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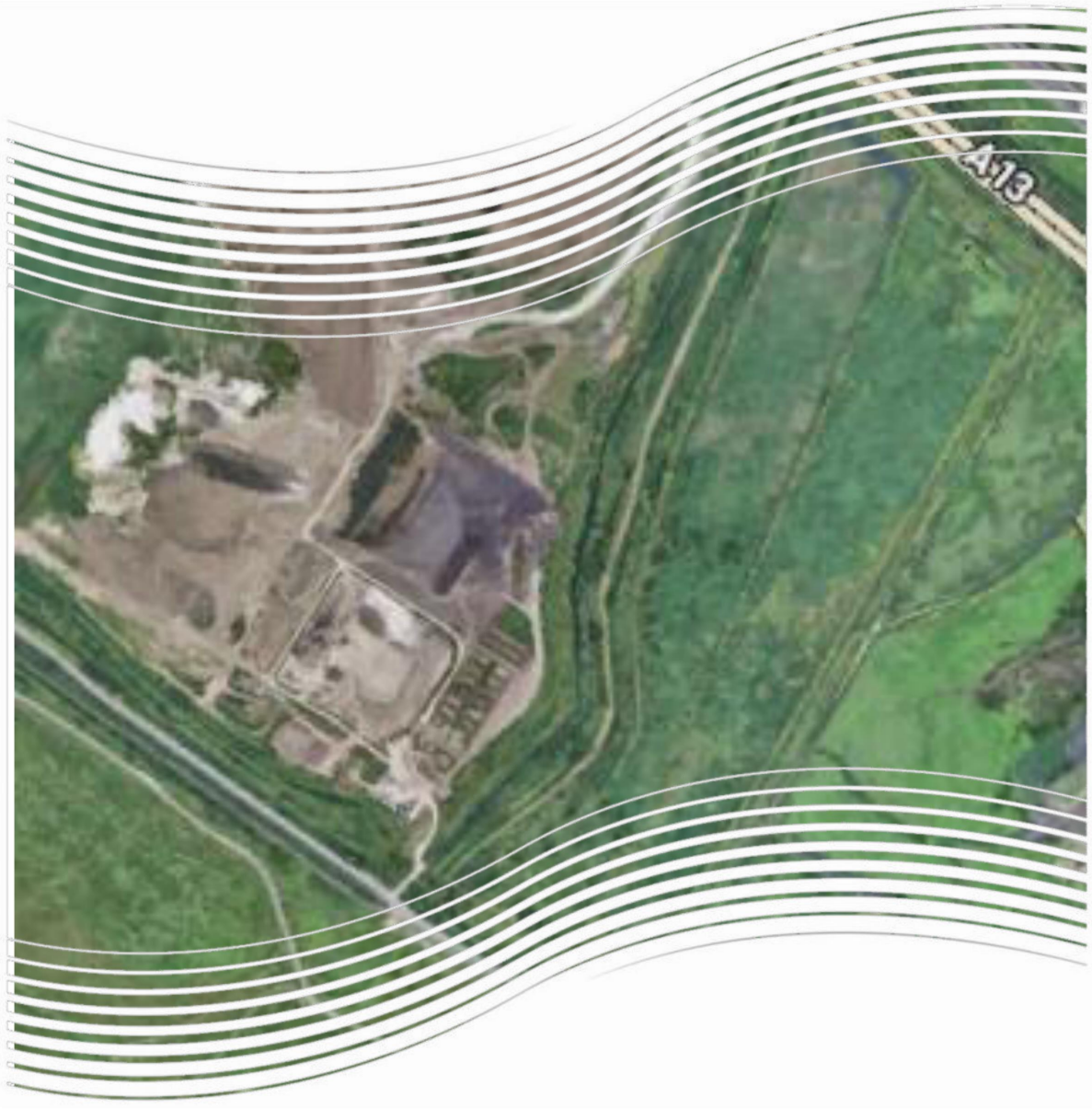

Landscape and Ecological Management Plan

Rainham Marshes

Project No: LanWa02.2 Client: Land & Water Services Ltd Date: 02/11/2026

ISSUE RECORD

Client name	Land & Water Services Ltd		
Project name	Rainham Marshes		
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Status	FINAL		
Report title	Landscape and Ecological Management Plan		
Issue number	V4	V5	V6
Date	26/05/2026	02/11/2026	02/11/2026
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The information and advice contained in this report has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

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1. INTRODUCTION

1.1 Scope of Report

This Landscape and Ecological Management Plan (LEMP) has been prepared by Peak Ecology Ltd on behalf of Land & Water Services Ltd.

It has been prepared in accordance with condition 15 of Planning Permission Ref. P1358.22, dated 17 November 2025 ('the Planning Permission'). Also relevant is that under Condition 4, the restoration must be in keeping with approved Restoration Plan (Ref. 2423/001/H) under planning permission reference P2076.17. The Restoration Plan has been included in Appendix A, with the LEMP site area now also shown with a red line.

