be kept up to date, with the conditions of any new, granted, mitigation licences.

3.5 A final report of the whole scheme shall be submitted to the EAG. Interim results shall be described in an annual ecology report. LGPDL shall be responsible for ensuring that all monitoring is carried out and reported as required. All monitoring work shall take place on land owned by LGPDL or on land to which LGPDL has access rights.

3.6 As stated in the EHMMP, all 57 ponds will be subject to the standard six visit population monitoring surveys in 2024 with a final round in 2025.

Habitat Monitoring (of the Off Site Habitat Creation Areas)

3.7 Habitats shall be monitored in accordance with the protocols set out in the EHMMP.

3.8 Habitat monitoring and management shall be the responsibility of LGPDL and shall be carried out in until such time as the EAG consider it unnecessary. Action shall be undertaken as appropriate in the event of any negative or sub-optimal results.

Chapter 4: Wintering Birds

4.1 The mitigation, management, monitoring and surveillance measures set out in this section are relevant to all winter bird species present on the site.

Habitat Creation and Management

Northern Triangle West

4.2 A suitable area (minimum 1ha) within the Northern Triangle West shall be stripped to create a series of shallow wader scrapes. The design on the scrapes shall follow the guidance in Appendix 1 wherever possible and Natural England will sign off on the design, and monitoring frequency prior to the works being carried out. Reasonable Endeavours shall be made to ensure that the wader scrapes shall be implemented by December 2026.

4.3 The scrapes and surrounding habitat shall continue to be managed to ensure it is a suitable habitat for Wintering/Breeding Birds by ensuring that grass levels are kept short.

Surveillance and Monitoring of the 'Off' Site Habitat Creation Areas

4.4 The following surveillance and monitoring methods shall be employed on the grazing marshes:

- The grazing marshes in DPW ownership shall be visited twice a month annually, between October and March inclusive, to coincide with a high and low tide cycle. On each occasion, an experienced ornithologist equipped with binoculars and a telescope of appropriate magnification, shall walk over the survey area ensuring that a good view is obtained of each area.
- Waterfowl, primarily waders and ducks shall be counted, though all notable species and large numbers shall be logged.
- Poor weather conditions (e.g. very wet or windy days) shall be avoided as far as possible as this can limit bird activity.
- At the end of the survey, tables of data detailing the results from each visit shall be submitted to the EAG. This shall include date of visit, tide cycle, weather condition, and bird species and numbers. Wintering bird surveys will continue until they are deemed no longer necessary, in consultation with the EAG.
- Surveillance and monitoring of the wader scrapes at the Northern Triangle shall be subject to Natural England's approval.

Chapter 5: Breeding Birds

5.1 The mitigation, management, monitoring and surveillance measures set out in this section are relevant to breeding birds listed in the Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), Species of Principal Importance (SPI), Essex BAP and Red Listed bird species.

Habitat Creation and Management

Park

5.2 Habitat enhancement to benefit breeding birds included the creation of 3.4km of habitat corridors including swales and balancing ponds.

5.3 The swales now colonised with reeds shall be maintained for the benefit of bearded tits, ensuring that some areas of open water are always present. Cutting back of reeds shall only take place outside the breeding bird season (March – September inclusive) and shall be included in the Park maintenance plan. Annual cutting shall be undertaken on a rotational basis where deemed required, and cutting shall not take place throughout the whole site in any one year.

General - Off-Site Habitat Creation

5.4 The habitat surrounding the development (including the Northern Landscape buffer) shall continue to be used to provide nesting habitat for SPI and Red Listed species.

Great Garland Farm

5.5 The Western Grazing Marshes located within Great Garlands Farm shall be managed to ensure that:

- The area is maintained as permanent grassland that shall not be cut for hay or silage before 1st July where possible;
- Fertilizers and pesticides shall only be used in low quantities during nesting bird months;
- Mechanical operations shall not be carried out in the period 1st April to 30th June; and
- Water levels in the ditches and dykes shall be managed to assist in the prevention of these features drying out.

5.6 Seasonal restrictions on hay and silage cutting shall allow the majority of ground nesting birds to raise broods before the habitat is cleared and the restricted application of mechanical operations during the period 1st April to 30th June shall also help to minimise disturbance to breeding birds.

5.7 Six kilometres of selected hedgerows on Great Garlands Farm have been restored by supplementary planting with the aim of creating a variety of dense continuous hedgerows between 2–4m high, 2–3m wide at the base and 1.5m at the top to provide suitable nesting habitat for a variety of birds. Hedgerows located in proximity to areas favoured by wintering waders and waterfowl in the grazing marsh have not been selected for restoration, as these species prefer open habitats.

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5.8 The hedgerows and their understorey have been restored with species of various sizes and longevity, in order that a wide variety of invertebrates are able to populate the habitat. Flowering species have been selected to blossom and set seed/berry at different times during the season providing food for birds at important times of the year.

5.9 Hedges shall be trimmed in January – February, before breeding birds start nesting (trimming shall be avoided between March – August inclusive) and after wintering birds have fed on the berry crop. No hedgerow standard tree shall be felled unless it is a health and safety requirement. Hedge trimming shall be done on a 2 – 3 year rotation as required and the trimming of all hedges in the same year shall be avoided.

Northern Triangle East

5.10 The cutting of specific areas, of the 20ha of coarse tussocky grassland, shall only be undertaken by machine in late summer. In addition to the grassland species, this shall allow a variety of herbaceous species to become established that would not typically be able to set seed in grazed areas, such as thistles (*Cirsium* sp.) and teasel (*Dipsacus fullonum*). This shall benefit breeding birds by:

- Providing a different variety of seeds to the grazed areas that shall form a food source for a variety of farmland species such as linnet, yellowhammer and corn bunting;
- Supporting a wide range of invertebrate species that shall provide a food source for insectivorous species such as Cetti's warbler and skylark;
- The additional cover provided by the taller vegetation shall support a large population of small mammals such as short-tailed voles (*Microtus agrestis*) that are important prey items for barn owls and kestrels (*Falco tinnunculus*); and
- Providing suitable nesting habitat for species such as grasshopper warbler (*Locustella naevia*) and skylark (*Aluda arvensis*).

Northern Triangle West

5.11 Thirteen hectares of Northern Triangle West shall be managed to ensure it is a suitable habitat for wintering/breeding Birds.

5.12 The creation of scrapes described in Section 4 to benefit wintering birds, may also benefit ground nesting waders such as lapwing and redshank.

Northern Landscape Receptor Site

5.13 The planting of scrub and trees over 6.2ha has been undertaken to benefit breeding birds by providing suitable nesting and foraging habitat for a variety of farmland birds. The inclusion of tree species in the planting scheme also provides further nesting opportunities for breeding birds that prefer to nest at higher elevations such as hobby (*Falco subbuteo*).

Surveillance and Monitoring

5.14 The following surveillance and monitoring methods shall be employed:

5.15 Surveys (see 5.21) shall be carried out around construction working areas on the logistics park to locate nest-sites of Schedule 1 species and ground-nesting birds for protection, where required.

5.16 The survey methodology to be employed is the territory (registration) mapping techniques as detailed in 'Bird Census Techniques' (Bibby, C.J., Hill, D.A., Burgess, N.D. and Mustoe, S. (2000).

5.17 A species shall be assumed to be breeding if one or more of the following activities are recorded:

- Territorial/alarm;
- Song;
- Aggressive encounter;
- Occupied nest/nest box/sitting on nest;
- Carrying nest material; and
- Carrying food.

5.18 Observations of birds made in the field shall be recorded directly on to maps to aid the accurate location and recording of the bird's breeding territories. Upon completion of the surveys, the data shall be used to create specific species maps.

5.19 The conservation status of the species recorded as breeding shall be measured against the following criteria, unless superseded, whereby the conservation status will be measured against the new criteria:

- Annex 1 of the EU Birds Directive (Directive 79/409/EEC);
- Schedule 1 of the Wildlife and Countryside Act 1981, (as amended);
- Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities Act, 2006;
- Birds of Conservation Concern 5 (BoCC5) Red List (Stanbury et al., 2021); and
- Essex local BAP species.

