

## Standard Maintenance Operations Policy Document



Version 1.0

## Training, Revision and Amendment Register

Date	Page Number	Section	Revision Details	Version Number
	-	-		1.0

## TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 LEGISLATION	2
2.1 European Legislation	2
2.2 National Legislation	3
2.3 Protected Species and Habitats and Other Considerations	3
2.4 Statutory Conservation Sites	3
2.5 Emergency Works	4
2.6 Non- Statutory Sites	4
2.7 Non Native Invasive Species	4
2.8 Cultural and Heritage Sites	5
3.0 HOW THE STANDARD MAINTENANCE OPERATIONS WILL WORK PRACTICE	IN 5
4.0 STANDARD MAINTENANCE OPERATIONS METHODOLOGIES	6
	•
4.1 Mowing of Bankside Vegetation	6
<ul><li>4.1 Mowing of Bankside Vegetation</li><li>4.2 Tree and Bush Management</li></ul>	6 7
<ul> <li>4.1 Mowing of Bankside Vegetation</li> <li>4.2 Tree and Bush Management</li> <li>4.3 Disposal of Waste Timber</li> </ul>	6 7 8
<ul> <li>4.1 Mowing of Bankside Vegetation</li></ul>	6 7 8 9 . 10 . 10
<ul> <li>4.1 Mowing of Bankside Vegetation</li></ul>	6 7 8 9 .10 .10 .10 .11 .12 .12
<ul> <li>4.1 Mowing of Bankside Vegetation</li></ul>	6 7 8 9 .10 .10 .11 .12 .12 .12
<ul> <li>4.1 Mowing of Bankside Vegetation</li></ul>	6 7 8 9 .10 .10 .11 .12 .12 .12 .12
<ul> <li>4.1 Mowing of Bankside Vegetation</li></ul>	6 7 8 9 .10 .10 .11 .12 .12 .12 .12 .12
<ul> <li>4.1 Mowing of Bankside Vegetation</li></ul>	6 7 8 9 .10 .10 .11 .12 .12 .12 .12 .12 .12 .12
<ul> <li>4.1 Mowing of Bankside Vegetation</li></ul>	6 7 8 9 .10 .10 .11 .12 .12 .12 .12 .12 .12 .12 .12 .12

10.0 A	APPENDIX I1	6
--------	-------------	---

#### 1.0 Introduction

Many of the ditches maintained by the Broads Internal Drainage Board are of outstanding importance for nature conservation and show a transition from freshwater to brackish conditions across the area. Many nationally scarce freshwater plant species such at water soldier and several pondweed species are present within many of the Board's drains. The area is also home to many Biodiversity Action Plan species and habitats. Working practice is important to conserve and enhance these features of interest, whilst still maintaining the conveyance to the pumps and the water management requirements of the district.

The Broads (2006) Drainage Board manages the water levels in agricultural and residential areas, across the pumped catchments of Broadland, operating in an estimated catchment area of 14,143 Hectares. This area is serviced by 36 pumping stations. Maintenance of the drainage infrastructure has always been achieved by the regular weedcutting of stretches of watercourses. Some desilting has always had a place in the maintenance schedule, to allow for the capacity of drains to be retained.

The Board has had a Standard Maintenance Operations Document since the year 2000. The aim of this document has always been to allow a uniform maintenance procedure to be carried out to a consistently high standard in designated wildlife sites and in Board-maintained ordinary watercourses alike.

The drains within the Broads (2006) IDB catchments are mostly that of artificial or heavily modified watercourses draining toward their respective pumping station.

Recent changes in legislation and key political drivers have recognised the need for a review of maintenance practices currently exercised by the Board, to ensure the sustainable management of their watercourses as natural resources within all catchments. This document hopes to strike the balance between helping the drainage infrastructure to meet the overall good ecological potential required of artificial and heavily modified channels under the remit of the Water Framework Directive but also to ensure sufficient conveyance of water to the pumps during extreme weather events and periods of high flow.

This document also hopes to recognise the importance of the sustainable management of drainage catchments as natural environmental systems and as an ecosystem service and recognises the importance of managing the Boards drains appropriately in moving toward, helping the UK Governments aim to halt decline in biodiversity by 2020. The manner in which the future maintenance regime responds to climate adaptation is also a consideration when looking at the operational needs and flood risk of the catchment served.

The Standard Maintenance Operations document has been reviewed in consultation with officers of the Board and officers of Natural England and the Environment Agency to produce a WFD-friendly maintenance document, suitable for the maintenance requirements of the Broads (2006) IDB.

