



King's Lynn Internal Drainage Board

Standard Maintenance Operations for the Fens

Introduction

Ditches and drains in intensively farmed arable land are usually regarded as being of less ecological interest than those of grazed pastures, but the very fact they are surrounded by intensively managed land means that they may provide the richest habitats in these arable areas. Drains and ditches have the potential to provide excellent corridors and aquatic and terrestrial habitats for wildlife. It is therefore imperative that these watercourses are maintained in such a way as to present the minimum impact on the wildlife within but ensure adequate and unimpeded drainage for the agricultural and residential interests in the catchment itself.



Development of the Standard Maintenance Operations

Regular maintenance of the Board's "main drains" is essential for land drainage, flood risk management and for maintaining biodiversity of the watercourse system. The "Standard Maintenance Operations" (SMO) have been developed as a result of the Board having to apply for assent from Natural England before works are carried out on an internal drainage board watercourse within a Site of Special Scientific Interest (SSSI). The Standard Maintenance Operations has been set wider than just the watercourses within a SSSI and encompasses the whole of King's Lynn Internal Drainage Board area. The Standard Maintenance Operations provides guidance on the appropriate standards to be achieved when undertaking maintenance works, so that work is carried out sympathetically, and with biodiversity interests kept firmly in mind, whilst also, taking into consideration the operational needs of the catchment served.



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The SMO takes into consideration the management of Biodiversity Action Plan Species such as Water Vole.

Control of Emergent and Submerged Vegetation

The Board uses a variety of wheel mounted machines, some of which are equipped with a flail mower for control of bankside vegetation and roding buckets for submerged or emergent vegetation. Again where weed cutting has to take place during the nesting season, due regard will be taken to avoid nesting birds, ever bearing in mind the legal responsibilities set out in the Wildlife and Countryside Act (1981). A methodology is in place for checking for nesting birds.



'The margins of ditches are extremely important areas for invertebrates, which feed on the plants or live amongst stems in shallow water'

Wherever possible, the work will be carried out on only one side of the drain in any one year. Where heavy growth necessitates and in order to satisfy conservation interests wherever possible, alternate banks will be maintained in any one year. This type of maintenance will not seriously affect flood flows as water levels will rise above the lower vegetation when greater flows occur.

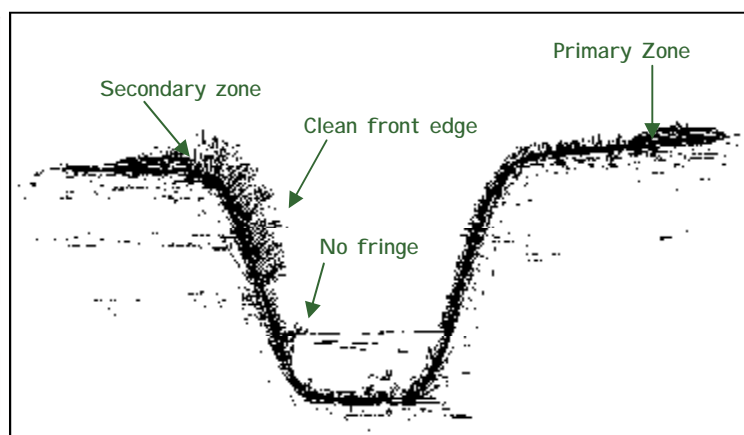
Some banks will be maintained more than once a year, though will be dependent on growth and ease of access to the main drains. Plant species diversity is maintained better by cutting twice a year than by cutting once a year or not at all.

It has also been shown that when bank side cutting is combined with ditch clearance, re-colonization of floating and submerged species is more successful with cutting twice a year compared to cutting only once every two years.

