



**NORTH KENT MARSHES
INTERNAL DRAINAGE BOARD**

BIODIVERSITY ACTION PLAN

2023-2033



This Biodiversity Action Plan has been prepared by Andrews Wildlife Consultants (AWC) for the North Kent Marshes Internal Drainage Board in accordance with the commitment in the Implementation Plan of the DEFRA Internal Drainage Board Review for IDBs to produce their own Biodiversity Action Plans.

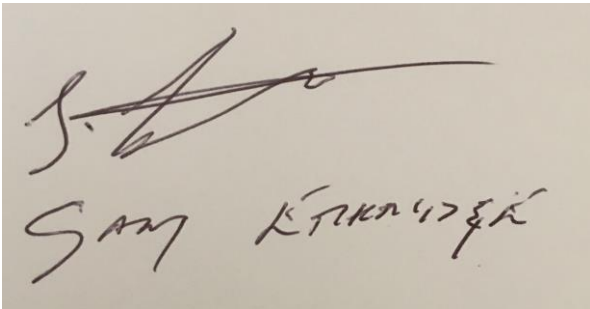
It also demonstrates the Board's commitment to fulfilling its duty as a public body under the Natural Environment and Rural Communities Act 2006 to conserve biodiversity.

Many of the Board's activities have benefits for biodiversity, not least its water level management and ditch maintenance work. It is hoped that this Biodiversity Action Plan will help the Board to maximise the biodiversity benefits from its activities and demonstrate its contribution to the Government's UK Biodiversity Action Plan targets.

The Board has adopted the Biodiversity Action Plan and is committed to its implementation. It will review the plan periodically and update it as appropriate.



06 October 2023



Cllr Gary Etheridge
Chairman of the Board

This Biodiversity Action Plan is a public statement by the Board of its biodiversity objectives and the methods by which it intends to achieve them.

We would welcome appropriate involvement in the delivery of the Plan from interested organisations, companies, and individuals.

You can contact us about this Biodiversity Action Plan by writing to the following address:

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Further information is available on the Board's website: <https://lowermedwayidb.co.uk/north-kent-marshes-idb/>

CONTENTS

1	IDB BIODIVERSITY – AN INTRODUCTION-----	7
1.1	Introduction	7
1.2	What is Biodiversity?	9
1.3	The Importance of Conserving Biodiversity	9
1.4	The Biodiversity Action Planning Framework	9
1.5	Biodiversity – The International Context	9
1.6	Biodiversity – The National Context.....	10
1.7	Local Biodiversity Action Plans	11
1.8	Internal Drainage Boards and Biodiversity	11
1.9	The Aims of the IDB Biodiversity Action Plan	11
2	THE IDB BAP PROCESS-----	12
2.1	The Biodiversity Audit	12
2.2	Evaluating and Prioritising Habitats and Species	12
2.3	Setting Objectives, Targets and Indicators	12
2.4	Implementation	12
2.5	Monitoring	12
2.6	Reporting and Reviewing Progress	12
3	THE BIODIVERSITY AUDIT-----	13
3.1	Introduction	13
3.2	Local Biodiversity Action Plans	13
3.3	IDB Biodiversity Audit Boundary	13
3.4	Sources of Data - Habitats	13
3.5	Sources of Data - Species	13
4	NATURE CONSERVATION SITES-----	14
4.1	The Drainage District	14
4.2	Geology	14
4.3	Landscape	14
4.4	Statutory Nature Conservation Sites	15
4.5	Non-statutory Local Sites.....	17
5	HABITAT AUDIT-----	18
5.1	Habitat Audit Summary	18
5.2	Habitats of Primary Importance for the IDB	19
6	SPECIES AUDIT-----	20
6.1	Species Audit Summary	20
6.2	Species of Primary Importance for the IDB	25
7	HABITAT AND SPECIES ACTION PLANS-----	26
7.1	Habitat and Species Action Plans.....	26
7.2	How the IDB action influences biodiversity	26
8	HABITAT ACTION PLANS -----	28
8.1	Freshwater Grazing Marsh	28
9	SPECIES ACTION PLANS-----	32
9.1	Tubular water-dropwort.....	32
9.2	European Eel	37
9.3	Lapwing	40
9.4	Water vole.....	43
10	PROCEDURAL ACTION PLAN -----	46
11	IMPLEMENTATION -----	48
12	MONITORING-----	49

13 REVIEWING AND REPORTING PROGRESS----- 50
APPENDIX 1: MAP OF THE IDB DISTRICT ----- 51
APPENDIX 2: SITES DESIGNATED FOR BIODIVERSITY ----- 52
APPENDIX 3 (A TO C = WEST TO EAST): PRIORITY HABITATS RELEVANT TO IDB OPERATIONS ----- 53

1 IDB BIODIVERSITY – AN INTRODUCTION

1.1 Introduction

The IDB has conducted a biodiversity audit of its district and identified those habitats and species that would benefit from particular management or actions by the IDB. Using this information, which is presented in later sections, the IDB's Biodiversity Action Plan has been developed. The Plan identifies objectives for the conservation and enhancement of biodiversity within the drainage district and goes on to describe targets and actions that will hopefully deliver these objectives. The intention is to integrate, as appropriate, biodiversity into the Board's activities, such as annual maintenance programmes and capital works projects.

The action plan will help to safeguard the biodiversity of the drainage district now and for future generations. It is hoped that implementing the plan will contribute to the achievement of local and national targets for priority species and habitats, as listed under Section 41 of the Natural Environment and Rural Communities Act (NERC) 2006. Species and habitats which are not listed under the NERC Act but may be locally significant for a variety of reasons have also been considered.

The Plan is an evolving document that will be reviewed and updated on a regular basis. It covers the entire drainage district of the IDB shown by the red boundary in Figure 1 and in Appendix 1.

Figure 1. North Kent Marshes Internal Drainage Board area.



1.2 What is Biodiversity?

The Convention on Biodiversity agreed at the Earth Summit in Rio de Janeiro in 1992 defined biodiversity as:

“The variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”

Biodiversity can be defined simply as “the variety of life” and encompasses the whole spectrum of living organisms, including plants, birds, mammals, and insects. It includes both common and rare species, as well as the genetic diversity within species. Biodiversity also refers to the habitats and ecosystems that support these species.

1.3 The Importance of Conserving Biodiversity

Biodiversity is a vital resource, and it is essential to acknowledge its importance to our lives along with the range of benefits that it produces:

- Supply of ecosystem services – water, nutrients, climate change mitigation, pollination
- Life resources – food, medicine, energy and raw materials
- Improved health and well-being
- Landscape and cultural distinctiveness
- Direct economic benefits from biodiversity resources and ‘added value’ through local economic activity and tourism
- Educational, recreational and amenity resources

1.4 The Biodiversity Action Planning Framework

This IDB Biodiversity Action Plan is part of a much larger biodiversity framework that encompasses international, national and local levels of biodiversity action planning and conservation.

1.5 Biodiversity – The International Context

The Kunming-Montreal Global Biodiversity Framework was adopted during the fifteenth meeting of the Conference of the Parties (COP 15) in December 2022 following a four year consultation and negotiation process. This historic Framework, which supports the achievement of the Sustainable Development Goals and builds on the Convention’s previous Strategic Plans, sets out an ambitious pathway to reach the global vision of a world living in harmony with nature by 2050. Among the Framework’s key elements are 23 targets for 2030. The first eight of these targets relate specifically to Biodiversity and are:

1. Ensure that all areas are under participatory, integrated and biodiversity inclusive spatial planning and/or effective management processes addressing land- and sea-use change, to bring the loss of areas of high biodiversity importance, including ecosystems of high ecological integrity, close to zero by 2030, while respecting the rights of indigenous peoples and local communities.
2. Ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and marine and coastal ecosystems are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.
3. Ensure and enable that by 2030 at least 30 per cent of terrestrial and inland water areas, and of marine and coastal areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures, recognizing indigenous and traditional territories, where applicable, and integrated into wider landscapes, seascapes and the ocean, while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognizing and respecting the rights of indigenous peoples and local communities, including over their traditional territories.

4. Ensure urgent management actions to halt human induced extinction of known threatened species and for the recovery and conservation of species, in particular threatened species, to significantly reduce extinction risk, as well as to maintain and restore the genetic diversity within and between populations of native, wild and domesticated species to maintain their adaptive potential, including through in situ and ex situ conservation and sustainable management practices, and effectively manage human-wildlife interactions to minimize human-wildlife conflict for coexistence.
5. Ensure that the use, harvesting and trade of wild species is sustainable, safe and legal, preventing overexploitation, minimizing impacts on non-target species and ecosystems, and reducing the risk of pathogen spillover, applying the ecosystem approach, while respecting and protecting customary sustainable use by indigenous peoples and local communities.
6. Eliminate, minimize, reduce and or mitigate the impacts of invasive alien species on biodiversity and ecosystem services by identifying and managing pathways of the introduction of alien species, preventing the introduction and establishment of priority invasive alien species, reducing the rates of introduction and establishment of other known or potential invasive alien species by at least 50 per cent by 2030, and eradicating or controlling invasive alien species, especially in priority sites, such as islands.
7. Reduce pollution risks and the negative impact of pollution from all sources by 2030, to levels that are not harmful to biodiversity and ecosystem functions and services, considering cumulative effects, including: (a) by reducing excess nutrients lost to the environment by at least half, including through more efficient nutrient cycling and use; (b) by reducing the overall risk from pesticides and highly hazardous chemicals by at least half, including through integrated pest management, based on science, taking into account food security and livelihoods; and (c) by preventing, reducing, and working towards eliminating plastic pollution.
8. Minimize the impact of climate change and ocean acidification on biodiversity and increase its resilience through mitigation, adaptation, and disaster risk reduction actions, including through nature-based solutions and/or ecosystem-based approaches, while minimizing negative and fostering positive impacts of climate action on biodiversity.

1.6 Biodiversity – The National Context

The original UK Biodiversity Action Plan (UK BAP), developed in the 1990s, was the UK commitment to Article 6A of the Rio Convention on Biological Diversity. It described the UK's priority species and habitats, and sought to benefit 65 priority habitats and 1149 species in total. It identified other key areas for action such as the building of partnerships for conserving biodiversity and gathering vital biodiversity data.

The UK BAP priority habitats and species became the Habitats and Species of Principal Importance listed under Section 41 of the NERC Act in 2006. This provided them with legal status, under the Act's biodiversity duty (Section 40), which continues to the present day. The Environment Act 2021 strengthens this duty to conserve and enhance biodiversity by stating that:

“A public authority which has any functions exercisable in relation to England must from time to time consider what action the authority can properly take, consistently with the proper exercise of its functions, to further the general biodiversity objective.”

The UK BAP itself was subsequently closed and archived in 2011 and was replaced in England with 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services'. Within this there were two high-level 'priority actions' relating to the water environment (and therefore relevant to IDBs):

- Priority Action 3.6: Align measures to protect the water environment with action for biodiversity, including through the river basin planning approach under the EU Water Framework Directive.
- Priority Action 3.7: Continue to promote approaches to flood and erosion management which conserve the natural environment and improve biodiversity.

This England Biodiversity Strategy ended in 2020. Currently there is no UK or England Biodiversity Action Plan that contains Habitat and Species Action Plans, but these continue to exist at the local level.

1.7 Local Biodiversity Action Plans

For the UK Biodiversity Action Plan to be implemented successfully it required some means of ensuring that the national strategy was translated into effective action at the local level. The UK targets for the management, enhancement, restoration, and creation of habitats and species populations were therefore translated into targets in Local Biodiversity Action Plans (LBAPs), which tend to operate at the county level. Many of these continue to follow a similar format today, despite the lack of a UK or England BAP.

1.8 Internal Drainage Boards and Biodiversity

The NERC Act 2006 and Environment Act 2021 place a duty on IDBs to conserve biodiversity. As a public body, every IDB must have regard in exercising its functions, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.

