



BIODIVERSITY HANDBOOK

**BEDFORD GROUP OF
INTERNAL DRAINAGE
BOARDS**

**ELY GROUP OF
INTERNAL DRAINAGE
BOARDS**

APRIL 2021



FOREWARD

Rivers and other watercourses are important biodiversity assets, providing a home to diverse and important plant and animal communities as well as providing valuable green space.

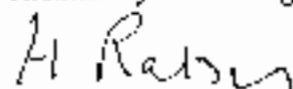
The Bedford and Ely Groups of Internal Drainage Boards have a responsibility, not only to maintain watercourses in their drainage districts so as to fulfil their land drainage and flood prevention duties, but to maintain and enhance their biodiversity value, a balancing act which is never easy.

This Biodiversity Handbook is being published immediately ahead of the Environment Bill (to be enacted) and seeks to establish good practice in all the activities that the Boards, as public bodies, undertake so as to comply with existing and forthcoming legislation to conserve and enhance biodiversity. This includes planning and maintenance and capital works and provides a framework within which these can be undertaken in a sensitive manner.

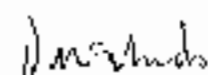
In our role as Chairs of the Boards within the two Groups, we look forward to the use of this Handbook and to the improved outcomes for biodiversity that should ensue.

BEDFORD GROUP OF INTERNAL DRAINAGE BOARDS

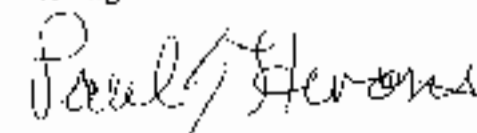
Alconbury and Ellington IDB



Bedfordshire and River Ivel IDB



Buckingham and River Ouzel IDB



ELY GROUP OF INTERNAL DRAINAGE BOARDS

Burnt Fen IDB

Cawdle Fen IDB

Lakenheath IDB

Littleport and Downham IDB

Middle Fen and Mere IDB

Mildenhall IDB

Padnal and Waterden IDB

Swaffham IDB

Waterbeach Level IDB

ACKNOWLEDGEMENTS

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We gratefully acknowledge the helpful comments from Caroline Laburn (Water Management Alliance), Justin Tilley and Nigel Simpson (Natural England) and Lou Mayer (Environment Agency) and Theresa Brown.

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CHAPTER 1: INTRODUCTION

This Handbook has been produced by the Bedford and Ely Groups of Internal Drainage Boards as part of their responsibilities under the *Natural Environment and Rural Communities Act 2006 (NERC)* and forthcoming *Environment Bill 2020*. The NERC Act states that ‘a public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.... where conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat’. The Environment Bill, at the time of writing, will extend this duty from ‘conserving’ biodiversity to ‘conserving and enhancing’ biodiversity. This document is a guide to good practice to be followed by the Boards while undertaking their duties and responsibilities. In effect, it will form a cornerstone of the Environmental Policy for the two Groups.

Advice from Government identifies that the duty regarding biodiversity may include, among other matters:

- Developing policies and strategies and putting them into practice;
- Managing the planning system;
- Managing your land and buildings, woodlands and nature reserves, gardens, parks and public open space;
- Managing community amenities eg sports grounds and cemeteries;
- Managing waste and pollution;
- Managing energy and water;
- Managing development of infrastructure ie roads, buildings or flood defences.

The role of the IDBs not only protects infrastructure and facilitates land use but many actions also benefit wildlife, sometimes directly but often indirectly. This Handbook aims to provide guidance as to the best practice methods of achieving these benefits by identifying opportunities to benefit and enhance biodiversity, not only when considering routine management practices, but also in the wider remit of their duties. In particular, it aims to ensure that the practices of the IDBs are compliant with the Water Framework Directive in seeking to achieve the best possible ecological potential with improvements to channels where possible. .

This Handbook is intended to provide a ‘one-stop shop’ for the Internal Drainage Boards to identify appropriate and standard watercourse management practices that may benefit biodiversity. It contains a number of sections, all of which are intended to be updated in the light of developments in legislation, additional

information and changes in what is perceived to be best practice. This version updates a Handbook, at the time a forerunner in the field, produced by the Bedford Group in 2001. By revising this material, it has been possible to develop strategies that ease decision-making on a day-to-day basis, provide cost effective solutions and methods and provide transparency in the Boards' activities. It has also been possible to provide information on matters which, though important, may not need to be regularly considered and identify where specialist help may be required.

The Bedford and Ely Groups of Internal Drainage Boards intend to play a positive role in fulfilling the statutory and other responsibilities for biodiversity when undertaking their water level management function. Policies which they intend to pursue in fulfilling this role include:

- seeking to avoid, wherever possible, damage to environmental interests by ensuring compliance with best practice wherever feasible;
- fully complying with legislation protecting species;
- aiming to ensure no net loss to habitats and species covered by Biodiversity Action Plans and or Habitats or Species of Principal Importance under the NERC Act ;
- seeking opportunities to enhance the aquatic and marginal environment and where possible contribute expertise in the management of designated sites ;
- ensuring that Water Level Management Plans are completed, implemented as appropriate and reviewed in accordance with DEFRA targets;
- ensuring that Biodiversity Action Plans are completed, implemented as appropriate, reported and reviewed in accordance with DEFRA targets;
- providing appropriate training for both workforce, officers, and Board Members;
- co-operating with other bodies to make an input into the development of Local Environment Agency Plans and Biodiversity Action Plans and other projects such as 'New Life on the Old West';
- co-operating in the development and maintenance of Biological and Environmental Records databases.
- incorporating biodiversity concerns into their consenting duties and responsibility as a consultee under the Town and Country Planning Acts.

This document is being produced as a loose leaf document so that it can be regularly updated.

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CHAPTER 2: THE BOARDS, THEIR AIMS AND THEIR ACTIVITIES

The Bedford Group

The Bedford Group of Internal Drainage Boards comprises three IDBs situated in the upper reaches of the Great Ouse catchment and within the Environment Agency's Anglian region, largely in Bedfordshire, but also including Milton Keynes and north Buckinghamshire with small areas in south Northamptonshire, north Hertfordshire, south and west Cambridgeshire and north Oxfordshire (Figure 1). Table 1 identifies the characteristics of each Board. The Boards are principally gravity drained systems, but there are a number of flood storage reservoirs and large SuDS basins managed by the Board and 1 (soon to be 2) small pumping stations. The Bedford Group is unusual in that it has a large area of land that is within an urban setting with high run off and 'flashy' catchments. It aims to reduce the risk to people and the developed and natural environment from flooding by provision of technically, environmentally and economically sound and sustainable defence measures in accord with local needs and central government policy.

In order to achieve this, the Boards employ a raft of measures including:

- i. A sound risk-based maintenance strategy incorporating prioritising the activities undertaken into three categories (with one sub-category):
Category 1 – high risk watercourses that require annual maintenance,
Category 1A – critical high risk Category 1 watercourses, where people and property may be at imminent risk of flooding
Category 2 – medium risk watercourses that will normally require work on a 2-6 year cycle,
Category 3 – low risk watercourses where works are likely to be required on a cycle greater than 6 years.

Over time, the watercourses will transfer into different categories as land use and flood risk changes.

- ii. A heavy commitment to development control issues and the Town and Country Planning Procedures in order to cater for the extensive development pressures in and adjoining the Drainage District.

Table 2.1: Characteristics of the IDBs within the Bedford Group

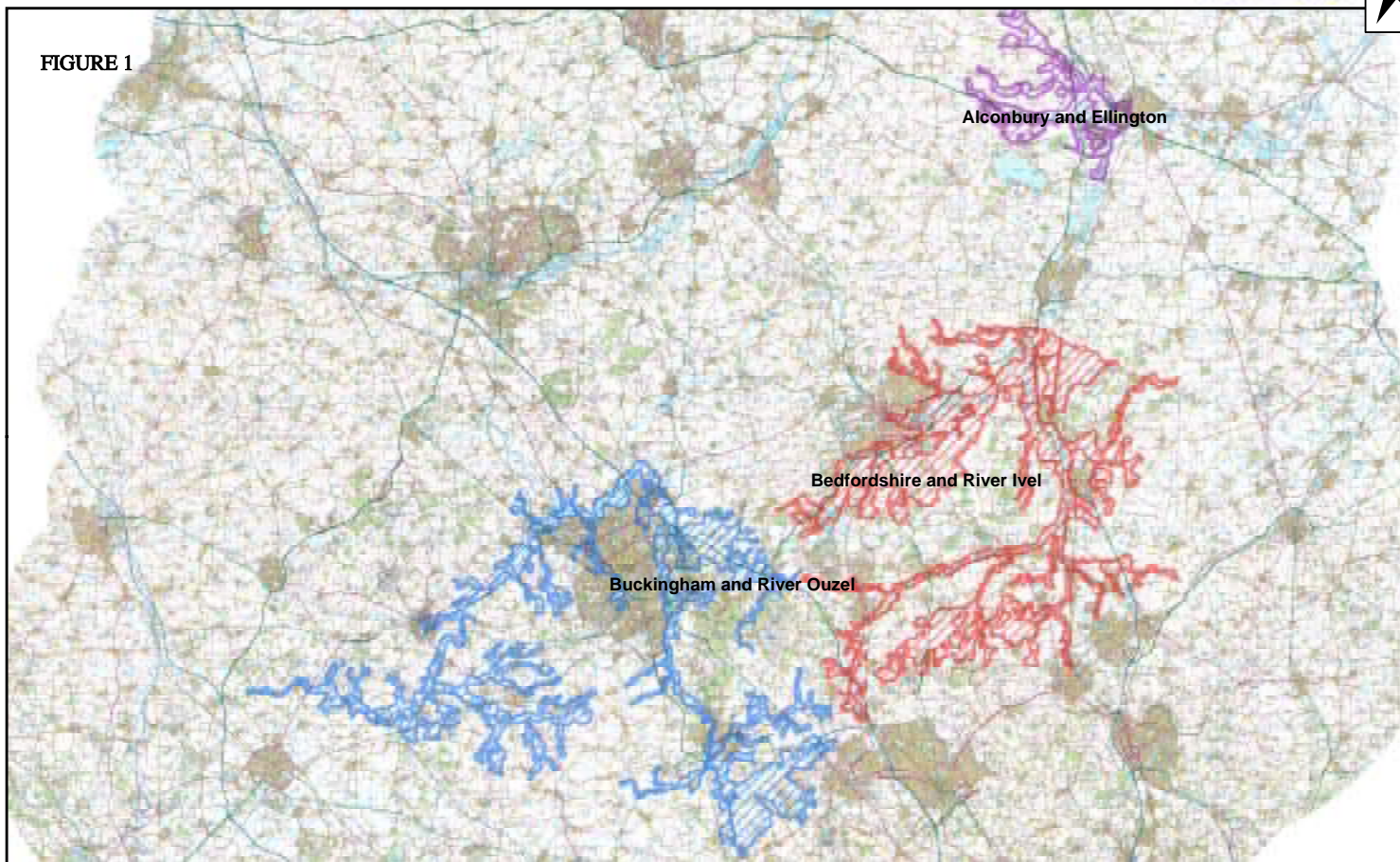
	Bedfordshire and River Ivel IDB	Buckingham and River Ouzel IDB	Alconbury and Ellington IDB
Catchment Area	77317ha	111450ha	16,042ha
Total area of the Drainage District	17852ha	15977ha	3,850ha
Area of Agricultural Land	15004ha	12981ha	3,029ha
Urban Area	2848ha	2996ha	821ha
Water Level Control Structures	12	3	0
Watercourses	636km	448km	63km
Raised Embankment	1.18km	1.17km	0
Major Urban Areas in and adjoining the Drainage District	Bedford, Biggleswade, Sandy, Shefford, Stotfold, Flitwick, Letchworth, Hitchin	Milton Keynes, Leighton Buzzard, Newport Pagnell, Buckingham, Winslow	Huntingdon, Alconbury & Alconbury Weston, Brampton
Main River (EA control)	64.27km	93.38km	37km
River Raised Embankments (EA control)	27.92km	2.58km	0

Bedford Group of Drainage Boards

Bedfordshire & River Ivel, Buckingham & River Ouzel, Alconbury & Ellington IDB



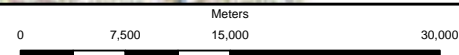
FIGURE 1



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www.idbs.org.uk

Scale 1 = 380,000



The Ely Group

The Ely Group comprises a consortium of ten IDBs, all of which have significantly low level land, some of it below sea level. The great majority of all the Boards are pumped drained systems, although water may be captured by Catchwater Drains prior to being removed from the systems.

The Ely Boards do not operate such a strong hierarchical system as the Bedford Group, concentrating on continued management to ensure conveyance to the pumping stations.

Table 2.2: Characteristics of the IDBs within the Ely Group

	Burnt Fen IDB	Cawdle Fen IDB	Lakenheath IDB	Littleport & Downham IDB
Catchment Area	6935 ha	513 ha	2234 ha	13716 ha
Total area of the Drainage District	6935 ha	181 ha	1975 ha	13048 ha
Area of Agricultural Land	6776 ha	132 ha	1875 ha	12407 ha
Urban Area				
Water Level Control Structures	2 pumping stations	1 pumping station	1 pumping station	6 pumping stations and reservoir
Watercourses	68.1 km	3.8 km	16.7 km	302 km
Raised Embankment				
Major Urban Areas in and adjoining the Drainage District		Part Ely	Lakenheath	Littleport, Witchford Stretham
Main River (EA control)	19.6 km	2 km	12.1 km	47 km
River Raised Embankments (EA control)	19.6 km	2 km	7.2 km	71.5 km

	Middle Fen & Mere IDB	Mildenhall IDB	Old West IDB	Padnal & Waterden IDB
Catchment Area	8954 ha pumped	4297 ha pumped	5601 ha	1235 ha
Total area of the Drainage District	8244 ha	3383 ha	4487 ha	1186 ha
Area of Agricultural Land	7921 ha	3144 ha	4487 ha	1135 ha
Urban Area	332 ha	240 ha	0	100 ha
Water Level Control Structures	5 pumping stations	1 pumping stations	2 pumping stations in use, one additional	5 pumps
Watercourses	82.5 km	54 km	87 km	25.7 km
Raised Embankment	0	0	0	
Major Urban Areas in and adjoining the Drainage District	Soham		Northstowe, Cottenham	Littleport, Ely
Main River (EA control)	29.1 km	10.4 km	19.6 km	10.8 km
River Raised Embankments (EA control)	33.7 km	6.8 km	19.6 km	17.5 km

	Swaffham IDB	Waterbeach Level IDB		
Catchment Area	6273 ha	2881 ha		
Total area of the Drainage District	5234 ha	2720 ha		
Area of Agricultural Land	4994 ha	2360 ha		
Urban Area	240 ha	360 ha		
Water Level Control Structures	1 pumping station	3 pumping stations		
Watercourses	83.8 km	36.3 km		
Raised Embankment				
Major Urban Areas in and adjoining the Drainage District		Part Waterbeach		
Main River (EA control)	35.4 km	15.9 km		
River Raised Embankments (EA control)	60.6 km	15.9 km		

The Ely Group of IDBs



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CHAPTER 3: LEGISLATION

This chapter provides a brief introduction to the legislation that governs the biodiversity duties of IDBs. Details of the implications of the various topics are covered under relevant sections, particularly relating to operations, species and sites. Compliance is required and failure to do so may result in individual and corporate liability both to employees and Board members.

Duties

Initially, the conservation duties for Internal Drainage Boards were proscribed under the *Land Drainage Acts* of 1991 and 1994. These duties were then clarified under Section 40 of the *Natural Environment and Rural Communities Act 2006*. This states that ‘a public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.... where conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat’.

Following exit from the European Union, the *Environment Bill 2020* is likely to become law and this provides for biodiversity gain as a condition of planning and for public bodies while exercising their functions to ‘conserve and enhance’ biodiversity. This includes regularly assessing what actions to take to further a general biodiversity objective particularly determining policies and specific objectives together with actions to pursue those. Should IDBs become designated authorities (yet to be confirmed at the time of writing) then there will be a requirement to publish biodiversity reports

The *Flood and Water Management Act 2010* Section 27 requires flood and coastal erosion risk management authorities to contribute towards the achievement of sustainable development when exercising their flood and coastal erosion risk management functions.

Development

Internal Drainage Boards are operating authorities and under the *Land Drainage Act 1991* have permissive powers to maintain, improve and build new works (Section 14) and to maintain a proper flow of water and manage water levels in the drainage districts by Consenting (Section 23 and 66). Accordingly, IDBs advise Planning Authorities as to the appropriate surface water and flood risk management measures required for development both within the Drainage

District and outside the district if such development is considered to have an impact on the Drainage District. This requires proper consideration of the conservation duties.

Environmental Protection

Biodiversity protection, both habitats and species, emanate from two sources, European directives and domestic legislation. There is some overlap between them. For practical purposes, UK legislation implements European legislation.

European legislation and its implementation

The *Directive on the Conservation of Wild Birds (79/409/EEC)* (the Birds Directive) provides for the designation and protection of Special Protection Areas (SPAs) and also requires Member States to preserve, maintain or re-establish sufficient diversity and areas of habitats for all species of birds naturally occurring in the wild, especially wetland species. The work that is undertaken by the IDBs to ensure that biodiversity is fully considered during their management of watercourses and that the species provisions in the *Wildlife and Countryside Act 1981* should ensure that the requirements of the Directive are fulfilled.

The *Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)* (Habitats Directive) provides for actions to conserve habitats and to restore populations of plants and animals (other than birds) to a favourable conservation status. It requires the establishment of a network of Special Areas of Conservation (SACs) as well as wider countryside measures and sets out criteria for the protection of SACs, SPAs and Ramsar sites. It also provides for the protection of certain species of animals and plants. This Directive is implemented in the United Kingdom by *The Conservation of Habitats and Species Regulations 2017*. Following exit from the European Union, *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019* which come into force on exit day to ensure that they remain operable.

The *Water Framework Directive (2000/60/EC)* provides for the protection and management of rivers, lakes, groundwater, estuaries and coastal waters with the objective of ensuring good ecological status for natural watercourses and good ecological potential for heavily modified and artificial water bodies. It sets out objectives, e.g. chemical, physical and biological that must be achieved. It is implemented in the UK by *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003*.

The *Environmental Impact Assessment Directive (85/337/EEC)*, as amended subsequently (Directives of 1997, 2003 & 2009) and codified by Directive 2011/92/EU and amended again by Directive 2014/52/EU, ensures that an Environmental Impact Assessment is undertaken for any major development, or any development proposed for sensitive locations. It was implemented in England by a series of Regulations, most recently *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017*. Following exit from the European Union, *The Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018* will ensure their continuation.

Capital works for land drainage is covered by a separate set of regulations, *The Environmental Impact Assessment (Land Drainage Improvement Works) (Amendment) Regulations 2017*, which amend *The Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999* and, under these, if there is not likely to be a significant impact then the works will be advertised as such, stating there will be no EIA produced.

Species and Habitat Protection

Contravention of the following may also result in criminal conviction with fines, custodial sentences and the need for restoration works.

Among other matters, *The Conservation of Habitats and Species Regulations 2017* provides for the protection of SPAs, SACs and Ramsar sites (Natura 2000 sites) (Part 1) including by identifying the process of Habitats Regulations Assessment (Part 6) which must be undergone when undertaking any plan or project which might have a likely significant effect on a site. Thus, works that are outside such a site but might adversely affect them need to be considered.

It further (Part 3) provides for the protection of species, both plants and animals, collectively known as European Protected Species (EPS), which receive special protection against killing, injuring, disturbance, taking or destruction of eggs and damage or destruction of breeding or resting places. It should be noted that the first three are absolute offences i.e. there is no defence. Licences are available for actions which would otherwise be unlawful.

The *Wildlife and Countryside Act 1981*, and as variously amended, protects certain species (some of which are also protected under the Habitats Regulations) and provides for licensing to allow activities that would otherwise be unlawful. Lists of the species of animals are given in Schedule 5 and plants in Schedule 8. These are further described in Chapter 7. Protected species of particular importance to IDBs are identified in that chapter. The Act also provides for the designation of

Sites of Special Scientific interest which is strengthened by The Countryside and Rights of Way Act 2001 by requiring that operating authorities gain assent from Natural England before undertaking work in SSSIs.

The *Protection of Badgers Act 1992* protects badgers from unlawful killing, injuring and taking, disturbance, cruelty and from interference with a sett. It provides for licences to undertake works that would otherwise be unlawful

The *Hedgerows Regulations 1997* provide for the protection of important hedgerows.

The *Eels (England and Wales) Regulations 2009* implement Council Regulation (EC) No 1100/2007 and require actions to aid the recovery of the European eel, particularly relating to structures. Eel Management Plans form the basis for compliance.

The *Salmon and Freshwater Fisheries Act 1975* covers measures to protect freshwater fish especially trout and salmon including the removal of barriers to migration.

CHAPTER 4: CONSULTATION

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CHAPTER 4: CONSULTATION

Consultation may be required over a number of aspects of a Board's work, either as part of the rolling programme of maintenance works or as one-off activities.

Routine Maintenance

The routine maintenance programme is determined every winter as it requires Board approval and budgets to be set by 15th February as under the Land Drainage Act Section 37(2) with appropriate timings for the following year's work. The work programme for that year comprises those works which are outstanding from previous programmes as well as new works.

In the Bedford Group, in the main, these risk-based programmes will comprise works from watercourses in Categories 1 and 2; that is works required on a greater frequency than 6 years. Some works in Category 3 (>6 years) will be included and occasionally will include capital or heavy maintenance schemes.

Given that the Ely Group follows regular maintenance practices, the slubbing programme will be advertised on the web site together with any changes to routine maintenance and any proposed capital works.

All programmes will be sent to the County Ecologists as a matter of routine. The programme of works will be sent to the Environment Agency's Partnership and Strategic Overview (PSO) team, who are the key liaison contact with IDBs and LLFAs. It will be sent to the relevant Natural England office where a Site of Special Scientific Interest is concerned or where it is believed that protected or priority species may be present which cannot be catered for by normal working practice. It will be sent to the relevant Wildlife Trust or relevant project officer where any reserve, managed land or County Wildlife Site is involved.

Additional consultations (e.g. Parish Councils, owners, occupiers and other interests including local catchment partnership groups) will be made as deemed appropriate by the IDBs.

Capital or Heavy Maintenance

Where capital or other heavy management works are involved that might affect the condition of an SSSI, Wildlife Trust Reserve, County Wildlife Sites or LNR, even if it is not adjacent to the works in question, consideration will be given to the need to discuss the project with the Environment Agency, Natural England and/ or

Wildlife Trusts depending on the scale, duration and potential impact of the works. In formulating such a decision, existing records of protected or designated areas, important hedgerows, priority habitats and protected and priority species (on a local and wider scale) will be consulted and where necessary surveys (see Chapter 7) will be undertaken. For further consideration of capital works, see Chapter 9.

Designated sites

Where activities are within or adjacent to statutory designated sites such as SSSIs or the European designated sites, SACs, SPAs or Ramsar sites, then written assent may be required from Natural England prior to works commencing. Prior to undertaking an operation which may affect a SSSI (directly or indirectly) then the IDB has to give formal notice to NE under S28H of the Wildlife and Countryside Act 1981. Further information is given on the following web page: <https://www.gov.uk/guidance/sites-of-special-scientific-interest-public-body-responsibilities>.

The exception will be for emergency works as provided for in S61C (4) of the Land Drainage Act 1994. NE MUST be notified immediately if there is to be no contravention of the Wildlife and Countryside Act 1981.

Prior to undertaking an operation in or adjacent to a European site, consideration must be given as to whether there is a likely significant effect of such an activity under the Conservation of Species and Habitats Regulations 2017. Initially a discussion should be held with Natural England to determine the scope of such an activity. This is particularly likely to be the case for 'one-off' capital or heavy maintenance activities.

Wider Biodiversity Interests

As part of the current duty to conserve biodiversity and the future duty to conserve and enhance biodiversity, it will be important to participate in local initiatives, including those relating to specific objectives e.g. mink control, and those with wider landscape implications e.g. New Lives in the Old West.

CHAPTER 5: PLANNING AND CONSENTING

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CHAPTER 5: PLANNING AND CONSENTING

Planning Consultation

As a statutory Risk Management Authority, Internal Drainage Boards may be consultees to planning applications where works are either close to ordinary water courses or are considered likely to affect the Board's ability either to manage flood risk or to provide adequate drainage in the Drainage District.

These applications, via the planning system, provide the details of design and construction for works and the Board is solely responsible for commenting on what is provided. While this may primarily include technical reviews, environmental aspects should be considered where the works have the potential to affect protected or priority species or priority habitats. Under the new requirement for biodiversity net gain within the *Environment Bill 2020*, there should be consideration whether this can be delivered to benefit the Board's assets and whether this will affect maintenance requirements.

It is expected that, for all other than minor impacts, consideration will have been given to a Water Framework Directive assessment. For information see:

<https://www.gov.uk/government/publications/water-framework-directive-how-to-assess-the-risk-of-your-activity>

Consenting

The Land Drainage Act 1991 prohibits any person from affecting flow or causing an obstruction to flow in any Ordinary Watercourse and land drainage consent is required from IDBs prior to any temporary or permanent works being undertaken. Any person wishing to introduce flow into a watercourse requires consent prior to the works being undertaken. Works will also require compliance with any bylaws that may be in place including maintaining a 9m standoff to a watercourse to ensure that maintenance can take place.

In addition to the necessary considerations of flood risk and maintaining drainage, consideration will be given to the environmental consequences of such activities and seek net biodiversity gain. An example of a consent application form is given at the back of this section.

As part of consenting, there is a requirement to ensure that appropriate authorisation has/ will be obtained from Natural England for any works that may adversely affect a designated site such as an European designated site or SSSI.

In reviewing the consent application, it is necessary to consider whether a formal Water Framework Directive assessment may be required in order to ensure compliance and whether any enhancements may be required to ensure that the best possible ecological

status is reached (<https://www.gov.uk/government/publications/water-framework-directive-how-to-assess-the-risk-of-your-activity>).

Specific habitat issues which will need to be addressed within the consent applications, are impacts on hedgerows, the effects on water course banks, changes to bed structure that may take place as a result of, for example, slowing flow and impacts on trees. Issues which are particularly important relate to the presence and management of protected species, particularly kingfisher and water vole on channel banks and badgers and reptiles within the channel profile or adjacent to the watercourse. Where ponds are present less than 250 metres away then consideration needs to be given to the possible presence of great crested newts. Should there be particularly good connectivity, then a radius of up to 500 m may need to be considered. This is particularly the case where culverts are present. The potential for bat roosts in adjacent trees should also be considered.

Although licences are available to allow IDBs to undertake works that might affect badgers and water voles, and these are less restrictive than those for developers, they are strictly for IDBs and this should be flagged to any applicant.

The potential for enhancements to be included in the consents should be considered and required where appropriate. This may include for example, small weirs to improve flow characteristics, kingfisher holes in sheet piling, aquatic replanting and use of mats to prevent scour from discharges. Further information is given in Chapter 9.

Appendix 5.1: Example Consenting Forms

BEDFORDSHIRE & RIVER IVEL INTERNAL DRAINAGE BOARD

APPLICATION FOR CONSENT FOR WORKS AFFECTING WATERCOURSES

LAND DRAINAGE ACT 1991 SECTION 23 AND DRAINAGE BOARD BYELAWS

DETAILS OF APPLICANT

NAME:

CONTACT PERSON:

POSTAL ADDRESS:

POST CODE:

TEL NO (OFFICE HOURS):

TEL NO (OUT OF HOURS):

EMAIL ADDRESS:

FAX NO:

DETAILS OF AGENT

NAME:

CONTACT PERSON:

POSTAL ADDRESS:

POST CODE:

TEL NO (OFFICE HOURS):

TEL NO (OUT OF HOURS):

EMAIL ADDRESS:

FAX NO:

BEDFORDSHIRE & RIVER IVEL INTERNAL DRAINAGE BOARD

**APPLICANT'S INTEREST IN
LAND:**

--

LAND REGISTRY TITLE NO.

--

LOCATION

OS GRID REFERENCE:

--

LOCATION OF PROPOSED
WORKS:

--

STATUTORY PROTECTED
SITE:

SSSI SAC SPA
OTHER:

NAME OF WATERCOURSE:

--

**DESCRIPTION AND
PURPOSE OF PROPOSED
WORKS:**

--

NO. OF STRUCTURES:

--

CONSTRUCTION DETAILS

(Note: Separate consents are prepared for the temporary works)

START DATE:

/ /

COMPLETION DATE:

/ /

DURATION OF WORKS:

WEEKS

BEDFORDSHIRE & RIVER IVEL INTERNAL DRAINAGE BOARD

BRIEF DETAILS OF ENVIRONMENTAL IMPACT OF WORKS TOGETHER WITH ANY PROPOSALS FOR AMELIORATION AND/OR COMPENSATORY ENHANCEMENT:

DESCRIPTION AND REFERENCE NUMBERS OF ALL PLANS, SECTIONS AND REPORTS SUBMITTED

LOCATION PLAN:

DETAIL PLANS:

SECTIONS:

REPORT TITLE:

BEDFORDSHIRE & RIVER IVEL INTERNAL DRAINAGE BOARD

METHOD STATEMENT & RISK ASSESSMENT:

(Please reference any supporting documentation.)

BEDFORDSHIRE & RIVER IVEL INTERNAL DRAINAGE BOARD

DECLARATION

APPLICANT

NAME OF APPLICANT:

POSTAL ADDRESS:

POST CODE:

I/WE

1. Apply for consent under the provisions of the Bedfordshire & River Ivel Internal Drainage Board's Byelaws and/or Section 23 of the Land Drainage Act 1991 to carry out works detailed in this Application and on the attached plan(s).
2. Enclose a cheque for £50 (this is a Statutory Consent fee for which invoices are not issued), plus a General Development Contribution fee if applicable, made payable to **Bedfordshire & River Ivel IDB**. Please note the Statutory Consent fee of £50 applies to each, separate structure. For electronic payments the details are as follows: Sort Code: 30 90 66, Account No: 00275010. Please add, as the reference, the Name of the Applicant or Agent and Site Location. Please indicate payment method: Cheque Electronic (BACS/CHAPS/on-line)
3. Enclose one copy of the plans (as detailed in section 5 of the accompanying Guidance Notes) and all relevant calculations.
4. Confirm that I/we have the right to carry out the works and have obtained all permissions from affected property owners and consent or approval as necessary from all other relevant authorities.
5. Do not know of any other facts or conditions imposed by others nor have other information that may prejudice the granting of this application.
6. Confirm that I/we will notify the board of any future changes in the information given in this application which might be materials to the continuation of any consent granted.
7. Confirm that all information given in the application and any questions which the Board may have is/will be true to the best of my/our knowledge.
8. Undertake to submit a full and accurate application and understand that the period of **two months** specified in Section 23 of the Land Drainage Act 1991 for determining the consent will not commence until the Board is satisfied it has all the necessary information.

Please return this form, together with the relevant fee (where applicable – see note 2 above) to the Director of Operations, Bedfordshire & River Ivel IDB, Vale House, Broadmead Road, Stewartby, Beds, MK43 9ND

SIGNED:
ON BEHALF OF:
DATED:

/ /

Updated 080818

MIDDLE FEN & MERE INTERNAL DRAINAGE BOARD

Form No. FD2 (IDB)

APPLICATION FOR CONSENT under the BYELAWS of the above Board

IMPORTANT NOTE. We ask you to read this form and the attached notes BEFORE you fill it in. Then please take GREAT CARE in answering the questions. If the form is fully and accurately completed, it will ensure as little delay as possible in processing it. If you have any queries, ASK US. Our address, telephone number, and other instructions are all in the attached notes.

Details of Applicant:

Name:

Contact Person:

Postal Address:

Telephone:

Out of Hours:

Fax:

Location of Proposed Works:

OFFICIAL USE ONLY

RECEIVED BY	DATE
INSPECTED BY	DATE
APPROVED BY	DATE
RESPONSE	
BYELAW CONSENT	

1. APPLICANTS INTEREST IN LAND

2. DESCRIPTION OF PROPOSED WORKS

INDICATE NUMBERS OF PLANS SUBMITTED

NUMBER OF STRUCTURES

3. STATE WHETHER WORKS ARE TO BE PERMANENT OR TEMPORARY

IF TEMPORARY, STATE DURATION REQUIRED

4. ARE THE PROPOSED WORKS ASSOCIATED WITH THE MAKING OF A DISCHARGE OF TRADE EFFULENT OR SURFACE WATER

YES

NO

ARE THE PROPOSED WORKS ASSOCIATED WITH THE ABSTRACTION OF WATER

YES

NO

PLEASE TICK APPROPRIATE BOXES

5. IF PLANNING APPROVAL HAS BEEN GRANTED STATE

LOCAL AUTHORITY

APPLICATION NO

APPROVAL DATE

6. NAME OF PERSON OR ORGANISATION RESPONSIBLE FOR
MAINTAINING THE STRUCTURE ON COMPLETION

7. BRIEF DETAILS OF ENVIRONMENTAL IMPACT OF WORKS
TOGETHER WITH ANY PROPOSALS FOR AMELIORATION
AND/OR COMPENSATORY ENHANCEMENT

APPLICATION

Name of Applicant

Address

I/We:

1. Apply for consent under the provisions of the Board's byelaws to carry out works as described in this Application and on the attached plan(s).
2. Enclose a cheque for £... .. to cover the cost of this application.
3. Enclose three (3) copies of suitable plans sufficient to show clearly the location of the proposed works together with three copies of plans and sections showing details of the proposed works to a scale appropriate to the nature of the works and any relevant calculations.
4. Confirm that I/we have the right to carry out the works and have obtained consent or approval as necessary.
5. Do not know of or suspect any other facts or information which would or might affect the granting of or conditions which might be imposed on the consent applied for.
6. Confirm that I/we will notify the Drainage Board of any future changes in the information given in this application which might be material to the continuation of this consent.
7. Confirm that all the information given in this application and any questions which the Drainage Board may have about it is/will be true to the best of my/our knowledge, information and belief.

Signed

On behalf of

Date

CHAPTER 6: SITES AND HABITATS

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CHAPTER 6: SITES AND HABITATS

Protected and Important Areas

It is intended that lists of all Protected and Important Areas will be entered onto a database held by the IDBs to facilitate advance planning. A list of all sites is given in Appendix 6.1 of this chapter. Identification of the presence of these sites will ensure that appropriate consultations are undertaken, and maintenance methods used, assent is applied for when required and that their presence is considered when commenting on planning applications and approving consents.

There are three categories of statutorily protected areas for conservation purposes. The first is the sites designated under European legislation Special Protection Areas (SPA) and Special Areas of Conservation (SAC). Sites designated under the Ramsar Convention have similar protection. None occur within any of the Drainage Districts of the Bedford Group of Drainage Boards. Some are present within the Districts of the Ely Group. These receive protection under the *Habitats and Species Regulations 2017* and any works which may have a likely significant effect will require a Habitats Regulations Assessment.

The second category is the Sites of Special Scientific Interest (SSSIs) and these will include National Nature Reserves (NNRs). Of all of these, only three, might be affected hydrologically by the Bedford Group's activities. No NNRs are likely to be affected by the Boards' activities. The Ely Group has a wider range of SSSIs which might be affected.

The third category of statutory sites is Local Nature Reserves (LNR), set up by local authorities on Natural England's recommendation to the Secretary of State.

In addition, there is a tier of non-statutory sites, County Wildlife Sites (CWSs). These will be notified to the Boards by the County Ecologists.

Habitats

Some of the Boards' areas have been subject to survey to identify, as far as possible, areas of semi-natural habitat and those which may have wildlife importance because they are likely to hold uncommon plants or fauna. These 'Phase 1' surveys are held by Wildlife Trusts, County Ecologists or Environmental Records Centres. Locations of these habitats, including important hedgerows, will be taken from them and entered onto a database to facilitate advance planning. It is expected

that this will be regularly updated by receipt of additional information. Data acquired by the Boards will be fed back to the Biological Records Centres.

The *NERC Act 2006* identified a list of Habitats of Principal Importance (HPI), sometimes known as a Section 41 habitat that are priorities for conservation because of their scarcity and the degree of threat to them. These were based on the former BAP Priority habitats. A full list is available on the MAGIC data base. Part of the Defra High Level Targets is the aim to ensure no net loss to habitats covered by Biodiversity Action Plans (See Chapter 10).

The following Habitats of Principal Importance may be affected by IDB activities in the Bedford and Ely Group areas.

Aquifer Fed Naturally Fluctuating Water Bodies
Arable Field Margins
Coastal or Floodplain Grazing Marsh
Eutrophic standing waters (including gravel pits, lakes and reservoirs but excluding small pools and field ponds)
Hedgerows
Lowland mixed deciduous woodland
Lowland meadows (including floodplain meadow and flood pasture)
Lowland Fens
Lowland raised bog
Ponds
Rivers, notably chalk rivers and headwaters
Reedbeds
Wet woodland

A number of local Biodiversity Action Plans have been produced within area of the two groups and, although generally elderly, identify habitats of particular concern at a local level. These are identified in Appendix 6.2.

Appendix 6.1: List of Designated Sites - Bedford Group

ALCONBURY AND ELLINGTON IDB

International Sites

None

National Sites

Site name	Grid Reference	Reason for designation
Brampton Meadow	TL192 720	A small species-rich meadow with plant communities typical of calcareous clay pasture
Brampton Racecourse	TL203 722	Extensive area of unimproved neutral grassland within the floodplain of the Alconbury Brook.
Brampton Wood (bordering)	TL180 701	One of the largest blocks of ancient woodland in Cambridgeshire comprising wet ash-maple woodland

Local Nature Reserve

None

County Wildlife Site

Site name	Grid Reference	Features Relevant to IDB
Brampton Flood Meadows	TL 2169	Supports at least 0.05ha of MG 4 grassland, a population of <i>Ranunculus lingua</i> (rare in the county) and frequent numbers of 8 neutral grassland indicator species.
Bromholme Ballast Pits	TL 229 707	Supports an area of more than 0.1 ha with 2 or more fen types.
Buckden Gravel Pits	TL2168	Type 10A standing water body with 5 submerged or floating species. Qualifies as a habitat mosaic with semi-improved grassland, swamp, open water and hedgerows
Ellington Brook Pollard Willows	TL122729	At least 5 mature pollard willows in association with other semi-natural habitat
Hinchingbrooke Gravel Pits	TL 2171	A site larger than 10 ha supporting mature trees, scrub, hedgerows, marshy grassland, swamp and open water.
River Great Ouse (adjoining)	TL37	A major river not grossly modified with >0.5 ha S6 swamp, >0.05 ha MG153 grassland, <i>Nymphoides peltata</i> and a breeding nationally rare dragonfly.

BEDFORDSHIRE AND RIVER IVEL IDB

International Sites

None

National Sites

Site name	Designation	Grid Reference	Features Relevant to IDB
Flitwick Moor	SSSI	TL 046 350	Flitwick Moor is the largest semi-natural wetland in Bedfordshire with a range of swamp, mire with acid springs, fen and mesotrophic grassland communities with carr woodland and some drier wood. The site contains a rich assemblage of notable vascular and lower plants and fungi and is renowned for its invertebrate interest.
Fancott Woods and Meadows	SSSI	TL 025 275	Fancott Meadows are mainly ancient ridge and furrow. The meadows exhibit a variety of vegetation types chiefly dependent on the drainage conditions.

Local Nature Reserves

Site name	Grid Reference	Borough
Flitwick Wood	TL 023 348	Central Bedfordshire
Flitton Moor	TL 056 360	Central Bedfordshire
Fenlake Meadow	TL 066 489	Bedford Borough
Henlow Common and Langford Marsh	TL 184 405	Central Bedfordshire
The Riddy	TL 166 487	Sandy Town Council

County Wildlife Sites Bedfordshire

Site	Label	Grid Reference	Description
Apsleybury Wood CWS	2	TL 117326	
Arlesey Meadows CWS	3	TL 188365	
Cople Pits CWS	58	TL 099493	
Coronation Pit CWS	59	TL 029433	
Great Barford House Grassland CW	100	TL 138532	
Henlow Park Woods CWS	113	TL 190382	
Hill Farm Pit CWS	117	TL 193385	
Hipseley Spinney CWS	120	TL 030281	
Kempston Hardwick Pit CWS	144	TL 033450	
Lady Wood CWS	154	TL 127550	
Langford Common CWS	156	TL 182408	

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Meadhook Wood CWS	170	TL 063323	
Millbrook Pillinge Pit CWS	175	TL 006412	
Poplars Nursery CWS	205	TL 022301	
Poppyhill Pits CWS	206	TL 182393	
Priory Country Park CWS	210	TL 069492	
Putnoe Wood CWS	214	TL 066525	
Sharpenhoe Grove CWS	236	TL 060311	
Shillington Churchyard CWS	238	TL 123339	
Shillington Meadow CWS	239	TL 119339	
Stewartby Lake CWS	257	TL 007422	
Warren Wood CWS	292	TL 085371	
Waterloo Thorns CWS	294	TL 181519	
West Wood CWS	298	TL 993625	
Willington Moat CWS	304	TL 111501	
Woodcock Wood CWS	312	TL 026281	
Wrest Park Grounds CWS	314	TL 091349	
Buckle Grove CWS	315	TL 085343	
Zwetsloots Pits CWS	322	TL 157515	
Priory Park Railway CWS	323	TL 057492	
Lower Alders CWS	329	TL 129389	
Great Barford Gravel Pits CWS	345	TL 120508	
Elstow Pit CWS	368	TL 046457	
River Great Ouse CWS	372	TL 935533	
Fancott Woods and Meadows CWS	373	TL 025275	
Flitwick Manor CWS	375	TL 029338	
Cainhoe Lakes CWS	377	TL 098378	
Upper Alders CWS	378	TL 114388	
Simpsonhill Plantation CWS	380	TL 079371	
River Flit CWS	381	TL 033339	
Flit Valley CWS	382	TL 058362	
Flitwick Moor CWS	383	TL 048351	
Biggleswade Common CWS	385	TL 187463	
South Mills Pits CWS	387	TL 157502	
Millbrook Warren CWS	390	TL 003374	
Rivers Ivel and Hiz CWS	395	TL 184431	

County Wildlife Sites Hertfordshire

Site	Label	Grid Reference	Description
High Down : the Close	10/020	TL 144305	Calcareous Grassland
Ickleford Common	11/010	TL 185330	R Hiz and pastures with unimproved neutral and acid wet grassland
Ickleford Watercress Beds	11/011	TL 1888328	Watercress beds by River Hiz
Lower Green Ickleford	11/012	TL 186323	Rough grassland and ditches by the R. Hiz
Lower Green South Meadow	11/013	TL 186322	Damp meadow by R. Hiz

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Cadwell Grove West Meadow	11/014	TL 186319	Damp meadow adj. to R. Hiz. Important for wintering birds.
Cadwell Grove	11/015	TL 186318	Damp meadow with ditches by R. Hiz
Cadwell Marsh and Burymead Springs	11/023	TL 187314	Mosaic of habitats by R. Hiz
River Hiz, Cadwell	11/039	TL 187323	River
Old Hale Way Allotments	11/042	TL 185310	Allotments adj to River Hiz and Cadwell Marsh
Pirton Grange Farm	10/025	TL 123329	Buildings

BUCKINGHAMSHIRE AND RIVER OUZEL IDB

International Sites

None

National Sites

Site name	Designation	Grid Reference	Features Relevant to IDB
Tebworth Marsh	SSSI	SP 982 289	One of the largest base-rich marshes in the country, containing a series of springs, unimproved neutral grassland, a stream and swamp carr.

