



King's Lynn
Drainage Board

Standard Maintenance Operations Policy Document

KING'S LYNN INTERNAL DRAINAGE BOARD

VERSION 3.0

Training and Revision Register

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Table of Contents

1.0 INTRODUCTION	1
2.0 LEGISLATION	4
2.1 International Legislation	4
2.2 National Legislation	4
2.3 Protected Species and Habitats and Other Considerations	5
2.4 Non Native Invasive Species and Biosecurity	6
2.5 Conservation Sites – Statutory and Non- Statutory	6
2.6 Emergency Works	7
2.7 Cultural and Heritage Sites.....	7
3.0 MEETING GOOD ECOLOGICAL POTENTIAL IN KLIDB WATERCOURSES	8
3.1 Maintaining Important Physical Features of the Watercourse	8
3.2 Maintaining Successional Processes within Watercourses	10
4.0 HOW THE STANDARD MAINTENANCE OPERATIONS DOCUMENT WILL WORK IN PRACTICE	11
5.0 GUIDANCE FOR OPERATORS: NESTING BIRDS	12
6.0 THE ENVIRONMENTAL OPTIONS	14
6.1 Mowing of Bankside Vegetation	14
6.2 Emergent and Instream Weed Control	17
6.3 Tree and Bush Management.....	21
6.4 Disposal of Waste Timber.....	26
6.5 Instream Silt Removal	27
7.0 HERBICIDE USE FOR WEED CONTROL	34
8.0 BANK REPROFILING	34
9.0 CULVERT INSTALLATION OR REPAIR.....	35

10.0 REFERENCES	36
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Standard Maintenance Operations Policy Document

1.0 Introduction

The King's Lynn Internal Drainage Board (KLIDB) manages the water levels in agricultural and residential areas, across a district of 650 km² which contains 598km of watercourse. These watercourses are regulated by 15 pumping stations, 10 tidal sluices and 15 other structures.

The KLIDB drainage district runs south from Hunstanton and west to Wisbech, being bisected by the River Great Ouse. The district can be divided into two main geological areas. To the west of the Great Ouse are the flat alluvial or peat landscapes of the Fens. This area consists of pumped catchments of the low-lying fens which account for the greater area. Here, the KLIDB manages water levels across agricultural land but also the large villages of Terrington St Clements, Clenchwarton and West Lynn. In contrast, to the east of the Great Ouse the land rises to form rolling hills with chalk and deposits of Lower Greensand and clays, amongst other natural substrates. In addition to pumped catchments, the east contains watercourses from the uplands, including the rivers Ingol, Babingly and Heacham. These systems are gravity driven in the upper reaches, before becoming tidal locked in the slower fenland lower reaches, where they are then primarily controlled by gravity outfalls to the sea. To the east, the KLIDB removes water from the easterly uplands including Dersingham, Grimston, Pott Row and also the town of King's Lynn.

The pump drained systems comprise of heavily modified and artificial channels draining towards the respective pumping stations. The gravity driven rivers are more natural in the upper reaches, becoming heavily modified in the lower reaches where their outfall is controlled. Where the watercourses are naturally draining, they exhibit a greater variety of physical characteristics including riffles, pools, wet berms and meanders.

Much of the drainage district is bounded by sea defenses, although some abuts the Wash SSSI at Snettisham and Heacham. The KLIDB district has within it or is adjacent to, 3 National Nature Reserves, 3 areas with multiple international designations, 6 Sites of Special Scientific Interest and 40 County Wildlife Sites.

Maintenance of the drainage infrastructure has always been achieved by the regular weed cutting 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 and ensure adequate conveyance to the pumping stations. The aim of this document is to allow a standardised and targeted maintenance procedure to be carried out to a consistently uniform standard in designated

wildlife sites and in Board-maintained and ordinary watercourses alike. However, changes in legislation and key political drivers have resulted in regular reviews of maintenance practices with the emphasis being placed on the sustainable management of our natural resources within these catchments.

The document recognises the importance of the sustainable management of drainage catchments as natural environmental systems and as an ecosystem service and acknowledges the importance of managing the Boards drains appropriately. This document should also be read in conjunction with the Association of Drainage Authorities (ADA) Environmental Good Governance Guide, written to aid IDBs navigate the requirements of the Environment Act 2021 and other environmental legislation, and the document, “Measures for Achieving Good Ecological Potential in Fenland Waterbodies” (2017). The main aim of this Fenland GEP document recognises the core function of Artificial or Heavily modified watercourses in flat or pumped landscapes and emphasises the importance of efficient conveyance and flow to pumping stations and outfalls. This is balanced with ensuring opportunities are taken to enhance and achieve good ecological potential within these watercourses. A sustainable and well-planned maintenance programme is also key to this ambition.

The KLIDB Standard Maintenance Operations Document also aligns itself naturally alongside the KLIDB Biodiversity Action Plan (BAP), whereby the Board seeks to enhance Habitats and Species of principle importance whilst carrying out its Statutory function. The KLIDB watercourses may act as linking corridors for wildlife to disperse between nature conservation sites, enhancing ecological networks, improving site connection and enabling species or their genes to move. They may play an important role in the Local Nature Recovery Strategy contributing toward the Lawton principal of “bigger, better, more joined up” landscape scale approaches to nature recovery.

During this update of the document, there is also a necessity to recognise the growing evidence of climate change predictions and how this has the potential to adversely impact on future operations. The Board is taking a risk-based approach to this. Outputs help identify pressure points requiring targeted maintenance works, whilst at the same time identifying opportunities for watercourse restoration. This evidence-based approach enables officers to form robust works schedules; striking a balance of business need, flood risk management and wider environmental health within the catchment served.

The Board also embraces the industry move toward utilising natural environmental systems and Natural Flood Management (NFM) to manage water level changes, high flows and provide flood resilience to the catchment. This approach is adaptable and increases resistance to climate extremes of drought and flash flooding. A well-designed NFM scheme can save time and money in maintenance costs over time and may enhance biodiversity interests.

The Board continues to work on actions within the Water Management Alliances' (WMA) Carbon Management Plan and will continue to review and make more efficient its maintenance programme, and use of fossil fuels, particularly where efficiencies and sustainable measures can be achieved alongside the flood risk management requirement. The Board aims to be Carbon Net Zero by 2050 and have cut at least 50% of Green House Gas emissions by 2030.

This document is consistent with the Environment Agency's suite of environmental options, which have been assessed for compatibility with the requirements of the Water Framework Directive.

2.0 Legislation

As a Statutory Risk Management Authority, the KLIDB has various national and international legislative duties to comply with, regarding the aquatic environment, biodiversity and wildlife sites within the KLIDB Drainage 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 International Legislation

- The Water Framework Directive (2017) – 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 2021. 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 (2017) - 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 (WCA Act) (1981) - 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 (CROW Act) (2000) – this act amends the WCA Act and enforces a duty for Statutory Authorities to be responsible for conservation and enhancement of SSSIs. It also enhances Natural England's enforcement powers.

- Natural Environment and Rural Communities Act (NERC) Act (2006) - a statutory duty to ensure that every 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 to maintain and enhance the natural environment (Habitats and Species set down in Section 41 of the NERC Act (2006)) when carrying out flood risk management activities and meet objectives and targets set out in the KLIDB Biodiversity Action Plan.
- Flood and Water Management Act (2010) – 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.
- Environment Act (2021) - Strengthens the General duty of public authorities, to conserve and enhance biodiversity. A public authority which has any functions exercisable in relation to England must from time to time consider what action the authority can properly take, consistently with the proper exercise of its functions, to further the general biodiversity objective, set out by Section 40 of the Natural Environment & Rural Communities (NERC) Act 2006, to require enhancement as well as conservation, of biodiversity through their functions. The act also requires public authorities to actively carry out Strategic Assessments of the actions they can take to enhance and conserve biodiversity, and then take that action.

2.3 Protected Species and Habitats and Other Considerations

There are networks of protected species and habitats across the UK. Some of these species such as water voles, breeding birds, 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 Section 41 of the NERC Act (2006) and classified as Habitats and Species of Principal Importance, which require specific consideration by public bodies to ensure these habitats or species are enhanced by the IDB, whilst carrying out our duties as a public body.

Some habitats and species are covered by separate and specific legislation; such as the Badgers Act (1992), the Salmon and Freshwater Fisheries Act (1975), Hedgerow Regulations (1997) and Tree Preservation Orders. We need to ensure that this legislation is considered and complied with when undertaking IDB activities.

2.4 Non Native Invasive Species and Biosecurity

The spread of Non-Native Invasive Species has the potential to cost the KLIDB dearly, both in economic terms and in the loss of biodiversity interests. The spread of non-native species e.g. Japanese Knotweed, Signal Crayfish, is illegal under Schedule 9 of the Wildlife and Countryside Act (1981) (as amended). It is therefore unlawful to cause these species to spread as a result of any IDB operational activity.

Biosecurity is key to preventing the spread of these organisms into and around the KLIDB watercourses. The KLIDB staff currently do all they can to help prevent the spread of non-native invasive species whilst undertaking operations. When the IDB drains are scoped by the Engineer and Environmental Officer, non-native species locations are recorded and if possible a plan to eradicate or control them is put into action.

Staff will undergo regular training on Non Native Species and sightings will be reported to the NNNSI. Training is reviewed and undertaken regularly and a Biosecurity Policy has been adopted by the Board.

Where feasible, machinery is cleaned prior to being moved between catchments using a portable cleaner system.