Conditions 4 and 15 of the Planning Permission are included below.

Condition 4

> *"On completion of the dredging works the site shall be restored in keeping with the approved restoration plan drawing number 2423/001/H (Restoration Plan)."*

Condition 15

> *"A Landscape and Ecological Management Plan (LEMP) shall be submitted to, and be approved in writing by, the local planning authority within one year of consent of the development.* [12mths after 17th November 2025]
>
> *The content of the LEMP shall include the following:*
>
> *a) Description and evaluation of features to be managed.*
>
> *b) Ecological trends and constraints on site that might influence management.*
>
> *c) Aims and objectives of management.*
>
> *d) Appropriate management options for achieving aims and objectives.*
>
> *e) Prescriptions for management actions.*
>
> *f) Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period).*
>
> *g) Details of the body or organisation responsible for implementation of the plan.*
>
> *h) Ongoing monitoring and remedial measures.*
>
> *The LEMP shall also include details of the legal and funding mechanism(s) by which the long-term implementation of the plan will be secured by the developer with the management body(ies) responsible for its delivery. The plan shall also set out (where the results from monitoring show that conservation aims and objectives of the LEMP are not being met) how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme. The approved plan will be implemented in accordance with the approved details."*

This LEMP has also been prepared in accordance with a Deed relating to Section 106 of the Town and Country Planning Act and other powers in relation to Land located at Rainham Marshes Silt Lagoons, Coldharbour lane, Rainham ('the Section 106 Agreement'). Schedule 4 Part 2 of the Section 106 Agreement refers to a Landscape and Ecology Management Plan (LEMP) and specifies:

Part 2 – Landscape and Ecology Management Plan

1 The Owner and the Company covenants with the Council:

1.1 Within 12 months of the grant of Planning Permission, to submit to the Council for its approval (such approval not to be unreasonably delayed or withheld) a Landscape and Ecology Management Plan ("**LEMP**") for the Site to cover a period of thirty years from the date of the Implementation of the Planning Permission. The LEMP, which shall be consistent with the Revised Restoration Plan, shall include:

1.1.1 A description of the desired habitat to be established on the Site, being in accordance with the Owner's aspirations for a non-interventionist approach so far as is practicable to allow natural recovery of the eco-system, with consideration to the SSSI designation and suitability for appropriate target birds and priority species appropriate for the Site;

1.1.2 the short to long-term management and monitoring of the habitats on the Site in accordance with the philosophy outlined at paragraph 1.1.1 of Part 2 of this Schedule 4, such that the aims and objectives of the approach are met and that the new habitats remain in a good and appropriate condition, with any invasive weeds or undesirable plants being controlled and removed and measures implemented to protect the Site from pollution and/or damage;

1.1.3 where necessary and subject to the operations permitted by the Planning Permission, if the SSSI is not in a favourable condition on the Site, ensuring that the SSSI features are returned to a healthy state and conserved by appropriate management;

1.1.4 ensuring that protected and priority species (and any relevant legislation) have been taken into account within the short to long term management of the Site, to include minimisation of any disturbance to any badger setts;

1.1.5 at the Owner's absolute discretion, if public access is not inconsistent with the nature conservation purposes of the long-term future of the Site, a plan for how public access may be managed on the Site once restoration is complete but ensuring that disturbance to wildlife and habitats will be minimised, to include minimisation of any disturbance to the badger sett.

1.1.6 A description of how the LEMP will be implemented for the full duration of its application, including a funding mechanism to ensure its delivery by the Owner and the Company and their licensees

1.2 If the Revised Restoration Plan is agreed to be adjusted or altered through a variation pursuant to Section 73 of the 1990 Act or an amendment pursuant to Section 96A of the 1990 Act to planning permission reference P2076.17 or otherwise, a revised LEMP shall simultaneously be submitted to the Council for approval (not to be unreasonably withheld or delayed) by the Owner or the Company to respond to the changes to the Revised Restoration Plan all references to the LEMP in Schedule 4 Part 2 of this Deed shall then relate to the approved revised LEMP

1.3 For the avoidance of doubt, the obligation for compliance with the LEMP shall cover a period of thirty years from the date of Implementation of the Planning Permission or such other longer period as may be agreed by the Owner and the Company.

The Restoration Plan is agreed for the wider site; however, this LEMP focuses on the area subject to the Planning Permission and these areas are shown in Appendix B. This area is

referenced in this LEMP as the LEMP Site. The wider site is currently active and used for the disposal of dredgings under planning permission L/HAV/2819/79. The description of development for the LEMP Site under the Planning Permission is as follows:

> 1. The excavation of waste previously deposited in the lagoons at the site and the treatment of the excavated waste by washing, screening and crushing to produce recycled aggregate with the residues deposited at the site and the recycled aggregate sold off site;
>
> 2. The treatment of waste imported to the site by washing, screening and crushing to produce recycled aggregate with the residues deposited at the site and the recycled aggregate sold off site, and
>
> 3. The stockpiling of suitable chalk and clay rich waste materials and the export of the chalk and clay rich materials from the site for use in agricultural improvements and/or engineering.

