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Environmental Options for Flood Defence Maintenance Works

November 2003



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Our work includes tackling flooding and pollution incidents, reducing industry's impacts on the environment, cleaning up rivers, coastal waters and contaminated land, and improving wildlife habitats.

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The Environmental Options for flood defence maintenance works, as identified in this report have been prepared in discussion with Flood Defence Operations (FD) Client, Emergency Workforce (EWF) and Fisheries, Recreation, Bio-diversity (FRB) teams in order that the Anglian Region of the Environment Agency can comply with its statutory duty to maintain and enhance the water environment whilst carrying out its flood defence functions.

Introduction

Each year the FD teams carry out a river and coastal maintenance programme, which is delivered by the Emergency Workforce, to ensure that all Main River, tidal and sea defences meet defined flood defence standards.

Routine flood defence maintenance can create many opportunities for environmental enhancements, but also can have significant impact on environmental interests. Plants and animals that rely upon the water environment have complex life cycles and can be vulnerable at different times of the year to certain maintenance activities, e.g. autumn removal of vegetation eliminates overwintering habitat for invertebrates, summer weedcutting can remove fish habitat.

Environmental Options provide generic best practice advice for 'routine' flood defence maintenance operations, which include desilting, grasscutting, weedcutting and bush/tree management. They allow FD to specify the conservation requirements in the instructions for work on individual jobs within a consistent framework. **Emergency works, other *ad hoc* work and work near or in a designated site (conservation or archaeological) or where protected species are known to be present is**

outside the scope of these options and specific advice must be sought from FRB Team.

The annual maintenance programme is agreed following consultation with FRB Team and external environmental organisations, as set out in the Conservation and Flood Defence Maintenance Procedures 2001 (see flowchart, Figure 1). Any works which fall outside this agreed programme arising through the year should undergo a similar consultation process.

Application

The Environmental Options apply to all flood defence maintenance works undertaken by the Agency, in the absence of any other overriding specific instructions. Where maintenance work has the potential to cause significant environmental damage, e.g. in or near a Site of Special Scientific Interest, a detailed specification for work will be compiled.

The Environmental Options are hierarchical with a range of environmental impacts. The option chosen must balance the flood defence standard required and the conservation value of the watercourse. **Generally, the higher the conservation value of the watercourse the option with the least environmental impact should be chosen, unless there are justifiable reasons for higher flood**

defence standards being required. Flood defences and rivers in areas where the consequence of their failure is High will normally require a high level of maintenance.

The Environmental Options must be used in conjunction with training to ensure FD, EWF and FRB teams are aware of habitats and species of importance that could be affected or enhanced by flood defence maintenance works.

Retention of Features with Conservation Value

As a general rule, the more diverse the structure of a river channel, (for example, riffles, pools, wet berms, cliffs, debris dams, marginal vegetation) the more opportunities there are for diverse plant and animal communities. These features and habitats, in whole or in some part, must survive throughout the year to maintain the plants and animals they support. Linear features such as marginal standing vegetation, provide habitat and refuges, from which animals and plants can repopulate into areas where maintenance work has occurred. The quantity and location of features that should be retained will be largely dependent upon the nature of the river and the flood defence standard required. Within Anglian Region, rivers vary greatly from restrained man-made river systems to semi-natural rivers.

Key Environmental Impacts and Best Practice

All maintenance operations have some impact upon the environment. The options have been assessed against best practice for those protected species that are widespread but not necessarily common throughout the region, including otters, water voles, birds, bats, reptiles (snakes/ lizards) and amphibians (newts/frogs/toads). The aim must always be to use best practice options whenever this is possible, consistent with the need to maintain flood defence standards. Three key areas of conservation impact are the loss of margins, desilting and the disposal of arisings. Many river management activities generate materials that have to be removed from site or disposed within the working area. All desilting, mowing, mechanical weed control and tree/shrub management produce materials that are potentially damaging to wildlife unless disposed of sensitively.

Guidelines

- 1 Environmental Options (EOs) are a series of cross-section and long-section drawings, which provide a visual picture of the desired environmental outcome required of maintenance works.
- 2 The objective of EOs is to provide a minimum environmental specification for maintenance works. Opportunities to enhance the river environment should always be sought.
- 3 The choice of each EO must be balanced with the flood defence needs of the watercourse, including health and safety issues. FD should decide the flood defence standards required and then agree the appropriate EO to meet these standards with the FRB Team.
- 4 EOs are generally hierarchical; that is the higher the number, the more complex the habitats which remain following maintenance works, the lower the environmental impact and greater the

conservation value. We should aim to work towards using the least damaging EO whilst maintaining flood defence standards.

- 5 Each watercourse may have a number of different options along its length, these will reflect the changing nature and flood risks of the watercourse, from head-streams to lowland river and open floodplain to urban bottlenecks.
- 6 EOs are an idealised environmental minimum. It is not intended to define every facet of each watercourse. A common sense approach is required when river and option do not match exactly:
 - a Do not 'expand' maintenance works to where existing margins/habitats already exceed minimum specification and do not affect flood defence standards.
 - b If the existing margins/habitats are smaller than those specified in the chosen options, take care not to disturb the 'retained' margin/habitat, e.g. do not run a weedrake through. This 'retained' zone must be undisturbed to allow colonisation and regeneration.
- 7 Weed cuttings, dredged silt, etc. must not be dumped on retained margins/habitats. Arisings should either be removed from the working area or placed in a specified place within the working area.
- 8 During weedcutting and desilting works take care to avoid baring the toe as this can have adverse impacts on both flood defence and conservation interests.
- 9 From time to time, retained aquatic margins may need desilting to retain their aquatic interests and maintain channel capacity. This should not be continuous over long lengths in any one year. All

desilting works must be accompanied by a detailed environmental specification.