## 2.0 Legislation

As a Statutory Risk Management Authority, the Broads (2006) IDB operates under the powers of the Land Drainage Act (1991) and complies with various employment focused statutory instruments. As a Drainage Authority it must comply with a number of National and International legislative duties, regarding the aquatic environment, biodiversity and wildlife sites within the IDB District. It should be noted that failure to comply with any of these statutory obligations, has the potential to result in both Personal and Corporate Liability being brought about to both individual Board Members and the Board, by the Enforcement Body. As a result, the Court may issue a fine dependent on the severity of the offence and insist on restorative works being carried out and paid for by the offender; some fines of which may be unlimited. Furthermore some offences may attract a custodial sentence.

The main legislative drivers are as follows:

## 2.1 European Legislation

- The Water Framework Directive (2000) a statutory duty to ensure that reasonable actions are taken to improve the physical and chemical nature of the waterbodies under their management, with the aim of achieving good ecological status or potential of surface waters by 2015. This can be achieved by putting in place environmental improvements or mitigation measures where applicable and undertaking sensitive management of watercourses.
- The Conservation of Habitats and Species Regulations 2010 (as amended - a statutory duty in the exercise of any functions, to have regard to this EC Habitats Directive which provides for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.

#### 2.2 National Legislation

- Wildlife and Countryside Act 1981 (as amended) imposes a statutory duty to protect native species (especially those at threat), control the release of non-native species and protect SSSIs.
- The Countryside and Rights of Way Act (2000) (The CROW Act) this act amends Wildlife and Countryside Act (1981) and enforces a duty for Statutory Authorities to be responsible for conservation and enhancement of SSSIs. It also enhances Natural England's enforcement power.
- Natural Environment and Rural Communities Act (2006) (The NERC Act) a statutory duty to maintain and enhance the natural environment when carrying out flood risk management activities and meet objectives and targets set out in the Norfolk Rivers Biodiversity Action Plan.

## 2.3 Protected Species and Habitats and Other Considerations

There are networks of protected species and habits across the UK. Some of these species such as water voles, otters and bats are given full protection under the law for both the individual species and their habitats. Some habitats and species are identified in the UK Biodiversity Action Plan. Some habitats and species are covered by separate legislation; such as the Badgers Act, the Salmon and Freshwater Fisheries Act, hedgerow legislation and tree Preservation Orders. We need to ensure that this legislation is considered and complied with when undertaking our works.

## 2.4 Statutory Conservation Sites

Where operational activities are to be carried out within or adjacent to statutory designated conservation sites such as SSSIs, SACs, Ramsars or SPAs, permission is required from Natural England before any work can start.

Prior to undertaking an operation which may affect a SSSI, the IDB is required to give formal notice to Natural England under section 28H of the Wildlife and Countryside Act 1981 (as amended).

Prior to undertaking an operation in or adjacent to a European site (SAC, SPA, Ramsar), then under the Conservation of Habitats and Species Regulations 2010 (as amended) the IDB must carry out a Habitat Regulations

Assessment (Habs Reg Assessment) or where necessary an Appendix 11 Assessment prior to undertaking an operation. This is carried out in consultation with Natural England. The burden of proof is on the proposer (i.e. the BIDB) to determine that no significant effect will take place on any of the features of interest of the protected site.

#### 2.5 Emergency Works

Emergency works may be required to be carried out during exceptional or unmitigated circumstances; such as in the event of a structural failure, pump seizure or during periods of extreme weather conditions, such as a tidal surge or flood event. In many of these circumstances, third party's and their property may be put at risk. In these, or similar events, it may be necessary to undertake Emergency Works or increase pumping to protect people and their property within the Broads IDB catchment area. However, these emergency procedures may have the potential to impact on a SSSI or European Protected site. In an emergency situation, it is reasonable to carry out operations in or near the protected site. However, Natural England should be informed of the operation as soon as practicable.

Reporting the emergency operation to Natural England is key to determining a satisfactory outcome to the emergency situation and prevents the deterioration of the site and the well being of species therein. Reporting the operation is fundamental to prevent legal action being taken against the Board for carrying out an illegal operation in a designated site.

## 2.6 Non- Statutory Sites

Non-statutory sites such as County Wildlife Sites (CWS) do not require any formal written permission; however these sites are noted for their habitats and species, some of which may be protected. These sites have a significant value within the county and it is within everybody's interest to ensure that work does not impact on these sites. Where BIDB are required to work on or near CWS, then the NRIDB will liaise with the Norfolk Wildlife Trust prior to starting works.