2.5 Conservation Sites – Statutory and Non- Statutory

Where operational activities are to be carried out within or adjacent to statutory designated conservation sites such as SSSIs, SACs, Ramsar's 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 site of international importance (SAC, SPA, Ramsar), then under the Conservation of Habitats and Species Regulations 2017 (as amended) the IDB must carry out a Habitat Regulations Assessment (HRA) or where necessary an Appropriate 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 KLIDB) to determine that no significant effect will take place on any of the features of interest of the protected site and where an appropriate assessment has been

undertaken, then there should be no adverse effect on any of the features of interest.

In drains where maintenance is being undertaken on a greater than annual cycle, a desk study will be undertaken prior to works to ensure maintenance is not impacting on Wildlife and Countryside Act (1981) Schedule 5 species.

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 to the Local Nature Recovery Strategy and it is within everybody's interest to ensure that work does not impact on these sites.

2.6 Emergency Works

Emergency works may be required to be carried out during exceptional or unmitigated circumstances, such as during periods of extreme weather conditions or a flood event or in the event of a structural failure or pump seizure. In many of these circumstances, third parties and their property may be put at risk. In these, or similar events, it may be necessary to undertake Emergency Works to protect people and their property within the KLIDB 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 after the event.

Reporting the emergency operation to Natural England is key to determining a satisfactory outcome to the emergency and prevents the deterioration of the site and the wellbeing 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.

2.7 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. Advice will be sought from a qualified archaeologist or the County Archaeologist and where appropriate, Historic England (the UK governments advisor and a statutory consultee on all aspects of the historic environment and its heritage assets) will be consulted and searches undertaken prior to operations which require breaking ground.

3.0 Meeting Good Ecological Potential in KLIDB Watercourses

Meeting good ecological potential within the KLIDB watercourses is a goal for the Board. The legislation and key political drivers have recognised the need 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, particularly during extreme weather events and periods of high flow. However, this can only be achieved effectively where mitigation measures are selected that do not have a significant adverse impact on the use that the watercourse is designated for, such as flood protection or land drainage.

Some of the KLIDB catchment falls below sea level and relies on water flowing to a pumping station to where the water is evacuated to a higher level, a river or an estuary. As such, the majority of the KLIDB watercourses have historically been artificially created or heavily modified, with the purpose of conveying water to a pumping station in times of high flow. The pumped watercourses are not dynamic like those of the gravitational system. Therefore, their purpose needs to be recognised first and foremost and prior to undertaking opportunities to improve their ecological potential.

The ADA and Environment Agency, “Guide to Management Strategies and Mitigation Measures for Achieving Good Ecological Potential in Fenland Waterbodies” and the Anglian River Basin Management Plan and the [EAs Catchment Data Explorer WFD Catchment Planning - Click here](#) should be looked to on a case by case basis for guidance on determining mitigation for WFD designated waterbodies.

3.1 Maintaining Important Physical Features of the Watercourse

The appropriate balance between conveyance and good ecological potential must be met. The KLIDB will however seek to conserve or enhance the physical and ecological parameters of the waterbodies where this is either achievable to do so without inhibiting the dedicated function of the watercourse. The following important physical features should be considered during maintenance to enhance or restore:

3.1.1 Pools and Riffles

Pools and riffles are natural formations in gravel-bedded channels. They are dynamic, changing form in response to flood events and are valuable features for the conservation interest of a river. The riffle sections oxygenate the water and provide a spawning habitat for various fish species.

3.1.2 Bends and Meanders

Bends and meanders slow the river down and can be used to help the river spill out onto a natural flood plain and deposit its silt loading in high flow events. Where flood alleviation is required then they can be used in conjunction with the creation of flood relief channels (backwaters) to improve conveyance.

3.1.3 Backwaters

Backwaters are important features in rivers as they provide a wide range of different habitats. Backwaters in continuous connection with the main flow are valuable, particularly as nursery habitat for fish fry. They can act as a flood bypass channel at times of high flow and provide refuge for fish in times of flood or other adverse conditions.

3.1.4 Natural Marginal Berms and Islands

Marginal berms and natural islands help create the natural habitat mosaic for a variety of species and are formed by natural sediment transport processes in the channel bed. Both berms and island are dynamic and change in size and form in response to flood events. These natural structures add diversity to the river and will cause an increase in the current velocity around them, so creating silt free zones.

3.1.5 Retention of Woody Debris

Woody debris is an important mechanism for increasing diversity of flow and habitat and as such is an essential element of watercourse ecology. Possible options for retaining woody debris in a water course will be considered on a site-by-site basis and adopted where practical and appropriate to do so.

3.1.6 Channel Narrowing

The practice of channel narrowing within a stream or river increases velocity, oxygenates the water and improves the diversity of flow along a watercourse. A narrowed channel naturally restores a cleansing dynamic to the watercourse and should thereby reduce maintenance requirements into the future.

3.1.7 Channel Capacity

Flowing watercourses will not be deepened. A deepened channel changes the natural fluvial processes of a watercourse, increases siltation and destroys the hydrological connectivity of a river to its floodplain. Where the necessity for

increased channel capacity is required, then the installation of a two stage channel to increase in bank capacity during flood events should be considered.

3.1.8 Riverbank

Straight batters within a watercourse are not encouraged. The preferred approach is to encourage natural processes and diversity. A variety of features can be encouraged or created particularly in the margins such as; low-level berms, holes, ledges, variations in height and slope etc, together with the natural vegetation. These variations in water depth and cover offer niches to a variety of plant and animal species, increasing biodiversity.

The Board will look to conserve the physical features of the waterbodies it manages and seek opportunities to restore or enhance them elsewhere where appropriate.

3.2 Maintaining Successional Processes within Watercourses

Sensitive maintenance of a watercourse, including retaining important features, will benefit many species and communities within the drainage channel network. The key to maintaining significant ecological interest is to maintain watercourses at differing stages of the successional process. For example, a newly desilted drain will exhibit an array of early colonisers such as charophytes or certain pondweed species. Drains left for a longer rotational periods prior to vegetation cutting or desilting may exhibit a larger abundance or diversity of macrophytes, while those that are unmanaged may be dominated by common reed to the near exclusion of other species. Many non-IDB drains may not be maintained for several years but the regular and rotational maintenance of IDB watercourses ensures a small percentage of the entire drainage network in the catchment retains areas of open water, which is so important to many animal and plant species.

Differing successional stages, water depths and maintenance cycles maximises ecological diversity. The other important factor which is key to maintaining this diversity, is good water quality.

4.0 How the Standard Maintenance Operations Document 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 KLIDB 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 a regular basis. Version control will allow any changes to be recorded.

Detailed consideration has been given to ascertaining whether the maintenance operations should be different for gravity and pump drained watercourses in the KLIDB district. It has been concluded however that the maintenance techniques required for the gravity driven river systems should be instructed by a detailed model that will highlight the hydro morphology specifics of the river Gaywood. The modelling process is expected to be undertaken over a 12 month period. Therefore, the principles of management to maintain biodiversity will remain the same for all KLIDB watercourses until the outcome of the model has been determined, at which point the KLIDB SMO document will undergo another review.

All Contractors, Operational and Engineering Staff asked to carry out maintenance for KLIDB will undertake a regular training based on the Standard Maintenance Operations Policy Document. Training needs will be reviewed regularly, in line with any amendments made to the Standard Maintenance Operations Policy Document.

Prior to initiating any Maintenance job, operatives and contractors will receive a job specific toolbox talk. All watercourse maintenance will receive close supervision by trained Operational and Engineering Staff or a member of the Environmental Team.

5.0 Guidance for Operators: Nesting Birds

The Law on Bird Nests:

The IDB has permissive powers, under the Land Drainage Act 1991, to maintain watercourses to allow drainage, irrigation and to prevent flooding. Routine watercourse maintenance by IDBs is considered a lawful activity. However, in doing so, it is important to consider wild birds, their nests and dependent young when planning maintenance.

The Wildlife and Countryside Act 1981 (as amended) states that all wild birds are protected and usually cannot be killed or taken except under licence. As a result, during IDB activities, must not:

- intentionally kill, injure or take any wild bird.
- intentionally damage, destroy or take the nest of any wild bird while it is in use or being built.
- intentionally destroy an egg of any wild bird.
- intentionally or recklessly disturb certain wild birds (ie. Schedule 1) or their dependent young while they are at or near to an active nest site.

Routine Watercourse Maintenance:

The IDB routinely assesses environmental risks and opportunities of its maintenance activities and has developed sensitive standards and adjusted the timing of works where possible. Mowing of bankside vegetation and emergent and instream vegetation clearance will be undertaken throughout the year, though in peak bird breeding season works will only take place where necessary in low-risk environmental areas. 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). Prework checks will be carried out by the Operators prior to work commencing and recorded on the operator's time sheet. For more sensitive sites, where Schedule 1 birds are of concern or when the Operator cannot identify, a competent Ecologist will undertake a pre walkover survey prior to the maintenance commencing.

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 or leaving an appropriate buffer zone on

either side of a nest. The length of the buffer zone will be species specific and should be agreed by a member of the Environmental Team (please see checklist below for buffer zones).

The extent of weed and grass cutting is kept to a practicable minimum, site staff have considerable experience and are given guidance and support in respect of biodiversity. During grass cutting, the flail height should be set to 100mm minimum to ensure water vole are not disturbed or displaced by the mowing activity (as per Annex B Management Activities IDB Water Vole Class Licence). During weed cutting, to accommodate access to growing crops and 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 watercourses greater than 2m, a margin of emergent vegetation will be left uncut at the water's edge as wide as it is practical to do so.

Looking for bird nests:

The nests of small species, like Reed Warblers, are very difficult to spot, even for trained ecologists. Adult birds can often be seen flittering about in the reeds and nearby shrubs, but this doesn't guarantee a nest is nearby, let alone indicate its exact location. Operators should remain vigilant at all times.