- 10 When weedcutting or desilting during a period of prolonged hot weather or low flow remain vigilant for signs of fish distress due to low dissolved oxygen levels. If fish distress is seen then stop work immediately and seek advice from the FRB team.
- 11 The timing of maintenance works should be co-ordinated to minimise its environmental impact. Unless agreed, by exception with FRB staff, timings of works will be as follows:-
 - a Mowing shall not take place during April, May and June inclusive, unless part of the H&S grasscutting option.
 - b Weedcutting shall not take place during April, May and June.
 - c Weedraking shall not commence before 1st August.
 - d Tree and bush management works shall only take place between 1st October and 14th March.
 - e Cutting of Phragmites/Common Reed, is better left until mid August or later, the later the better.
 - f Desilting should not take place in or upstream of salmonid spawning areas during November/December/January.
 - g Individual sites may have rare or sensitive species associated with them. If this is known, individual site specifications should be developed with FRB team advice, which will supersede generalised EOs in these areas.
- 12 There will always be exceptions to these options. If in doubt, or unclear on any point, contact the FRB team, EWF Officer or FD Engineer – **DO NOT CARRY ON REGARDLESS.**

Fig 1 Liaison arrangements for Flood Defence & Conservation staff

Annual planning for Maintenance Programme

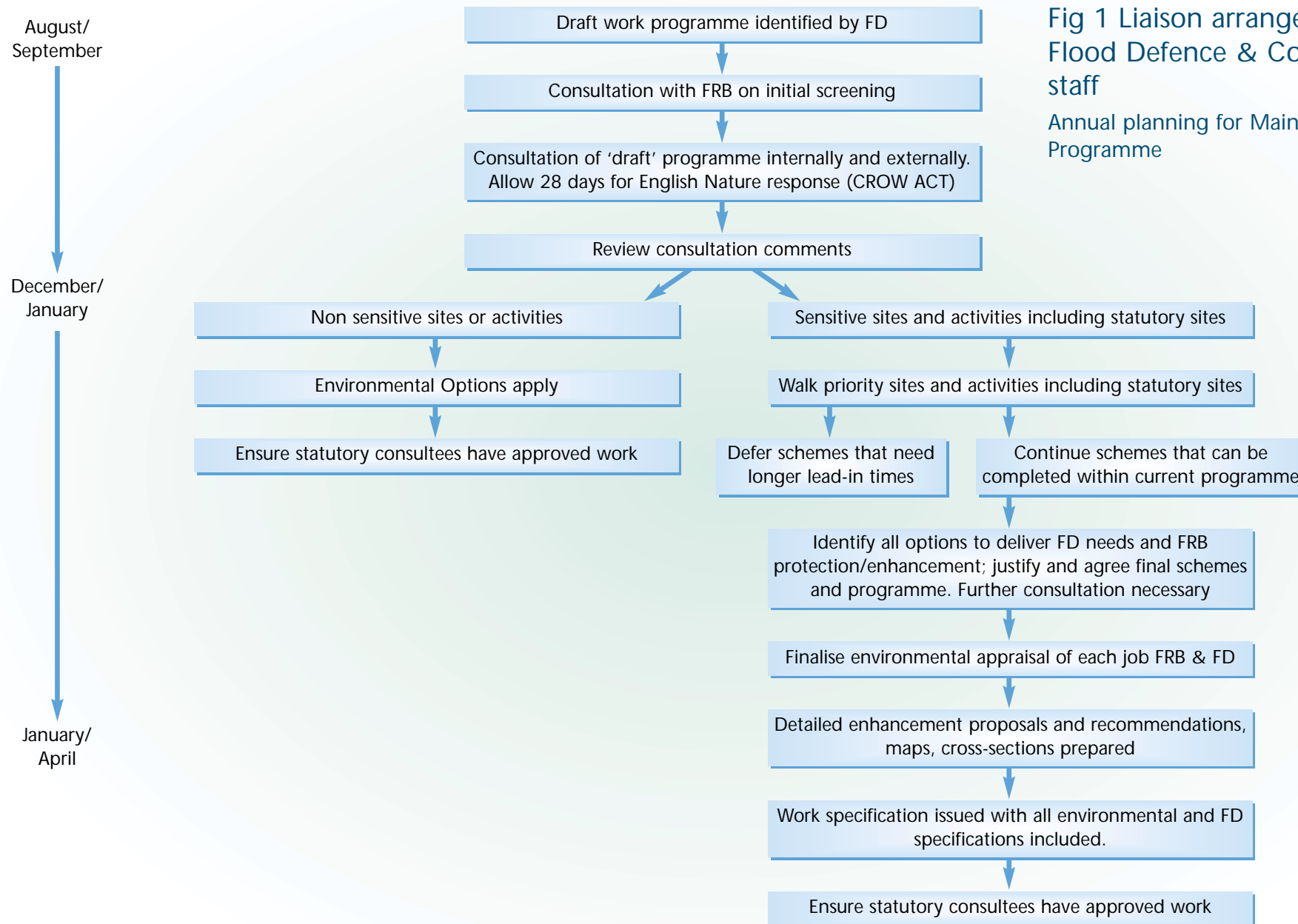



Fig 2 Conservation Value of Options



OPERATION	ENVIRONMENTAL OPTIONS								
Mowing	M1			M2	M3		M4		M5
Mowing Raised Banks	ME1			ME2	ME3		ME4		
Mowing Tidal/ Sea Banks	MS1			MS2	MS3		MS4		
Weedcutting	W1	W2	W3	W4	W5	W6	W7	W8	W9
Weedcutting by Boat				WB1	WB2				
Weedraking				WR1	WR2				
Desilting	D1			D2	D3	D4			
Pollarding							P1		
Tree and Bush Management Embankment	BE1			BE2	BE3				
Tree and Bush Management	B1			B2	B3	B4			

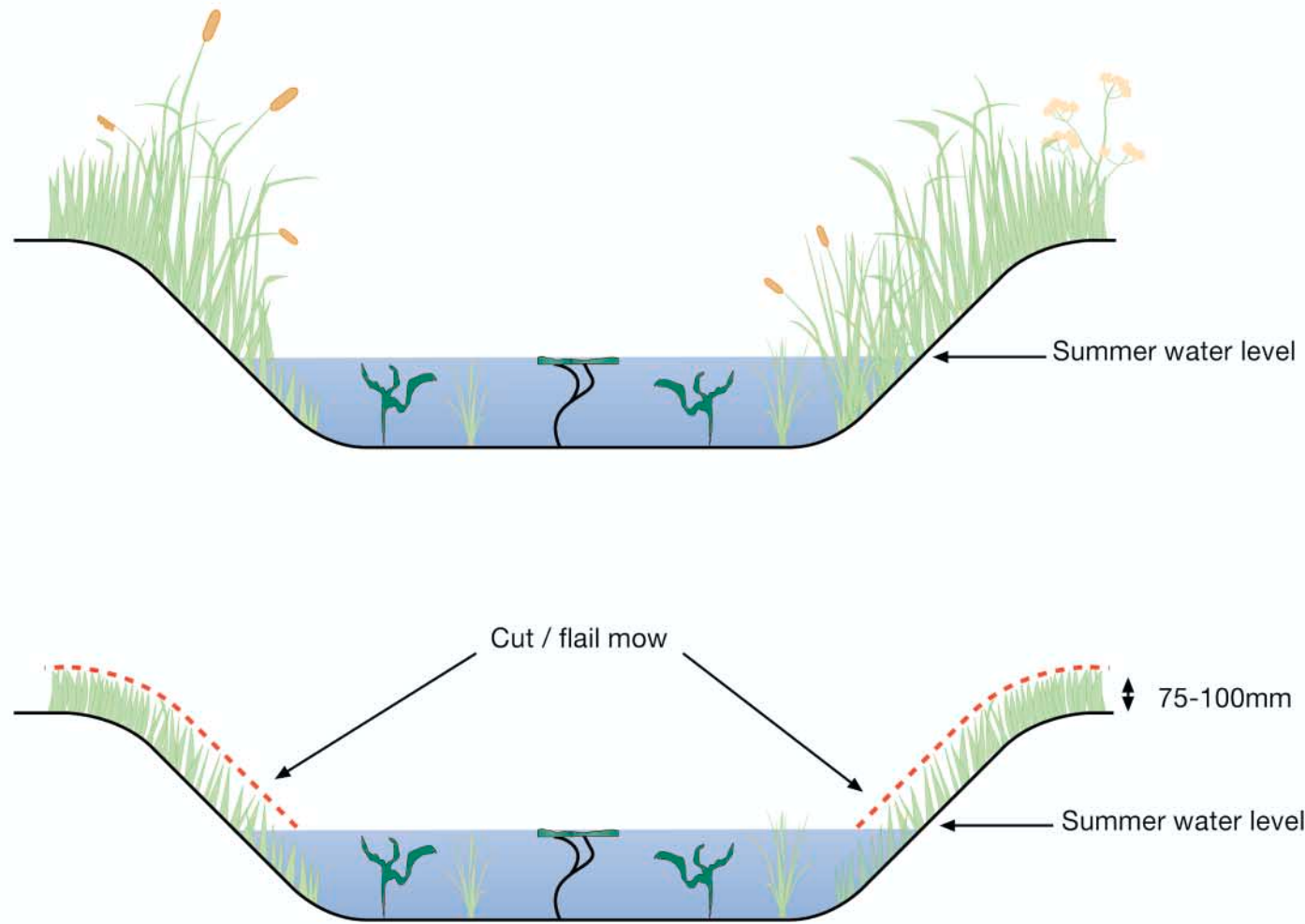
The Environment Agency has been provided with advice on how our routine maintenance can incorporate best practice for the following protected species: bats; birds; otters; water voles; amphibians and reptiles. Where possible we have incorporated this advice into the environmental options. Where we have not incorporated this advice we have indicated that carrying out an option can have a high risk of adverse impact upon protected species and recommend effort is made to identify potential habitat and carry out mitigation/ enhancement measures where present.