5.20 Species specific maps and territory assessment shall only be undertaken for those species that are covered by one or more of the above criteria.

Timings and Frequency

5.21 Prior to and during the construction period on undeveloped plots, breeding bird surveys shall take place annually between March and June inclusive to encompass the breeding season for various species of birds. The results shall be used to identify any potential nesting bird constraints.

5.22 More frequent specific surveys shall be carried out as required around working areas to locate nest sites of Schedule 1 and ground nesting birds. A Natural England Schedule 1 bird disturbance licence may be required for this activity.

5.23 The results of these surveys shall be reported and presented to the EAG as appropriate.

Chapter 6: Invertebrates

6.1 This chapter sets out mitigation, management, monitoring and surveillance measures for fresh water and terrestrial invertebrates.

Habitat Creation and Management

Park

6.2 'Bee banks' have been incorporated into the habitat creation works within on-site habitat corridors. The south-facing banks shall be kept weed-free and free from chemical treatment. They will be valuable to solitary bee and wasp species to create tunnels for breeding in the exposed earth.

6.3 Approximately 3.4km of habitat corridors have been created in the Park for landscaping, drainage and general biodiversity enhancement, which will also be beneficial to invertebrates. The on-site habitat corridors consist of approximately:

- 3.4km of ditches;
- 9.7ha of grassland;
- 2.14 ha of ha of scrub;
- 2.75ha of reedbed;
- 13 log piles; and
- 13 artificial hibernacula.

6.4 Areas of specific habitat for significant invertebrate species such as sparsely vegetated shingle, rough grassland around bushes and scrub and species-rich wildflower grassland, has been incorporated into the boundary habitat areas.

6.5 Around the boundary of the site and along the road network, areas of scrub and shingle have been incorporated which will provide valuable foraging and nesting habitats to many populations of invertebrates. In addition, green landscaped areas have been seeded with nectar-rich plant species and tall grassland mosaics. Where embankments or mounds are constructed bare ground and 'bee banks' have been incorporated and bare surfaces shall provide further burrowing habitat.

6.6 Management of the swales, the reptile and amphibian refuges and the boundary habitat areas has been designed to provide suitable conditions for invertebrates.

6.7 The use of weed killers on gravelled areas along roads etc. shall be reduced to a minimum. Where this management is considered essential, it shall be carried out on rotation throughout the site so that colonisation can take place from adjacent areas;

6.8 The use of insecticides on the service and landscaping areas shall be avoided where possible.

6.9 The Mosaic Landscaping Area shown in Figure 11 of the LDO2 Design Code shall form a mosaic of short turf, bare ground and flowery swards, of no less than 0.8ha, to provide a further valuable foraging and nesting habitats to many populations of invertebrates which will in particular benefit the shrill carder bee (*Bombus sylvarum*).

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6.10 Cutting shall be varied across the site and different parts of the mosaic shall be cut annually. The cutting of different areas at different times shall ensure a varied structure that is important for invertebrates.

Receptor Sites

6.11 A total of 3.4km of habitat corridors consisting of ditches, grassland, shrubs, woodland, log piles and artificial hibernacula have been created in the receptor sites.

Great Garlands Farm Elbow

6.12 Management of the two ponds shall include the removal of accumulated silt and the cutting back of marginal vegetation to ensure minimal shading.

6.13 Aquatic vegetation removal shall be undertaken every few years or when required. The target for management shall be to create a mosaic of densely vegetated areas with intervening areas of open water. The vegetation that is removed shall be taken away from the pond margins to avoid damaging marginal communities of plants and invertebrates.

6.14 The marginal vegetation shall be managed in order to develop a more varied sward and mosaic of habitats. The cutting of the vegetation shall not occur between the months of May and August inclusive.

6.15 If not grazed by cattle, grass cutting shall be varied across the site and different parts of the grassland shall be cut annually. The cutting of different areas at different times shall ensure a varied structure that is important for invertebrates. Areas shall be left uncut to provide a patchwork of small areas of tall, tussocky grass, offering valuable havens for communities of invertebrates which would be harmed by cutting elsewhere.

The use of weed killers and insecticides shall be avoided where possible or otherwise kept to a minimum. Where it is required, it shall be applied by spot treatment only around the base of newly planted shrubs.

Northern Triangle East Receptor Site

6.16 As with Great Garlands Farm Elbow, the use of weed killers and insecticides shall be kept to a minimum and be avoided where possible. Where it is required, it shall be applied by spot treatment only around the base of newly planted shrubs.

Northern Triangle West Receptor Site

6.17 'Bee banks' have been created to a similar design as those incorporated into the Park Area. The south-facing banks shall be kept weed-free and free from chemical treatment.

6.18 The wader scrapes incorporated into Northern Triangle West are expected to provide additional habitat for invertebrates.

Northern Landscape Receptor Area

6.19 Coarse tussocky grassland habitat shall be managed by grazing at a low stock density, or annual cutting. The height of grass cutting, if undertaken, shall be varied across the site and different areas shall be cut at different times to ensure a varied structure that is important for invertebrates.

Monitoring and Surveillance

6.20 A single habitat and species survey shall be undertaken of the Mosaic Landscaping Area shown on figure 11 of the Design Code once the habitat is considered established (approximately 2 to 3 years post creation) in order to review the habitat suitability and progression and whether any remedial works are required or improvements can be made to ensure that the habitat reaches a good condition. Providing reasonable endeavours have been made to create and improve the habitat, further surveys will not be required.

6.21 To achieve good condition , the habitat must pass all four criteria, including the requirements for Good condition within criterion C.

Table 6.1: Criterion required to achieve Good condition for Open mosaic habitats on previously developed land.

Criteria	
A	Vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area.
B	The habitat parcel contains different plant species that are beneficial for wildlife, for example flowering species providing nectar sources for a range of invertebrates at different times of year.
C	Invasive non-native plant species (listed on Schedule 9 of Wildlife and Countryside Act) and others which are to the detriment of native wildlife (using professional judgement) cover less than 5% of the total vegetated area. Note - to achieve Good condition, this criterion must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).
D	The parcel shows spatial variation and forms a mosaic of bare substrate plus: - At least four early successional communities (a) to (i); Communities: (a) annuals; (b) mosses/liverworts; (c) lichens; (d) ruderals; (e) inundation species; (f) open grassland; (g) flower-rich grassland; (h) heathland, (i) pools.

6.22 Further terrestrial and aquatic invertebrate surveys of the on-site habitat corridors within the Phase 2 infrastructure shall be undertaken in 2026 with no further requirement thereafter.

Chapter 7: Water Vole

7.1 This chapter sets out mitigation, management, monitoring and surveillance measures for water voles, unless superseded by future method statements and/or licence conditions which will otherwise be enforced.

Habitat Creation and Management

Park

7.2 At least 3.4km of suitable water vole habitat within the development site has been created. A large proportion of this comprises the boundary ditch and habitat corridors.

Receptor Sites

7.3 As outlined in water vole mitigation licences granted by Natural England, habitat has been created and enhanced across the receptor sites including in Northern Landscape and Northern Triangle West.

Responsive Water Level Management

7.4 Water levels shall be managed where appropriate to ensure that excessive flooding or drying out of water bodies on the receptor sites does not occur. The objective of management of this type shall be to create stable water levels for the majority of the water bodies in the receptor area.

Long-term Water Level Management

7.5 Where appropriate, management shall include de-silting of water bodies. The objective of clearance shall be to maintain the drainage function of attenuation pools and drainage ditches and prevent channels becoming choked with vegetation. Detailed de-silting plans shall be informed by up to date water vole survey information to allow lengths containing active water vole burrows to be avoided.

7.6 De-silting shall be undertaken outside of the water vole breeding season (March to September) unless agreed with Natural England, and machinery shall be selected that is appropriate to the task. Works shall be undertaken from one bank only, and efforts shall be made to minimise impacts upon bankside vegetation by confining dredging activity to the central section of the channels where possible.