Nests of waterfowl are easier to spot as they are larger. Examples range in size from Coot to Mute Swan. Both of these species nest at the water's edge on a raft built from reeds and other plants, while ducks tend to nest on land, a little further from water.

If you spot a nest, either on land or at the water's edge, you must take action to avoid damaging it.

What to do if you find a bird nest:

1. Assume all bird nests that you spot are active. An empty nest isn't necessarily from last year, it could be under construction.
2. Mark the location of the nest with a high-visibility peg/pin.

3. DO NOT cut any closer than; 5m from nests of small species (e.g. Reed Warblers), 10m from nests of waterfowl (e.g. Coot) and 15m from a Swans nest.
4. Let other operators and staff know the location of the nest and record on your Operators timesheet. Operators are required to ring the Environment Team for advice and support on what type of nest they have found and the appropriate buffer zone required around the identified nest. Operators should take pictures of the identified nest (if they are able to without disturbing) and send to the Environment Team to help the identification process.

6.0 The Environmental Options

6.1 Mowing of Bankside Vegetation

The aim of mowing is threefold:

1. It allows unimpeded visibility for the driver.
2. It improves the conveyance of a watercourse.
3. It prevents the establishment of trees and scrub along the nearside water's edge.

Mowing of the bankside vegetation will be carried out by a tractor and flail. In some areas where access cannot be achieved or is considered inappropriate for a machine, then strimmer's and hand tools will be utilised.

Mowing of bankside vegetation may be undertaken throughout the year, though in peak bird breeding season works will only take place where necessary in low-risk environmental areas. 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). Prework checks will be recorded on the operator's time sheet.

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 or leaving an appropriate buffer zone on either side of a nest. The length of the buffer zone will be species specific and should be agreed by a member of the Environmental Team.

The flail height should be set to 100mm minimum to ensure water vole are not disturbed or displaced by the mowing activity (*as per Annex B Management*

Activities IDB Water Vole Class Licence).

A choice of **two Environmental Options** can be employed:

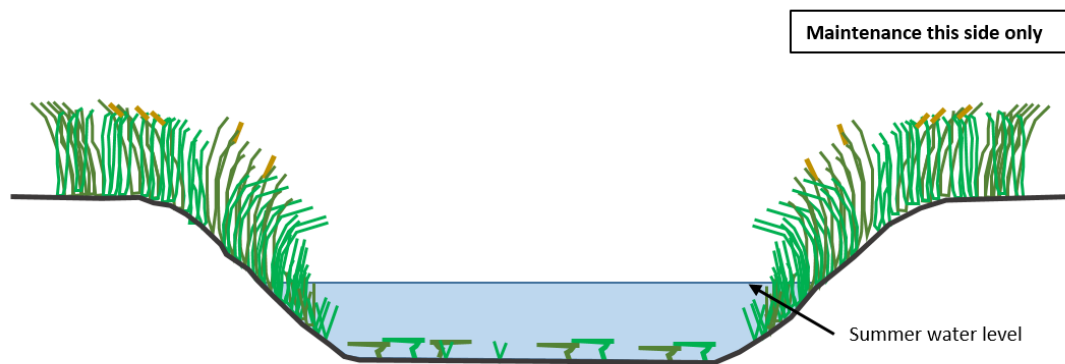
6.1.1 Environmental Option M4 – Greater than 2m wet width

Visibility for the driver is crucial in being able to carry out targeted maintenance. Environmental M4 will be used on watercourses which are more than 2 metres wet width. Mowing should take place down the nearside batter to the water's edge and one cut along the top of the nearside bank top.

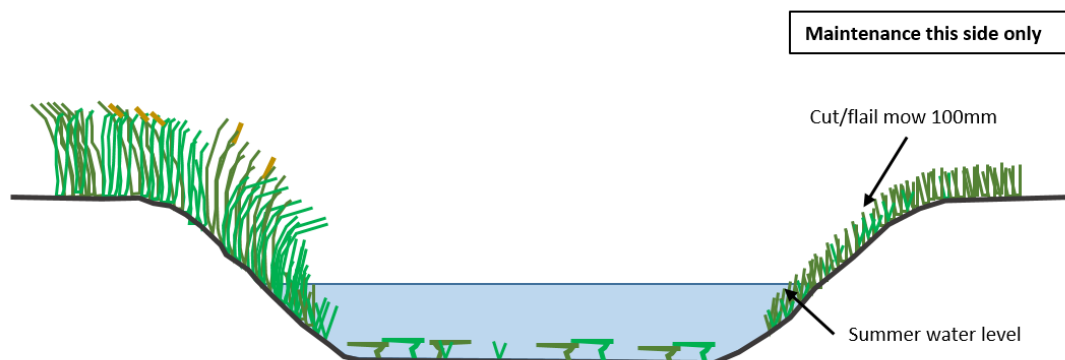
The flail height should be set to 100mm to ensure water vole are not disturbed or displaced by the mowing activity.

No WFD assessment is required prior to using this method.

Before Operation



After Operation



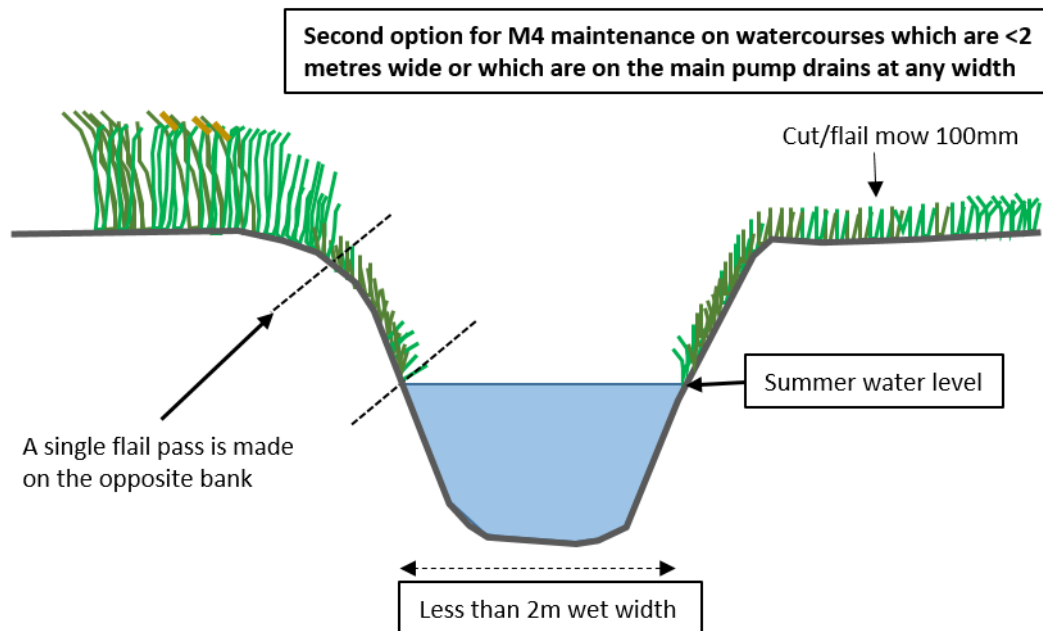
6.1.2 Drains less than 2m wet width or main pump drains

For watercourses which are less than 2 metres wet width or which are on the main pump drains (at any width), mowing will be undertaken as per the Environment Option M4, as such mowing should take place down the nearside batter to the water's edge and one cut along the top of the nearside bank top, additionally a single flail pass should be made on the opposite bank.

The flail height should be set to 100mm to ensure water vole are not disturbed or displaced by the mowing activity.

No WFD assessment is required prior to using this method.

After Operation



6.2 Emergent and Instream Weed Control

The Board removes vegetation from watercourses mechanically, using a weed cutting basket attached to a 360° hydraulic machine or tractor. 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 large specialist rake (e.g. a chrome).

Emergent and instream vegetation clearance will be undertaken throughout the year, though in peak bird breeding season works will only take place where necessary in low-risk environmental areas. 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). Prework checks will be recorded on the operator's time sheet.

Emergent and instream weed control is essential to allow unimpeded water flow within the banks of the watercourse. Weed cutting will take place cyclically as part of a regular rolling programme. 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. Checks will be undertaken to ensure the maintenance is not impacting on Wildlife and Countryside Act (1981) Schedule 5 species.

The weed-cutting basket should always be set to ensure that no deepening of the watercourse or removal of gravels occurs during the process of weed cutting. In most instances in drains greater than 2m wet width, a margin of emergent vegetation will be left uncut at the water's edge as is practical to do so.

Instream weed control will work in conjunction with the mowing regime specified in Section 6.1.