Local Nature Reserve

None

County Wildlife Site Bedfordshire

Site	Label	Grid Reference	Description
Church Meadows	49	SP 917 257	
Colworth Thicket	57	SP 918 241	
Edlesborough Hill	74	SP985 190	
Ouzel Valley	195	SP915 265	
River Ouzel	220	SP 917 265	
Stanbridge and Blackgrove Woods	251	SP 977 238	
Tebworth Marsh	267	SP 982 290	
Watergate Meadow	293	SP 981 281	
Clipstone Brook	393	SP 945260	

County Wildlife Site Buckinghamshire

Site	Label	Grid Reference	Description
River Ouse from Thornton Col to Beachampton		SP 756 368	Large River
Field boundaries, Beachampton		SP 760368	Intact Hedge
River Ouzel, Sparks Meadow to west of Eaton Mill		SP 883 .328	Small River
Abandoned railway, North Chetwode		SP 632 303	Scrub
Padbury Brook south of Oxlane Bridge		SP 709301	Small River
Bridleway at Kings Bridge		SP 703 288	Hedge with Trees
Padbury Brook, Three Bridge Mill		SP 675 268	Stream
Redland Bridge, Steeple Claydon		SP 695264	Small River
River Ouzel, A4146 road bridge		SP 945213	Small River
Whistlebrook		SP 942203	Small River
Eaton Bridge, Eaton Bray		SP 964 203	Large River
Grand Union Canal south of Horton Wharf		SP 932 190	Canal or Wet Ditch
Whistle Brook		SP 941 171	Small River
Hedgerow south of Horton		SP 929 182	Hedge with Trees
Grand Union Canal, Great Seabrook to Ivinghoe Locks		SP 932 170	Canal or Wet Ditch
Wet meadows by disused railway		SP 725 281	Neutral Grassland
Bridge east of Leamington Cottage		SP 814 442	Small River
Wetland near Cold Harbour		SP 849 360	Neutral Grassland
Three-fields, Great Horwood		SP 770 305	Acidic Grassland
Wet corner of meadow, Great Horwood		SP 768 317	Neutral Grassland
Spinney near Redhall Farm		SP 779 282	Broad-leaved Woodland
Scrub near Claydon Park		SP 711 256	Neutral Grassland
River Ouse at Wolverton		SP 812 422	Large River
Orchard Mill		SP 885 308	Large River
Horwood House		SP 797 295	Neutral Grassland
West of Threebridge Mill		SP 668 269	Marshy Grassland
Wet meadow behind Seven Stars Pub		SP 674 267	Marshy Grassland
Stream and Scrub, Swanbourne		SP 785 265	Scrub
Swanbourne Lane west		SP 810 267	Neutral Grassland
Grassland west of Lathbury Park		SP 871 449	Basic Grassland
Grassland/fen near New Bradwell		SP 828 406	
Blue Bridge Pond		SP 829 408	
Parish Boundary Hedges, Wolverton		SP 777 385	Intact Hedge

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River Ouse, Buckingham		SP 718 343	Large River
Holloway Hedge		SP 707 345	Hedge with Trees
Norbury		SP 712 299	Broad-leaved Woodland
Field boundary north of Richmond Lodge		SP 828 284	Hedge with Trees
Hedgerow northwest of Merrymead Farm		SP 828 283	Hedge with Trees
Hedgerow south of Slapton		SP 929 201	Hedge with Trees
South Lake, Addington		SP 746 277	Small Lake
North Bridge, Newport Pagnell		SP 877 441	Large River
Bridge south of Newport Pagnell		SP 878 438	Large River
Haversham River Bank		SP 839 435	GEOL
Moulsoe Old Wood		SP 922 424	Coniferous Woodland
Moulsoe Old Wood, Pond and Scrub		SP 919 421	Scrub
Pond in Ouzel Valley Park		SP SP 882 379	Small Pond
River Ouzel, Simpson Bridge		SP 885 361	Large River
Grand Union Canal, Fenny Stratford to Water Eaton		SP 883335	Canal or Wet Ditch
Oakhill Wood		SP 812 357	Coniferous Woodland
Teardrop Lakes		SP 846 371	Neutral Grassland
Wet meadow near Hill Farm		SP 787 305	Marshy Grassland
Railway near Botolph Claydon		SP 745 242	Neutral Grassland
Grassland near Addington		SP 741 273	Neutral Grassland
Willen Lake		8 SP 79 4027	
Loughton Lake		SP 831 383	Small Lake
Stony Stratford Water Meadows		SP 786 410	Reservoir
Galleon Aqueduct, Wolverton		SP 803 415	Canal or Wet Ditch
Buckingham Canal		SP 727 352	Canal or Wet Ditch
Bridge east of Thornborough Mill		SP 738 354	Large River
Cattleford Bridge, Thornton		SP 742 363	Large River
Footbridge at Mill farm		SP 774 381	Large River
King's Farm pond		SP 879 285	Large Pond
Stoke Hammond Fen		SP 875 283	Fen
Swanbourne Park		SP 798 269	Parkland
Grand Union Canal, Great Linford		SP 859 420	Canal or Wet Ditch
Broughton Fields pond 1		SP 910 403	Large Pond
Bradwell Abbey		SP 827 395	Neutral Grassland
Buckingham Railway		SP 709 310	Scrub
Holy Cross Churchyard, Slapton		SP 937 206	Basic Grassland
Scrub near Whistle Brook		SP 940 193	Scrub
Railway Cutting north of Twyford		SP 659 271	Scrub
Simpson Churchyard		SP 883 361	Neutral Grassland
Three Locks meadows		SP 896 286	Neutral Grassland
Manor Farm		SP 808 418	Neutral Grassland
Great Linford Gravel Pits		SP 846 431	Large Lake
River Ouse, Haversham		SP 835 430	Small River
Tongwell Lake		SP 868 423	Large Lake

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Caldecote Lake		SP 889 352	Large Lake
New Ouzel Channel		SP 886 354	Large River
Broughton Fields pond 2		SP 909 404	Large Pond
Pond at Abbey Hill Golf Course		SP 12 392	
Great Woolstone Churchyard		SP 875 386	
Pond in Ouzel Valley Park		SP 878 381	
Waterhall Park		SP 882 320	
Scrub by west side of M1		SP 848 447	
Wet area south side of Lathbury Park		SP 875 445	

County Wildlife Sites - Northamptonshire

Site	Label	Grid Reference	Description
Deanshanger Gravel Pits		SP772 389	Gravel Pit
Dogsmill Brook Meadow		SP 783 417	Wet meadow
Cosgrave Old Canal		SP793 421	Disused canal

County Wildlife Sites - Oxfordshire

Site	Label	Grid Reference	Description
Pool Spinney		SP611 292	Wet woodland
Hopyard Spinney		SP 613 290	Broad-leaved woodland, wetland and scrub
Meadow east of Fringford		SP 612 292	Wet meadow

Appendix 6.2: List of Designated Sites - Ely Group

BURNT FEN IDB

International Sites

None

National Sites

Site	Designation	Grid Reference	Features Relevant to IDB
Shippea Hill	SSSI	TL 637 850	Water level management
Stallode Wash	SSSI	TL 675 853	Water level management, ditches, wildlife and plants

Local Nature Reserve

None

County Wildlife Site

Site	Designation	Features Relevant to IDB
Ely Ouse/Ten Mile River	CWS	Water level management, ditches, wildlife and plants
River Lark	CWS	Water level management, ditches, wildlife and plants
Little Ouse River	CWS	Water level management, ditches, wildlife and plants

CAWDLE FEN IDB

International Sites

None

National Sites

None

Local Nature Reserves

None

County Wildlife Sites

Site	Designation	Features Relevant to IDB
Angel Drove Drains	CWS	Rivers, ditches, water level management, wildlife and plants

LAKENHEATH IDB

International Sites

Site	Designation	Features Relevant to IDB
Breckland	SPA/SAC	Rivers, ditches, water level management, wildlife and plants

National Sites

Site	Designation	Grid Reference	Features Relevant to IDB
Pashford Poors Fen	SSSI	TL732836	Rivers, ditches, water level management, wildlife and plants
Lakenheath Poors Fen	SSSI	TL701827	Rivers, ditches, water level management, wildlife and plants
Stallode Wash	SSSI	TL 675 853	Rivers, ditches, water level management, wildlife and plants

Local Nature Reserves

None

County Wildlife Sites/ Nature Reserves

Site	Designation	Features Relevant to IDB
RSPB Lakenheath Fen Reserve	-	Rivers, ditches, water level management, wildlife and plants
Undley Bank	CWS	-
Shepherds Fen, Norfolk Fen, Joist Fen (poplar plantations)	CWS	Rivers, ditches, water level management, wildlife and plants
Little Ouse Washes	CWS	Rivers, ditches, water level management, wildlife and plants

LITTLEPORT AND DOWNHAM IDB

International Sites

Site	Designation	Features Relevant to IDB
Ouse Washes	SAC	Water level management, ditches, wildlife and plants
100 Foot Washes	RAMSAR	Water level management, ditches, wildlife and plants

National Sites

Site name	Designation	Grid Reference	Features Relevant to IDB
Ouse Washes	SSSI	TL490879	Water level management, ditches, wildlife and plants

Local Nature Reserves

Site name	Designation	Features Relevant to IDB
Little Downham	Local Nature Reserve	Water level management, ditches, wildlife and plants

County Wildlife Sites

Site name	Designation	Features Relevant to IDB
Byall Fen Drains	CWS	Water level management, ditches, wildlife and plants
Wentworth Pollarded Willows	CWS	-
Chettisham Meadows	CWS	Water level management, ditches, wildlife and plants
Bald Drove Pollarded Willows	CWS	-
River Close Park Land	CWS	-
River Great Ouse	CWS	Water level management, ditches, wildlife and plants

MIDDLE FEN AND MERE IDB

International Sites

None

National Sites

Site name	Designation	Grid Reference	Features Relevant to IDB
Soham Wet Horse Fen	SSSI	TL611726	Rivers, ditches, water level management, wildlife and plants
Delph Bridge Drain	SSSI	TL567768	Rivers, ditches, water level management, wildlife and plants
Cam Washes	SSSI	TL536712	Rivers, ditches, water level management, wildlife and plants
Upware Bridge Pit North	SSSI	TL543724	Water level management
Upware Pit North	SSSI	TL544728	Water level management

Local Nature Reserves

None

County Wildlife Sites

Site name	Designation	Features Relevant to IDB
Kingfishers Bridge – wetland creation project	CWS	Rivers, ditches, water level management, wildlife and plants
Ely (9) – A142	Protected Road Verge	–
Middle Fen Bank pollarded willows	CWS	–
Black Wing Drain	CWS	Rivers, ditches, water level management, wildlife and plants
River Lark and associated habitat	CWS	Rivers, ditches, water level management, wildlife and plants
Roswell Pits and adjacent areas	CWS	Rivers, ditches, water level management, wildlife and plants
Ely Beet Pit	CWS	Management of ditches
Mereside grasslands	CWS	Management of ditches
Qua Fen Common	CWS	Management of ditches
East Fen Common	CWS	Management of ditches
Isleham disused railway	CWS	–
Ely Ouse and associated habitat	CWS	Rivers, ditches, water level management, wildlife and plants
Broad Piece	CWS	Rivers, ditches, water level management, wildlife and plants

MILDENHALL IDB

International Sites

None

National Sites

Site name	Designation	Features Relevant to IDB
Wilde Street Meadows	SSSI	Rivers, ditches, water level management, wildlife and plants

Local Nature Reserves

None.

County Wildlife Sites

Site name	Designation	Features Relevant to IDB
Beck Row Golf Course	CWS	–
Aspal Park	CWS	–
Beck Row Churchyard	CWS	–

OLD WEST IDB

International Sites

None

National Sites

None

Local Nature Reserves

None

County Wildlife Sites

Site name	Designation	Features Relevant to IDB
Beach Ditch and Engine Drain	CWS	Rivers, ditches, water level management, wildlife and plants
Landbeach Pits Willow Wood	CWS	Rivers, ditches, water level management, wildlife and plants
Twenty Pence Pit	CWS	Rivers, ditches, water level management, wildlife and plants

PADNAL AND WATERDEN IDB

International Sites

None

National Sites

Site	Designation	Grid Reference	Features Relevant to IDB
Ely Pits and Meadows	SSSI	TL 558 807	Rivers, ditches, water level management, wildlife and plants

Local Nature Reserves

None

County Wildlife Sites

Site name	Designation	Features Relevant to IDB
Ely Ouse	CWS	Rivers, ditches, water level management, wildlife and plants
River Lark	CWS	Rivers, ditches, water level management, wildlife and plants
Ely Beet Factory Pits	CWS	Rivers, ditches, water level management, wildlife and plants
Rowell Pits	CWS	Rivers, ditches, water level management, wildlife and plants
MF Bank Pollarded Willows	CWS	-

SWAFFHAM IDB

International Sites

Site name	Designation	Features Relevant to IDB
Fenland	SAC	Rivers, ditches, water level management, wildlife and plants
Wicken Fen	RAMSAR	Rivers, ditches, water level management, wildlife and plants

National Sites

Site name	Designation	Features Relevant to IDB
Wicken Fen	SSSI/NNR	Rivers, ditches, water level management, wildlife and plants
Stow-cum-Quy	SSSI	Rivers, ditches, water level management, wildlife and plants
Cam Washes	SSSI	Rivers, ditches, water level management, wildlife and plants

Local Nature Reserves

None

County Wildlife Sites

Site name	Designation	Features Relevant to IDB
Priory Farm Wetland Creation Project	-	Rivers, ditches, water level management, wildlife and plants
CCC Conservation Area Reach Lode Pit	-	Rivers, ditches, water level management, wildlife and plants
Heath Road/Street Ways Green Lanes	CWS	-
Bottisham Park	CWS	-
Burwell Disused Railway	CWS	-
Burwell Brick Pit	CWS	Rivers, ditches, water level management, wildlife and plants
Burwell Swamp	CWS	-
Burwell Spring Close	CWS	-
Burwell Green Lanes Grassland	CWS	-
Anglesey Abbey	CWS	-
Swaffham Pools Fen	CWS	Rivers, ditches, water level management, wildlife and plants
River Cam	CWS	Rivers, ditches, water level management, wildlife and plants
Cowbridge Pollarded Willows	CWS	Rivers, ditches, water level management, wildlife and plants
Swaffham Prior Meadows	CWS	-
Driest Droveaway	CWS	-

New. River Monks Lode	CWS	Rivers, ditches, water level management, wildlife and plants
Allicky Farm Pond	CWS	Rivers, ditches, water level management, wildlife and plants

WATERBEACH LEVEL IDB

International Sites

None

National Sites

Site name	Designation	Grid Reference	Features Relevant to IDB
Cam Washes	SSSI	TL536712	Rivers, ditches, water level management, wildlife and plants

Local Nature Reserves

None

CWS

Site name	Designation	Features Relevant to IDB
River Cam	CWS	Rivers, ditches, water level management, wildlife and plants
Old West River	CWS	Rivers, ditches, water level management, wildlife and plants
River Great Ouse	CWS	Rivers, ditches, water level management, wildlife and plants

Appendix 6.3: Local Bap Priority Habitats

The following provides links to the most relevant local Biodiversity Action Plans where available.

Bedfordshire

Arable Field Margins

<https://www.bedscape.org.uk/BRMC/newsite/docs/bedslife/bap%20plans/HA%202016%20arable%20margins.pdf>

Floodplain grazing marsh

<https://www.bedscape.org.uk/BRMC/newsite/docs/bedslife/bap%20plans/HA%202016%20FPGM.pdf>

Hedgerows

<https://www.bedscape.org.uk/BRMC/newsite/docs/bedslife/bap%20plans/HA%202016%20hedgerows.pdf>

Lowland Meadows

<https://www.bedscape.org.uk/BRMC/newsite/docs/bedslife/bap%20plans/HA%202016%20lowland%20meadow.pdf>

Ponds

<https://www.bedscape.org.uk/BRMC/newsite/docs/bedslife/bap%20plans/HA%202016%20ponds.pdf>

Reedbed

<https://www.bedscape.org.uk/BRMC/newsite/docs/bedslife/bap%20plans/HA%202016%20reedbed.pdf>

Traditional orchards

<https://www.bedscape.org.uk/BRMC/newsite/docs/bedslife/bap%20plans/HA%202016%20orchards.pdf>

Wet woodland

<https://www.bedscape.org.uk/BRMC/newsite/docs/bedslife/bap%20plans/HA%202007%20wet%20woodland.pdf>

Wood pasture and parkland

<https://www.bedscape.org.uk/BRMC/newsite/docs/bedslife/bap%20plans/HA%202016%20wpp.pdf>

Woodland

<https://www.bedscape.org.uk/BRMC/newsite/docs/bedslife/bap%20plans/HA%202008%20woodland.pdf>

Buckinghamshire and Milton Keynes

<https://bucks.mknep.co.uk/projects/forward-to-2020-biodiversity-action/>

Including:

Lowland Wood Pastures and parkland

Traditional Orchards

Hedgerows (2 m wide)

Ponds (assumes average size of 0.05 ha)
Lowland Meadows
Purple Moorgrass & Rush pastures
Lowland Fens
Reedbed
Coastal & Floodplain Grazing Marsh
Native Woodland
Water Framework Directive (WFD) watercourses

Cambridgeshire

There is no current BAP. Archived documents available on the Cambridge and Peterborough Biodiversity Partnership web site
<http://www.cpbiodiversity.org.uk/downloads> include:

Arable Field Margins
Arable
Fenland Drainage Ditches
Fens
Floodplain and Grazing Marsh
Hedgerows
Mineral restoration sites
Neutral grassland
Ponds, Lakes and Standing Water
Reedbeds
Rivers and Streams
Wet Woodland
Woodland

Hertfordshire

Relevant Chapters from *A 50 YEAR VISION - Biodiversity Action Plan* are:
Woodland

http://www.hef.org.uk/nature/biodiversity_vision/chapter_04_woodland.pdf

Wetlands

http://www.hef.org.uk/nature/biodiversity_vision/chapter_05_wetlands.pdf

Neutral Grassland

http://www.hef.org.uk/nature/biodiversity_vision/chapter_07_neutral_grass.pdf

Farmland

http://www.hef.org.uk/nature/biodiversity_vision/chapter_09_farmland.pdf

NORFOLK

Cereal Field Margins

<http://www.norfolkbiobiodiversity.org/assets/Uploads/Cereal-field-margins-HAP2.pdf>

Coastal and Floodplain Grazing Marsh

<http://www.norfolkbiobiodiversity.org/assets/Uploads/Coastal-and-floodplain-grazing-marsh-HAP2.pdf>

Fens <http://www.norfolkbiobiodiversity.org/assets/Uploads/Fens-HAP3.pdf>

Hedgerows <http://www.norfolkbiobiodiversity.org/assets/Uploads/Hedgerows-HAP2.pdf>

Lowland Meadows

<http://www.norfolkbiobiodiversity.org/assets/Uploads/Lowland-meadow-and-pastures-HAP3.pdf>

Lowland mixed deciduous woodland

<http://www.norfolkbiobiodiversity.org/assets/Uploads/Lowland-mixed-deciduous-woodland-HAP2.pdf>

Lowland wood pasture

<http://www.norfolkbiobiodiversity.org/assets/Uploads/Lowland-wood-pasture-and-parkland-HAP2.pdf>

Mesotrophic lakes

<http://www.norfolkbiobiodiversity.org/assets/Uploads/Mesotrophic-lakes2.pdf>

Ponds <http://www.norfolkbiobiodiversity.org/assets/Uploads/Ponds-HAP2.pdf>

Reedbeds <http://www.norfolkbiobiodiversity.org/assets/Uploads/Reedbed-HAP2.pdf>

Wet woodlands <http://www.norfolkbiobiodiversity.org/assets/Uploads/Wet-woodlands-HAP2.pdf>

OXFORDSHIRE

Lowland Meadows

<https://www.wildoxfordshire.org.uk/wp-content/uploads/2014/03/Lowland-Meadows-and-Floodplain-Grazing-Marsh.pdf>

Lowland Mixed Deciduous Woodland <https://www.wildoxfordshire.org.uk/wp-content/uploads/2014/03/Woodland.pdf>

Fens <https://www.wildoxfordshire.org.uk/wp-content/uploads/2014/03/Lowland-Fens.pdf>

Eutrophic standing waters <https://www.wildoxfordshire.org.uk/wp-content/uploads/2014/03/Eutrophic-Standing-Waters.pdf>

Ponds <https://www.wildoxfordshire.org.uk/wp-content/uploads/2014/03/Ponds.pdf>

Reedbed <https://www.wildoxfordshire.org.uk/wp-content/uploads/2014/03/Reedbed.pdf>

Rivers <https://www.wildoxfordshire.org.uk/wp-content/uploads/2014/03/Rivers.pdf>

Arable Field Margins <https://www.wildoxfordshire.org.uk/wp-content/uploads/2014/03/Farmland-Habitats-including-Arable-Field-Margins.pdf>

Hedgerows <https://www.wildoxfordshire.org.uk/wp-content/uploads/2014/03/Hedgerows.pdf>

SUFFOLK

<http://www.suffolkbiodiversity.org/biodiversity-action-plans.aspx>

Including:

Hedgerows

Mixed deciduous woodlands

Arable Field Margins

Reedbeds

Coastal and Floodplain Grazing Marsh

Lowland Meadows

Lowland Fens

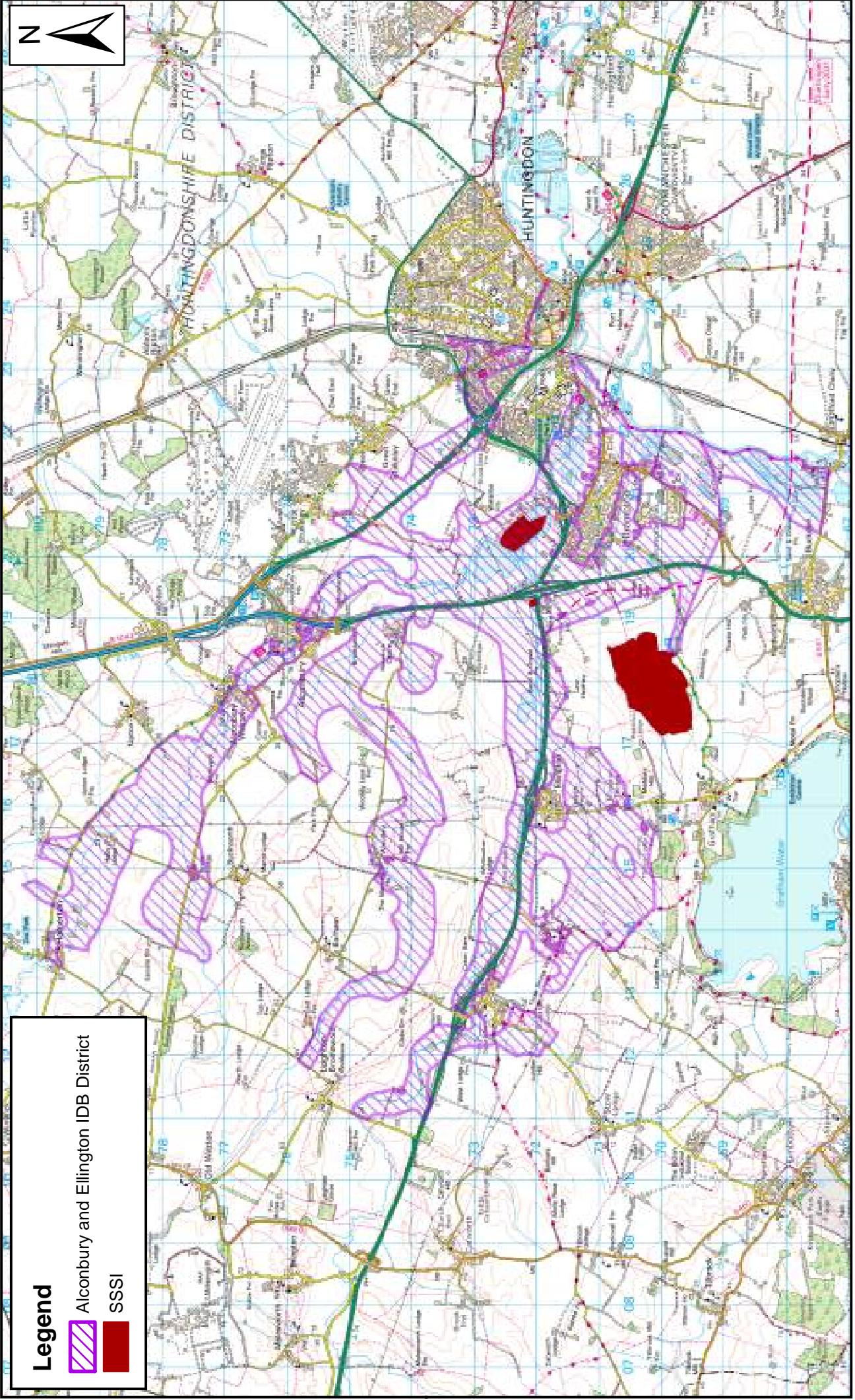
Wet woodland

Ponds

Figure 6.1: Location of SSSIs In Bedford Group Area

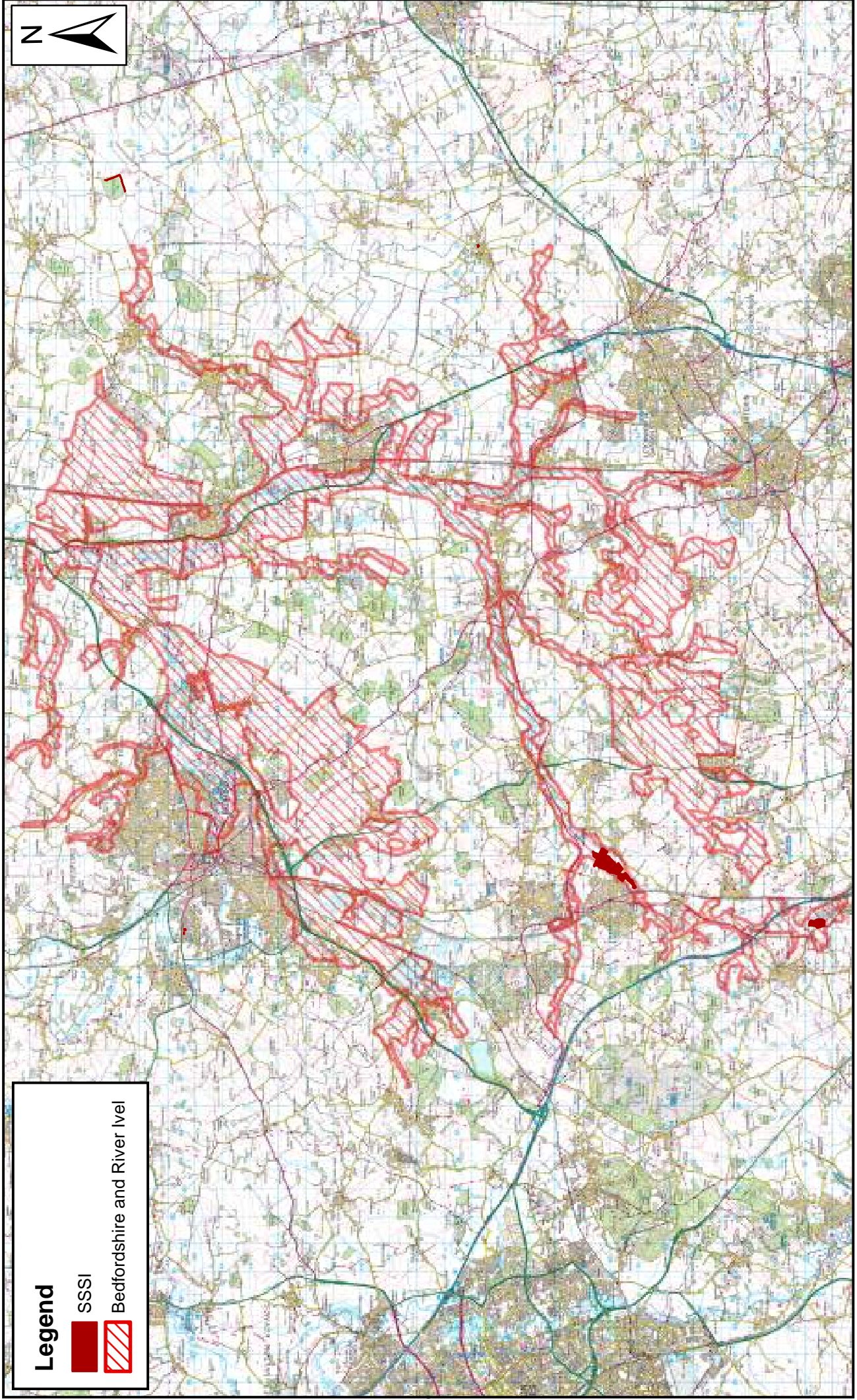
Bedford Group of Drainage Boards

Alconbury & Ellington IDB - SSSI Locations



Bedford Group of Drainage Boards

Bedfordshire & River Ivel IDB - SSSI Locations

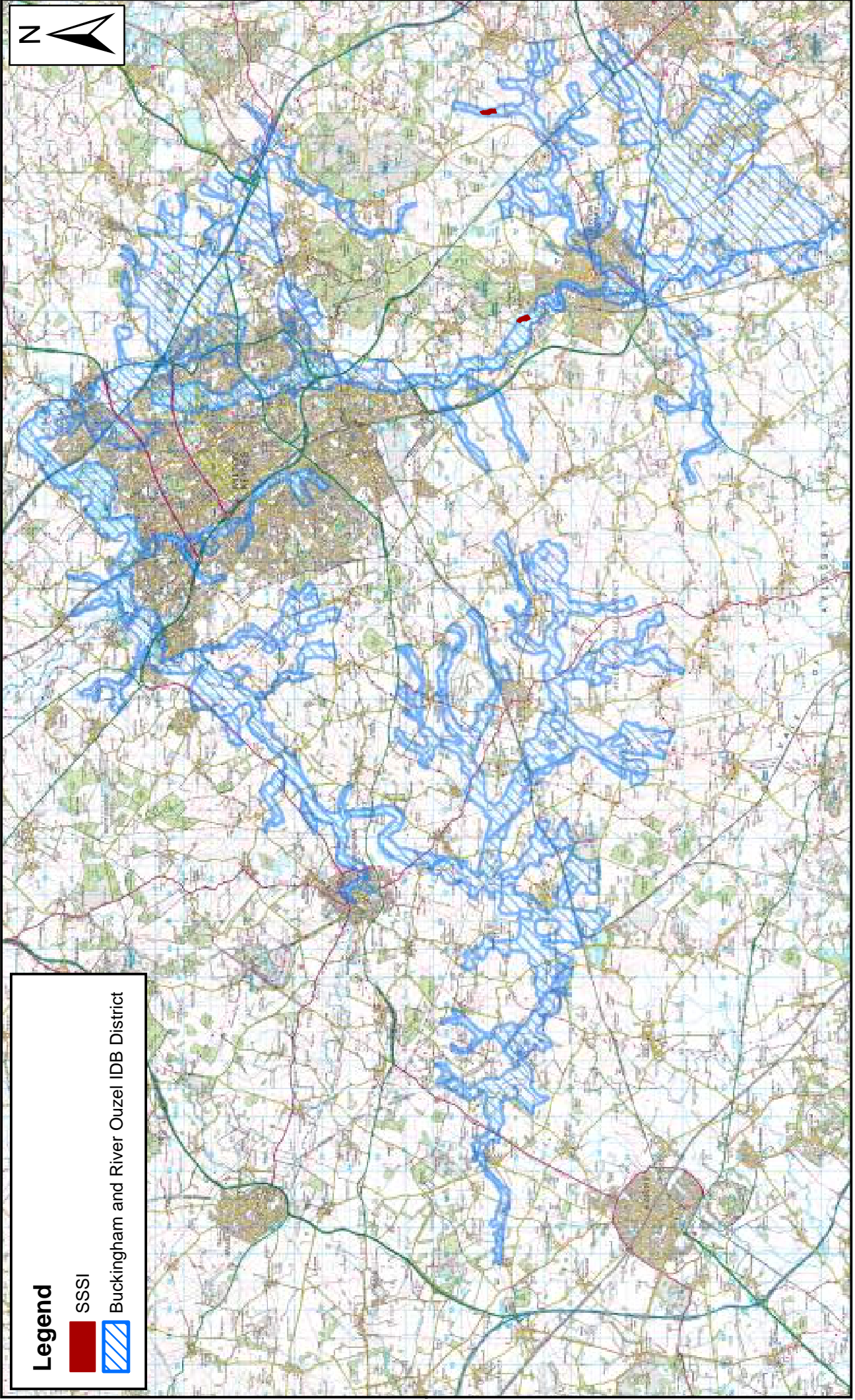


Legend

- SSSI
- Bedfordshire and River Ivel

Bedford Group of Drainage Boards

Buckingham & River Ouzel IDB - SSSI Locations



Legend



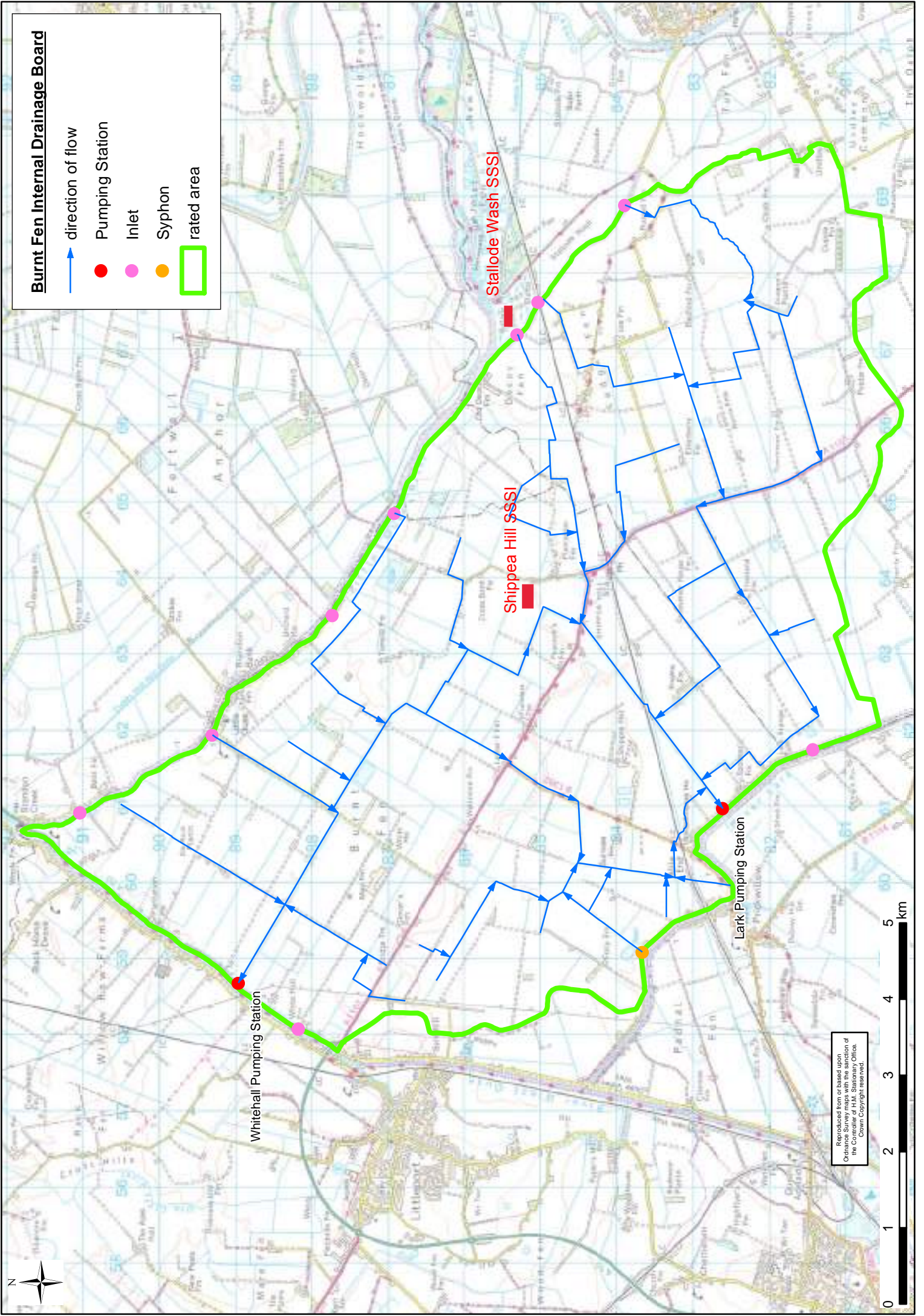
-  SSSI
-  Buckingham and River Ouzel IDB District

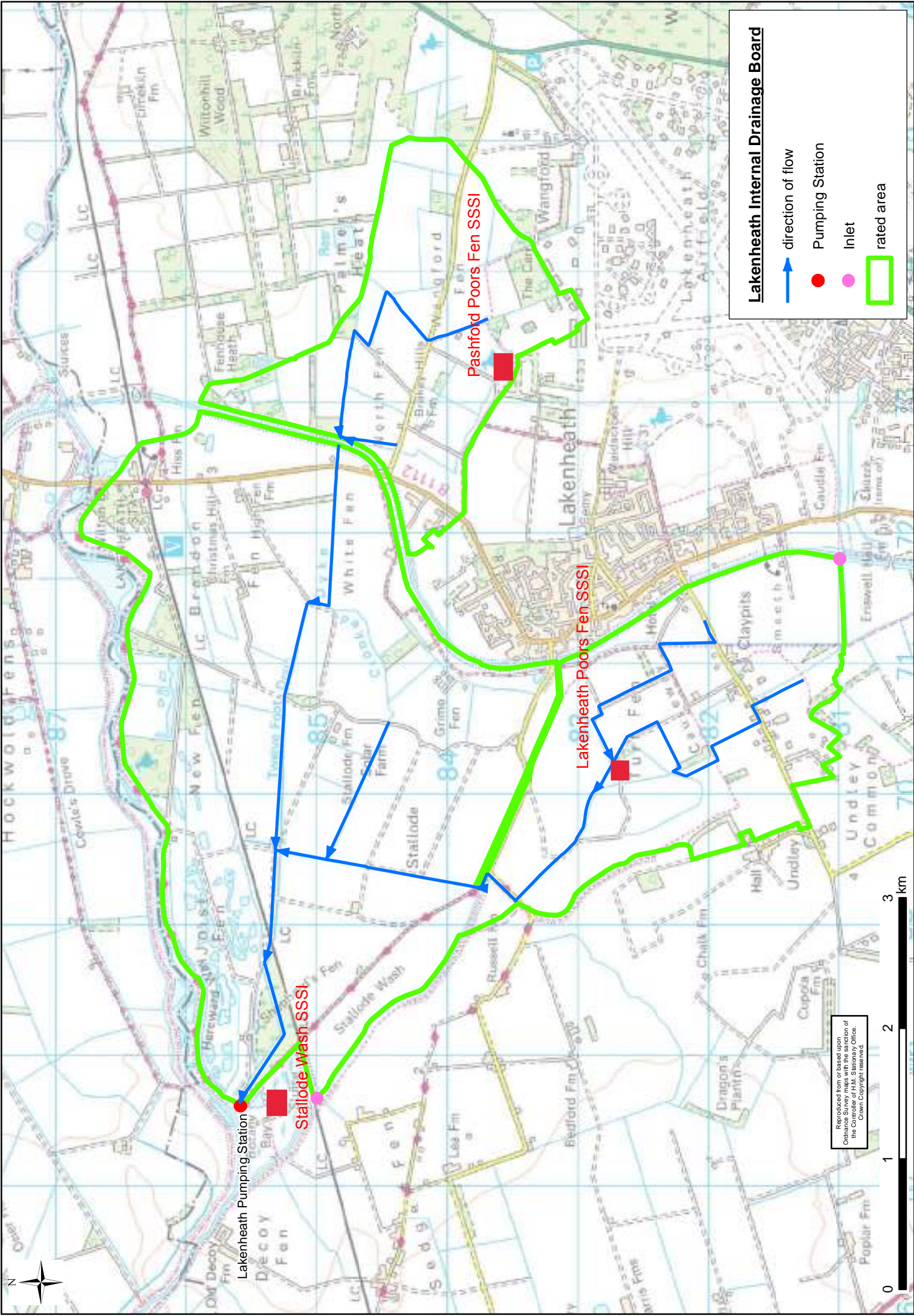
Figure 6.2: Location of SSSIs in Ely Group Area
(In and immediately adjacent to a Board's area)

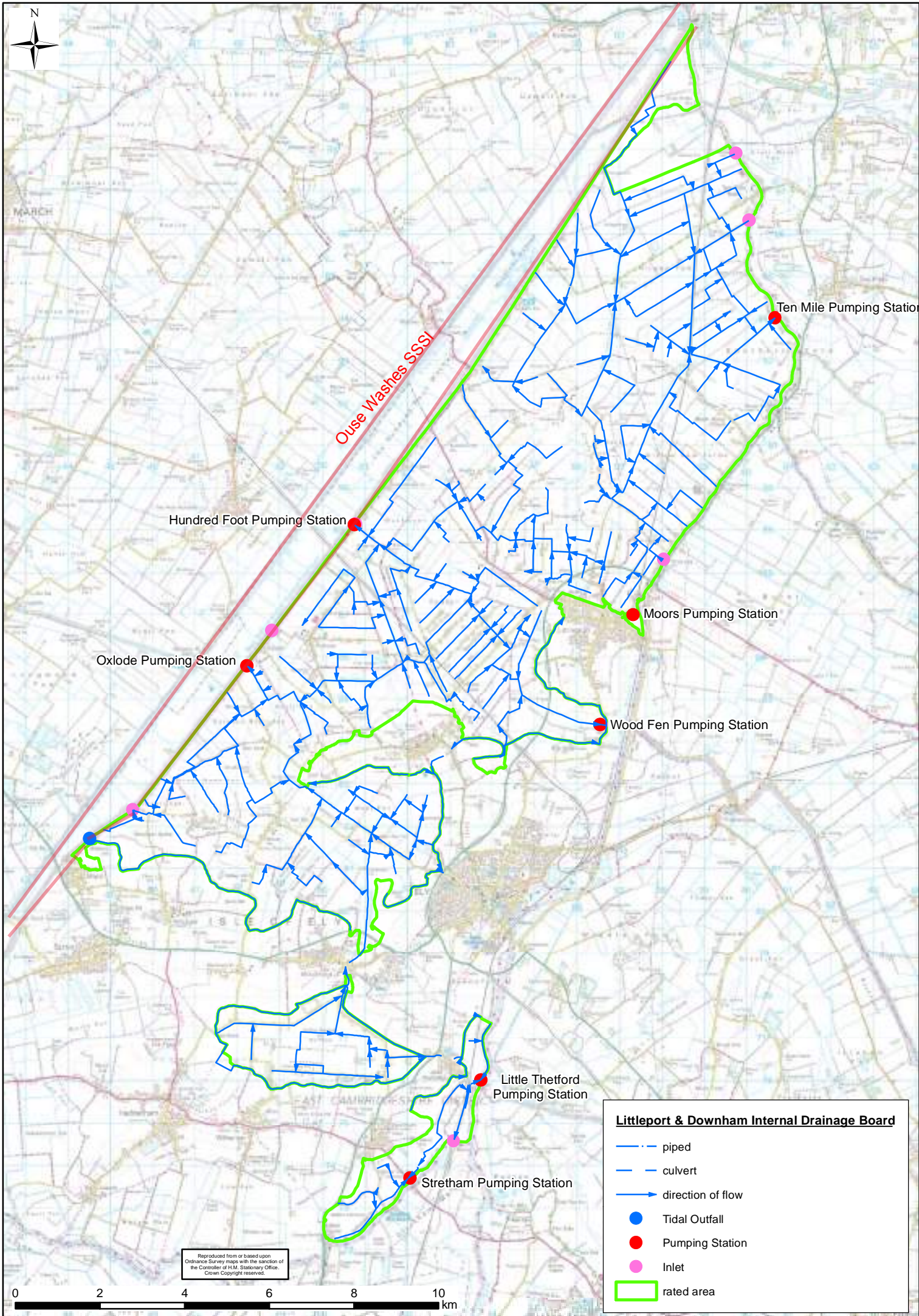
Burnt Fen Internal Drainage Board

- direction of flow
- Pumping Station
- Inlet
- Syphon
- rated area



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Hundred Foot Pumping Station