Weed cutting will be carried out annually as follows:

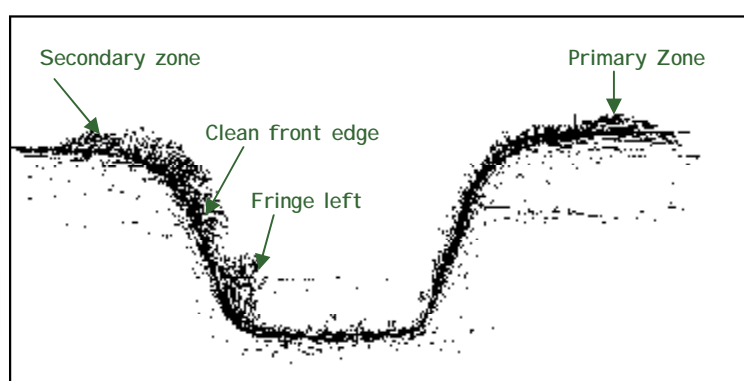
- Emergent weed will be removed across the width of the watercourse leaving a margin of emergent fringe in drains greater than 2m wet width. This will be carried out annually and where access permits will be cut from the alternative bank on consecutive years.
- In drains less than 2m wet width, drains will have one bank fully flailed and one cut taken on the opposite bank at the water line.
- Where drains are greater than 2 m, a margin of emergent vegetation as wide as practicable will be left uncut at the water's edge depending on the gradient of the banks. Emergent margins will be cut on a rotational basis depending on growth.
- Where watercourses are important for the drainage of residential or agricultural areas, all aquatic weed will be removed from drains greater than 2m. These drains represent 2% of the district.
- Weed removed from the channel will be placed on the top of the bank.
- Where circumstances dictate, special treatments will be applied.

Drain less than 2 metres wet width



In these narrow drains, all emergent vegetation should be removed and no fringe should be left. All the removed vegetation should ideally be placed behind the machine in the primary zone. However, where circumstances dictate, vegetation can be put across the drain on the opposite brink (secondary zone), but in this situation, vegetation must not be allowed to slip down the bank face and the front edge of the drain should remain clean of mud.

Drain greater than 2 metres wet width



In wider drains, a fringe of emergent vegetation, as wide as the drain permits, should be left *in situ*. All removed vegetation should ideally be placed behind the machine in the primary zone. However, where circumstances dictate vegetation can be put across the drain on the opposite brink (secondary zone), but in this situation, vegetation must not be allowed to slip down the bank face and the front edge of the drain should remain clean of mud.

Herbicide Use

Herbicide use in general is counter to the Water Management Alliance Conservation Policy. However, this policy also states that chemical control will be considered where weed growth cannot be effectively controlled by mechanical means.

Herbicide use will also be considered in the case of alien invasive species, e.g. Japanese Knotweed, Giant Hogweed etc. Where invasive species grow on the land owned by the Board or watercourse, then it is the Board's responsibility to clear it. Where these species grow elsewhere, it will be the responsibility of the landowner to make arrangements for clearance of the plants concerned. The landowners will be contacted and asked to make provision to prevent the alien species being spread in accordance with the Wildlife and Countryside Act (1981).

Before herbicides can be used, written consent must be obtained from the Environment Agency. If chemicals are to be used, then only herbicides cleared for aquatic use will be used in or beside water (in accordance with the "Guidelines for the use of herbicides on weeds in or near watercourses and lakes" DEFRA, the Control of Pesticide Regulations 1986 and the Food and Environment Protection Act 1985. The storage and use of these substances will also comply with the Control of Substances Hazardous to Health Regulations 1988. It should be noted that the use of herbicides within the Board's drainage districts is also affected by agri-environment scheme requirements.

Desilting Maintenance



A Board's wheeled vehicle carries out desilting work on a boards main drain.

The regular desilting of the Fenland drainage system is of fundamental importance to the agricultural requirements of the area. The maintenance of these ditches also prevents them becoming over silted or drying up, as a large array of wildlife use these wet corridors. The frequency of excavation of drainage systems will depend upon the characteristics, location and accretion rate of a watercourse. Channels will usually be de-silted only when around 100mm of silt has accumulated. This means that the majority of fenland drains are maintained annually.

Heavy desilting work occurs rarely and an individual environmental assessment will be made as and when it is required.

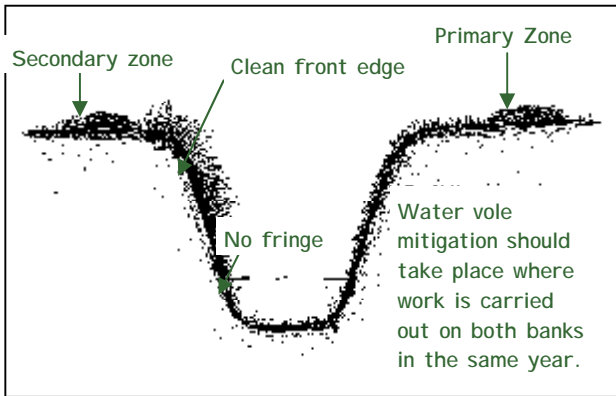
The Consortium use hydraulic excavators which can operate through 360° together with tractor mounted side arm operated roding buckets to dredge watercourses. Sometimes the bed and banks are re-profiled to ensure their efficient use as land drainage channels and flowing waters and to accommodate and store flood flows.