Key

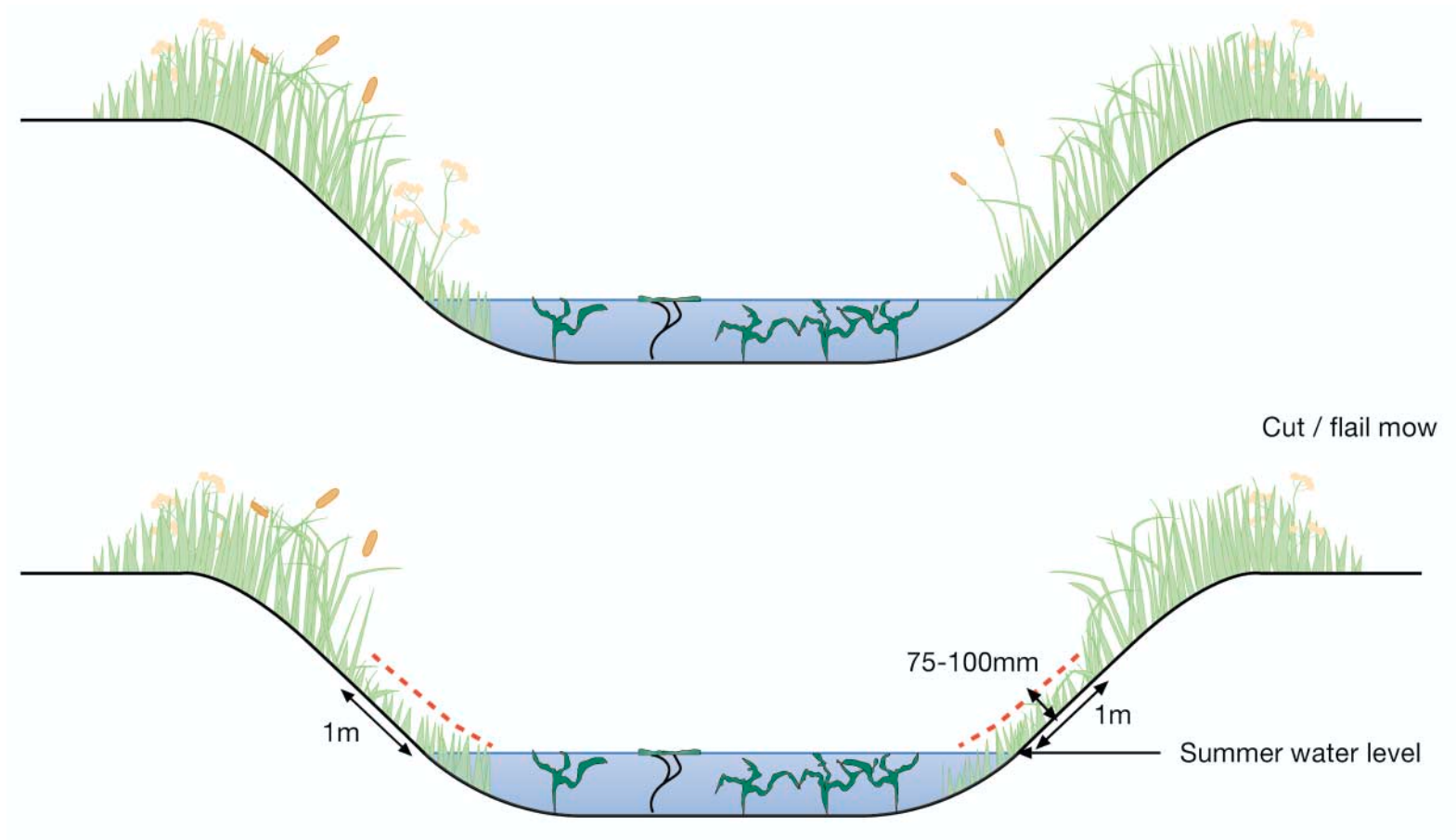
- High risk of adverse impacts upon protected species
- Medium risk of adverse impacts upon protected species
- Low risk of impact upon protected species