The NERC Act states that conserving biodiversity includes restoring or enhancing a population or habitat. In so doing, an IDB should have regard to the list published by the Secretary of State of living organisms and types of habitat that are of principal importance for the purpose of conserving biodiversity. In effect, this list comprises the priority species and habitats for England which were once listed in the national BAP.

In 2007, the Government's IDB Review Implementation Plan established a commitment that IDBs should produce their own Biodiversity Action Plans.

This IDB Biodiversity Action Plan has been produced to help fulfil these requirements and seeks to set out targets and actions that complement evolving national biodiversity strategy and current Local Biodiversity Action Plans.

1.9 The Aims of the IDB Biodiversity Action Plan

The aims of this IDB BAP are:

- To ensure that habitat and species listed under the NERC Act and in the local LBAP are given effective action within the drainage district.
- To identify targets for other habitats and species of local importance within the drainage district.
- To develop effective local partnerships to ensure that programs for biodiversity conservation are maintained in the long term.
- To raise awareness within the IDB and locally of the need for biodiversity conservation, and to provide guidance to landowners, occupiers and their representatives on biodiversity and inland water management.
- To ensure that opportunities for conservation and enhancement of biodiversity are fully considered throughout the IDB's operations, and
- To monitor and report on progress in biodiversity conservation.

2 THE IDB BAP PROCESS

2.1 The Biodiversity Audit

To produce this IDB Biodiversity Action Plan, information on the habitats and species present in the catchment was first obtained. This “Biodiversity Audit” involved the collation of existing data held by the IDB and by other biodiversity partners.

2.2 Evaluating and Prioritising Habitats and Species

The Biodiversity Audit identified those priority habitats and species in the NERC Act Section 41 list and the Local Biodiversity Action Plan that can be found in the drainage district. Additional non-NERC/BAP habitats and species deemed to be important within the drainage district were also identified.

Further habitats and species, together with additional targets and actions, may be added in the future, as knowledge is improved and delivery of the IDB BAP is reviewed.

A range of criteria was then used to select those species and habitats that are of particular importance to the IDB – that is to say, those habitats and species that could benefit from IDB actions. The criteria used included their national and local status, the opportunities for effective IDB action and the resources available.

2.3 Setting Objectives, Targets and Indicators

For each habitat and species identified as being important to the IDB, conservation objectives and targets have been drawn up and set out in the Plan. The objectives express the IDB’s broad aims for benefiting a particular habitat or species. The related targets have been set to focus IDB programmes of action and to identify outcomes that can be monitored to measure achievement. For each target an indicator has been set – a measurable feature of the target that, when monitored over time, allows delivery to be assessed.

For this BAP to be as effective as possible, the targets and actions have been devised to be SMART (Specific, Measurable, Achievable, Relevant and Time-limited). The targets are ambitious but are also considered to be proportionate and practicable given the resources available.

Procedural targets and actions have also been considered. These are targets that the Board will use to measure the way in which it considers and incorporates biodiversity across the whole range of its operations. These may involve changes to administrative, management and operating procedures.

2.4 Implementation

Once targets have been set for habitats and species, it is important that the actions to deliver the Biodiversity Action Plan are described. The Plan sets out how the Board intends to implement the actions in the plan, often in partnership with other organisations or individuals.

2.5 Monitoring

Achievement of the Plan targets will be measured by a programme of monitoring which the Board will undertake, in some instances with assistance from its partners, and the methods to be used are described in the Plan.

2.6 Reporting and Reviewing Progress

It is important to review the implementation of the BAP, assess changes in the status of habitats and species and the overall feasibility of objectives and targets. In addition, it is vital that the successful achievement of targets is recorded and the gains for biodiversity registered in the public domain.

The Plan sets out the methods the IDB will be using to review the delivery of targets and to communicate progress to partner organisations and the public.

3 THE BIODIVERSITY AUDIT

3.1 Introduction

The following Sections 4, 5 and 6 summarise the results of the Biodiversity Audit, undertaken in February-March 2023. Section 4 provides information about the drainage district and a list of the nature conservation sites that occur within or bordering its boundaries. Sections 5 and 6 list respectively the habitats and species occurring within the district that are of potential importance to the IDB.

3.2 Local Biodiversity Action Plans

The following Local Biodiversity Action Plan covers the IDB's drainage district:

- Kent Biodiversity Strategy (Kent Nature Partnership 2020):
<https://kentnature.org.uk/strategy/kent-biodiversity-strategy/>

3.3 IDB Biodiversity Audit Boundary

The Biodiversity Audit covers the entire district of the IDB, as shown in Figure 1 and Appendix 1. Where data has been obtained that shows a record of a species in a 1km square or 10km square which the district wholly or partially covers, this has been included in the area of the audit.

3.4 Sources of Data - Habitats

Information on habitats of relevance occurring within the drainage district was obtained from the following sources:

- Kent Habitat Survey 2012 (Kent County Council)
- Priority Habitat Inventory (Natural England) (last updated March 2023)

3.5 Sources of Data - Species

Information on species of relevance occurring within the drainage district was obtained from the following sources:

- Kent and Medway Biological Records Centre
- Royal Society for the Protection of Birds (RSPB)

4 NATURE CONSERVATION SITES

4.1 The Drainage District

The drainage district covers an area of 83.7km² and contains 27.3km of IDB-maintained watercourses. It is located mainly in the Hoo Peninsula on the north coast of Kent east of Gravesend (see Appendix 1). The majority falls within the Medway Unitary Authority, but a smaller eastern portion lies within Gravesham District.

4.2 Geology

The actively-managed IDB watercourses (Appendix 1) are all situated in a low-lying marshland area made up of alluvial drift deposits (sand/gravel/clay). The drift geology of the higher ground within the district is made up of head deposits (gravel) and terrace river gravel. Other areas of higher ground, to the west of the Hoo Peninsula, are a solid geology comprised of the Thanet Sand Formation (sand, silt and clay) and chalk.

4.3 Landscape

4.3.1 Landscape Designations

There are no statutory landscape designations covering the IDB district.

The London Area Greenbelt covers a small portion of the IDB district to the west within Gravesham. This is principally a development control area to limit the sprawl of metropolitan urban development.

4.3.2 Landscape Character

Natural England has divided the whole of England into a number of National Character Areas (NCA) based on characteristic landforms, wildlife and land use. They are not designations and are not confined by traditional administrative boundaries. For each NCA, Natural England has prepared a profile that characterises the wildlife and natural features, identifies the influences that act upon those features and sets objectives for nature conservation.

The IDB district includes two NCAs:

- The Greater Thames Estuary – This is the NCA that dominates the IDB district and where the IDB-maintained watercourses are. It is predominantly a remote and tranquil landscape of shallow creeks, drowned estuaries, low-lying islands, mudflats and broad tracts of tidal salt marsh and reclaimed grazing marsh that lies between the North Sea and the rising ground inland. Despite its close proximity to London, the Greater Thames Estuary contains some of the least settled areas of the English coast, with few major settlements and small villages and hamlets on higher ground and the marsh edges. Sea defences protect large areas of reclaimed grazing marsh and its associated ancient fleet and ditch systems, and productive arable farmland.
- North Kent Plain – A smaller portion of the IDB district mainly on the higher ground. It is the strip of land between the Thames Estuary to the north and the chalk of the Kent Downs to the south. The area is open, low and gently undulating. It is a very productive agricultural area with predominantly high-quality, fertile loam soils characterised by arable use. Traditional orchards, soft fruits and other horticultural crops exist in central and eastern areas. It is generally an open landscape: characteristic shelterbelts occur within the fruit-growing areas, but the agricultural land is mostly devoid of hedgerows.

4.3.3 Sites and Monuments Records

There are several scheduled monuments within the IDB district including:

- Cooling Castle and its associated landscaped setting
- Cliffe Fort
- Cliffe Explosives Works
- Halstow Marshes Decoy Pond
- Slough Fort and wing batteries
- Second World War QF P-series oil bombing decoy

- Coastal artillery defences on the Isle of Grain, immediately east and south east of Grain village
- Lodge Hill Anti-aircraft Battery
- Shornemead Fort
- St Mary's Priory: an alien Benedictine priory 100m east of St Mary's Church
- New Tavern Fort, Gravesend, including Milton Chantry

None of these are particularly relevant to this Biodiversity Action Plan, apart from the Cliffe Explosives Works through which part of the IDB-maintained watercourse, Curtis and Harvey Sewer, flows.

4.3.4 Tree Preservation Orders

Tree Preservation Orders (TPO) in Medway can be searched on the Medway Council website: https://www.medway.gov.uk/info/200147/applying_for_planning_permission/128/applications_for_works_to_trees/2.

No such service is apparently available for Gravesham, so Gravesham Council would need to be contacted directly to identify TPOs in their district.

TPOs are not a biodiversity designation, but rather are for very localised landscape purposes. Therefore, they are not particularly relevant to this BAP (even though tree protection generally benefits biodiversity).

4.4 Statutory Nature Conservation Sites

4.4.1 International Sites

The following internationally-designated conservation sites are found within the IDB district:

Table 1. International Designations

Site name	Designation	Qualifying features
Thames Estuary and Marshes	Special Protection Area (SPA)	Wetland birds: <ul style="list-style-type: none"> • hen harrier <i>Circus cyaneus</i> (wintering) • avocet <i>Recurvirostra avosetta</i> (wintering) • dunlin <i>Calidris alpina alpina</i> (wintering) • knot <i>Calidris canutus islandica</i> (wintering) • black-tailed godwit <i>Limosa limosa islandica</i> (wintering) • grey plover <i>Pluvialis squatarola</i> (wintering) • redshank <i>Tringa totanus tetanus</i> (wintering) • ringed plover <i>Charadrius hiaticula</i> (on passage) • An assemblage of 75,019 overwintering waterfowl (including the above species)
Thames Estuary and Marshes	Ramsar site	The above-listed SPA birds, plus: <ul style="list-style-type: none"> • more than 20 Red Data Book invertebrates • least lettuce <i>Lactuca saligna</i> • slender hare's-ear <i>Bupleurum tenuissimum</i> • divided sedge <i>Carex divisa</i> • sea barley <i>Hordeum marinum</i>

		<ul style="list-style-type: none"> • Borrer's saltmarsh-grass <i>Puccinellia fasciculata</i> • dwarf eelgrass <i>Zostera noltei</i>
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Additionally, part of the Medway Estuary and Marshes SPA and Ramsar site lies just outside of but adjacent to a short section of the IDB district's southern boundary.

The boundaries of these internationally designated sites are shown in Appendix 2.

4.4.2 National Sites

The following nationally-designated conservation sites for biodiversity are found within the district:

Table 2. National Designations

Site name	Designation	Reasons for notification
South Thames Estuary and Marshes	Site of Special Scientific Interest (SSSI)	An extensive mosaic of grazing marsh, saltmarsh, mudflats and shingle characteristic of the estuarine habitats of the North Kent Marshes. Freshwater pools and some areas of woodland provide additional variety and complement the estuarine habitats. The site supports outstanding numbers of waterfowl with total counts regularly exceeding 20,000. Many species regularly occur in nationally important numbers and some species regularly use the site in internationally important numbers. The breeding bird community is also of particular interest. The diverse habitats within the site support a number of nationally rare and scarce invertebrate species and an assemblage of nationally scarce plants.
Northward Hill	SSSI	Contains a heronry which is the largest in Britain. There is a diverse breeding bird community, and the insect fauna is also of interest particularly moths and butterflies. The site consists of mixed deciduous woodland and scrub with some open areas of grassland and bracken. Several small ponds are present and also a few open ditches. The wood has a diverse flora with over 200 plants recorded, including trees and shrubs.
Chattenden Woods and Lodge Hill	SSSI	The site comprises a mosaic of habitats, including long-established semi-natural woodland (areas of which are recorded as ancient semi-natural woodland), dense scrub and neutral grassland. The site is also of importance for its breeding nightingales.
High Halstow	National Nature Reserve (NNR)	(see Northward Hill SSSI above which overlaps this site)

Additionally, part of the Medway Estuary and Marshes SSSI lies just outside of but adjacent to a short section of the IDB district's southern boundary.