7.7 To provide short-term refuges for voles during the works, regular sections approximately 10-20m in length, shall be left untouched. To ensure longer term habitat availability at least a third of the total length of each water body shall remain untouched each year. If appropriate, work shall proceed upstream to allow any dislodged plant propagules or invertebrates to float downstream onto the disturbed substrate and colonise such areas.

Bankside Vegetation Management

7.8 Bankside vegetation management in receptor sites shall be undertaken specifically to ensure the continued availability of suitable habitat for water voles and shall be undertaken outside of the breeding season (March to September) unless agreed with Natural England. This shall also facilitate the emergence of a rich grass sward prior to the winter months.

7.9 Management shall aim to maintain marginal vegetation and a 2 metre strip at the top of the bank, in order that cover and food resources are maintained.

Monitoring and Surveillance

7.10 Monitoring of habitat suitability and water vole field signs shall be undertaken in line with any active mitigation licences that have been granted by Natural England.

Mink Control Measures

7.11 Measures to control American mink shall be implemented at all receptor sites in line with good practice, until such time as the EAG consider it no longer necessary.

7.12 Mink control shall be in line with best practice guidelines; Game Conservancy Trust mink rafts shall be employed in order to facilitate this action. Where necessary trapping of mink shall occur year round. However, it is anticipated that efforts shall be concentrated in early spring (February – April) prior to the mink breeding season when mink are known to particularly target over wintering water voles. Any such programme of control shall be included as part of the management strategy for the receptor site concerned.

Translocation Methodology

7.13 Water voles will be trapped and translocated, where required, in accordance with the guidance in the Water Vole Mitigation Handbook for Development and Other Construction Activities (Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016); The Water Vole Mitigation Handbook for Development and Other Construction Activities. Eds. Fiona Mathews & Paul Chanin), unless guidance is superseded, in addition to guidance from Natural England.

Chapter 8: Reptiles

8.1 The mitigation, management, monitoring and surveillance measures set out in this chapter are relevant to the following reptiles that are protected under the Wildlife and Countryside Act 1981 (as amended):

- Common lizard (*Zootoca vivipara*);
- Slow worm (*Anguis fragilis*);
- Adder (*Vipera berus*); and
- Grass snake (*Natrix helvetica*).

Habitat Creation and Management

Park

8.2 Habitat corridors have been provided throughout all areas of the development. At least 3.4km of boundary ditch and habitat corridors including a linear strip of between 2 - 3m of tall grassland has been provided along all bank sides, the cutting of which shall take place annually in late autumn, to no shorter than 100mm. These corridors also provide suitable habitat for reptiles which may re-colonise the site following completion of the development.

8.3 No deadwood shall be removed from the site, rather it shall be transferred to rot down in refuge areas.

8.4 Refugia suitable for basking have been provided in all refuge areas and vegetation shall be cleared back from them annually.

8.5 Reptile habitat creation has been incorporated into parts of the drainage swale network, providing new hibernation sites in areas distant from the railway. Rough grassland provided for water voles and scrub for breeding birds shall also provide good reptile habitat.

8.6 The management measures set out in Appendix 2 for on-site habitat corridors, shall also be implemented for the benefit of reptiles unless superseded by future method statements and/or licence conditions which will otherwise be enforced.

Off-Site Receptor Sites

8.7 Specific reptile habitat has been created in a 10m buffer strip on the perimeter of the Park (Northern Landscape Receptor Site). The receptor area has been fenced off to prevent reptiles re-entering the development site.

8.8 The management measures set out in Appendix 2 for off-site receptor sites shall also be implemented for the benefit of reptiles.

Protection Measures

Installation of Reptile Exclusion Fencing around the Exclusion Zones

8.9 The exclusion fence which forms the perimeter of the Park shall be maintained to prevent reptiles re-colonising the Park until Natural England deem it is no longer necessary through the relevant licences.

8.10 When required, removal of the exclusion fencing shall be done under the supervision of an ecologist and outside the reptile hibernation period, i.e. between the months of April to September inclusive. An ecologist shall also be present during site clearance in case any reptiles are found.

**Appendix 1:
RSPB Information and Advice Note, 2003**

Information and advice note

Version 1 –
June 2003

Compiled by: J. Day, R. Sheldon, N. Symes, G. White, R. Winspear
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Creating wader scrapes and flashes on farmland.

Summary

Several species of wading bird of conservation concern use farmland on which to breed. They may nest in spring crops and tillage on arable land, in wet grassland or in-bye pasture. However, drainage and improvement of grassland to provide better grazing and forage has greatly reduced suitable areas for feeding and nesting. An opportunity to offset some of the declines in breeding waders on farmland is possible through the creation of scrapes and wet flashes with sparse marginal vegetation. These can provide important feeding areas for adult and young birds alike, and can help a range of other important species of bird throughout the year. Table 1 lists the birds likely to benefit by the creation of scrapes and flashes.

Table 1: Birds of conservation concern likely to benefit from the creation of a scrape.

Species	BoCC status	Requirements for nesting	Requirements for feeding
Curlew	Amber	Tussocky damp grassland or heathland.	Pastures, damp fields, particularly with wet flushes
Lapwing	Amber	Short grass (0- 12cm) with some tussocks, spring tillage or bare ground	Short vegetation and wet mud in damp grassland and water margins,
Redshank	Amber	Short (5-15 cm) damp grassland with tussocks, close to standing water.	Damp grassland, marginal vegetation, mud and shallow water.
Snipe	Amber	Wet pastures and boggy heaths with a tussocky sward of 10-30 cm.	Soft damp ground, or shallow muddy bottomed pools. Close to cover.
Oystercatcher	Amber	Short grassland, bare ground or shingle banks, all with open views.	Short grassland, and marginal vegetation with soft damp ground to probe for food.
Ringed Plover	Amber	Bare stony ground including spring tillage	Soft damp mud or dry muddy areas.
Teal	Amber	Tussocky marsh vegetation near shallow water.	Aquatic invertebrates and weed seeds.
Shoveler	Amber	Tussocky marsh vegetation near shallow water.	Aquatic invertebrates and weed seeds
Water Rail	Amber	Tall dense clumps of marsh vegetation in shallow standing water.	Invertebrates
Turtle Dove	Red	Dense scrub and thick tall hedges often in climbers.	Weed seeds especially around short sparse vegetation.
Yellow Wagtail	Amber	Damp meadows or cereal fields	Insects from grazed pasture and short, sparse marginal vegetation around pools.
Song Thrush	Red	Trees, hedges or scrub.	Invertebrates, especially earthworms and snails, and, in autumn, fruit.
Starling	Red	Trees, buildings or nest boxes	Insects and seeds from grazed pasture and short, sparse marginal vegetation around pools.
House Sparrow	Red	Buildings or nest boxes, hedges or scrub	Insects and weed seeds.
Tree Sparrow	Red	Trees, buildings or nest boxes	Insects and weed seeds.
Linnet	Red	Thick thorny hedges. Also, scrub and brambles on grassland and waste ground.	Insects and weed seeds.
Yellowhammer	Red	Thickets and tall thick grass.	Insects and weed seeds.
Reed Bunting	Red	Ditch edges, crops and set-aside. Occasionally in hedges.	Insects and weed seeds.
Corn Bunting	Red	Crops, set-aside and field margins.	Insects and weed seeds.

BoCC= Birds of Conservation Concern: 2002-2007 (RSPB) Red = high concern, Amber = medium concern

The Countryside Stewardship Scheme, operated in England by DEFRA, provides payments to farmers to improve and extend wildlife habitats, including scrapes. This Information and advice note provides guidance on how to create and manage shallow scrapes and wet flashes for wetland birds on farmland. The landscape feature likely to be most appropriate to scrapes within the Countryside Stewardship Scheme is waterside land. Where there are no conflicts with other priorities, scrapes could also be considered for arable land, low lying coastal land, degraded old meadows and pasture, and for upland.

Assessing the habitat

Scrape creation should only be attempted in suitable areas. These are often in low-lying poorly drained areas of fields, where as a result, crop yield and productivity is low. It is important to consider all the issues before proceeding, and where necessary, specialist advice should be sought. Table 2 identifies the key issues needed to be assessed.