1.2 Site History

The Rainham silt lagoons have been used by the Port of London Authority (PLA) for the disposal of dredgings since the 1960s. At that time seven lagoons were constructed as Permitted Development. In 1982 under planning permission L/HAV/2819/79, two additional lagoons were constructed. The Restoration Plan was agreed in 2018 through planning permission P2076.17. Part of the wider site, which is the subject of those two permissions, now has the benefit of the Planning Permission, as described above.

The lagoon area is part of the wider Rainham Marshes, all owned by RSPB. The dredging spoil disposal is licensed to the PLA by RSPB and the operational aspects of the disposal are managed by Land & Water Remediation Ltd on behalf of the PLA.

Ecological Status

The wider site has been subject to ecological surveys in recent years, of particular note are the surveys.

- Preliminary Ecological Appraisal, 2016. Thompson Environmental Consultants;
- Preliminary Ecological Appraisal, 2023. Wilkinson Associates.

An Ecological Mitigation and Management Plan was also prepared by Land & Water in 2021.

1.3 Inner Thames Marshes SSSI

It is necessary to consider the Inner Thames Marshes SSSI in the context of this LEMP, because that is what the Section 106 Agreement requires in respect of its boundary, being the LEMP Site. The citation for the SSSI has been included in Appendix C. The SSSI was designated in 1986 and is 479.3ha; there are ten SSSI units, the LEMP Site lies entirely within Unit 2. Under the Natural England SSSI Common Standards Monitoring scheme the Unit, which is 152.4ha, is in ‘Unfavourable – Declining’ condition. The site has been assessed on four occasions as shown in Table 1 below.

Table 1: Condition Assessment results since 1997

Assessment Year	Condition
1997	Unfavourable – Declining
2005	Unfavourable - No change
2007	Unfavourable – Recovering
2010	Unfavourable - Declining

The most recent survey described SSSI Unit 2 as;

> *"no longer providing suitable conditions for wading birds, as silt deposition has ceased and as a result the land is drying out. The habitat is now rough grassland which may support raptors and invertebrates in particular, but does not support the interest features of the SSSI."*

In order to address the issues regarding the condition of the SSSI Unit it will be necessary to implement measures to ensure that the site is improved and managed to benefit the interest features of the SSSI.

Note the following relevant documents;

- Inner Thames Marshes SSSI Citation, 1989. Natural England, and
- Inner Thames Marshes SSSI ORNECS, undated. Natural England.

1.4 Site Restoration

A Restoration Plan has been created for the wider site, including all lagoon areas, over a total area of approximately 150ha (see Appendices A and B). Once fully restored the site should support a range of key habitats and species which should ensure that SSSI Unit 2 is brought into favourable condition. The current planning application, addressed by this LEMP, is for an area of 8.85ha and lies within the bounds of the wider site.

2. OBJECTIVES

This LEMP has been prepared to meet the requirements as set out in Planning Conditions 4 and 15 of Planning Application P1358.22 (see Section 1.1); also taking into consideration details within the Section 106 Agreement (see Section 1.1). The LEMP is required to continue for a period of thirty years from the date of implementation of the Planning Permission.

In summary this LEMP will:

- Describe the habitats currently within the area to be managed
- Provide detail of the materials to be used for the restoration
- Describe and evaluate the habitats to be managed
- Identify constraints that could influence management

- Describe the aims and objectives of management
- Describe how the restoration could influence the condition of the SSSI
- Describe management options
- Highlight potential positive and negative impacts on protected species and describe how these will be addressed
- Include a Five-Year Work Schedule
- Provide details on which party will be responsible for plan implementation and the mechanisms and responsibilities for securing the thirty-year obligation from the implementation of the Planning Permission
- Describe ongoing monitoring after the initial five-year work schedule
- Describe remedial measures that may be required

2.1 Site Description

The LEMP Site is currently bare earth with hard standing, a small lagoon and a larger settlement lagoon. As a functional site with disturbance the Site is limited in its current ecological value. The site is shown in an aerial photograph in Fig.1 below.

Figure 1. Aerial image of the site



The most recent ecological appraisal (Wilkinson 2023) stated;

"The Site mostly comprises unvegetated or sparsely vegetated bare ground and hardstanding and does not support any habitats or species of ecological importance. The only appreciable areas of vegetation on the Site are stands of scattered to dense ephemeral vegetation which are not of ecological importance.

The Site does not contain any habitats or features likely to support protected or priority species"

It is envisaged that there will be minimal impacts associated with the ground preparation.

2.2 Ground Preparation – Materials

The materials used in restoration of the wider site have been agreed and are illustrated on the Restoration Materials Plan, Appendix D. This equates to the areas shown in Fig 2 below for this LEMP.

