South Holland
Drainage Board

Standard Maintenance Operations Policy Document

South Holland Internal Drainage Board

Version 3.0

Training and Revision Register

Date	Revision Details	Version Number
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28/03/2022	Changed front cover to Calibri font and added Logo	2.0
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1.0 Introduction

The history of drainage in the Marsh and Fen of South Holland is an ancient one; there is evidence of Roman occupation in the area and records of rudimentary reclamation efforts of the marshland area preceding the Doomsday Book of the 11th Century. In modern times, the South Holland area contains some of the most fertile arable land in the UK and major urban and suburban development has taken place. This was made possible by the success of the drainage infrastructure following the South Holland Drainage Act of 1793 and the construction of the South Holland Main Drain. Without its history of drainage, much of the South Holland area we know today would be under water.

The Board maintains 707km of watercourse, approximately 25% of the total length of watercourse within the South Holland IDB drainage district. These watercourses form an arterial network into which privately maintained watercourses discharge. The drains within the South Holland IDB area are artificial structures and, unlike many other watercourses, have been designed to a capacity to cope with the output of individual catchments using a roughness coefficient indicative of a recently maintained channel. Thus to function properly regular maintenance is required.

These drains, situated within intensively farmed arable land, may be the richest habitats in these arable areas, providing excellent corridors and aquatic and terrestrial habitats for wildlife. It is important that these watercourses are maintained to provide the appropriate balance in presenting the minimum impact on and greatest opportunities for biodiversity whilst ensuring adequate and unimpeded drainage for the agricultural and residential interests. To allow this, the Board has undertaken a risk-based approach to Flood Management and have classified their watercourses as either High, Medium or Lower Priority drains, with different maintenance regimes applied to each category.

The maintenance programme allows earlier cutting of High Priority drains thereby reducing the risk of flooding to residential property and other areas catered for by these drains, while on the other hand providing environmental benefit by leaving Medium or Lower Priority drains untouched until after the bird nesting season. However, it is recognised that in exceptional conditions, such as flooding, if a watercourse needs to be cut to prevent this, whatever the priority, it would have to be cut whatever the time of year, in accordance with the Board's Emergency Response Plan.

The aim of this document is to allow a standardised and targeted maintenance procedure to be carried out to a consistently high standard in designated wildlife sites and in Board-maintained and ordinary watercourses alike. However, changes in legislation and key political drivers have resulted in a 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, pumped landscapes and emphasises the importance of efficient conveyance and flow to pumping stations. 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 SHIDB Standard Maintenance Document also aligns itself naturally alongside the SHIDB Biodiversity Action Plan (BAP), whereby the Board seeks to enhance Habitats and Species of principle importance whilst carrying out its Statutory function. The SHIDB 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 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 SHIDB has various national and international legislative duties to comply with, regarding the aquatic environment, biodiversity and wildlife sites within the SHIDB 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 relevant enforcement body. As a result, a 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 SHIDB 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 SHIDB, 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 SHIDB 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.

Where invasive and noxious species grow on land owned by the Board, then it is the Board's responsibility to clear it. Where these species grow elsewhere, it will be the responsibility of the landowner to make arrangements for clearance of the plants concerned in accordance with the Wildlife and Countryside Act (1981) and the Noxious Weeds Act (1959).

Biosecurity is key to preventing the spread of these organisms into and around the SHIDB watercourses. The SHIDB 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 Environmental Team, non-native species locations are recorded and if possible a plan to eradicate or control them is put into action.

Staff have undergone training on Non-Native Species and sightings are to be reported to the GLNP. Training is reviewed and undertaken regularly, and a Biosecurity Policy has been adopted by the Board.

Where machinery has been in contact with a known non-native invasive species, a washdown will be completed prior to entering the next site to prevent contamination of other watercourses.

Various methods of approach to invasive and noxious plant control will be undertaken by the Board, e.g. Mechanical removal can be undertaken in the case of Ragwort and Himalayan Balsam, whereas spraying with glyphosate is a more appropriate method for the eradication of invasive plants such as Giant Hogweed, Japanese Knotweed and Parrot's feather. More persistent species such as Australian swamp stonewort or floating pennywort will require more innovative integrated methods depending on their location and spread.

The SHIDB is a partner organisation of the Waterlife Recovery Trust (WRT) which is a group aimed to eradicate mink throughout Great Britian, whereby the

WRT and partner organisations trap mink. SHIDB staff continue to monitor and check the traps within the SHIDB area.

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. None are currently present within the South Holland district.

Non-statutory sites such 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 SHIDB 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 the protected site. However, Natural England must 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 contacted and searches will be undertaken prior to operations which require breaking ground.