The boundaries of these nationally designated sites are shown in Appendix 2.

4.4.3 Local Nature Reserves

There are no Local Nature Reserves in the IDB District.

4.5 Non-statutory Local Sites

A number of sites have been identified locally as being important for wildlife. Whilst these designations do not have statutory status, the sites themselves are important for their contribution to biodiversity and planning policy requires that they are given consideration.

Several non-statutory Local Wildlife Sites (LWS) are to be found within or bordering the drainage district (see Appendix 2). Of these, only one at the western end of the IDB district covers watercourses that are directly maintained by the IDB, namely the Westcourt and Great Clane Marshes watercourse. This LWS is:

- 'Canal and Grazing Marsh, Higham' LWS. No detail was available at the time of writing, but the relevant part the LWS appears to be an area of coastal grazing marsh habitat.

The other LWSs in the drainage district are of little relevance to the IDB's operations.

The RSPB own and manage some areas of non-designated land within the drainage district. These are shown in Appendix 2. Most of this is at Northward Hill RSPB Reserve within an area of grazing marsh that lies adjacent to the woodland SSSI covering the rest of the RSPB land here.

5 HABITAT AUDIT

5.1 Habitat Audit Summary

This habitat audit summary (Table 3) lists the NERC Act Habitats of Principal Importance that occur within the IDB district which the IDB has potential to influence through its activities. A map of these habitats is provided as Appendix 3. The table also indicates which of those priority habitats are featured in the county Biodiversity Strategy. Habitats that are of potential importance for the IDB, where water level management, ditch maintenance or other IDB activities may be of benefit, are identified. Finally, brief notes are included on the potential for the IDB to maintain, restore or expand its important habitats. Those with the highest potential are shown in bold text.

Table 3. Habitat Audit Summary

NERC Habitat of Principal Importance	Local Biodiversity Action Plan habitat?	Habitat of importance for IDB	Location of habitat within IDB district	IDB potential for maintaining, restoring or expanding habitat
Coastal and floodplain grazing marsh	Yes	Grazing marsh ditches and hydrologically-linked wet grassland	Extensive presence throughout all areas actively managed by IDB	High: Maintain and restore through - <ul style="list-style-type: none"> • Appropriate water level management • Sensitive ditch maintenance
Reedbed	No	Reedbed	Multiple locations scattered throughout IDB district	Medium: Maintain, restore and expand through - <ul style="list-style-type: none"> • Appropriate water level management • Reedbed creation
Wet woodland	Yes	Wet woodland and willow carr	<ul style="list-style-type: none"> • Grain • Church Street • Northward Hill Reserve • Buckhole Farm • Stoke Marshes (Yantlet Creek) 	Low: Maintain through - <ul style="list-style-type: none"> • Appropriate water level management
Saline lagoons	No	Saline lagoon	<ul style="list-style-type: none"> • North Level • Allhallows Marsh • St Mary's Bay 	Medium: maintain through - <ul style="list-style-type: none"> • Appropriate water level management

Internal Drainage Board – Biodiversity Action Plan

			<ul style="list-style-type: none"> • Egypt bay • Cliffe Pools 	<ul style="list-style-type: none"> • Appropriate tidal exchange where applicable • Saline ditch maintenance (Allhallows Marsh)
Ponds	Yes	Pond	Multiple locations scattered throughout IDB district	High: Maintain, restore and expand through - <ul style="list-style-type: none"> • Appropriate water level management • Pond creation

5.2 Habitats of Primary Importance for the IDB

The Action Plan in Section 8 provides more information on the status and location of the habitat within the drainage district that is of highest importance for the IDB and may benefit from water level management or other IDB activities, as shown in bold text above: namely coastal and floodplain grazing marsh.

6 SPECIES AUDIT

6.1 Species Audit Summary

This species audit summary (Table 4) lists species for conservation concern that occur within the IDB district and are deemed likely to be influenced by the IDB’s activities such as watercourse management and water level management. Many are NERC Act Species of Principal Importance (UK priority species). Also included are qualifying species of the designated sites (see Section 4.4), species identified as priorities or indicators in the county (Kent) Biodiversity Strategy that occur in the IDB district and/or species that are indicators of a wetland habitat that’s healthy and able to support a range of notable species. Finally, brief notes are included on the potential for the IDB to maintain or increase the population or range of species of importance. Those features with the highest potential for the IDB to make a difference to biodiversity are shown in **bold** text. These are the features selected as priorities for action and form the basis of the action plans in Section 9.

Table 4. Species Audit Summary

Common name	Scientific name	NERC Act Species of Principal Importance?	Kent Biodiversity Strategy species?	Qualifying feature of statutory designated site?	Particularly strong indicator of wider habitat quality and connectivity?	Recorded presence within IDB district	IDB potential for maintaining or increasing species population or range
Plants							
Bulbous foxtail	<i>Alopecurus bulbosus</i>			Yes – Ramsar		Recorded at: <ul style="list-style-type: none"> • Allhallows Marshes • Higham Marshes • Cooling Marshes • Oakliegh • Grain Limited recorded distribution in IDB district, with only one location overlapping with IDB watercourse.	Low: A grass of meadows, fens, marshes and other grasslands.
Dittander	<i>Lepidium latifolium</i>					Recorded at: <ul style="list-style-type: none"> • Cliffe Pools • Denton Limited recorded distribution in IDB district, with only one location overlapping with IDB watercourse.	Low: A herb of coastal saltmarsh edges and damp ground. Often found in disturbed soil.
Divided sedge	<i>Carex divisa</i>	Yes		Yes – SSSI & Ramsar		Multiple locations scattered throughout IDB district. Widespread records near IDB watercourses.	Medium: A coastal wetland plant, moderately salt-tolerant, found in moist soils and can also tolerate some standing water but tends to avoid it. Thames estuary is a key stronghold. Water level management will influence.

Internal Drainage Board – Biodiversity Action Plan

Common name	Scientific name	NERC Act Species of Principal Importance?	Kent Biodiversity Strategy species?	Qualifying feature of statutory designated site?	Particularly strong indicator of wider habitat quality and connectivity?	Recorded presence within IDB district	IDB potential for maintaining or increasing species population or range
Golden dock	<i>Rumex maritimus</i>			Yes - SSSI		Multiple locations scattered throughout IDB district. Records overlap with IDB watercourse in several locations.	Medium: Found in wetland habitats such as pond and reservoir margins, and with a preference for bare, muddy ground e.g., in the draw-down zone. Water level management will influence.
Slender hare's ear,	<i>Bupleurum tenuissimum</i>	Yes		Yes – Ramsar		Multiple locations scattered throughout IDB district. Records overlap with IDB watercourses at Allhallows Marsh and North Level.	Medium: Primarily a colonist of thinly vegetated or disturbed coastal sites, including coastal banks, sea-walls, drained estuarine marshes and the margins of brackish ditches.
Tubular water-dropwort	<i>Oenanthe fistulosa</i>	Yes			Yes	Multiple locations scattered throughout IDB district. Records overlap well with IDB watercourses.	High: A plant of marshes which likes damp or wet habitats, usually in areas of winter flooding. Found in emergent and fringing vegetation by rivers, streams, canals, ditches and lakes. Influenced by water level management.
Water soldier	<i>Stratiotes aloides</i>			Yes - SSSI		Recorded at: <ul style="list-style-type: none"> • Higham Marshes • Great Clane Lane Marshes Records are along or near IDB ditches.	Medium: Free-floating aquatic plant that can be found in ponds and ditches. Therefore, influenced by aquatic weed cutting regime.
Invertebrates							
(a water-beetle)	<i>Aulacochthebius exaratus</i>			Yes – Ramsar		Multiple locations scattered throughout IDB district.	Medium: Occurs in reedbeds, etc.
(a weevil)	<i>Bagous longitarsis</i>			Yes – Ramsar		Recorded at: <ul style="list-style-type: none"> • Allhallows Marshes Some records overlap with IDB watercourses.	Medium: Associated with water milfoil plants.
(a cranefly)	<i>Erioptera bivittata</i>			Yes – Ramsar		Recorded at: <ul style="list-style-type: none"> • Cliffe Marshes • North Level Some records overlap with IDB watercourses.	Medium: Associated with reedbeds and grazing marsh.
(a water-beetle)	<i>Hydrochus ignicollis</i>			Yes – Ramsar		Recorded at: <ul style="list-style-type: none"> • Northward Hill No records along IDB watercourses.	Low: Well-vegetated marginal habitats.

Internal Drainage Board – Biodiversity Action Plan

Common name	Scientific name	NERC Act Species of Principal Importance?	Kent Biodiversity Strategy species?	Qualifying feature of statutory designated site?	Particularly strong indicator of wider habitat quality and connectivity?	Recorded presence within IDB district	IDB potential for maintaining or increasing species population or range
(a hoverfly)	<i>Lejops vittata</i>			Yes – Ramsar & SSSI		Recorded at: <ul style="list-style-type: none"> • Grain Marsh Recorded local distribution does not overlap with an IDB watercourse, but is upstream of North Level.	Medium: Brackish marsh where sea-clubrush is plentiful. Freshwater; standing and slow-running freshwater bodies supporting stands of <i>Phragmites</i> , <i>Typha</i> or <i>Scirpus</i> , including coastal lagoons. The classic habitat is amongst stands of Sea Club-rush <i>Scirpus maritimus</i> along ditches on grazing marshes.
(a rove beetle)	<i>Philonthus punctus</i>			Yes – Ramsar		Recorded at: <ul style="list-style-type: none"> • Redham Mead (Cliffe Marshes) Only recorded at/near junction of Curtis and Harvey with Lower Hope Delph (IDB watercourses).	Medium: A riparian species that does not depend on saline conditions, but most British records are for coastal habitats. Usually associated with coastal marshes and also found at the edges of saltmarshes. This species has been found in litter, on mud amongst Sea Club-rush in drying, brackish ditches, on the banks of muddy dykes, and at the edges of brackish ditches and saline pools. Water levels should be maintained at levels allowing the seasonal drying out of shallower dykes and ditches.
Big-spotted cleg	<i>Haematopota bigoti</i>			Yes - Ramsar		Recorded at: <ul style="list-style-type: none"> • Redham Mead (Cliffe Marshes) Only recorded at/near junction of Curtis and Harvey with Lower Hope Delph (IDB watercourses).	Low – mainly a species of saltmarshes
Crescent moth	<i>Celaena leucostigma</i>	Yes				Recorded at: <ul style="list-style-type: none"> • Grain • Cliffe Pools • Northward Hill • Great Clane Lane Marshes Records do not overlap with IDB watercourses.	Low: A species of wet woodland, likely to be affected by drainage. Larvae feed on the stems of marshland plants, such as yellow flag.
Great silver water beetle	<i>Hydrophilus piceus</i>			Yes – Ramsar		Multiple locations scattered throughout IDB district. Potential overlap of record with Shorne Marshes IDB watercourse.	Medium: Well-vegetated, often shallow, and permanent lowland water bodies; marshes, drains and especially coastal grazing marshes. Clean water is likely to be a requirement.