## 2.7 Non Native Invasive Species

The spread of many Non-Native Invasive Species eg. Japanese Knotweed, *Crassula helmsii*, Parrots feather is illegal under the Wildlife and Countryside

Act 1981 (as amended). The BIDB therefore must not cause these species to spread as a result of our activities.

The Killer Shrimp is also of particular relevance in Broadland and the Boards operators will pay due diligence to the process of "Check, Clean and Dry", whilst undertaking its operations.

#### 2.8 Cultural and Heritage Sites

Landscape, cultural and heritage sites may be present within work areas or adjacent land, some of these such as Scheduled Ancient Monuments and Conservation areas require permission to undertake work on or adjacent to them.

#### 3.0 How the Standard Maintenance Operations will work in practice

This document will be called the Standard Maintenance Operations Policy Document and will be used to inform outside bodies of the way in which the Broads (2006) IDB intend to carry out all future maintenance practices and will act as the basis from which all maintenance practice will initiate. The document will be subject to review on an annual basis. Version control will allow any changes to be recorded.

A further document "Field Notes for Operatives and Contractors" (Field Notes) will be used by operatives, and contractors on site. This will be a more concise document, tailored to the relevant needs of the operative. The Field Document will be subject to review following any amendments to the Standard Maintenance Operations Policy Document. Version control will allow any changes to be recorded.

All Operatives, Contractors and Supervisors asked to carry out maintenance for the BIDB now and in the future, will undertake a Training session based on the Standard Maintenance Operations Policy Document. Training needs will be reviewed in line with any future amendments to the Standard Maintenance Operations Policy Document.

Prior to initiating any Maintenance job, operatives and contractors will receive a job specific tool box talk, from the Operations Manager. All watercourse maintenance will receive close supervision by the Operations Manager.

## 4.0 Standard Maintenance Operations Methodologies

The methods for undertaking each maintenance activity are described in this section.

Diagrams pertaining to each Maintenance Activity are illustrated in Appendix I.

## 4.1 Mowing of Bankside Vegetation

The aim of mowing is twofold:

- 1. it allows unimpeded visibility for the driver
- 2. it prevents the establishment of trees and scrub along the nearside waters edge.

Mowing of the bankside vegetation will be carried out by a tractor and flail or a side mounted flail on a 360° hydraulic machine. In some areas where access cannot be achieved or is considered inappropriate for a machine, then strimmers and hand tools will be utilised.

Mowing of bankside vegetation will be undertaken throughout the year, though in bird breeding season works will only take place where necessary in low risk environmental areas, such as open grazing marsh. However, prework checks will take place between March to September to ensure nesting birds are not present, prior to maintenance and at all times consider the Boards statutory responsibilities set out in the Wildlife and Countryside Act 1981 (as amended).

Where protected species or breeding birds are found then effective mitigation will be put in place to ensure compliance with the law. This may mean delaying works depending on what is found.

## Mowing Method

- This method will be undertaken on drains of all width.
- Mowing should take place from one side only, down the nearside batter only to the waters edge and where necessary one cut along the nearside bank top.
- The flail height will be set to 75 -100mm.

No WFD assessment required prior to instigating this method

#### 4.2 Tree and Bush Management

Bankside trees and shrubs provide shade and keep water cool. Instream branches improve the ecology of the watercourse by providing food and substrate for invertebrates and cover and food for fish.

The aim of tree management is threefold:

- 1. To allow unimpeded access for machinery into a site and prevent damage to the machine eg. Hydraulic pipe work becoming caught up in branches.
- 2. To prevent the sides of watercourses becoming overgrown and in some instances, overshaded.
- 3. To prevent instream blockages occurring in areas of high flood risk.

Tree and bush work can be undertaken between August – March. Prework checks are recommended between August to September and Mid-February to March to ensure nesting birds are not present, prior to maintenance. It is an offence under the Wildlife and Countryside Act (1981) to recklessly disturb a breeding bird or its nest during the bird breeding season.

Veteran trees may be subject to a Tree Preservation Order or may provide roosting sites for bats. Fallen trees or root systems may also act as couches or holts for Otter. It is crucial then that trees are not cleared without prior investigation by the Operations Manager or Technical and Environmental Assistant as this may constitute an offence under the Conservation of Habitats and Species Regulations 2010 (as amended).