M1

Mowing Non-raised Banks

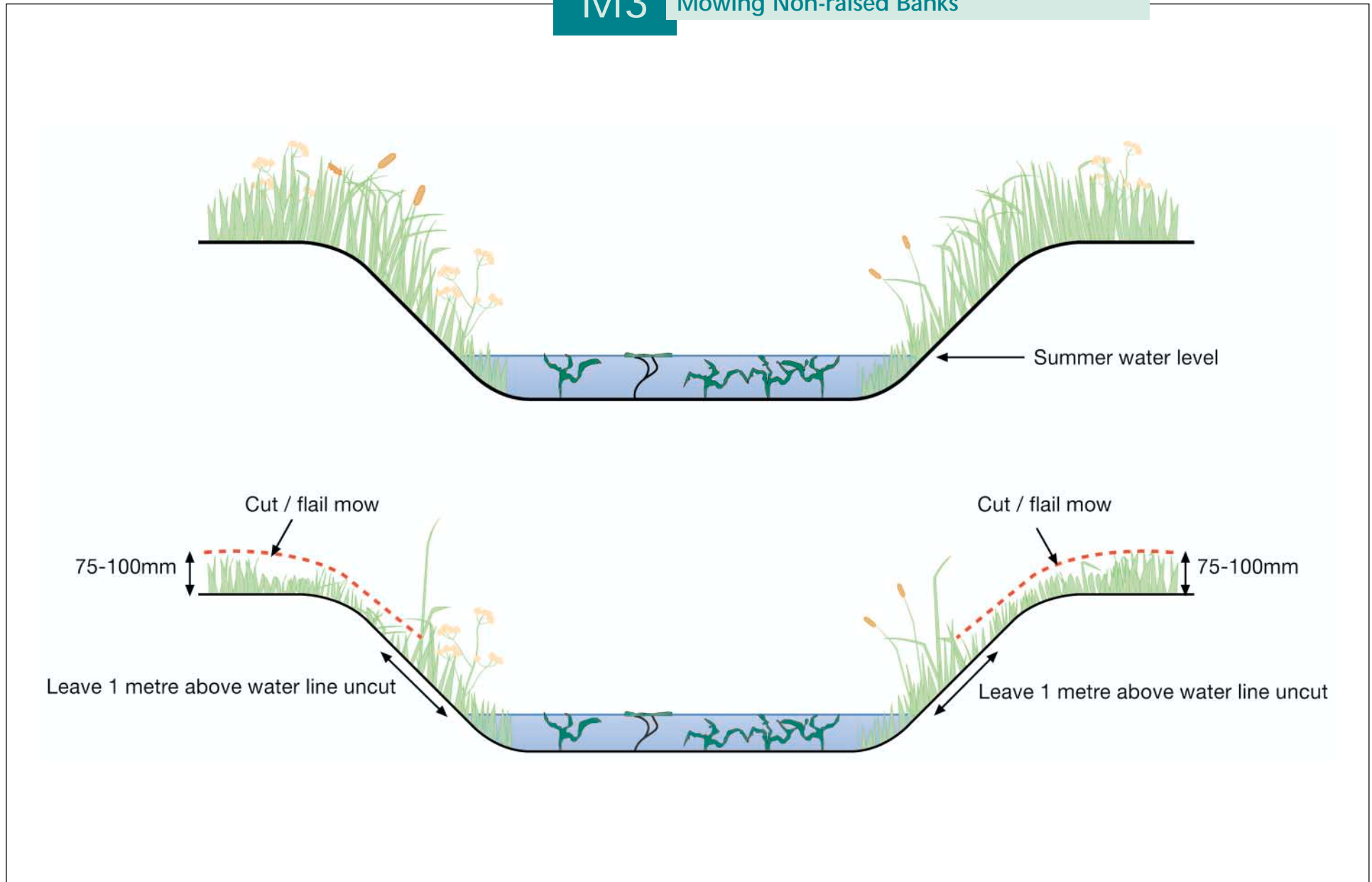


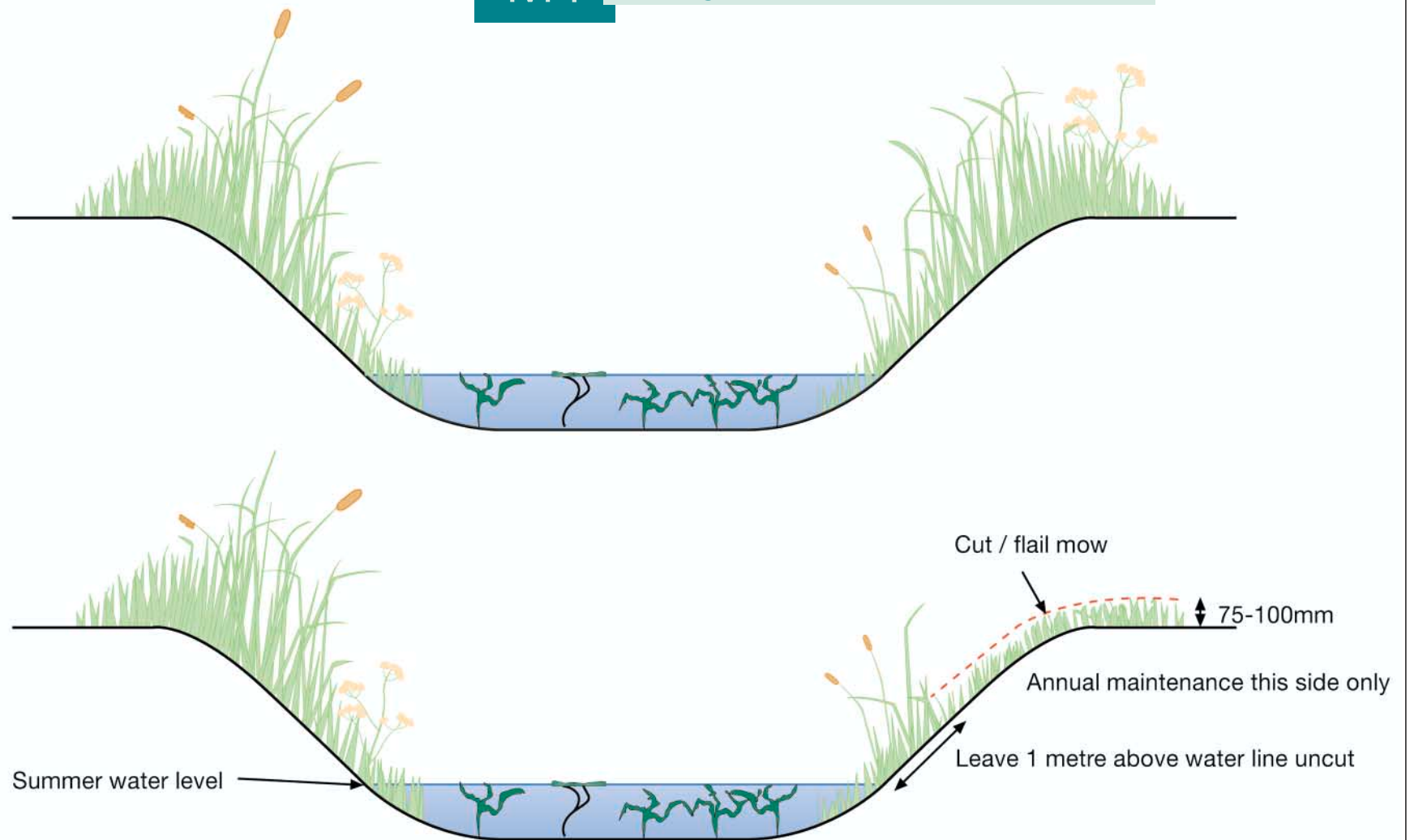
Use only where risk / limited capacity dictates. Look to enhance