Oxolode Pumping Station

Moors Pumping Station

Wood Fen Pumping Station








Little Thetford Pumping Station

Stretham Pumping Station

Ten Mile Pumping Station

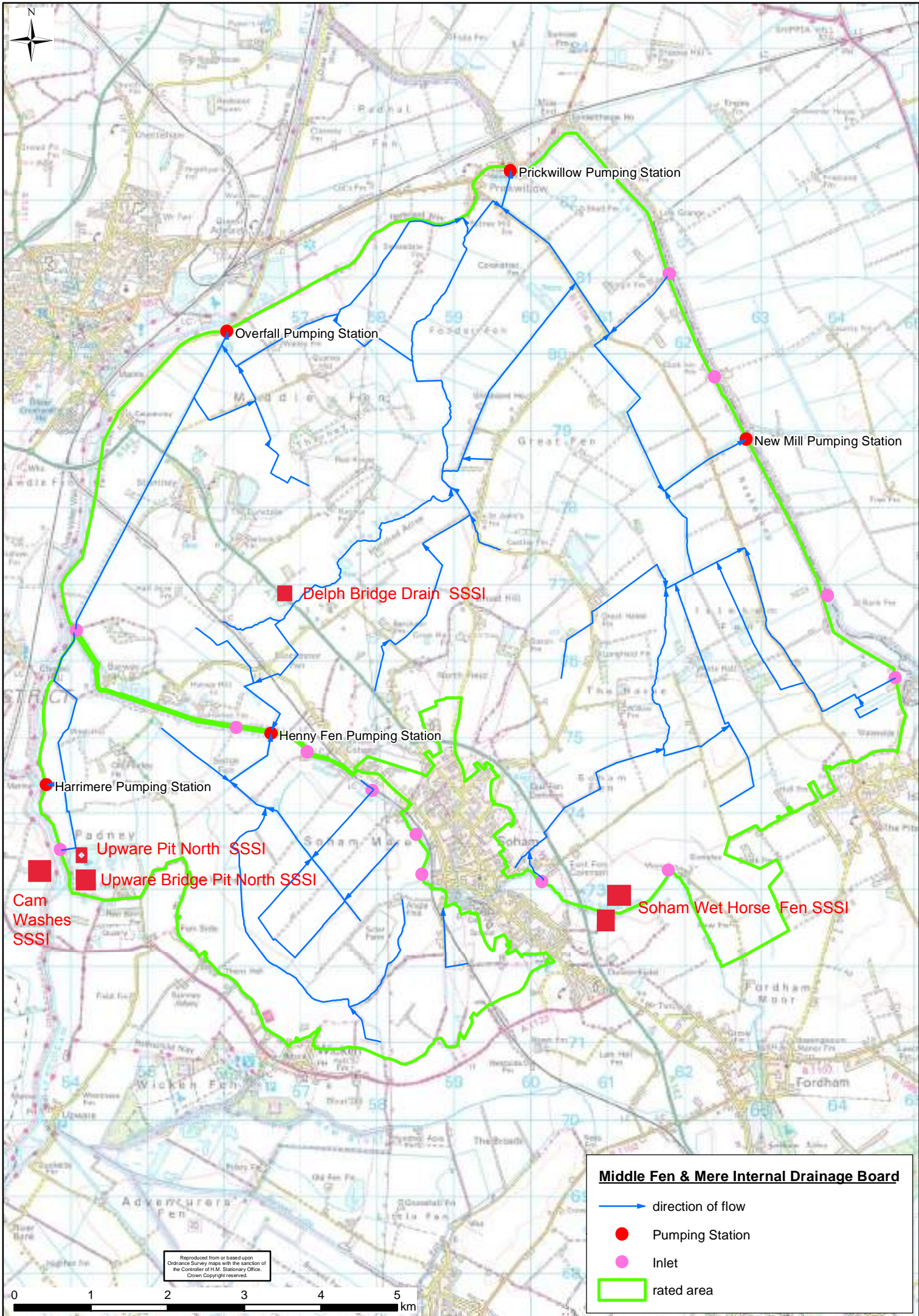
Ouse Washes SSSI

Littleport & Downham Internal Drainage Board

-  piped
-  culvert
-  direction of flow
-  Tidal Outfall
-  Pumping Station
-  Inlet
-  rated area

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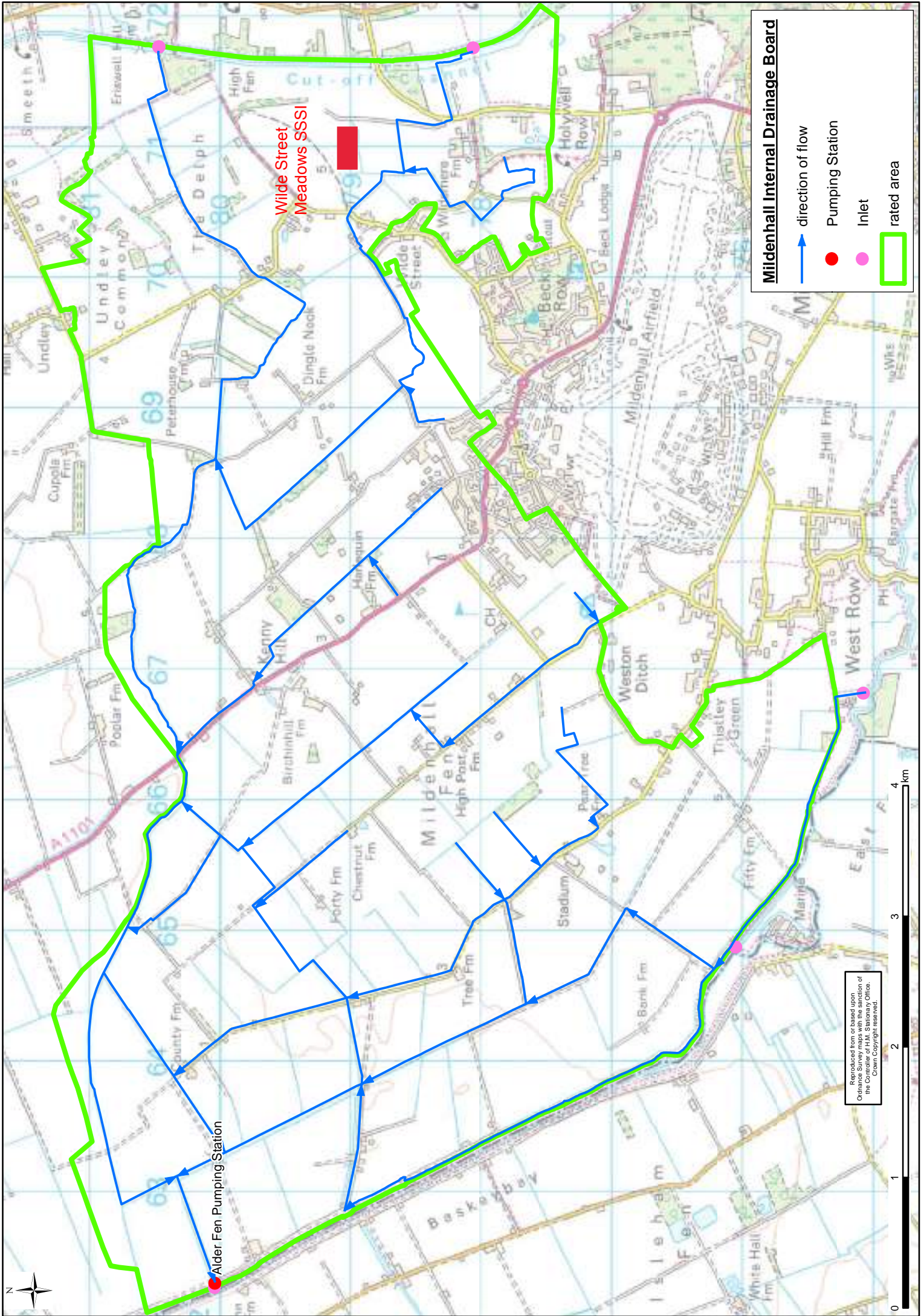


Middle Fen & Mere Internal Drainage Board




- direction of flow
- Pumping Station
- Inlet
- ▭ rated area

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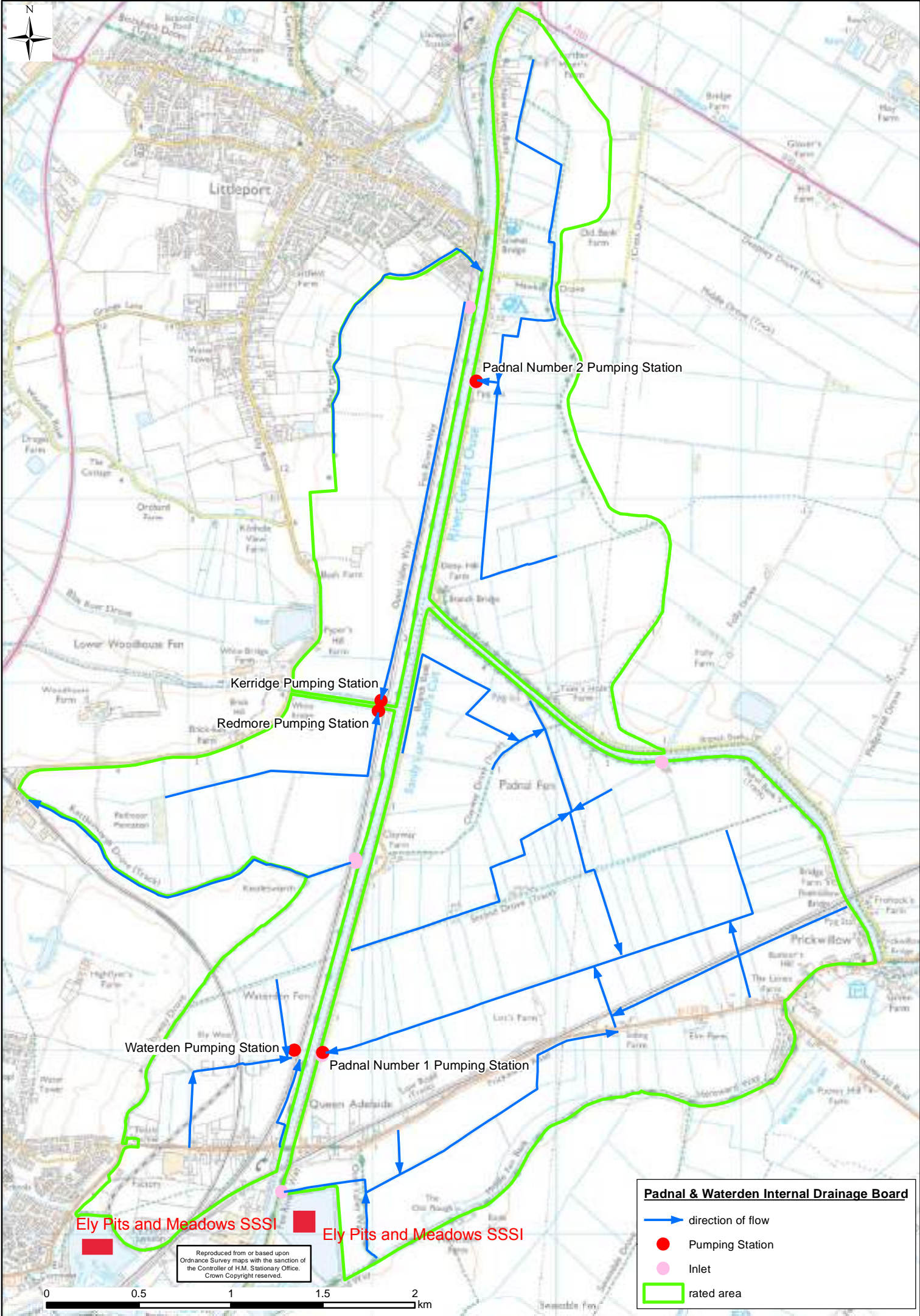




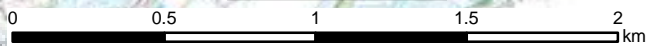
Mildenhall Internal Drainage Board

-  direction of flow
-  Pumping Station
-  Inlet
-  rated area

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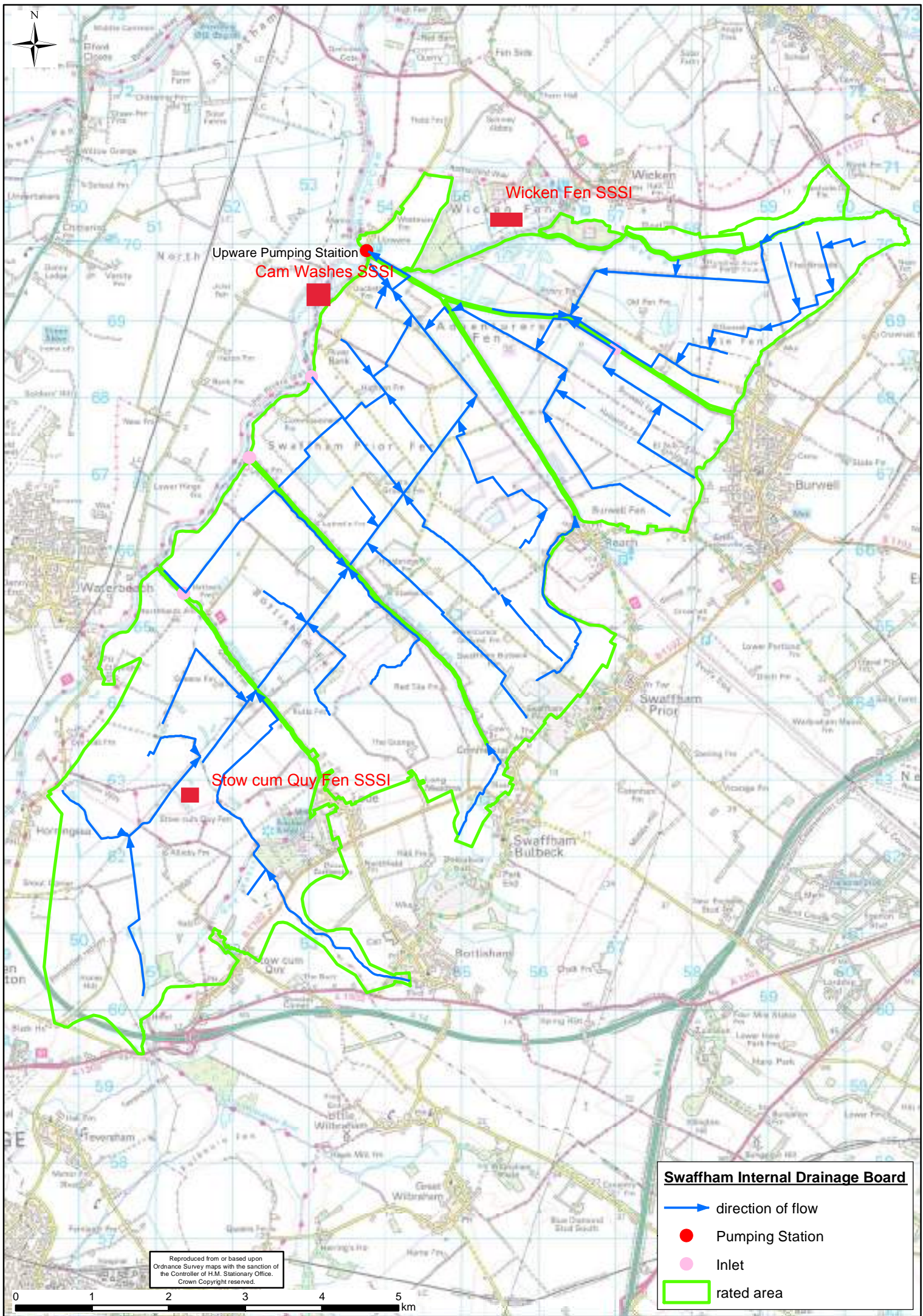


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Padnal & Waterden Internal Drainage Board

- direction of flow
- Pumping Station
- Inlet
- rated area



Upware Pumping Station
Cam Washes SSSI

Wicken Fen SSSI

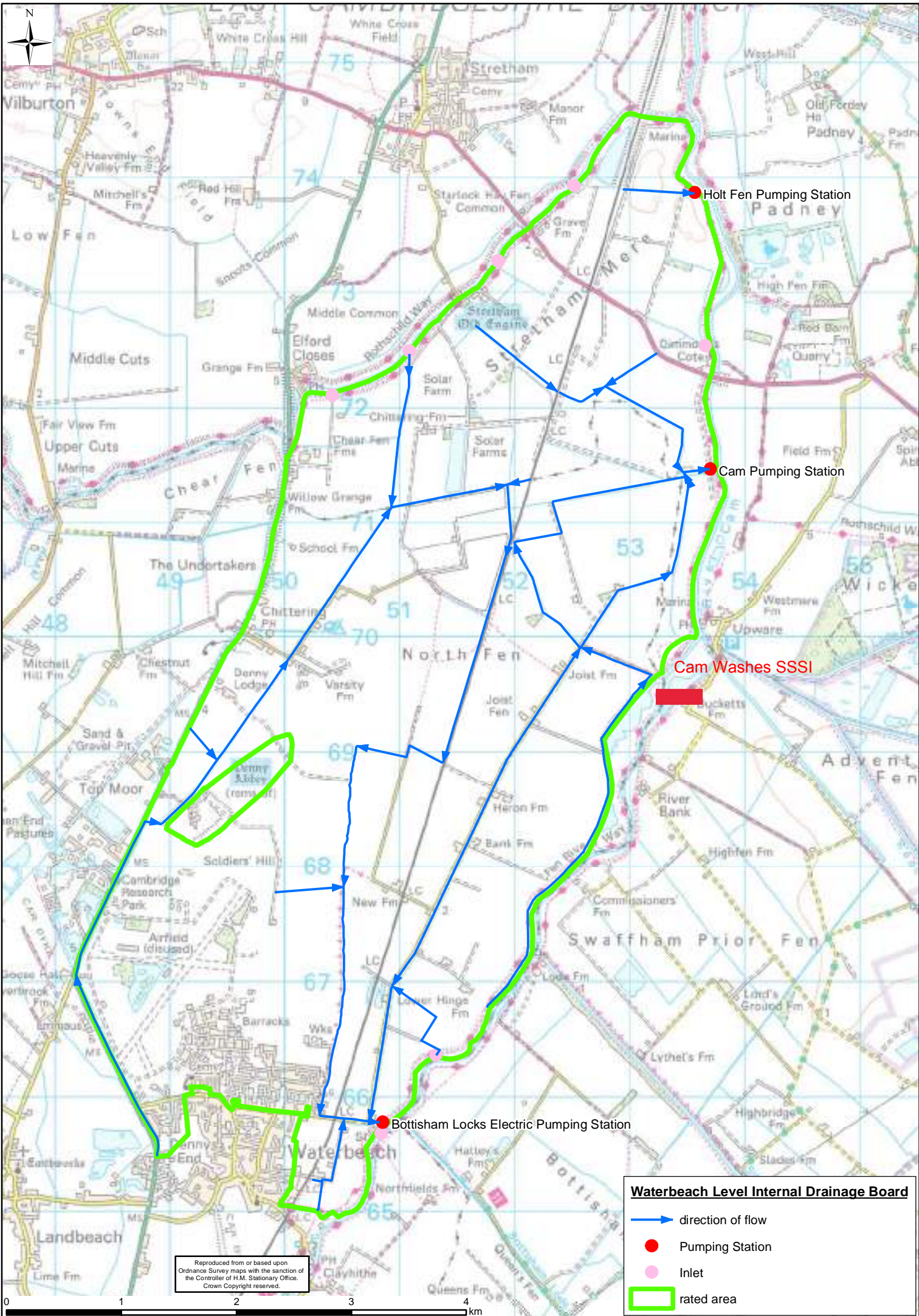
Stow cum Quy Fen SSSI

Swaffham Internal Drainage Board

-  direction of flow
-  Pumping Station
-  Inlet
-  rated area





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Waterbeach Level Internal Drainage Board

-  direction of flow
-  Pumping Station
-  Inlet
-  rated area

CHAPTER 7: SPECIES AND SURVEYS

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CHAPTER 7: SPECIES AND SURVEYS

Species

Species protection in England is provided by the *Wildlife and Countryside Act 1981 (WCA)*, the *Conservation of Habitats and Species Regulations 2017 (HR)* and the *Protection of Badgers Act 1992 (POB)*.

Relevant sections of the legislation are as follows:

Protection of Badgers Act 1992

1 Taking, injuring or killing badgers.

(1) A person is guilty of an offence if, except as permitted by or under this Act, he wilfully kills, injures or takes or attempts to kill, injure or take, a badger.

3 Interfering with badger setts.

(1) A person is guilty of an offence if, except as permitted by or under this Act, he interferes with a badger sett by doing any of the following things—

- (a) damaging a badger sett or any part of it;
- (b) destroying a badger sett;
- (c) obstructing access to, or any entrance of, a badger sett;
- (d) causing a dog to enter a badger sett; or
- (e) disturbing a badger when it is occupying a badger sett,.....

intending to do any of those things or being reckless as to whether his actions would have any of those consequences.

Wildlife and Countryside Act 1981 and as amended

Protection of wild birds, their nests and eggs.

(1) Subject to the provisions of this Part, if any person intentionally—

- (a) kills, injures or takes any wild bird;
- (b) takes, damages or destroys the nest of a wild bird included in Schedule ZA1;
- (b) takes, damages or destroys the nest of any wild bird while that nest is in use or being built; or
- (c) takes or destroys an egg of any wild bird,

he shall be guilty of an offence.

- (5)** Subject to the provisions of this Part, if any person intentionally **or** recklessly—
- (a) disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or
 - (b) disturbs dependent young of such a bird,
- he shall be guilty of an offence.

Protection of certain wild animals.

- 9** (1) Subject to the provisions of this Part, if any person intentionally kills, injures or takes any wild animal included in Schedule 5, he shall be guilty of an offence.
- (2) Subject to the provisions of this Part, if any person has in his possession or control any live or dead wild animal included in Schedule 5 or any part of, or anything derived from, such an animal, he shall be guilty of an offence.
- (4) Subject to the provisions of this Part, a person is guilty of an offence if intentionally or recklessly—
- (a) he damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;
 - (b) he disturbs any such animal while it is occupying a structure or place which it uses for shelter or protection; or
 - (c) he obstructs access to any structure or place which any such animal uses for shelter or protection.
- he shall be guilty of an offence.

Protection of wild plants.

- 13** (1) Subject to the provisions of this Part, if any person—
- (a) intentionally or recklessly picks, uproots or destroys
 - (i) any wild plant included in Schedule 8; or
 - ii) any seed or spore attached to any such wild plant; or
 - (b) not being an authorised person, intentionally or recklessly uproots any wild plant not included in that Schedule,
- he shall be guilty of an offence.

Although there are defences in law for all of these, it is important not to be in a position where this needs to be considered. In contrast, there are no defences under the Habitats Regulations 2017 and any offence is absolute.

The Conservation of Habitats and Species Regulations 2017

41.—(1) A person who—

- (a) deliberately captures, injures or kills any wild animal of a European protected species,
- (b) deliberately disturbs wild animals of any such species,
- (c) deliberately takes or destroys the eggs of such an animal, or
- (d) damages or destroys a breeding site or resting place of such an animal, is guilty of an offence.

(2) For the purposes of paragraph (1)(b), disturbance of animals includes in particular any disturbance which is likely—

- (a) to impair their ability—
 - (i) to survive, to breed or reproduce, or to rear or nurture their young, or
 - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- (b) to affect significantly the local distribution or abundance of the species to which they belong.

Summary

A summary of the species which are covered by legislation and are potentially within the boundaries of the IDBs and may be affected by its activities is as follows:

	Protection under			
	Protection of Badgers	Wildlife and Countryside Act	Habitat Regulations	Possible habitat
All breeding birds		D, K, I, T		Trees/ scrub/ ground nesting/ holes in river banks
Schedule 1 birds especially kingfisher, barn owl		D, K, I, T, DI		Holes in trees/ holes in banks
White-clawed crayfish.		D, K, I, T, DI		Watercourses
Water voles.		K, I, T, D, DI		Holes in banks possibly in the base of reeds.

	Protection under			Possible habitat
	Protection of Badgers	Wildlife and Countryside Act	Habitat Regulations	
Bats.		K, I, T, D, DI	K, I, T, D, DI	Holes/ cracks in trees/ buildings
Badger:	K, I, T, D, DI			Holes in ground
Otter:		K, I, T, D, DI	K, I, T, D, DI	Holts in ground, under tree roots
Great crested newt		K, I, T, D, DI	K, I, T, D, DI	Ponds, piles of rubble/ vegetation, vegetation
Reptiles (adder, common lizard, grass snake)		K, I, T		Grasslands, piles of rubble/ branches
Dormouse		K, I, T, D, DI	K, I, T, D, DI	Hedges / woodland
Plants		Unlikely in the areas of the IDBs		

Where : K = killing
 I injuring
 T taking
 D damage to places of shelter protection and/ or rest, damage to nest
 DI Disturbance while in a place of shelter protection and/ or rest or nest

Surveys for Protected Species

A number of species need to be considered in the advance of any IDB works. Locations for these will be sought from the County Wildlife Trusts and the County Ecologists and entered onto a data base held by the IDBs. Data acquired by the Boards will be fed back to other parties. This data base will be incomplete because the current distribution of many species is poorly known. Therefore, the absence of records for a given location cannot be taken as proof that a species is not present there. Only those species likely to be affected by the Boards' activities will be included. Machine operators will hold a card in their cabs so that sightings can be recorded (Appendix 7.1).

Therefore, species surveys may be required in order to ensure that the provisions within the Wildlife and Countryside Act (as strengthened by the Countryside and Rights of Way Bill by the addition of 'reckless killing') and the Habitats Regulations are met. Their need will be determined by the information gathered from the walk over survey by the supervisors, information from the consultation process or that available on the IDB's database. Where necessary, the surveyor will hold the

appropriate licences from English Nature i.e. for white-clawed crayfish, dormouse, barn owl, great crested newts and bats.

Each supervisor will have a card that indicates the principal habitat requirements of each protected species. A copy is included in Appendix 7.2 of this chapter. If it appears possible that a protected species could be present and likely to be affected by the proposed works, then an ecological assessment will be made. Routine survey will not be necessary in relation to "normally protected" breeding birds if works will be undertaken outside the breeding season. Although the standard routine methodologies in this document will ensure that there is no offence against water voles, all supervisors will be trained in water vole survey methodology so that a preliminary assessment can be made as they are assessing work requirements.

The need for fish surveys (eels and other species) shall be reviewed where the hard beds of channels are to be affected and/ or there will be changes to pumping stations.

The procedure for determining surveys will thus be as follows:

1. Ecologist reviews the programme once approved before it starts
2. Risk based approach is undertaken that works managers assess routine and regular sites and ecologist assesses infrequent or sensitive sites.
3. If no likely presence of protected species is seen then works may proceed. If there is a possible presence then the ecologist reviews. If there are likely protected species then specific survey is undertaken and depending on the findings, either works are amended, a licence is sought or a class licence used.

All works on watercourses are controlled by a job card (Appendix 7.3). Within this card there is provision for the results of any surveys to be given so as to highlight particular working points.

Licences

Licences are available from Natural England under both the *Habitats Regulations* and the *Wildlife and Countryside Act* to allow works which would otherwise cause an offence to be undertaken. These can be granted for the reasons of 'over riding public interest' or the purposes of preserving public health or public or air safety or preventing serious damage to livestock, foodstuffs for livestock, crops, vegetables fruit, growing timber or fisheries. It is always better to try to avoid the need for licences however.

Bespoke licences may be required for all the European Protected Species e.g. great crested newts, dormouse, bats, otter and these require significant forward planning of at least three months from submission to works starting. Low impact licences may cover works for bats and great crested newts but need specially licensed ecologists. If a nest site is to be affected, then a licence may be required for barn owl.

'Class' licences are available to IDBs for water vole and for badger. Copies are given in Appendix 7.4 of this chapter. There are strict conditions associated with the use of these licences, the timings that may be employed and on the reporting of works. If used then an internal procedure for control will be established. Consideration may be required as to whether these are appropriate or whether a bespoke licence is required.

A class licence is available to remove white clawed crayfish to protect them from harm but the licensing system is complex and should there be any concern that they are present, specialist help should be sought. The establishment of 'Ark' sites for this species by specialists should be supported.

Alien invasive species

Alien invasive species are controlled by the *Wildlife and Countryside Act* and its amendments. It is illegal to plant or otherwise cause to grow in the wild any plant listed in Schedule 9 to the Act and illegal to release, or allow to escape into the wild, any animal listed in Schedule 9 of the Act. Thus, should these species be inadvertently removed from a channel, then they must not be replaced. A list of relevant species is given in Appendix 7.5, but it includes signal crayfish.

Mink are also on the list and their presence may affect the ability of a Board to fulfil its biodiversity responsibility. Control may need to be instigated and / or participation in wider mink control programmes.

There is an increasing list of alien plant species in the Boards' areas. These include giant hogweed, Japanese knotweed, Himalayan balsam on the banks and floating pennywort, water primrose, water hyacinth and parrot's feather. Identification sheets are given in Appendix 7.6 and full information is available on nonnativesp.org. Appendix 7.7 holds the ADA protocols on Biosecurity Procedures and Protocols.

Some aquatic species pose considerable risks for flood alleviation and can seriously affect pumping stations, trash screens and culverts. A record shall be kept of all sightings and there will be a space on the job card to allow records. It may be necessary to amend working practices so as to ensure that the species are appropriately managed e.g. where pennywort is present then pulling and herbiciding is the preferred method rather than weed cutting as this reduces the risk of fragments. Where there is any reason to suspect the presence of such aquatic species, cleaning plant, possibly by steam, at the end of use is essential. Irrespective appropriate cleaning and drying of all equipment and clothing should be undertaken when moving between jobs. Care must be taken that the washings do not enter a surface water drain.

Himalayan balsam is an annual and can be controlled by pulling or cutting before August. Giant Hogweed and Japanese knotweed are perennials and should be eradicated wherever possible. It is likely that herbicides will need to be used and advice should be sought from the Environment Agency. It must not be burnt but material carted to licensed waste disposal sites.

Enhancements

In line with the biodiversity duties of the IDBs, enhancements for protected species should be considered wherever possible even if they are not within the Board's BAPs and these may be taken alone or in collaboration with other agencies.

These may include:






- Barn owl boxes in conjunction with leaving one bank of the watercourse unmanaged but not allowed to develop scrub
- Vegetation management modification eg wild flower meadows in pumping stations and Board's owned land
- Bat boxes - in buildings, bridges, trees
- Heaps of soft vegetation arisings for grass snakes
- Kingfisher nest sites - holes in sheet piling
- Sandmartin nest sites - artificial banks 1.5 m above normal water level, holes in sheet piling
- Otter - artificial holts
- Water voles - management of water/ bank interface
- Eels and fish - fish passes and/ or fish friendly pumps.

Appendix 7.1: Sightings Card

ELY GROUP OF INTERNAL DRAINAGE BOARDS

Sightings record

Species	Name	Date	Place	What was it doing
	Water Vole			
	Otter			
	Badger			
	Mink			
	Kingfisher			
	Sand martin			

	<p>Floating pennywort</p>			
	<p>Barn owl</p>			
	<p>Reptile</p>			
	<p>Great crested newt</p>			
	<p>Eel</p>			
<p>Other</p>				
<p>Other</p>				
<p>Other</p>				

Appendix 7.2: Habitat features which may indicate the presence of protected species

White clawed Crayfish

Stony bed.
Fast flowing water.
Little silt deposition.
Overhanging banks.

Great crested newts

Permanent or seasonally dry ponds in a wide range of pond sizes, but usually 500-750 sqm. with a depth of 0.5-2.0 m.
Less than 75% shade.
50-75% submerged vegetation cover.
Few or no fish.

Ground nesting birds

Tall vegetation will probably prevent view of a nest in later spring. Birds may be seen repeatedly returning to the same spot.
Skylarks may be heard and seen overhead.
Lapwing may be seen overhead and heard making an alarm call.

Water vole

Typically, a slower flowing permanent watercourse.
Occasionally sites that dry out in extreme summer conditions.
Typically earth or clay banks which are vegetated.
Banks with tall or luxuriant grasses or emergent plant species.
Holes in the bank that are 4-8cm diameter, typically wider than high, close to or below the water.
'Lawns' of grazed vegetation around the land holes.
Runs close to the water's edge seen as tunnels in the vegetation.
Latrines with droppings 8-12mm long and 4-5mm wide with blunt ends

Badgers

Setts shown as substantial holes in the ground, often in groups. Characterised by a fan of earth outside. Bedding material may be outside.

Badger hairs on wire orbushes.

Otters

Presence of holts under tree roots, in scrub, especially bramble or blackthorn or in piles of debris.

Footprints in mud, 45-75 mm wide, sometimes with webbing and sometimes showing 5, more usually 4 toes.

Spraints are loose, black and tar like, often on ledges under bridges, prominent rocks or tufts of grass.

Bats

Trees with holes or loose bark.

Bats leaving the holes at night.

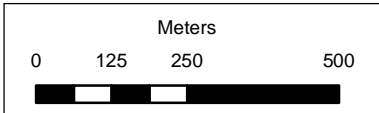
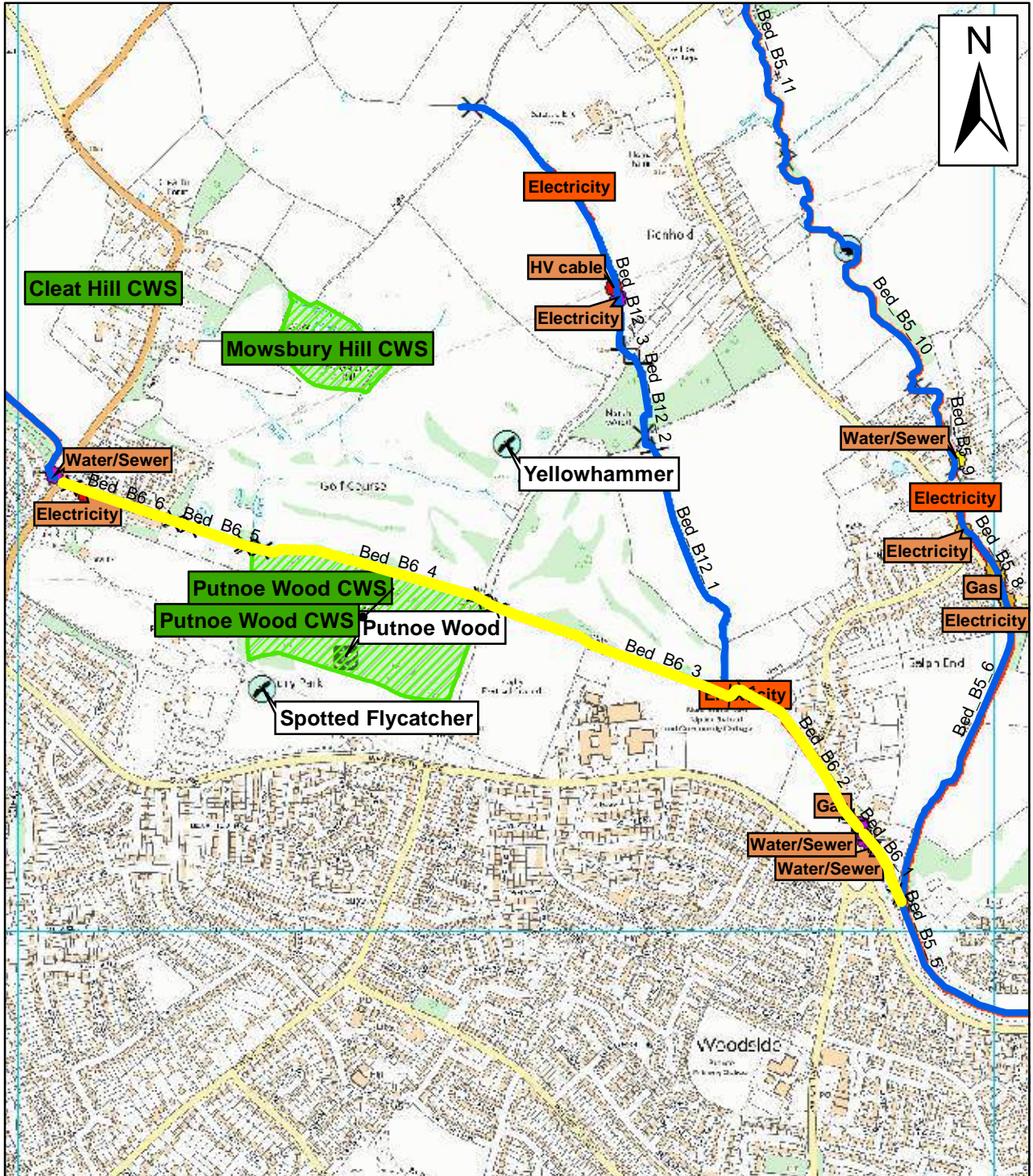
Oily smear down from the hole.

Noise from the hole (summer roost only).

Appendix 7.3: Specimen Job Card

Bedford Group of Drainage Boards

Bedfordshire & River Ivel



Scale 1 = 12,500

Watercourse Section

- Drain_polyline
- Culvert_polyline

Legend

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- | | | |
|---|---|---|
| <ul style="list-style-type: none"> ★ SSSI 🌿 County Wildlife Site NNR National Nature Reserve BLBRMC County Wildlife Sites SPA Special Protection Area SAC Area of Conservation Ramsar sites | <p>Wildlife Sitings SPECIES</p> <ul style="list-style-type: none"> 🦡 Badger 🦉 Otter 🦉 Water Vole 🦉 White Clawed Crayfish 🦉 Signal Crayfish ★ Protected Species | <p>Utilities TYPE</p> <ul style="list-style-type: none"> ● In Bank ● In Bed ● Overhead ● Underground <p>TYPE</p> <ul style="list-style-type: none"> — Overhead — Cable — Gas Pipeline — O/H Line |
|---|---|---|

Job Card Bedfordshire & River Ivel IDB

Work Period: 2018/19
 Date Printed: 20/07/2018
 Site Location u/s: 506092 / 252920
 Site Location d/s: 507811 / 252061
 Length (m): 2009

Drain No: B6_1 / B6_2 / B6_3 / B6_4 / B6_5 / B6_6

Category: 1
 Ravensden Brook
 Hookhams Lane to Cleat Hill

Task Description

- Dredging
- Weed Cutting
- Flailing
- Clearing
- Hand Clearing
- Tree Snips
- Hedge Cutter
- Discing
- Fencing
- Bank Repair
- Wood Chipping
- Burning
- Spreading
- Other

Best Practice

- Work one bank only
- Retain base fringe
- Retain trees/shrubs
- Habitat piles
- Pollarding
- Coppicing

Contractor

Operator(s) _____

 Plant _____

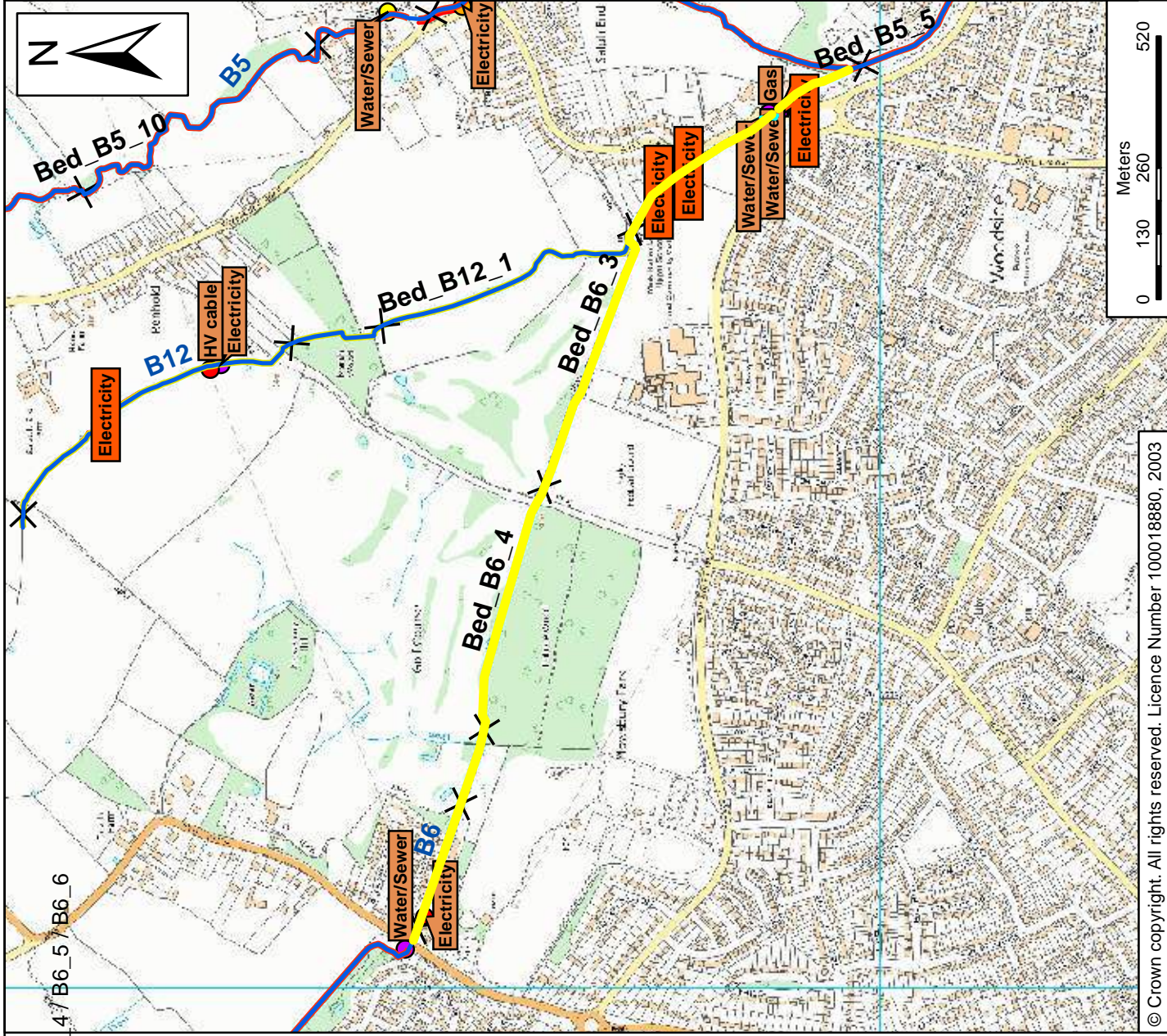
Job Start Date _____

 Job End Date _____

Legend (to be completed during pre-commencement inspection)

- Plant Access → Other Vehicles →→→
- Overhead lines — OH — Water — W —
- Gas — G — Fence — F —
- Electricity — E — Working Bank — WB —

Work Supervisors Signature _____



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MAINTENANCE WORKS RISK MANAGEMENT SHEET



Bedfordshire & River Ivel IDB

Attach Job Card:

Work Period: 2018/19

SITE LOCATION

Drain ref:		Drain name:	
Site coordinates u/s:		Site coordinates d/s:	
Site location u/s:		Site location d/s:	

RISKS AND CONSTRAINTS

Has a pre-commencement inspection been done? Y / N
Signature: _____ Date: _____
Details of hazards:
Height of overhead cables (m):

Details of environmental constraints:

Are access routes identified on the Job Card? Y / N
--

TEAM BRIEF

LDO to sign when briefed prior to work commencing:
1.
2.
3.
4.
Supervisor's Signature: _____ Date: _____

Appendix 7.4: Class Licences



1. Home (<https://www.gov.uk/>)
2. Environment (<https://www.gov.uk/environment>)
3. Wildlife, animals, biodiversity and ecosystems (<https://www.gov.uk/environment/wildlife-animals-biodiversity-and-ecosystems>)
4. Protected sites and species (<https://www.gov.uk/environment/protected-sites-species>)
5. Land species (<https://www.gov.uk/environment/planning-development-protected-sites-species-land-species>)
6. Badgers: licence for internal drainage boards to interfere with setts for drainage operations (CL27) (<https://www.gov.uk/government/publications/badgers-licence-to-interfere-with-setts-for-drainage-purposes>)



(<https://www.gov.uk/government/organisations/natural-england>)

Statutory guidance

Licence to interfere with badger setts for watercourse and drainage purposes (CL27)

Updated 1 January 2021

Contents

Overview

Legislation

Licence terms and conditions

Licence conditions

Information and advice specific to this licence

Information and advice for all class and general licences

Contact Natural England for licensing enquiries

Annex A - Recording and reporting requirements

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This publication is available at <https://www.gov.uk/government/publications/badgers-licence-to-interfere-with-setts-for-drainage-purposes/licence-to-interfere-with-badger-setts-for-watercourse-and-drainage-purposes-cl27>

Class licence CL27: interference with badger setts* for the purpose of undertaking water course or drainage maintenance operations.