Dead trees should be left in situ as ecologically they can provide niches for a rich diversity of species, ranging from invertebrates to birds and bats. These should be left and not be touched without prior investigation by the Technical and Environmental Assistant as this may constitute an offence under the Conservation of Habitats and Species Regulations (2010).

Woody debris is not required to be left in channel as this will impede the conveyance of water to the pumping station. However, consideration should be paid to the utilisation of overhanging branches as shelter and shade for fish and the opportunity to improve instream ecological diversity by other means where possible.

#### 4.3 Disposal of Waste Timber

Where board's operators have found it necessary to remove or trim overhanging trees or shrubs, then trees and bushes can be cut up as wood piles, stacked and left on the banktop to enhance the terrestrial habitat or be removed. Waste timber may be chipped and spread where the landowner is happy for this to occur and where no detriment will be caused to the surrounding environment. Where chipping is required in a designated site, then consultation with Natural England will be undertaken.

Alternatively the chippings or waste timber can be removed from site. No mulching will take place on Broadland grazing marsh.

It may be necessary for some timber to be burned. As far as practicable, fires will be no larger than a conventional domestic bonfire and will be situated only in areas where spoil has been deposited during previous maintenance activities. Care will be taken when burning on peat to avoid the underground spreading of fire. Under the Environmental Permitting Regulations (England and Wales) 2010 a Waste Exemption licence (D7) permits the burning of 10 tonnes of untreated wood in the open during a 24 hour period. Where burning is proposed in a designated wildlife site, prior consultation with Natural England will be undertaken.

Burning and chipping is expensive and will therefore only be undertaken upon request and where no detriment to the surrounding environment will take place.

#### 4.4 Emergent and Instream Weed Control

The Board removes vegetation from watercourses mechanically, using a weed cutting basket attached to a 360° hydraulic machine. Where this is not practical, due to the size of the watercourse or impeded access, then manual clearance is employed using hand tools, such as a chrome.

Emergent and instream vegetation clearance will be undertaken throughout the year, though in bird breeding season works will only take place where necessary in low risk environmental areas, such as open grazing marsh. However, prework checks will take place between March to September to ensure nesting birds are not present, prior to maintenance and at all times consider the Board's statutory duties set out in the Wildlife and Countryside Act (1981) (as amended). No work will take place in designated sites during bird breeding season under normal environmental conditions. Work should not be planned during bird breeding season or between November – February. However, under unusual environmental conditions, consultations will take place on a case by case basis.

The main aim of emergent and instream weed control is to allow unimpeded water flow within the banks of the watercourse and improve conveyance. Weed cutting will take place cyclically as part of a regular rolling programme. In addition, drain maintenance is required to conserve the various stages of colonisation of the drains for their designated features and prevent succession taking place.

To accommodate access to growing crops and in order to satisfy conservation interests, wherever possible alternate banks will be maintained from one clearing cycle to the next..

Some important pumped drains may require maintenance more than once in one year. Wherever possible the work will be carried out on one side of the drain in any one year cycle.

The weeding basket should always be set to ensure no deepening of the watercourse occurs during the process of weed cutting. In most instances in drains greater that 2m, a margin of emergent vegetation will be left uncut at the waters edge as wide as it is practical to do so.

Instream weed control will work in conjunction with the mowing regime specified in Section 3.0.

#### Weedcutting will be carried out using one of a series of options:

#### 4.4.1 In drains less that 2m wet width

In narrow drains all emergent vegetation should be removed and no fringe should be left. Cut material should be set back behind the machine as far as possible or placed on the opposite bank top. No wet vegetation or mud should be allowed to slip down the bank face.

No WFD assessment will be required prior to this operation.

#### 4.4.2 In drains greater than 2m wet width – Leave opposite margin

This practice allows for a margin to be created on the opposite bank. The margin consists of leaving as much wet width vegetation as far as is practicable for the size of the drain *in situ*. The nearside toe should not be exposed or touched by the weedcutting basket.

Cut material should be set back behind the machine as far as possible or placed on the opposite bank top. No wet material or mud should be allowed to slip down the bank face.

The weed cutting basket should be set to ensure that no deepening of the section takes place.

No WFD assessment required prior to instigating this method.

## 4.4.3 In drains greater than 2m wet width – Leave opposite and nearside margin

This practice allows for a margin to be created on both nearside and opposite banks by removing only material from the central section of the watercourse. The margins should be left untouched to encourage recolonization by plants and invertebrates etc.

Cut material should be set back behind the machine as far as possible or placed on the opposite bank top. No wet material or mud should be allowed to slip down the bank face.