Table 2 Key issues to be considered in scrape creation

Issue	Rationale	Points to consider
Geographic location	Breeding waders have been lost from large areas of the country. Newly created habitat may be only slowly colonised by target species.	<ul style="list-style-type: none"> • Target species should ideally be present in the locality to enable colonisation.
Site suitability	Waders generally require unenclosed habitats with an open and tussocky vegetation structure.	<ul style="list-style-type: none"> • The site should be unenclosed, being relatively free of hedgerows, trees and other screening. • Is the site accessible for grazing or cutting management required to maintain the habitat structure.
Hydrology and soils	Adult waders and their chicks feed in damp soil and shallow water with muddy margins	<ul style="list-style-type: none"> • Can shallow water be maintained throughout the spring and early summer? (water control structures will be needed to manage water levels in some cases). • Are the soils suitable? Free draining soils are generally unsuitable unless the water table is close to the surface. • Have the water flows entering or leaving the area been identified and quantified. • Consult with appropriate authorities to ensure there is no conflict when altering drainage.
Potential conflict with other features:	A scrape should NOT be created in areas where there is a conflict of interest, for instance where there is: <ul style="list-style-type: none"> • Environmental • Historic and archaeological, or • Cultural landscape interest. 	<ul style="list-style-type: none"> • Does the land have existing conservation value; eg a wet marsh or species rich flower meadow? • Is the land a Scheduled Ancient Monument, other archaeological site, or ridge and furrow field system? • Are there existing public rights of way?

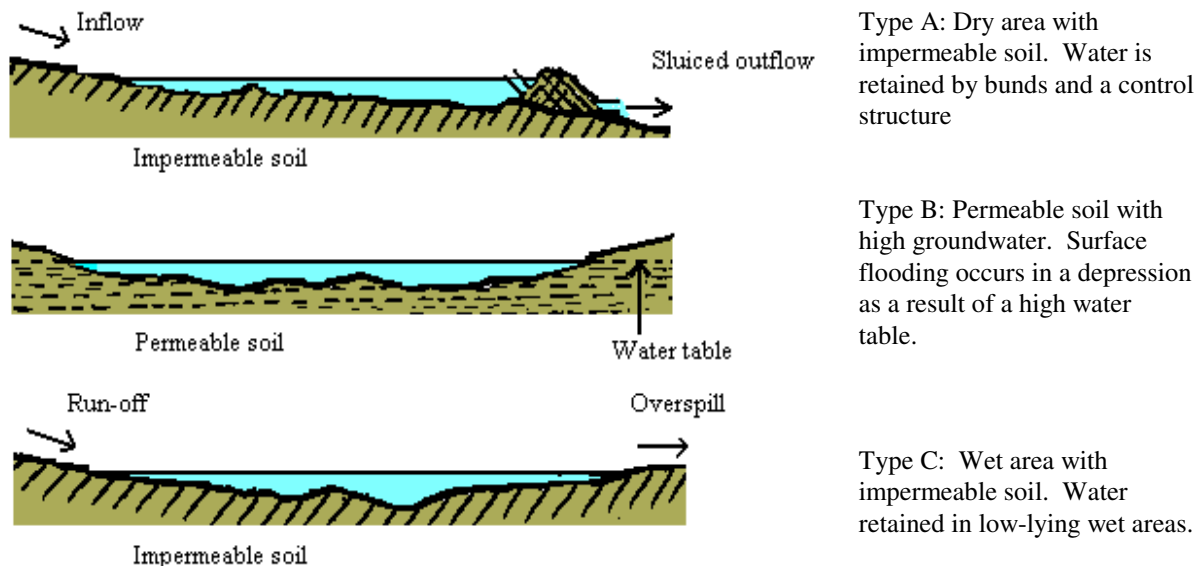
Creating the scrape

Scrapes may be located in a range of soil and hydrological conditions (see Figure 1) but most frequently will be on relatively level open land, preferably seeking a known damp area where water lies naturally on impermeable soils. Creating a scrape is often simply a case of reversing or reducing the function of drainage in a particular area, in others water may be directed to a chosen location. Assess the soils and drainage patterns for the site and if necessary, block any drains that take water away from the scrape area or redirect others to drain into it. Consider any likely impacts created up-stream by blocking or diverting drainage and consult with the necessary statutory agency (eg The Environment Agency in England and Wales) for further advice. In potentially difficult situations, it may be necessary to assess rainfall against evapo-transpiration and volumes of water flow throughout the critical spring period, using local climate data from the Meteorological Office. Expert assistance may be required at this stage.

- There is no minimum size of scrape but 1 hectare will provide an adequate amount of feeding habitat.
- Several small flashes could be created instead of one larger one, and will provide more marginal habitat, but may also require more maintenance.
- Sculpting a convoluted, or sinuous, edge to the scrape will increase available feeding area and is likely to provide shelter in windy weather.
- Water depths in the scrape in early spring should typically be between 0–25 cm over half of the area and the remainder 25-50 cm.
- Ideally locate in a natural depression; otherwise, earthmoving, undertaken during a dry period, may be required to achieve the correct depth.
- A very gentle slope with an uneven finish will allow shallow wet pools to remain longer within the scrape and allow a gradual exposure of the feeding surface.

Any spoil material that is the by-product of excavating the scrape should ideally be removed away from the area. Alternatively, the spoil could be used to construct a bund around the downstream edge of the scrape. Note that this may limit the openness of the scrape and reduce its attractiveness to birds. Bunds need to be carefully engineered so that they are stable and impervious. It is very important to consult with the appropriate authorities to ensure that designs are appropriate and storage capacities are not exceeded, as there are serious safety considerations¹.

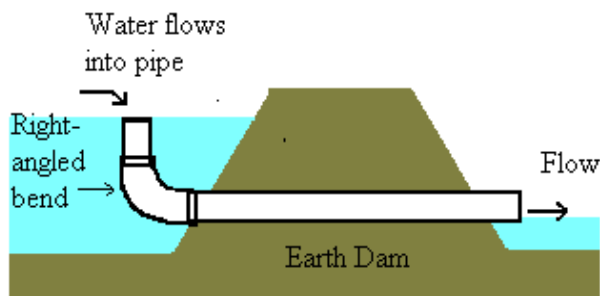
Figure 1 Types of scrape



Managing water levels

The provision of shallow water and muddy margins are important to feeding waders, and ideally, the water levels in a scrape should be controllable. Without the ability to control the inflow or outflow of water, the scrape may dry out too soon in early dry weather, while a wet spring may result in levels remaining too high. A simple water control device, or sluice, can be installed to help manage levels.

Figure 2: Diagram of a pipe sluice.



The most cost effective sluice is likely to be constructed with a length of plastic piping, either rigid pipe with a swivel end or flexipipe, laid through an earth dam in the outflow ditch or bund (Figure 2). Each end extends beyond the dam, and the upstream end is held at the desired level. Flexipipe will normally need weighting to keep the lip submerged and require a length of rope to hold the upstream end at the desired level. Adjusting the upstream end (by swivelling the pipe or raising or lowering the rope) will set the desired water levels.

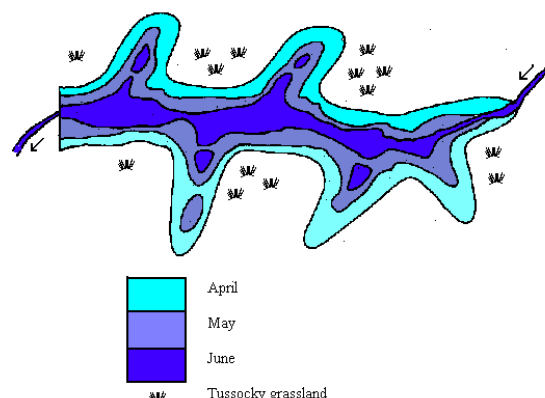
Other options are available, for example: drop-board sluices. These are more costly in time and resource to install. Details of these can be found in Reedbed Management for commercial and wildlife interests (see further reading).