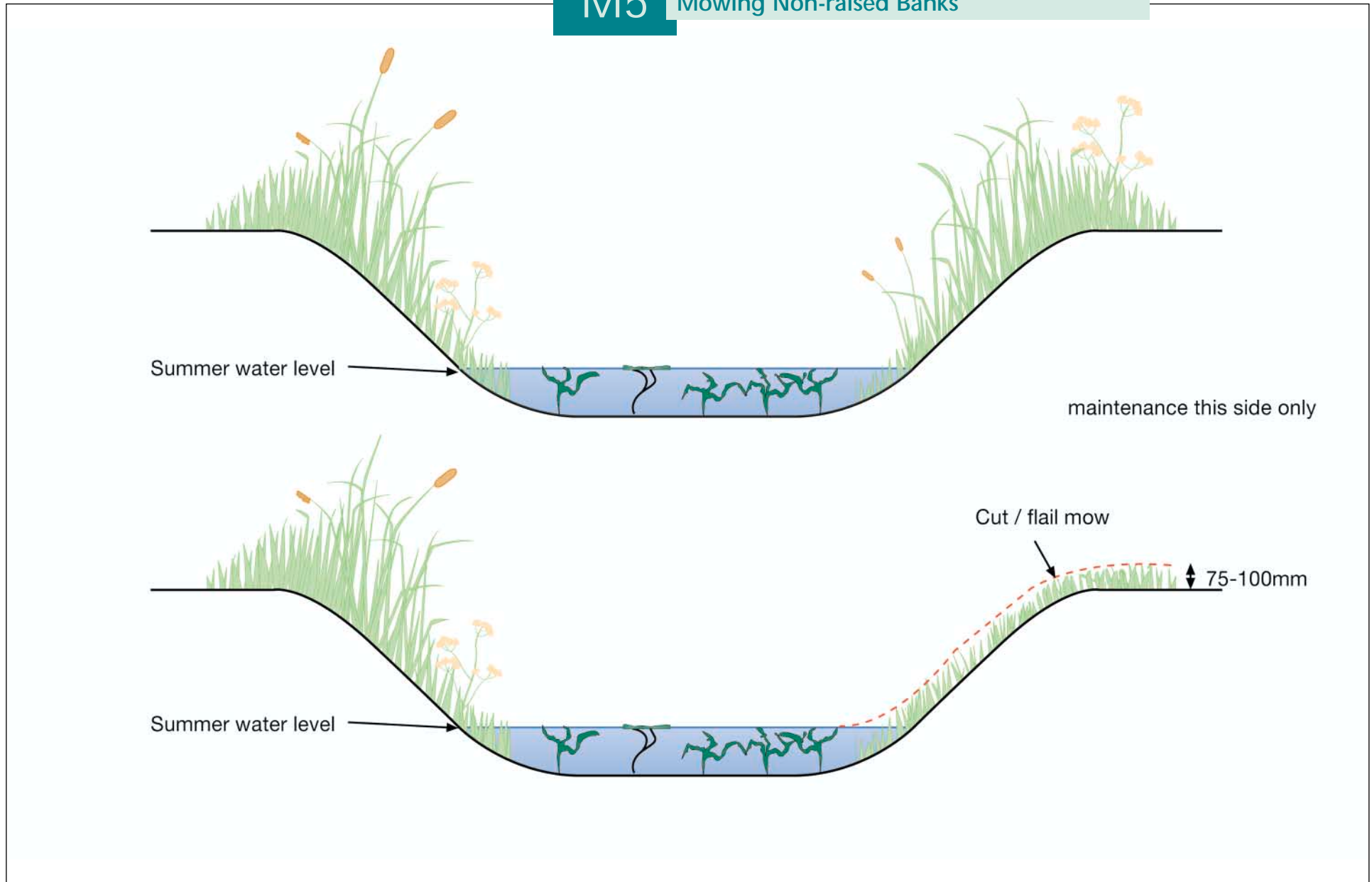


M3

Mowing Non-raised Banks

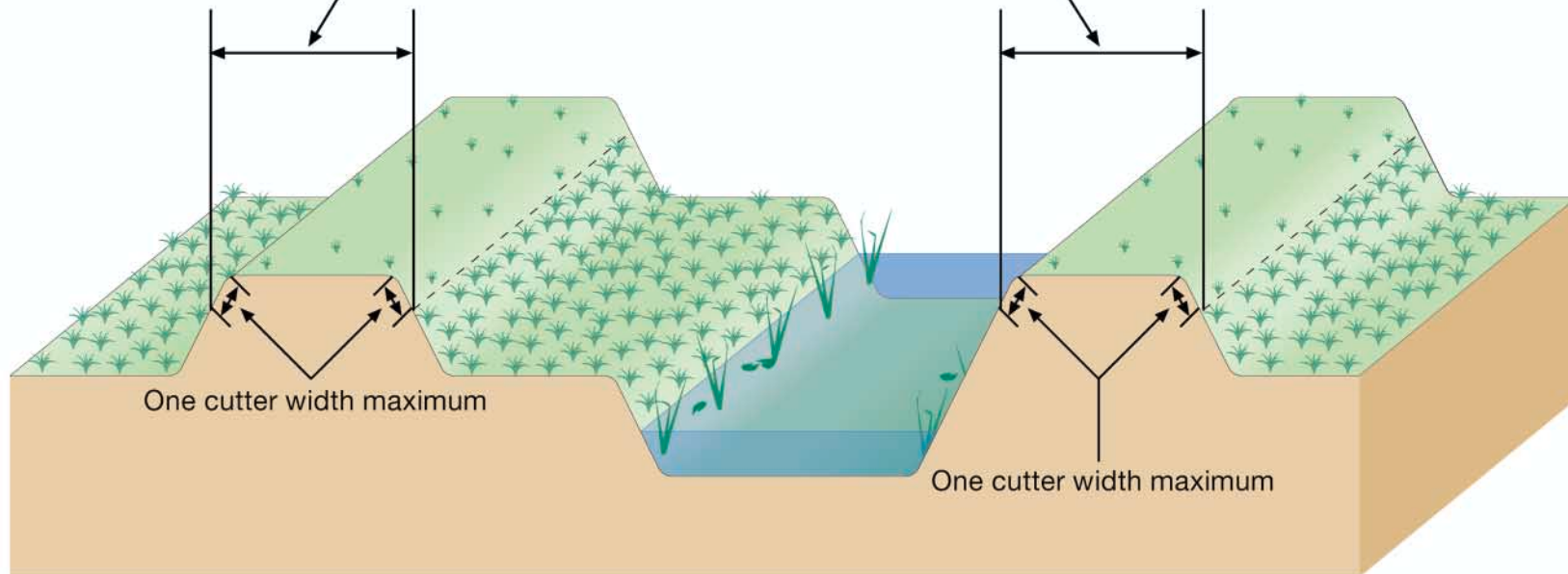






Areas of embankments covered by new H & S grasscutting option

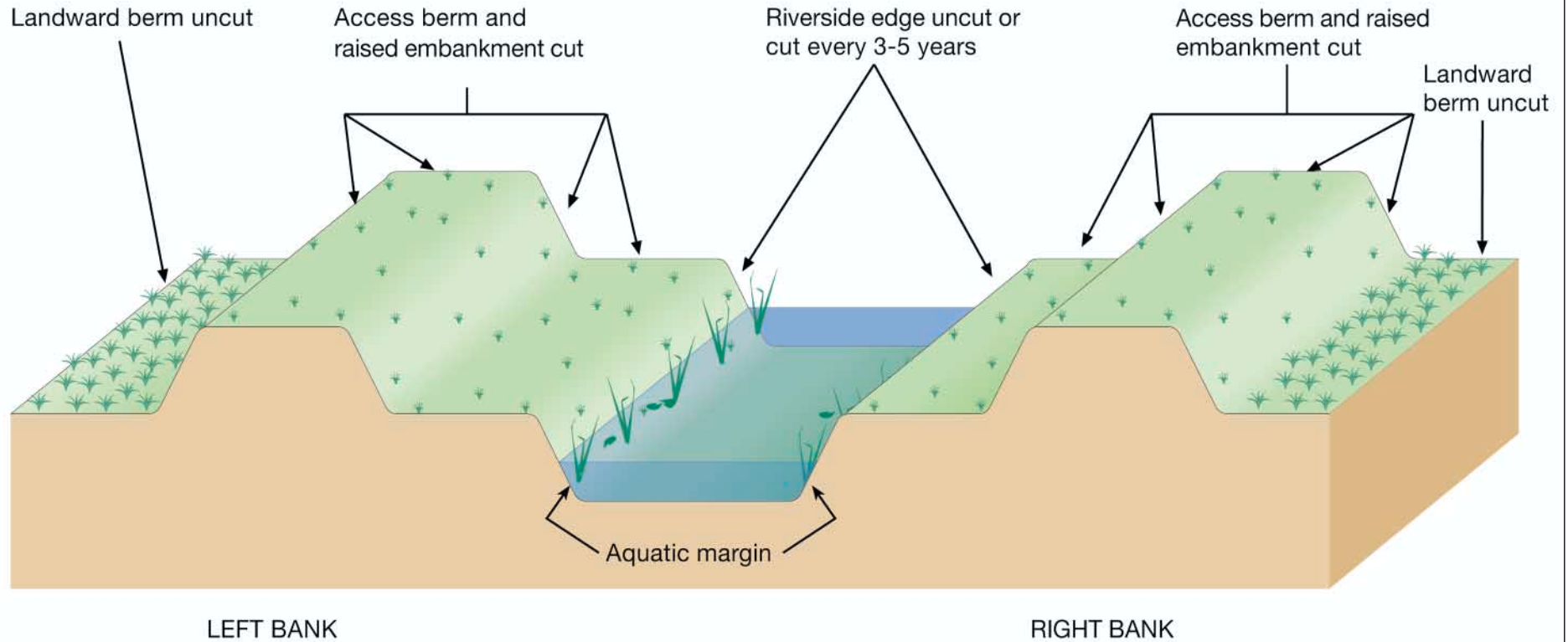
Crests and edges of embankments (and berms where used for access) to be subject to regular cutting from March onwards (unless covered by specific agreement) according to the Environmental Option specified