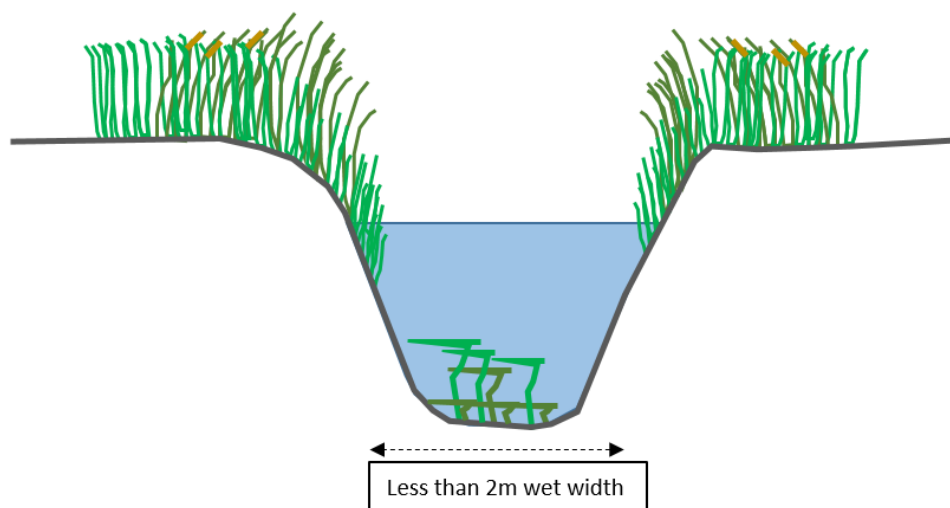
A choice of **three Environmental Options** can be employed:

6.2.1 Emergent and Instream Weed Control in drains less than 2m wet width

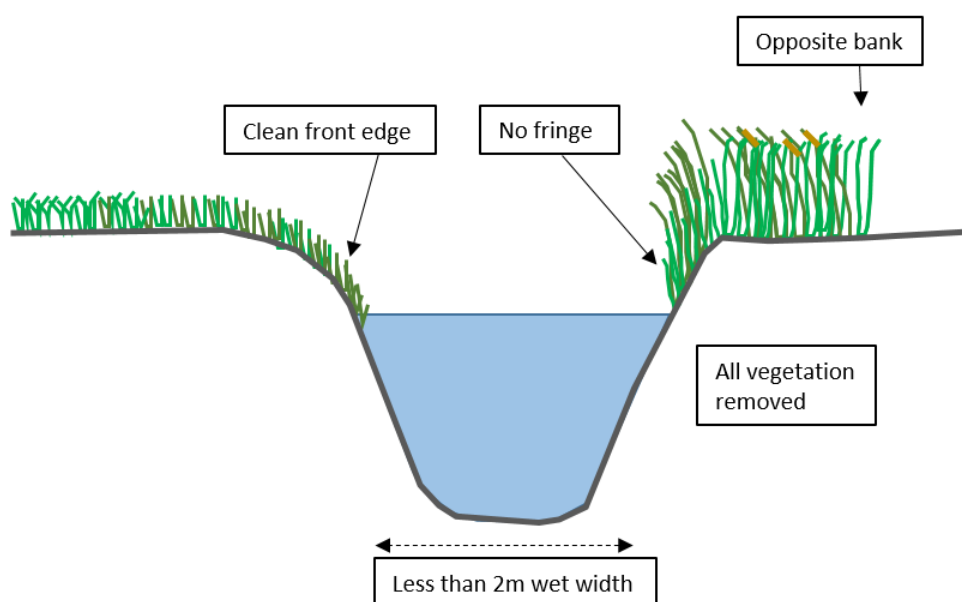
In narrow drains, all instream emergent vegetation will be removed and no fringe will be left. Cut material should be set back behind the machine as far as possible or, as a second choice, placed on the opposite bank top. Care will be taken not to place material on floristically rich areas, wet flushes or block grips. No wet vegetation or mud will be placed on the face or allowed to slip down the bank face. The front edge of the drain should remain clean.

No WFD assessment is required prior to using this method.

Before Operation



After Operation



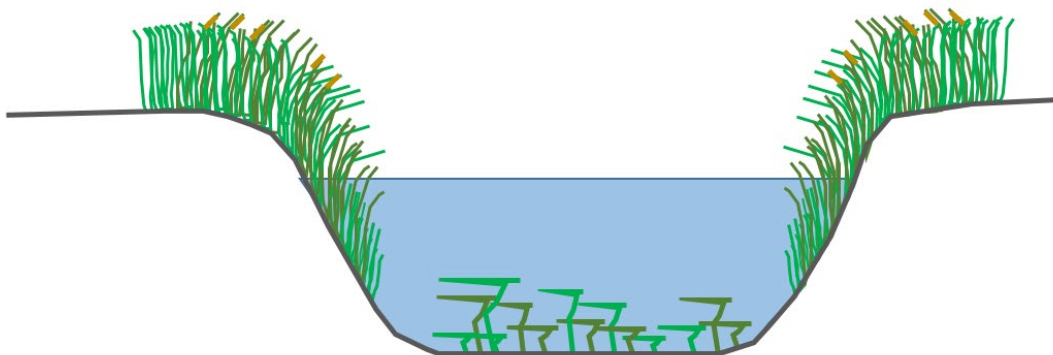
6.2.2 Emergent and Instream Weed Control in drains greater than 2m wet width – Leave opposite margin

This practice allows for a margin to be created on the opposite bank. The margin consists of leaving as much wet width vegetation *in situ*, as far as is practicable for the size of drain (approx. 10-20% remaining). The nearside toe will not be exposed or touched by the weed cutting basket. The weed cutting basket should be set to ensure that no deepening of the section takes place.

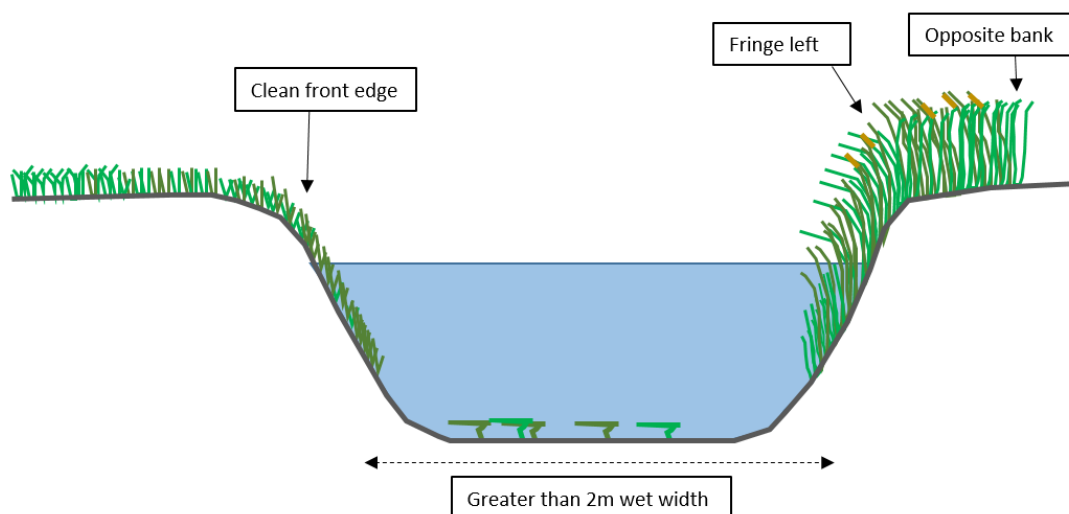
Cut material should be set back behind the machine as far as possible or, as a second choice, placed on the opposite bank top. Care will be taken not to place material on floristically rich areas, wet flushes or block grips. No wet vegetation or mud will be placed on the face or allowed to slip down the bank face. The front edge of the drain should remain clean.

No WFD assessment is required prior to using this method.

Before Operation



After Operation



6.2.3 Emergent and Instream Weed Control in drains greater than 2m wet width – Leave opposite and nearside margin in sequence

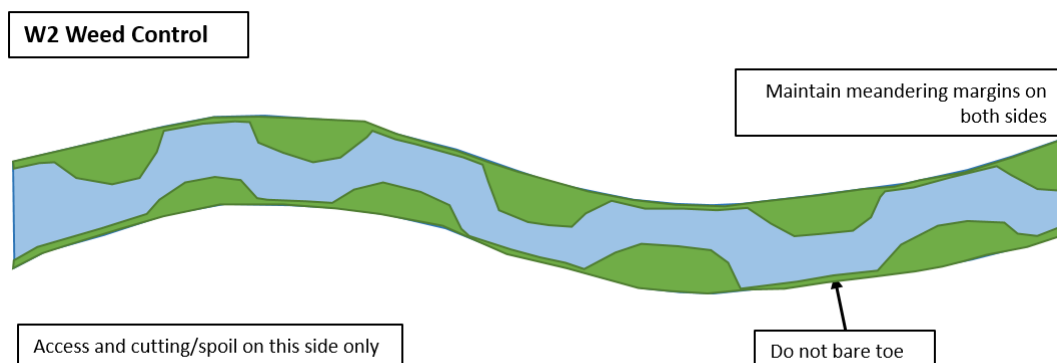
This option allows for 80% of the instream vegetation to be removed centrally, in a sinusoidal manner, as to alternately retain 10-20% of the marginal vegetation and to allow instream diversity to be maintained and allow silt deposition to occur to encourage narrowing and berm formation. Where vegetation is retained, the toe of the opposite bank should not be exposed or touched by the weed-cutting basket.

Cut material should be set back behind the machine as far as possible or, as a second choice, placed on the opposite bank top. Care will be taken not to place material on floristically rich areas, wet flushes or block grips. No wet vegetation or mud will be placed on the face or allowed to slip down the bank face. The front edge of the drain should remain clean.