Internal Drainage Board – Biodiversity Action Plan

Common name	Scientific name	NERC Act Species of Principal Importance?	Kent Biodiversity Strategy species?	Qualifying feature of statutory designated site?	Particularly strong indicator of wider habitat quality and connectivity?	Recorded presence within IDB district	IDB potential for maintaining or increasing species population or range
Long-horned general (a soldier fly)	<i>Stratiomys longicornis</i>			Yes - Ramsar		Recorded at: <ul style="list-style-type: none"> • Cooling • Cliffe pools • Higham Marshes • Gravesend A couple of records overlap with IDB watercourses at Cooling and Shorne Marshes.	Medium: Coastal areas, typically upper saltmarsh, tidal rivers and coastal grazing marsh where brackish pools, ditches and lagoons are present within e.g., borrow dykes and old salt-winning areas.
Marsh mallow moth	<i>Hydraecia osseola hucherardi</i>	Yes				Recorded at: <ul style="list-style-type: none"> • Grain • Cliffe Pools No records along IDB watercourses.	Medium: Associated with the margins of ditches on grazing levels, riverbanks, and marshy places where the foodplant grows. Channel management to retain larval food plant, marshmallow.
Scarce emerald damselfly	<i>Lestes dryas</i>			Yes – Ramsar & SSSI		Multiple locations scattered throughout IDB district. Records overlap several IDB watercourses.	Medium: Usually found within the dense vegetation of shallow pools and drainage channels. They prefer ponds and ditches with thick vegetation and little open water. Also use the borrow dykes as well as ditches and marsh pools where they show a tolerance of brackish water. Breeding sites are well vegetated with submerged and emergent vegetation. Influenced by aquatic cutting regime.
Fish							
European eel	<i>Anguilla anguilla</i>	Yes	Yes		Yes	Recorded at: <ul style="list-style-type: none"> • (seaward of) East Court Marshes • Allhallows Marshes 	High: Elver migration upstream heavily influenced by water level control structures in ditches.
Birds							
Barn owl	<i>Tyto Alba</i>					Multiple locations scattered throughout IDB district	Medium: ADA (2009) have a species action plan for inclusion in IDB BAPs. Leave section of bank uncut for hunting. Installation of barn owl boxes on structures and on poles alongside channels.

Internal Drainage Board – Biodiversity Action Plan

Common name	Scientific name	NERC Act Species of Principal Importance?	Kent Biodiversity Strategy species?	Qualifying feature of statutory designated site?	Particularly strong indicator of wider habitat quality and connectivity?	Recorded presence within IDB district	IDB potential for maintaining or increasing species population or range
Great bittern	<i>Botaurus Stellaris</i>	Yes				Recorded at: <ul style="list-style-type: none"> Allhallows Marshes North Level 	Medium: Maintain appropriate water levels in reedbed habitat and remove obstructions to fish passage.
Hen harrier	<i>Circus cyaneus</i>	Yes		Yes- SPA & SSSI		Multiple locations scattered throughout IDB district	Low: Over-winters locally and breeds elsewhere (uplands). Not water-dependent. Declines mainly due to persecution.
Kingfisher	<i>Alcedo atthis</i>					Multiple locations scattered throughout IDB district	Medium: Protection of known nesting sites and creation of artificial nesting sites.
Lapwing	<i>Vanellus vanellus</i>	Yes	Yes		Yes	Multiple locations scattered throughout IDB district	High: Hydrology is a crucial factor in managing habitat for breeding waders. Maintain appropriate water levels on grazing marsh sites.
Reed bunting	<i>Emberiza schoeniclus</i>	Yes				Multiple locations scattered throughout IDB district	Medium: Leave one bank uncut with seed heads intact to provide winter food source. Keep isolated bushes. Manage banks so as to maintain and extend areas of adjacent rank grassland.
Yellow wagtail	<i>Motacilla flava flavissima</i>	Yes				Multiple locations scattered throughout IDB district	Medium: Maintain appropriate water levels on grazing marsh sites.
Reptiles							
Grass snake	<i>Natrix helvetica</i>	Yes				Multiple locations scattered throughout IDB district	Medium: Marginal fringes of dense vegetation left alongside ditches should benefit this species. Hibernacula could be established alongside channels.
Amphibians							
Common toad	<i>Bufo bufo</i>	Yes				Recorded at: <ul style="list-style-type: none"> Allhallows Cliffe Cliffe Woods Thames and Medway Canal 	Medium: Creating pools (>1m depth) in channel. Rotational cutting. Creation of log piles could benefit this species.
Great crested newt	<i>Triturus cristatus</i>	Yes				Multiple locations scattered throughout IDB district	Medium: Mainly uses ponds, but also known to use still-water ditches for breeding, although presence of fish can be limiting.
Mammals							

Internal Drainage Board – Biodiversity Action Plan

Common name	Scientific name	NERC Act Species of Principal Importance?	Kent Biodiversity Strategy species?	Qualifying feature of statutory designated site?	Particularly strong indicator of wider habitat quality and connectivity?	Recorded presence within IDB district	IDB potential for maintaining or increasing species population or range
Harvest mouse	<i>Micromys minutus</i>	Yes				Recorded at: <ul style="list-style-type: none"> • Northward Hill • Cooling Marshes • Shorne Marshes • Cliffe Pools 	Medium: Nests are found in tall, dense grass, including along the banks of ditches.
Otter	<i>Lutra lutra</i>	Yes				Recorded at: <ul style="list-style-type: none"> • Salt Fleet Flats • Northward Hill • Stoke Marshes 	Medium: A riparian species that uses watercourses for foraging and commuting. Larger watercourses with abundant fish are important, especially where there is good vegetation cover on the banks. Exposed riparian tree roots, dense scrub and reedbed can offer sheltering opportunity. Water quality is important.
Water vole	<i>Arvicola amphibius</i>	Yes	Yes		Yes	Multiple locations scattered throughout IDB district	High: A riparian species that burrows in well-vegetated ditch banks and feeds on lush bank and marginal vegetation. Uses the water for escape from predators. Mink predation control requires coordinated effort.
Daubenton's bat	<i>Myotis daubentonii</i>					Recorded at: <ul style="list-style-type: none"> • Cliffe Fort • Northward Hill • Buckland • Lodge Hill and Great Chattenden Woods 	Medium: A species associated with foraging along the open water surface and roosting near water such as within bridges. May use wider ditches that have open water and abundant insect prey.

6.2 Species of Primary Importance for the IDB

The Action Plans in Section 9 provide more information on the status and location of the species within the drainage district that have the highest potential for the IDB to contribute to improving local biodiversity through watercourse management, water level management or other IDB activities, as shown in bold text above. In particular, the ability to support delivery of the Kent Biodiversity Strategy is an important factor in this choice of IDB 'adopted' species.

7 HABITAT AND SPECIES ACTION PLANS

7.1 Habitat and Species Action Plans

The following sections contain action plans for each of the habitats and species that have been prioritised for action by the IDB (Sections 6 and 7). The plans set out the objectives, targets and actions that the IDB believes are appropriate for each. These plans will be reviewed and updated periodically.

7.2 How the IDB action influences biodiversity

The IDB has greatest opportunity to directly improve the network of ditches that form an integral part of grazing marsh habitat. This is because these features are the ones that are directly managed on a regular basis and form the IDB's principal infrastructure for their core operations: land drainage and water-level management. The biodiversity value of these ditches is based on several factors, notably water level, water quality, vegetation composition and connectivity.

Generally, unpolluted water is required to encourage and maintain high biodiversity. Water quality is less directly influenced by IDB operations and more influenced by farming operations and waste-water discharges. However, the IDB has a valuable role to play in influencing farmers and water companies and helping to monitor the effects of their operations.

Water level, however, is directly influenced by IDB infrastructure and operations. In fact, water level management is the IDB's *raison d'être*. It is also the principal means by which the IDB has the opportunity to improve not only ditch habitat but also the wider grassland habitat surrounding the ditches. The value of grazing marsh grassland for species lies in it being inundated during parts of each year, thus creating wet soils and shallow ephemeral pools of water. Exposed 'draw-down' zones of falling water levels are also important for certain species.

The ditches themselves require both supply and retention of water to serve their ecological function. The level of the water in the ditches and its stability will partly determine what ecological community develops within, and a variety of water levels across the marsh allows a diversity of species and communities to take advantage of the various hydrological niches. However, too little water over too large an area can lead to the loss of ditch habitat and/or lack of overtopping for valuable grassland inundation.

Water level control is generally achieved through built structures such as sluices, weirs, pumps and valves. These are used to hold water back, thus raising levels or to facilitate its drainage away to the sea thus lowering levels. Dense in-channel vegetation and thick layers of deposited silt can also influence water level to a lesser extent.

Thus, the IDB has the opportunity to improve biodiversity through sensitive and targeted water level management, which requires detailed understanding of the hydrological and ecological effects of the design, operation, and locations of control structures. This also requires an understanding of the hydrological requirements of the notable wetland and aquatic species within the IDB district. Obtaining and then combining these two bodies of knowledge is the first step towards the development of an ecologically-sensitive Water Level Management Plan (WLMP) which can lead to widespread biodiversity improvements.

The management of ditches in terms of vegetation and silt control is also an important aspect of the IDB's work, and is the main way, other than water level control, that the IDB can directly influence the physical structure of habitat within its district. The main activities the IDB carries out on an annual or longer cycle are bank mowing, aquatic weed cutting and channel de-silting.

Bank mowing and aquatic weed cutting are the more frequent operations and involve cutting of vegetation, often annually along IDB-maintained watercourses. Bank mowing is normally done to allow visibility into the channel for subsequent weed cutting or de-silting operations in the wetted channel. It is also done to facilitate visual bank inspections for structural integrity. Weed cutting is done to remove constraints to flow (drainage) along the watercourse caused by vegetation that can restrict the channel cross-sectional area and increase hydraulic friction. It also reduces the build-up of dead vegetation in the channel which over time can also reduce the channel capacity and decrease water depth.

De-silting is normally carried out less frequently on an as-needed basis. This involves the removal of silt from the bed of the ditch to restore its desired capacity/depth and also slow the rate of in-channel vegetation encroachment.

Given that the bed of the channel and vegetation within the channel are key elements of ditch habitat and home to many notable species, the IDB has opportunity to, and does, improve biodiversity through sensitive vegetation and silt management, which requires a good understanding of the hydrological, geomorphological and ecological effects of such operations and the needs of priority species.

The IDB can also indirectly influence habitat and species within its district through its development control and consenting activities. Each application to the IDB for Land Drainage Consent must be scrutinised to ensure that any consent meets the IDB's biodiversity duty under the NERC Act and does not contravene other wildlife legislation. In this way, the IDB has a significant role to play in managing the impacts of others on the natural environment.

8 HABITAT ACTION PLANS

8.1 Freshwater Grazing Marsh

8.1.1 Description

Grazing marsh is defined as periodically inundated pasture or meadow, with ditches which maintain the water levels containing standing brackish or fresh water. The relatively dense network of ditches forming the boundaries of grassland fields is uniquely characteristic of grazing marsh and is, in large part, responsible for its biological diversity, alongside the avian diversity of the wet grassland. Whilst the grassland is very important for waders, waterfowl and certain birds of prey, other notable taxa of grazing marsh are mostly associated with the ditches. The ditches are especially rich in plants and invertebrates, but also support notable mammals (e.g. water vole), amphibians (e.g. toad) and fish (e.g. eel). Grazing marsh grassland is particularly notable for the range and abundance of birds it supports, in particular waders, waterfowl and certain birds of prey. Almost all grassland areas are grazed by livestock, and some are cut for hay or silage. Sites may contain seasonal water-filled hollows and permanent ponds with emergent swamp communities, but not extensive areas of tall fen species like reeds; although they may abut with fen and reed swamp communities.

8.1.2 National Status

Freshwater Grazing Marsh is listed as a Habitat of Principal Importance under the NERC Act 2006 and is therefore recognised nationally as being of importance for biodiversity conservation. The exact extent of grazing marsh in the UK is not known, but it is possible that there may be a total of 300,000ha. England holds the largest proportion with an estimate in 1994 of 200,000ha. However, only a small proportion of this grassland is semi-natural supporting a high diversity of native plant species (5,000ha in England, an estimated 10,000ha in the UK).

8.1.3 National UK BAP Targets

The original UK BAP was first created in the 1990s and later closed in 2011; it is now archived. Therefore, there is no current Habitat Action Plan adopted by UK Government.

