



# South Holland Drainage Board

## Standard Maintenance Operations for the Board's District

### 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 Domesday Book of the 11<sup>th</sup> Century. In modern times, the South Holland area is considered to afford some of the most fertile arable land in the UK and major urban and suburban development has taken place; all this has been underpinned by the success of the drainage infrastructure heralded by the passing of 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 the most important watercourse which is in fact only approximately 25% of the total length of watercourse within the South Holland IDB drainage district. The watercourses that the Board maintain, form an arterial network into which the other privately maintained watercourses discharge. The drains within the South Holland IDB area are artificial man made structures designed to such a capacity as to cater for their individual catchments. The drainage infrastructure has been improved successively over the years to cater for new catchment conditions and drainage standards. The Boards drains were designed using a roughness coefficient indicative of a recently maintained channel. Therefore, for the drains to have sufficient conveyance capacity they have to be maintained on a regular basis.

### The need for a Standard Maintenance Operations document

Regular maintenance of the Board's drains is essential for land drainage, flood risk management and for maintaining biodiversity of the watercourse system. The Association of Drainage Authorities (ADA) and Natural England produced the Drainage Channel Biodiversity Manual in 2008 for use by Drainage Boards when carrying out routine maintenance. However, the South Holland IDB wanted an easy reference guide, more readily applicable to the wildlife and flood risk management protocols taking place regularly within the South Holland IDB catchment.

This Standard Maintenance Operations document provides guidance on the appropriate standards to be achieved when undertaking all maintenance works, so that work is carried out sympathetically, and with biodiversity interests kept firmly in mind, whilst also meeting the operational needs of the catchment served.



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

## Contents of Document

<b>Introduction</b>	Front cover
<b>The need for a Standard Maintenance Operations document</b>	Front cover
<b>1.0 Prioritising Drain Maintenance</b>	3
<b>2.0 Control of Emergent, Submerged and Bankside Vegetation</b>	4
<b>2.1 The Cutting of High Priority Drains</b>	4
<b>2.2 The Cutting of Lower Priority Drains</b>	5
<b>2.3 Herbicide Use</b>	5
<b>2.4 Control of Invasive species and Noxious Weeds</b>	6
<b>3.0 Watercourse De-silting (Mudding)</b>	6
<b>3.1 Open Channel</b>	6
<b>3.2 Culvert Clearing</b>	6
<b>3.3 Jetting Pipelines</b>	7
<b>4.0 Slip Repairs</b>	7
<b>5.0 Deposition and Spreading of Spoil</b>	7
<b>6.0 Tree Cutting, Bushing and Burning</b>	7
<b>7.0 Pumping Stations, Sluices, &amp; Water level Control Structures</b>	8
<b>8.0 Construction</b>	8
<b>9.0 Management of Water Levels</b>	8
<b>10.0 Other Roles of the South Holland IDB</b>	9
<b>Contact Details</b>	Back cover

## 1.0 Prioritising Drain Maintenance

From an environmental point of view, these drains, situated within intensively farmed arable land, may provide the richest habitats in these arable areas. Drains have the potential to provide excellent corridors and aquatic and terrestrial habitats for wildlife. It is important that these watercourses are maintained in such a way as to provide the appropriate balance in presenting the minimum impact on the wildlife within, whilst ensuring adequate and unimpeded drainage for the agricultural and residential interests within the catchment. In an attempt to facilitate this, the Board has undertaken a risk-based approach to Flood Management and have classified their watercourses as either High Priority or Lower Priority drains, with different maintenance regimes applied to each category.



However, it is recognised that in exceptional conditions, such as a flooding emergency, if a watercourse is identified as needing to be cut to prevent flooding from occurring, whether it be High or Lower Priority, it would have to be cut, whatever the time of year, due to the overriding circumstances, as the emergency dictates and in accordance with the Board's Emergency Response Plan.

**The High Priority designation is assigned to watercourses which fulfil one or more of the following criteria:**

- **Watercourses that meet the DEFRA Critical Ordinary Watercourse criteria; i.e.. they pass through areas of Land-use A or B, where:**



**Land use Band A is:**

**Typically intensively developed urban areas at risk from flooding.**

**Land use Band B is:**

**Typically less extensive urban areas with some high grade agricultural land and/or environmental assets of international importance requiring protection.**

- **The main pumped or gravity watercourse in each catchment,**
- **Arterial breaches into large areas of agricultural land otherwise unprotected by High Priority infrastructure.**

The programme of maintenance aims to allow cutting of High Priority drains to commence earlier in the season, thereby reducing the risk of flooding to residential property and other areas catered for by High Priority drains, while on the other hand providing environmental benefit by leaving Lower Priority drains untouched until after the bird nesting season.

## 2.0 Control of Emergent, Submerged and Bankside Vegetation

To ensure there is sufficient capacity and conveyance of flow, all of the Boards drains are cleared of vegetation at least once a year and many of the High Priority 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”.