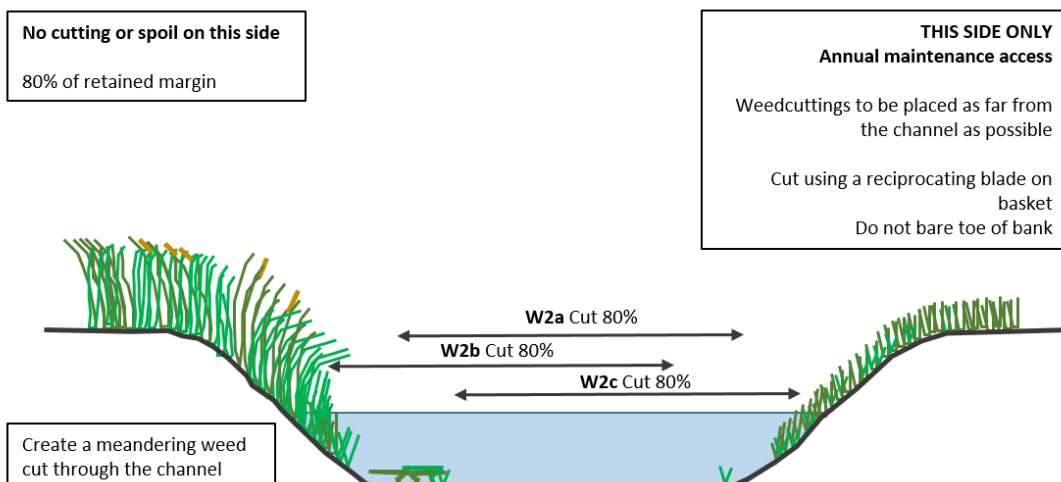
A WFD assessment will be required prior to instigating this method.

After Operation

Long View



Cross Section



6.3 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 shelter and food for fish. Over time, instream branches add natural diversity to the surrounding aquatic environment by altering the physical hydraulic function of the watercourse, which may result in scours and pool and shoal formation.

With the high ecological benefits attributed to the aquatic environment by trees, the first consideration, prior to any tree, bush or branch removal should be to consider whether removal is necessary.

The aim of tree management is threefold:

1. To allow unimpeded access for machinery into a site and prevent damage to the machine e.g. hydraulic pipework becoming caught up in branches.
2. To prevent the sides of watercourses becoming overgrown and in some instances, over shaded.
3. To prevent instream blockages occurring in areas of high flood risk.

Due to the open landscape throughout much of the KLIDB district, Tree management will be considered on a case by case basis by the Environmental Team. The aim will be to strike a balance between the ecological benefits to the watercourse and conveyance.

In pumped catchments, woody material will not be installed or left in the channel as this may 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.

Tree and bush work can be undertaken between August – March. Prework checks prior to maintenance are recommended between August to September and Mid-February to March to ensure nesting birds are not present. 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 and tree work during these seasons is not recommended. Any tree work required during peak bird breeding season may be undertaken only following consultation with and having had appropriate checks undertaken by the Environmental Team.

Veteran and mature trees may be subject to a Tree Preservation Order and/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 those trees are not cleared without prior investigation by the Environmental Team as this may constitute an offence under the Conservation of Habitats and Species Regulations (2017).

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 Environmental Team as this may constitute an offence under the Conservation of Habitats and Species Regulations (2017).

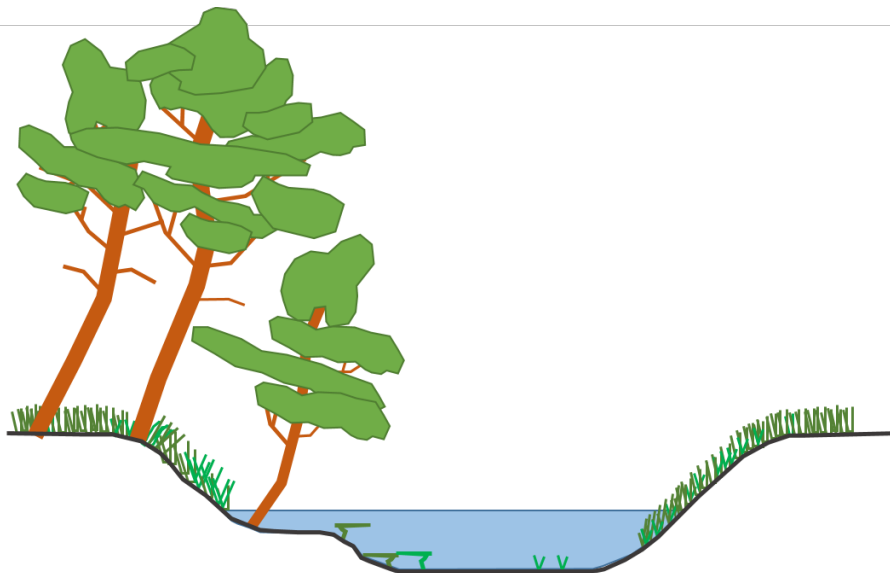
A choice of **four Environmental Options** can be employed:

6.3.1 Environmental Option TB4

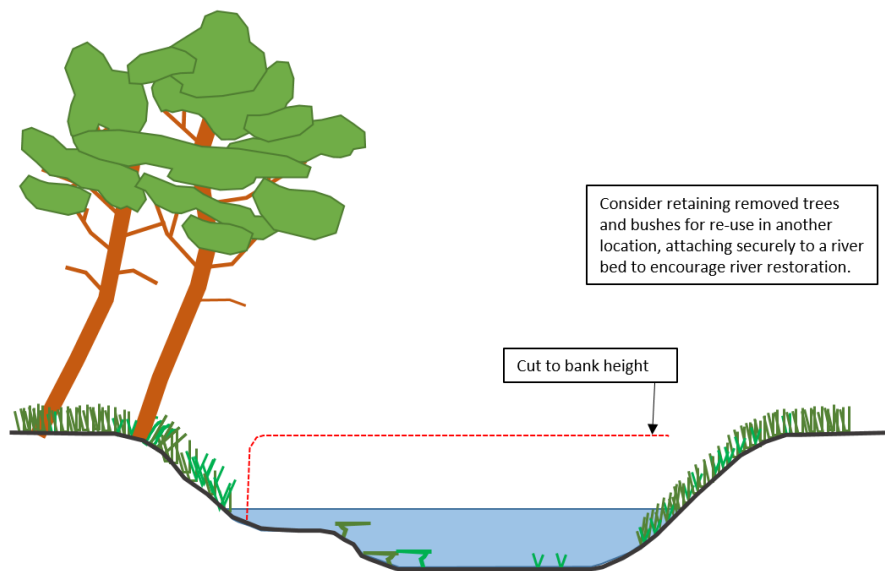
Where a tree or bush has a trunk only growing in the water and there are other trees behind, offering shade, then the tree can be removed where necessary. Cuttings should be removed from the channel.

No WFD assessment required prior to instigating this method.

Before Operation



After Operation

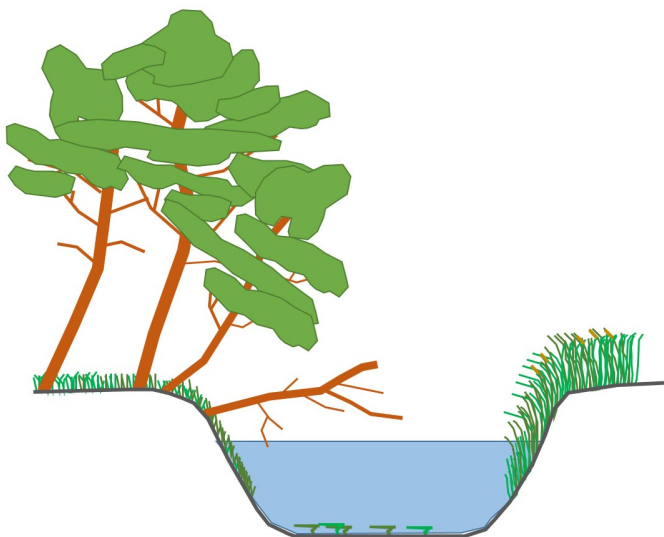


6.3.2 Environmental Option TB3

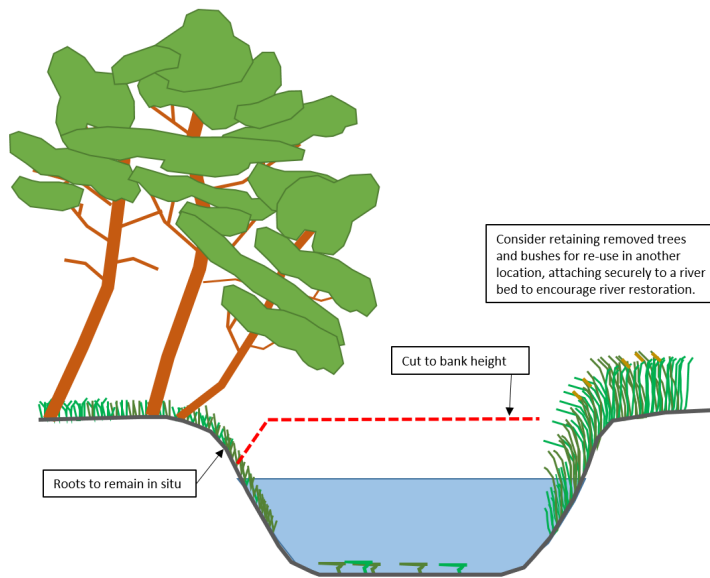
Where a tree or a bush has branches overhanging the watercourse but not actually within the water, then overhanging limbs can be removed up to the height of the bank top only. The remaining tree remains in situ.

No WFD assessment required prior to instigating this method.