8.1.4 Local Status

Kent holds approximately 14,000 ha of grazing marsh (Kent Habitat Survey 2012), much of which is designated for biodiversity conservation. According to Kent Nature Partnership's 'State of Nature in Kent 2021' (published in 2022), it is estimated that 55% of grazing marsh in Kent is designated as SSSI, and direct loss of habitat area has slowed. By 2021, the extent of well-managed grazing marsh has increased by at least 1,800 ha since the 1980s. However, invasive non-native species such as floating pennywort, *Crassula* and American mink continue to impact grazing marsh in Kent.

As well as changes in habitat extent, changes in population and distribution of key wetland species can be used to indicate the impact of hydrological changes on the health of wetlands (Kent Nature Partnership, 2020). As an indicator of habitat quality, birds associated with slow flowing and standing water have shown a recent decline, and reedbed birds have also slightly decreased. Lapwing is particularly vulnerable to changes in agriculture, and, although nationally, it has shown little change, it has declined across southeast England over the 10 years prior to 2021 (BTO, JNCC and RSPB, 2019).



With funding from the Green Recovery Challenge Fund, a partnership comprising Kent Wildlife Trust, Essex Wildlife Trust, Kent Wildfowling & Conservation Association, Elmley Conservation Trust, a number of private landowners and lead by the RSPB have recently concluded a programme of landscape-scale restoration and enhancement across the Greater Thames Estuary. This is intended to be the first of many such collaborations with opportunities for the IDB to be involved.

8.1.5 Local Biodiversity Action Plan Targets

The Kent Biodiversity Strategy has a target to restore 2000 ha of grazing marsh habitat between 2020 and 2025 (Kent Nature Partnership 2020). This target includes habitat creation at Higham Marshes.

8.1.6 Status within the Drainage District

The North Kent Marshes IDB district contains approximately one-fifth of the county's grazing marsh resource, and it forms an important part of the wider coastal grazing marshes of the Thames and Medway estuaries. The great majority of the actively managed part of the district (Appendix 1) is grazing marsh habitat (Appendix 3), and most of this is formally designated for nature conservation (Appendix 2).

The majority of the nationally and internationally designated parts of the drainage district's grazing marshes is in 'favourable' condition according to Natural England's monitoring criteria (though organisations such as the RSPB would question whether these criteria and categories truly reflect the habitats' full potential and condition).

Notable exceptions to this 'favourable' condition include SSSI Unit 10 at Cliffe Marshes, several SSSI Units (27-29) at Higham Marshes and Unit 39 at Stoke Marsh, which were found to be in 'unfavourable declining' condition in 2022 due to the fields being very dry with low levels of bare ground that would facilitate breeding wader feeding. Water levels being held on site during the spring and summer months has decreased and may cause an impact to designated features going forward. Many of the fields within these areas are also over-grazed with a homogeneous appearance to the habitat, with few areas of longer sward and larger *Juncus* tussocks. A few others are under-grazed. Again, opinions vary among conservation organisations (e.g., RSPB) of how these Units compare to those classed as 'favourable'.

8.1.7 IDB Objectives

Objectives:

1. Better information on extent and condition of grazing marsh habitats in the IDB district to help prioritise conservation work.
2. Restoration of unfavourable grazing marsh habitats to favourable condition through improved water level and ditch management.
3. Water level management to ensure sufficient water for wet fencing, seasonal inundation of marsh grassland with subsequent drawdown resulting in high standards of favourable condition.
4. Improved ditch management to maximise native aquatic and riparian species diversity across the IDB district and to limit non-native species.

Table 5. Grazing marsh targets and actions

Target Reference	Target	Action Reference	IDB Actions	Partners	Date	Indicators	Reporting
1	Updated information on extent and condition of grazing marsh grassland and ditch habitat within IDB district	1.1	Promote and enable habitat type and condition survey (e.g. UK Hab ¹ /CSM ²) of grazing marsh grassland and ditches within the IDB district.	Natural England	2024	Updated mapping of habitat type and condition for all grazing marsh fields and ditches.	2025
		1.2	Promote and enable desk-based study of management, hydrological and topographic data to help interpret the results of habitat survey (see Action 1.1).	Landowners, Environment Agency	2024	Updated mapping of topography and surface water modelling for all grazing marsh	2025
2	All existing grazing marsh habitat to be in favourable condition by 2030	2.1	Help to restore unfavourable habitat to favourable (and 'good' using Biodiversity Metric) condition through targeted water level management, sensitive ditch maintenance and control of invasive, non-native species.	Landowners, Natural England, RSPB	2025-2029	All grazing marsh habitat within IDB district in favourable/good ³ habitat condition	2030
		2.2	Help maintain and enhance favourable/good habitat condition in all areas where it has already achieved that condition through targeted water level management, sensitive ditch maintenance and control of invasive, non-native species.	Landowners, Natural England, RSPB	2025-2029		2030

¹ UK Habitat Classification: <https://ukhab.org/>

² Common Standards Monitoring: <https://jncc.gov.uk/our-work/common-standards-monitoring-guidance/>

³ 'Favourable' is a category under the Common Standards Monitoring and 'Good' is a category under the UK Habitat Classification. Ideally, both should be achieved.

Target Reference	Target	Action Reference	IDB Actions	Partners	Date	Indicators	Reporting
		2.3	Promote and enable monitoring of success through repeat habitat surveys (see Action 1.1)	Natural England	2030		2031
3	Increase numbers or extent of grazing marsh indicator species within IDB district	3.1	Promote and enable baseline survey and desk-based study to determine 5-year (2021-2025) mean counts of breeding lapwing pairs in the IDB district.	RSPB	2025	Minimum increase (above regional trend) of 20% in numbers of breeding lapwing by 2030, and minimum increase of 20% in extent (m) of water vole occupied IDB watercourse by 2032	2026
		3.2	Promote and enable baseline survey (in June and September) and desk-based study to determine maximum extent of water vole distribution along IDB-maintained watercourses in 2026 and 2027.	Environment Agency, Kent Wildlife Trust, RSPB	2027		2028
		3.3	Promote and enable (repeat) monitoring survey and desk-based study to determine change in numbers of breeding lapwing pairs in the IDB district, and compare this to regional and national trends for this species.	RSPB	2030		2031
		3.4	Promote and enable (repeat) monitoring survey (in June and September) to determine maximum extent of water vole population along IDB-maintained watercourses in 2031 and 2032.	Environment Agency, Kent Wildlife Trust	2032		2033

9 SPECIES ACTION PLANS

9.1 Tubular water-dropwort

9.1.1 Description

Tubular water-dropwort is a delicate umbellifer plant of the lowlands which grows in a wide range of wetland areas, including damp ground on the edges of ponds (more rarely rivers, streams, canals, ditches and lakes) as well as in dense wetland vegetation in meadows, marshes, fens and pasture on river floodplains and occasionally in deep water in permanent ditches. It appears most frequently in ancient habitats, where there is a long history of stable land use, such as traditionally managed pasture and meadows.

A unifying requirement for these habitats is clean water with little or no nutrient pollution from intensive agriculture. This is because nutrients are a fertilizer that allows more vigorous and fast growing species to out-compete more delicate species such as tubular water-dropwort.

To germinate, tubular water-dropwort requires some kind of disturbance to create openings amongst denser vegetation. Consequently, it favours habitat with both grazing and fluctuating water levels, both of which help eliminate competing plants and maintain appropriate conditions. Although usually found in open sunny situations, light shade can sometimes help to inhibit tubular water-dropwort's competitors, allowing it better opportunities to flourish, but it is intolerant of heavy shading from trees and scrub.



9.1.2 National Status

Tubular water-dropwort is classed as Vulnerable in the UK and is listed as a Species of Principal Importance (priority species) under the NERC Act in England. Tubular water-dropwort has declined dramatically in the UK since the 1950s. This has been due to multiple factors including wetland drainage, nutrient enrichment, loss of grazing, change to intensive arable and grazing, and the spread of non-native species. Although it is still found in southern England and in places on the coast of Wales, it is a rapidly declining plant. Recent surveys have found it has been lost from a high proportion of its previous sites.

9.1.3 National UK BAP Targets

The original UK BAP was first created in the 1990s and later closed in 2011; it is now archived. Therefore, there is no current Species Action Plan adopted by UK Government.

9.1.4 Local Status

Tubular water-dropwort is found in several coastal wetland sites throughout Kent including North Kent.

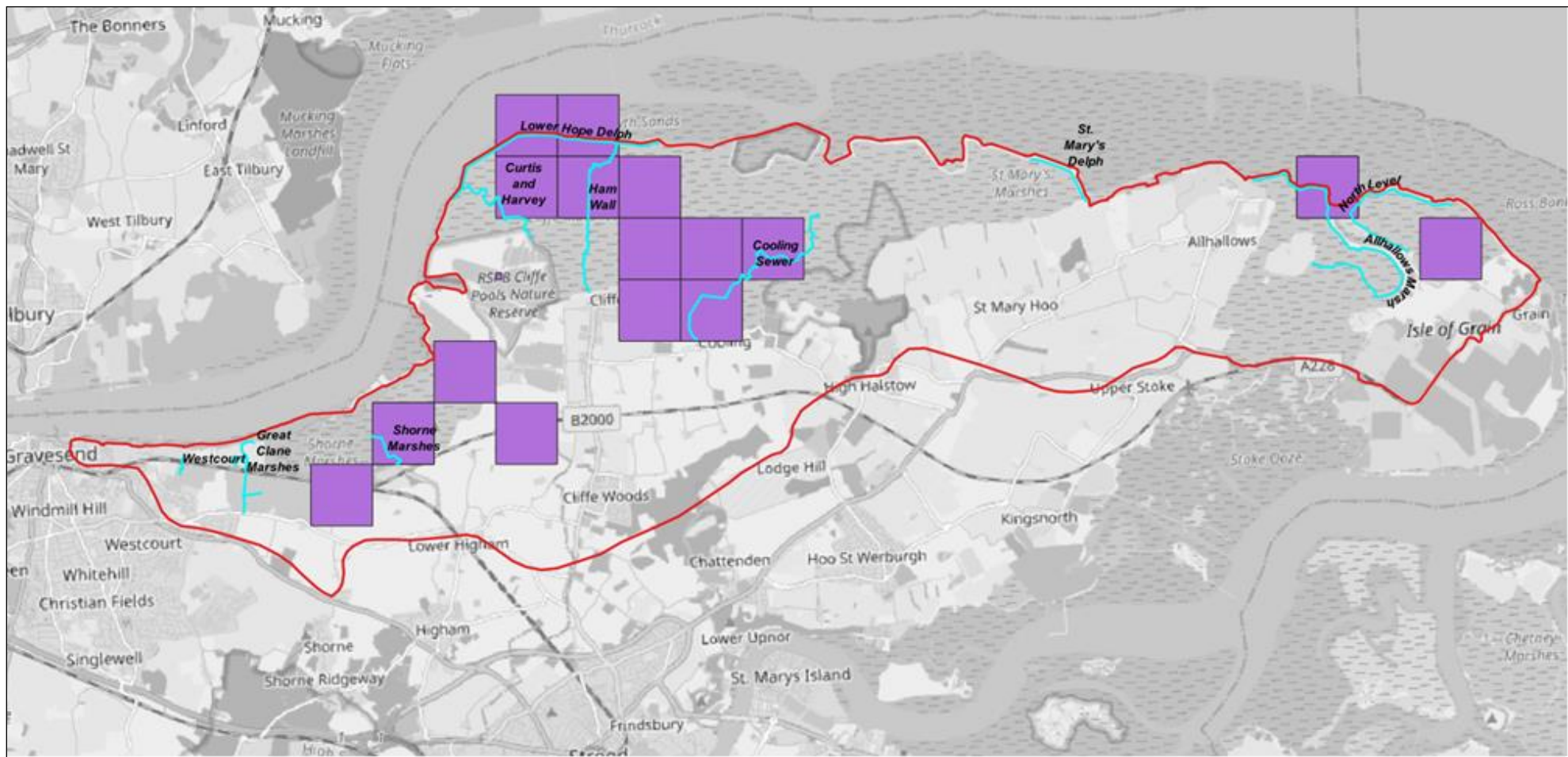
9.1.5 Local Biodiversity Action Plan Targets

The Kent Biodiversity Strategy does not include this species.