In most cases the work is carried out from one side of the drain. Cut material will be put on the brink in such a position so as not to slide down the bank, to keep the channel free from obstructions to flow, and to prevent water vole burrows becoming blocked with material. Less frequently, and on average once in every 3 years, the opposite side of the drain will be flailed to control seeded saplings and maintain the integrity of the bank. There is a separate [Reed Cutting Policy](#) for the South Holland Main Drain and the Little Holland Drain.

**There are three recognised mechanical methods applied by the Board to remove vegetation from the watercourses:**



**1. Tractor mounted flails are used to remove the vegetation on the bankside and banktops.**

**2. 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.**

**3. A weedboat may be contracted in to cut emergent and submerged vegetation from wider watercourses; namely sections of the Little Holland Drain and South Holland Main Drain.**

### 2.1 The Cutting of High Priority Drains

Access is ensured by the provision of agreed access strips along all High Priority drains. These strips are beneficial in these areas, not only to the South Holland IDB and landowners but they may also provide a buffer zone from the arable land to the watercourse and a corridor for wildlife.

**The cutting of these High Priority drains is done in 2 phases:**

**The Flailing and Basket Cutting of High Priority drains (411km).**

The start date for this operation is determined by a risk based approach; the criteria being amount of rainfall, amount of growth in the channel, and saturation of the catchment. In a typical year, the start date would be during July, but if the risk is deemed high this date may be earlier. The basket will 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. The operator will look out for nests within the watercourse and work around any that exist, leaving a 5m buffer zone either side, thereby saving them from damage.



## **The second Flailing and Basket Cutting of all High Priority drains (411km) as growth dictates.**

The basket will cut the nearside batter, all of the bed and as much of the far side batter as can be reached. This cut will take place after the end of the bird nesting season and be completed by the end of December/January.

The exceptions to this 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, in total 24km of drain. On these lengths a weed boat may be used, if growth dictates, in place of the first basket cut, so that the middle of the channel can be cleared of vegetation while leaving the reed fringes and growth on the banks intact. During the second Basket cut, both the bed and the banks will be cleared of vegetation by the excavator but a reed fringe will be retained from Sutton Bridge Sluice to Clifton's Bridge 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.

### **2.2 The Cutting of Lower Priority Drains**

In Lower Priority drains, vegetation clearance will not start until after the end of the bird nesting season, no earlier than 1 September, and should be completed by the end of December/January. The basket will cut the nearside batter, all of the bed and as much of the far side batter as can be reached.



### **2.3 Herbicide Use**

Herbicide use will be considered where weed growth cannot be effectively controlled by mechanical means or where it is deemed more appropriate for the environment. Glyphosate is the only herbicide which will be used by the Board for use in or near water and spraying operatives will have the appropriate City and Guilds NPTC certificate of competence for the safe use of pesticides.

The storage and use of these substances will also comply with the Control of Substances Hazardous to Health Regulations 1988. It should be noted that the use of herbicides within the Board's Drainage District is also affected by agri-environment scheme requirements.

Before herbicides can be used, written consent must be obtained from the Environment Agency. If chemicals are to be used, then only herbicides cleared for aquatic use will be used in or beside water (in accordance with the "Guidelines for the use of herbicides on weeds in or near watercourses and lakes" DEFRA, the Control of Pesticide Regulations 1986 and the Food and Environment Protection Act 1985).



## 2.4 Control of Invasive Species and Noxious Weeds

Various methods of approach to invasive and noxious plant control will be undertaken by the Board, eg. 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 Parrots feather. More persistent species such as Crassula or Pennywort will require more innovative integrated methods depending on their location and spread. Great care will be taken in de-contaminating Board's equipment after coming in to contact with invasive species to prevent contamination of other watercourses.



**Parrot's Feather.**  
A non- native species of aquatic plant

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).

## 3.0 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 5% of the total length of Board maintained watercourses are de-silted every year. When heavy de-silting work is programmed at this time, an individual environmental assessment will be made.

Sometimes, as part of this work, the bed and banks of the drain are re-profiled to ensure their efficient use as land drainage channels and improve the flow of water. Where re-profiling is to take place a protected species survey will be carried out in advance of the works by a competent surveyor, and the findings recorded. Appropriate mitigation measures will be carried out in respect of water vole. The material removed from the drain will be deposited adjacent to the watercourse. Where necessary, if the deposition of material adjacent to the drain is not possible, material may have to be carted offsite and stockpiled before spreading. This will be done under the specifications of an Environment Agency Exemption Permit.

### 3.1 Open Channel

### 3.2 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:

1. Jetting out of culverts using high pressure water generated by a high powered jetting machine. The subsequent waste slurry 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.
2. Mechanical cleaning of culverts by dragging a bucket back and forth through the pipe using an excavator. This type of culvert cleaning is undertaken by the Board's in-house workforce.

For longer culverts or pipelines the jetting method of de-silting is used, and as before a suitably qualified licensed jetting contractor is employed to carry out the work. Again this work is usually carried out as part of the general de-silting programme, although it can be done for other reasons, for example as a result of an enquiry or complaint, or as part of investigations in connection with planning applications etc.