2.8 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 (i.e. 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 started from mid-July on high priority watercourses. However, dynamic prework checks will be carried out by the Operators 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 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 used in a way to ensure no deepening of the watercourse occurs during the process of weed cutting. Weed cutting along the South Holland Main Drain (outfall up to wisemans), the Little Holland drain (outfall up to Saturday bridge) and in front of the SH Main Drain Old Outfall Sluice, will leave a margin of emergent vegetation uncut at the water's edge as wide as it is practical to do so, in order to manage the reedbed along these sections.

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.

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 the online mapping system. 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.

3.0 Meeting Good Ecological Potential in SHIDB Watercourses

Meeting good ecological potential within the SHIDB 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.

The majority of the SHIDB catchment falls below high tide 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 these watercourses have historically been artificially created or heavily modified, with the purpose of conveying water to a pumping station in times of high flow. These watercourses are not dynamic like those of a 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.

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 SHIDB intends to carry out all regular 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.

All Contractors, Operational and Engineering Staff asked to carry out maintenance for SHIDB 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 activity, operatives and contractors will receive a job specific tool box talk. Watercourse maintenance will receive close supervision by trained Operational and Engineering Staff or a member of the Environmental Team.

5.0 Control of Emergent, Submerged and Bankside Vegetation

To ensure that there is sufficient capacity and conveyance of flow, all of the Board's drains are cleared of vegetation at least once a year and many of the High Priority watercourses are cleared twice a year, as growth dictates. This operation was traditionally called "roding" but for clarity, in this document, it will be referred to as "cutting".

Three mechanical methods are used by the SHIDB to remove vegetation from the watercourses:

- Tractor mounted flails are used to remove the vegetation on the bankside and bank tops.
- A variety of tracked and wheeled vehicles equipped with weed cutting baskets are used for the cutting of emergent and submerged vegetation in the bed of the drains and the lower parts of the banks where the flails cannot reach.
- A weed boat may be contracted in to cut emergent and submerged vegetation from wider watercourses, notably sections of the Little Holland Drain and South Holland Main Drain.

In most cases the work is carried out from the bank on one side of the drain, using notified annual access and/or clear land where available. Cut material will be put on the top of the bank so as to ensure that material does not to slide down the bank and so keeps the channel free from obstructions to flow. This also prevents water vole burrows becoming blocked with material. Less frequently, at least once in every 3 years, the opposite side of the drain will be flailed to control seeded saplings, prevent the ingress of bank vegetation, and maintain grass root density which in turn promotes bank integrity and stability.

Time period	Watercourses	Extent of cut
From start of cutting season to 31st July	High Priority only	One side, and as much of the bed and far toe that can be reached
1st – 31st August	High, Medium, and Lower Priority	One side, and as much of the bed and far toe that can be reached
From 1st September to end of cutting season	High, Medium, and Lower Priority	One side and bed. Also other side if accessible (at least once every three years)

5.1 From start of cutting season to 31 July

High Priority Drains only - one side, bed, and far toe only (dependant on drain width and reach of machine).

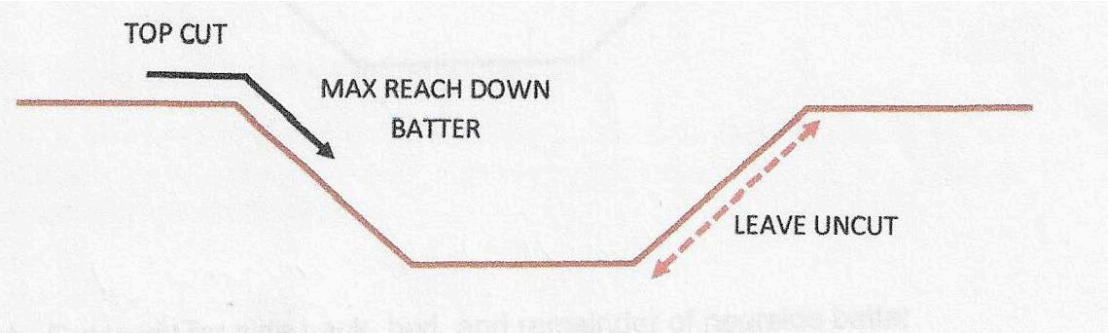
Access is ensured by the provision of agreed access on one side of these drains.

The start date for cutting by flailing or basket cutting depends on a risk-based approach, notably the rainfall, amount of growth in the channel, and saturation of the catchment. This date will normally be mid-July but may be earlier if the situation demands. Cutting will consist of an initial cut of the top and near side bank with tractor and flail for health and safety reasons, and for visibility for the second operation which is cutting the lower nearside bank, bed, and far toe with a either a tractor or excavator mounted basket cutter.