Before Operation



After Operation

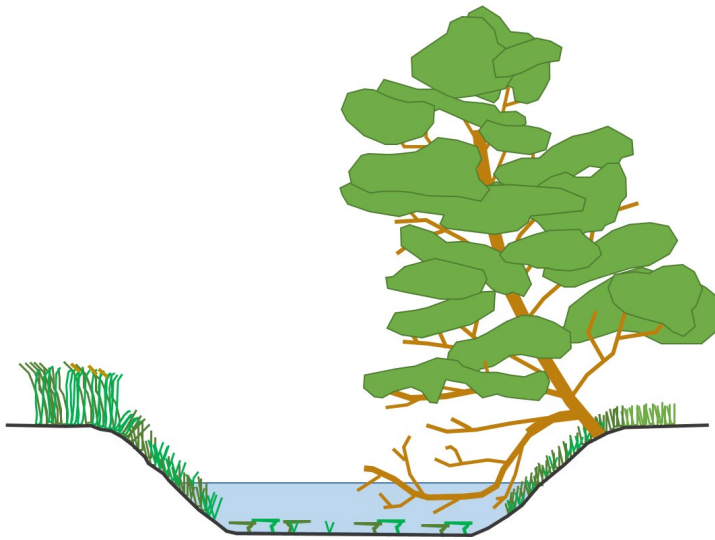


6.3.3 Environmental Option TB2

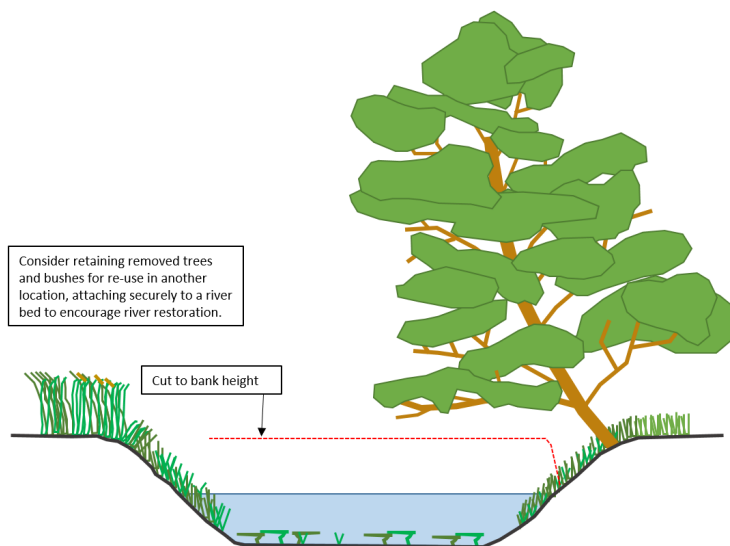
Where a tree or a bush has overhanging branches trailing in the water, then these can be removed up to bank height and the rest of the tree left in situ. It may then be possible to install the removed branches in a more appropriate position. This should be a consideration to lessen the ecological impact of removal. However, installing branches in a pumped drain will not be appropriate.

A WFD assessment will need to be undertaken prior to works.

Before Operation



After Operation

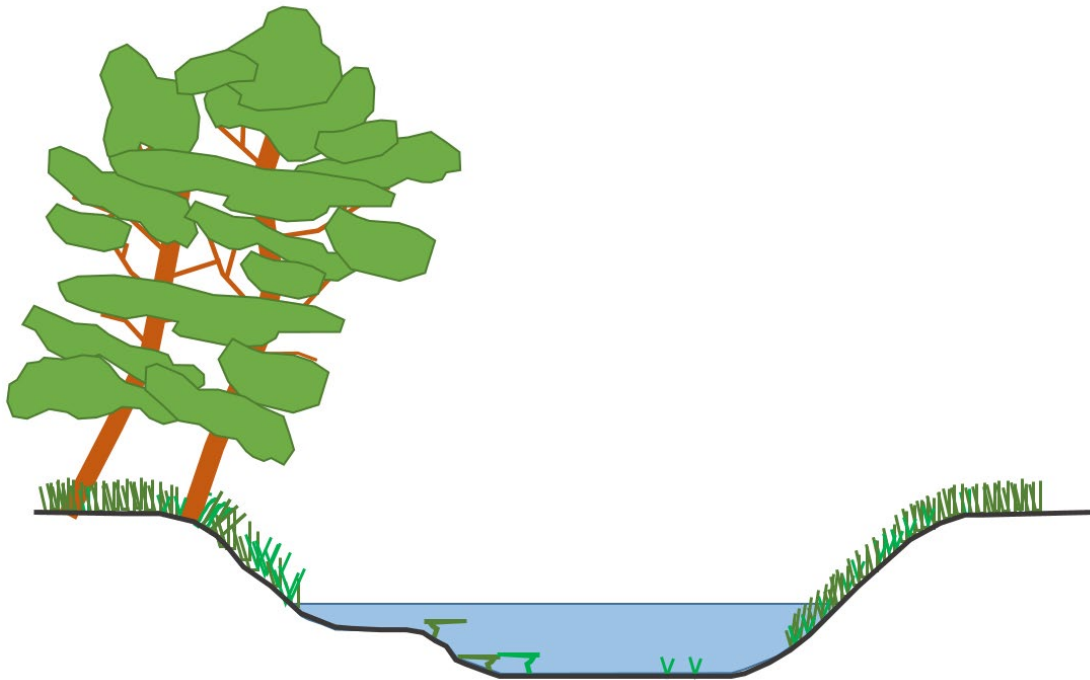


6.3.4 Environmental Option TB1

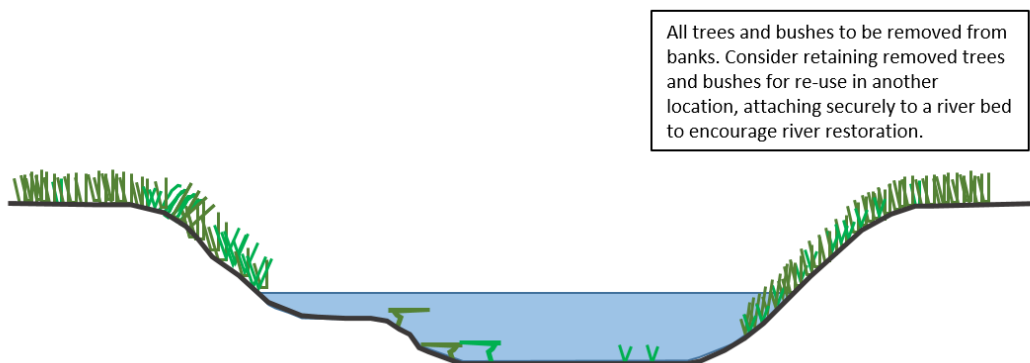
Where trees or bushes are standing away from the watercourse, but access is required or flood risk is an issue, then trees can be felled near the watercourse. Works are to be phased over a number of years.

A WFD assessment will need to be undertaken prior to works.

Before Operation



After Operation



All trees and bushes to be removed from banks. Consider retaining removed trees and bushes for re-use in another location, attaching securely to a river bed to encourage river restoration.

6.4 Disposal of Waste Timber

Where KLIDB operators have found it necessary to remove or trim overhanging trees or shrubs, then trees and bushes can be cut up as wood piles or left on the bank top to enhance / provide habitat for a large variety of vertebrates and invertebrates. Material can be left only where appropriate to do so, i.e. where there is no risk of material being washed back instream, where it may result in culverts becoming blocked.

Waste timber may also 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 as part of the assenting process. Alternatively, the chippings or waste timber can be removed from site. No mulching will take place on designated grazing marsh.

Burning is not recommended, however where it is necessary to do so it should be carried out under an EA Waste Exemption licence (D7), on high ground and / or away from species rich environments. 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.

Under the Environmental Permitting Regulations (England and Wales) 2016 a Waste Exemption licence (D7) permits the burning of 10 tonnes of untreated wood in the open during a 24 hour period. Though exemptions are subject to change in the near future. Where burning is proposed in a designated wildlife site, prior consultation with Natural England will be undertaken. There are some key conditions under the Waste Exemption licence (D7) which must be followed and these include;

- The burning must take place on open land, not in an incinerator or a building.
- You should be careful to position the bonfire where it will not cause nuisance to neighbours through excessive smoke or odour.
- The burning must take place only at the place where the waste is produced.

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

6.5 Instream Silt Removal

The low energy nature of the pumped system of the KLIDB catchments, makes it prone to having silts accrete within the system. The frequency of silt removal will depend upon the characteristics of the watercourse and surrounding land use. Some drains will therefore require attention more frequently than others. However, channels will usually be desilted, only when the depth of silt affects the hydraulic capacity and conveyance of the drain and where it affects pumping efficiency.

Instream Silt Removal is not a routine operation in the KLIDB district. The environmental risk involved in silt removal in the catchments, is deemed to be high. Therefore each operation will be looked at on a case by case basis. A desk study, scoping exercise and a WFD assessment will be required prior to all desilting operations taking place and mitigation measures will be 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 and look for opportunities to undertake ecological improvement.

The KLIDB currently uses hydraulic excavators which can operate through 360° to desilt watercourses, and a desilting bucket is used to remove the silt but allows water to escape. 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 and within 9m of the watercourse.

De-silting is a planned activity and as far as is practical should be undertaken between October and February, when water temperatures are cool. However, where works are deemed necessary at other times of the year such as September and March, then a prior assessment of works by the Environmental Team or Consultant will take place.

Regular dissolved oxygen monitoring will also be undertaken on all sites requiring desilting maintenance. A methodology for operators to walk the drain and undertake regular dissolved oxygen monitoring is outlined below, to ensure that silt loading and temperatures does not impact upon dissolved oxygen levels.

Where protected species, wintering or breeding birds are found, prior to a planned programme of works, then effective mitigation will be put in place to ensure compliance with the law. This may require delaying the works depending on what is found. Desilting operations will likely be carried out in conjunction with the mowing regime specified in Section 6.1.

No removal of any bed material (dredging) will take place during the desilting process as this will likely result in the deepening of a watercourse which will be detrimental to the hydro morphology and ecology of the watercourse (see section 6.1). Slubbing's will be placed well back behind the machine, preferentially on an historic spoil bank, to prevent spoil being washed back into the water and reduce further nutrient enrichment of the watercourse.