¹ Note: Impounding volumes of water in excess of 25,000m³ above ground falls under 1975 Reservoir Safety Provisions Act. Design and construction under control of DEFRA Panel Engineer and inspected annually. (A bunded scrape with an average depth of 25cm would need to be bigger than 10 ha to exceed this)

The scrape should naturally reduce in depth slowly during the spring through evaporation. Alternatively, depending on weather, let water out of the scrape slowly (1cm depth at a time) to create a muddy fringe. If the sluice is not connected to an existing watercourse, a soak away will need to be created behind the dam to take the water drawn off through the sluice.

In Figure 3 the outer line represents the extent of the open water in early April, ideally surrounded by short grassland with up to 20% tussocky grassland. The middle line represents the shrinking area of water by the end of May and the inner by the end of June. Annual weeds will have grown on the mud and set seed. By August the scrape should be all but dry and ready for management.

Figure 3: Hypothetical scrape, showing receding area of water throughout spring and early summer.



Feeding requirements

Waders and their chicks require a constant supply of high protein invertebrate food throughout the breeding season. A rich supply of insects will also help other birds such as Reed Bunting and Yellow Wagtail, which rely heavily on insect food for their chicks. The conditions created by the periodic flooding and drying of ephemeral water bodies attract a limited but specialised range of invertebrates. These often occur in very high numbers because of reduced competition and few predators. The water body is often nutrient rich because of the levels of organic matter, which encourages high rates of invertebrate reproduction, particularly of midge larvae, which are a valuable food source for waders and their chicks.

As the water levels in the scrape are lowered, or dry naturally, annual plants will germinate on the margins; these provide additional food and cover for chicks. The seeds they produce will accumulate around the edges of the pool and will provide winter food for waterfowl as well as a variety of finches and buntings that come to the shallow margins to drink and bathe.

Maintenance

It will be necessary to manage colonising plants, such as rushes or grasses, to prevent them from choking the whole area. Patchy cover of marginal plants will provide cover for young chicks, but if this exceeds more than 25% of the scrape, then management should be considered. Grazing with livestock at a moderate intensity is ideal as it a) creates a mosaic of tussocks and short turf used for nesting by a range of wader species, b) augments the invertebrate population of the margin through dunging. If grazing is not possible, cutting or cultivation could be used. Cutting should be timed for suitably dry periods after the end of the breeding season, usually between August and October. It is not necessary to remove the cuttings, as they will initially provide a source of seed food and later, as it decomposes, a source of insect food for birds.

Following summer/autumn management, re-flooding in winter will kill colonising perennial vegetation such as grass. Annual weeds, which germinate each year on the muddy margins as the water retreats, are important as they provide a large supply of seeds for dabbling duck as well as number of passerines such as Yellowhammer, Reed Bunting and Linnet.

Further reading²

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- Street, M., (1985) *The Restoration of Gravel Pits for Wildlife*, ARC/Game Conservancy Trust

² A complimentary set of Information and Advice Notes on the Ecology and Conservation for tree sparrow, yellowhammer, corn bunting, turtle dove, linnet, lapwing and yellow wagtail, all listed in Table 1, can be obtained from RSPB Conservation Management Advice. There are also available, leaflets for lowland and upland farmland habitats and species. Contact: richard.winspear@rspb.org.uk or telephone: 01767 680551

Case study sites

Old Hall Marshes, RSPB reserve

Old Hall Marshes nature reserve was acquired by the RSPB in 1984 and is run as a working farm as well as a nature reserve composed of several habitat types, including 70ha of improved grassland. The primary management of the reserve is as a traditional grazing marsh, providing sheep and cattle grazing to a number of local graziers.

The current 'improved' grassland is primarily managed for wintering Brent Geese by tightly grazing with sheep and cattle. A low-lying 'creek' feature, a remnant of the old saltmarsh grassland, retained water throughout the winter months but quickly dried out in the spring, minimising any benefit for breeding waders. By controlling water levels, this feature has been enhanced and maintained as a shallow scrape throughout the spring to provide feeding opportunities for breeding waders.

A windpump was installed in 2000 to lift water 2.0 m from the adjacent ditch and circulate through the scrape. Installation costs amounted to £9,000, while ongoing maintenance costs are negligible. Water can be let out of the scrape through a simple sluice mechanism of a 300 mm plastic pipe with a 90 degree 'turner' joint on the upward end. This enable precise water level control on the scrape by turning the joint to the required angle.

Breeding waders have increased from one or two pairs to 15 pairs of Lapwing and eight pairs of Redshank in 2002.



The wader scrape at high winter level, showing shallow pools and long shorelines

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Newsham Hall Farm, North Yorkshire

This 330 ha farm supports a diverse range of lowland farmland habitats, including a newly created 31ha wetland complex of open water, fen and grassland.

After discussions with relevant agencies, the landowner was able to reinstate the wetland with a Countryside Stewardship grant to support the capital and revenue costs (£280 per ha for arable reversion to grassland and an annual re-wetting payment of £60 per ha for raised water levels)

Restoration was relatively simple, with the existing drainage infrastructure (an Archimedes Screw sub-soil system) switched off. This allowed ground water to rise, creating an area of shallow water (0.2 – 0.5m deep), surrounded by newly established wet grassland and hay meadows.

This attracts several hundred wintering waders (eg lapwing and golden plover), wildfowl and passage birds. Once the water management and new grasslands are established, breeding wader densities are expected to be high. Breeding reed buntings, sedge warblers and snipe have quickly colonised the wetland fringes.

Water level control – in the first year, water levels remained very high all year, with no lowering of levels during the breeding season to create good wader habitat. A newly installed flexi pipe system on the main ditch should now give the appropriate level of water level control

Grazing management – During the first year, there was no grazing in the wetland compartments. Agreements are now in place to deliver low-intensity cattle grazing year round, possibly using native hardy cattle breeds.

Condition monitoring –regular site visits from DEFRA and bird monitoring from a local volunteer should ensure site management continues to evolve to maximise the site’s biodiversity delivery.

Another CSS agreement is now in place, to convert an adjacent 40ha of arable land, into fenland and wet grassland. A bird hide overlooking the existing wet grassland area is proposed and the farm may be used as a demonstration farm in the future.

Contact: nick.mason@rspb.org.uk

Great Bridgeford Hall Farm, Staffordshire.

Under the Countryside Stewardship Scheme, 10ha of floodplain grassland along the River Sow is being managed as extensively grazed damp pasture. Through the RSPB Waders of Wet Meadows project, CSS has been actively promoted and targeted at floodplain sites in Staffordshire, Shropshire and Cheshire. Great Bridgeford Hall Farm came under CS management because of this project.

To introduce in-field wet features and raised water levels, sub surface drains on the site have been exposed, creating shallow, well-profiled, linear scrapes/ditches.

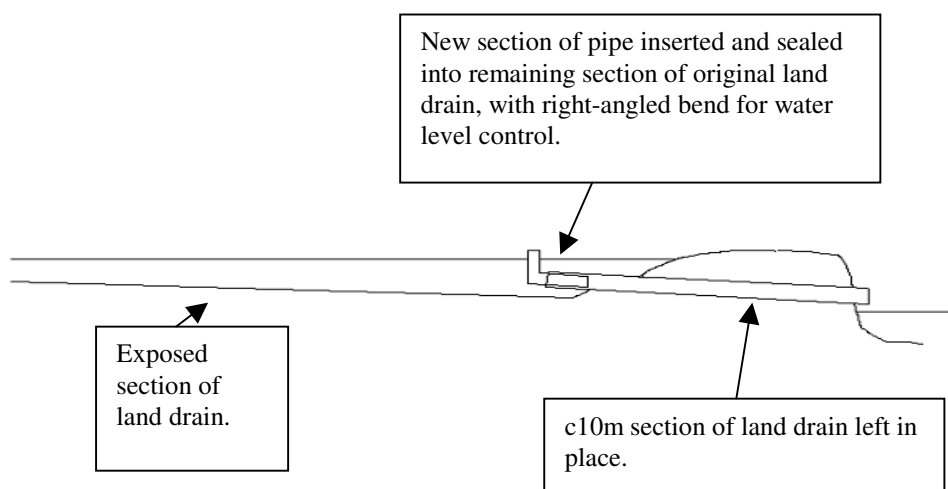
The final 10m of the drain, before they enter the River Sow, have been left intact. Where the remaining length of drain enters the exposed section, a right-angled-bend section of pipe has been inserted and sealed with the remaining land drain, to provide a system of control on water levels held in the exposed sections.