Figure 2. Restoration Materials



In accordance with the Restoration Materials Plan, the Site will therefore comprise the following surface materials;

- Non-cohesive material – 0.26ha
- Clay – 8.75ha
- Hard standing – 0.08ha

The non-cohesive material will be permeable and free-draining, thus drying out quickly after precipitation and not holding water or nutrients. The clay, which forms the majority of the Site will hold water and will support surface water after precipitation.

The hardstanding is the current access track onto the Site; this will be retained in order to facilitate future site access.

3. LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN

3.1 Ground Preparation - Habitat Creation

The low nutrient status of the non-cohesive materials will be a key aspect of the restoration and the habitats to be created. The materials will be laid out in accordance with the plan. The current use of the Site and the use of large plant in undertaking the ground preparation does generate the risk of the introduction of non-native species which could be invasive. Vehicles will need to be checked and may require a wheel-wash which may need to be extended to digger buckets, dumpers and other plant. In addition, a check over the area where the material originates will be required to ensure that undesirable species are not inadvertently moved around the Site or brought onto Site. Plant will be maintained within the plant maintenance area onsite and that refuelling will be undertaken using bunded bowsers, spill trays and nappies and appropriate spill kits will be in place.”.

The profile of the clay area will be important; it is recommended that it is laid down so that shallow depressions or scrapes are produced which will hold water after rainfall events; this will attract a greater range of flora and fauna in a more diverse habitat. It is suggested depressions form approximately 20% of the clay area and that some depressions are deeper. This area is likely to dry out completely in prolonged dry spells but will re-wet during rainfall events and will retain surface water for varying lengths of time.

3.2 Habitat Establishment

The preferred option is to allow natural colonisation of the area once the ground preparation is complete. This approach offers certain ecological benefits including:

- Natural regeneration will encourage locally native species which are appropriate for the ground conditions on site
- Locally native species will support an appropriate fauna, including pollinators and other invertebrates
- Typically reduces the management burden in the short and longer term
- Reduces, although does not eliminate, the risk of unwanted species being introduced to the site

It will take time for a stable sward to develop and it is likely to develop into a sparse short ephemeral vegetation.

The non-cohesive areas will be relatively free draining and will dry out quickly, thus attracting drought-tolerant plant species associated with free draining soils. In contrast, the clay is likely to support a different plant assemblage; it will stay wetter and will hold water and, subject to the profile, may have standing water after rainfall events for varying periods of time, attracting more wetland species.

It is anticipated that there will be a sparse but diverse botanical assemblage across the area, largely as a result of the nature of the substrate.

3.3 Aims and Objectives of Management

The management of the restoration area will facilitate both the establishment and the long-term prevalence of a sparse but diverse flora which will be a valuable habitat in its own right with the potential to support a range of invertebrates, reptiles, birds and other fauna.

The different materials will develop their own habitats with different plant assemblages supporting different fauna.

3.4 SSSI Condition

The restoration of the wider site is intended to allow the LEMP Site to develop in such a way that it brings the SSSI unit back into favourable condition. It is currently Unfavourable Declining as described in Section 1.3.

It is important to note that the area covered by this LEMP is 8.85ha and forms approximately 6% of Unit 2 of the SSSI. It will not therefore, achieve an improvement in SSSI condition if enacted in isolation and will only show a demonstrable ecological benefit as part of the whole restoration and the implementation of appropriate management. Nonetheless it is important to ensure that the management described will show tangible benefits for the interest features of the SSSI.

Invertebrates are noted in the citation and largely include those associated with aquatic habitats. It is unlikely that the depressions will remain wet long enough to support many of these species but the terrestrial habitats will suit a range of invertebrates including butterflies such as dingy skipper which shows a preference for sparse vegetation and bare ground, mining bees might take advantage of the non-cohesive substrates.

The wetter areas within the clay will support a different plant assemblage, potentially including marsh dock *Rumex palustris* and golden dock *R. maritimus*. The proximity of some of the species will be a factor in the likelihood of them finding their way to the newly restored habitats.

The bare ground and sparse vegetation will create a suitable habitat for some reptiles, particularly common lizard *Zootoca vivipara* and slow worm *Anguis fragilis*, both of which will forage and bask in this habitat. Patches of denser vegetation, should they develop, will provide places of shelter which may be lacking. Grass snakes *Natrix helvetica* are more commonly associated with the wetter habitats and may utilise the clay depressions, particularly if tussocky areas of sedges and rushes develop to provide cover.

The ornithological interest is a key feature of the SSSI, with a wide range of birds including both over-wintering and breeding species, notably large flocks of teal *Anas crecca* over-winter and the site is noted for finches, waders and birds of prey. Little ringed plover *Charadrius dubius* and ringed plover *Charadrius hiaticula* will both nest in sparsely vegetated areas on sandy gravel substrate, lapwing *Vanellus vanellus* and other waders might also be found here and in areas of shorter vegetation.

It is difficult to predict exactly what species might utilise this restored area but the habitat that will develop has potential to support a wide range of species, some of which will be included in the interest features of the SSSI and will contribute positively towards its condition.