Leaving a fringe of marginal vegetation will serve to minimise risks of environmental harm, maintain the seed bank and leave cover and food for invertebrates and other aquatic animals. However, there may be situations where the watercourses are narrow, where a drain will need to be desilted from bank to bank, to maintain its land drainage function. Where possible on narrow drains, material will be left. All the options will be considered very carefully in relation to conveyance, prior to undertaking a desilting exercise.

General standard desilting practices will not be undertaken on a greater than annual cycle by the Board. Checks will be undertaken to ensure the maintenance is not impacting on Wildlife and Countryside Act (1981) Schedule 5 species.

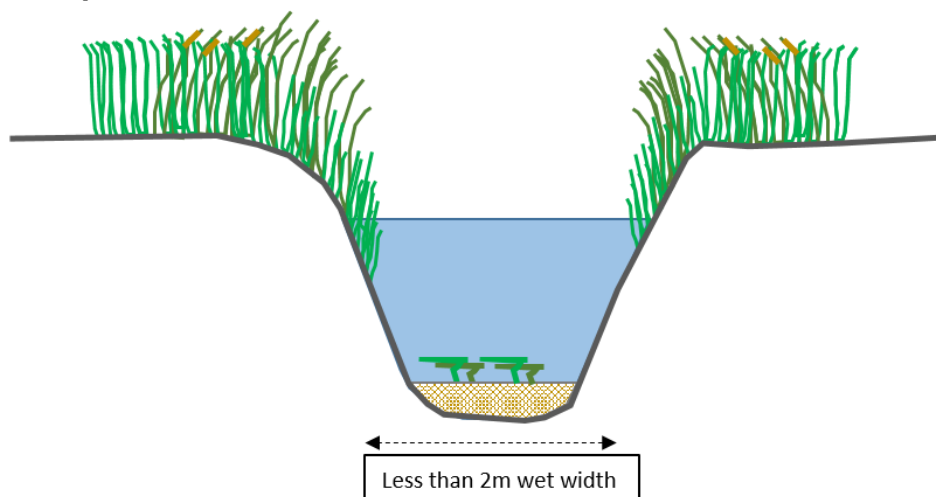
6.5.1 Instream Silt Removal in drains less than 2m wet width

In narrow drains less than 2m wet width, all emergent vegetation and slubbing's will be removed and no fringe will be left. All removed slubbing's will be set back behind the machine, preferably on an historic deposition pile or where circumstances dictate, slubbing's can be put across the drain as far as possible on the opposite bank top.

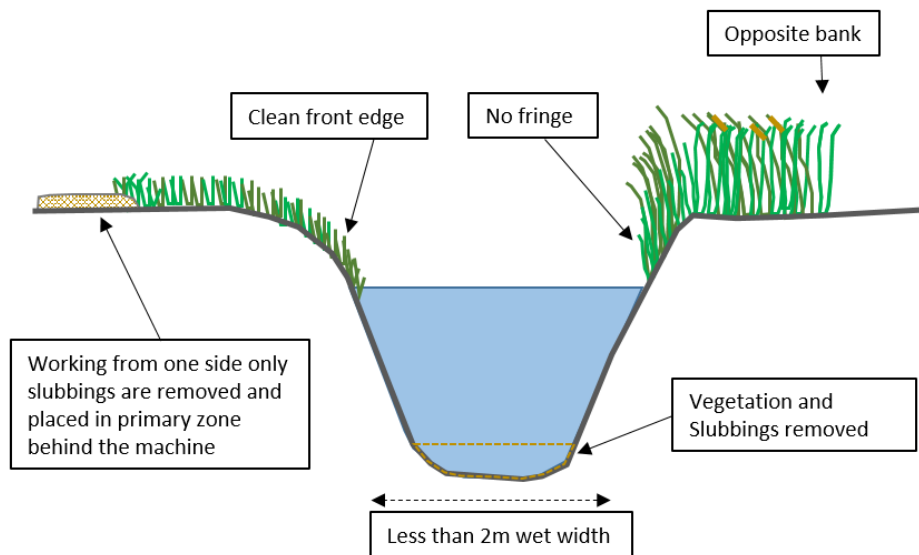
Wet material or mud should not be allowed to slip down the bank face and should not be placed on floristically diverse areas, wet flushes, fill in grips or impact on habitat requirements of Schedule 5 species. The front face of the bank should remain clean.

A WFD assessment will need to be undertaken prior to works.

Before Operation



After Operation



6.5.2 Instream Silt Removal in drains greater than 2m wet width – Leave opposite margin

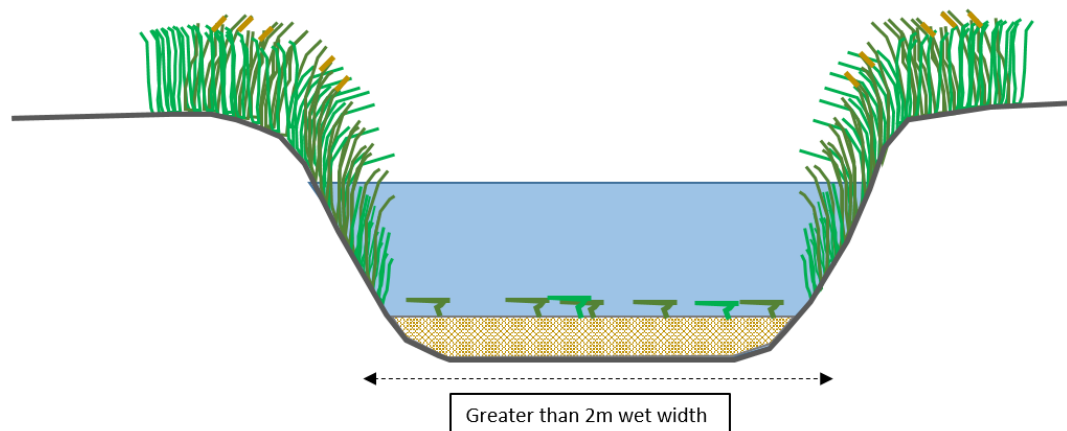
In drains greater than 2m wet width, a fringe of emergent vegetation will be left on the opposite emergent margin to act as a seed bank and refuge area. The machine will work from one bank only. An appropriate margin of silt and vegetation should be left *in situ* as far as is practicable for the size of the drain (10-20% approx.). The nearside toe should not be exposed or touched by the slubbing bucket.

All removed slubbing's will be set back behind the machine, preferably on an historic deposition pile or where circumstances dictate, slubbing's 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 and should not be placed on floristically diverse areas, wet flushes, fill in grips or impact on habitat requirements of Schedule 5 species. The front face of the bank should remain clean.

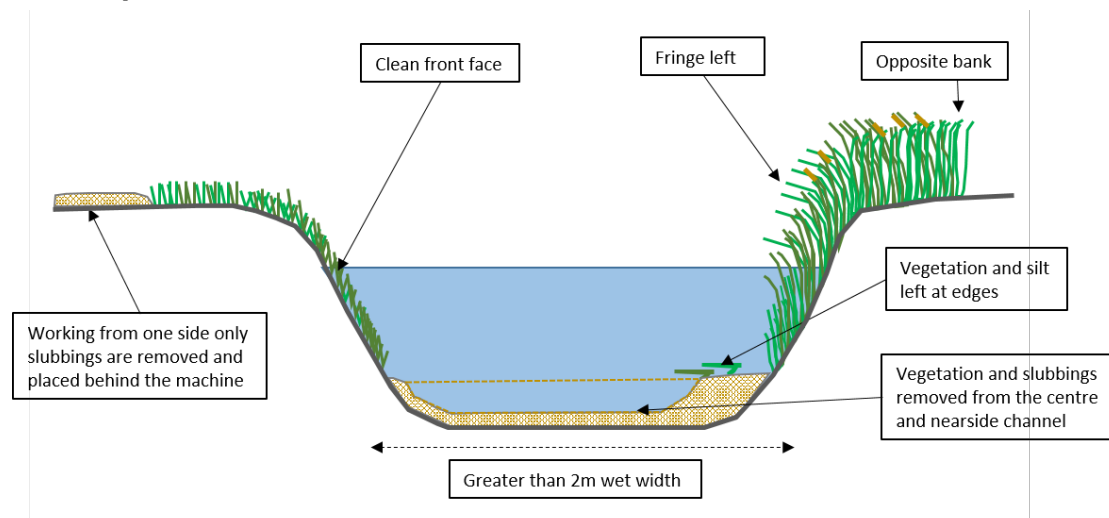
Overlying silts only should be removed; no deepening of the section should take place.

A WFD assessment will need to be undertaken prior to works.

Before Operation



After Operation



6.5.3 Instream Silt Removal in drains greater than 6m wet width – Leave opposite and nearside margin

In drains greater than 6m wet width, a fringe of emergent vegetation and slubbings can be left on the nearside and opposite emergent margins. This practice allows material to be removed from the central channel of the watercourse and is particularly suited to the Truxor. Both opposite and nearside margins should be left untouched to act as a seed bank and refuge area to encourage recolonization by plants and invertebrates etc. The machine will work from one bank only.

An appropriate margin of silt and vegetation should be left *in situ* as far as is practicable for the size of the drain (10-20% approx.). The nearside toe should not be exposed or touched by the slubbing bucket.