9.1.6 Status within the Drainage District

Tubular water-dropwort has been recorded since 2010 at several marshland locations across the drainage district including Cliffe Marshes, Rye Street Common, Cooling Marshes, Higham Marshes, Allhallows Marshes, RSPB Northward Hill and Shorne Marshes (Figure 2). These records are from 2010 to 2019, with the most recent being from Cliffe Marshes and RSPB Northward Hill.

Figure 2 *Distribution of tubular water dropwort records in North Kent Marshes IDB district (purple squares)*



9.1.7 Objectives

1. Establish baseline information on distribution and abundance along IDB-managed ditches through surveys.
2. For extant sites, enable grazing and/or cutting and seasonal inundation regimes that are optimal for retaining the species.
3. Enable spread of the species by creating suitable hydrological and grazing/cutting conditions near to extant populations.

Table 6. Tubular water dropwort targets and actions

Target Reference	Target	Action Reference	IDB Actions	Partners	Date	Indicators	Reporting
1	Distribution of the species along IDB managed ditches is fully known.	1.1	Promote and enable baseline survey for the species along all IDB-managed watercourses	Natural England	2024	Current distribution along IDB channels is known by end of 2024.	2025
2	No reduction in current extent and abundance	2.1	Ensure that water level management allows for seasonal inundation at a frequency and timing that is optimal for the species wherever it occurs.	Natural England Landowner	2025 onwards	Increase in distribution along IDB channels of 20% (by length) by 2033	2026
		2.2	In the absence of a suitable (i.e. light) grazing regime, ensure that cutting of ditch-bank vegetation occurs at a frequency, height and timing that is optimal for retaining the species wherever it occurs (by suppressing more competitive, tall species).	Landowner	2025 onwards		2026
3	Increased distribution of the species	3.1	Ensure that water level management allows for seasonal inundation at a frequency and timing that is optimal for the species in areas adjacent and hydrologically connected to where it occurs.	Natural England Landowner	2026 onwards		Increase in distribution along IDB channels of 20% (by length) by 2033
		3.2	In the absence of a suitable (i.e. light) grazing regime, ensure that cutting of ditch-bank vegetation occurs at a frequency, height and timing that is optimal for retaining the species in areas adjacent and hydrologically connected to where it occurs.	Landowner	2026 onwards	2027	
		3.3	Promote and enable monitoring survey for the species along all IDB-managed watercourses	Natural England	2028 and 2033	2029 and 2033	

Target Reference	Target	Action Reference	IDB Actions	Partners	Date	Indicators	Reporting
			to identify changes in distribution and abundance.				

9.2 European Eel

9.2.1 Description

The eel is a very long, narrow fish that can grow to over a metre in length. It looks smooth and lacks the obvious scales and gills of other fish. It can be found in rivers and ditches but leaves its freshwater home to breed in an area of the west Atlantic Ocean called the Sargasso Sea. Young eels (known as 'elvers') return to freshwater rivers to develop. Eels are predators and scavengers, feeding on dead animals, fish eggs, invertebrates and other fish.

9.2.2 National Status

Listed as Critically Endangered on the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species, abundance of the European eel stock is at a historical low and continues to decline. The current level of recruitment of glass eel (juveniles) to Europe is at its lowest level in recent decades, at less than 5%. Average glass eel recruitment to fisheries in Europe has declined by 97%. The decline in eel stocks is an international concern. In England, the species is a NERC Act Species of Principal Importance and legally protected under the Eels (England and Wales) Regulations 2009.



9.2.3 National UK BAP Targets

The original UK BAP was first created in the 1990s and later closed in 2011; it is now archived. Therefore, there is no current Species Action Plan adopted by UK Government.

9.2.4 Local Status

European eel is a Kent Biodiversity Strategy Species.

9.2.5 Local Biodiversity Action Plan Targets

The Kent Biodiversity Strategy has a target of demonstrable progress to silver eel (mature eels which have undertaken a change in readiness for migration) escapement (outward migration) targets in all Kent-influenced catchments by 2025 and to secure access for eel to an additional 200 km of habitat. The longer-term target is to increase escapement in silver eels by 40% by reducing the obstacles which prevent eels moving downstream to migrate.

9.2.6 Status within the Drainage District

The brackish and freshwater marshes of North Kent, are important habitat for eels to grow and mature in. However, they have only been recorded in a limited number of locations within the drainage district: seaward of East Court Marshes and at Allhallows Marshes (Figure 3). This probably reflects under-recording. The RSPB report the species' presence at Cliffe Pools, for example, and a local landowner confirms recently seeing one dropped by a heron near the Pools.

Table 7. European eel targets and actions

Target Reference	Target	Action Reference	IDB Actions	Partners	Date	Indicators	Reporting
1	Distribution of the species and migration obstacles along IDB-managed ditches is fully known.	1.1	Promote and enable baseline survey for the species and obstacles to its migration along all IDB-managed watercourses	Environment Agency	By end of 2025	Current distribution of species and obstacles along IDB channels is known and mapped by 2026.	2026
2	Increased distribution of the species	2.1	Under expert guidance, undertake a programme of removing obstacles to both upstream (elver) and downstream (silver eel) migration along all IDB-managed ditches by either removing structures or making them passable.	Environment Agency	2026-2027	Abundance of elvers and adult eels passing through IDB-maintained channels increased by 25% by 2033.	2028
		2.2	Promote and enable long-term monitoring of the species (against the baseline - see item 1.1 above) to assess the effects of obstacle mitigation (see 2.1).	Environment Agency	2028-2033		2033

9.3 Lapwing

9.3.1 Description

Lapwings are found on farmland throughout the UK particularly in lowland areas of northern England, the Borders and eastern Scotland. In the breeding season they will utilise spring-sown cereals, root crops, permanent unimproved pasture, meadows, fallow fields and sensitively grazed wetlands with short vegetation. In winter, they flock on pasture and ploughed fields. Breeding lapwing are a good proxy for wet grassland management. In the breeding season, lapwings need a mosaic of habitats, because they need different conditions for nesting and for chick rearing.

The nest is a scrape in the ground, lined with a variable amount of plant material. The birds need a good all-round view from the nest to spot predators, and nest either on bare ground or in short vegetation. They often choose rough or broken ground to aid concealment of the nest. Spring sown crops and rough grazing are ideal. Soon after hatching, the parents will lead them to suitable feeding areas, where the supply of surface invertebrates is good and the vegetation low. They particularly need to have nearby grassland, especially if it contains flooded pools and damp patches.



9.3.2 National Status

Lapwing has suffered significant declines nationally and is now a Red List species. It is also a NERC Act Species of Principal Importance. Between 1995 and 2012, breeding lapwing declined by 47% in Southeast England. They have been lost from much of the wider countryside due to changes in agriculture, but populations on wet grassland have increased over this time due to habitat creation and enhancement, particularly on the North Kent Marshes.

9.3.3 National UK BAP Targets

The original UK BAP was first created in the 1990s and later closed in 2011; it is now archived. Therefore, there is no current Species Action Plan adopted by UK Government.

9.3.4 Local Status

The estimated population of breeding lapwing in Kent in 2013 was between 980 and 1,200 pairs. The species is a Kent Biodiversity Strategy priority.

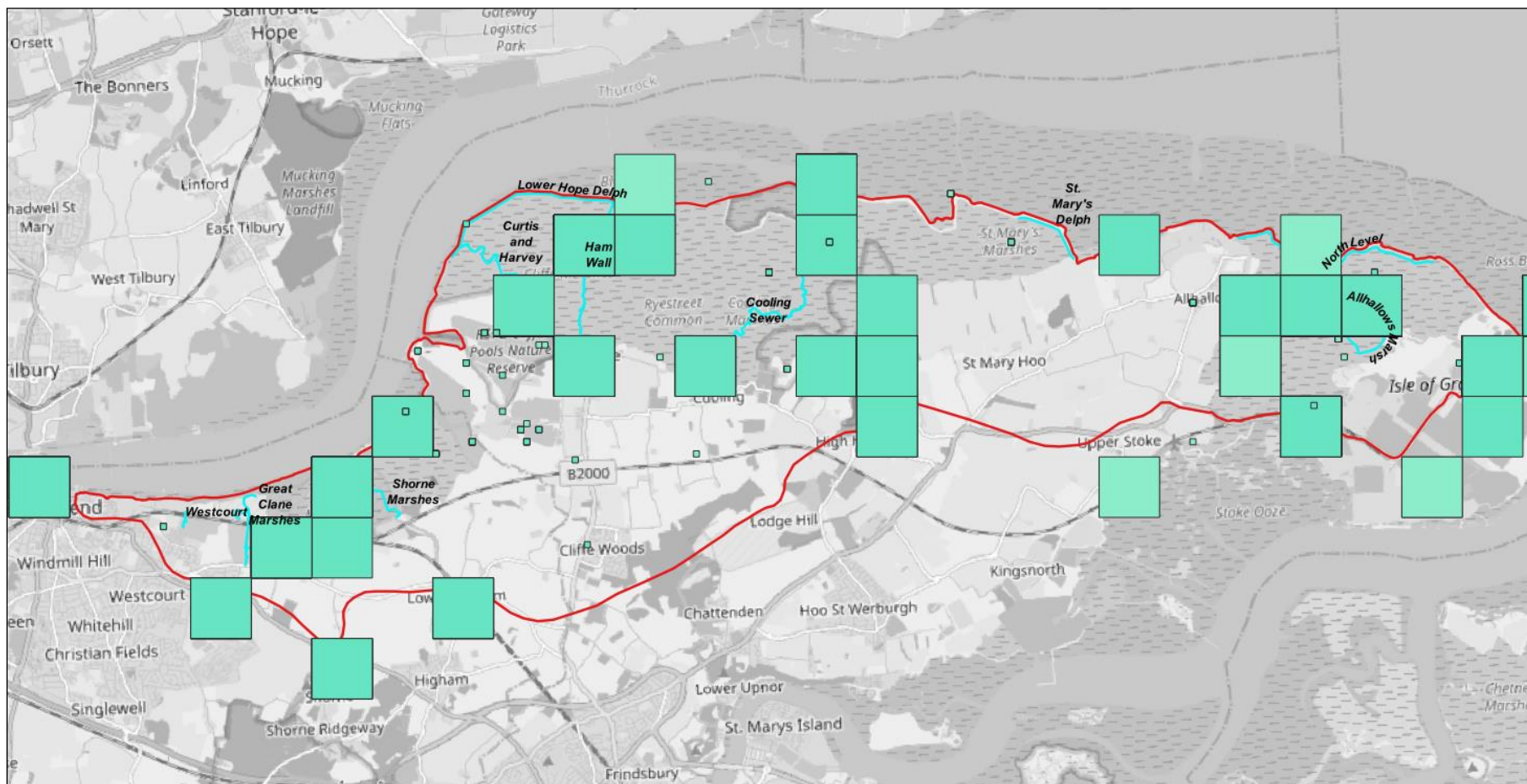
9.3.5 Local Biodiversity Action Plan Targets

The Kent Biodiversity Strategy has a target of greater than 1000 breeding pairs of lapwing in North Kent by the end of 2025 (from a baseline of 800). This is to be achieved through landscape-scale conservation management, involving improvements to hydrological management and grazing management.

9.3.6 Status within the Drainage District

The North Kent Marshes are a stronghold for this species, and it is present throughout the IDB district (Figure 4).