Flail cut:

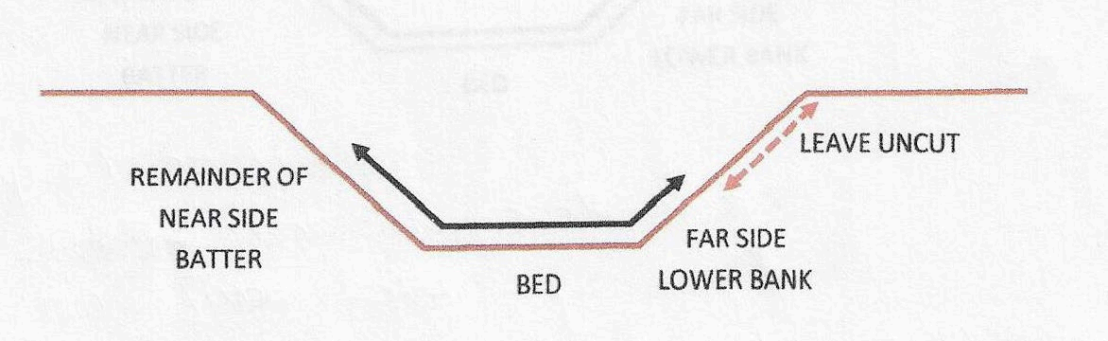
A first flail cut will be used on one side, cutting the top and batter as far as can be reached leaving the far batter uncut for environmental reasons. The operator will look out for nests within the watercourse and work around any that exist,

leaving a buffer zone either side of the nest (as specified in 2.8 of this policy), thereby saving them from damage. The presence of nests will be reported to the foreman, and the Operative will mark the location of the nest and the date recorded on the online mapping system for the information of other operatives.



Basket cut:

A weed basket would cut the nearside batter, all of the bed and as much of the far side batter as can be reached up to approximately 1m above the toe line, with sufficient cover being left for water voles.



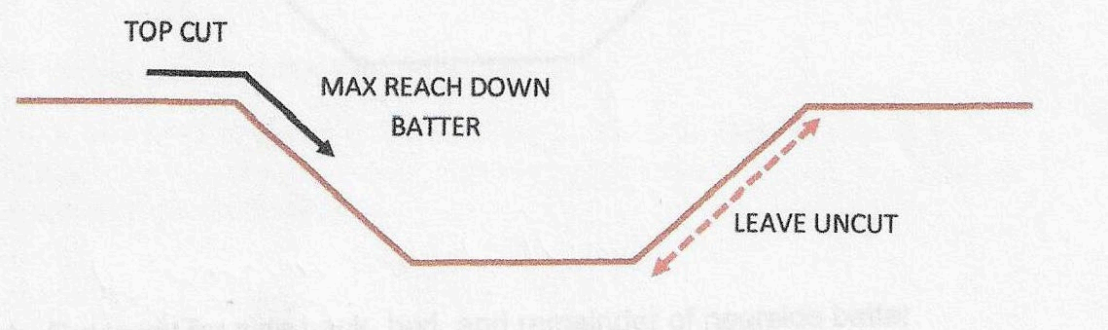
5.2 From 1st to 31st August

High, Medium, and Lower Priority Drains - one side, bed, and far toe only (dependant on drain width and reach of machine).

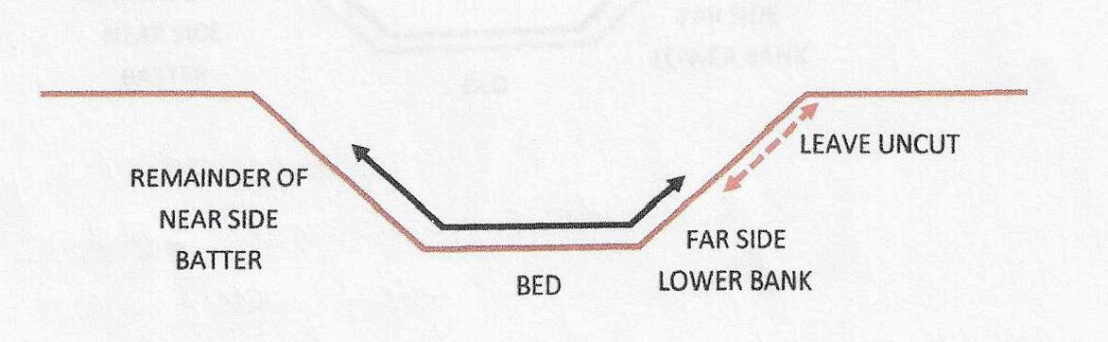
Access is ensured by the provision of agreed access on one side of these drains.

Cutting remains as in Section 5.1 above, only now Medium and Lower Priority Drains are also included.