Overview

This licence permits interference with badger (meles meles) setts where there is a need to conduct routine watercourse or drainage maintenance operations such as vegetation cutting, bank reforming, or culvert clearance.

Only employees or contractors of the Internal Drainage Boards are entitled to register to use this licence.

This licence cannot be relied upon where a badger sett is causing problems in flood defences and reservoir dams. These situations, should be referred to the Environment Agency for action in accordance with their internal operational guidance.

Registration: Anyone wishing to use this licence must first apply to Natural England to be registered.

Recording and reporting: There are data recording and annual reporting requirements.

Reference: WML – CL27.

Legislation

Statute(s): Protection of Badgers Act 1992 ('the 1992 Act').

Section(s): This licence is issued under section 10(2)(d).

Licence terms and conditions

Valid for the period: 1 January 2021 to 31 December 2021 (inclusive).

Area valid in: All counties of England (landward of the mean low water mark).

Purpose(s) for which this licence is issued: This licence can only be used for any operation (whether by virtue of the Land Drainage Act 1991 or otherwise) to:

- maintain or improve any existing watercourse or drainage works, or
- construct new works required for the drainage of any land, including works for the purpose of defence against sea water or tidal water

What this licence permits

Subject to all the terms and conditions of this licence and solely for the purposes stated above, this licence permits Registered Persons and their Assistants to interfere with a badger (meles meles) sett by means of:

- cutting bank vegetation with hand-tools and/or a tractor mounted flail
- cutting bank vegetation and processing with a purpose-built harvester
- cutting mid-channel vegetation with a 360° excavator
- reforming banks with a 360° excavator
- desilting drainage beds with a 360° excavator
- maintaining low-level drainage culverts with a 360° excavator

Who can use this licence

This licence can only be used by Registered Persons* and their Assistants* except those convicted on or after 1 January 2010 of a wildlife crime* unless, in respect of that offence, either:

- they are a rehabilitated person for the purposes of the Rehabilitation of Offenders Act 1974 and their conviction is treated as spent, or
- a court has made an order discharging them absolutely

Any application by a person to whom this exclusion applies for an individual licence will be considered on its merits.

*: see Definitions

Definitions used in this licence

"Registered Person" is an employee or contractor of the Internal Drainage Board, and who has successfully registered to use this licence in accordance with Condition 13a.

"Assistant" is a person assisting a Registered Person. Assistants are only authorised to act under this licence whilst they are under the direct supervision of the Registered Person.

"Wildlife crime" means any offence under the Conservation of Habitats and Species Regulations 2017, the Wildlife and Countryside Act 1981, the Protection of Badgers Act 1992, the Deer Act

1991, the Hunting Act 2004, the Wild Mammals (Protection) Act 1996, the Animal Welfare Act 2006, the Protection of Animals Act 1911 (all as amended) or the Invasive Alien Species (Enforcement and Permitting) Order 2019.

"Badger sett" is defined by the 1992 Act as "any structure or place which displays signs indicating current use by a badger". Examples of signs that may indicate 'current use' include entrances that are greater than 25cm in diameter with a flattened oval appearance, entrances that are clear of debris and vegetation, entrances with smoothed sides (due to the passage of badgers), large spoil heaps (sometimes fresh) outside entrances, fresh bedding outside entrances, fresh badger footprints in spoil heaps, and well trampled runs leading to and from entrances. See Advice and Information note b. for further guidance on interpretation of 'current use' of a badger sett.

Licence conditions

1. Before undertaking any action at a site under this licence, the licensee must notify Natural England by telephone or email of the name and location of the site. Notice must be given at least two working days in advance of the action being taken.
2. Tractors and excavators must operate from the opposite bank to that occupied by the badger sett (see Definitions for the definition of a sett) unless this is not feasible or practicable. If operating from the bank occupied by the sett is unavoidable, then only tracked machinery may be used in the sett area.
3. Tractors and excavators must not drive directly over badger sett entrances.

Vegetation cutting

4. Any cut vegetation in sett entrances that is likely to prevent access to the sett by a badger, must be removed at the end of each day's work.
5. Vegetation from the mid-channel must not be placed over sett entrances but must be placed at least five metres from sett entrances to avoid obstructing access by badgers.
6. During vegetation cutting, it is not permissible to damage or obstruct access to water vole (*Arvicola amphibius*, previously known as *Arvicola terrestris*) burrows or disturb water voles while they are using such places unless permitted to do so under licence by Natural England (see Information and Advice note c).

Bank reformation and desilting

7. Prior to bank reformation, badger sett entrances must be temporarily plugged with straw-filled (or similar material) hessian or paper sacks to prevent the associated tunnel becoming blocked with soil.
8. Where it is necessary to dig into the badger sett to achieve the desired bank profile / channel width the excavation of sett tunnels must be limited to the minimum required to achieve the required profile / channel width. Following re-profiling, badgers must be able to freely access and exit sett entrances.
9. Excavated soil from the bank and silt from the channel must be placed at least five metres from the sett entrance(s) to avoid obstructing access by badgers.
10. At the end of each day's work, the hessian or paper sacks must be removed from the badger

sett entrances and the tunnels left unobstructed.

11. These operations must not be conducted during the months of February, March or April so as to avoid the most sensitive period of the badger breeding season.

Low-level culverts

12. If low-level culverts are to be installed within drainage channels where excavated spoil from a badger sett is blocking the flow of water, the culvert must be installed below the level of the lowest sett entrance.

Authorised persons

13. To use this licence you must either:
 - a. Register with Natural England to use the licence (see Information and Advice notes e - i)
 - b. Be authorised by a Registered Person to act as an Assistant (see Definitions), in which case you may act under the authority of this licence so long as you are doing so under the direct supervision of a Registered Person.
14. The Registered Person is responsible for all activities carried out under this licence, including activities carried out by their Assistants.
15. All persons using this licence must possess appropriate knowledge and experience of the relevant species (see Information and Advice note d).
16. Whilst engaged in work permitted by this licence all persons registered or authorised to act under this licence must have access to a copy of this licence and produce it to any police officer or any Natural England officer on demand.

Recording and reporting requirements

17. The Registered Person must maintain a record, which must be kept for at least 24 months beyond the expiry date of this licence, in accordance with the requirements of Annex A. Records are to be made available for inspection at any reasonable time by Natural England.
18. The Registered Person must comply with the reporting requirements specified in Annex A.

Reports, including 'nil' returns, must be submitted for the period 1 January to 31 December by no later than 31 January of the following year.
19. If Conditions 17 and 18 are not met then the Registered Person will, by default, no longer be considered registered to act under this licence.

Important

This licence authorises acts that would otherwise be offences under the legislation referred to

above. Failure to comply with its terms and conditions:

- i. may be an offence against the 1992 Act or mean that the licence cannot be relied upon and an offence could therefore be committed. The maximum penalty available for an offence under the 1992 Act is, at the time of the issue of this licence, an unlimited fine and/or a six month custodial sentence
- ii. may result in your permission to use this licence being withdrawn. Natural England will inform any person or organisation whose permission to use this licence is withdrawn in writing. This sanction may be applied to other similar licences, and
- iii. may mean that you are not able to rely on this licence as a defence in respect to the prohibitions within the Animal Welfare Act 2006 or the Wild Mammals (Protection) Act 1996

If the activity that you wish to undertake is not covered by this licence, or if you are unable to comply with any of the terms and conditions which apply to the use of this licence, then you will need to apply to Natural England for an individual licence.

This licence is not a consent for the purposes of Part II of the Wildlife and Countryside Act 1981 (as amended) in respect to SSSIs. It is your responsibility to get consent or assent if required before this licence can be used on any SSSI. See Advice (o - q) for further information.

Issued by and on behalf of Natural England on 1 January 2021.

Information and advice specific to this licence

Working during the coronavirus pandemic

Anyone acting under this licence should follow Defra's advice on surveying and mitigation work during the coronavirus pandemic (<https://www.gov.uk/guidance/coronavirus-covid-19-surveying-and-mitigation-works-affecting-wildlife>) - also available on request from Natural England:

wildlife.scicons@naturalengland.org.uk. This advice is a minimum precaution to reduce the risk of accidental transmission of the virus from humans to wild animals, and may be updated. You should check GOV.UK before you act.

Any products used to clean and disinfect equipment should be safe for use where there could be contact with animals, and used at an effective and safe dilution rate. 'Safe4 Disinfectant' is considered to be a safe and appropriate product for cleaning and disinfecting equipment that could come into contact with animals. Use at a dilution of 1:50 to be effective against COVID-19.

Operational guidance

a. Placing straw-filled hessian or paper sacks into badger sett tunnels during operations reduces the likelihood of encountering badgers and ensures that the tunnel can be located in the event of a collapse. To reduce the risk of injury to badgers, the excavator bucket must never dig beyond the sack. If it is necessary to excavate beyond the sack, the sack must be removed (by hand) and the tunnel inspected with a bright torch to ascertain the tunnel layout. Provided the tunnel does not branch and no badgers are present, the sack must be replaced to arm's-length and the process repeated until the desired bank profile/channel width is achieved.

b. The following relevant guidance is available:

- guidance on what constitutes 'disturbance' to badgers in their setts (WML-G16)

(<https://webarchive.nationalarchives.gov.uk/20140605105957/http://www.naturalengland.org.uk/ourwork/regulation/wildlife/species/badgers.aspx>)

- guidance on 'current use' of a badger sett (WML-G17

(<https://webarchive.nationalarchives.gov.uk/20140605105957/http://www.naturalengland.org.uk/ourwork/regulation/wildlife/species/badgers.aspx>)

c. Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to:

(i) intentionally kill, injure or take a water vole

(ii) intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection and

(iii) disturb water voles while they are using such a place. Licences are available from Natural England to permit activities that would otherwise be unlawful for specific purposes such as conserving flora and fauna

Training requirement

d. Training applicable to the activities permitted by the licence should be undertaken at regular intervals. It is the responsibility of each Registered Person to maintain their expertise at an appropriate level to act under this licence and it is also the Registered Person's responsibility to ensure that Assistants have appropriate training, experience and instruction, including in mitigation measures commonly employed, to act under this licence.

Registering to use this licence

e. Only Registered Persons, or persons authorised or supervised by a Registered Person (see Condition 13), may act under this licence. Anyone seeking to become a Registered Person must apply to Natural England. You can register online (<https://www.gov.uk/get-a-wildlife-licence>) to use this licence. Alternatively applications can be submitted by email or post (contact details below). Applications require supporting evidence (including references) indicating appropriate knowledge and experience of the species covered by this licence and the management techniques permitted (see Reference guidance (<https://www.gov.uk/government/publications/reference-to-support-a-protected-species-licence>)).

f. Once registered, a person is entitled to use this licence so long as they satisfy the licence's terms and conditions; annual re-registration is not required. Failure to comply by the terms and conditions, including the recording and reporting requirements, will, by default, render registration null and void. The annual reporting process is used to verify a person's desire to remain registered.

g. Anyone seeking to confirm whether a person is registered to use this licence should contact Natural England Wildlife Licensing (contact details below).

h. A person's registration may be revoked by Natural England, for example, if that person breaches the conditions of this licence. In these circumstances Natural England will normally give 28 days' notice of our intention to revoke a person's registration.

i. Registration to use this licence to interfere with a badger sett is taken as a statement that the Registered Person has an appropriate level of competence in these activities. The licence should not be used or taken to indicate competence in any other activity that may be associated with work affecting badgers (eg for the purposes of any other activity for which an individual licence is required – contact Natural England Wildlife Licensing).

Information and advice for all class and general licences

j. Natural England checks compliance with licences and the attached conditions. Where breaches are identified, these may be subject to enforcement action.

k. Ordinarily, licences will be reissued on 1 January each year (you do not need to re-register for those with registration requirements). Please note, however, that they can be modified or revoked

at any time by Natural England or the Secretary of State, but this will not be done unless there are good reasons for doing so. You are advised to check the terms and conditions of a licence prior to your first use of it each year in case of amendments.

The limits of licences

- l. Licences permit action only for the purposes specified on that licence.
- m. Licences do not permit actions prohibited under any other legislation, nor do they confer any right of entry upon land.
- n. Unless otherwise stated the provisions of Natural England licences only apply landward of the mean low water mark in England. The Marine Management Organisation is responsible for all licensing seaward of the mean low water mark.

Protected sites

- o. You can search for and view details about all sites of special scientific interest (SSSIs) by using Natural England's Designated Sites system (<https://designatedsites.naturalengland.org.uk/SiteSearch.aspx>). The notification documents for each SSSI contain a list of operations that require Natural England's prior consent. Owners and occupiers of land notified as SSSIs are required to give written notice to Natural England before either beginning any of these operations, or allowing someone else to carry out those operations. SSSI consent can only be given to a SSSI owner or occupier. It may be given with or without conditions, or in some cases, consent may not be granted. A similar process applies to public bodies and statutory undertakers (as defined under Section 28G of the Wildlife and Countryside Act 1981 (as amended)) and this obligation applies even where the operations are carried out on land outside of the SSSI.
- p. Please note that as the licensee you will not be able to undertake the licensed activity on a SSSI until the owner or occupier of the SSSI has applied for, and received, Natural England's written SSSI consent. If you do so, you may be at risk of committing an offence. As the licensee, if you wish to exercise this licence on a SSSI you must contact the relevant owners or occupiers of the SSSI and ensure they give written notice to Natural England of their proposal to permit you to carry out licensed activity on their SSSI. You should wait until a SSSI consent decision has been received by the SSSI owner/occupier before you begin to exercise this licence on a SSSI. See GOV.UK for further information on how to get SSSI consent (<https://www.gov.uk/guidance/protected-areas-sites-of-special-scientific-interest>) from Natural England.
- q. In considering whether to issue consent or assent for activities likely to affect a SSSI that is a European site, in other words a Special Protection Area (SPA) or Special Area of Conservation (SAC), Natural England will carry out a Habitats Regulations Assessment, as required by the Conservation of Habitats and Species Regulations 2017 (as amended) ('the Habitats Regulations') to ensure there will be no adverse effects on the European site.

Using and sharing your information

- r. There is significant public interest in wildlife licensing and in those who benefit from receiving a wildlife licence. We may make information publicly available, for more information, please see our privacy notice (<https://www.gov.uk/government/publications/natural-england-privacy-notice/wildlife-licensing-privacy-notice>).

Contact Natural England for licensing enquiries

Telephone: 020 802 61089

Email: wildlife@naturalengland.org.uk

Wildlife Licensing, Operations Delivery
Natural England
Horizon House
Deanery Road
Bristol
BS1 5AH

For other enquiries use the Enquiry Service.

Telephone: 0300 060 3900

Email: enquiries@naturalengland.org.uk

Annex A - Recording and reporting requirements

Records

Each Registered Person must maintain, and keep for at least 24 months beyond the expiry date of this licence, a record of the following information for each watercourse or drainage maintenance operation conducted using this licence (this also includes water course or drainage maintenance operations conducted by Assistants acting under their authority):

- date the badger sett was interfered with
- type of water course or drainage maintenance operation, and
- location (administrative area and a 6-figure Ordnance Survey grid reference)

Reporting

A report, detailing the information stipulated above, including 'nil' returns, must be sent by each Registered Person to Natural England Wildlife Licensing (at the address given above) for the reporting period 1 January to 31 December no later than 31 January of the following year. Use the report template (<https://www.gov.uk/government/publications/report-action-taken-under-licences-cl26-and-cl27>).

Commercial confidentiality

If you encounter difficulties releasing data due to client confidentiality restrictions then you are advised to remind your client that it is a condition of using this licence that licensing information is reported. Furthermore, the licence may only be used if this condition is met.

To help avoid such difficulties, it is recommended that your contractual terms and conditions make it clear that submitting records to Natural England and other bodies specified in licences is a legal requirement. If a client is not prepared to accept such terms and conditions then you may not use this licence without the prior permission of Natural England Wildlife Licensing.

WML-CL27 [version December 2020]

[Print this page](#)

1. Home (<https://www.gov.uk/>)
2. Environment (<https://www.gov.uk/environment>)
3. Wildlife, animals, biodiversity and ecosystems (<https://www.gov.uk/environment/wildlife-animals-biodiversity-and-ecosystems>)
4. Protected sites and species (<https://www.gov.uk/environment/protected-sites-species>)
5. Land species (<https://www.gov.uk/environment/planning-development-protected-sites-species-land-species>)
6. Water voles: licence to displace them for work on flood defences, water courses or drainage systems (CL24) (<https://www.gov.uk/government/publications/water-voles-licence-to-displace-them-for-work-on-flood-defences-water-courses-or-drainage-systems>)



- <https://www.gov.uk/government/organisations/natural-england>

Statutory guidance

Licence to allow internal drainage boards to intentionally displace water voles for work on flood defences, water courses or drainage systems (CL24)

Updated 1 January 2021

Contents

- Overview
- Legislation
- Licence terms and conditions
- Licence conditions
- Information and advice specific to this licence
- Information and advice for all class and general licences
- Contact Natural England for licensing enquiries
- Annex A - Recording and reporting requirements
- Annex B – Management activities

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Class licence CL24: Intentional disturbance of water voles and damage or destruction of water vole burrows by means of displacement (Internal Drainage Boards).

Overview

This licence permits intentional damage or destruction of water vole burrows, and / or disturbance to water voles occupying burrows, by use of the mitigation method known as 'displacement'. This method is used to displace water voles away from areas where potentially harmful operations are planned to take place.

This licence permits use of displacement as a technique to facilitate certain works to flood defences, water courses or drainage systems, to prevent serious damage or risks to public health or safety, or for the purpose of conservation, including the purpose of river restoration. For the purposes of this licence, displacement means removal of vegetation followed, where appropriate, by a destructive search of the burrows, where the intention is to displace water voles from their burrows. Water draw-down or removal may be used in parallel with vegetation cutting, where appropriate.

This licence is not intended to cover the risk of incidental disturbance or damage resulting from other activities, such as routine mowing of water course banks (see Annex B for further information). It is Natural England's view that such operations can proceed lawfully under the Wildlife & Countryside Act 1981 (as amended) section 10(3)(c) defence "an incidental result of a lawful operation...", so long as works are justified and undertaken in accordance with best practice that minimises the risk of any adverse impact on water voles.

Licence users must comply with licence terms and conditions at all times when taking action under this licence.

Registration: Only employees, contractors or consultants acting on behalf of the Internal Drainage Boards are entitled to register to use this licence.

Recording and reporting: There are data recording and annual reporting requirements.

Reference: WML – CL24.

Legislation

Statute(s) Wildlife and Countryside Act 1981 (as amended) ('the 1981 Act').

Section(s) This licence is issued under sections 16(3)(c), (f) and (h).

Licence terms and conditions

Valid for the period: 1 January 2021 to 31 December 2021 (inclusive).

Area valid in: All counties of England (landward of the mean low water mark).

Purpose(s) for which this licence is issued: This licence can only be used to:

- conserve wild animals or wild plants or introduce them to particular areas
- prevent serious damage to livestock, foodstuffs for livestock, crops, vegetables, fruit, growing timber or any other form of property or to fisheries
- preserve public health or public safety

What this licence permits

Subject to all the terms and conditions of this licence and solely for the purposes stated above, this licence permits Registered Persons, Accredited Agents and their Assistants to: Intentionally disturb water vole (*Arvicola amphibius/terrestris*) whilst occupying a structure or place of shelter or protection, or to intentionally damage, obstruct or destroy such a structure or place, and to temporarily take water vole whilst undertaking these activities by means of:

- removal of vegetation
- water draw-down or removal
- carrying out a destructive search of water vole burrows after an appropriate monitoring period following vegetation stripping
- destroying water vole burrows

Who can use this licence

This licence can only be used by Registered Persons* and their Accredited Agents* and Assistants* except those convicted on or after 1 January 2010 of a wildlife crime* unless, in respect of that offence, either:

- they are a rehabilitated person for the purposes of the Rehabilitation of Offenders Act 1974 and their conviction is treated as spent, or
- a court has made an order discharging them absolutely.

Any application by a person to whom this exclusion applies for an individual licence will be considered on its merits.

*: see Definitions

Definitions used in this licence

"Registered Person" is a person who has successfully registered to use this licence.

"Accredited Agent" is a suitably trained and experienced person (such as, field staff or contractor) who is able to carry out work under a licence without the personal supervision of the Registered Person, in accordance with Condition 1. If required, the Registered Person may authorise Accredited Agents to undertake certain activities under this licence, such as supervising vegetation removal following appropriate training and instruction.

"Assistant" is a person assisting a Registered Person or Accredited Agent. Assistants are only authorised to act under this licence whilst they are under the direct supervision of either the Registered Person or Accredited Agent.

"Wildlife crime" means any offence under the Conservation of Habitats and Species Regulations 2017, the Wildlife and Countryside Act 1981, the Protection of Badgers Act 1992, the Deer Act 1991, the Hunting Act 2004, the Wild Mammals (Protection) Act 1996, the Animal Welfare Act 2006, the Protection of Animals Act 1911 (all as amended) or the Invasive Alien Species (Enforcement and Permitting) Order 2019.

Licence conditions

1. To use this licence you must either:

- a) be a Registered Person (see Information and Advice notes h-l for registration procedures and Definitions)
- b) be authorised as an Accredited Agent (see Definitions) by a Registered Person, in which case you are only permitted to act under the authority of this licence if you are in possession of a letter signed by the Registered Person appointing you by name as a duly Accredited Agent for the purpose of this licence. Accredited Agents shall carry a copy of the said letter when acting under the licence and shall produce it to any police or Natural England officer on request, or
- c) be authorised by a Registered Person or their Accredited Agent to act as an Assistant (see Definitions), in which case you may act under the authority of this licence so long as you are doing so under the direct supervision of a Registered Person or their Accredited Agent.

2. The Registered Person is responsible for all activities carried out under this licence, including activities carried out by their Accredited Agents and their Assistants.

3. This licence can only be relied upon where there is no alternative but to displace the water voles and destroy their burrows, that is, when alternative measures that do not require a licence have been considered and proved to be either impractical or impossible.
4. All relevant animal welfare legislation must be complied with at all times, including the Animal Welfare Act 2006 and the Wild Mammals (Protection) Act 1996 (see Information and Advice note g).

Removal of vegetation including marginal vegetation (with water drawdown if required) to displace water voles

5. Before vegetation cutting takes place, the location of known water vole burrows, suitable adjacent refuge areas for water voles, and compensatory habitat measures (where possible) must be identified (see Information and Advice note b).
6. The initial cutting of vegetation including marginal vegetation (see Information and Advice note d) must take place and be completed during the periods 15 February to 15 April and 15 September to 31 October, inclusive. In the counties of Northumberland, County Durham, Tyne and Wear, North Yorkshire, Cumbria and Lancashire, the spring period of initial vegetation removal (starting 15 February) may be extended until 30 April if this is necessary to ensure displacement only takes place in suitable weather conditions and when there is sufficient forage available to support the displaced water voles (see Information and Advice note c).
7. Removal of vegetation including marginal vegetation after the periods specified in Condition 6 must only take place where the vegetation has initially been removed between 15 February and 15 April (30 April for northern counties listed in Condition 6) or 15 September and 31 October, and where it is necessary to maintain a previously cut area. Any re-growth must be removed and maintained as short as possible, through cutting or herbicide use, at a height no greater than 10 cm (4 inches) above ground level.
8. Removal of vegetation in accordance with Conditions 6 and 7 must be in accordance with the following:
 - a. Where both banks of the same section are being cut, the cut sections must be limited to continuous lengths not exceeding 150 m in length; and A minimum of 150 m of un-cut bank providing suitable habitat for water voles must be left between cut sections. There must be no more than two cut sections of bank separated by 150 m of un-cut vegetation, or
 - b. Where only one bank is being cut, an unlimited length of bank may be cut provided that the opposite bank and/or other immediately adjacent area(s) provide suitable and sufficient good quality water vole habitat.
9. Cut vegetation, weed cuttings and arisings must not be deposited on the bank where there are retained water vole refuge areas or be left where they will prevent access to water vole burrows.
10. Where water draw-down / removal is to be used in parallel with vegetation removal, this must be limited to the same lengths of habitat specified in Condition 8, and the same times of year specified in Conditions 6 and 7.

Monitoring presence / absence of water voles

11. Before commencing works that will damage or destroy water vole burrows it is necessary to confirm that water voles have been successfully displaced. Following the final vegetation removal in accordance with Conditions 6 to 10 prior to destruction works, the retained area

Where the presence of water voles is confirmed or is suspected by other means, the appropriate areas must be monitored for fresh signs of water vole activity for a minimum period of seven days. Monitoring can include the use of an endoscope.

Where monitoring finds fresh signs of water vole activity, the monitoring period must be extended and vegetation removal or water removal repeated. If there are signs that water voles are still present, a destructive search by hand must be carried out and water voles allowed to escape or captured temporarily (see Condition 15 and Information and Advice note f).

Captured water voles must be kept in an appropriate animal container with suitable bedding material and food provided (see Information and Advice note c), for release at an adjacent refuge area on the same day.

12. Once water vole absence is confirmed (in accordance with Condition 11) works must begin as soon as practicable to minimise the risk that water voles recolonise the stripped area.
13. If the works will result in permanent loss of water vole habitat (for example, installation of a culvert or construction of a head wall), then each burrow affected must be carefully excavated and searched, and destroyed once the search is completed. This will minimise the risk that any water voles remaining in burrows will be harmed.
14. A destructive search is not required, if it is judged that it is neither safe nor technically feasible to do so (eg due to engineering constraints such as destabilisation of the bank that would occur as a result of the destructive search, presence of a road or other permanent structure, or no safe access from which to undertake a destructive search). Justification for not undertaking a destructive search or modifying the methodology to account for any of the above constraints must be provided in the annual report for this licence.
15. Any water voles found during excavation of burrows must be allowed to escape to an adjacent refuge area. If necessary, water voles may be captured by hand, net or other suitable container, but only by persons who are trained and competent to do this. A trap must not be used under this licence. Captured water voles must be kept in an appropriate animal container with suitable bedding material and food provided (see information and Advice note c), for release at an adjacent refuge area on the same day.

Monitoring after completion of works

16. Sites that have undergone displacement must be monitored for the presence / absence of water voles in the immediate vicinity of where works were carried out for up to three years following displacement or until it is confirmed that water voles are present (whichever is sooner). Monitoring records must be kept and provided to Natural England as part of the annual licence return and on request.

Recording and reporting requirements

17. The Registered Person must maintain a record of all activities carried out under the authority of this licence. This record must include the information required for each annual report to Natural England as specified in Annex A. Records are to be kept for at least 24 months after the licence expires and made available for inspection at any reasonable time by Natural England.
18. The Registered Person must send an annual report to Natural England Wildlife Licensing (contact details below) even if the licence is not used. Report form WML-LR-CL24 must be submitted for the period from 1 January to 31 December, inclusive, by no later than 31 January of the following year.

19. If Conditions 17 and 18 are not met then the Registered Person will, by default, no longer be considered registered to act under this licence.
20. The Registered Person must inform Natural England of any breach of this licence as soon as practicable after it becomes known to them.

Important

This licence authorises acts that would otherwise be offences under the legislation referred to above. Failure to comply with its terms and conditions:

- i. may be an offence against the 1981 Act or mean that the licence cannot be relied upon and an offence could therefore be committed. The maximum penalty available for an offence under the 1981 Act is, at the time of the issue of this licence, an unlimited fine and/or a six month custodial sentence
- ii. may result in your permission to use this licence being withdrawn. Natural England will inform any person or organisation whose permission to use this licence is withdrawn in writing. This sanction may be applied to other similar licences, and
- iii. may mean that you are not able to rely on this licence as a defence in respect to the prohibitions within the Animal Welfare Act 2006 or the Wild Mammals (Protection) Act 1996.

If the activity that you wish to undertake is not covered by this licence, or if you are unable to comply with any of the terms and conditions which apply to the use of this licence, then you will need to apply to Natural England for an individual licence.

This licence is not a consent for the purposes of Part II of the Wildlife and Countryside Act 1981 (as amended) in respect to SSSIs. It is your responsibility to get consent or assent if required before this licence can be used on any SSSI. See Advice (s - u) for further information.

Issued by and on behalf of Natural England on 1 January 2021.

Information and advice specific to this licence

Working during the coronavirus pandemic

Anyone acting under this licence should follow Defra's advice on surveying and mitigation work during the coronavirus pandemic (<https://www.gov.uk/guidance/coronavirus-covid-19-surveying-and-mitigation-works-affecting-wildlife>) - also available on request from Natural England: wildlife.scicons@naturalengland.org.uk. This advice is a minimum precaution to reduce the risk of accidental transmission of the virus from humans to wild animals, and may be updated. You should check GOV.UK before you act.

Any products used to clean and disinfect equipment should be safe for use where there could be contact with animals, and used at an effective and safe dilution rate. 'Safe4 Disinfectant' is considered to be a safe and appropriate product for cleaning and disinfecting equipment that could come into contact with animals. Use at a dilution of 1:50 to be effective against COVID-19.

- a. The guidance provided in the Association of Drainage Authorities' Drainage Channel Biodiversity Manual (http://www.ada.org.uk/downloads/publications/the_drainage_channel_biodiversity_manual.pdf) and the Environment Agency 'Environmental Options' (see Water Vole Conservation Handbook 3rd edition, 2011; p. 60-64) should be referred to for best practice for maintaining flood risk management standards while, at the same time, minimising the impact on wildlife.

b. Before carrying out works, the site should be assessed for the presence of water voles. Where appropriate, a site survey should be carried out by a suitably competent person. Areas where burrows are located should be identified, in accordance with Condition 4, either on the ground or on a site plan, in a way which enables the persons carrying out the work to clearly identify their location.

c. Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook. Eds. Fiona Mathews and Paul Chanin, The Mammal Society, Southampton, should be referred to for guidance on best practice. In particular, persons acting under this licence should take account of best practice guidance and factors, such as local climate and prevailing weather conditions, which may influence the optimum time for carrying out displacement.

d. Ideally, all vegetation in the cut areas will be removed to bare ground (see Condition 7). Cutting of vegetation must include marginal vegetation as this can provide refuge for water voles if not removed.

e. Before commencing work, the presence of other protected species, including white-clawed crayfish, certain reptiles and badgers, should be considered. Given the timing of actions permitted by this licence, particular account needs to be made of the bird nesting season.

f. Destructive searches must not be undertaken when the temperature is less than five degree centigrade (see Information and Advice note c).

Relevant legislation and good practice

g. Persons acting under a licence should have regard to legislation and good practice relevant to the action(s) undertaken, including animal welfare and the Animal Welfare Act 2006 (2006 Act). It is an offence to cause any unnecessary suffering to an animal (including birds) under the control of man (section 4 of the 2006 Act). This applies to the humane dispatch of captured animals and the treatment of animals held in traps or nets, including decoy birds and non-target animals. The application of Animal Welfare Act 2006 to wildlife management activities is explained in Natural England leaflet Wildlife Management Advice Note: The Animal Welfare Act 2006: what it means for wildlife (<https://www.gov.uk/government/publications/wildlife-management-advice-notice-the-animal-welfare-act-2006-wml-gu02>) (WML-GU02).

Registering to use this licence

h. Only Registered Persons, their Accredited Agents or persons directly supervised by a Registered Person or an Accredited Agent may act under this licence. Anyone seeking to become a Registered Person must apply to Natural England by email or post (contact details below). Applications require supporting evidence indicating appropriate knowledge and experience of the species covered by this licence and the management techniques permitted.

i. Once registered, a person is entitled to use this licence so long as they satisfy the licence's terms and conditions; annual re-registration is not required. Failure to comply by the terms and conditions, including the recording and reporting requirements, will, by default, render registration null and void. The annual reporting process is used to verify a person's desire to remain registered.

j. It is the responsibility of Registered Persons to maintain their expertise at an appropriate level to act under this licence and it is also their responsibility to ensure that their Accredited Agents and Assistants have appropriate training, experience and instruction, including on mitigation measures commonly employed, to act under this licence.

k. Anyone seeking to confirm whether a person is registered to use this licence should contact Natural England Wildlife Licensing (contact details below).

l. A person's registration may be revoked by Natural England; for example, if that person breaches the conditions of this licence. In these circumstances Natural England will normally give 28 days' notice of our intention to revoke a person's registration.

Information and advice for all class and general licences

General information

m. Natural England checks compliance with licences and the attached conditions. Where breaches are identified, these may be subject to enforcement action.

n. Ordinarily, licences will be reissued on 1 January each year (you do not need to re-register for those with registration requirements). Please note, however, that they can be modified or revoked

at any time by Natural England or the Secretary of State, but this will not be done unless there are good reasons for doing so. You are advised to check the terms and conditions of a licence prior to your first use of it each year in case of amendments.

o. The common name of the species given in a licence is included by way of guidance only; in the event of any dispute or proceedings, it is the scientific name of a species only that will be taken into account.

The limits of licences

p. Licences permit action only for the purposes specified on that licence.

q. Licences do not permit actions prohibited under any other legislation, nor do they confer any right of entry upon land.

r. Unless otherwise stated the provisions of Natural England licences only apply landward of the mean low water mark in England. The Marine Management Organisation is responsible for all licensing seaward of the mean low water mark.

Protected sites

s. You can search for and view details about all SSSIs by using Natural England's Designated Sites system (<https://designatedsites.naturalengland.org.uk/SiteSearch.aspx>). The notification documents for each SSSI contain a list of operations that require Natural England's prior consent. Owners and occupiers of land notified as SSSIs are required to give written notice to Natural England before either beginning any of these operations, or allowing someone else to carry out those operations. SSSI consent can only be given to a SSSI owner or occupier. It may be given with or without conditions, or in some cases, consent may not be granted. A similar process applies to public bodies and statutory undertakers (as defined under Section 28G of the Wildlife and Countryside Act 1981 (as amended)) and this obligation applies even where the operations are carried out on land outside of the SSSI.

t. Please note that as the licensee you will not be able to undertake the licensed activity on a SSSI until the owner or occupier of the SSSI has applied for, and received, Natural England's written SSSI consent. If you do so, you may be at risk of committing an offence. As the licensee, if you wish to exercise this licence on a SSSI you must contact the relevant owners or occupiers of the SSSI and ensure they give written notice to Natural England of their proposal to permit you to carry out licensed activity on their SSSI. You should wait until a SSSI consent decision has been received by the SSSI owner/occupier before you begin to exercise this licence on a SSSI. See GOV.UK for further information on how to get SSSI consent (<https://www.gov.uk/guidance/protected-areas-sites-of-special-scientific-interest>) from Natural England.

u. In considering whether to issue consent or assent for activities likely to affect a SSSI that is a European site, in other words a Special Protection Area (SPA) or Special Area of Conservation (SAC), Natural England will carry out a Habitats Regulations Assessment, as required by the Conservation of Habitats and Species Regulations 2017 (as amended) ('the Habitats Regulations') to ensure there will be no adverse effects on the European site.

Using and sharing your information

v. There is significant public interest in wildlife licensing and in those who benefit from receiving a wildlife licence. We may make information publicly available, for more information, please see our privacy notice (<https://www.gov.uk/government/publications/natural-england-privacy-notice/wildlife-licensing-privacy-notice>).

Contact Natural England for licensing enquiries

Telephone: 020 802 61089

Email: wildlife.scicon@naturalengland.org.uk

Wildlife Licensing, Operations Delivery
Natural England
Horizon House
Deanery Road
Bristol
BS1 5AH

For other enquiries use the Enquiry Service.

Telephone: 0300 060 3900

Email: enquiries@naturalengland.org.uk

Annex A - Recording and reporting requirements

Records and reporting

The Registered Person must maintain a record of the following information for all displacement activities undertaken using this licence (this also includes works conducted by Accredited Agents and Assistants acting under their authority):

1. Maintaining registration

To maintain your registration you are required to complete an annual report. The report will ask you to confirm whether any works have been carried out in the preceding 24 months (nil returns are required) for each location where the licence has been used:

- i. personnel acting under the licence
- ii. purpose of the licensed activity (eg preserving public health and safety)
- iii. location (site name, county and six-figure (minimum) Ordnance Survey grid references for the start and finish of the water course)
- iv. total length of the bank affected by the displacement activities, and whether it is a single bank or both banks of the water course
- v. whether the habitat loss to water voles is temporary or permanent
- vi. the water vole population size affected by the displacement activity
- vii. the date vegetation was first removed
- viii. whether water draw-down was carried out
- ix. the date displacement was completed
- x. the number of water voles seen or found during the displacement activity, including location (eg in a burrow or in the water)
- xi. the number of dead or injured water voles seen or found during the displacement activity and the circumstances surrounding each occurrence
- xii. confirmation that a destructive search was undertaken prior to destroying a water vole burrow(s) or a justification for why a destructive search was not undertaken
- xiii. any other information such as details of water voles found, predator control, etc. Whether you wish to continue to be registered

2. Submitting water vole observation information

Records of water vole observations should be submitted to the relevant Local Records Centre for each site where the licence is used by 31 January each year. To find out where your nearest Local Record Centre (<http://www.alerc.org.uk/>) is visit the Association of Local Environmental Records Centres (ALERC) website.

3. Commercial confidentiality

If you encounter difficulties releasing data due to client confidentiality restrictions then you are advised to remind your client that it is a condition of using this licence that licensed activities are reported. Furthermore, the licence may only be used if this condition is met and withholding information may lead to a licence breach.

To help avoid such difficulties, it is recommended that your contractual terms and conditions make it clear that submitting records to Natural England and other bodies specified in licences is a legal requirement. If a client is not prepared to accept such terms and conditions then you may not use this licence. You may then have to apply for an individual licence.

Records must be kept, and available for inspection, for at least 24 months beyond the expiry date

of this licence.

Annex B – Management activities

Activities not requiring a licence	Comments
Vegetation control – mowing, flailing, hedge and tree management, pollarding, planting, chipping and other routine vegetation management works within and alongside a waterbody.	<p>Provided that water voles can gain access to their burrows.</p> <p>Bankside sward vegetation should be cut to a minimum length of 100mm.</p>
Burning on top of a bank.	Provided that this is not undertaken within 20 metres of known water vole burrows.
Spreading vegetation and sediment on the top of a bank.	Provided that water voles can gain access to their burrows.
Removal of obstructions, debris and rubbish within and alongside a waterbody.	Provided that water voles can gain access to their burrows.
Bankside support and enhancement works, for example, installation of coir rolls and use of wooden faggots and toe boards.	<p>Provided that water vole burrows are not directly impacted and access for water voles is maintained.</p> <p>Where erosion or slips occur, repairs should be undertaken as soon as possible to minimise the risk that water voles colonise these areas.</p>
Temporary sluices.	Provided there are no water vole burrows impacted in the working footprint.
Desilting	Provided that, where water vole burrows are present, the banks, including the toe, are undamaged by machinery.
Access alongside watercourses, including tracking.	Provided no ground penetration/digging takes place over known water vole burrows.
Erection of a temporary clear span bridge.	Provided that no works are required on the banks where water vole burrows are present.
Fencing: fence construction, repair and removal alongside a waterbody.	Repair and replacement (in situ) of existing fencing would not require a licence. Where possible, the erection of new fence lines should avoid areas where it is known there may be burrows beneath. Such fences should be erected sufficiently far back on the bank to avoid tunnels, or posts knocked in at least two metres from burrow entrances.
Routine/seasonal changes of water levels, including temporary reduction of water levels for desilting.	-
Activities that may require a licence	Comments
Access - creation of temporary crossings for access alongside or within a waterbody.	If creation of the access route or crossing impacts directly on water vole burrows, a licence may be needed to displace the water voles before works begin.

Installing culverts.	A licence may be needed where the installation of a culvert impacts directly on water vole burrows.
Permanent clear span bridge.	A licence may be needed where the working footprint and/or concrete lining (if used) directly impacts water vole burrows.
Operation and routine maintenance of control structures, for example pumping stations, trash screens, flap valves, weirs and sluices.	These activities are likely to be undertaken on the structures themselves, so a licence would only be needed to displace water voles if the activity impacts directly on water vole burrows.
Erosion management, bank stabilisation, and reforming water course banks.	This depends on the nature of the operation and its impact on water vole burrows. For major works such as reforming or re-profiling banks a licence to displace water voles before works begin would normally be required.