The weed cutting basket should be set to ensure that no deepening of the section takes place.

No WFD assessment required prior to instigating this method.

#### 4.5 Instream Silt Removal

The frequency of silt removal will depend upon the characteristics and locations of the watercourse and some will require attention more frequently than others. The cycle will be dependent on the accretion rates of silts in the watercourse. Channels will usually be desilted, only when the depth of silt affects the hydraulic capacity and conveyance of the drain.

Each operation involving instream silt removal will be looked at on a case by case basis as a WFD assessment will be required prior to any desilting operation taking place and mitigation measures put in place as required.

Where there is the need to remove silts from the beds of watercourses the minimum of channel de-silting will be undertaken in order to promote good aquatic communities.

The Board uses hydraulic excavators which can operate through 360° to desilt watercourses.

Margins and water edges will be maintained on a rotational basis, alternate sides of the drain being maintained in one year and the opposite side in the following period where access permits. De-silting as far as is practicable is not undertaken between Mid-March and August. However, where works do occur during this period then a prior assessment of works by the Technical and Environmental Assistant will be made in addition to a methodology for operators to walk the drain. Where protected species or breeding birds are found then effective mitigation will be put in place to ensure compliance with the law. This may mean delaying the works depending on what is found.

Where work is to be undertaken on both sides of the watercourse and where the presence protected species has been established, then appropriate mitigation measures will be undertaken.

Silt removal particularly during warm weather periods will require monitoring using a dissolved oxygen meter to ensure silt loading and temperatures do not impact upon dissolved oxygen levels. During a period of high environmental stress caused by increased temperatures and high suspended organic matter there is the potential for a fish kill.

Desilting operations will be carried out in conjunction with the mowing regime specified in Section 3.0.

Where de-silting has to be undertaken, one of two standard methods will be employed:

#### 4.5.1 In drains less that 2m wet width

In narrow drains all emergent vegetation should be removed and no fringe should be left. All removed slubbings should be set back behind the machine, or where circumstances dictate, slubbings can be put across the drain as far as possible on the opposite bank top. Wet material or mud should not be allowed to slip down the bank face. The front edge of the drain should remain clean.

#### 4.5.2 In drains greater than 2m wet width – Leave opposite margin

This practice allows the drain to be desilted across the majority of the width whilst working only from one bank, leaving a marginal fringe of silt and vegetation on the opposite side of the drain to act as a seed bank.

An appropriate margin of silt and vegetation should be left *in situ* as far as is practicable for the size of the drain. The nearside toe should not be exposed or touched by the slubbing bucket.

Cut material should be set back behind the machine as far as possible or placed on the opposite bank top. No wet material or mud should be let slip down the bank face.

No deepening of the section should take place.

# 4.5.3 In drains greater than 2m wet width – Leave opposite and nearside margin

This practice allows for a margin to be created on both nearside and opposite banks by removing only material from the central section of the watercourse. Both opposite and nearside margins should be left untouched to act as a seed bank and encourage recolonization by plants and invertebrates etc.

Slubbings should be set back behind the machine as far as possible. No wet material or mud should be allowed to slip down bank face.

No deepening of the section should take place.

## 4.6 Spreading of Silts

The Board has powers under Section 15 of the Land Drainage Act, 1991 to deposit material arising from the maintenance of a watercourse on the banks of a drain within the 9m byelaw distance. The Board has an understanding

that they will only spread spoil if the owner or occupier waives any claim for compensation.

Deposits will be spread on one side, the working side of the channel only. Particular care will be taken to avoid floristically rich areas or low wet areas.

Material cleared from a channel is usually spread thinly up to approximately 5m from the water course to prevent spoil being washed back into the drain and reduce further nutrient enrichment of the watercourse. Grips will be cut to allow water to drain away. Where possible the spoil will be shared over a period of years by both banks. Every effort will be made to spread spoil evenly to facilitate easy access for topping the weed and thistle which may grow as a result of the desilting process. Landowners are encouraged to control weed infestation by mechanical means following maintenance work.

No gravels will be removed from the watercourse and no deepening of the watercourse will take place.

## 5.0 Bank Reprofiling

Sometimes the bed and banks of watercourses require to be re-profiled to ensure their efficient use as land drainage channels to accommodate and store flood flows. Banks may have been poached by cattle or red deer or slips may have occurred and it may be a necessary to reprofile some sections of drain. However, the environmental risk involved in bank reprofiling in the Broads IDB catchments is deemed high, particularly to water vole whose habitat and welfare, now falls under protected species legislation of the Wildlife and Countryside Act 1981 (as amended).