All exposed sections have been kept as shallow as possible, with gentle profiles. The result has been a network of linear, shallow scrapes/ditches across the site, providing plenty of shallow, muddy, margins. The right-angled bend arrangement provides water level control.

As well as creating the in-field wet features, the system has also resulted in raised water levels and some splash flooding across the field surface, away from the scrapes/ditches themselves.

Elsewhere on the site, land drains have been left in place, but blocked using commercially available pipe test plugs.

Longitudinal cross section of new ditch/scrape arrangement.



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**Appendix 2 :
Summary of London Gateway Great Crested Newt Ecological
Habitat Management and Maintenance Plan (Amendment 014).
DP World London Gateway (September 2022)**

Appendix 2 – Summary of London Gateway Great Crested Newt Ecological Habitat Management and Maintenance Plan (Amendment 014). DP World London Gateway (September 2022)

Creation of Favourable Habitat Features

A2.1 Terrestrial and aquatic habitat enhancement for great crested newts at the receptor sites and habitat enhancement areas has included the creation of coarse grassland areas, scrub areas, dry ditch features, log piles, stone pile hibernacula and ponds. The extent (numbers and areas) of habitat creation works is shown in Table A2.1.

Table A2.1: Extent of habitat creation works for great crested newts at London Gateway receptor sites and habitat enhancement areas

Receptor Site	Habitat	Approximate No. or Area
Great Garlands Farm Elbow Receptor Site (1.35ha)	Ponds	2 (0.05ha)
	Grassland	1.0ha
	Scrub	0.3ha
	Log Piles	8
	Artificial Hibernacula	8
Great Garlands Farm Elbow Habitat Enhancement Area (4.4ha)	Grassland	4.4ha
	Log Piles	4
Northern Triangle East GCN Receptor Site (27ha)	Ponds	24 (0.65ha)
	Grassland	20ha
	Dry Ditches	27
	Scrub	5.5ha
	Log Piles	24
	Artificial Hibernacula	24
Northern Triangle West GCN Receptor Site (~5ha)	Ponds	4 (0.1ha)
	Grassland	3.5ha
	Scrub	1.4ha
	Log Piles	8
	Artificial Hibernacula	8
Northern Landscape Receptor Site (30.5ha)	Ponds	22 (0.59ha)
	Grassland	23.71ha
	Scrub and Trees	6.2ha
	Log Piles	22
	Artificial Hibernacula	22
Stanford Wharf Nature Reserve Habitat Enhancement Area (10ha)	Ponds	2 (0.1ha)
	Grassland/Brownfield	9.9ha
	Woodland edge	500m
	Log Piles	2
	Hibernacula	2
Access Road Receptor Site (1.5ha)	Ponds	3 (0.1ha)
	Grassland	1.4ha
	Log piles	5
	Hibernacula	5
Off Site Rail Bend Enhancements (2.08ha)	Scrub	2.08ha
	Log Piles	6
	Hibernacula	6

Management and Maintenance of Aquatic and Terrestrial Habitats

The management and maintenance measures set out below shall be implemented in the off-site receptor sites and habitat enhancement areas where applicable according to Table A2.1. Habitat management measures for the on-site habitat corridors shall be implemented.

Management and Maintenance of Aquatic Habitat

Management of water levels

- A2.2 The measures set out in Table A2.2 to control pond water levels shall be implemented.

Table A2.2: Management of water levels

Objective	Minimum summer water level for ponds shall not be below 50% of maximum planned depth.
Management	Ponds shall be topped up as necessary using mains water supply outlets currently available close to the ponds. Mains water is preferred since it is free from fish and fish eggs.
Monitoring	The water level in ponds shall be monitored annually in June.
Remedial Action	Top up water levels. Put liners into currently unlined ponds if necessary.

Removal of Excess Aquatic Vegetation

- A2.3 Aquatic vegetation shall not be removed from more than 60% of the pond area. The measures set out in Tables A2.3a to manage aquatic vegetation for a variety of pond types and Table A2.3b to manage aquatic vegetation within the on-site habitat corridor ditches shall be implemented.

Table A2.3a: Management of aquatic vegetation

Location	Habitat creation sites
Objective	10% to 50% open water
Management	Removal of excess vegetation shall take place annually in January to give 10% to 50% open water. Vegetation shall be search for newts, placed on the pond edge for 1-2 days and then removed from the vicinity of the pond.
Monitoring	The percentage cover of aquatic vegetation in ponds shall be recorded annually in June.
Remedial Action	If vegetation is excessive, it shall be removed to give 35% to 60% open water. If vegetation is insufficient appropriate aquatic species shall be planted.

Table A2.3b: Management of aquatic vegetation

Location	On site habitat corridor ditches
Objective	10% to 25% open water
Management	Removal of excess vegetation shall take place annually in January to give 10% to 25% open water. Vegetation shall be searched for newts, placed on the ditch edge for 1-2 days and then removed from the vicinity of the pond.
Monitoring	The percentage cover of aquatic vegetation in ditches shall be recorded annually in June.
Remedial Action	If vegetation is excessive, it shall be removed to give 35% open water. If vegetation is insufficient appropriate aquatic species shall be planted.

Removal of Excess Marginal Vegetation

- A2.4 The measures set out in Table A2.4a to manage marginal vegetation for different pond types and the measures in Table A2.4b to manage marginal vegetation within the on-site habitat corridor ditches shall be implemented.

Table A2.4a: Management of marginal vegetation

Location	Habitat creation sites
Objective	Unmanaged marginal vegetation over 25% to 50% of pond margin. Managed marginal vegetation over 50% to 75% of pond margin. No encroachment of marginal vegetation beyond 3 metres inward of plotted or original pond edge.
Management	Marginal vegetation shall be cut and removed annually in January for 50% to 75% of the pond margin. Planting of marginal vegetation shall take place if insufficient establishment has been achieved three years after construction.
Monitoring	Record species diversity and % encroachment
Remedial Action	Cutting and removal of marginal vegetation

Table A2.4b: Management of marginal vegetation

Location	On site habitat corridor ditches
Objective	Maintain marginal vegetation and a 2 metre strip at the top of the bank with optimal cover to benefit water voles and GCN.
Management	An annual cut and rake shall take place in September and October.
	Monitor status of vegetation annually in June.
Remedial Action	Alteration of management regime.

Invasive Non-Native Plant Species

A2.5 The measures set out in Table A2.5 to manage invasive non-native plant species in all pond types at all habitat creation sites and within the on-site habitat corridor ditches shall be implemented.

Table A2.5: Management of invasive non-native plant species

Location	All Pond types at all habitat creation sites and on site habitat corridor ditches
Objective	0% non-native plant species
Management	If detected, non-native plant species shall be removed from ponds as soon as possible. The main invasive species likely to be encountered are Australian swamp stonecrop (<i>Crassula helmsii</i>), parrot's feather (<i>Myriophyllum aquaticum</i>) and floating pennywort (<i>Hydrocotyle ranunculoides</i>). The removed vegetation shall be searched for newts, placed on pond/ditch edge for 1-2 days and then removed from the vicinity of the pond or ditch.
Monitoring	Monitoring shall take place annually in June for the presence of invasive non-native plant species.
Remedial Action	Immediate removal of non-native species.

Shading Scrub

A2.6 The measures set out in Table A2.6 to manage shading scrub in all pond types at all habitat creation sites and within the on-site habitat corridor ditches shall be implemented.

Table A2.6: Management of shading scrub

Location	All Pond types at all habitat creation sites and on site habitat corridor ditches.
Objective	0% to 25% scrub shade
Management	Removal of scrub around pond/ditch margins to 25% or less in January each year shall take place.
Monitoring	The amount of shading scrub in ponds shall be monitored annually in June.
Remedial Action	Scrub shall be removed if shading is more than 25% of the pond/ditch margin.