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Appendix 7.5: List of alien/ invasive species listed in Schedule 9 of the *Wildlife and Countryside Act 1981*, and as amended, of potential relevance to the Bedford and Ely groups

<i>Common name</i>	<i>Scientific name</i>
<u>Animals</u>	
Bass, Large-mouthed Black	<i>Micropterus salmoides</i>
Bass, Rock	<i>Ambloplites rupestris</i>
Bitterling	<i>Rhodeus sericeus</i>
Boar, Wild	<i>Sus scrofa</i>
Crab, Chinese Mitten	<i>Eriocheir sinensis</i>
Crayfish, Noble	<i>Astacus astacus</i>
Crayfish, Red Swamp	<i>Procambarus clarkii</i>
Crayfish, Signal	<i>Pacifastacus leniusculus</i>
Crayfish, Spiny-cheek	<i>Orconectes limosus</i>
Crayfish, Turkish	<i>Astacus leptodactylus</i>
Frog, Edible	<i>Rana esculenta</i>
Frog, European Tree (otherwise known as Common tree frog)	<i>Hyla arborea</i>
Frog, Marsh	<i>Rana ridibunda</i>
Limpet, Slipper	<i>Crepidula fornicata</i>
Mink, American	<i>Mustela vison</i>
Newt, Alpine	<i>Triturus alpestris</i>
Newt, Italian Crested	<i>Triturus carnifex</i>
Pumpkinseed (otherwise known as Sun-fish or Pond-perch)	<i>Lepomis gibbosus</i>
Terrapin, European Pond	<i>Emys orbicularis</i>
Toad, African Clawed	<i>Xenopus laevis</i>
Toad, Midwife	<i>Alytes obstetricans</i>
Toad, Yellow-bellied	<i>Bombina variegata</i>
Wallaby, Red-necked	<i>Macropus rufogriseus</i>

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Wels (otherwise known as European catfish)	<i>Silurus glanis</i>
Zander	<i>Stizostedion lucioperca</i>
<i>Plants</i>	
Balsam, Himalayan	<i>Impatiens glandulifera</i>
Fern, Water	<i>Azolla filiculoides</i>
Hogweed, Giant	<i>Heracleum mantegazzianum</i>
Hyacinth, water	<i>Eichhornia crassipes</i>
Knotweed, Giant	<i>Fallopia sachalinensis</i>
Knotweed, Hybrid	<i>Fallopia japonica x Fallopia sachalinensis</i>
Knotweed, Japanese	<i>Fallopia japonica</i>
Knotweed, Japanese	<i>Polygonum cuspidatum</i>
Lettuce, water	<i>Pistia stratiotes</i>
Parrot's-feather	<i>Myriophyllum aquaticum</i>
Pennywort, Floating	<i>Hydrocotyle ranunculoides</i>
Potato, Duck	<i>Sagittaria latifolia</i>
Primrose, Floating Water	<i>Ludwigia peploides</i>
Primrose, Water	<i>Ludwigia grandiflora</i>
Primrose, Water	<i>Ludwigia uruguayensis</i>
Rhubarb, Giant	<i>Gunnera tinctoria</i>
Salvinia, Giant	<i>Salvinia molesta</i>
Stonecrop, Australian Swamp (otherwise known as New Zealand Pygmyweed)	<i>Crassula helmsii</i>
Waterweed, Curly	<i>Lagarosiphon major</i>
Waterweeds	All species of the genus <i>Elodea</i> .

Appendix 7.6: Identification sheets for the principal invasive species

Water Fern

Species Description

Scientific name: *Azolla filiculoides*

AKA: Fairy Fern, Cyfrdwy (Welsh)

Native to: North and Central America

Habitat: Still and slow flowing water bodies (e.g. ponds, drainage channels, ditches, canals)

Very small free-floating water plant that forms dense mats. Unmistakeable when in its red form and relatively easy to distinguish from duckweeds in its green form. Can be seen most months of the year. Spreads mainly vegetatively though can produce minute spores.

Introduced for ornamental use in ponds and aquaria. First recorded in 1883 and has spread rapidly throughout England in the last 50 years. Infrequent in Scotland and Northern Ireland. Can be inadvertently carried on water plants from garden centres. Out-competes native species by forming a dense covering on the surface of the water, blocking out light, causing deoxygenation, preventing air-breathing insects from reaching the surface and reducing water temperatures. Dense and continuous stands can be a health hazard as the water surface appears solid.

Water fern is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. As such it is an offence to plant or otherwise cause this species to grow in the wild.

For details of legislation go to www.nonnativespecies.org/legislation.



Key ID Features

Usually green but often has a reddish tinge and can be completely red when exposed to stresses (such as cold temperatures, brackish waters or shading)



Forms dense mats but can also be present as a few fronds amongst emergent or other floating vegetation

Identification throughout the year

Plants can be present year round, but often die back in winter. Colour can vary considerably through the year. Green in spring/summer often turns red during cold weather in autumn/winter.

Green form



Red form



Distribution

Sporadic distribution in southern and central England. Has spread north to Yorkshire and into Wales but relatively few locations in Scotland and Northern Ireland.

Source: NBN Gateway. Check website for current distribution

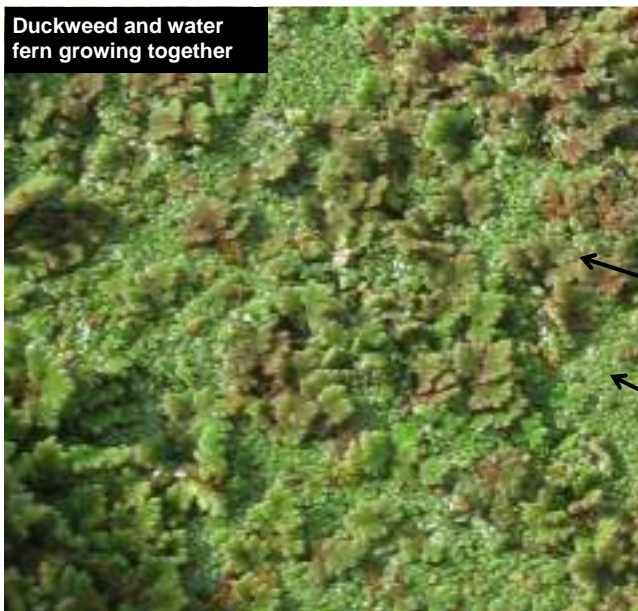


Similar Species

Duckweeds
3 native and
2 non-native species
(*Lemna* species)



Duckweed and water fern growing together



Water fern

Duckweed

Common Duckweed

Native
(*Lemna minor*)

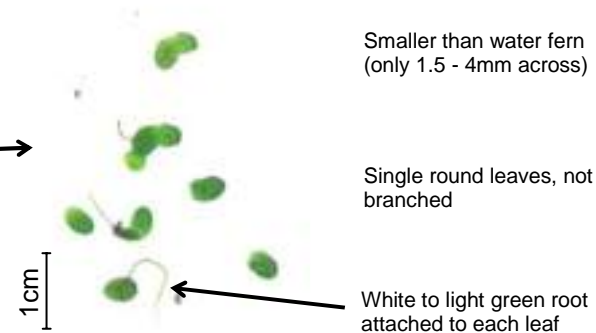
Light green colour

Smaller than water fern
(only 1.5 - 4mm across)

Single round leaves, not
branched

White to light green root
attached to each leaf

1cm



Water Fern For comparison

Multiple dark
brown roots

Leaves are much larger (up
to 2.5cm) and branching

1cm



References and further reading:

Blamey, M, Fitter, R and Fitter, A (2003) "*The Wild Flowers of Britain and Ireland. The Complete Guide to the British and Irish Flora*". A & C Black
Preston, C D and Croft, J M (1997) "*Aquatic plants in Britain and Ireland*". Harley Books
Preston, C D, Pearman, D A and Dines, T A (editors) (2002) "*New Atlas of the British and Irish Flora*". Oxford University Press
Stace, C (1999) "*Field Flora of the British Isles*". Cambridge University Press

New Zealand Pigmyweed

Species Description

Scientific name: *Crassula helmsii*

AKA: *Tillaea aquatica*, Australian Swamp-stonecrop, Briweg Seland Newydd (Welsh), *Tillaea recurva*

Native to: Australia and New Zealand

Habitat: Aquatic up to 3m deep in still or slow flowing water bodies or terrestrial around pond or lake margins

Can be submerged, emergent and terrestrial. Readily recognisable when growing at the edges of water bodies by its fleshy leaves. Submerged leaves are less easy to see and recognise. Reproduces from very small stem fragments but does not produce viable seed in the UK.

Introduced in 1911 as an oxygenating plant for ponds and, since the 1970s, has spread rapidly. Forms dense mats and can impede drainage, causing flooding. Displaces other aquatic plant species and reduces amenity use of the waterbody.

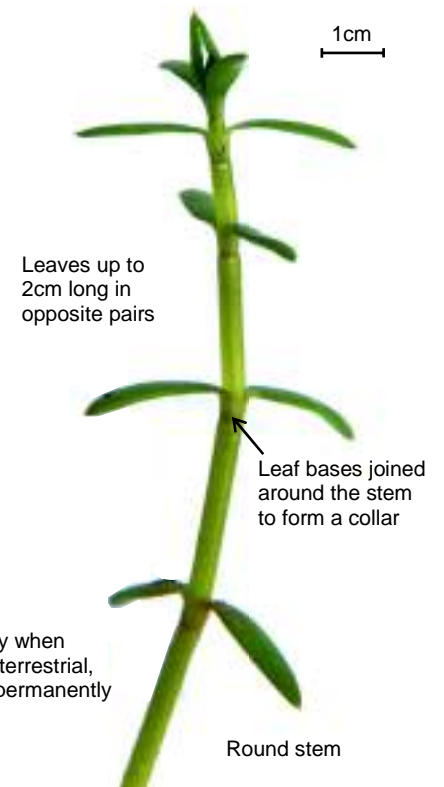
New Zealand Pigmyweed is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. As such, it is an offence to plant or otherwise cause this species to grow in the wild.

For details of legislation go to www.nonnativespecies.org/legislation.



Key ID Features

Forms dense mats within the water body

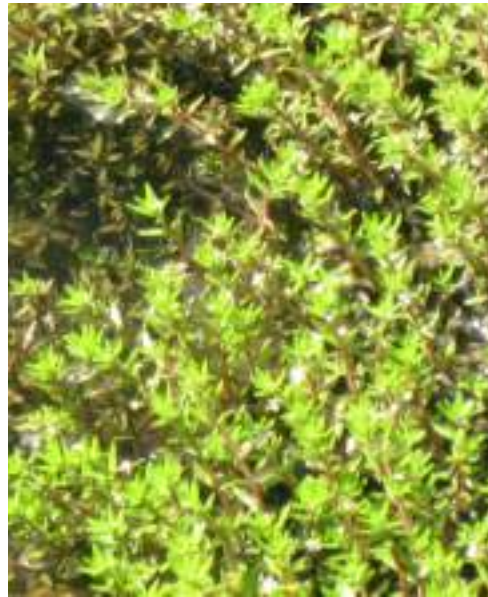


Identification of terrestrial, emergent and submerged forms

Terrestrial: Growing away from the water's edge or left stranded as water level falls, creeping stems and aerial, fleshy leaves.



Emergent: Densely packed leaves in water, intermediate between terrestrial and submerged form (occurs in water <0.6m deep).



Submerged: Elongated stems with leaves sparse and flat, able to form extensive mats on bed of the water body.



Similar Species

A group of species known as water-starworts are most likely to be confused with New Zealand pigmyweed. Water-starworts are distinguished from New Zealand pigmyweed by their non-fleshy leaves, which are usually notched at the tip (hold up to light or use hand lens), and lack of collar at leaf base.

Water-starworts
Native
(*Callitriche* species)



Non-fleshy leaves

RL

Water-starwort leaf with typically notched tip, a hand lens is usually required to see this properly



Distribution

Widespread in England and Wales. Spreading northwards, though much less common in Scotland. Very common in the south-east of England.

Source: NBN Gateway. Check website for current distribution.



New Zealand Pigmyweed
For comparison



New Zealand pigmyweed collar around stem at base of leaves



Illustration from IFAS, Centre for Aquatic Plants, University of Florida, Gainesville 1990

Fleshy leaves without notched tips

References and further reading:

Blamey, M, Fitter, R and Fitter, A (2003) *The Wild Flowers of Britain and Ireland. The Complete Guide to the British and Irish Flora.* A & C Black

Preston, C D and Croft, J M (1997) *Aquatic plants in Britain and Ireland.* Harley Books

Preston, C D, Pearman, D A and Dines, T A (editors) (2002) *New Atlas of the British and Irish Flora.* Oxford University Press

Stace, C (1999) *Field Flora of the British Isles.* Cambridge University Press

Canadian and Nuttall's Waterweeds

Species Description

Scientific name: *Elodea* species

AKA: Chwyn dŵr (Welsh)

Native to: North America

Habitat: Still or slow-flowing, shallow or deep water

There are two non-native species of Waterweed *Elodea* species in the UK, Canadian waterweed *Elodea canadensis* and Nuttall's waterweed *Elodea nuttallii*. Both are aquatic, submerged (apart from tiny white flowers borne on very long thread-like stalks just above the water surface) growing up to 3 m in length, perennial and only reproduce vegetatively in the UK as all plants are female.

Canadian waterweed, first recorded in Ireland in 1836 and in Britain in 1842, has subsequently spread rapidly and is now found commonly. It has disappeared from some areas, often being replaced by Nuttall's waterweed. Nuttall's waterweed is found in more nutrient-rich water than Canadian waterweed. First recorded as naturalised in Britain in 1966, it has since spread rapidly but is less common than Canadian waterweed in northern England, Scotland and Ireland.

It is difficult to distinguish between these two species. Dense growth of these waterweeds in slow flowing rivers, drainage channels and canals can impede flow and exacerbate flooding. Replace native aquatic plant species and reduce biodiversity in lakes and ponds and interfere with recreational activities such as angling and boating.

Elodea species are listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England and Wales. As such, it is an offence to plant or otherwise allow these species to grow in the wild.

For details of legislation go to www.nonnativespecies.org/legislation.



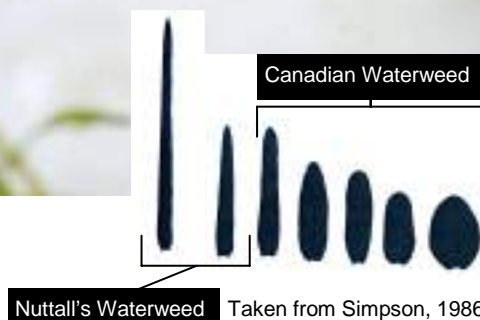
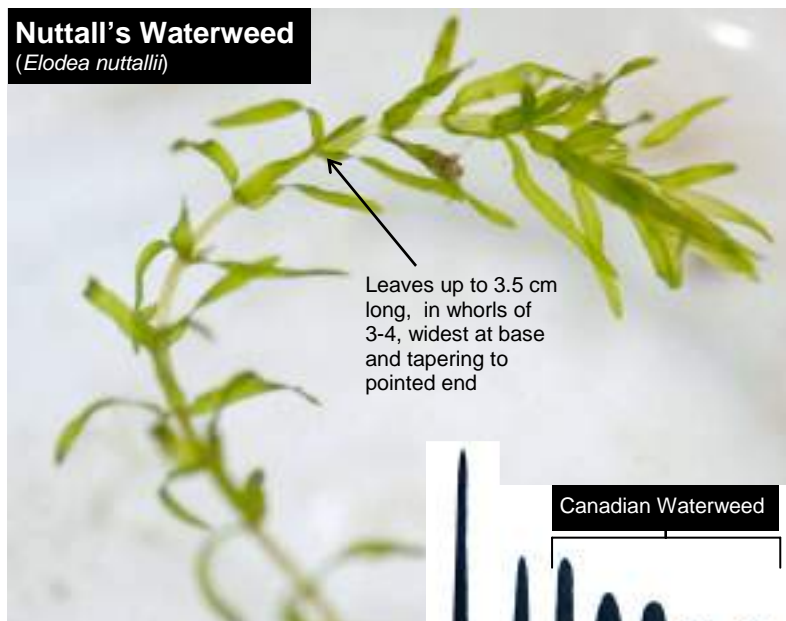
Key ID Features

Flowers are small and inconspicuous and petals white or white tinged with red and borne on end of very long fine stalk.

Canadian Waterweed
(*Elodea canadensis*)



Nuttall's Waterweed
(*Elodea nuttallii*)



Identification throughout the year

Canadian waterweed and Nuttall's waterweed are both perennial and are present throughout the year, though they can die back in winter. Tiny flowers are produced June to September.

Distribution

Canadian waterweed is widespread and common throughout the UK. Nuttall's waterweed occurs mainly in England.

Similar Species

Curly Waterweed
Non-native
(*Lagarosiphon major*)



Lower leaves spiralled at base, not in whorls. Leaves to 3 cm long

Flowers inconspicuous, with reddish petals

Canadian Waterweed Nuttall's Waterweed

Source: New Atlas of the British & Irish Flora (Preston et al., 2002)



Large-flowered Waterweed
Non-native
(*Egeria densa*)

Flowers white, to 2 cm across, with three petals

Much larger in size with small teeth along central vein

Leaves in whorls of 4-5, to 3 cm long with toothed edge



References and further reading:

Lansdown, R V (2008) "A field guide to the riverine plants of Britain and Northern Ireland". Environment Agency

Preston et al. (2002) "New Atlas of the British and Irish Flora". Oxford University Press

Simpson, D A (1986) "Taxonomy of Elodea Michx in the British Isles" *Watsonia* **16** 1-14

Stace, C (1997) "New Flora of the British Isles".

Japanese Knotweed

Species Description

Scientific name: *Fallopia japonica*

AKA: Japanese Bamboo, Pysen saethwr (Welsh), *Polygonum cuspidatum*, *Reynoutria japonica*

Native to: Japan, Taiwan, northern China

Habitat: Common in urban areas, particularly on waste land, railways, road sides and river banks

Tall herbaceous perennial with bamboo like stems. Often grows into dense thickets. Characteristic leaves and stems, persistence of last year's dead canes and distinctive rhizome (underground root-like stems) enables year round identification.

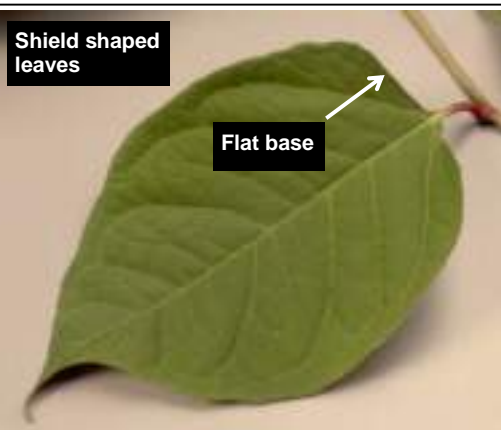
Introduced in the early 19th century as an ornamental plant. Now common and wide-spread across the UK. Spreads rapidly in the wild by natural means and as a result of spread by humans. Spread is solely by vegetative means, either fragments of rhizome or stem. Does not produce seed in the UK. Negative impacts include outcompeting native flora, contributing to river bank erosion and increasing the likelihood of flooding. Can also cause significant delays and cost to development as well as structural damage (it can grow through asphalt and some other surfaces).

Japanese Knotweed is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. As such it is an offence to plant of otherwise cause Japanese knotweed to grow in the wild. Under the Environmental Protection Act 1990, Japanese Knotweed is classified as controlled waste.

For details of legislation go to www.nonnativespecies.org/legislation.



Key ID Features



Identification throughout the year

Winter

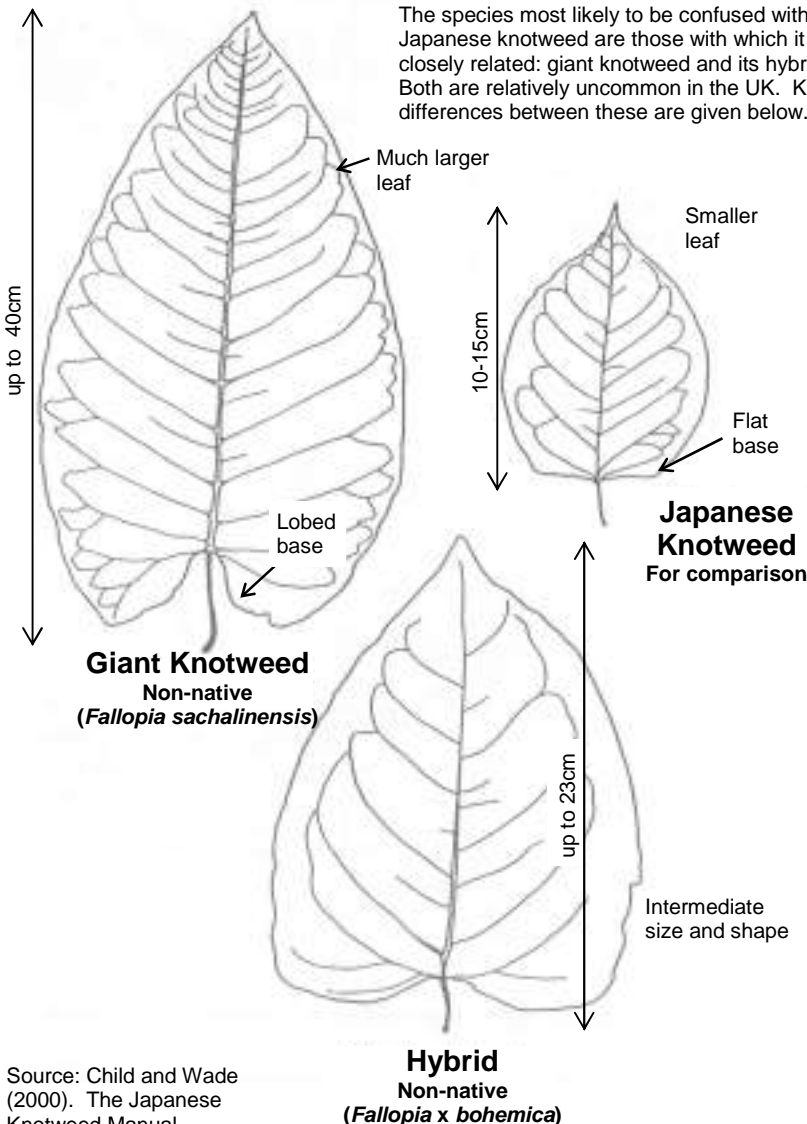
Summer

Spring



Similar Species

The species most likely to be confused with Japanese knotweed are those with which it is closely related: giant knotweed and its hybrid. Both are relatively uncommon in the UK. Key differences between these are given below.



Source: Child and Wade (2000). The Japanese Knotweed Manual

Distribution

Widespread and common across the UK. Notably extensive infestations are found in the south-west of England, south Wales and Greater London, however similarly extensive populations can also be found elsewhere.

Source: NBN Gateway. Check website for current distribution



References and further reading:

- Blamey, M, Fitter, R and Fitter, A (2003) "The Wild Flowers of Britain and Ireland. The Complete Guide to the British and Irish Flora." A & C Black
- Child, L E and Wade, P M (2000) "The Japanese Knotweed Manual". Packard
- Environment Agency (2006) "The Japanese Knotweed Code of Practice". Environment Agency
- Preston, C D, Pearman, D A and Dines, T A (editors) (2002) "New Atlas of the British and Irish Flora". Oxford University Press
- Stace, C (1999) "Field Flora of the British Isles". Cambridge University Press

Giant Hogweed

Species Description

Scientific name: *Heracleum mantegazzianum*

AKA: Efwr enfawr (Welsh)

Native to: Caucasus mountains in south west Russia and Georgia

Habitat: Widespread, most common on river banks

Easy to identify when fully grown by height, size of leaves and size of flowers. Can be confused with native hogweed when not fully grown or when growth is stunted (e.g. regrowth after cutting).

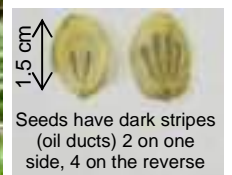
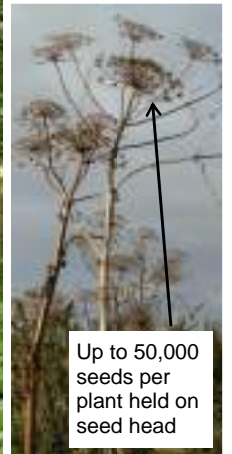
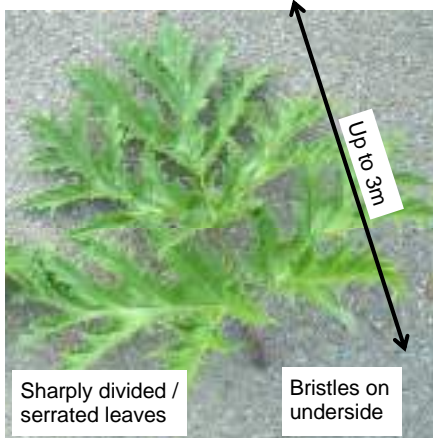
Introduced as an ornamental. First recorded wild in the UK in the late 19th century. Spreads solely by seeds, mainly through deliberate planting, wind dispersal and in water courses. Now common across much of the UK. Contact with any part of this plant must be avoided as even minute amounts of sap can cause blistering of the skin following exposure to sunlight. Other negative impacts include out-competing native flora, river bank erosion and increase in flood risk. Can cause delays/additional costs on development sites where the plant must be removed as controlled waste in order to comply with legislation.

Giant hogweed is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. As such it is an offence to plant or otherwise cause this species to grow in the wild. Under the Environmental Protection Act 1990, giant hogweed is also classified as controlled waste.

For details of legislation go to www.nonnativespecies.org/legislation.



Key ID Features



Identification throughout the year



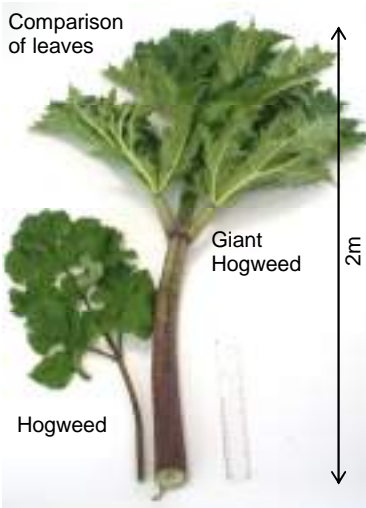
Similar Species

When in full height it is difficult to confuse giant hogweed with any other plant. While still growing or stunted, possibly as a result of disturbance, it can be confused with some other native plants. The most likely species with which it might be confused is hogweed.

Key differences between hogweed and giant hogweed include the height, width of stem, size of leaf, size of flower head and size of seed.



Hogweed
Native
(*Heracleum sphondylium*)



Distribution

Widespread and common across much of the UK. Extensive infestations are found particularly in Scotland and the north of England. Less abundant in Cornwall. Often associated with large rivers.

Source: NBN Gateway. Check website for current distribution



References and further reading:

- Blamey, M, Fitter, R and Fitter, A (2003) "The Wild Flowers of Britain and Ireland. The Complete Guide to the British and Irish Flora." A & C Black
- Booy, O and Wade, P M (2007) "Giant Hogweed Management in the United Kingdom". RPS Group plc
- Pyšek P, Cock, M J W, Nentwig, W & Ravn, H P (2007) "Ecology and Management of Giant Hogweed (*Heracleum mantegazzianum*)". CAB International
- Stace, C (1999) "Field Flora of the British Isles". Cambridge University Press

Floating Pennywort

Species Description

Scientific name: *Hydrocotyle ranunculoides*
AKA: Dail-ceiniog arnofiol (Welsh), *Hydrocotyle nova zealandiae*

Native to: North America

Habitat: Emergent or floating on the surface of still or slowly moving freshwater

Free-floating or rooted. The characteristic leaves and growth form help to make this plant easy to identify. It is found mostly in the south-east of England and occasionally in the north-west of England and Wales. Spreading rapidly.

First naturalised in 1990 as a result of discarded plants from garden ponds. Can grow up to 20cm per day and may quickly dominate a waterbody forming thick mats and impeding water flow and amenity use. May out-compete native species by blocking out light, causing deoxygenation, obstructing air breathing insects from reaching the water surface and reducing water temperatures.

Floating pennywort is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. As such, it is an offence to plant or otherwise cause this species to grow in the wild.

For details of legislation go to www.nonnativespecies.org/legislation.



Key ID Features

Grows horizontally

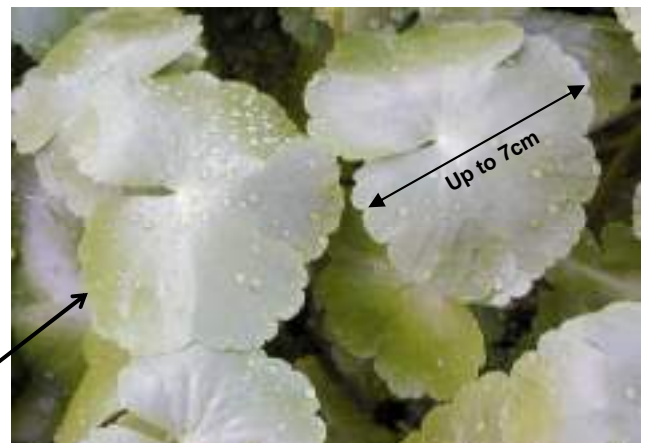


Leaves can be floating or emergent



Fleshy stalks

Fine roots



Up to 7cm

Shiny, kidney-shaped leaves with crinkled edge, frequently broader than long

Identification throughout the year

Varies little throughout the year, although in the winter it is most likely to be found at the water's edge. Tiny white flowers are rare, but if present, they appear between July and August.

Distribution

Common in the south-east of England, and spreading to other parts of the British Isles.

Similar Species

Marsh Pennywort

Native
(*Hydrocotyle vulgaris*)



Grows on damp ground in bogs and fens. Always rooted in the ground, never free-floating

Source: NBN Gateway. Check website for current distribution

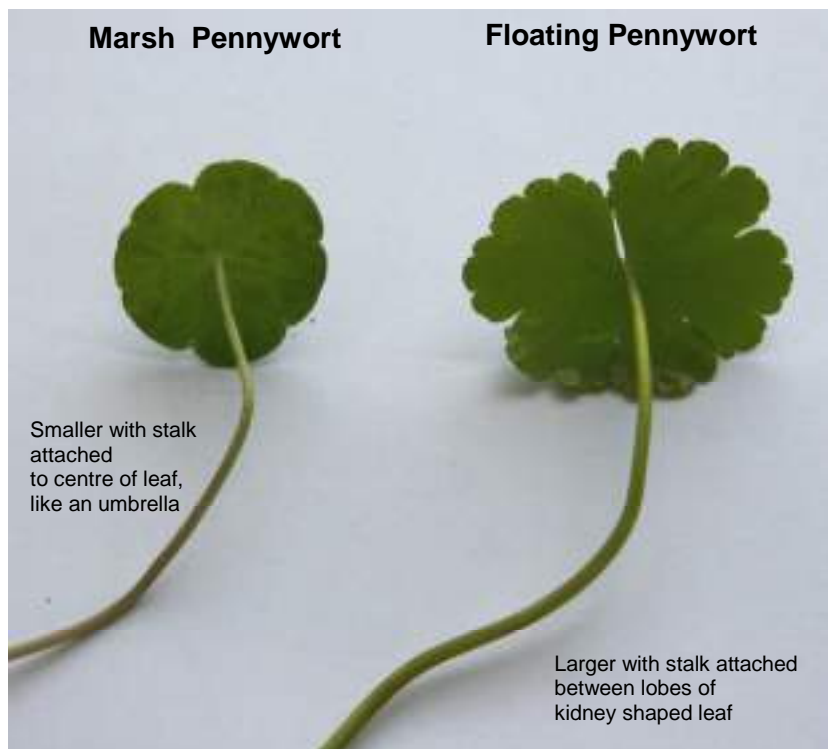


Floating Pennywort can form dense mats that need to be physically removed



Marsh Pennywort

Floating Pennywort



Smaller with stalk attached to centre of leaf, like an umbrella

Larger with stalk attached between lobes of kidney shaped leaf

References and further reading:

Blamey, M, Fitter, R and Fitter, A (2003) "*The Wild Flowers of Britain and Ireland. The Complete Guide to the British and Irish Flora.*" A & C Black

Preston, C D and Croft, J M (1997) "*Aquatic plants in Britain and Ireland.*" Harley Books

Preston, C D, Pearman D A and Dines, T A (editors) (2002) "*New Atlas of the British and Irish Flora.*" Oxford University Press

Stace, C (1999) "*Field Flora of the British Isles.*" Cambridge University Press

Himalayan Balsam

Species Description

Scientific name: *Impatiens glandulifera*

AKA: Policeman's Helmet, Indian Balsam, Jac y Neidiwr (Welsh)

Native to: West and central Himalayas

Habitat: Found mostly on river banks and in damp woodland, can grow in other damp habitat

A tall, attractive, annual herb with explosive seed heads. Although easy to identify as a mature plant with its pink-purple flowers, fleshy stem and characteristic leaves, the seedlings and last year's dead stems of this annual are more difficult to spot.

Introduced as a garden plant in the early 19th century and first recorded in the wild in 1855. Often favoured by the general public for its aesthetic appeal and is still deliberately planted on occasion. Now widespread in the UK, especially along urban rivers. Spreads solely by seeds, which are small and easily carried by wind or water.

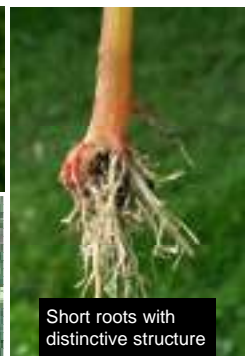
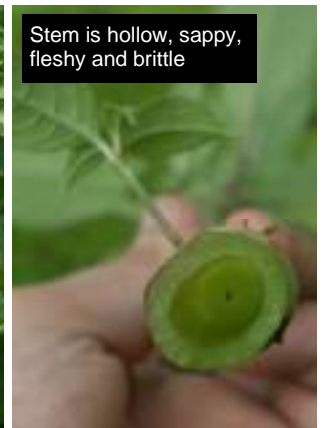
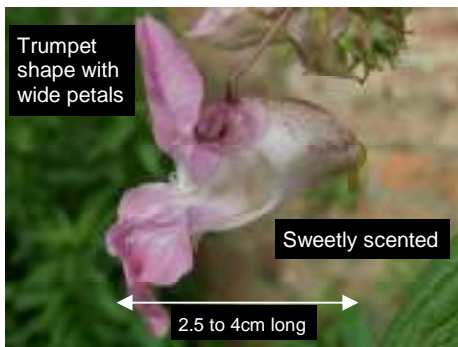
Out-competes native species in ecologically sensitive areas, particularly river banks. Where it grows in dense stands along river banks it can impede flow at times of high rainfall, increasing the likelihood of flooding. Die back of extensive stands over winter can leave river banks bare and exposed to erosion.

Himalayan balsam is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England and Wales. As such, it is an offence to plant or otherwise allow this species to grow in the wild.

For details of legislation go to www.nonnativespecies.org/legislation.



Key ID Features



Identification throughout the year

Can be identified at most times of the year: March-June by its seedlings, stem and leaf shape, from July to September by its stem, leaf shape and flowers. More difficult to identify over winter (October to February), look for hay like remains and distinctive root structure.



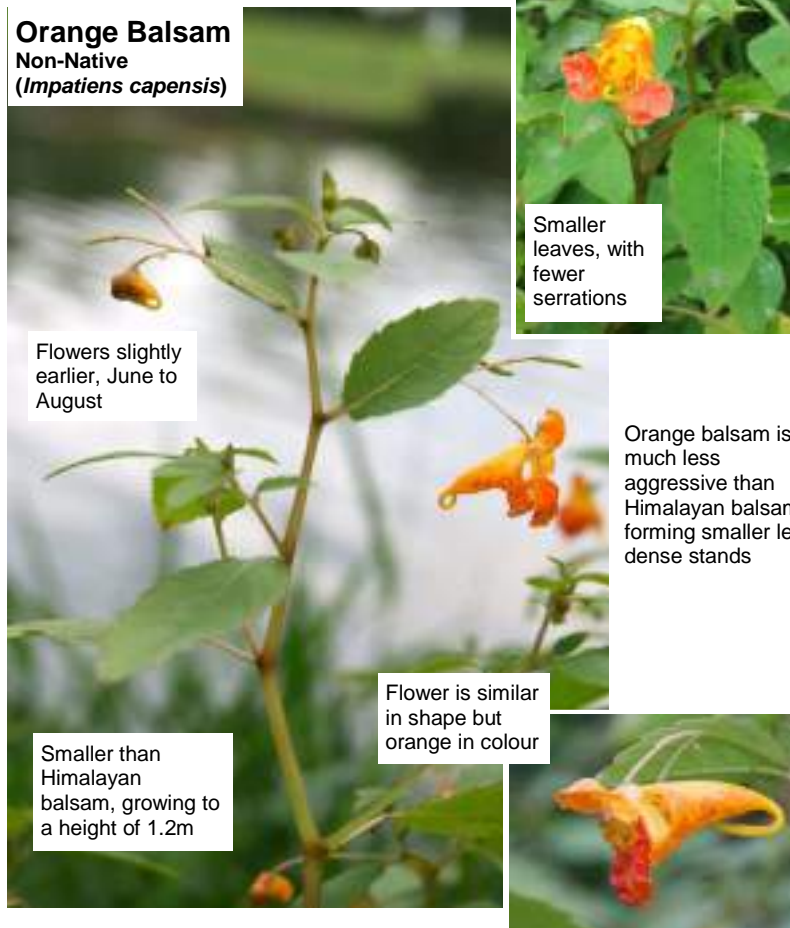
Hay like remains in winter



Root structure in winter

Similar Species

Orange Balsam
Non-Native
(*Impatiens capensis*)



Flowers slightly earlier, June to August

Smaller leaves, with fewer serrations

Orange balsam is much less aggressive than Himalayan balsam, forming smaller less dense stands

Flower is similar in shape but orange in colour

Smaller than Himalayan balsam, growing to a height of 1.2m

Distribution

Widespread and common across the whole of the UK. Primarily on riverbanks and in other damp areas.

Source: NBN Gateway. Check website for current distribution



References and further reading:

Blamey, M, Fitter, R and Fitter, A (2003) *The Wild Flowers of Britain and Ireland. The Complete Guide to the British and Irish Flora*. A & C Black

Preston, C D, Pearman, D A and Dines, T A (editors) (2002) *New Atlas of the British and Irish Flora*. Oxford University Press

Stace, C (1999) *Field Flora of the British Isles*. Cambridge University Press

Curly Waterweed

Species Description

Scientific name: *Lagarosiphon major*

AKA: Curly Water-thyme, Chwyn dŵr Cyrliog (Welsh), *Elodea crispata*

Native to: Southern Africa

Habitat: Standing waters such as lakes and

A perennial, aquatic plant which can grow up to 3 m completely submerged under the water in chalk, gravel and clay pits, lakes, reservoirs and canals. Leaves are strongly curved and whorled around the stem though are spirally arranged on the lower part of stem. Flowers are inconspicuous and borne separately as male and female flowers. Plants spread mainly by vegetative propagation through detached stem fragments and can become easily established.

First recorded in Britain in 1944 in a chalk pit in Bedfordshire, where it persisted for at least 40 years. Since the mid-1900s, it has been recorded in many locations and is now well-established at many sites.

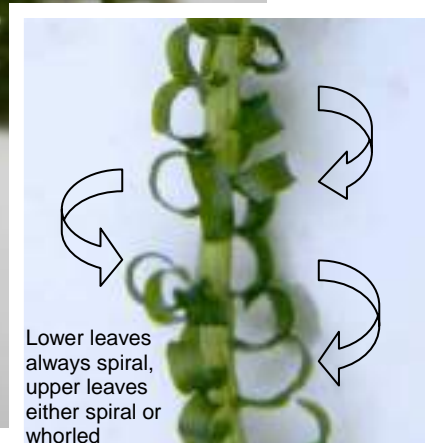
It is widely sold as an aquarium and garden pond plant and the UK population is most likely due to deliberate or accidental release. Like many nuisance aquatic plants, curly waterweed can overwhelm ponds and out-compete native vegetation as well as choke up waterways, exacerbating flood risk.

Curly waterweed is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. As such, it is an offence to plant or otherwise allow this species to grow in the wild.

For details of legislation go to www.nonnativespecies.org/legislation.



Key ID Features



Identification throughout the year

Survives over-winter in southern areas of the UK. Further north, the amount of plant material present over-winter decreases but rarely dies down completely. Therefore it can usually be identified throughout the year across most of the UK.

Distribution

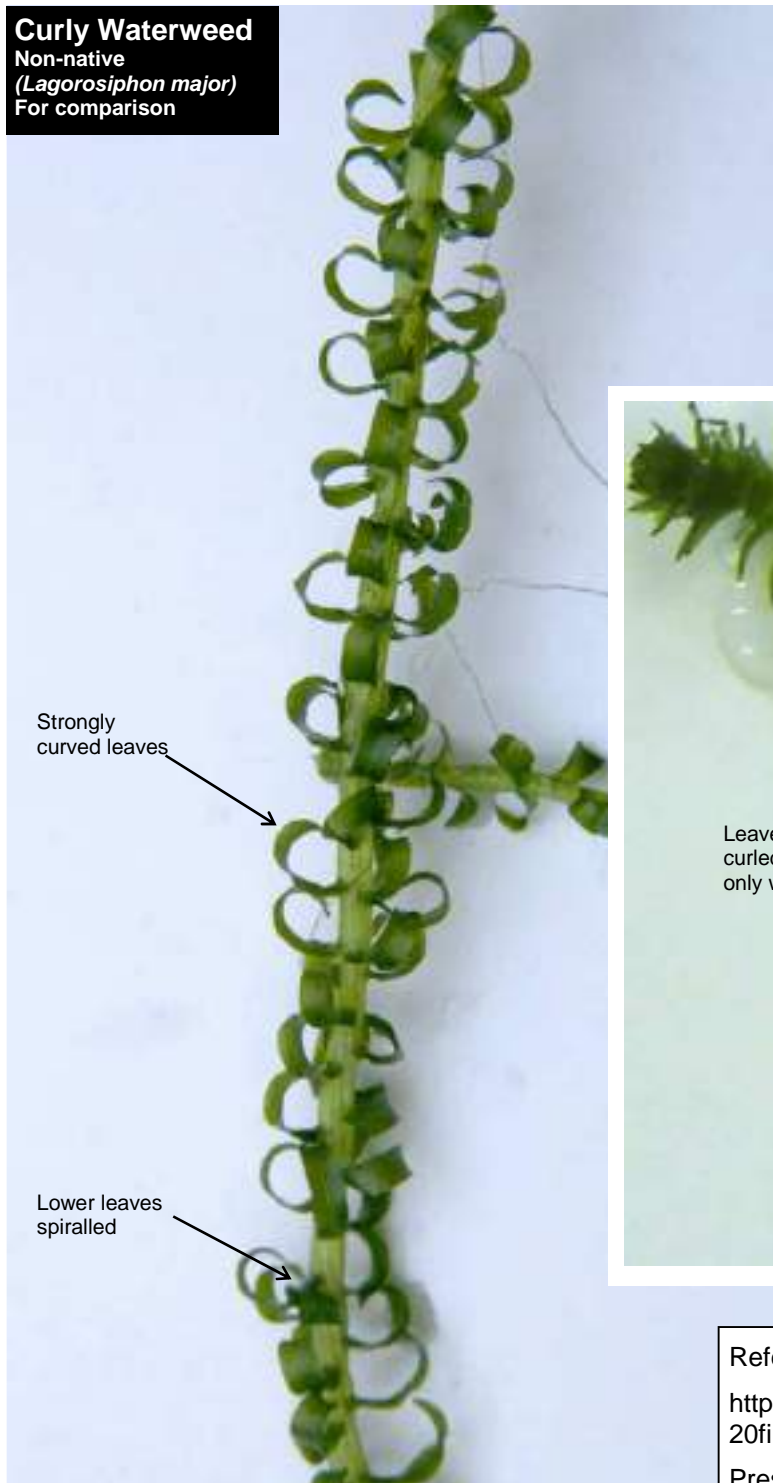
Widespread through lowland England.