3.5 Management Options

The planned restoration relies heavily on the initial ground preparation and the distribution of the various materials which will make up the Site. The advantage of allowing the natural colonisation of these areas is that the flora will already be present in the wider area and will grow where it can spread to and where the conditions are suitable. Consequently, the habitat that develops is more 'natural' and is likely to require minimal management.

Vehicles can drive onto the retained hard standing which forms an access to the LEMP Site but should not go any further unless absolutely necessary. In the event that a vehicle does need to go on Site this should be done along agreed routes set out by an experienced ecologist to avoid ecologically sensitive areas and potentially, nesting birds.

Management will likely focus on eradicating any non-native species which may develop on Site; it is understood that there are no known non-native species on Site at the current time. The nutrient-poor substrate is such that no species are likely to proliferate but non-native and other undesirable species need to be identified and eradicated. Species such as Himalayan balsam *Impatiens glandulifera* can easily be pulled by hand whereas Japanese knotweed *Reynoutria japonica* is more difficult but single plants can be dug up. Giant hogweed *Heracleum mantegazzianum* presents a risk of injury and should only be tackled with full cover PPE, preferably by a specialist contractor. It is noted that Condition 14 requires a removal and management plan for Giant hogweed. Another species, more associated with wetland areas, that could establish around the clay depressions is Australian swamp stonecrop *Crassula helmsii.* Very small infestations of this species should be covered over to exclude light and left to die; once this species gets established it is very difficult to get rid of. It is also noted that some invasive species, such as Japanese knotweed, are considered as controlled waste and should it be present on-site protocols should be in place for its removal and disposal to prevent spread.

The overarching advice regarding any non-native species found on Site is that it is tackled immediately. To let non-native species reproduce is always a mistake; once established the control can be prohibitively expensive and control measures are likely to damage other habitats on Site.

The management will be informed by an annual survey which is described in Section 3.6 below.

3.6 Monitoring and remedial action

It is proposed to undertake a walkover botanical survey on an annual basis each June or July beginning one year after the restoration is completed.

The advantage of June/July for the survey is that it is in the middle of the growing season when a competent botanist will be able to generate a comprehensive species list. In addition, any undesirable species can be identified and removed before they go to seed. However, a view should be taken on survey timing since this could impact on ground nesting birds and it may be preferable to delay the botanical survey.

The proposed survey method would be one modified from an NVC survey based on 2x2m quadrats randomly selected across the Site. A deviation from the methodology should be made to ensure that all surface material types are surveyed in proportion. It may be appropriate to address each surface type separately and randomly select quadrats within each. The advantage of this approach is that it is repeatable each year and the data is of good quality and can be used to measure change over time. The data could also be fed into a full NVC study in the future.

The survey data should be reported and should include a map identifying habitat types and associated species. In the event that a non-native species or other undesirable species is found this should be reported immediately and measures put in place to remedy the situation with minimal delay. Any additional adaptive habitat management required will also be reported at this time.

After Years 1 to 5 the survey frequency will change to once every two years until Year 17 and then every four years thereafter (if relevant).

In summary;

- Years 1 to 5 – after restoration is complete, survey every year;
- Years 7 to 17 – (if relevant) after restoration is complete, survey every two years;
- From year 19– (if relevant) after restoration is complete, survey every four years.

Liaison with Natural England, the body responsible for reporting on the SSSI condition, is recommended throughout the monitoring programme. It is also suggested that the Condition Monitoring undertaken by Natural England is undertaken after the restoration works are complete and once vegetation has established.

It is not proposed to undertake any additional surveys over and above the annual botanical surveys, although surveys prior to the onset of restoration works may be required as described below.

3.7 Public Access

At the current time there is no public access on to the Site. It is understood that during restoration and once restoration is complete there are no plans to allow public access on to Site. Should this change, by a decision by the RSPB as landowner at their absolute discretion, and public access proposed then an addendum to this LEMP will be required to introduce measures which will ensure that habitats and species are not negatively impacted.

3.8 Protected Species – Other Survey Work

There are no known habitat management constraints related to protected species on the LEMP Site at the current time.

Badgers *Meles meles* are known to be present in the wider area; an artificial main sett has been created and is used by badgers, this is over 300m to the north of the Site boundary. The nature of badgers is such that they could construct an outlier or subsidiary sett within, or close to, the Site boundary. It is therefore recommended that prior to the onset of any restoration works, a badger survey is undertaken by a suitably experienced ecologist. In the event that a sett is found to be on Site or within 30m of the Site boundary, it will be categorised and an appropriate way forwards will be agreed.

If the ground preparation works is planned to start during the bird nesting season, a survey should be completed in advance to ensure that any active nest sites can be protected during the works.

Water voles *Arvicola amphibius* are known to be present in the wider area but they are not present on Site and once the ground works are completed for the restoration, there will be no suitable waterbodies for any riparian mammals.