Flail cut:



Basket cut:



5.3 From 1st September to end of cutting season

High, Medium, and Lower Priority Drains - One side and bed. Also other side if accessible (at least once every three years)

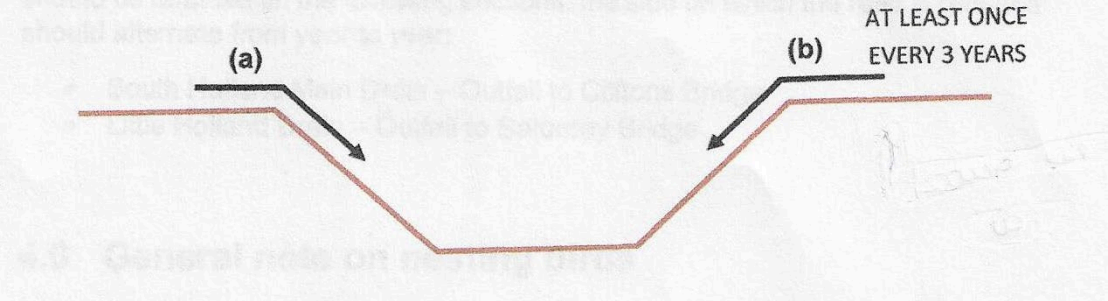
Access is ensured by the provision of agreed access on one side of these drains.

Access to the other side of these drains is only generally available when the land is clear of cropping. Access every year is not therefore guaranteed, but the Board aim to cut the other side whenever access is possible, and at least once every three years.

During this period, those High Priority drains that were cut early in the season, and have had sufficient re-growth to warrant a second cut, will be cut again to maximise flow capacity in these drains over the winter period. This cut will take place after the end of the bird nesting season and be completed by the end of December/January.

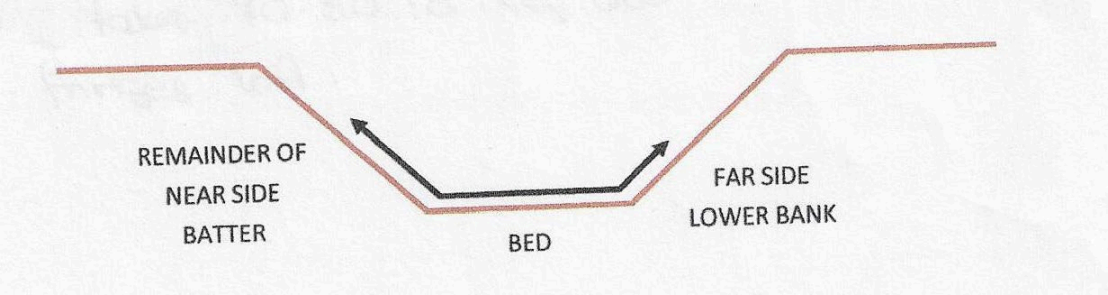
Flail cut:

A flail will cut the bank top and down the batter as far as can be reached and at least every three years, the top of the far bank is cut together with as far down the far batter as can be reached.



Basket cut:

The basket will cut the nearside batter, all of the bed and as much of the far side batter as can be reached.



<u>Exceptions:</u>

- There are certain Board's watercourses which cater for areas of significant drainage need where the risk of flooding is too great to allow the build-up of vegetation between the end of the cutting season in January, and the start of the next cutting season in July. In these watercourses, regular cutting is undertaken throughout the year to ensure the channel is kept clear for conveyance. During the bird nesting season, the cutting is undertaken monthly to dissuade bird nesting, which would prevent the drain being cut again until the nesting season is over. All of these watercourses will, by their nature, be High Priority drains with an access strip, where required, to provide the Board with all year round access. This additional cutting requirement is not only an extra cost for the Board, but also reduces the amount of bird nesting habitat. For this reason, only a very small number of drains fall into this

category, and only where there is a definite significant drainage need to prevent flooding.

Watercourses	Area of concern	Cutting regime
B04 Austendyke West Drain B08 Bulb Company Drain B18 Half Mile Dyke B25 Old Exeter Drain	Old land settlement area, Low Fulney.	These watercourses catering for areas of significant drainage need are cut all year round to ensure adequate conveyance of flow is always available. During the bird nesting season, the drains will be cut monthly using flail and basket to cut one side, bed, and far side toe, leaving one bank uncut. A full cut will then be attempted during September, November, and January.

- Further exceptions to the general method are the lower reaches of the Little Holland (downstream of Saturday Bridge), and the lower reaches of the South Holland Main Drain (downstream of Wisemans Pumping Station) - approximately 23km of drain. The first cut of these sections of watercourse may commence in June, but only the bed of the watercourse will be cut, for conveyance of flow. The banks and a fringe of reed along the toe line will be left uncut thus maintaining bird breeding habitat. This operation will be undertaken either by weed boat or long reach excavator and basket. During the second basket cut, both the bed and the banks will be cleared of vegetation. A reed fringe will be retained in the lengths between Sutton Bridge Sluice to Wiseman's Pumping Station in the South Holland Main Drain and from the Pumping Station to Saturday Bridge in the Little Holland Drain. The reed removed by the excavator will be put on the bank top or heaped at a suitable location away from water vole burrows or floristically diverse areas. The retained fringe will alternate annually where possible so as to ensure that optimum habitat is retained for reed warbler.