#### 4.0 Slip Repairs

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 programme where any slips are addressed as the de-silting is carried out.

#### 5.0 Deposition and Spreading of Spoil

The Board has powers under Section 15 of the Land Drainage Act, 1991 to deposit material arising from excavation of a watercourse on the banks. In the majority of cases, this will consist of small quantities of silt and vegetation from the regular maintenance procedure. Notice will be given to carry out work and compensation will be paid for a strip to cover any area of cropping loss when the material is spread.

Spreading is accomplished using a hydraulic excavator when the spoil is in a suitable condition to be spread. In general, spoil will 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 left for that purpose, the spoil will be spread on the field side of the buffer strip if a request to do so is made by the landowner. In the case of grassland, care will be taken to avoid floristically rich areas, where an alternative disposal site is available.

Further carting and storing of inert silts will be done under an Exemption Licence from the Environment Agency; providing the quantities stored at a registered site do not exceed 1250 tonnes.

#### 6.0 Tree Cutting, Bushing and Burning

Tree trimming and bushing is carried out every year where such vegetation is encroaching on Board's water-courses in accordance with the [Tree Management Policy](#). This work is usually timed to take place out of the bird nesting season so as not to cause damage or disturbance to breeding birds, although in some exceptional cases this work has to be done at other times of the year, subject to a thorough survey being undertaken beforehand by the Operations Manager or Works Supervisor, to check for the presence of breeding birds. If work is planned on a large mature tree, it will be checked for Tree Preservation Orders and an arboriculturalist will undertake a tree survey. Care will be taken to ensure no damage to nesting birds and roosting sites for bats. If a tree is removed as part of the Board's work, it is the Board's policy to set a replacement tree in a position acceptable to the Board and the landowner.

Hedgerow legislation, Tree Preservation Orders, the Conservation (Natural Habitats etc) Regulation 1994, as amended by the Conservation of Habitats and Species Regulations 2010 and the Wildlife and Countryside Act (1981) (as amended) and incorporated in the CROW Act 2000, and the Natural Environment and Rural Communities Act (2006) will be considered before the cutting and limbing of trees or the removal or maintenance of hedgerows or trees.

It is occasionally necessary for the Board to dispose of vegetable matter (mostly timber) by burning. This generally occurs when a substantial blockage such as a fallen tree has been removed from a watercourse, or if the Board's operators have found it necessary to trim overhanging trees or shrubs.

Under the Waste Management Licensing Regulations 1994, and under an Environment Agency exemption licence, the Board may burn up to ten tonnes of woody material per day, in the open, at their discretion.

## **7.0 Pumping Stations, Tidal Sluices, Second line Sluices and Water level Control Structures**

The Board 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 all inspected annually and have work carried out on them as and when necessary. The 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.

## **8.0 Construction**

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 protected species survey to be carried out well before the works are due to commence by a competent surveyor; the findings of which are recorded. If any protected species are found then appropriate mitigation measures will be put in place before any work commences on site.

## **9.0 Management of Water Levels**

The Board control water levels within the Internal Drainage District mainly by the maintenance and operation of pumping stations, or outfall sluices within the gravity drained catchments.

The Little Holland Drain and South Holland Main Drain have differing winter and summer operating levels. In summer the water levels in these drains are 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. As previously discussed, the drains are cut annually to allow the uninterrupted flow and conveyance of water to the pumps and sluices, and to keep water levels regulated within each catchment.



## 10.0 Other Roles of the South Holland IDB

### 10.1 Rubbish Clearance



Fly tipping is a nuisance to landowners and those who have appreciation of the countryside and the natural environment. The South Holland IDB responds promptly to fly tipping within its drains. The waste is removed and disposed of at an appropriately licensed tip.

### 10.2 Vermin Control

The South Holland IDB also works in conjunction with landowners to control pests within Board's drains and on Board owned land.

### 10.3 Environmental Enhancement



The Board also maintains an area of grassland, adjacent to the South Holland Main Drain, as a site where orchids and other unusual flora can flourish, along with the biodiversity which is encouraged by such a site.

The Board has in recent years worked in conjunction with the Hawk and Owl Trust in the erection of Owl boxes throughout its area and these are monitored on an annual basis.



### 10.4 Eel Passage

The Board has a programme in place for the planned installation of eel passes on some of its structures, as well as the controlled inflow of saline water at some of the tidal sluices, at certain times of the year, to assist eel passage.

## Contact Details

**South Holland Internal Drainage Board** is one of five drainage boards administered by the **Water Management Alliance**.

For more information on any of the information detailed in this Standard Maintenance Operations document, please contact us using the following contact details:



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**SOUTH HOLLAND**  
Internal Drainage Board

*Defenders of Lincolnshire's Fens*

**Bread Basket of Britain**

**Prioritized Maintenance Programme**

**The Right Balance**

- People
- Property
- Infrastructure
- Agriculture
- Commerce
- Wildlife

Land within South Holland IDB District - 38,443 Hectares

Category	Area (ha)
Residential/Industrial/Other	3,047
Designated Wildlife Sites	41
Agricultural Land	35,355