Figure 4 *Distribution of lapwing records in North Kent Marshes IDB district (blue squares)*



9.3.7 Objectives

1. Determine the likely baseline number of breeding lapwing pairs and the areas of greatest breeding density within the IDB district.
2. Review water level management plans and implementation to ensure ideal conditions are maintained or created for lapwing breeding and feeding where breeding density is highest.
3. Work with landowners and Natural England to influence sensitive grazing regimes.

Table 8. Lapwing targets and actions

Target Reference	Target	Action Reference	IDB Actions	Partners	Date	Indicators	Reporting
1	Current number of breeding pairs and areas of highest breeding density within the IDB district are known.	1.1	Work with recording organisations and individuals to consolidate data sets (into the KMBRC) and determine the likely baseline number of breeding lapwing pairs and areas of highest breeding density within the IDB district.	Recording organisations (e.g. RSPB, BTO, KOS, KMBRC)	By end of 2024	Robust estimate of current number of breeding pairs and areas of highest breeding density in IDB district is known.	2025
2	Increased distribution of the species	2.1	Ensure that water level management allows for seasonal inundation at a frequency and timing that is optimal for the species wherever breeding densities are highest.	Environment Agency, Landowners, RSPB, Natural England	2025-2026	Number of breeding pairs in the IDB district increased by 20% compared to 2024 baseline.	2027
		2.2	Work with landowners and Natural England to influence grazing regimes so that lapwing breeding habitat is enhanced throughout the IDB district.	Landowners, RSPB, Natural England	2026-2027		2028
		2.3	Work with recording organisations and/or consultants to monitor the change in number of breeding lapwing pairs within the IDB district.	Recording organisations (e.g. RSPB, BTO, KOS)	2027-2033		2033

9.4 Water vole

9.4.1 Description

A riparian rodent and Britain's largest vole species, which burrows into well-vegetated ditch banks and feeds primarily on lush bank and water-margin vegetation. It uses the adjacent water for escape from predators. Breeds mainly from April to September, having up to five litters in a season leading to maximum distribution in September wherever watercourses remain wet. Naturally high winter mortality reduces the population before the onset of the next breeding season.

9.4.2 National Status

The water vole is found throughout Britain, though it is less common on higher ground. It is Britain's fastest declining mammal species due to a combination of habitat loss and predation by non-native American mink. The latest analysis of data undertaken by the National Water Vole Database and Mapping Project estimates the overall decline of this species was 30% between 2006 and 2015 across England and Wales. The water vole is a Species of Principal Importance under the NERC Act and legally protected in the UK under the Wildlife and Countryside Act, 1981. It is listed as Endangered in Britain's Red List for Mammals.

9.4.3 National UK BAP Targets

The original UK BAP was first created in the 1990s and later closed in 2011; it is now archived. Therefore, there is no current Species Action Plan adopted by UK Government.

9.4.4 Local Status

The species is listed as a priority in the Kent Biodiversity Strategy. Water vole populations in Kent are now largely concentrated within the county's extensive coastal and floodplain grazing marshes, including North Kent, which feature complex habitats including ditch networks and reedbeds.

9.4.5 Local Biodiversity Action Plan Targets

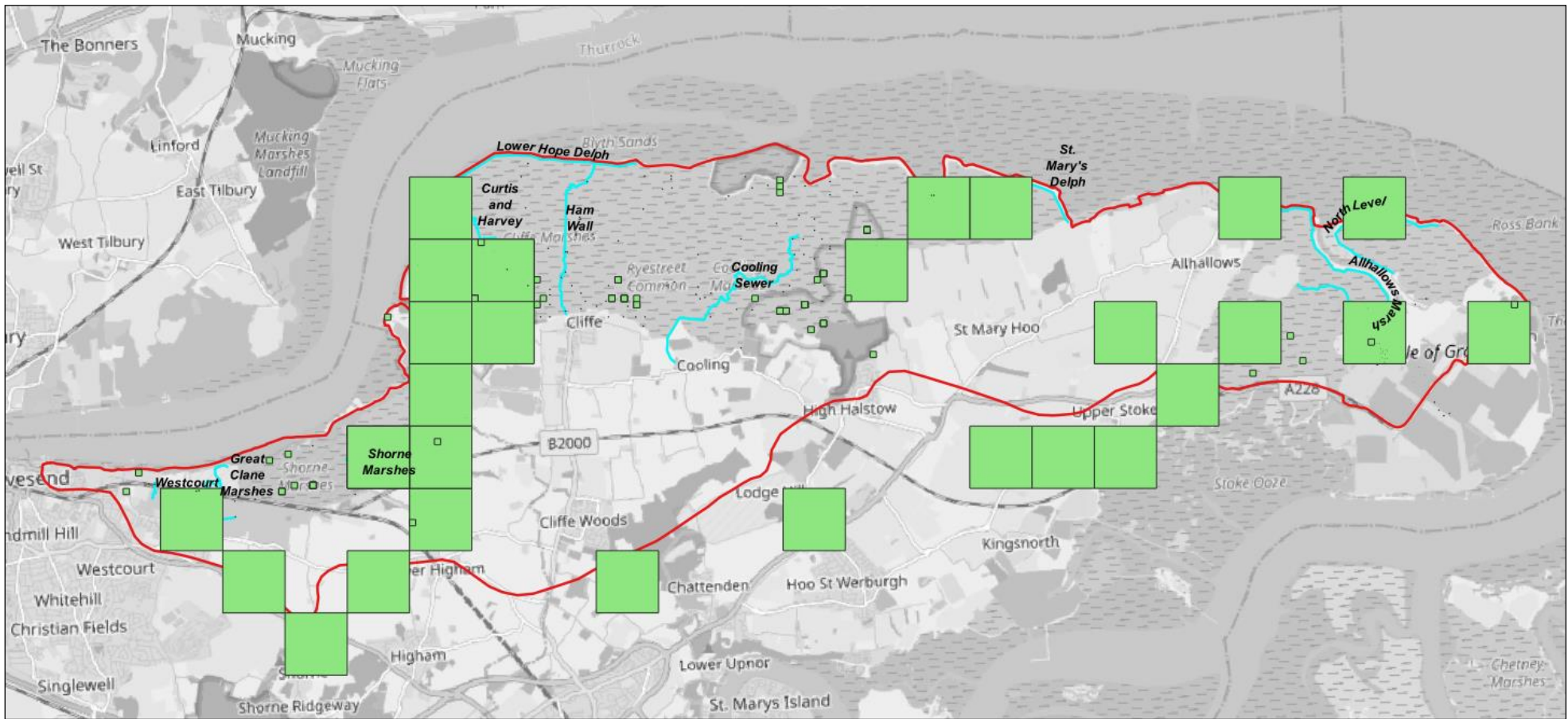
The Kent Biodiversity Strategy has a target to retain water vole populations on all known sites and demonstrate progress in assessing county-specific status through encouraging involvement in the National Water Vole Monitoring Programme (evidenced by all existing sites being monitored and the addition of new sites to the register). This will enable subsequent assessment of the population across Kent and enable specific actions to be identified.

9.4.6 Status within the Drainage District

Water voles have a relatively strong recorded presence in the IDB district, having been recorded in multiple locations throughout (Figure 5).



Figure 5 *Distribution of water vole records in North Kent Marshes IDB district (green squares)*



9.4.7 Objectives

1. Determine distribution of water vole occupation along IDB-maintained channels.
2. Improve channels for water voles by ensuring that banks are not damaged and sufficient vegetation cover is retained during channel maintenance.
3. Ensure water levels are maintained to provide sufficient depth for predation avoidance, but also sufficient height of bank above water level for burrowing.

Table 9. Water vole targets and actions

Target Reference	Target	Action Reference	IDB Actions	Partners	Date	Indicators	Reporting
1	Current distribution of water vole along IDB-maintained channels is fully recorded.	1.1	Work with recording organisations and individuals to determine the baseline distribution of water vole along IDB-maintained channels.	RSPB, Kent Mammal Group, Environment Agency, PTES	By end of 2024	Current distribution along IDB channels is known by 2024	2025
2	Increased distribution of the species	2.1	Work with a species expert to develop and implement a ditch bank vegetation cutting specification that optimises the long-term persistence and expansion of the species.	Environment Agency, Landowners, RSPB, Natural England	2025 onwards	Increase in distribution along IDB channels of 20% (by length) by 2033	2026
		2.2	Review and modify water level management to maximise opportunity for water vole expansion, where this does not conflict with the interests of other priority species.	Environment Agency, RSPB	2025 onwards		2026
		2.3	Work with recording organisations and individuals to monitor the change in distribution along IDB channels.	RSPB, Kent Mammal Group, Environment Agency, PTES	2025-2033		2033

10 PROCEDURAL ACTION PLAN

Introduction

A number of procedural targets and actions have been established within this Procedural Action Plan. These are intended to integrate biodiversity considerations into IDB practices and procedures.

Objectives

1. Raise and maintain awareness of, and involvement in, this IDB BAP among all IDB board members, staff and contracting partners.
2. Implement training for staff and/or contractors in conservation management of drainage channels.
3. Extend partnership-working with nature conservation and species recording organisations.
4. Develop and maintain a user-friendly GIS database that combines IDB assets and operations information with species and habitat data.

Table 10. Procedural targets and actions

Target Reference	Target	Action Reference	IDB Actions	Partners	Date	Indicators	Reporting
1	Provide training on the IDB BAP and conservation management of drainage channels for all relevant staff	1.1	Establish annual programme of 1-day courses for IDB staff	N/A	2023 onwards	100% of relevant staff attending each year.	Annual to 2033
		1.2	Deliver a half-day presentation to Board members	N/A	2023	All Board members attending	2023
		1.2	Establish annual programme of 1-day courses for IDB contractors to be delivered just prior to the start of annual maintenance (July)	Contractors	2023 onwards	% of contractors attending each year.	Annual to 2033
2	Undertake minimum of five partnership projects related to BAP implementation	2.1	Identify and initiate at least five partnership projects related to IDB BAP implementation	TBC (e.g. Natural England, RSPB, Kent Wildlife Trust,	By end of 2027	At least five new partnership projects commenced.	2027

Target Reference	Target	Action Reference	IDB Actions	Partners	Date	Indicators	Reporting
				Environment Agency, KRAG, KOS, Etc)			
		2.2	Complete a minimum of five partnership projects related to IDB BAP implementation		By the end of 2033	At least five new partnership projects completed and reported.	2033
3	Manage all BAP-relevant data using GIS	3.1	Develop a BAP GIS project/database that combines spatial data on IDB assets and operations with species and habitat data.		2024	GIS project complete and available	2024
		3.2	Maintain the GIS project with regular information updates		2024 onwards	GIS project data fully up to date	Annually from 2024

11 IMPLEMENTATION

The implementation and review of the North Kent Marshes IDB BAP will be overseen by a dedicated Steering Group made up of the IDB and key stakeholders. It is envisaged that the group will include representation from Natural England, the RSPB, Medway Council and the Environment Agency, but may also include others, should they wish to be involved (e.g. Kent Wildlife Trust, Gravesham Council). The exact composition of the Steering Group is still to be confirmed.

The BAP will be implemented in three main ways:

- Through the IDB's normal operations including:
 - Maintenance works
 - Capital works
 - Development control (of others' works)
 - Enforcement of byelaws
 - Water level management (with reference to the Water Level Management Plan)
 - IDB staff professional development
- Through novel IDB biodiversity projects
- Through partnerships with other organisations (e.g. Steering Group partners) and individual landowners

Despite the involvement of a wider Steering Group and project-specific partners, the implementation of this BAP is ultimately the collective responsibility of the IDB's Board Members.