- One side of the New Sea Bank Soke Dyke will generally be left uncut. Occasional cutting may be required to control ingress of scrub.

- Some flexibility in the 1st September start date for full cuts in the watercourses to allow earlier cutting under certain limiting circumstances

where complaints are being received from neighbouring property owners for things such as:

- The vegetation from the bank is or will be encroaching on, and creating a nuisance to, adjacent residential property, before 1st September.
- Weeds within the bank will go to seed and create a nuisance to adjacent residential property or field/paddocks for livestock, before 1st September.

This allows the Operations Team some flexibility to avoid such complaints, while affecting less than 1% of the Board's watercourse bank cutting in terms of loss of habitat before 1st September each year. Any such early full cuts should be documented on an annual basis.

- Restricted areas where works can only be undertaken by hand will be cut in February / March.

6.0 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. Over time, instream branches add natural diversity by altering the physical hydraulic function of the watercourse, however this benefit needs to be balanced against the need for good conveyance within the SHIDB's drains.

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:

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

Due to the open landscape throughout much of the SHIDB district, mature tree management will be considered on a case by case basis by the Environmental Team except immediately up or downstream of a pumping station where flow

is compromised. The aim will be to strike a balance between the ecological benefits to the watercourse and conveyance.

In pump drained or flat lowland gravity systems, woody material will not be installed or left in the channel as this will impede the conveyance of water to the pumping station. However, consideration will be paid to retaining overhanging branches as shelter and shade for fish and the opportunity to improve instream ecological diversity by other means.

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 so as to ensure compliance with the Wildlife and Countryside Act (1981). Any tree work required during bird breeding season may only be undertaken following consultation with the Environmental Team.

Veteran and mature trees may be subject to a Tree Preservation Order and/or may provide roosting sites for bats and birds in cavities or splits. Fallen trees or root systems may also act as couches or holts for Otter. It is essential therefore, that 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 **Environmental Options** can be employed:

6.1 Tree and bush management on Narrow drains

Any tree work required on narrow drains will be looked at on a case by case basis and may only be undertaken following prior consultation with the Environmental Team.

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

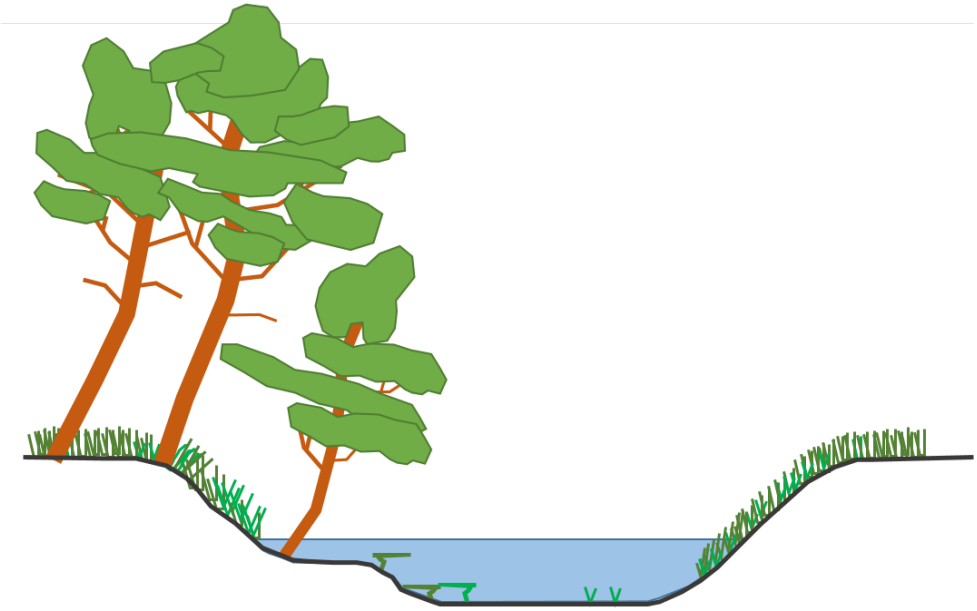
6.2 Tree and bush management on Wide drains