No bank reprofiling should be undertaken without first assessing the drain and receiving instruction from the Technical and Environmental Assistant. Appropriate mitigation measures may also be required prior to any reprofiling work.

Consideration should be given where practicable and where landowners are in agreement, to reshaping of banks to create marginal wetland habitats (berms), however, capital grant in aid may be required in this instance.

A WFD assessment will be required for large sections of reprofiling work. Minor repairs will not require a full WFD assessment but consideration must still be paid to ensuring no impact will be made on protected species.

#### 6.0 Herbicide Use for Weed Control

Chemicals are used rarely for vegetation control in the Broads (2006) Internal Drainage District. However chemical control will be considered where appropriate and where weed growth cannot be effectively controlled by mechanical means, notably in the case of non native invasive species, such as Japanese Knotweed or in inaccessible areas.

Before any herbicides can be used in or near watercourses, written consent must be obtained from the Environment Agency in the way of an Herbicide Licence. Consultations with Natural England must also take place before the licence can be issued, where the chemicals may have an impact on designated areas.

If chemicals are to be used, then only herbicides and adjuvant cleared for aquatic use will be used in or beside water i.e. Glyphosate (Roundup Bioactive) and Top film.

These chemicals will only be used in accordance with 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 2002. It should be noted that the use of herbicides within the Board's drainage district is also affected by agri-environment scheme requirements.

No WFD assessment required prior to instigating this method.

## 7.0 Culvert Installation or Repair

Any culvert installation or repair will need prior assessment by the Technical and Environmental Assistant as a WFD assessment may be required depending on the location and the length of the culvert to be installed.

#### 8.0 Control of Water Levels

The control of water levels is of paramount importance to a number of stakeholders within the Broads (2006) IDB catchment area; urban and rural communities, landowners and a large area of national and internationally designated wildlife sites. Conservation interests, flood risk and agriculture all need to be considered to ensure the water management requirements of all stakeholders are balanced appropriately. Water levels are physically controlled within the Broads Internal Drainage Districts in two ways:

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

Where feasible to do so, 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. Water levels will in the future be prescribed within agreed Water Level Management Plans. These plans will be built to accommodate the fluctuations required of normal summer and winter water levels. Any deviation from these prescribed levels will require a Habitats Assessment to protect the conservation interests of the area.

#### 9.0 References

Broads Internal Drainage Board (2008). Standard Maintenance Operations for Broadland. Water Management Alliance.

Environment Agency (2012). Delivering consistent standards for sustainable asset management. Maintenance Standards Version 3, March 2012.

Kings Lynn Consortium of Internal Drainage Boards (2000). Standard Maintenance Operations.

Norfolk Rivers Internal Drainage Board (2013). Standard Maintenance Operations for Rivers. Water Management Alliance.

## 10.0 Appendix I

## Mowing and Control of Bankside Vegetation – Section 4.1



#### **Emergent and Instream Weed Control – Section 4.4**

Drain less than 2 metres wet width



#### In drains less than 2m

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 brink on the **opposite bank**, but in this situation, vegetation or mud 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 – Leave Opposite Margin



#### In drains greater than 2m

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 brink of the **opposite bank**, 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 – Leave opposite and nearside margin



#### In drains greater than 2m

In some situations it may be appropriate to remove weed from the centre of the channel, leaving the margins untouched to encourage recolonisation (This will be recommended under the guidance of the Technical and Environmental Assistant). 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 brink of the opposite bank, but in this situation, vegetation or mud must not be allowed to slip down the bank face and the front edge of the drain should remain clean of mud.

#### Instream Silt Removal – Section 4.5

Drain less than 2 metres wet width



#### In drains less than 2m

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



#### Drain greater than 2 metres wet width – Leave opposite margin

#### In drains greater than 2m

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

#### Drain greater than 2 metres wet width – Leave opposite and nearside margin



#### In drains greater than 2m

In some situations it may be appropriate to remove slubbings from the centre of the channel, leaving the margins untouched to encourage recolonisation (This will be recommended under the guidance of the Technical and Environmental Assistant). All the slubbings should ideally be placed behind the machine in the primary zone. However, where circumstances dictate, vegetation and mud can be put across the drain on the brink of the opposite bank, but in this situation, slubbings must not be allowed to slip down the bank face and the front edge of the drain should remain clean of mud.