12 MONITORING

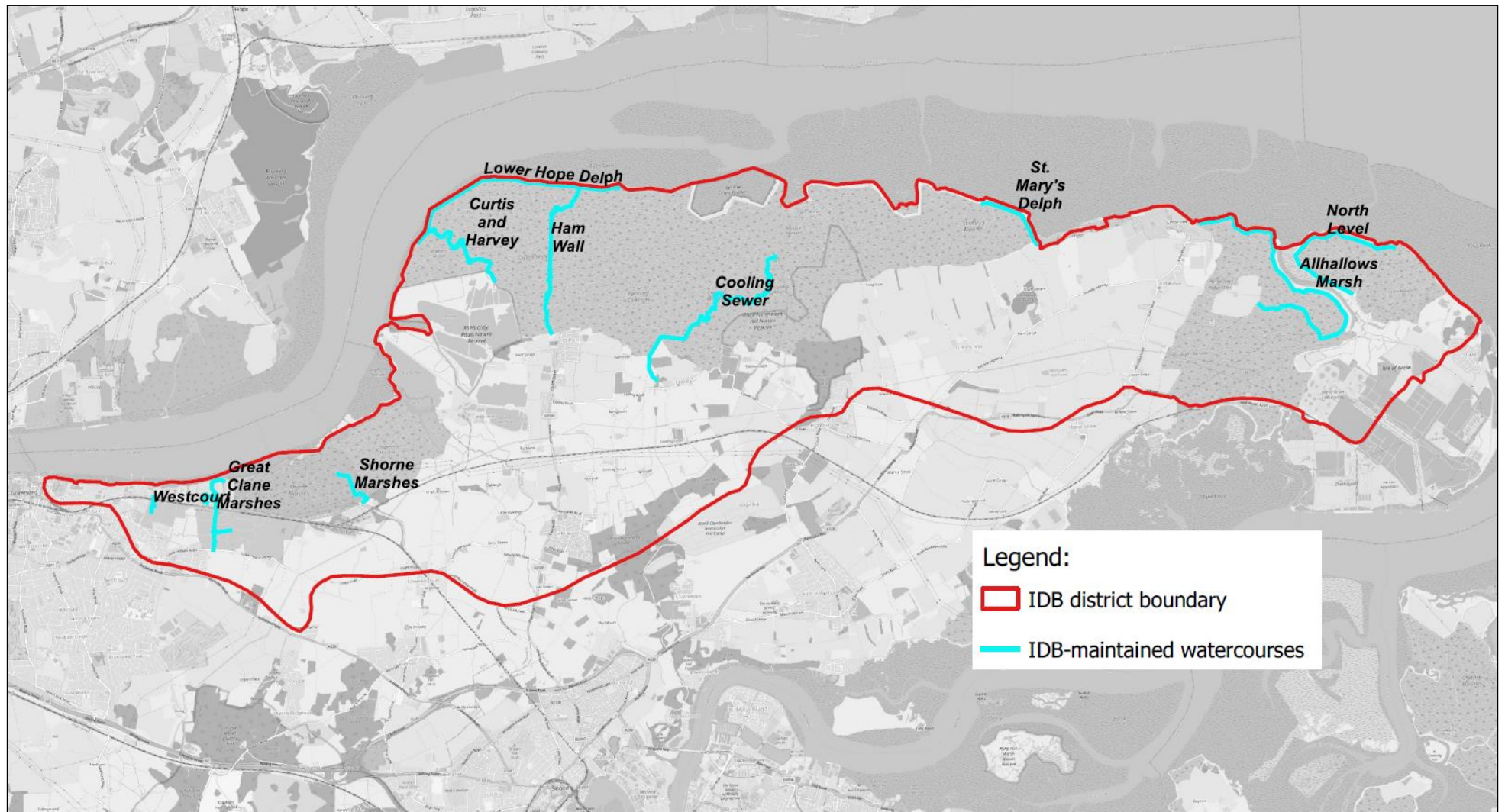
Monitoring of individual action plan targets and indicators is built into each action plan (see Sections 8 and 9).

13 REVIEWING AND REPORTING PROGRESS

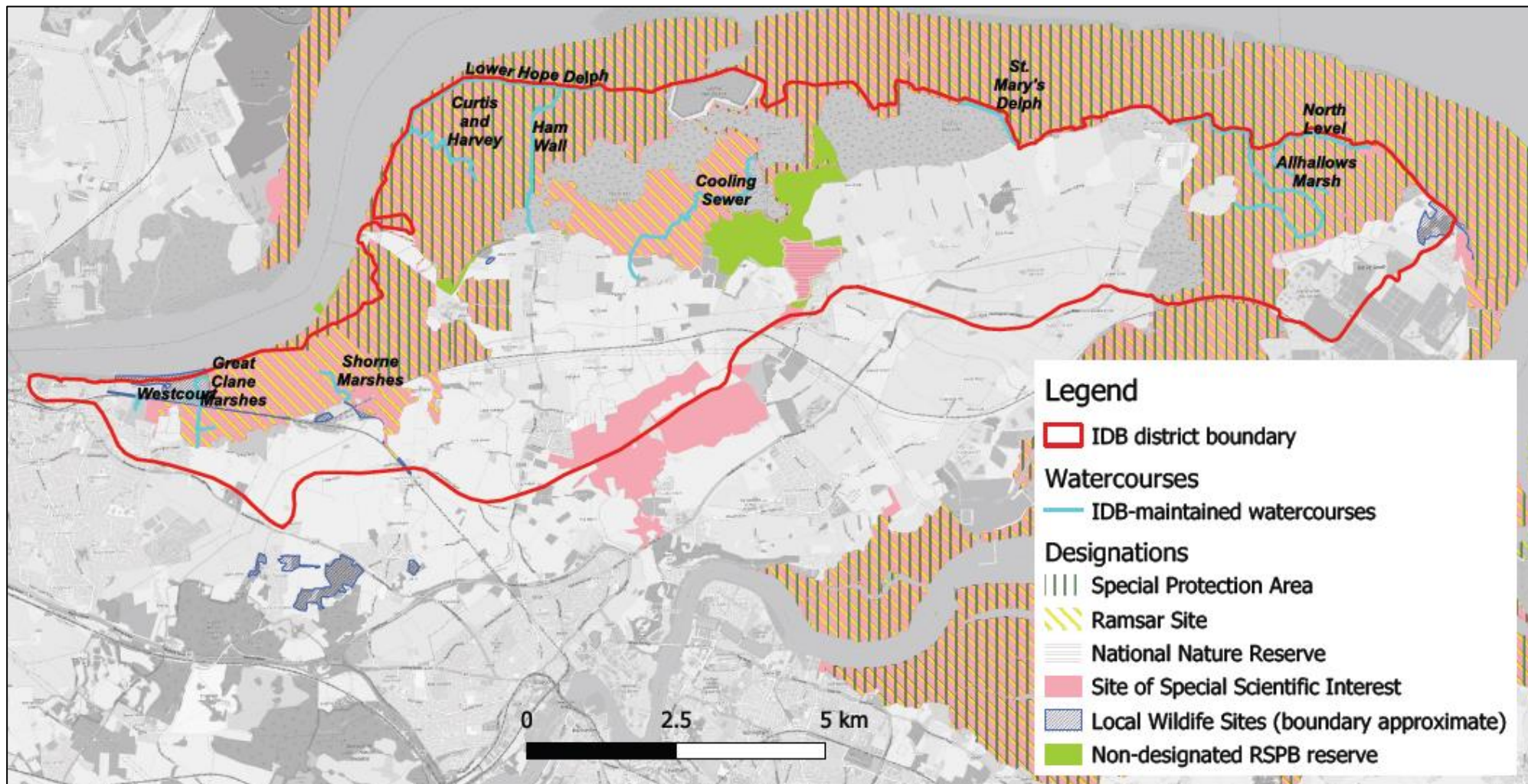
BAP target progress and achievements will be reviewed and reported to the IDB BAP Steering Group annually. Reasons for missing any targets by the specified delivery dates will be provided in the report, as necessary, and remedial measures proposed.

The whole BAP will be subject to an interim review of its appropriateness and effectiveness by the Steering Group in Year 5 (2028) and again in Year 10 (2033). If the Year 5 review identifies significant shortcomings, a revision of the BAP will be implemented to overcome this.

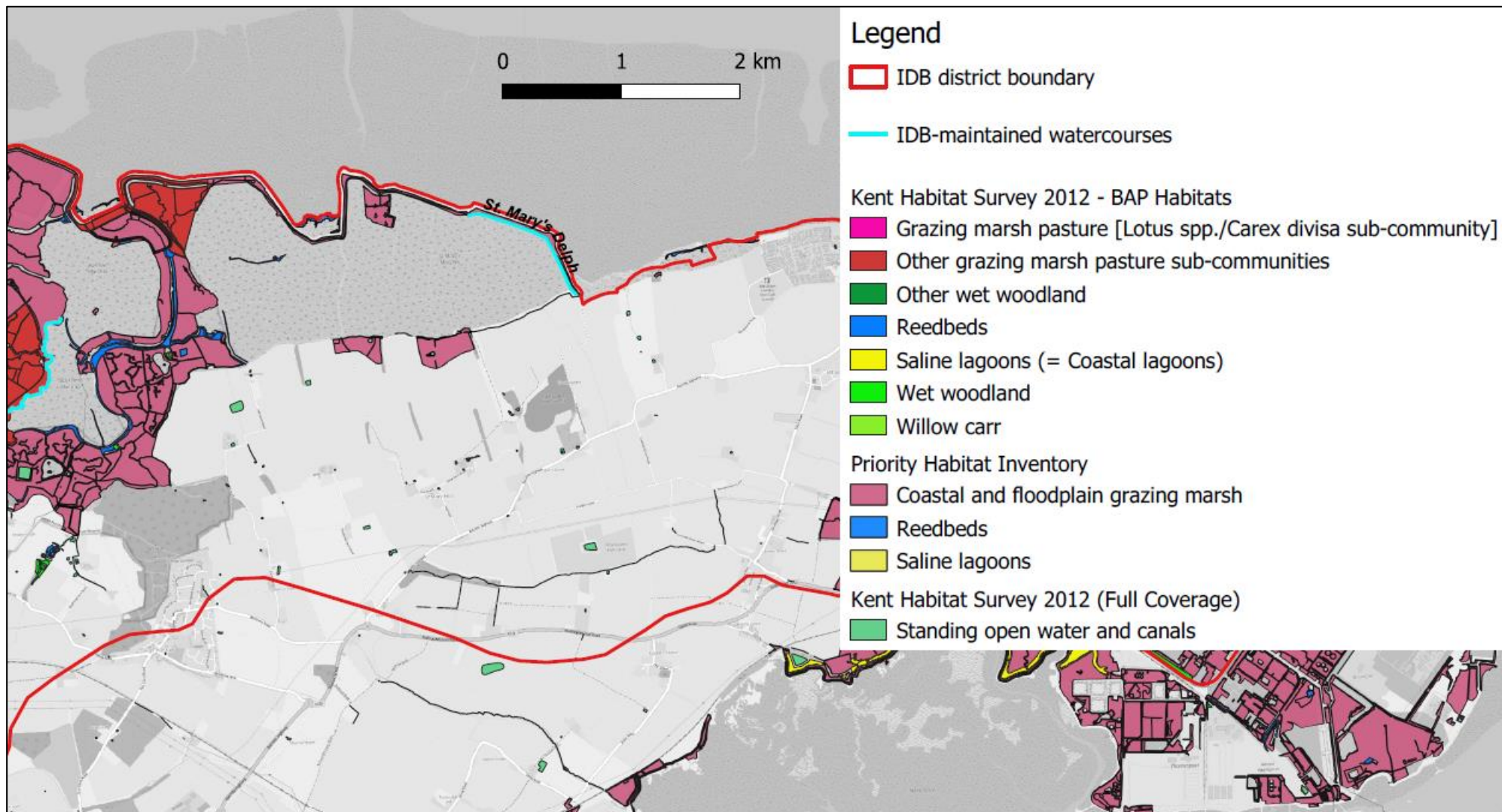
APPENDIX 1: MAP OF THE IDB DISTRICT



APPENDIX 2: SITES DESIGNATED FOR BIODIVERSITY



3b: middle



3c: east