6.2.1 Environmental Option TB4

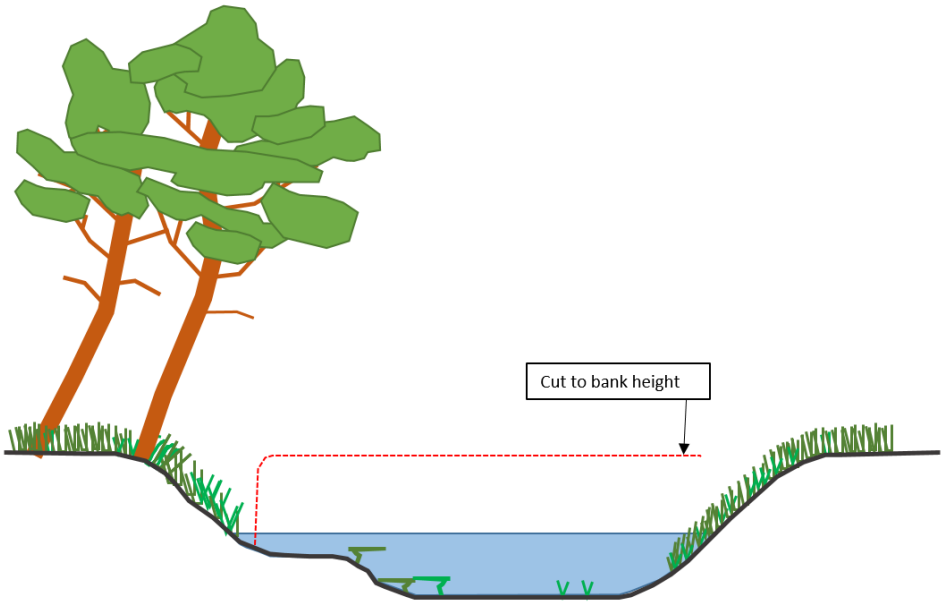
Where a tree or bush has a trunk only growing in the water and there are other trees behind, offering shade, then the tree can be removed where necessary. Cuttings should be removed from the channel.

No WFD assessment required prior to instigating this method.

Before Operation



After Operation

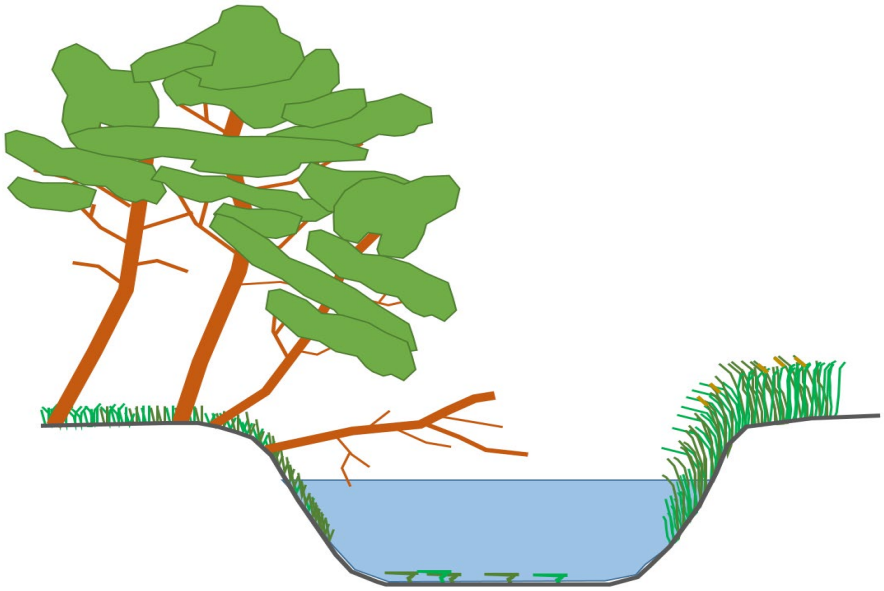


6.2.2 Environmental Option TB3

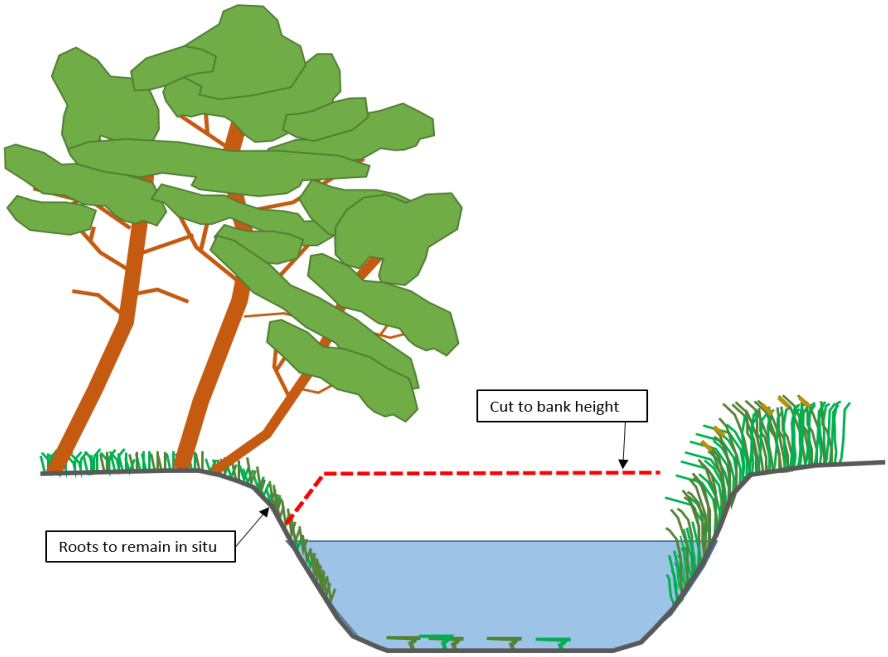
Where a tree or a bush has branches overhanging the watercourse but not actually within the water, then overhanging limbs can be removed up to the height of the bank top only. The remaining tree remains in situ.