Removal of Fish

A2.7 The measures set out in Table A2.7 to manage fish in all pond types at all habitat creation sites shall be implemented.

Table A2.7: Management of fish

Location	All Pond types at all habitat creation sites
Objective	Absence of fish
Management	Ponds shall be checked for the continued hydrological isolation of water bodies and for potential sources of fish colonisation.

Monitoring	Monitoring for the presence of fish shall be carried out annually in June. Monitoring shall be carried out by visual search of the shallow pond margins and by netting.
Remedial Action	If fish are found to be present then action shall be taken to remove them. Temporary draining and drying of ponds during winter months. Subject to approval by the EAG, it is proposed that pond draining and drying shall only be carried out if the presence of fish has been confirmed.

Accumulation of Silt

- A2.8 The measures set out in Table A2.8 to manage silt in all pond types at all habitat creation sites and within the on-site habitat corridor ditches shall be implemented.

Table A2.8: Silt Management

Location	All Pond types at all habitat creation sites and on site habitat corridor ditches.
Objective	Sediment layer no greater than 0.5 metres above original pond/ditch base.
Management	Vegetation (including roots) shall be removed from ponds as described in Table 3a, 3b, 4a and 4b or the remedial actions shall be reverted to.
Monitoring	Monitor silt depth annually in June
Remedial Action	Excavation of the existing pond/ditch or the creation of a new neighbouring pond if possible

Control of Pollution

- A2.9 The measures set out in Table A2.9 to manage pollution in all pond types at all habitat creation sites and within the on-site habitat corridor ditches shall be implemented.

Table A2.9: Pollution Management

Location	All Pond types at all habitat creation sites and on site habitat corridor ditches.
Objective	Absence of pollution
Management	Check for pollution sources and stop if possible.
Monitoring	The monitoring for the presence of obvious signs of pollution shall take place annually in June. pH and salinity levels shall be recorded.
Remedial Action	Terminate or divert pollution at source.

Management and Maintenance of Terrestrial Habitat

Grassland Habitat

- A2.10 The measures set out in Table A2.10a-A2.10e to manage grassland in the receptor sites and habitat enhancement areas shall be implemented. The measures set out in Table A2.10f to manage grassland in the onsite habitat corridors shall be implemented.

Table A2.10a: Grassland Management

Location	Northern Triangle East receptor site, Access Road receptor site, Great Garlands Farm Elbow receptor site and Northern Triangle West receptor site
Objective	Rank coarse grassland terrestrial habitat coverage over minimum 65% of site.
Management	The area shall be cut no more frequently than once every three years. Cutting shall be carried out by machine in the late summer to minimum of 100mm and raked.
Monitoring	The grassland shall be monitored annually in June and during GCN survey visits in April/May. Sward height and scrub invasion shall be recorded.
Remedial Action	Removal of natural scrub regeneration to <10% coverage in grassland area.

Table A2.10b: Grassland Management

Location	Northern Landscape receptor site main grassland areas, Great Garlands Farm Elbow Habitat Enhancement Area
Objective	Tussocky grassland with sward height in excess of 100mm over minimum 75% of site.
Management	The area shall be cut annually or cattle-grazed at low stocking density (see table A3.11 for stock density)
Monitoring	The grassland shall be monitored annually in June and during GCN survey visits in April/May by an ecologist. Sward height and scrub invasion shall be recorded. Sward height shall be measured at least once per month by an ecologist if managed by grazing.
Remedial Action	If sward height is less than 100mm over more than 25% of the area then stocking density shall be reduced. Removal of natural scrub regeneration to <10% coverage in the grassland area.

Table A2.10c: Grassland Management

Location	Stanford Wharf Nature Reserve Habitat Enhancement Area
Objective	Hay meadow coverage at least 80% of the site.
Management	The hay meadow (covering at least 80% of the site) shall be cut annually in late summer. Cutting shall be by machine and no lower than 100mm. Cuttings shall be raked and piled within the site.
Monitoring	The hay meadow shall be monitored annually in June. Sward height and scrub invasion shall be recorded.
Remedial Action	Annual cuts shall cease if the habitat created is deemed to be unsuitable for newts. Removal of natural scrub regeneration to <10% coverage in the grassland area.

Table A2.10d: Grassland Management

Location	Receptor sites grassland areas within pond stock fences.
Objective	Rank coarse grassland terrestrial habitat coverage over 100% of area within fences not occupied by hibernacula and log piles
Management	Grassland shall not be cut. Scrub shall be removed if causing die back of grass.
Monitoring	The grassland area shall be monitored annually in June and during GCN survey visits in April/May. Sward height and scrub invasion shall be recorded.
Remedial Action	Scrub shall be removed if shading causes die back of grassland or causes pond shading (refer to Table 3.6).

Table A2.10e: Grassland Management

Location	Stanford Warren and Marshes SINC
Objective	Maintain existing suitable terrestrial habitat for great crested newts.
Management	Minimal intervention management.
Monitoring	Monitored annually in June. Sward height and scrub invasion shall be recorded.
Remedial Action	If habitats are found to be unsuitable for great crested newts, Thurrock Borough Council shall be informed and appropriate management shall be prescribed and implemented.

Table A2.10f: Grassland Management

Location	Onsite habitat corridors
Objective	Hay meadow along habitat corridor verges
Management	Annual cut in late summer by machine no lower than 100mm. Cuttings shall be raked and removed.
Monitoring	Monitored annually in June. Sward height and scrub invasion shall be recorded.
Remedial Action	Annual cuts shall be ceased if habitat created is deemed to be unsuitable for newts.

Table A2.11: Example of maximum stock density for different durations of cattle grazing.

Grazing duration (days per year)	75	100	150	300
No. animals per hectare	1	0.75	0.5	0.25
No. animals on Northern Landscape receptor site (~25ha of grassland)	25	18	12	6
No. animals on Great Garlands Farm Elbow Habitat Enhancement Area (~4.4ha of grassland)	4	3	2	1

Note: Figures have been rounded to create whole numbers.

Dry Ditch Landscape Features

- A2.11 The measures set out in Table A2.12 to manage dry ditch features that have been built between the ponds on the Northern Triangle East receptor site shall be implemented.

Table A2.12: Management of dry ditch features

Location	Northern Triangle East
Objective	Linear habitat of rank coarse grassland with up to 25% natural scrub regeneration forming habitat corridors linking ponds.
Management	The grass shall not be cut and natural scrub regeneration in excess of 25% area coverage shall be removed.

Monitoring	Monitoring shall take place annually in June and the percentage of scrub cover shall be recorded.
Remedial Action	Scrub removal

Scrub

A2.12 The measures set out in Table A2.13 to manage planted scrub areas shall be implemented.

Table A2.13: Management of planted scrub areas

Location	All areas of planted scrub
Objective	Maintain scrub cover over designated areas (20% of GGFE, NTE & NTW, 7% of the NLRs as part of the structural landscape zone 1A & 1B and 2.08ha on the off site rail bend) with understorey of high value as terrestrial habitat for newts.
Management	No management of the scrub vegetation shall take place in the first five years. If necessary, weed growth at the base of young plants shall be cut by strimming to reduce competition. After five years scrub areas shall be assessed and following assessment, management shall be implemented to improve the value of these areas for the species. Management at this stage may include coppicing, piling of coppice brush and additional log piles.
Monitoring	Monitoring shall take place annually in June. Any loss (%) of planted scrub shall be mapped and recorded.
Remedial Action	Replacement of dead scrub planting. Enhancement of understorey layer with deadwood.

Log Piles

A2.13 The measures set out in Table A2.14 to manage log piles at all receptor and habitat enhancement areas shall be implemented.

Table A2.14: Management of log piles

Location	All receptor and habitat enhancement areas
Objective	Partially rotted, intact, log piles.
Management	The log piles shall be replaced or additional logs deposited to maintain the pile at a minimum of 75% of the original dimensions.
Monitoring	Monitoring shall take place annually in June.

Remedial Action	Reconstruction or replacement.
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Artificial Hibernacula

A2.14 The measures set out in Table A2.15 to manage artificial hibernacula shall be implemented.