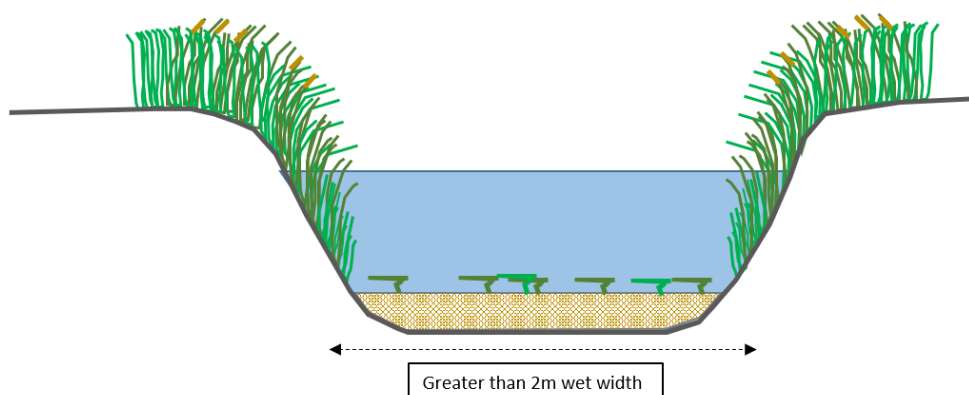
All removed slubbing's will be set back behind the machine, preferably on an historic deposition pile or where circumstances dictate, slubbing's can be put across the drain as far as possible on the opposite bank top.

Wet material or mud should not be allowed to slip down the bank face and should not be placed on floristically diverse areas, wet flushes, fill in grips or impact on habitat requirements of Schedule 5 species. The front face of the bank should remain clean.

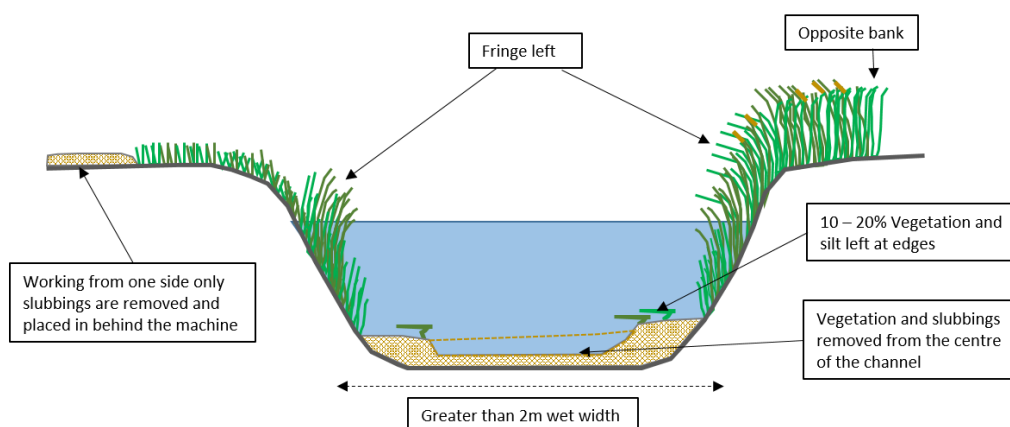
Overlying silts only should be removed; no deepening of the section should take place.

A WFD assessment will need to be undertaken prior to works.

Before Operation



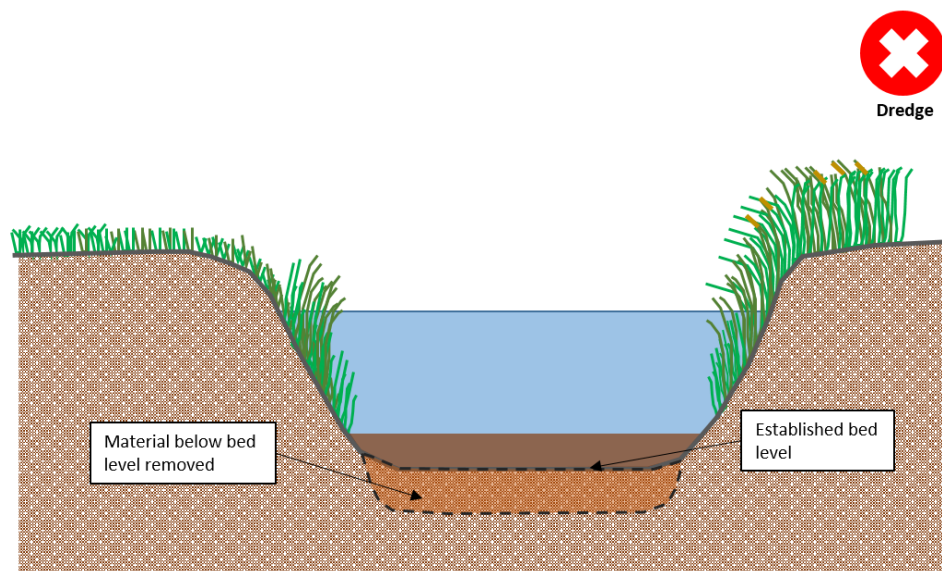
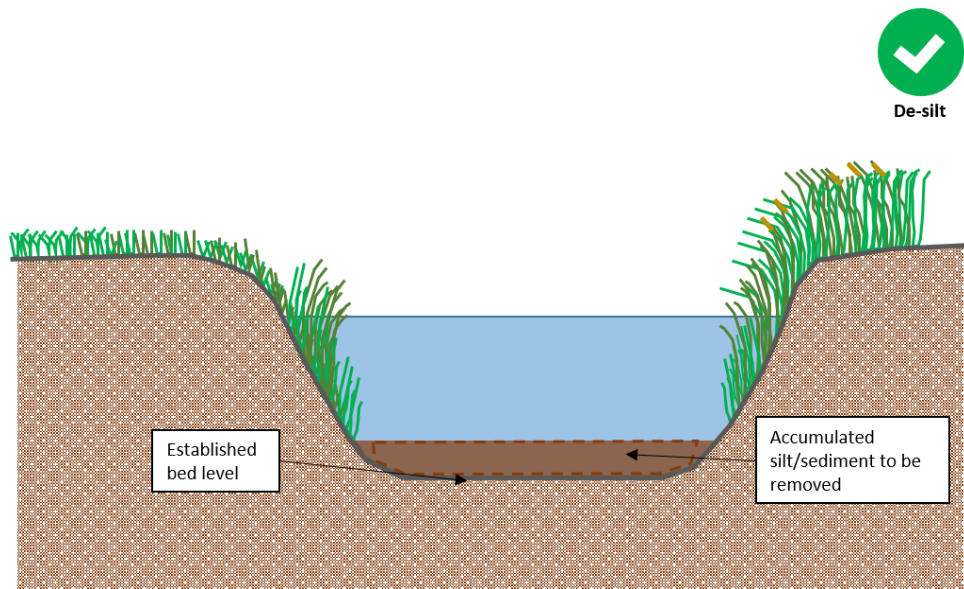
After Operation



6.5.4 The important difference between desilting and dredging:

Desilting is when silts that have accumulated in the water channel are removed. **No deepening or over widening will occur during desilting.**

Dredging is where material below bed level is removed and is likely to lead to over deepening of the channel, the slowing of flows and a continuous need for further maintenance.



7.0 Herbicide Use for Weed Control

Chemicals are used occasionally to control growth in the PCWLMB District. Chemical control will be considered where weed growth cannot be effectively controlled by mechanical means, in inaccessible areas or in the case of non-native invasive species, e.g. Parrots Feather and terrestrial INNS (Japanese Knotweed or Giant Hogweed).

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

If chemicals are to be used, then only herbicides and adjuvants cleared for aquatic use will be used in or beside water i.e. Glyphosate (Roundup BiActive) and Topfilm. Only suitably qualified operatives with an NPTC certificate in the Safe Use of Pesticides (PA1) and the application of pesticides in or near water, using a hand held applicator (PA6W) will be permitted to carry out any herbicide application on behalf of the KLIDB and in compliance with the Official Controls (Plant Protection Products) Regulations 2020.

Herbicides 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 (as amended). It should be noted that the use of herbicides within the Board's drainage district may also affect or be affected by agri-environment scheme requirements.

No WFD assessment required prior to instigating this method.

8.0 Bank Reprofilng

Banks may have been poached by cattle, horses and deer or slips may have occurred and as such, some sections of banks may require re-profilng to ensure their efficient use as land drainage channels and to accommodate and store flood flows. The environmental risk involved in this activity in the KLIDB catchments is deemed high, particularly to water vole whose habitat and the welfare of the animal itself now falls under protected species legislation of the Wildlife and Countryside Act (1981) (as amended).

No bank reprofiling should be undertaken without first receiving instruction from the Environmental Team. A desk study, scoping exercise and schedule 5 species check may be necessary. Appropriate mitigation measures and timing may be required prior to any reprofiling work. The IDB Water Vole Class licence may apply and appropriate mitigation measures may be required prior to any reprofiling work taking place. Checks must be made with Environmental Team well in advance of operation to ensure appropriate survey and mitigation is undertaken.

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 prior to work of this nature being carried out.

9.0 Culvert Installation or Repair

Any culvert installation or repair will need prior assessment by the Environmental Team and a WFD assessment may be required, depending on the location and the length of the culvert to be installed or whether the culvert is to be replaced, like-for-like. The IDB Water Vole Class Licence may apply and mitigation windows should be considered. In general culverting should be avoided and other alternative measures considered.

A WFD assessment will be required prior to work of this nature being carried out.

10.0 References

Association of Drainage Authorities (2015). An Introduction to the Guide to Management Strategies and Mitigation Measures for Achieving Good Ecological Potential in Fenland Waterbodies.

Association of Drainage Authorities IDB Environmental Good Governance Guide (2022). Association of Drainage Authorities.

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

Environment Agency (2015). Channel Management Handbook. Report-SC110002.

KLIDB Biodiversity Action Plan (2023). Water Management Alliance.

Natural England (2016). CLASS LICENCE - Intentional disturbance of water voles and damage/destruction of water vole burrows by means of 'Displacement' (Internal Drainage Boards).