No WFD assessment required prior to instigating this method.

Before Operation



After Operation



6.3 Disposal of Waste Timber

Where SHIDB operators have removed or trimmed overhanging trees or shrubs, these arisings can be removed or cut up as wood piles or left on the bank top to enhance / provide habitat for a large variety of vertebrates and invertebrates, subject to landowners consent. 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 be chipped and spread where the landowner is happy for this to occur and where no detriment will be caused to the surrounding environment. Alternatively the chippings or waste timber can be removed from site.

It may be necessary for some timber to be burned. 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.

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

7.0 Watercourse De-silting (Mudding)

Historically, this operation has gone by many names, such as slubbing, mudding, cleansing, de-silting, etc. For clarity, in this document, the term de-silting will be used.

Approximately 35km of Board maintained watercourses are de-silted every year, this equates to an approximately once in every 20 years activity. When heavy de-silting work is programmed at this time, an individual environmental assessment will be made. A desk study, followed by pre-mudding surveys to assess the ecological condition of the drains and a WFD assessment will be required prior to all desilting operations taking place and mitigation measures

will be put in place as required. Checks will be undertaken to ensure the maintenance is not impacting on Wildlife and Countryside Act (1981) Schedule 5 species. The banks and the toe of the banks will remain untouched to maintain stability but if there is a need to manage the base of the bank a water vole survey will be undertaken and it is possible that works will need to be carried out under a class licence.

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.

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.

No 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 ecology and bank stability of the watercourse (see section 7.2). No slubbing's will be allowed to run down the front face of the batter.

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 toe to toe, 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.

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

7.1 Deposition and Spreading of Spoil

Under Section 15 of the Land Drainage Act, 1991 the SHIDB can deposit material arising from excavation of a watercourse on its banks. Normally this is small quantities of silt and vegetation from the regular maintenance procedure. For more irregular desilting operations, notice will be given to

carry out work and compensation will be paid for a strip to cover any area of cropping loss for storage of material prior to spreading after harvest.

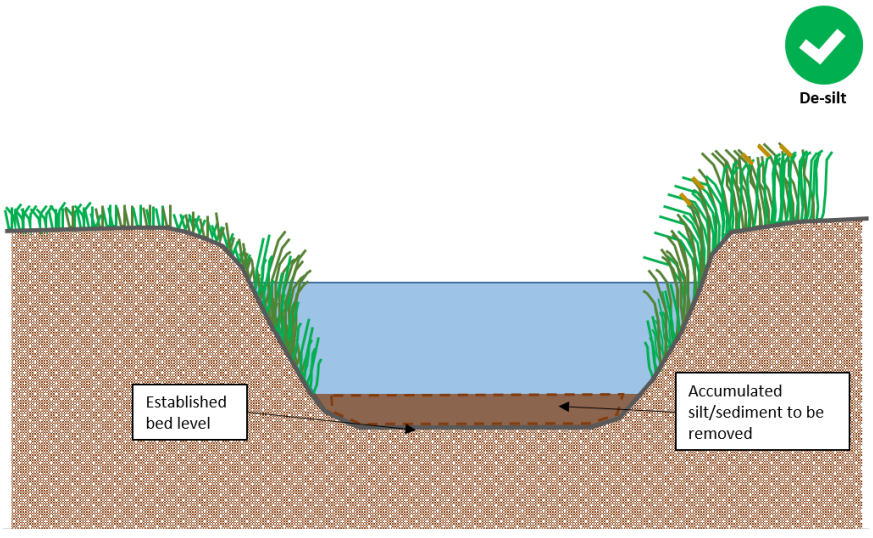
Spreading usually takes place using a hydraulic excavator when the spoil is in a suitable condition to be spread thinly so that it can be easily worked in the next time the field is cultivated. Where a landowner has entered into an Entry Level Scheme and a buffer strip is present, the spoil will be spread on the field side of the buffer strip. In the case of grassland, care will be taken to try to avoid floristically rich areas.