4. LONG-TERM MANAGEMENT OF THE LEMP SITE

Land & Water Services Limited together with Group company Land & Water Remediation Limited are responsible for the day-to-day operation of the LEMP Site and this will continue once the authorised operation has ceased and the site restoration takes place. Under their licence arrangement with the RSPB and the PLA, Land & Water Services Limited is permitted to allow agents and contractors to work on the LEMP Site, as appropriate. Land & Water Group are specialist environmental contractors and have expertise in delivery of restoration projects, including habitat creation and ecological works. All work will be undertaken with the requisite amount of skill and care by the Group. Where the LEMP recommends the input of ecologists, suitably competent consultants will be secured to undertake the required work.

As owner of the freehold, the RSPB has an interest in the long-term restoration and management of the LEMP Site. The private licensing arrangements with the RSPB ensure that restoration and management work will be undertaken in accordance with the Section 106 Agreement and the Planning Permission.

5. REFERENCES

Land & Water. 2021. Ecological Mitigation and Management Plan.

Natural England. Undated. Inner Thames Marshes SSSI ORNECS.

Thompson Environmental Consultants. 2016. Preliminary Ecological Appraisal.

Wilkinson Associates. 2023. Preliminary Ecological Appraisal.

APPENDICES

Appendix A – Restoration Plan

Appendix B – LEMP Site Boundary

Appendix C – Inner Thames Marshes SSSI Citation

Appendix D - Restoration Materials Plan

Appendix A – Restoration Plan

WETLAND AREAS CONNECTED VIA DITCHES WITH WATER FLOW CONTROL MEASURES

DITCH CONNECTION TO EXISTING OVERFLOW

WETLAND AREAS WITH SUBMERGED ISLANDS AT PEAK WATER LEVEL. INCLUDES IRREGULAR EDGES WITH SHALLOW SLOPES, MAX. 600mm DEEP.

EXISTING WATERCOURSE CHANNEL RETAINED

1:12 BANK AT THE EDGE OF THE SITE

DITCH CONNECTION TO EXISTING OVERFLOW

10m STANDOFF

SEASONALLY WET SWALE PROVIDES A CONNECTION BETWEEN THE SOUTHERN AND NORTHERN AREAS

FRESHWATER COMMON WATERCOURSE

SALINE DRAIN

DRYER MOUNDS UP TO +11.25m AOD WITH TUSSOCKY GRASSLAND

TO INCLUDE SCRUB PLANTING ON HIGHER GROUND ONLY, NOT NEAR WETLANDS

WETLAND AREAS WITH SUBMERGED ISLANDS AT PEAK WATER LEVEL. INCLUDES IRREGULAR EDGES WITH SHALLOW SLOPES, MAX. 600mm DEEP.

1:12 BANK AT THE EDGE OF THE SITE

10m STANDOFF

WETLAND 1 WL 6.5m

WETLAND 2 WL 6.5m

WETLAND 2 WL 6.3m

WETLAND 3 WL 5.5m

WETLAND 4 WL 5.9m

WETLAND 5 WL 6.1m

A13

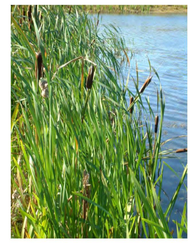
COLDHARBOUR LANE

COLDHARBOUR LANE

0 50m 100m 200m 300m

KEY

- EXISTING & PROPOSED CONTOURS 0.5m INTERVALS
- EXISTING WATERCOURSE - FRESHWATER
- EXISTING WATERCOURSE - SALTWATER
- EXISTING ROAD
- PROPOSED GRASSLAND MOUNDS
- PROPOSED SEASONALLY WET SWALES
- PROPOSED PERMANENT WETLAND
- PROPOSED SCRUB



SEASONALLY WET REEDBEDS



SWALES AND PERMANENT WETLAND



TUSSOCKY GRASSLAND

RAINHAM MARSHES
2423/001/H
Proposed Lagoon Restoration
1:2000 at A0

NOTE:

REVISIONS:

Rev.	Date	Summary
A	30.10.15	First Issue
B	02.11.15	Saline and Freshwater ditch graphics amended
C	20.11.15	Marginal graphics amended
D	04.12.15	Dryer landforms raised and plan adjusted to suit.
E	22.05.17	Revised to suit RSPB and L&W comments received on 26-04-17 and agreed on 15-05-17
F	24.05.17	Revised to suit L&W comments received 23.05.2017
G	26/09/17	Scheme amended to incorporate existing bund standoff as per client instructions of 06.09.17/16:13hrs.
H	20.11.17	Plan revised in accordance with dwg. 2423/008F.

LAND & WATER Services Ltd

Appendix B – LEMP Site Boundary





Survey Information

Site extent

Source:
Ordnance Survey © Crown copyright 2025, All rights reserved. License Number 100049837.