Table A2.15: Management of artificial hibernacula

Location	All receptor and habitat enhancement areas
Objective	Intact stone piles of no less than 90% of original dimension.
Management	The artificial hibernacula shall be managed by replacing or depositing additional stones to maintain the original dimensions.
Monitoring	To be checked in April, June and September, increased from a single visit to account for potential trampling when stock fencing removed from some ponds.
Remedial Action	Replacement or reconstruction.

**Appendix 3:
EAG Constitution**

Appendix 3– EAG Constitution

Environmental Advisory Group Constitution

1. Formation and Operation of the Advisory Group
 - 1.1 The Environmental Advisory Group (**EAG**) (formerly known as the Ecological Advisory Group) was established in 2008 by London Gateway Park Development Ltd (**LGPDL**).
 - 1.2 The EAG Committee (**Committee**), consisting of DP World London Gateway staff, was established by London Gateway Park Development Ltd for the purpose of implementing this constitution and the roles described therein.
 - 1.3 The EAG consists of up to two nominated representatives (or their delegates) of each Party, set out in Schedule 1 (together the **Parties**) as notified by each Party to all the other Parties from time to time in writing. Other representatives from statutory and non-statutory groups may be invited to attend the EAG from time to time but will not have voting rights.
 - 1.4 Each Party shall have one vote whether it nominates one or two representatives, and may vote by proxy.
 - 1.5 The representatives (or delegates) of each Party may be accompanied by one or more additional representatives upon the EAG's approval in each case.
 - 1.6 The EAG will be chaired by a representative of the EAG Committee and will;
 - 1.7 Meet periodically (at least once every 12 months). Meetings shall be convened by the Chairman with at least 20 working days prior written notice with an agenda. Any of the Parties may request the Chairman to call a meeting;
 - 1.8 Hold such meetings at a convenient location to be provided by the Committee; and
 - 1.9 Appoint a secretary who shall be responsible for sending draft minutes of each meeting to the Parties within 10 working days of the meeting. The Committee shall provide the secretarial services unless otherwise agreed.

One representative of all Parties shall sign the minutes within 20 working days (or as agreed) of their receipt. Any Party wishing to propose amendments to such draft minutes shall notify the Parties within 20 working days of receipt. Comments by any Party on proposed amendments shall be made within 10 working days of receipt. If after 10 working days no proposed amendments have been notified, the minutes will be taken as agreed and will be duly signed; otherwise agreement of the minutes will be subject to discussion between the Parties.

2. Expenses

- 2.1 The administrative expenses of the EAG (including office and secretarial expenses) shall be borne by the Committee but the ordinary expenses of individual representatives or delegates in attending the meetings of the EAG shall be borne in each case by the Party nominating them as being a part of the exercise of their respective statutory duties.

3. Terms of Reference

- 3.1 The EAG shall:

- 3.2 Advise the Committee on environmental management issues arising out of the development implemented under the London Gateway Local Development Order (**LDO**).

- 3.3 Review environmental monitoring and other information collected by London Gateway Services Limited (**LGSL**) for the purpose of the implementation of the LDO and conformity with associated existing and new Environmental Permits and Licences;

- 3.4 Consult relevant parties (such to be agreed by the EAG) and consider if it sees fit any relevant representations made by them;

- 3.5 Consider any relevant questions raised by the Parties in connection with operation of the LDO.

- 3.6 Make suggestions to the Committee on any relevant matter connected with the administration of the Ecological Mitigation and Management Plan (**EMMP**) or this constitution which could further the interests of achieving the objectives set out and agreed in the EMMP or this constitution.

- 3.7 Shall stimulate interest and the voluntary engagement of the occupiers of the Logistics Park as the case may be in the achievements of the EMMP, Code of Construction Practice, Design Code or this constitution. The EAG acting in concert, may invite representatives from relevant public organisations or user groups, to attend a part of meetings in the context of any relevant agenda item. Such strangers will not be entitled to vote or to take part in any formal part of the meeting and will be required to leave the meeting during any confidential discussion or any discussion involving financial matters or management of the EAG;

- 3.8 Produce and make publicly available an Annual Report which will comprise in the form of an Executive Summary a review of the progress to date in respect of the LDO or this constitution;

- 3.9 In light of the review of the progress mentioned above to make recommendations to the Committee for any modifications considered necessary by the EAG to ensure the measures in the EMMP or this constitution are met.

4. Decisions and Dead-Lock

- 4.1 Decisions of the EAG (including recommendations to the Committee and EAG's annual report) require unanimous consent. No approval, consent, or agreement required from or by any party under this constitution shall be unreasonably withheld or delayed. If any issue is unresolved after formal consideration by the EAG, each Party may by written notice to the other Parties, who shall in good faith negotiate to resolve that issue within 30 (thirty) calendar days, or for such other period as the EAG may agree, subject to paragraph 4.2 of this constitution, refer the dispute to binding arbitration pursuant to paragraph 10 of this constitution. In matters of scientific opinion any Party may make use of an Expert to aid in the resolution of dead-lock.
- 4.2 If the Committee exercises its vote in opposition to all other voting parties of the EAG then the Parties shall (after having followed the procedure in paragraph 4.1 above) follow the procedure in this paragraph 4.2. The Committee's decision to so vote will be reviewed by its Lawyer within 28 working days of the failure by the senior officers to reach agreement, such review to be circulated to voting members of the EAG. Recipients of the review will have 14 days in which to respond and such response will set out whether or not that member intends to refer the matter to arbitration pursuant to paragraph 10 below against the Committee and if so on what grounds. The Committee shall respond to any intention of a member to refer the matter to arbitration within a further 28 days. Thereafter the Party intending to take such action shall either take such action or shall either confirm to the EAG that its concerns have been satisfied by the Committee or that it requires further time in which to consider the matter.

5. Annual Meeting and Annual Report

- 5.1 The Committee will constitute a formal meeting of the parties (plus others) which shall report once annually as to progress made against the Terms of Reference in this constitution, and the LDO, including monitoring outcomes required in the Code of Construction Practice, Design Code and EMMP. Annual Reports will be published on the London Gateway website and submitted to Thurrock Borough Council for the duration of the life of the EAG. The Committee agrees to consider properly the advice of the EAG of which it is a party and to proceed according to that advice where that advice is based on sound scientific knowledge and judgement and where it is so agreed by all parties to the EAG acting unanimously (or subject to the dispute resolution procedure as set out at paragraph 9 below) provided that all such required actions of the Committee are lawful for it, and fall within its statutory remit and are within its control.

6. Informal dialogue

- 6.1 In addition to formal EAG meetings, the Parties intend, but are not required so to do, to maintain an informal, interactive dialogue throughout the course of the implementation of the LDO.

7. Dissolution of the Advisory Group

7.1 The EAG shall continue in operation for the duration of the LDO and for any longer period as needed by a monitoring regime under the EMMP. Thereafter it may only be dissolved irrevocably by unanimous agreement of the Parties.

8. Statutory Remit of the Parties

8.1 No Party will exceed its statutory duties when considering issues before it as the EAG. The EAG will inform the relevant statutory remit of each party but will not take the place of statutory duties of the relevant parties (if any).

8.2 Nothing in this constitution shall be taken to prejudice or otherwise fetter the exercise by Natural England or the Environment Agency of their respective statutory functions.

9. Arbitration

9.1 Subject to paragraph 4 of this EAG constitution, any dispute or difference arising out of or in connection with this EAG constitution (including without limitation any question regarding its existence, validity, interpretation, performance or termination) shall be referred to and finally resolved by arbitration under the Rules of the London Court of International Arbitration (“the Rules”), which Rules are deemed to be incorporated by reference into this paragraph. It is agreed that:

9.2 The number of arbitrators shall be one;

9.3 The appointing authority for the purpose of the Rules shall be the London Court of International Arbitration;

9.4 The seat, or legal place, of arbitration shall be London;

9.5 The language to be used in the arbitration shall be English;

9.6 The governing law of the agreement shall be the substantive law of England and Wales.

Schedule 1

The Parties to the EAG are:-

- DP World;
- Natural England (“NE”);
- Environment Agency (“EA”); and
- Thurrock Borough Council.

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