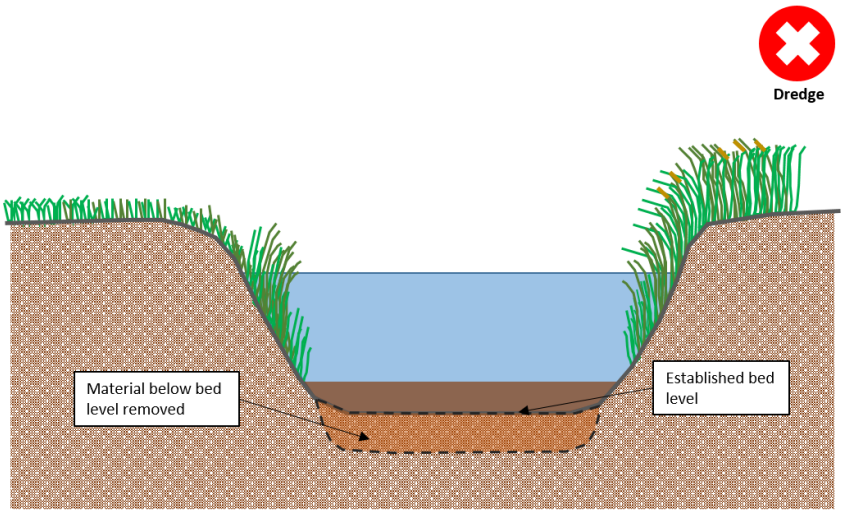
Should no suitable site be available then spoil may be removed from site using an Exemption Licence from the Environment Agency.

7.2 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.





7.3 Culvert Clearing

This maintenance activity usually takes place as part of the de-silting programme, in the winter season, and can be achieved by either of these two methods:

Jetting out of culverts using high pressure water generated by a high powered jetting machine, used particularly on longer culverts and pipelines. The subsequent waste material is immediately sucked up and removed into a tanker where the silt and water are separated. The silt is then either disposed of on the bank side, or if necessary taken to a licensed tip. An appropriately qualified licensed jetting contractor, with ISO 9001 and 14001 accreditation, is employed to carry out this task.

Mechanical cleaning of culverts, dragging a bucket back and forth through the pipe using an excavator is undertaken by the Board's in-house workforce.

8.0 Herbicide Use for Weed Control

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.

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 handheld applicator (PA6W) will be permitted carry out any herbicide application on behalf of the SHIDB 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).

No WFD assessment required prior to instigating this method.

9.0 Bank Reprofiling and Slip Repairs

Sometimes, as part of desilting work, the bed and banks of the drain are re-profiled to lessen the angle of the bank slope to improve bank stability and to improve the flow of water. The environmental risk involved in this activity in the SHIDB 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.

Where re-profiling is to be undertaken, every endeavour will be made to carry this out on one bank only in any given year. Consideration is given to the potential for compensatory habitat rehabilitation in closely aligned drains.

Slips can occur in any drain at any time and require appropriate attention to prevent further erosion and maintain the integrity of the drainage infrastructure. A repair will usually involve installing a wedge of limestone pitching stone in the

toe of the batter to provide support for the bank to be re-built above, re-profiled, and re-seeded.

Repairs take place as and when required, and may also form part of another work programme such as the de-silting or cutting programme, where any slips are addressed as the de-silting or cutting is carried out.

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

10.0 Culvert Installation or Repair

From time to time, new culverts need to be installed, or old ones replaced or extended, to provide access across drains and for reasons of Health and Safety, in accordance with Board's Culverting Policy.

Such works will require a water vole survey to be carried out beforehand by a competent ecologist and if present works may need to be carried out under a class licence. 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.

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

11.0 Pumping Stations, Tidal Sluices, Second line Sluices, and Water level Control Structures

The SHIDB has 17 pumping stations, 6 tidal sluices, 15 second line sluices, and 9 water level control structures to maintain in good working order. These are inspected periodically and refurbishment of these structures is undertaken in line with the Board's Asset Management Plan. Where major works are required an individual environmental assessment is carried out beforehand.

Appropriate regard will be paid to the Eel Regulations (2009) in response to the requirements set down by the Environment Agency. Consideration will be given to the potential enhancements for swallows, barn owl, bats and kingfisher.

12.0 Control of Water Levels

The SHIDB controls water levels within the District by the maintenance and operation of pumping stations, or outfall sluices within the gravity drained catchments.

The South Holland Main Drain has winter and summer operating levels which differ by approximately 0.3 metres. In summer the water level in this drain is raised, and then lowered again during the winter period. The operating levels of the other catchments are set either by automated start and stop levels at the pumping stations, or regulated by the tidal outfall sluices. The drains are cut annually to allow the uninterrupted flow and conveyance of water to the pumps and sluices.

13.0 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.

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

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SHIDB Biodiversity Action Plan (2022). Water Management Alliance.

Mayer, L., Moodie, I., Carson, C., Vines, K., Nunns, M., Hall, K., Redding, M., Sharman, P. & Bonney, S. (2017). Good Ecological Potential in Fenland Waterbodies: A Guide to Management Strategies and Mitigation. Measures for achieving Good Ecological Potential in Fenland Waterbodies.