N

0 50 100 200
Metres

PROJECT TITLE

RAINHAM SILT LAGOONS

DRAWING TITLE

Appendix B: Wider Site and area covered by LEMP

VER	DATE	REMARKS	Drawn	Checked
1.0	06/11/25	Restoration	MP	CP

DRAWING NUMBER:
PeakEcology/Rainham Marshes/Restoration

peakecology LIMITED
ECOLOGICAL CONSULTANTS
Arden House,
Deepdale Business Park,
Bakewell,
Derbyshire.
DE45 1GT.
www.peakecology.co.uk

DATUM	OSGB
PROJECTION	BNG
PLOT SIZE	A3
SCALE	1:5,400

Appendix C – Inner Thames Marshes SSSI Citation

COUNTY: GREATER LONDON AND ESSEX SITE NAME: INNER THAMES MARSHES

DISTRICT: HAVERING; THURROCK

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981.

Local Planning Authority: Havering Borough Council, Thurrock District Council

National Grid Reference: TQ 531800 Area: Total – 479.3 (ha.) (1184.4 ac.); Greater London – 352.2 (ha.) (870.5 ac.)

Ordnance Survey Sheet 1:500,000: 177 1:10,000: TQ 57 NW, TQ 57 NW & TQ 58 SW

Date Notified (Under 1949 Act): 1986 Date of Last Revision: 1989

Other Information:
Revised to include an additional part of the Wennington Marshes and an extended account on the reasons for notification.

Reasons for Notification:
The Inner Thames Marshes form the largest remaining expanse of wetland bordering the upper reaches of the Thames Estuary. The site is of particular note for its diverse ornithological interest and especially for the variety of breeding birds and the numbers of wintering wildfowl, waders, finches and birds of prey, with wintering teal populations reaching levels of international importance. The Marshes also support a wide range of wetland plants and insects with a restricted distribution in the London area, including some that are nationally rare* or scarce*.

The site comprises a major relic of low-lying grazing marsh with a variety of grassland communities dissected by a network of fresh to brackish water drains. These Marshes are divided into two main blocks by an extensive series of bunded lagoons used for the disposal of silt dredgings. The discharge of silt and river water into the lagoons produces a changing complex of dry or flooded mud flats and developing saltmarsh. These lagoon habitats are complemented by more restricted areas of naturally derived saltmarsh and intertidal mud along the Thames foreshore.

The grazing marshes are dominated by the more common grasses of neutral soils, and are of interest on account of their structural characteristics. An open, short, tussocky grassland structure has been created on the eastern Wennington and Aveley Marshes where traditional management by sheep and cattle grazing is continued. This contrasts with the tall ungrazed grasslands on the Western Rainham Marshes. The grasslands, particularly those on the Wennington and Aveley Marshes, are also important for the large extent and abundance of divided sedge *Carex divisa*. This nationally scarce plant is a characteristic species of the Thames estuary but its distribution along with other species has become much decreased with a widespread and continuing loss of grazing marsh habitat. The Aveley Marshes are additionally of note for the local abundance of ant hills.

Where the water table is high, some marsh drains remain flooded throughout the year while others are flooded on a seasonal basis. These drains are characterised by a limited range of aquatic and emergent plants, several of which are rare or scarce in the London area. These include lesser pondweed *Potamogeton pusillus*, threadleaved water-crowfoot *Ranunculus trochophyllous* and two nationally scarce species: soft hornwort *Ceratophyllum sumbersum* and brackish water-crowfoot *Ranunculus baudotii*. Elsewhere the drains are largely dominated by common reed *Phragmites australis*. The

seasonally wet drains and shallow depressions scattered amongst the grasslands hold a different wetland flora. This includes locally scarce species such as saltmarsh rush *Juncus gerardii* and pink water-speedwell *Veronica catenata*. In places these seasonally wet areas are also important for the occurrence and abundance of the nationally scarce marsh dock *Rumex palustris* and the nationally scarce and decreasing golden dock *Rumex maritimus*. One of the drains on Rainham Marshes is more saline and supports a strong population of stiff saltmarsh-grass *Puccinellia rupestris*, a further nationally scarce plant now only known in the London area from this locality and elsewhere in the site: a few shallow depressions on the Wennington Marshes.

Surveys in recent years have revealed a diverse and important invertebrate fauna which includes Rec Data Book and nationally scarce species of dragonflies (Odonata), moths (Lepidoptera), beetles (Coleoptera) and flies (Diptera). Most of this interest is centred on the areas of grazing marsh, especially the network of drains. These support a moderately rich fauna which differs quite markedly from that found on the majority of the remaining Essex and Kent marshes along the outer part of the Thames estuary in being strongly characterised by species of freshwater conditions. Molluscs and beetles are well represented and several nationally scarce and local species occur such as water snail *Bithynia leachii* and the water beetles *Noterus crassicornis* and *Helophorus nanus*.

The invertebrate species recorded from the drains also includes specialists of brackish water conditions. Among the nationally rare species are the 'scarce' emerald damselfly *Lestes dryas* (Vulnerable**) and a meniscus midge *Dixella attica* (Rare**) as well as several other species which are nationally scarce such as the water beetles *Agabus conspersus* and *Haliplus apicalis*. Overall the invertebrate community provides an unusual example in the Thames estuary of an assemblage at the freshwater end of the transition from fresh to brackish conditions.