Source: NBN Gateway. Check website for current distribution



Similar Species

Curly Waterweed
Non-native
(*Lagorosiphon major*)
For comparison



Waterweed species
Non-native
(*Elodea* species)



References and further reading:

<http://www.nerc-wallingford.ac.uk/research/capm/pdf%20files/23%20Lagorosiphon%20major.pdf>

Preston, C D and Croft, J M (1997) "*Aquatic plants in Britain and Ireland*". Harley Books

Preston, C D, Pearman, D A and Dines, T A (editors) (2002) "*New Atlas of the British and Irish Flora*". Oxford University Press

Stace, C (1999) "*Field Flora of the British Isles*". Cambridge University Press

Water Primrose

Species Description

Scientific name: *Ludwigia grandiflora*

AKA: Often incorrectly identified as *L. peploides* and labelled in garden centres as *Jussiaea*; Briallen d ŵr (Welsh)

Native to: South America

Habitat: Still or slow-flowing water

Quite distinctive in floating form, more care is needed to distinguish it from other species when it is growing in the margins of water bodies. Best searched for when in flower (July to August). Spreads primarily by plant fragmentation but also by seeds. There are few native species in the UK that are similar.

Only known from a few sites in the UK and it has been eradicated from some of these. *L. x kentiana* is the only other non-native species of *Ludwigia* known to occur in the UK. Distinguishing between non-native species of *Ludwigia* is very difficult. If this is required expert consultation may be necessary.

Introduced to Europe as an ornamental and water garden plant. Causes severe negative impacts, including out-competing native species and clogging waterways.

Water Primrose is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England and Wales. As such, it is an offence to plant or otherwise allow this species to grow in the wild.

For details of legislation go to www.nonnativespecies.org/legislation.



Key ID Features



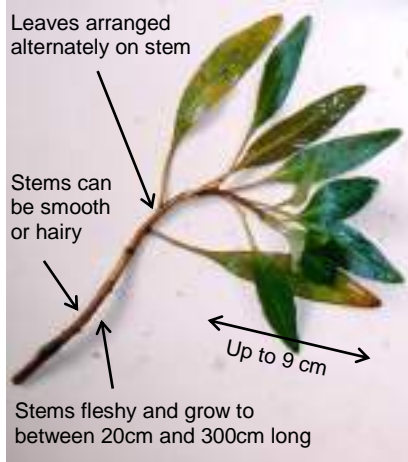
Leaves can vary in shape from long and slender to round or egg shaped



Emergent form



Floating form



Leaves arranged alternately on stem

Stems can be smooth or hairy

Stems fleshy and grow to between 20cm and 300cm long

Up to 9 cm



Approx 3 cm

Bright yellow flowers with five petals



Fruit containing small seeds



Dark green with a lighter green central vein (midrib)

Identification throughout the year

Flowers from July to August. Vegetation dies back in winter leaving distinctive brown stems.



Water Primrose stems in winter

Distribution

Has been present at a limited number of sites across the British Isles although it has been eradicated from some of these.

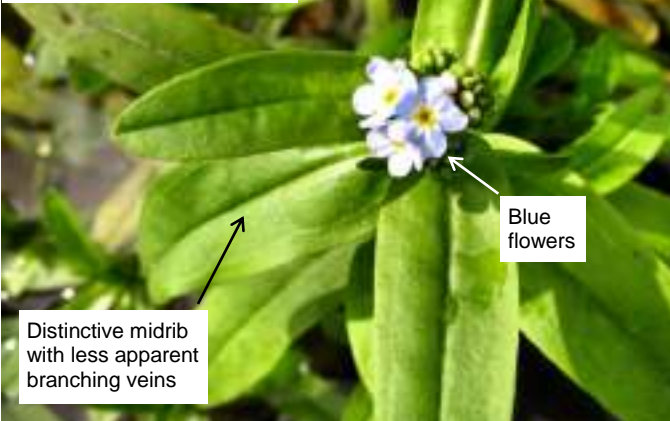
Source: redrawn from Defra 2007



Similar Species

There are few similar species with which Water Primrose could be confused. The leaves of aquatic forget-me-nots (*Myosotis* species) have a distinctive midrib with less distinctive branching veins, unlike Water Primrose. When the floating leaves of amphibious bistort (*Persicaria amphibia*) first appear they resemble Water Primrose, but are significantly larger when full grown with dissimilar flowers. Hampshire purslane (*Ludwigia palustris*) is a very rare plant of boggy areas. Although closely related to Water Primrose, it is considerably smaller.

Water forget-me-not
Native
(*Myosotis scorpioides*)



Blue flowers

Distinctive midrib with less apparent branching veins

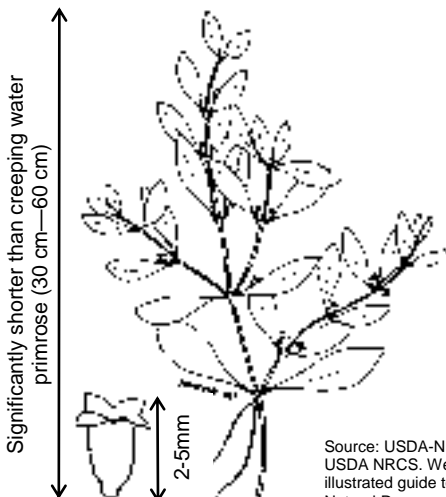
Amphibious bistort
Native
(*Persicaria amphibia*)



Dissimilar flowers

Floating leaves can be similar to Water Primrose

Hampshire-purslane
Native
(*Ludwigia palustris*)



Significantly shorter than creeping water primrose (30 cm—60 cm)

2-5mm

Source: USDA-NRCS PLANTS Database
USDA NRCS, Wetland flora Field office
illustrated guide to plant species. USDA
Natural Resources Conservation Service

References and further reading:

Blamey, M, Fitter, R and Fitter, A (2003) *The Wild Flowers of Britain and Ireland. The Complete Guide to the British and Irish Flora*. A & C Black

Defra (2007). *Eradication strategies for invasive non-native Ludwigia species—PH0422*. Defra

Preston, C D, Pearman, D A and Dines, T A (editors) (2002) *New Atlas of the British and Irish Flora*. Oxford University Press

Stace, C (1999) *Field Flora of the British Isles*. Cambridge University Press

Water Lettuce

Species Description

Scientific name: *Pistia stratiotes*

AKA: Letys dŵr (Welsh)

Native to: Africa

Habitat: Lakes, ponds and slow moving streams

A perennial plant floating on the surface of the water with long feathery roots hanging beneath the floating leaves. It has thick, soft, matt, light green leaves with a pronounced corrugated surface that form a rosette. It is unlikely to be confused with any other plants.

As the plant reproduces vegetatively from runners, dense floating mats are rapidly formed. These lead to the majority of problems encountered with water lettuce, including blocking waterways, hindering navigation and impeding water flow and flood control efforts. Mats can also disrupt natural ecosystems by lowering the concentration of oxygen and preventing air-breathing aquatic insects from reaching the water surface. Thick mats can prevent sunlight from passing into the water and reduce water temperature. These negative characteristics can cause a loss of biodiversity. Not frost tolerant in the UK and so not currently considered to be an invasive risk.

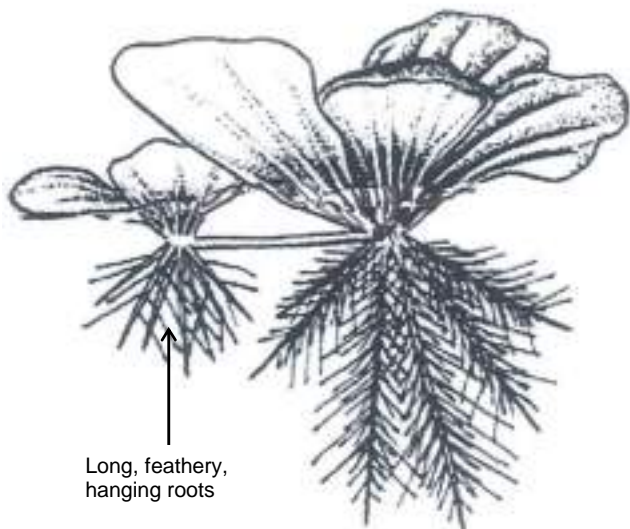
Water lettuce is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. As such, it is an offence to plant or otherwise allow this species to grow in the wild.

For details of legislation go to www.nonnativespecies.org/legislation.



Key ID Features

Flowers are few, inconspicuous and up to 1.5 cm long



Long, feathery, hanging roots



Leaves light green, with deep parallel veins, wavy margins and are covered in short hairs, giving a matt/furry texture

Rosettes up to 15 cm across

Identification throughout the year

Dies back over winter in Britain as temperature drops.
Flowers in late summer to early winter but unlikely to be seen.

Distribution

Water lettuce is found as transient populations where it is released into the wild but has not persisted.

Similar Species

Water Hyacinth
Non-native
(*Eichhornia crassipes*)

Bulbous floatation
sacs at base of leaves

Up to 10 cm
across

Thick, waxy/shiny leaves



An individual water
hyacinth plant in flower

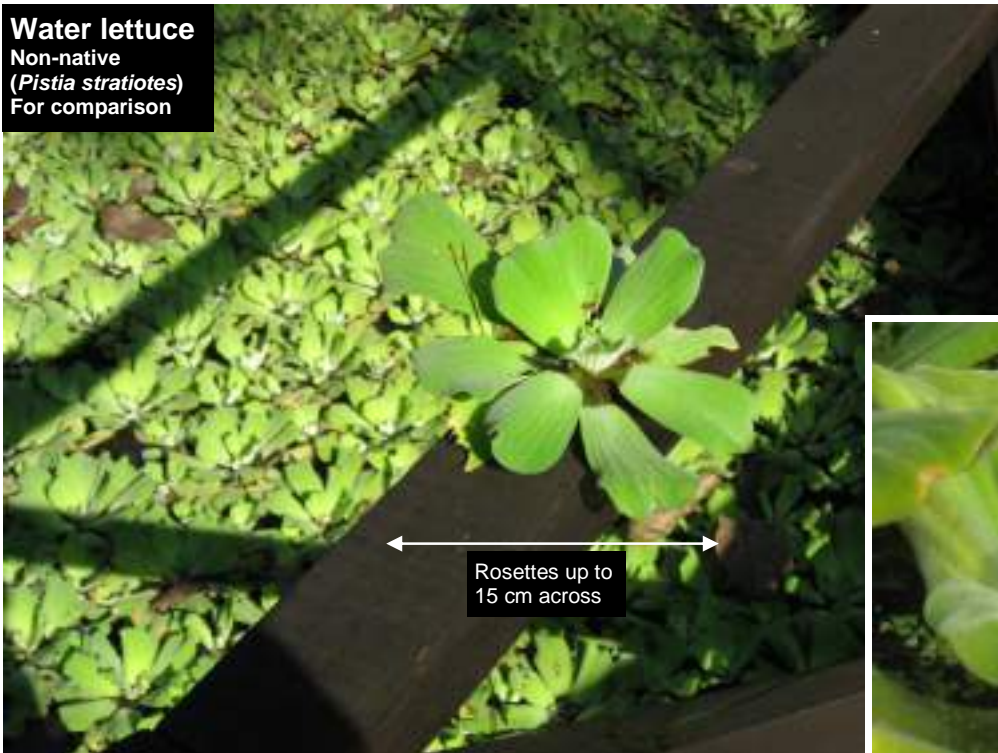
Flowering water hyacinth
forming a dense mat



Water lettuce
Non-native
(*Pistia stratiotes*)
For comparison

Furry leaves

Rosettes up to
15 cm across



References and further reading:

Pistia stratiotes. Global invasive species database.
www.issg.org

Appendix 7.7: ADA biosecurity protocol

[XXX Internal Drainage Board]

Biosecurity Procedures

PURPOSE

These procedures aim to help Board members, staff, and operators working for the IDB to identify key biosecurity risks pertinent to the internal drainage district and the Board's activities, and identify measures to address these risks.

Accidentally spread invasive non-native species may be harmful to the environment and potentially damaging the reputation of the Board, compromising its ability to operate, or work with partners. Operators visiting a site where an invasive non-native species is known to be present, should take measures to ensure they do not spread it. Failure to do so can risk prosecution under the Wildlife & Countryside Act 1981.

OBJECTIVES

- Increase awareness around invasive non-native species via training.
- Identify, and keep a record of, known areas where invasive non-native species are an issue.
- Ensure effective cleaning of equipment, machinery, and clothes.
- Ensure operators take care to avoid transporting water and material between water bodies where a risk has been identified.
- Ensure ongoing monitoring of invasive non-native species when undertaking operations.
- Remain vigilant when undertaking operations to identify any further areas where invasive non-native species exist.

RESPONSIBILITIES

Awareness

..... [Job role or Name of person] will have oversight of biosecurity, disseminate information, and report on these matters.

The Board's staff will be encouraged to seek information on invasive non-native species and biosecurity practices. The Environment Agency and Non-native Species Secretariat have relevant useful information.

If a risk is identified then the operator concerned or contractor should be made aware of the priority invasive non-native species, with specific attention to aquatic and riparian species of concern and those known to be present in the surrounding area. Training for staff and operatives shall be provided as appropriate, and information will be disseminated through toolbox talks, workshops, leaflets, emails etc. Contractors should be asked to confirm that they have similar arrangements in place.

Signage, species alerts/information sheets, or guidance should be in place, making operators aware of the risks, and providing advice on how to prevent spread.

Monitoring

Operators should be vigilant in the field for invasive non-native species and have an appropriate mechanism for recording and reporting sightings of suspected species, location, and relevant details.

New sightings should be reported to [Job role or Name of person], and other authorities and/or land managers as appropriate. The PlantTracker app (www.planttracker.org.uk/), available free for Apple and Android devices, shows you how to identify invasive non-native plant species and enables you to easily submit geo-located photos whenever you find one.

Planning works

Biosecurity should be taken into consideration alongside other factors, such as health and safety, when planning operations and standard working procedures.

The risk of spreading invasive non-native species can be reduced by reducing the contact time in which equipment is exposed to the water. This is particularly important for items such as trailers, which have cavities that may retain water and be hard to inspect.

Propagules are small bits of plant that become detached and give rise to a new plant. Working practices that either reduce, or contain and remove, propagules should be encouraged where practicable, especially in regard to mechanical vegetation control.

Cleaning

Remember: Check, Clean, Dry - www.nonnativespecies.org/checkcleandry/

Decontamination is an essential process to be carried out prior to leaving a site where invasive species are present. This ensures that any foreign matter remains on the land/watercourse of origin, rather than taking it to another location.

Where it is not possible to conduct the decontamination prior to leaving the land/watercourse where the work was conducted (e.g. steam cleaning larger equipment), the operation should be carried out immediately afterwards at the depot or another secure site before the next operation.

Where a cross contamination risk has been identified any field team moving from a contaminated site should carry a 'disinfection box'. This should contain an appropriate commercial disinfectant, a spray bottle, cloths or sponges, a scrubbing brush and protective gloves.

On completion of a field operation, for situations where cross contamination is identified as a risk, the following principles apply:

1. Visually inspect all tools, equipment and machinery that has come into contact with the water for evidence of attached plant or animal material, or adherent mud or debris.
2. Remove any attached or adherent material before leaving the site of operation.
3. Washing/hosing with water will be sufficient to remove debris from most tools, equipment and machinery. Use hot water where possible.
4. Ensure that all water is drained from any water retaining compartments, outboard motors, tanks and other equipment before transportation elsewhere.

5. A high pressure washer or steam cleaner may be essential for more difficult stains or soil, paying particular attention to the tyres, tracks and undercarriage of vehicles and buckets, hulls, outboard motors and submerged parts of machinery. High-pressure steam cleaning, with water >40°C, is recommended for larger equipment, excavators, boats, trailers, and outboard motors that are being moved from one watercourse to another.
6. Clothing and PPE should be visually inspected, and any attached vegetation or debris removed. Soiled clothing and PPE should be removed for laundering and boots scrubbed clean; hands and other body parts may also need cleaning.
7. Finally, decontamination by spraying on a commercial disinfectant at the recommended strength to the cleaned boots, tools, equipment or machinery will ensure any remaining disease agents or pests are destroyed.

Every effort should be made to ensure that the decontamination process is a public exercise and where appropriate tactfully brought to the attention of the land owner or manager at the appropriate time. It is not just a question of doing the right thing but also being seen to be doing it. In this way, public confidence will be maintained in flood and water level management operations.

APPROVAL

These procedures were adopted on dd mm yyyy.

CHAPTER 8: GOOD PRACTICE GUIDE FOR BIODIVERSITY IN ROUTINE WATERCOURSE MAINTENANCE WORKS

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CHAPTER 8: GOOD PRACTICE GUIDE FOR BIODIVERSITY IN ROUTINE WATERCOURSE MAINTENANCE WORKS

Scope of Maintenance

This guide covers routine operations, which may be included in watercourses within any of Categories 1,2 or 3 in the Bedford Group or in the gravity or pumped catchments of the Ely Group. It is intended to provide guidance as to the best and/or most appropriate methods of undertaking the operations in order to meet the flood defence requirements while at the same time providing the maximum opportunity for conservation benefit and net biodiversity gain. Where feasible, a longer rotation ie 4-5 years is better than a short one of 1-2 years but it is better to undertake works more frequently e.g. 4 - 5 years rather than causing a major disruption on a watercourse every 25 years. It is therefore important that this is one of the factors considered when assigning a watercourse to a category.

This chapter does not cover capital works or heavy maintenance works (See Chapter 9) where the hard bed of a watercourse is affected or where there is significant reprofiling of a bank. These may require an EIA but will in any case be dealt with on a site-specific basis with an input from ecologists. Nevertheless, the following good practice contains many examples that will be used in design of works in these categories.

It is important that opportunities for enhancements are taken wherever possible while undertaking the works.

Surveys

Routine works on a <6 year cycle do not normally require ecological survey. Assessments will be carried out on watercourses with a work return period of 2-6 years where it is intended to modify any long-running management programme or, as a one-off, undertake any work within the channel with the exception of hand clearance. They will also be undertaken on watercourses with a longer return work period where any work within the channel is to be undertaken with the exception of hand work. Where there is any modification of channel form likely then either a River Corridor Survey or a River Habitat Survey will be undertaken as appropriate. These will be undertaken to the standards laid down by the RCS and RHS Handbooks. They will not be routinely carried out for annual or biennial works or those which are covered by the bank and channel vegetation management techniques.

Silt samples may be taken as required.

This will ensure that any appropriate measures can be taken to ensure that the best ecological potential is being met and ensure compliance with the Water Framework Directive.

What is the desirable outcome?

Good practice seeks to identify appropriate working methodologies, which at least maintain and preferably enhances the conservation value of a watercourse, wherever possible and desirable, by:

- **Retaining the features of interest.** These may be isolated individual features of conservation value such as tree with open root structure at water level providing shelter for fish fry; species which are rare, protected or even of local interest and habitats which, because of their rarity, extent, contiguity with other features, may be valuable. It should be recognised that this is not always feasible.
- **Providing continuity of habitat or features along a watercourse** either by retaining lengths within works so that recolonisation may occur or by maintaining a management system over long periods to ensure that there is the capacity for maintaining the interest present.
- **Mitigating any losses** during periods of maintenance.
- **Providing conditions for enhancement** either by extending existing quality habitat or by creating new habitats. Enhancement options are considered in Chapter 12.

Ecological value (See photographs in Appendix 8.2)

General principles

- The age of a habitat will determine how many species are present. For example, a long-lived pool-riffle structure is likely to contain more species than a channel that is dredged and accumulates silt each year.
- The greater the diversity of plants that are present, in general, the greater the range of animals that will also occur. The more species that are present, the more stable the community is likely to be. It is also more likely that rarer species are present.
- The larger an area of habitat, the less likely it is that species will become extinct from it as there is more chance that they will recolonise.

However, large areas of mono-dominant unmanaged vegetation may not be ecologically important (an exception is reedbed).

Feature of importance along a bank

- Shallow banks with a mix of taller and shorter vegetation are important as a diversity of habitat will increase the numbers of plants and animals that can survive.
- Varied plant diversity provides food for insects and seed eating birds.
- Taller rank vegetation provides greater habitat structure benefiting invertebrates, small mammals, reptiles and birds. Improved hunting for owls.
- Tussocky areas provide nesting sites for reed bunting, meadow pipit, valuable for beetles.
- Very short vegetation may be used for feeding by wagtails in summer but is less valuable as a supply of food and shelter.
- Specialist features such as steep earth banks have their own specialist fauna e.g. kingfishers, burrowing bees and wasps.

Features of importance along a watercourse

- Water - bank interface is very valuable and the shallower the gradient of the bank at this point the better. It will be less vulnerable to changes in water level and will support a wider and more specialised range of plants. Some of these, particularly the tall emergent plants, will provide good shelter and feeding habitat for invertebrates and birds as well as bird nesting habitat.
- Marginal vegetation may be diverse in its own right and is important as shelter for fish, food and shelter for invertebrates and food for birds.
- In-channel vegetation is important as a producer of oxygen, inhibitor of silt deposition by channelling flow and provides shelter and food for invertebrates and fish.
- Long lived features, such as riffles and pools, will contain a greater number of species and more uncommon species than ephemeral features including silt banks which are likely to be colonised by widespread and common species.
- Specialist features such as gravels are particularly important

Adjacent land

- Land that is hydrologically dependent on the watercourse is particularly valuable and is a habitat that is declining in the U.K.
- Unimproved land is important as it will hold a wider range of specialised species of greater rarity.
- Large trees are more important than smaller ones. Native trees hold greater numbers of invertebrates. Old trees have cavities that may hold bats which are protected. Large cavities under trees might be potential resting places for otters; if used, these are protected by law.

- Bushes provide cover, food and nesting places for birds and shelter for mammals.

Management Regime

The management regime for each watercourse, including the regularity of works, has been identified by the IDBs with regard to fulfilling their responsibility to exercise general supervision over all matters relating to drainage of land and management of water levels and flood risk with permissive powers to maintain existing works in a due state of efficiency; improve existing works or construct new works. In carrying out these operations, there is a statutory duty to maintain and enhance the natural environment. This guide shows options to improve conservation benefit to watercourses (see above) while at the same time ensuring efficiency of function.

It is intended that, wherever possible, the guidance will be followed so that input needed from outside agencies is reduced and to ensure that there is no risk of affecting protected species. It must be recognised however that operational constraints, adjacent land use or vulnerability to flooding may preclude the use of the best practice options and in these cases good alternatives should be sought. In the main, an option which involves a smaller proportion of river or bank being managed or the one which extends the timescale between operations is preferable. There are instances however where the IDBs have undertaken regular management for many years and ecological interest may have developed under such a regime. Changes to existing long-term management programmes or sudden cessation of management ostensibly for conservation benefit should always be discussed with an ecologist.

Timing of Works

IDBs operate on a permissive basis and it is not always possible to gain access to land at the optimum time for conservation purposes. It must also be recognised that some works may need to be undertaken at non-optimum times to ensure a reduction in flood risk. For example emergent growth in channel may need to be cut in summer to ensure adequate conveyance. Nevertheless, it is appreciated that there are times when it is undesirable to undertake works.

In particular, the main bird breeding season from end of-March to mid July should be avoided wherever possible. If it cannot be avoided, then appropriate surveys might be needed, e.g. for in-channel works a search for nesting birds should be undertaken prior to work so that any nests can be avoided. For bankside works, surveys for ground nesting birds and kingfisher might be needed. Precautionary

works may need to be considered. Bat roosts are more likely to be in trees in the summer and appropriate precautions would need to be taken.

Woody vegetation cutting is best undertaken in autumn and winter as this provides the best chance of regeneration and there is no danger of affecting birds and least danger of affecting bats.

Desilting is best undertaken outside the period end March to mid-July to avoid the main bird breeding season, and prevent silt being washed downstream adversely affecting invertebrate production and fish breeding. It also prevents de-oxygenation which can lead to fish kills.

In general, summer works should be confined to water courses which have least ecological value or are of highest vulnerability.

Work within a Statutory Conservation Site.

Where routine activities are within or adjacent to statutory designated sites such as SSSIs or the European designated sites SACs, SPAs or Ramsar sites, then written assent is required from Natural England prior to works commencing and pre-consultation will be required.

Prior to undertaking an operation that may affect a SSSI (directly or indirectly), the IDB has to give formal notices to NE under S28H of the *Wildlife and Countryside Act 1981*.

Prior to undertaking an operation in or adjacent to a European site, consideration must be given as to whether there is a likely significant effect of such an activity under the Conservation of Species and Habitats Regulations 2010. Initially, a discussion should be held with Natural England to determine the scope of such an activity.

Non-statutory Conservation Sites

Although no formal permission is required prior to working on or adjacent to such sites, as they are an important resource, the County Wildlife Trust or County Ecologist should be notified as part of the consultation process.

Access

In general, access should take place across land of low ecological value i.e. not a SSSI, Trust Reserve or CWS. If this is not possible, no access should be gained except in an emergency without prior consultation with Natural England, Wildlife

Trust or the County Ecologist respectively unless a route has been previously agreed. Across these sites, a route should be identified in advance of plant arriving on site and the route tape marked.

Emergency Procedures

Should emergency works be required to protect people or property from flooding then immediate action may need to be taken. Where works have affected a SSSI, then Natural England must be notified as soon as possible after the works start. Failure to do so is a breach of the provisions of the Wildlife and Countryside Act 1981 and may leave a Board open to prosecution.

Should a **protected species** or its place of dwelling (water vole, otter, bats) be found during the course of maintenance works, then work should be stopped, and discussions held with the ecologist. Any crayfish should be held separately until they can be identified, as the legislation provides for different actions for different species. Any fish or mussels removed should be returned to the watercourse immediately. Should an **invasive** species be found during the course of maintenance works then this should be reported and action taken following the ADA protocols (Appendix 7.7)

Choice of Techniques

The choice of appropriate technique has been identified using as a basis Guidelines for Vegetation Management in Channel and on Banks (Environment Agency R&D Technical Report W135). This provided options for extent of in channel weed cutting, margins that can be left, frequency and timing. It is based on ecological principles described in R&D 536/1/ST available from the Environment Agency. This document was updated and expanded by the *Maintenance Standards Manual* published by the EA in 2012. Further information on appropriate techniques was gained from the ADA and Natural England publication *The Drainage Channel Biodiversity Manual* published in 2008. All are valuable references. Additionally, *The Guide to Management Strategies and Mitigation Measures for achieving Good Ecological Potential in Fenland Waterbodies* (2017) has further information.

Illustrations are provided in Appendix 8.1.

All watercourse widths are bed widths.

Bank Vegetation Maintenance - Mowing and Flailing

Category of Watercourse

All

Reasons for undertaking the works

- For Health and Safety to locate edge of bank top e.g. for spraying
- To provide a passage for floodwater,
- To reduce bank roughness,
- To control succession to trees/ scrub,
- To increase the root mat and thus stabilise banks ,
- To enable inspection of flood banks
- To increase amenity use

Possible protected species

Water voles; otter, breeding birds including kingfisher; badgers, reptiles

Machinery used

Mower; flail; strimmer; hand tools

Specification

The following principles should be considered.

- Best to cut a single bank wherever the watercourse width and the standard of service demanded allows this. If more than one cut is required in a year then, where possible, alternate banks should be cut.
- Best to leave a fringe of 0.25m or greater at the bottom of the bank if allowed by the width of the watercourse; if not a fringe at the top is desirable. The base is better as it allows gradation from dry land into the wet channel.
- Channels of 10+m wide should have a fringe of 1 m at the base where the height of the bank allows.
- Continuity of less frequently managed habitat is important but it should not however be allowed to become coarse or invaded by scrub.
- Where ditches are dry for most of the year and are very narrow (<2m), it is not possible to leave a fringe. It is best practice to leave the base unmown and cut on a long rotation or cut from one side. However, flood risk may preclude this and the entire channel may need to be mown.
- Annual cuts in autumn and winter are best but where earlier cuts in spring or summer are required then there should be confirmation that that no breeding birds are present.
- The cut should be between 75-100 mm high

- Trees/ shrubs with a diameter of 25mm, 1m above ground to be retained where feasible such as on the non-working bank (see Tree maintenance).
- Areas of high botanical importance to be subject to specific discussion.
- If a cut is required to provide visibility for desilting works, then this should be carried out outside the bird breeding season.

Disposal of materials

- Where cutting is undertaken on a regular basis, fine material can be left *in situ*.
- Where there is important bank vegetation, material from annual cuts may need to be raked to prevent killing important plant communities and this should be spread at the top of the bank.
- Cut material should be placed above the top of the normal flood level and placed behind the machine. Piles of cut vegetation are important for mammals and reptiles.
- Material should not be dumped on high quality adjacent habitats.
- Grass cuttings should not be burnt.

Management Options - Flail

Bed width	Option		
	Best	Good	Acceptable
< 2m	M4		M1
2-5m	M5	M4	M3, M2
5-10m	M5	M4	M3
10+ m	M5		M4

Illustrations of the options for each bed width follow. In summary:

- M1 Mow / flail both banks from the top to water's edge
- M2 Mow/ flail lowest 1 m on both banks
- M3 Mow / flail both banks from the top to 1 metre above water line
- M4 Mow/ flail single bank from the top to the water's edge
- M5 Mow/ flail single bank from the top to 1 metre above water line

<2m wide - Best Practice Option M4, acceptable M1

Before



M4 after



M1 after



2m - 5 m wide - Best Practice Option M5, Good Practice Option M4,
Acceptable Practice Option M3 and M2

Before



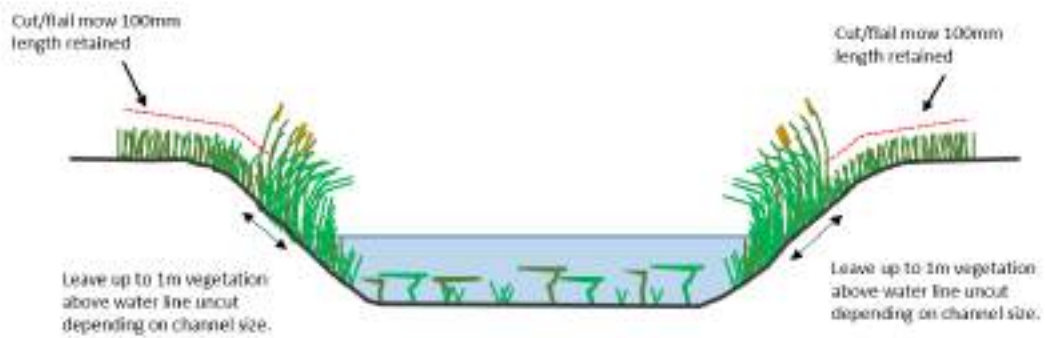
M5 After



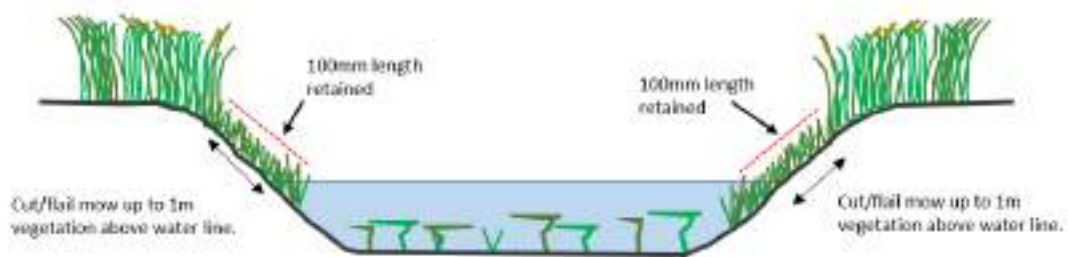
M4 after



M3 After



M2 After

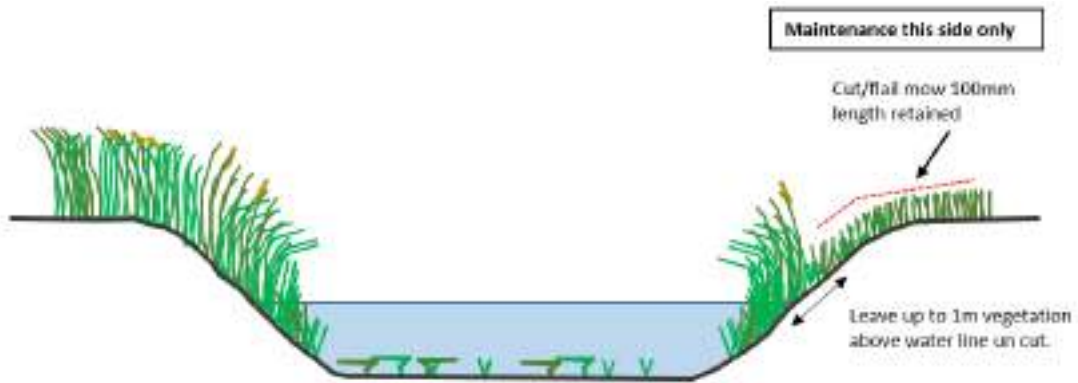


5m - 10 m wide - Best Practice Option M5, Good Practice Option M4,
Acceptable Practice Option M3

Before



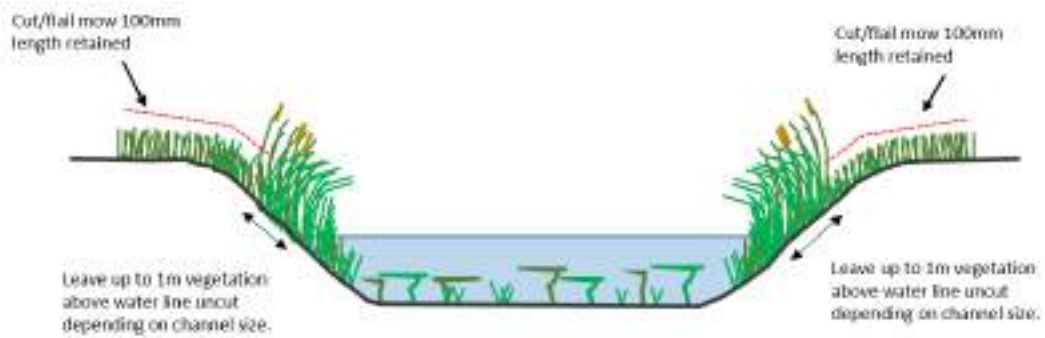
M5 After



M4 After



M3 After

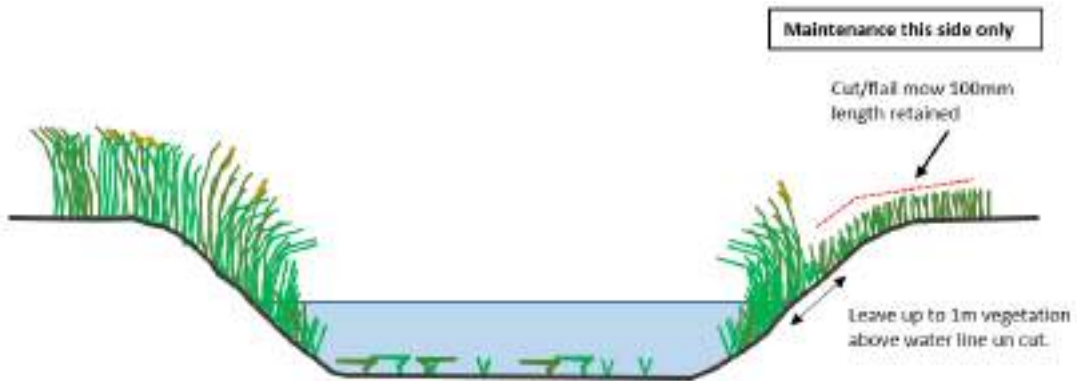


10 m + wide - Best Practice Option M5, Acceptable Practice Option M4,

Before



M5 After



M4 After



Management Options – Strimmer/Brushcutter

This technique is limited to smaller areas where either more regular clearance is required or the biodiversity interest is high and sensitivity is required in allowing a selective approach.

Other management requirements

Where management of specific assets eg raised bank/embankment/dam grass cutting, reservoir or SuDs ponds is necessary, then specific techniques may be required which may need to be managed outside of the above parameters and these will be determined on a case by case basis to take account of legislative and operational requirements.

In-channel Emergent and Submerged Weed Control

Category of Watercourse

Categories: all

Reasons for undertaking the works

- Restore conveyance
- Manage water levels
- Reduce silt deposition
- Protect functioning of structures
- To provide a passage for floodwater
- During the creation of a berm to maintain habitat

Machinery used

Mowing buckets; handcutting, chemical control, weed boat

Possible protected species

White clawed crayfish, breeding birds, otter, water vole

Specification

The following principles should be considered:

- Where management of narrow (<2m wide) is undertaken, then bank works may be an integral part of the works. Thus, the guidelines for bank management should be consulted.
- Irrespective of the technique used, it is best to cut in patches to retain areas for recolonisation.
- It is best to cut the centre of the channel only and leave a margin; this concentrates flow into a channel and reduces siltation. Maintaining flow is particularly important at low gradients.

- Normally between 50-80% of vegetation will be removed depending on the flood risk vulnerability of the watercourse and its ecological sensitivity. Leaving an uncut base in the channel is important and 0.25m wide on both banks is desirable where possible.
- It is important not to scrape the base of the opposite bank when undertaking machine work (but it is accepted that in narrow channels simply turning the bucket to bring material out can affect the very base of the opposite bank).
- Reduction in flow may lead to increased vegetation development - it is important to ensure that flow is increased where possible.
- The period end-March – mid-July should be avoided as far as possible otherwise there should be confirmation that no breeding birds are present.
- Where a weedboat is used in the centre of a channel, then works may commence in mid-May.
- Areas of high botanical importance to be subject to discussion prior to works.
- Weed should be cut to leave 100mm of shoot from the bed of the channel so as to maintain habitat for fish.
- Consider planting trees for shade, particularly on the south bank, so that in-channel growth is inhibited. This is usually preferable on the non-working bank so as not to restrict access. (Byelaw consent and/or landowner permission will be required).
- Longer rotations are best wherever possible.
- Vegetation should be left near the opposite bank top to allow invertebrates to crawl back to the river, but no wet vegetation nor mud should slip down the bank.
- Cut weed should be removed at appropriate locations wherever possible; alternatively, if there are smaller amounts, it may be left at bank top on non-sensitive areas and subsequently flailed.
- No cuttings should be placed on a wet berm.
- Cut weed left in the channel can cause de-oxygenation of the water and fish kills in hot weather or if the drain base is disturbed.

Management Options

Best practice is always spot management

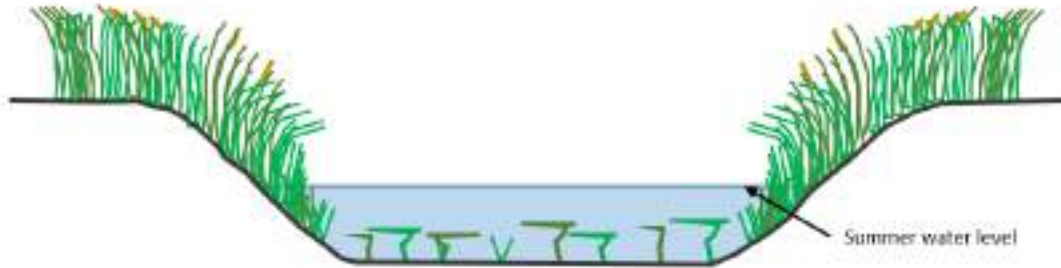
	Option		
Bed width	Best	Good	Acceptable
< 2m	W1		
2-5m	W5		W6
5-10m	W7, W5	W3	W4, W2
10+ m	W7, W5	W3	W4, W2

Illustrations of the options for each bed width follow. In summary:

- W1 Cut entire bed width
- W2 Cut 80% bed width in a sinuous form
- W3 Cut 50 % bed width in a sinuous form
- W4 Maintain short lengths of approx. 20m aquatic margin with a 80% cut on alternating sides
- W5 Maintain short lengths of approx. 20m aquatic margin with a 50% cut on alternating sides
- W6 Maintain aquatic fringes only on both sides
- W7 Cut one side of the channel only, leaving a retained margin on the other.