Where work is to be undertaken on both sides of the watercourse then appropriate mitigation measures will be undertaken where the presence of water vole has been established.

The removal of material from the beds of watercourses will be undertaken in order to promote good aquatic communities and will be carried out as follows:

- on watercourses less than 2m wide (wet width), silt will be removed from the bed of the watercourse and placed on one bank only over its entire length.
- on a watercourse greater than 2m (wet width), a fringe of vegetation and sediment will be left on the opposite bank. Operations will be conducted where possible from the opposite bank in rotation, where access permits.
- The banks of narrow watercourses will be reshaped where bank slips have occurred, either naturally or as a result of poaching. Where this has taken place batters will be laid back on one side only. Where work is required on both sides, appropriate water vole mitigation measures will be undertaken before work proceeds.
- Where banks are to be reshaped, consideration will be given, where practicable to the creation of marginal wetland habitats (berms).

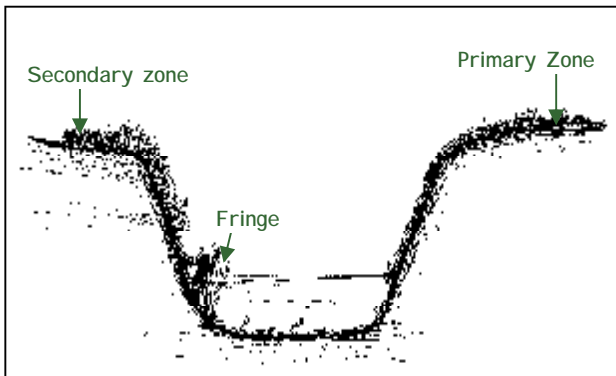
Drain less than 2 metres wet width



In these narrow drains, **no fringe** is required to be left. All the slubbings should ideally be placed behind the machine in the **primary zone** and spread to 100–150mm. However, in some circumstances, mud can be put across the drain on the opposite brink (**secondary zone**). In this situation, it should be spread so as to prevent mud slipping down the face of the bank and allow the **front edge** of the drain to remain clean of mud.

Where work is to be carried out on both sides of the drain in the same year, appropriate water vole mitigation should take place.

Drain greater than 2 metres wet width



In wider drains, a **fringe** is required to be left. All the slubbings should ideally be placed behind the machine in the **primary zone** and spread to 100–150mm. However, in some circumstances, mud can be put across the drain on the opposite brink (**secondary zone**). In this situation, it should be spread so as to prevent mud slipping down the face of the bank and allow the **front edge** of the drain to remain clean of mud. In some large drains, the slub should be placed only in the **primary zone**, due to the large quantities of mud that will be removed.

Dumping and Spreading of Spoil

The Board has powers under Section 15 of the Land Drainage Act, 1991 to deposit material arising from excavation of a watercourse on the banks. In the majority of cases, this will consist of small quantities of silt and vegetation from the regular maintenance procedure.

However, following any large scale desilting or excavation, spoil spreading usually takes place the year following excavation, between mid-July and October. Spreading is accomplished using a hydraulic excavator using the back-grader when the spoil is in a suitable condition to be spread. In general, spoil will be spread thinly some distance back from the drain margins, although on request, spoil will be formed into an embankment on top of the watercourse bank if this does not create further access problems.