The marsh grasslands support a further range of important invertebrate species with differences between the grazed and ungrazed areas. Insects present and which are nationally scarce include Roesel's bush cricket *Metrioptera roeselii*, the wormwood moth *Cucillia absinthii* and a hoverfly *Tropidia scita*. The invertebrates supported by the areas of saltmarsh along the Thames foreshore are less recorded but include a rare spider *Baryphyma duffeyi* (provisional RDB category 3: Rare).

Appendix D - Restoration Materials Plan

WETLAND AREAS CONNECTED VIA DITCHES WITH WATER FLOW CONTROL MEASURES

DITCH CONNECTION TO EXISTING OVERFLOW

WETLAND AREAS WITH SUBMERGED ISLANDS AT PEAK WATER LEVEL INCLUDES IRREGULAR EDGES WITH SHALLOW SLOPES, MAX. 600mm DEEP

EXISTING WATERCOURSE CHANNEL RETAINED

RESTORATION TYPE 3

DITCH CONNECTION TO EXISTING OVERFLOW

WETLAND AREAS WITH SUBMERGED ISLANDS AT PEAK WATER LEVEL. INCLUDES IRREGULAR EDGES WITH SHALLOW SLOPES, MAX. 600mm DEEP

WATER COLLECTION GULLY

1:12 BANK AT THE EDGE OF THE SITE

10m STANDOFF

10m STANDOFF

1:12 BANK AT THE EDGE OF THE SITE

RESTORATION TYPE 2

RESTORATION TYPE 1

SEASONALLY WET SWALE PROVIDES A CONNECTION BETWEEN THE SOUTHERN AND NORTHERN AREAS

FRESHWATER COMMON WATERCOURSE

SALINE DRAIN

DRYER MOUNDS UP TO +11.25m AOD WITH TUSSOCKY GRASSLAND

TO INCLUDE SCRUB PLANTING ON HIGHER GROUND ONLY, NOT NEAR WETLANDS

A13

COLDHARBOUR LANE

COLDHARBOUR LANE

WETLAND 1 WL 6.5m

WETLAND 2 WL 6.5m

WETLAND 2 WL 6.3m

WETLAND 3 WL 5.5m

WETLAND 4 WL 5.9m

WETLAND 5 WL 6.1m

+6.8m +6.1m +5.7m +6.2m +6.3m +6.6m +7.0m 5.9m+ IL6.3m IL6.2m

+5.2m +6.8m +6.5m +6.0m +6.5m +4.9m +5.2m +5.4m +4.9m IL5.4m IL5.2m IL5.2m IL5.7m

+9.0m +6.4m +6.0m +5.9m +6.3m IL5.4m

+7.0m +5.5m +6.5m +7.0m +5.3m +5.7m +7.0m

+10.75m +8.0m +8.0m +6.5m

+11.25m +11.25m +8.8m +11.0m

+7.5m +6.7m +7.0m +7.5m +5.8m +7.5m 6.0m+ IL6.0m +5.6m +5.8m +7.0m +6.5m 11.0m+ +10.0m +9.75m +7.25m

KEY

- EXISTING & PROPOSED CONTOURS 0.5m INTERVALS
- EXISTING WATERCOURSE - FRESHWATER
- EXISTING WATERCOURSE - SALTWATER
- EXISTING ROAD
- RESTORATION TYPE 1
- RESTORATION TYPE 2
- RESTORATION TYPE 3
- WATER COLLECTION GULLY
- 10m STANDOFF FROM OUTER EDGE OF EXISTING BUND CREST
- WATER FLOW CONTROL STRUCTURE - LOW AND HIGH WATER CONTROL WEIR OR SLUICE

WETLAND PEAK WATER AREAS

WETLAND 1 - 2.31HA

WETLAND 2 UPPER - 0.31HA
WETLAND 2 LOWER - 0.93

WETLAND 3 - 1.85HA

WETLAND 4 - 2.08HA

WETLAND 5 - 1.74HA

N

0 50m 100m 200m 300m

RAINHAM MARSHES
2423/008/F
Restoration Materials Plan
1:2000 at A0

NOTE:

REVISIONS:

Rev.	Date	Summary
-	20.06.17	First Issue
A	03.07.2017	Drawing number revised to 008. Drawing revised in line with LAWS comments received 28.06.2017 09:19hrs.
B	10.07.17	Drawing amended in accordance with LAWS comments received 05.07.17 at 12:41 and 15:11hrs.
C	08.08.17	'DRAFT' status omitted and drawing title adjusted as requested by client 08.08.2017/09:29hrs.
D	26/09/17	Scheme amended to incorporate existing bund standoff as per client instructions of 06.09.17/16:13hrs.
E	15/11/17	Wetland areas amended to reflect RSPB comments and landform adjusted to suit as per client instruction 14.11.17/ 10:31
F	20/11/17	Minor amendments to island levels and invert levels as per client instruction 16.11.17/17:23

LAND & WATER Services Ltd