<2m wide - Best Practice Option W1

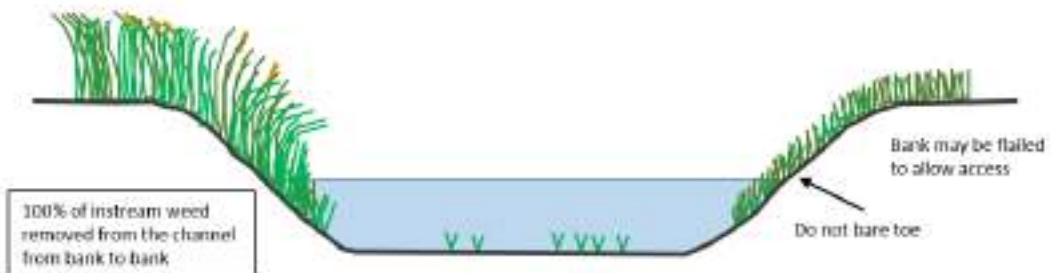
Before



W1 After

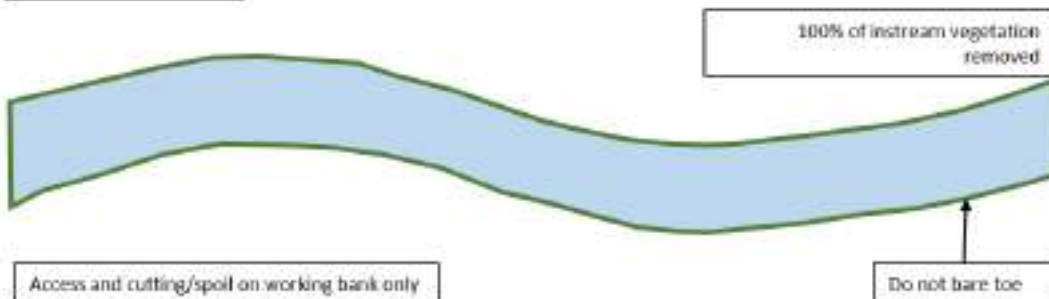
No cutting or spoil on this side
50% of retained margin

Work from this side
Weedcuttings to be placed as far from the channel as possible
Do not bare toe of bank



100% of instream weed removed from the channel from bank to bank

W1 Weed Control

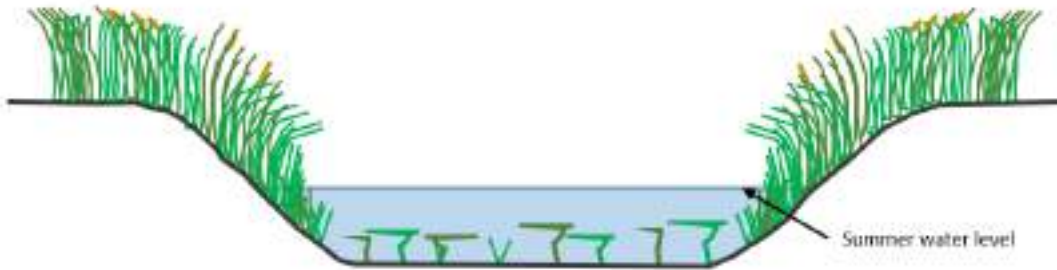


100% of instream vegetation removed

Access and cutting/spoil on working bank only

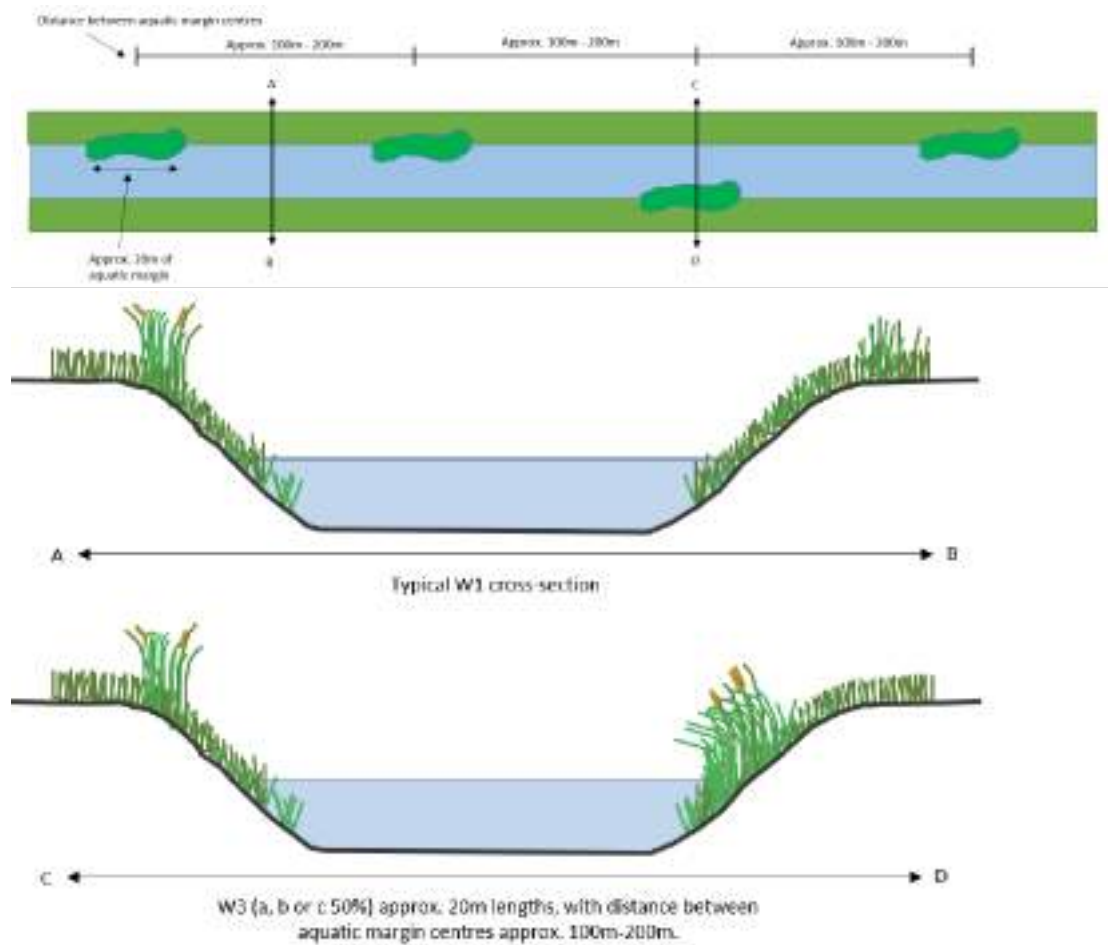
2-5 m wide: Best Practice Option W5, Acceptable W6

Before

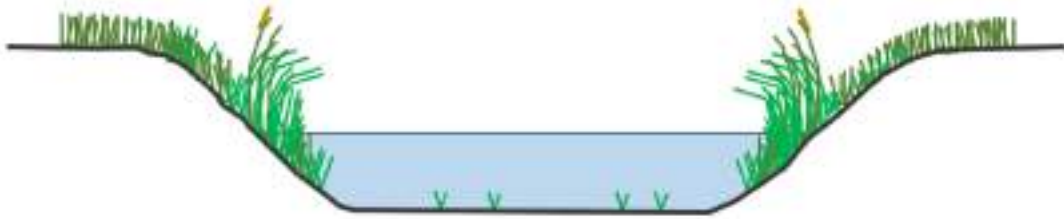


W5 After

Maintaining short lengths of aquatic margin on alternating sides of an otherwise 50% cut



W6 After

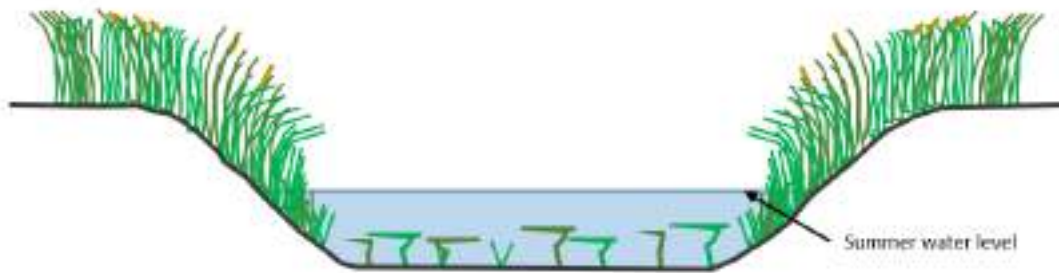


Do not cut aquatic (reed) fringes
Weedcuttings to be placed as far from the channel as possible
Do not expose toe or bank side soils by excessive cutting and avoid disturbance of bed material

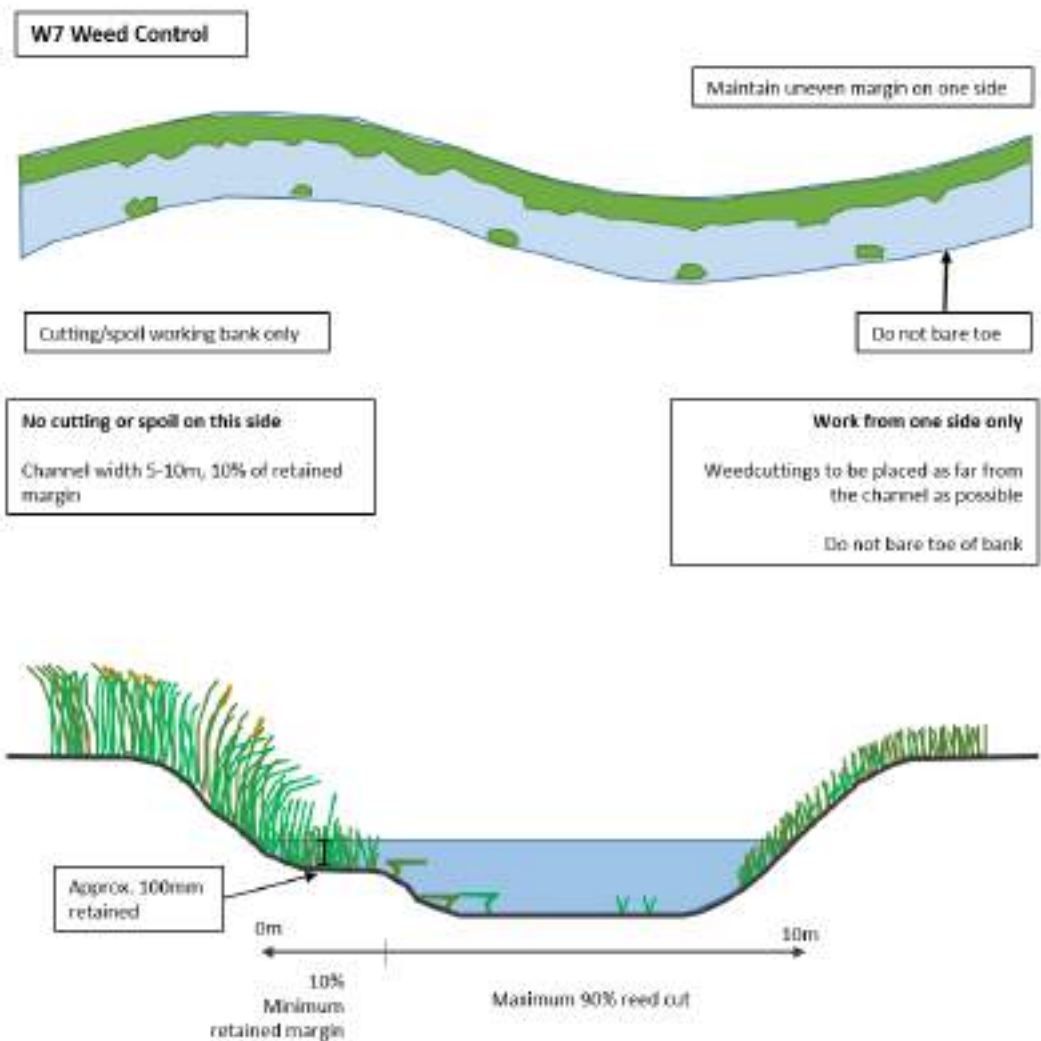
To be used in areas of higher risk

5m + wide: Best Practice W7 or W5, Good Practice W3, Acceptable Practice W4 or W2

Before

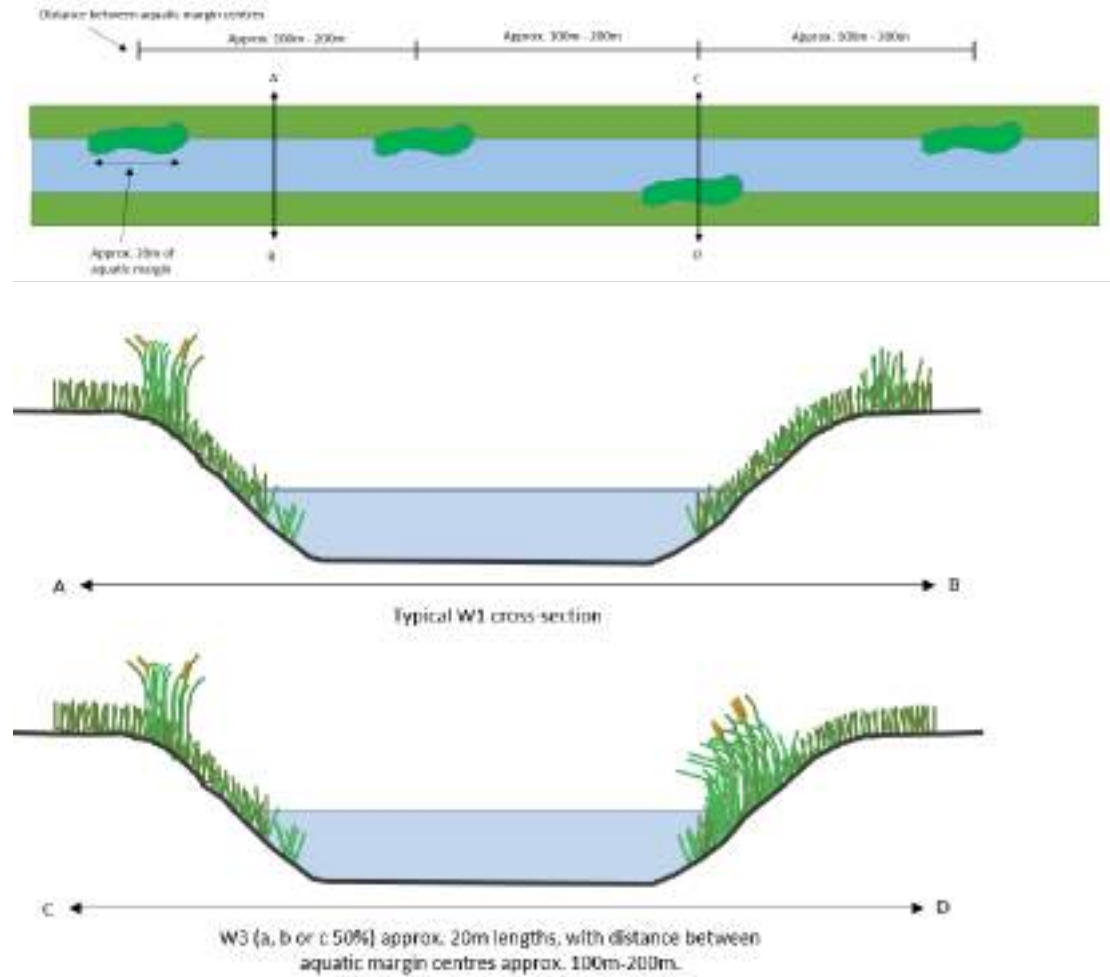


W7 after

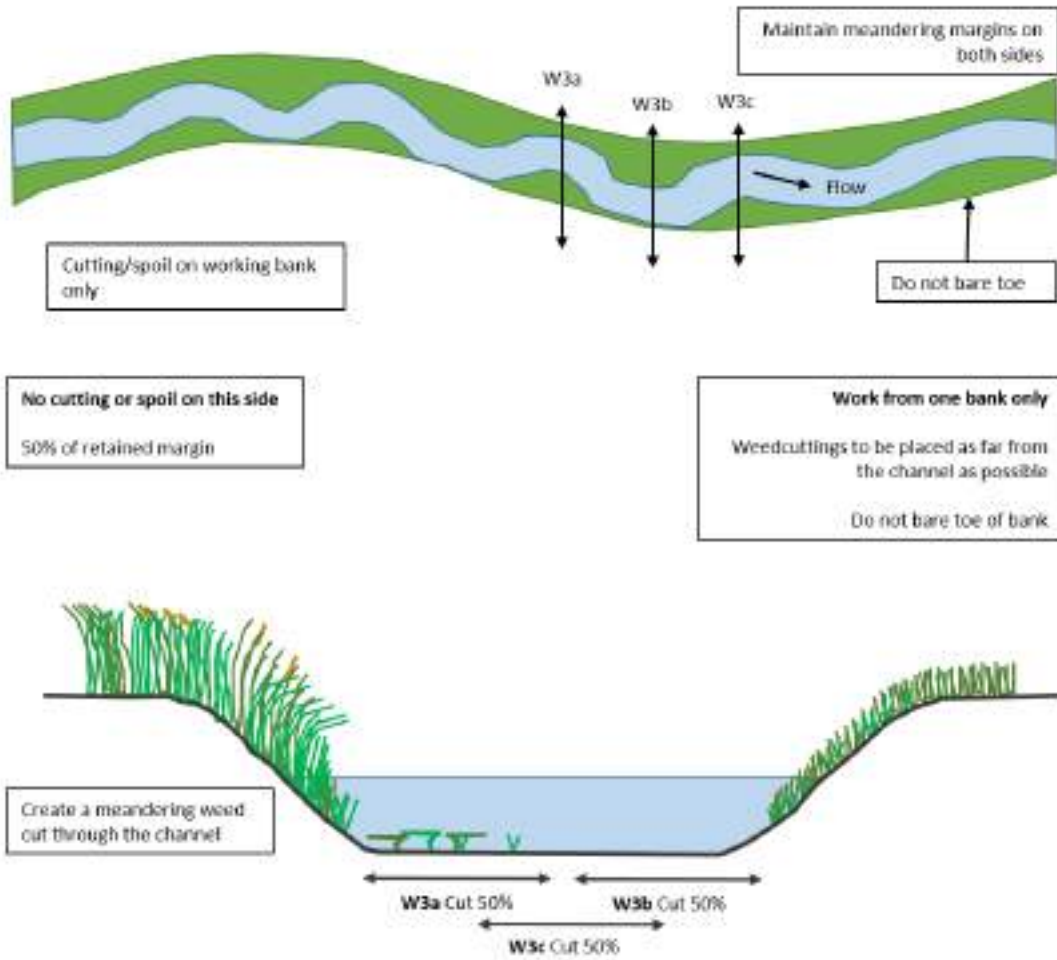


W5 after

Maintaining short lengths of aquatic margin on alternating sides of an otherwise 50% cut

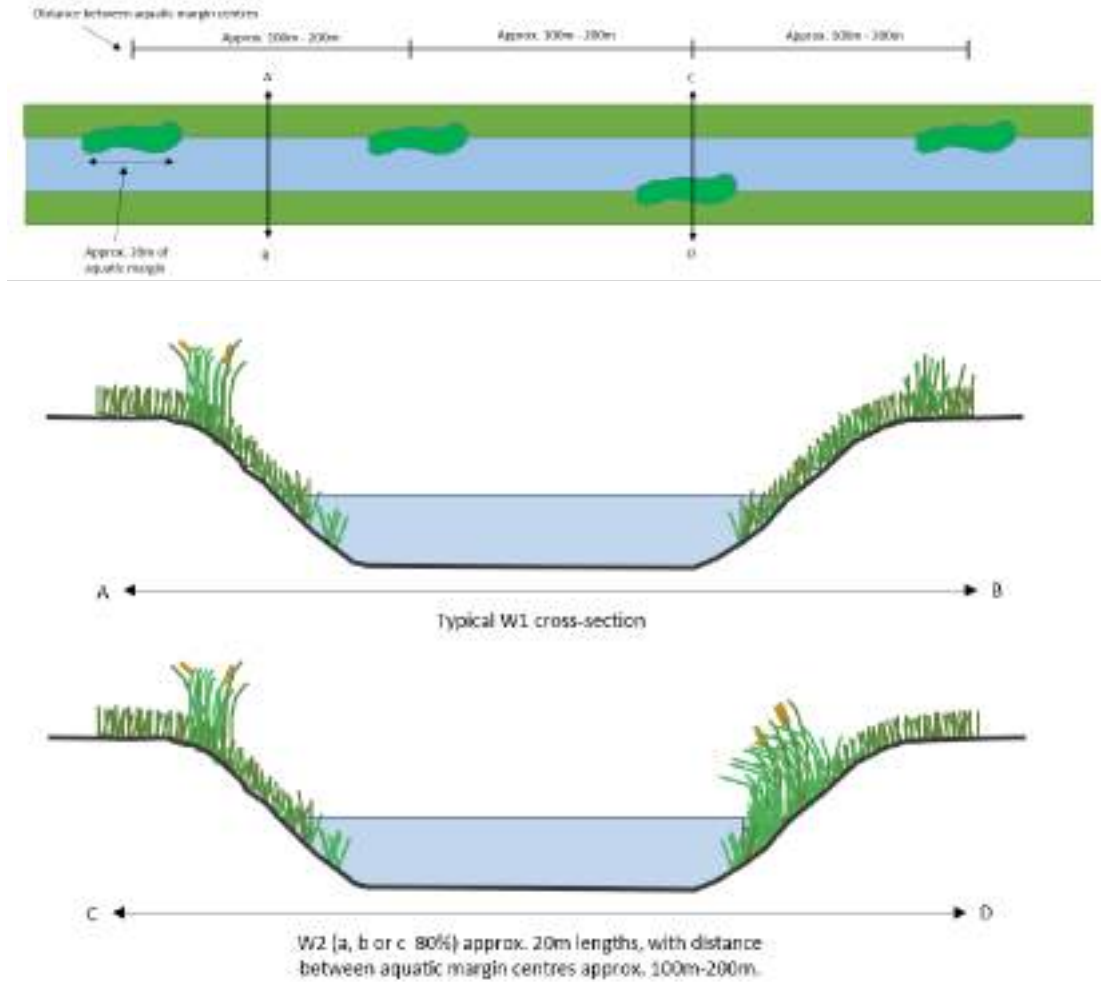


W3 after – Meandering channel 50 % cut



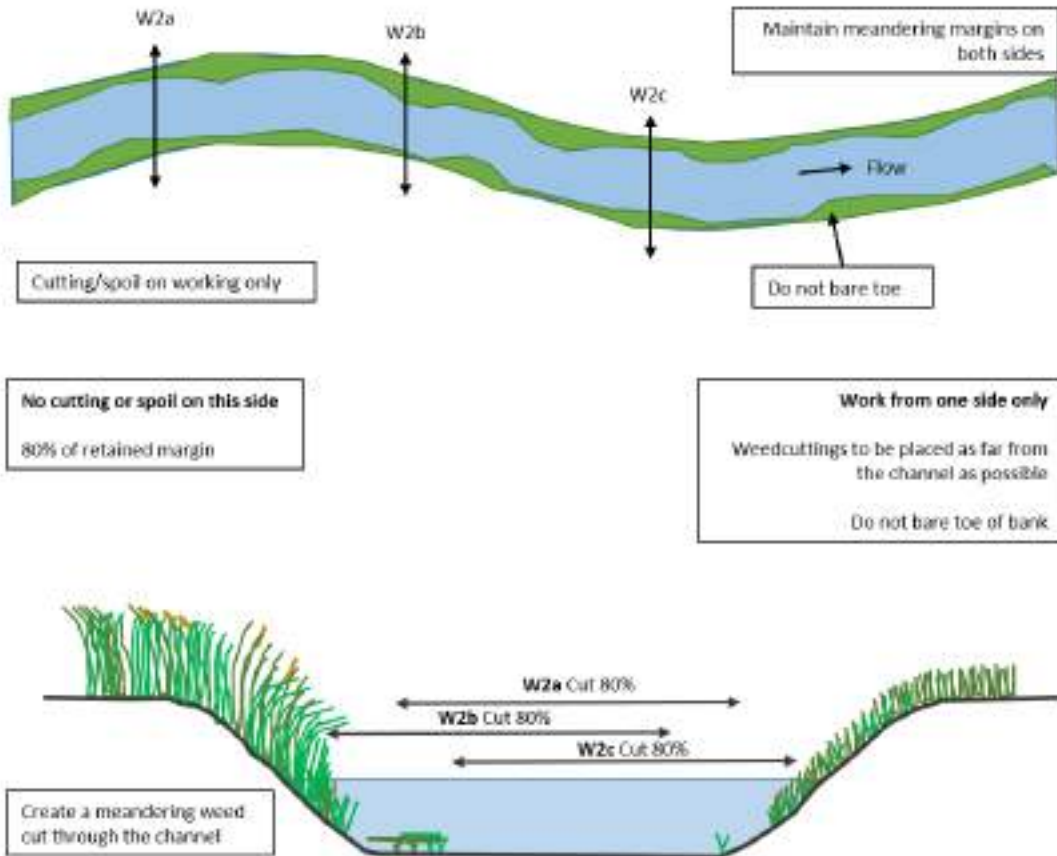
W4 after

Maintaining short lengths of aquatic margin on alternating sides of an otherwise 80% cut



W2 after

Meandering channel 80% cut



Chemical

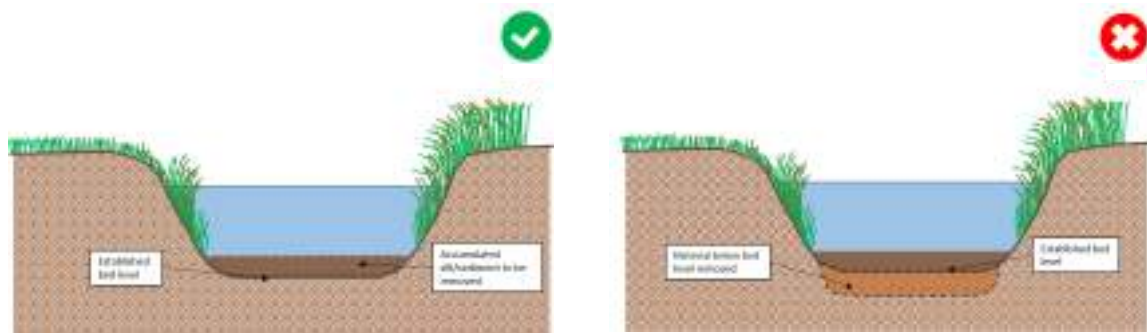
In some areas, particularly where there are significant silt deposits, low gradient and dense emergent growth, such as common club rush or reed sweet-grass, across the channel it may be appropriate to consider chemical treatment. The work may only be carried out by NPTC (National Pesticides Training Certificate) or similar certified operators.

While it may have adverse effects, spot spraying or use in a sinusoidal fashion may reduce the need for regular vegetation control management to keep a channel open and also bring about improvements in the flow regime in a channel. Careful consideration is required before using this technique. It may be more appropriate to consider restoration of the channel either by narrowing it using groynes or by deepening a central section rather than undertaking long term chemical control. Only chemicals approved for aquatic use may be used and all relevant legislation eg *Control of Pesticides Regulations 1986*, *Food and Environment Protection Act 1985* and *Control of Substances Hazardous to Health Regulations 1988* must be complied with.

Prior to any use, the form AqHerb01 'Agreement to use herbicides in or near water' must be completed and submitted to the Environment Agency for approval. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/601813/LIT_4719.pdf

Desilting

Desilting is the removal of soft silts to restore the channel capacity back to hard bed profile. This is sometimes referred to by the Bedford Group as dredging and by the Ely Group as slubbing. An illustration of the correct working practice follows:



This section only considers desilting operations with only patchwork on the banks if required e.g. where slips have occurred. Reforming (firm material) and regrading (bed and banks) requires a site-specific approach, always involving an ecologist, often involving River Corridor Survey and sometimes involving an EIA. See Chapter 9. Detailed consideration for mitigation/ enhancements will be included in these options.

Category of Watercourse

Categories 1, 2,3

Reasons for undertaking the works

The need to undertake works is entirely related to flood defence needs.

- To maintain or restore capacity
- Stabilize banks,
- To maintain conveyance by reducing channel roughness
- Ensure efficient operation of structures such as outfall sluices

Machinery used

Hydraulic excavator, by hand, desilting pumping and jetting

Possible protected species

Water voles, otter breeding birds, kingfishers (disturbance), white clawed crayfish.

Specification

- Preparatory works should include the preparation of predrawn plans highlighting any features that need to be retained. In some cases a river corridor survey will be required.
- Where possible, machinery used should be appropriate to the size of the job and the bucket should contain holes to allow fish and invertebrates to escape.
- The toe of the banks should not be touched to maintain bank stability.
- Protection of existing interest is paramount. Silt only is to be taken; riffles, areas of cobbles, gravels to be left untouched and if inadvertently touched, then replaced. Where gravel accretions reduce flow capacity, this will be treated as a special case.
- One working bank only to be used chosen for ease of access, sensitivity of vegetation present, crops and need to minimise works along the channel. It may be necessary to change working banks.
- If trees impede machine access, good practice for tree management should be followed.
- The direction of works should be working upstream.

- Variation in the long-section as well as the cross-section of a watercourse is desirable. Variation in the LS should be attempted with retention of any shallow areas with solid bed.
- Minimum silt required to achieve the flood defence objectives to be taken, with preference from the centre of the channel to create a fast flowing centre. The extent of any margins left will depend on the flood risk. On very narrow channels, it may only be possible to leave one side.
- Work should not touch the opposite banks. The exception may be on very narrow watercourses where a turn of the bucket may affect lower bank.
- It is not desirable to change the water level significantly in summer when invertebrates and plant material is greatest.
- Enhancements should be considered where possible and working undertaken wherever possible to mimic natural fluvial processes e.g. at margins variable amounts to be taken where possible to provide variation in XS, silt left wider on inside of bends, possibility of adding silts to the margins to allow reed etc. to grow. No enhancements should increase the extent or frequency of maintenance requirements. These may not be possible on very small watercourses.
- Spoil may be incorporated into adjacent land via thin spreading on arable, usually 5-10m from the watercourse. On pasture, dried spoil may be placed into a trench that has had the topsoil stripped and then the topsoil replaced and the ground reseeded. On pasture, hollows should not be filled. Spoil must not be spread on SSSI or CWS or Trust Reserves without prior discussion.
- Where adjacent land is in an agricultural scheme, then further consideration may need be given to reinstatement. It may be necessary for the landowner to apply for a derogation due to the impact of works on scheme compliance.

Management Options

Spot treatment is always best.

Otherwise

Bed width	Option		
	Best	Good	Acceptable
< 2m	SM 1		
2-5m	SM2		SM1
5-10m	SM3	SM2	
10+ m	SM3	SM2	

Illustrations of the options for each bed width follow. In summary

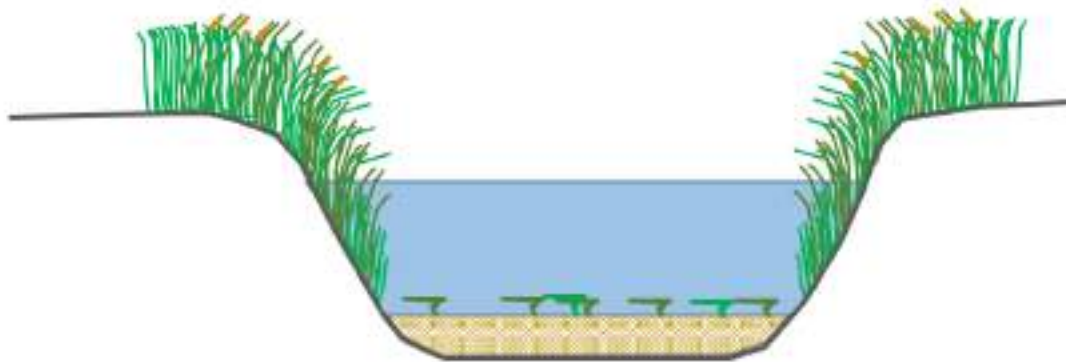
SM1 Channel width cleared of silt

SM2 10% of vegetation and silt left on one side of the channel

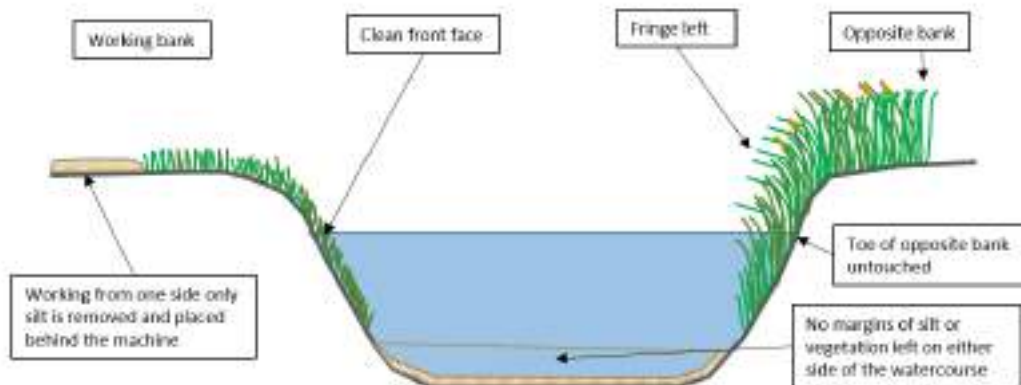
SM3 10-20% of silt and vegetation left on both sides of the channel

<2m wide - Best Practice Option SM1

Before

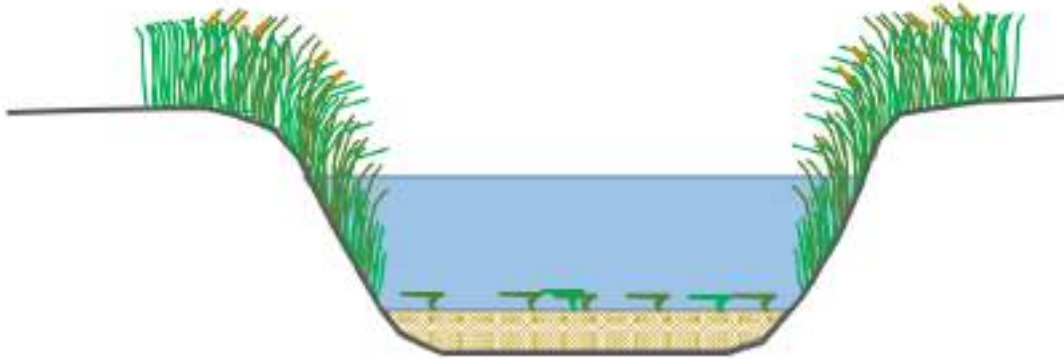


SM1 After

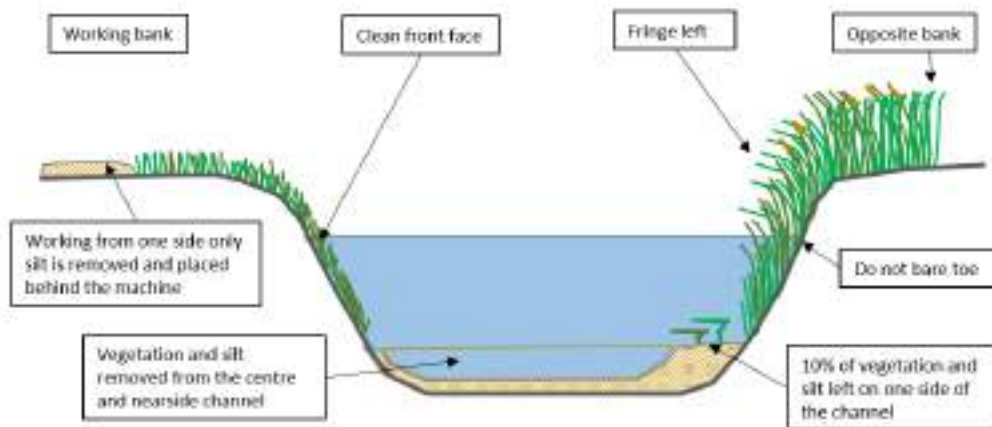


2-5 m wide Best Practice Option SM2 Acceptable Practice SM1

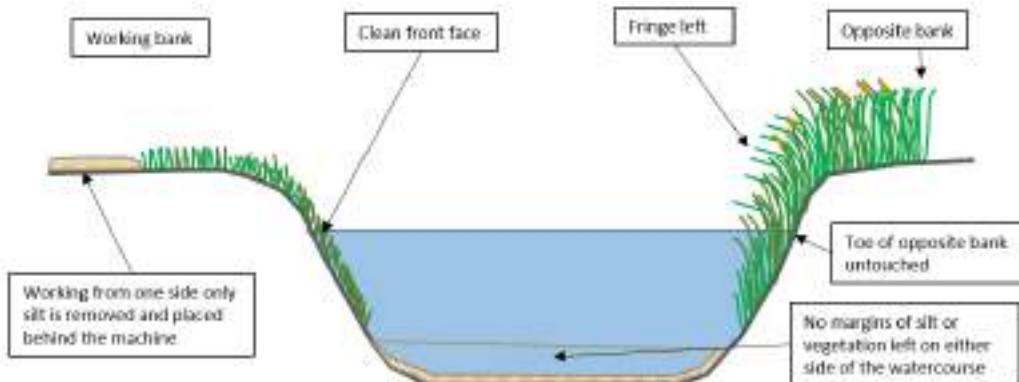
Before



SM2 After

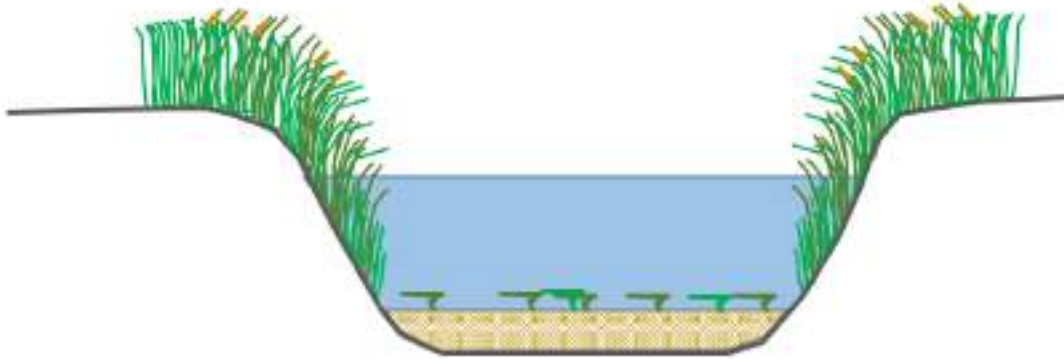


SM1 After

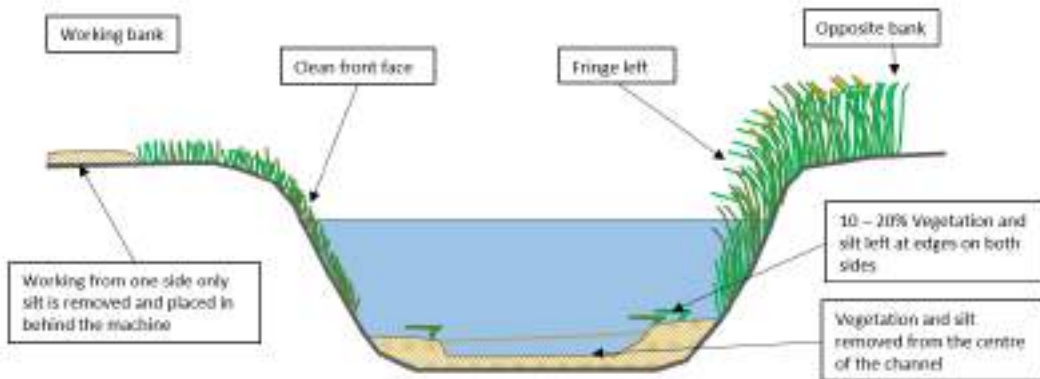


5m + Best Practice Option SM3, Acceptable Practice SM2

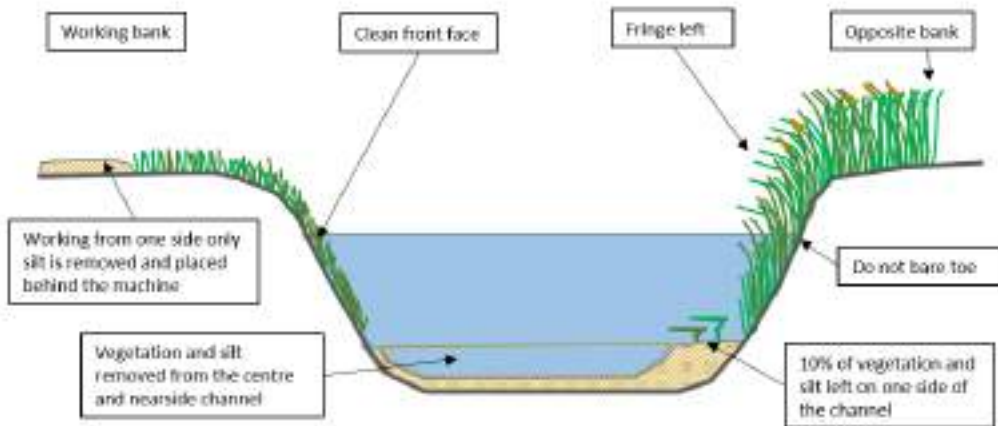
Before



SM3 After



SM2 After



Tree/ Scrub /Hedge Maintenance

Category of Watercourse

Categories 1,2,3

Reasons for undertaking the works

- Provide access to river
- Prevent collapse into river creating blockages
- Prevent buildup of wrack and thus reduce conveyance

Machinery used

Handcutting, chainsaws, excavator and tractor mounted machinery.

Possible protected species

Breeding birds, bats in holes or cavities, otters in the roots of trees. Work on trees should not take place between late March – mid July without checking for breeding birds and bats. At any time cavities must be checked for bats; typically November to mid March is the time of least risk.

Specification and Management Options

- All trees to be managed should be marked with the appropriate code (e.g. F = fell; C= coppice; P= pollard; T= trim).
- As few trees as possible should be managed and as lightly as possible.
- Work should only take place on one bank unless handwork from the channel is involved.
- The exception is that on narrow (<5m watercourses) trees, bushes and hedges will be sided back on the opposite bank to remove obstructions from blocking flow in the channel and also to remove obstructions for machine access to remove risks such as pulling hydraulic hoses off machine arms which could lead to an environmental incident.
- Where such actions are required ahead of other works, eg flailing, weed cutting or desilting, tree clearance work will be undertaken to a height of 0.5 m above the maximum height of the jib of the machine undertaking such actions. Wherever possible, the limb shall not be taken back to the trunk but will be taken back to a suitable junction.
- Work on veteran or very old trees will require the input of an ecologist.
- Felling should only undertaken with handheld machinery, plant may be used to remove lopped limbs.
- ***Leaving some trees will reduce weed growth within the channel.***
- It is important to adhere to Health and Safety Regulations.
- Possible options for tree work is given in TB

- Arisings may be made into woodpiles or used for otter holts to provide enhancements. Otherwise, disposal of material may be by burning (away from important areas, other trees and vulnerable soils e.g. peat), heaping it above flood levels, forming otter holts or chipping suitable species and either carting it or incorporating into arable soils.
- Scrub is particularly valuable for breeding birds and wherever possible should be worked around.

Specific Techniques

Illustrations of these techniques follow

Bushing/ tunnelling

- Do not cut branches above wrack line unless necessary; if possible, leave some to act as nest sites for coot, perches for kingfisher.
- It may be possible to leave a tunnel - the size will depend on the flood risk, but the maximum should be approx. 1.5m above bank top. (Option TB3) On small flood risk areas, tunnel may have a maximum height at bank top.
- If cutting trees in banks, leave roots systems intact. If there is likely to be an issue in the future, then they can be stump treated. .
- It is possible to 'face up' trees where over hanging branches will cause issues for management.

Pollarding:

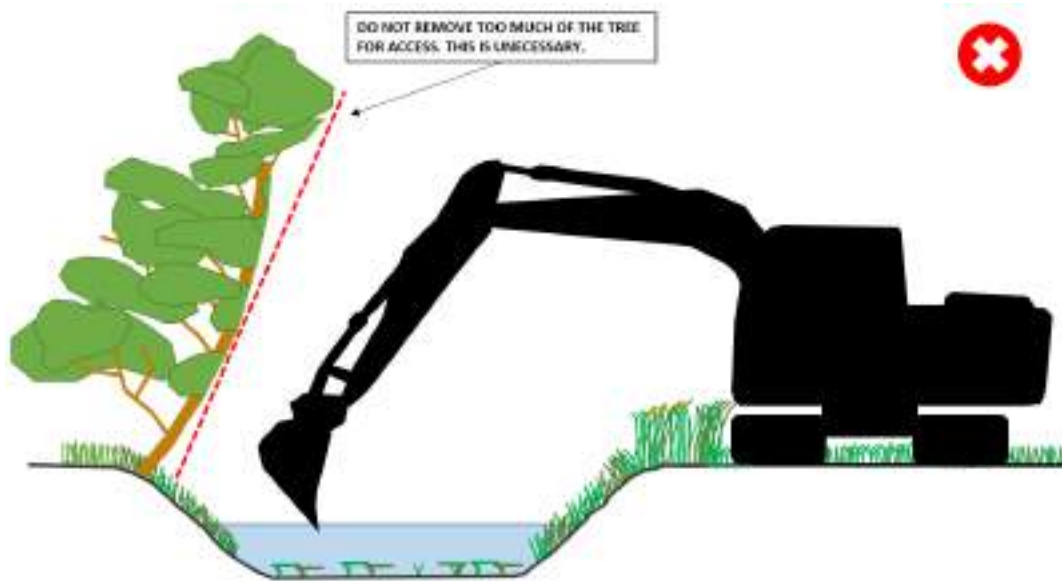
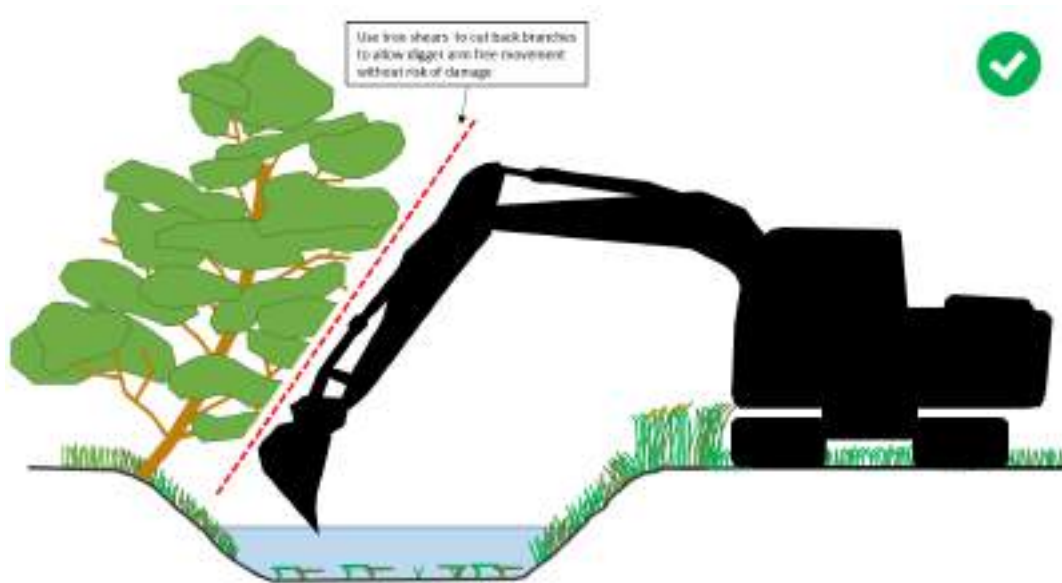
- This has significant ecological benefit and ensures that old trees that provide important invertebrate habitats can be retained.
- Undertake in appropriate areas only between November and March.
- Oblique cuts should be made with the slope facing out, approximately 2m above the ground, or 2-4m above ground, if there is a fork.
- Repollard immediately above previous cuts.
- If there has been a long period between pollarding leave some young limbs to prevent the tree from dying.