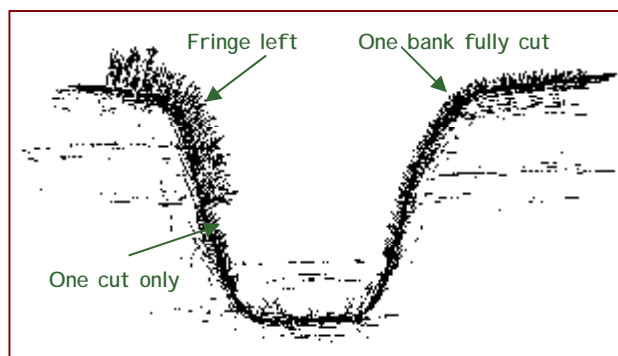
Where access permits, every effort will be made to spread slubbings on the most appropriate side of the channel. In particular, care will be taken to avoid floristically rich areas, where an alternative disposal site is available. Material cleared from a channel is usually spread thinly to a thickness of between 100-150mm and away from the edge of the watercourse. Every effort will be made to spread the spoil evenly to facilitate easy access for topping the weed and thistle growth which may result. Landowners are encouraged to control weed infestation by mechanical means following maintenance work.

The Board has an understanding that they will only spread spoil if the owner or occupier waives any claim for compensation.

Mowing and Control of Bankside Vegetation



This deep fen drain has had one side fully flailed and one cut taken on the opposite bank. The flail is set approximately 100mm above ground level. A fringe of long vegetation has been left on one bank to catch spray drift and provide food and shelter for a variety of wildlife. Left at the top like this, the fringe will not interfere with the land drainage function of the drain.



The Board removes vegetation from watercourses by a variety of means, the most efficient being mechanically, using either a Roding bucket attached to a hydraulic excavator. Where this is not practical, manual clearance is employed using cromes and strimmers.

Wherever possible, vegetation clearance will not be carried out during the nesting and spawning period (between April and mid-July). The method of clearance chosen will depend upon the extent of weed growth found in a particular drain.

A methodology of working practice is in place for checking for nests whilst work is required to be carried out during the bird breeding season.

Again where weed cutting has to take place during the nesting season, due regard will be taken to avoid nesting birds ever bearing in mind the legal responsibilities set out in the Wildlife and Countryside Act (1981). A methodology is in place for checking for nesting birds.

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Burning and Tree Cutting



A site being cleared of gorse bushes.

It is occasionally necessary for the Board to dispose of vegetable matter (mostly timber) by burning. This generally occurs when a substantial blockage such as a fallen tree has been removed from a watercourse, or if the Board's operators have found it necessary to trim overhanging trees or shrubs. Sometimes it is necessary to dispose of other debris such as wooden planks, fence posts, etc. that have been brought down by flows from outside the drainage district. Waste timber may also be chipped and removed from site.

Some material may require to be burned. As far as is practicable, fires will be no larger than the conventional domestic bonfire and will be situated only in areas where spoil has been deposited during previous maintenance activities. Burning will take place as a last resort to dispose of this waste material. Care will be taken when burning on peat to avoid underground spreading of fire. Under the Waste Management Licensing Regulations 1994, the Board may burn up to ten tonnes of material at their discretion. Where burning is proposed within SSSI's prior consultation with Natural England will be undertaken.

Pumped Water and Fisheries

Maintaining the flow of water through ditches by regular management (and periodic pumping) will reduce the chances of stagnation and the build up of plants such as duckweed. Dense populations of the latter species cause oxygen depletion and shading out of submerged plants, with further de-oxygenation occurring when the duckweed decays during the winter often resulting in anaerobic conditions.

During hot summer, is it feasible to pump little and often from pumping stations (e.g. Greenbank) where weed will be dying back behind the pumping station leading to anoxic conditions. Anoxic waters being pumped in large quantity during high water may lead to major fish kill.

Roach are a common species within many of the Board's main drains.



Control of Water Levels



The Board control water levels within the Internal Drainage District, generally, in two ways:

- by the maintenance and operation of pumping stations;
- by maintenance and control of water control structures (WCS).

Water control structures normally consist of concrete structures with wing walls into which wooden dam boards can be slotted to vary the height of water in the watercourses. Tipping weirs are also utilized for this purpose.

A tipping weir water control structure, on Leziate Fen ; a SSSI within the Board's catchment area.

Where feasible so as to further nature conservation, water levels will be raised and maintained at a stable level as far as possible and compatible with arable interests. Land managers will be encouraged to accept higher levels if these can be achieved without affecting neighbouring land management interests.

Structures on the Banksides

Structures built on the bankside will be secure and comply with the Health and Safety requirements and Environment Agency guidelines. Structures will be constructed so as not to make the bank unstable, cause subsequent erosion or create an obstacle to the flow of water. The Board does not have a policy to provide infrastructure for angling interests.



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