Coppicing

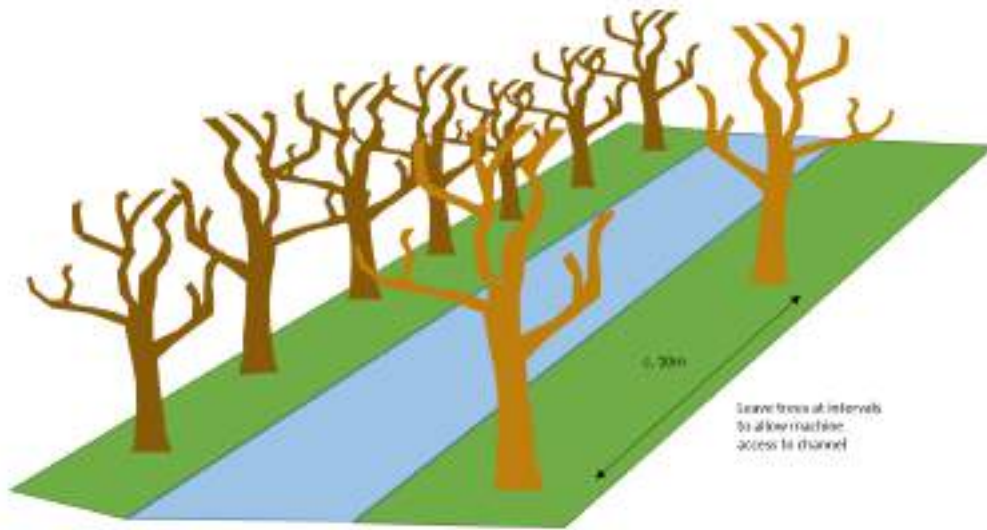
Oblique cuts should be made with the slope facing out, just above ground level. Regular coppicing is necessary to prevent trees splitting.

A rotation of coppicing along a river helps maintain various stages of tree growth and a refugia and cover for wildlife until areas regrow.

Approach for Tree Works Prior to Flailing or Desilting

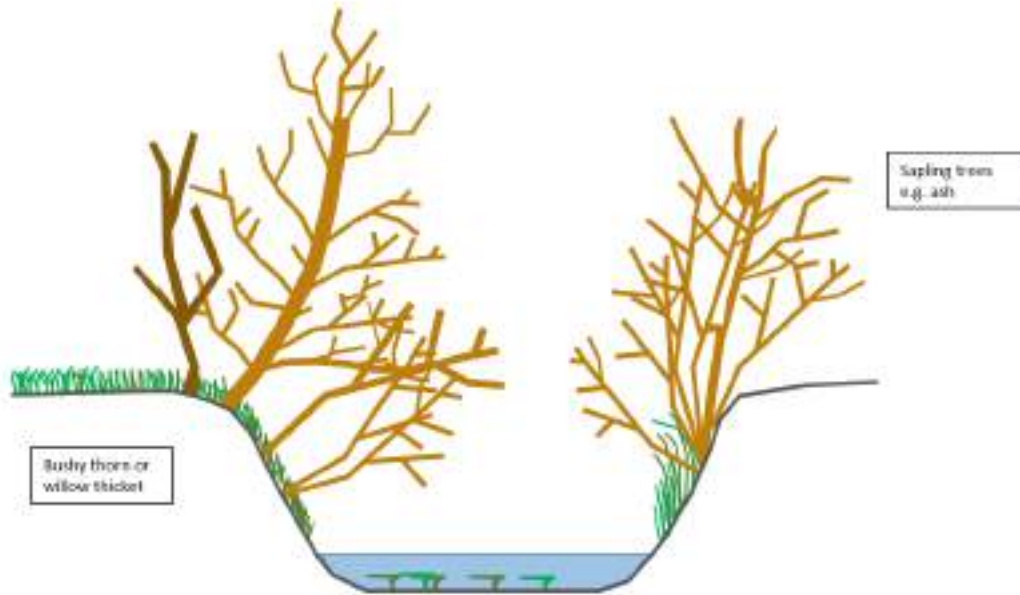


Working between Trees

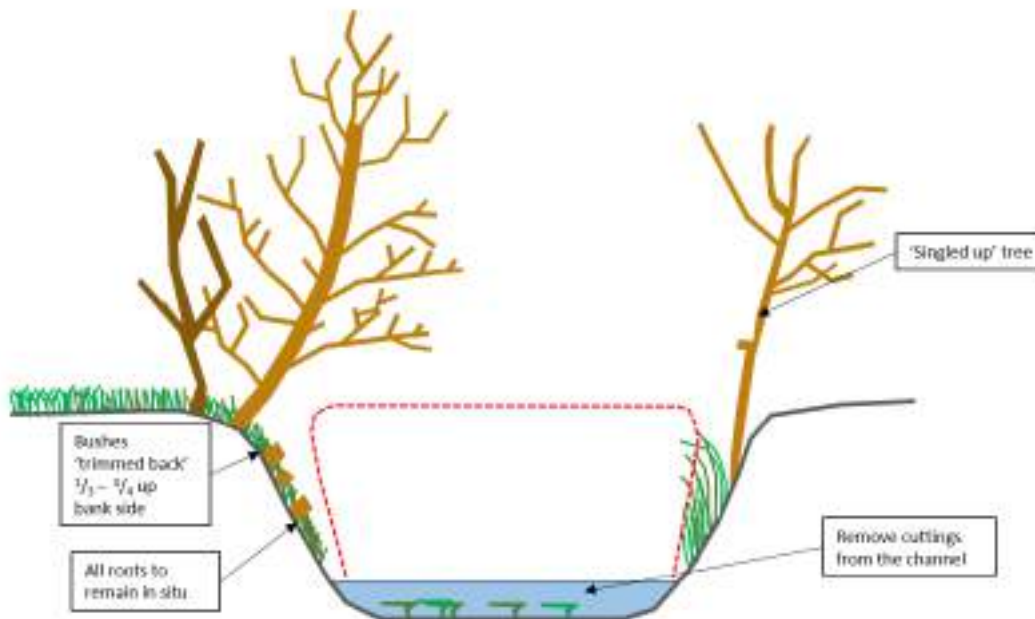


Bushing

Before

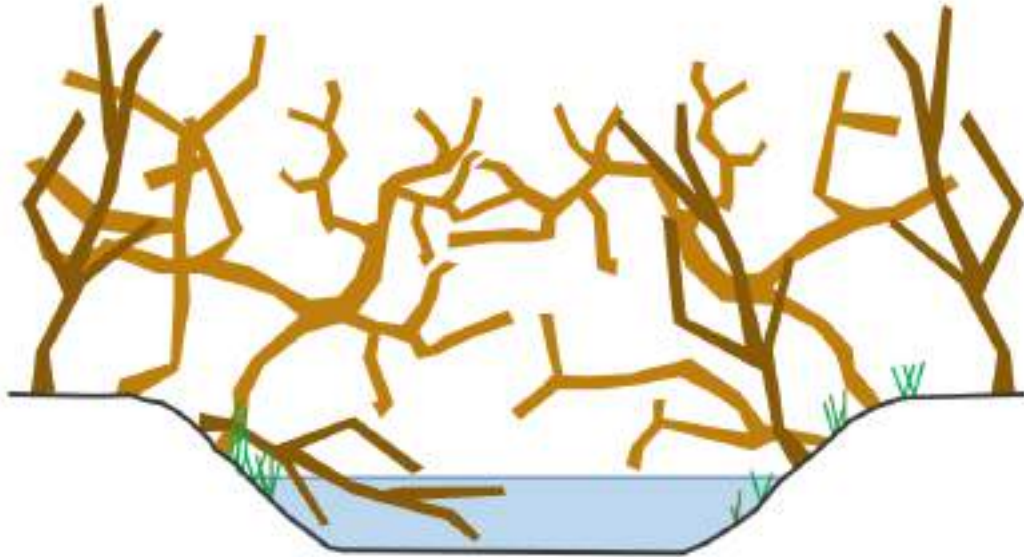


After

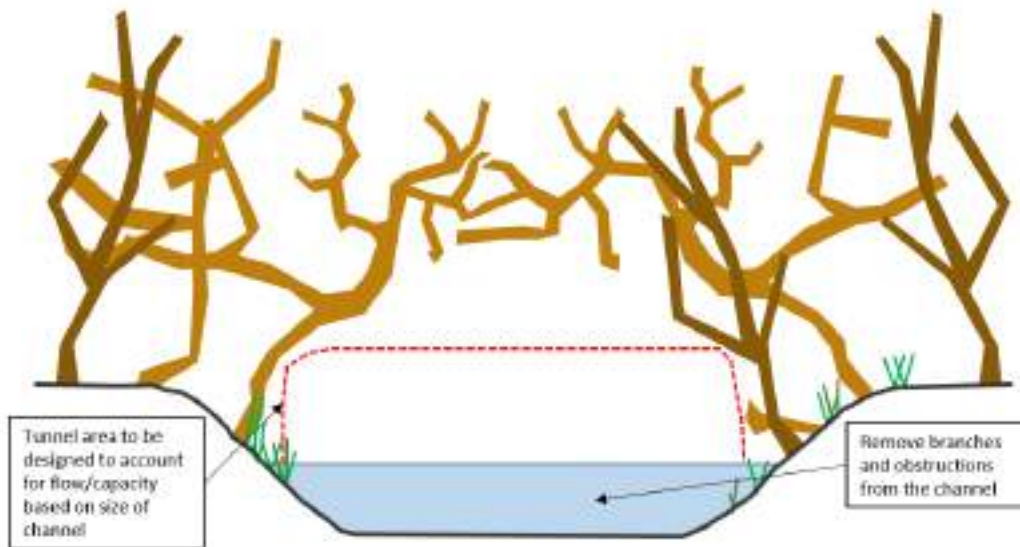


Tunnelling

Before



After



"Tunnelling" – Working from inside of the channel
Bushing to be carried out between November and March

NB. Gaps need to be cut at approximately 30m intervals to allow removal of debris

Pollarding

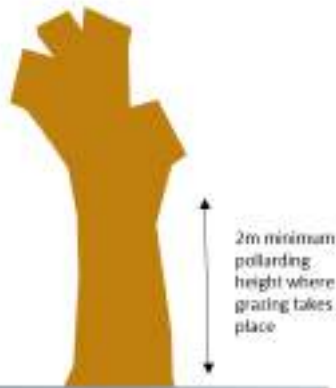
Before



Tall willows can be subject to 'wind throw' – casting off branches or totally collapsing.

After

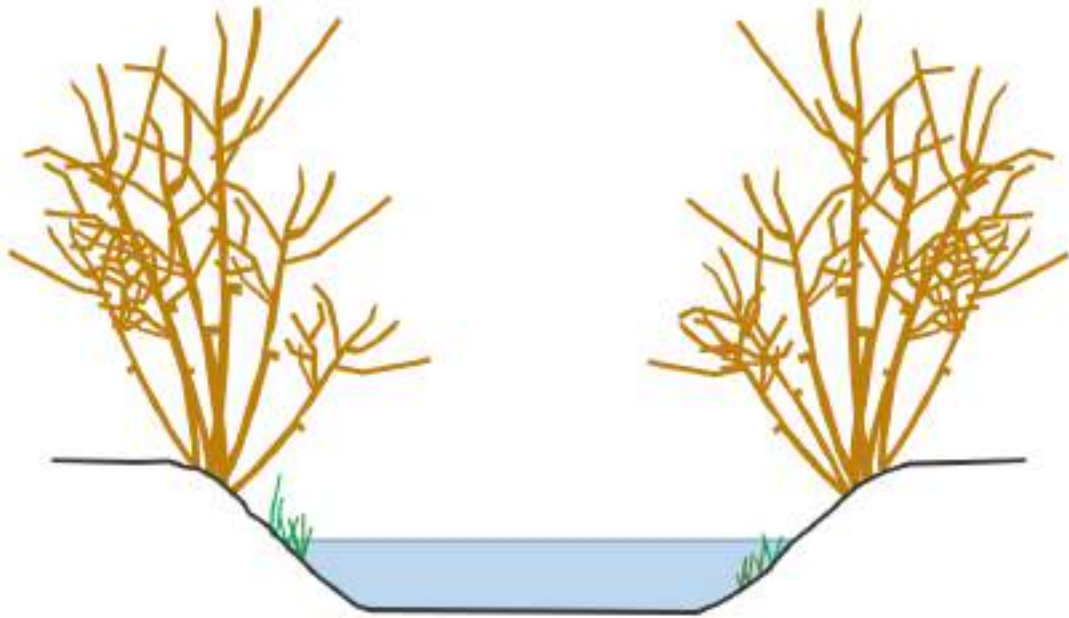
To be undertaken between November – March



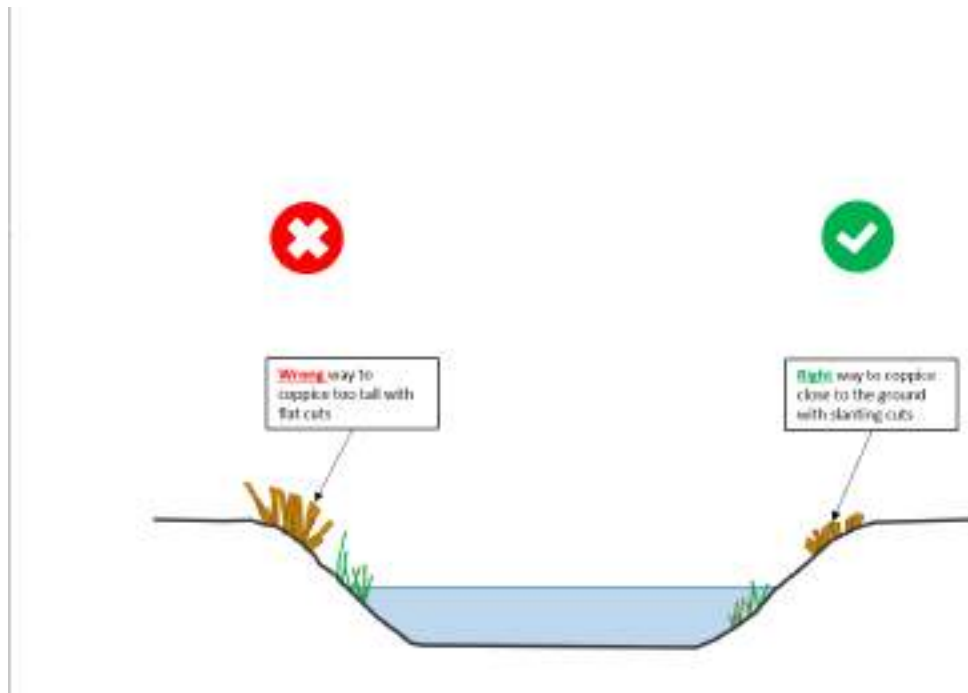
Cut all branches close to the trunk to balance re-growth on the tree. (Unbalanced trees will topple or split). However if repollarding after a long lapse leave some minor limbs to reduce the risk of tree dying.

Coppicing

Before





After




APPENDIX 8.1: ILLUSTRATIVE PHOTOGRAPHS

All photographs are taken within the Bedford and Ely Group drainage districts.

Important features in the river corridor



	<p>A lowland watercourse showing variation in bank form as a result of the meander. The accreting right bank has developed a tree. Immediately before the bend, the slower water has developed a fringe of emergent vegetation. The steep earth bank is suitable for kingfisher nesting.</p>
	<p>Variation in water flow is provided by the riffle, an area of faster, broken water over coarser substrate which provides increased oxygenation for invertebrates and fish.</p>

	<p>A pool formed holding softer sediment. Valuable for fish to lie up</p>
	<p>Pumped drained watercourses do not show such structural variation. Here marginal vegetation, such as this strong reed fringe are particularly important for breeding bird, and water vole as well as hunting barn owl.</p>

	<p>Adjacent land can be important in its own right as well as adding value to the watercourse. Leaf drop in to the watercourse provides food for invertebrates.</p>
---	---

Examples of Operational works

	<p>Desilting a critical watercourse across the full width but retaining retaining the important scrub cover. Spoil is placed away from the top of the bank on low quality grassland.</p>
	<p>Desilting a watercourse, retaining the hedge, an important feature in an agricultural environment.</p>

	<p>Herbicide use maintains the centre of the channel open while leaving the margins untouched</p>
	<p>Weed cutting on a fen drain, leaving a wide margin on both sides. The weed is collected ready to be raked up at the pumping station</p>



Flailing the bank from one side, retaining the important cover on the other. The mown bank has retained the toe.

Tree works



Trimming to allow access to the watercourse, including coppicing at ground level and the use of 'snips' at high level to ensure safe access for machine



A pollarded willow showing good regrowth. Failure to maintain pollards leads to limbs becoming overheavy and splitting. Willows are very important for invertebrates



Limited clearance of short length to allow machine access retaining the woodland on both sides.



Removal of fallen timber while retaining woodland cover. If possible, some woody debris should be left but may need to be tied into the bank.

Enhancements



A stone deflector used in increase flow and deflect flow, mimicking a riffle.



Creating a flow deflector from brush from hedge works



Creation of log piles can provide lying up areas for otter, benefit reptiles and provide dead wood habitat required by specialist invertebrates

APPENDIX 8.2: Aq Herb 01 form

Agreement to use herbicides in or near water



Please read through this form and the guidance notes that came with it. Please write clearly in the answer spaces.

The Food and Environment Protection Act 1985 and Control of Pesticides Regulations 1986, as amended sets out the rules on using pesticides to control weeds growing in water or on land. 'Pesticides' includes herbicides as well as insecticides and fungicides. They all have information on the product labels to explain how and where they can be used.

The product labels of aquatic herbicides explain that anyone who wants to use herbicides to control weeds in water (aquatic weeds) or on the banks or banksides next to a water body or a watercourse (a flow of water), should get our agreement. This is to make sure that the proposed use of the herbicide could not damage or pollute the aquatic environment (including both surface water and groundwater). This form will give us the information we need to decide whether or not to agree to you using the herbicide as you propose.

Once you have all the information you need it should take you less than one hour to fill in this form.

You'll need:

- details of the location of the site, including its grid references and a site plan;
- your NPTC certificate number (and a photocopy of your certificate if this is the first time you have asked for our agreement); and
- evidence that you have contacted Natural England (if you intend to use the herbicide in a nature conservation area).

When to use this form

Use this form if you plan to use herbicides to control weeds in water or on the banks next to a water body or watercourse.

You should discuss your plans with us, particularly for unusual or complex proposals, before you fill in this form.

You can send your form by email, fax or post to our national Permitting Support Centre in Sheffield at the address shown in section 5.

If you need to send us other documents to support your application, you can send them to us by fax or post, or you can scan and email them.

If you need more space for any of your answers, please use separate sheets of paper (continuation sheets). Make sure that you label each sheet clearly with:

- the section number it applies to; and
- the number of the sheet (for example, 3 of 5).

Site owner's agreement

If we agree to your application, and you do not own the site the herbicide is to be used on, you cannot carry out the treatment until the owner of the site agrees to this.

Nature conservation areas

If you intend to use a herbicide in a nature conservation area (see the guidance notes for more details), you (or the site owner if that is not you) must also get permission from Natural England.

On this form you will need to provide evidence that you have got their permission (see section 1.9).

You must also hold the correct NPTC certificate for aquatic applications (see the website at www.nptc.org.uk). On this form you must provide evidence that you hold this qualification (see section 1.3).

Contents

- 1 About the applicant and site
- 2 About the watercourse or water body
- 3 Weed control
- 4 Checklist
- 5 What happens next
- 6 The Data Protection Act 1998
- 7 Declaration
- 8 How to contact us

1 About the applicant and site

(person or company applying for agreement)

Dates the treatment will be applied and over what time period?

1.1 Your details

Name, if an individual

Title (Mr, Mrs, Miss and so on) _____

First name _____

Last name _____

Name, if a company, partnership or public body

1 About the applicant and site, continued

Address

Postcode

Contact numbers, including the area code

Phone _____

Mobile _____

(If you give us a fax number or email address we can send our reply to you faster.)

Fax _____

Email _____

1 About the applicant and site, continued

Are you:

- the owner of the site?
- Please go to section 1.3.
- the manager of the site?
- the site owner's agent?
- a contractor?
- other?
- If other, please give details.

1.2 Details of the site owner or the person or company responsible for the site

Name, if an individual

Title (Mr, Mrs, Miss and so on) _____

First name _____

Last name _____

Name, if a company, partnership or public body

Company registration number

Address

Postcode _____

Contact numbers, including the area code

Phone _____

Fax _____

Mobile _____

Email _____

1.3 Please give details of who will apply the herbicide (or supervise its use).

Name of the spray operator (and anyone who is supervising them)

Their NPTC certificate number

Category of NPTC certificate

If this is your first application to this Environment Agency office, send us a photocopy of the NPTC certificate.

1.4 Location details

Name of site

Nearest village or town

1 About the applicant and site, continued

1.5 Ordnance Survey grid references for the site

For example, ST 1234 5678

Please give two Ordnance Survey grid references, one for each end of the area to be treated. You can find them on an Ordnance Survey map.

If the area is very small (for example, a pond), one grid reference will do. In this case put the same reference in both boxes.

1.6 Please send us a site plan that shows the site to be sprayed and its surrounding area.

There is an example in the guidance notes.

1.7 Have you ever had permission to use herbicide on this site?

No

Yes Please say when and give the reference number if possible.

Date (DD/MM/YYYY)

Reference number

1.8 Is the site a conservation area?

(Please see the guidance notes on the types of conservation area – for example, Natura 2000 sites (SACs or SPAs), SSSIs or Nature Reserves.)

No Go to section 1.10

Yes Please give details below.

1.9 Have you consulted Natural England?

No

Yes Please give details below.

If treatment is in a protected area it is your responsibility to contact them and get their agreement beforehand.

1.10 Are there fish in the water that you plan to treat?

Treating only the bank

Don't know

No

Yes Please give details of the species (if known).

2 About the watercourse or water body

2.1 Are you proposing to use a herbicide:

in a watercourse or water body?
 on the banks of or next to a watercourse or water body?
 If you are treating weeds only on the banks next to the watercourse or water body, please go directly to section 3.

2.2 Type of watercourse or water body

Please tick all relevant boxes.

Canal Lake Reservoir Ditch
 Stream Pond River Estuary

If it is a water body, what is the total area in hectares?

_____ hectares

(One hectare is equal to 10,000m².)

If it is a watercourse, give the length, width and depth below.

Length

_____ metres

Width

_____ metres

Average depth

_____ metres

2.3 Are you planning to treat the whole area?

Yes

No In the spaces below, please give details of the part to be treated.

Length

_____ metres

Width

_____ metres

Average depth

_____ metres

Water speed

2.4 How fast does the water flow?

Tick one box only.

Standing Slow Fast

Minimal Moderate

How many places does water flow in (inflows)?

How many places does water flow out (outflows)?

2.5 Can you control the outflows?

We need to know that the herbicide will not contaminate watercourses or waterbodies downstream.

No

Yes Please give brief details below (for example, how long you can stop the outflow for).

2 About the watercourse or water body, continued

Downstream uses of the watercourse or water body

2.6 Is the water body connected to a watercourse?

No Go to section 3.1.

Yes

2.7 If you know that the water body or the watercourse is used for any purpose please give details below.

(For example, irrigation or fisheries).

3 Weed control

3.1 Why do you think the weeds need to be controlled?

For angling For leisure purposes

For flood defence

To control non-native species such as Japanese knotweed, giant hogweed and rhododendron

Other

If other, please give details below.

3.2 Can you identify the species of weed you plan to control?

No Go to section 3.3.

Yes Please give details below.

Where the weed is	Percentage of area it covers	Species
Bankside	_____	_____
At the water's edge (marginal)	_____	_____
Floating	_____	_____
Partially underwater (emergent)	_____	_____
Underwater (submerged)	_____	_____

3.3 If you do not know the species please send us a sample of the weeds.

Please read the guidance notes about sending samples.

3.4 Have you considered other ways to control the weeds?

No Please say why below.

3 Weed control, continued

Yes Please tell us below which methods you considered and why you didn't use them.

3.5 The herbicide you want to use

The product label gives you the information we ask for below. Please also see the guidance notes.

Name on the product label

Active ingredient shown on the product label

Amount of product in litres or kilogrammes

Dilution rate (if appropriate)

Amount of active ingredient

Adjuvant which is approved for use in or near water

3.6 Please give details below of how you will apply the herbicide.

(For example, knapsack sprayer).

Extra information

3.7 Please give us any further details you think are relevant to your application.

(For example, if this is part of a planned spraying programme over a number of years we can agree to herbicide use for up to three years for a specific site after which we will re assess applications).

4 Checklist

Please tick the relevant boxes to show which documents you are enclosing with this form.

A site plan showing the water body and the surrounding area (section 1.6)

A photocopy of the relevant NPTC certificate (if applicable)

Continuation sheets

How many?

5 What happens next

Please send the form back to the following address:

Environment Agency
Permitting Support Centre
Quadrant 2
99 Parkway Avenue
Parkway Business Park
Sheffield
S9 4WF.

Phone: 03708 506 506

Fax: 0114 2626697

Email: PSC-WaterQuality@environment-agency.gov.uk

We aim to deal with your application within two weeks of receiving it. However, under section 28G of the Wildlife and Countryside Act 1981, when carrying out our role we must take all reasonable steps to protect and improve sites of special scientific interest. So in certain circumstances (for example, unusual or complex uses), we may need to consult Natural England before giving our permission for any activity that may affect a site of special scientific interest. Natural England have 28 days to respond, although they will try to respond within two weeks.

If we agree to your proposals, we will let you know by post, fax or email.

If we have any objections to your proposals, we will discuss them with you.

If we do not agree to your proposal and you are not happy with our decision, you can ask us to refer your proposal to the Area Manager.

6 The Data Protection Act 1998

We, the Environment Agency, will process the information you provide so that we can:

- deal with your application;
- make sure you keep the conditions of our agreement;
- process renewals.

We may also process or release the information to:

- offer you documents or services relating to environmental matters;
- consult the public, public organisations and other organisations (for example, the Health and Safety Executive, local authorities, the emergency services, the Department for Environment, Food and Rural Affairs) on environmental issues;
- carry out research and development work on environmental issues;
- prevent anyone from breaking environmental law, investigate cases where environmental law may have been broken, and take any action that is needed;
- assess whether customers are satisfied with our service, and to improve our service; and

6 The Data Protection Act 1998, continued

- respond to requests for information under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004 (if the Data Protection Act allows).

We may pass the information on to our agents or representatives to do these things for us.

7 Declaration

If you make a statement that you know or believe is false or misleading you may be committing an offence.

I declare that as far as I know and believe, the information in this application is true. I understand that this application may be refused, or agreement withdrawn, if I give false or incomplete information.

Tick this box to confirm that you understand and agree with the declaration above.

If you are the applicant's agent, or are signing on behalf of an organisation, please also print your name and your position.

Name

Title (Mr, Mrs, Miss and so on) _____

First name _____

Last name _____

Position

Date (DD/MM/YYYY)

8 How to contact us

If you need help filling in this form, please contact the person who sent it to you or contact us as shown below.

General enquiries: 08708 506 506 (Monday to Friday, 8am to 6pm)

Textphone: 08702 422549 (Monday to Friday, 8am to 6pm)

Email: PSC-WaterQuality@environment-agency.gov.uk

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff. If you're not happy with our service, please tell us how we can improve it.

Please tell us if you need information in a different language or format (for example, in large print) so we can keep in touch with you more easily.



For Environment Agency use only

Notification reference number

Date received (DD/MM/YYYY)

Area

Are there any objections?

No

Yes Give details of the objections and the date the letter setting out the objections was sent to the applicant.

CHAPTER 9: GOOD PRACTICE GUIDE FOR BIODIVERSITY IN NON-ROUTINE WATERCOURSE WORKS

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EIA.....	4
Planning Permission.....	4
Waste Disposal.....	4
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CHAPTER 9: GOOD PRACTICE GUIDE FOR BIODIVERSITY IN NON-ROUTINE WATERCOURSE WORKS

Planning works

Proposed works will have been identified by a demonstrable need, for example, flooding, development requirements, bank or structure failure and may be capital works or heavy maintenance where the hard bed of a watercourse will be affected. These non-routine works need careful planning and sufficient time given to appropriate surveys before arriving at the final design. The following provides a summary but further information is given in the references. Enhancements should be included as part of the project to provide net biodiversity gain, but stand-alone enhancements should also be considered.

Surveys

Sufficient background information is a prerequisite to non-routine works, not only because it will inform design, but because it will be required to ensure the works are Water Framework Directive compliant and/ or comply with the need for the preparation of an Environmental Statement. Background information, including from the relevant Environmental Records Centres and an initial walk over, will help define the scope of required surveys which include those for protected species, River Corridor Surveys or River Habitat Surveys. In addition, it will be necessary to consider the need for further geomorphological surveys and detailed engineering plans depending on the proposed works. They will need to be undertaken.

Design

The design of non-routine works should always be undertaken on a case by case basis although options can be taken from suites of techniques such as those given in the handbook, 'Good Ecological Potential in Fenland Waterbodies'. In considering options, it is important to consider the potential to return a watercourse to near natural state as far as is practicable, not only so as to comply with the WFD but also to provide the maximum biodiversity benefit. Most, but not necessarily all, watercourses will be classed as either Heavily Modified Waterbodies or Artificial waterbodies and measures must be considered which will restore hydro-geomorphology without having a significant adverse impact on the function of the watercourse.

Factors which will be considered are flow, mitigation measures that will restore hydromorphology, and elements that may be non-sensitive and sensitive

depending on the project. These last will include physico-chemical matters, such as dissolved oxygen or nutrients, and biological elements including for example fisheries or invertebrate assemblages.

Mitigation Measures

A process of identifying a complete set of potential mitigation measures should be undertaken. These may include those which improve marginal habitat, improve fish passage, provide improved maintenance techniques (see Chapter 8), allow appropriate water level management and limit the detrimental effects of water management structures. Many can be free standing enhancements, others will need to be incorporated in wider watercourse works. Some measures are only appropriate on certain widths of watercourse or certain flow characteristics or flow. Where appropriate there will be full consultations with the relevant bodies e.g. Natural England and the Environment Agency.

Appendix 1 includes a table taken from the 'Good Ecological Potential in Fenland Waterbodies' identifying mitigation measures that may help to improve the ecological potential as a result of works. Other opportunities are identified in the Drainage Channel Biodiversity Manual. There is also an overlap between some techniques described in Chapter 8 Routine Maintenance.

Outside non-routine watercourse works the Bedford Group and the Ely Group will take every opportunity to enhance or create features of conservation interest under their permissive powers and in agreement with the landowner provided that it can be demonstrated that tangible benefit will result. Additionally it must be proven that there is likely to be no increase in maintenance requirements and no adverse effects. These actions may have been identified within Biodiversity Action Plans produced by each Boards or may be *ad hoc* enhancements as the opportunity arises. This may be proposed by supervisors or the ecologist may propose enhancements, they may arise from the consultation procedure or they may be proposed as additions to works on a watercourse by conservation bodies or other persons. Examples include:

In channel works

2 stage channel, creation of riffles, pools, sinuosity, backwaters, weirs, flow detectors, toe boarding, multi stage channels, deposition of gravels, aquatic planting, revetment works, removing obsolete water control structures, pool creation at ditch junctions.

Bank works: change of batter, high level / low level berms, vertical faces, bank protection (including coir rolls, geotextiles, faggotting, spiling, hurdles, reed planting), marginal planting, tree planting, specialist grass seeding, replacement of hard bank re-inforcement.

Adjacent Land

Pond creation, scrape creation, reedbed creation specialist grass seeding on floodbanks, otter holts, bird boxes, tree and scrub planting.

EIA

Consideration will need to be given to the need to prepare an Environment Statement as required by the Environmental Impact Assessment (Land Drainage Improvement Works) (Amendment) Regulations 2017 and advertise as necessary. This may be required if there is likely to have a significant effect on the environment, for example, if there is channel modification such as deepening, or widening or installation of a structure.

Planning Permission

Most land drainage improvement works undertaken by the IDBs will be under the permitted development rights. Some works, particularly stand-alone enhancement works may need planning permission in their own right, for example construction of a pond. All necessary consents will be sought.

Waste Disposal

Management of aquatic and riparian plants and desilting may create waste requiring disposal off-site. This is most likely to occur on non-routine operations and may need a permit from the Environment Agency.

Appendix 9.1: Possible Mitigation

Taken from 'Good Ecological Potential in Fenland Waterbodies'

Figure 2.13 MITIGATION MEASURES TABLE – pressures, impacts, case-studies & information sources, and hydromorphological/biological effectiveness.



Working with form and function

	Mitigation measure	Pressure	Impact
A	Remove obsolete structure	Dams, sluices, weirs and gravel trap	Loss of sediment continuity (longitudinal) - build-up of sediment upstream, reduced bed load downstream
B	Remove hard bank reinforcement / revetment or replace with soft engineering solution	Hard bank protection, such as steel piling, vertical walls. Includes hard bank protection in a state of disrepair	Loss of riparian zone / marginal habitat / loss of connectivity / loss of sediment input / loss of wave energy absorption; Loss of sediment continuity (lateral) - build-up of sediment in the channel (flood protection, land drainage, urbanisation only)
C	Preserve and, where possible, restore historic aquatic habitats	Hard bank protection, such as steel piling, vertical walls. Includes hard bank protection in a state of disrepair	Loss of riparian zone / marginal habitat / loss of connectivity / loss of sediment input / loss of wave energy absorption; Loss of sediment continuity (lateral) - build-up of sediment in the channel (flood protection, land drainage, urbanisation only)
D	Increase in-channel morphological diversity, e.g. install in-stream features; 2 stage channels	Realignment / Re-profiling / Re-grading	Loss of morphological diversity and habitat
E	Re-open existing culverts; alteration of channel bed within culvert	Culverts	Loss of morphological diversity and habitat; continuity
F	Flood bunds (earth banks) in place of floodwalls; set-back embankments; Improve floodplain connectivity	Flood banks and flood walls	Loss of riparian zone / marginal habitat / loss of lateral connectivity / loss of sediment input

Structural modification

G	Enable fish access to waters upstream and downstream of impoundment	Impoundments / Locks and weirs/ Dams, sluices and gravel traps/ tidal barrages	Loss of biological continuity; disruption of habitat connectivity/continuity - interference with fish population movements
H	Manage fish entrainment in intakes	Pumping station operations	Fish entrapment
I	Preserve, and where possible, enhance ecological value of marginal aquatic habitat, banks and riparian zone	Hard bank protection, such as steel piling, vertical walls. Includes hard bank protection in a state of disrepair; trampling and erosion of riparian zone	Loss of riparian zone / marginal habitat / loss of connectivity / loss of sediment input / loss of wave energy absorption; Loss of sediment continuity (lateral) - build-up of sediment in the channel (flood protection, land drainage, urbanisation only)
J	Operational and structural changes to locks, sluices, weirs, beach control, etc.	Impoundments / Locks and weirs/ Dams, sluices and gravel traps/ tidal barrages	Loss of sediment continuity - build-up of sediment upstream, reduced bed load downstream; loss of biological continuity - interference with fish population movements

Figure 2.13 MITIGATION MEASURES TABLE – pressures, impacts, case-studies & information sources, and hydromorphological/biological effectiveness.

	Mitigation measure	Pressure	Impact
Operations and maintenance	K Appropriate techniques to prevent transfer of invasive species	Vegetation control	Transfer and establishment of alien invasive species
	L Appropriate vegetation control regime	Vegetation control	Physical disturbance of bed and or bank- increased sediment input; sediment mobilisation and loss of marginal / riparian vegetation
	M Retain marginal aquatic and riparian habitats	Realignment / re-profiling / regrading	Loss of morphological diversity and habitat
	N Sediment management strategies (develop and revise)	Sediment management (including dredging)	Direct loss of / impact to aquatic habitats / hydromorphology; transfer of fine sediment downstream; bankside erosion and impacts to riparian habitats;
	O Appropriate channel maintenance strategies and techniques	Disturbance to channel bed and margins Removal/clearance of urban trash and woody debris	Loss of aquatic habitats; transfer of fine sediment downstream
Water Management	P Appropriate water level management strategies, including timing and volume of water moved	Artificial water level management	Manipulation of water levels resulting in loss of habitats and access to habitats, increased erosion and impacts on riparian habitats and vegetation (at low water level), drowning of riparian habitats and vegetation (at high water level)
	Q Appropriate techniques to align and attenuate flow to limit detrimental effects of pipes, inlets, outlets and off-takes	Pipes, inlets, outlets and off-takes	Hydromorphological alterations of water and sediment inputs through artificial means
Education	R Inform landowners on sensitive management practices	Urbanisation; intensive agricultural practice	Changes to vegetation, hydrology and sediment supply

Notes to Table

- Mitigation Measure – see map (page 28) for measures in place in a schematic Fenland landscape referred to by the Mitigation Measures letter A - R
- See Section 3.1 for explanation of Mitigation Measure, pressure, impact and response
- See Figure 2.12 for further information on hydromorphological and biological indicators.
- Effectiveness: ✓ = Effective ✗ = Not effective ? = Effect unknown
- The column 'Case studies' list the case studies described in full in Section 3 of this guide. Where a case study may also apply to another Mitigation Measure (MM), this is indicated.
- The column 'ADA/NE' cites the reference numbers to appropriate management techniques described in ADA/NE 'The Drainage Channel Biodiversity Manual'

Appendix 9.2: Example form to promote enhancements

**PROPOSALS FOR ENHANCEMENT WORKS
TO BE UNDERTAKEN BY OR CONTRIBUTED TO
BY THE BEDFORD GROUP OF INTERNAL DRAINAGE BOARDS**

1. Site	
2. Grid reference	
3. Watercourse number	
4. Length of watercourse involved	
5. Area of adjacent land involved	
6. Body or person making proposal	
7. Nominated officer	
8. Address	
9. Contact number	
10. Name and address of riparian or other land owner	
11. Occupier's name and address	
12. Has the owner/ occupier been approached about this proposal?	
13. Does it require capital works to be carried out by the IDB? <i>Describe</i>	
14. Will works attract Defra grant-aid?	

<p>15. Details of proposal. <i>Please provide as full details as possible including size, slopes, depth, spoil disposal, water quality, availability of water, vegetation of banks. Detail conservation benefit. If necessary please attach a separate sheet.</i></p>	
<p>16. Will it lead to an increased or decreased maintenance requirement from the IDB? <i>Please explain.</i></p>	
<p>17. Is there any public relations benefit to the proposer or IDB?</p>	
<p>18. Estimated cost of the works. <i>Please provide a break down if possible. Include earth-works, seeding, planting etc.</i></p>	
<p>19. Is there a time of year or deadline that the work should be carried out?</p>	
<p>20. Are you aware of anyone who needs to be notified? Who?</p>	
<p>21. Does it need planning or other permission including byelaw consent from the IDB, Environment Agency or both?</p>	

<p>22. What management would need to be carried out on the proposed works? <i>Please give details</i></p> <p>Short-term?</p> <p>Long-term?</p>	
<p>23. What costs are involved?</p>	
<p>24. Who will undertake this management?</p>	
<p>25. Will they enter into an agreement with the IDB?</p>	
<p>26. Is the proposal likely to affect any other land owner or any public or private property? Describe.</p>	
<p>27. Are there any constraints to the successful achievement of this proposal.</p>	

Please use additional sheets if there is insufficient space on this form.

CHAPTER 10: INITIATIVES

As part of their conservation duties, where possible and compatible with their responsibilities, the IDBs will participate or provide support for any of the local biodiversity initiatives. In the Bedford Group area this may include the Upper Bedford Ouse Catchment Partnership (including river wardens), projects undertaken by the Bedfordshire Rural Communities Charity, Greensands Trust, Forest of Marston Vale, the Wildlife Trusts, the Milton Keynes Parks Trust and the Bedford and Milton Keynes Waterways Trust. In the Ely Group area this will include the relevant Wildlife Trusts, projects run under the auspices of Suffolk County Council including the Landscape Partnership project for the Wet Brecks and the 'New Life on the Old West' project.

Support will also be given, where appropriate, for members of the farming community who have entered or who wish to enter the Countryside Stewardship scheme under the arable, mixed farming or lowland grazing options.

Each Board has prepared a Water Level Management Plan for hydrologically sensitive SSSIs and these will be subject to regular review starting in 2021.

Similarly, the Board Biodiversity Action Plans, prepared in 2010 as a, then, MAFF initiative, will be reviewed on a regular basis starting in 2021.

A list of current BAPs and WLMPs are included in Appendix 10.1 and 10.2.

As part of the high level targets, Defra has included the requirement to report to the Environment Agency on all losses and gains of habitats covered by Biodiversity Action Plans as a result of their flood and coastal defence operations. Data provided is available on the Defra website.

APPENDIX 10.1: CURRENT BIODIVERSITY ACTION PLANS

All are available via the Group websites and are due for review.

Ely Group

Burnt Fen IDB
Cawdle Fen IDB
Lakenheath IDB
Littleport & Downham IDB
Middle Fen & Mere IDB
Mildenhall IDB
Old West IDB
Padnal & Waterden IDB
Swaffham IDB
Waterbeach Level IDB

Bedford Group

Alconbury and Ellington IDB
Bedfordshire and River Ivel IDB
Buckinghamshire and River Ouzel IDB

APPENDIX 10.2: CURRENT WATER LEVEL MANAGEMENT PLANS

All are due for review

Ely Group

Stow cum Quy
Soham Wet Horse
Shippea Hill
Lakenheath Poor
Pashford Pools
Delph Bridge Drain
Wilde Street SSSI

Bedford Group

Flitwick Moor SSSI
Fancott Woods and Meadows SSSI
Tebworth Marsh SSSI