NB Also applies to sea defence embankments

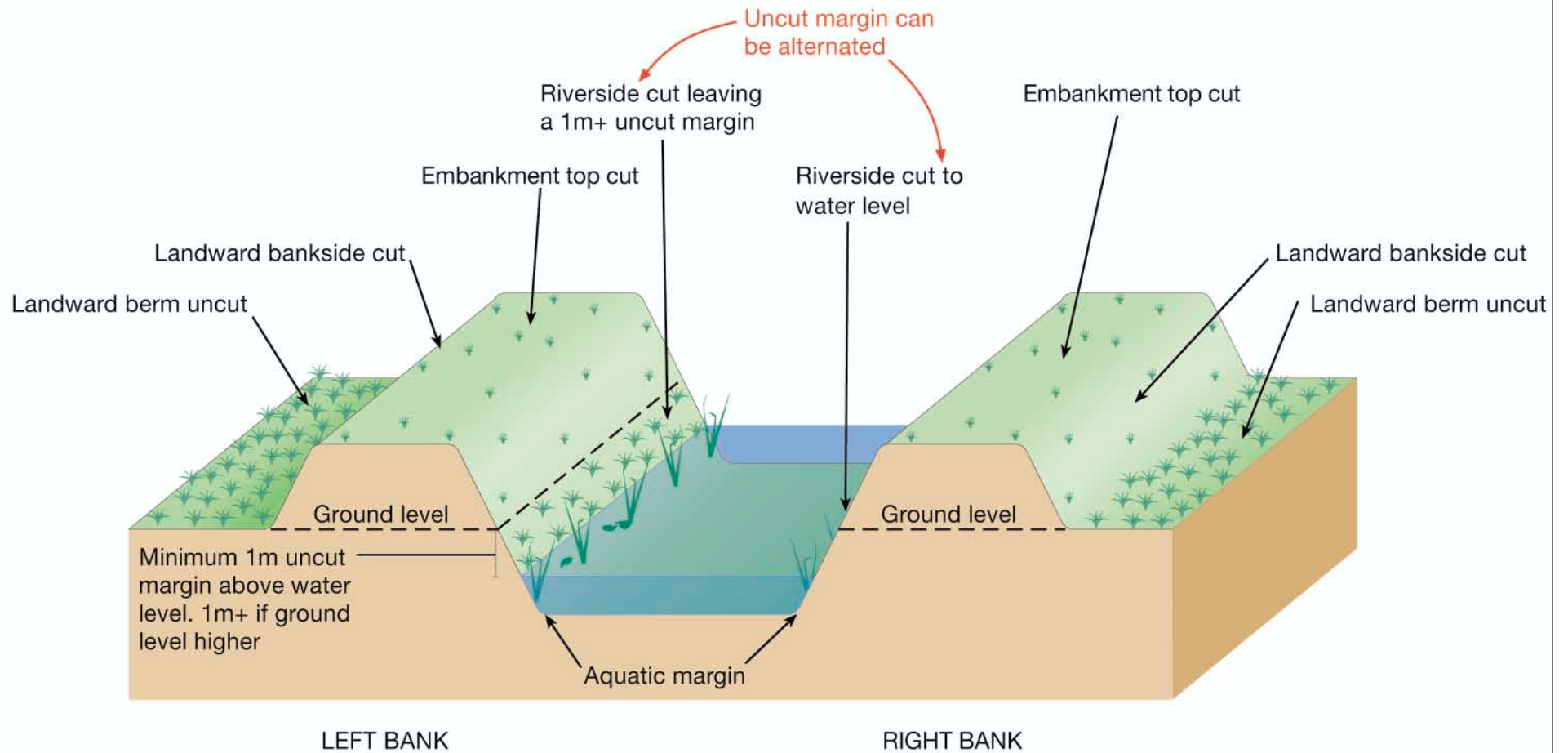
See Appendix 1

ME1 Mowing Raised Banks

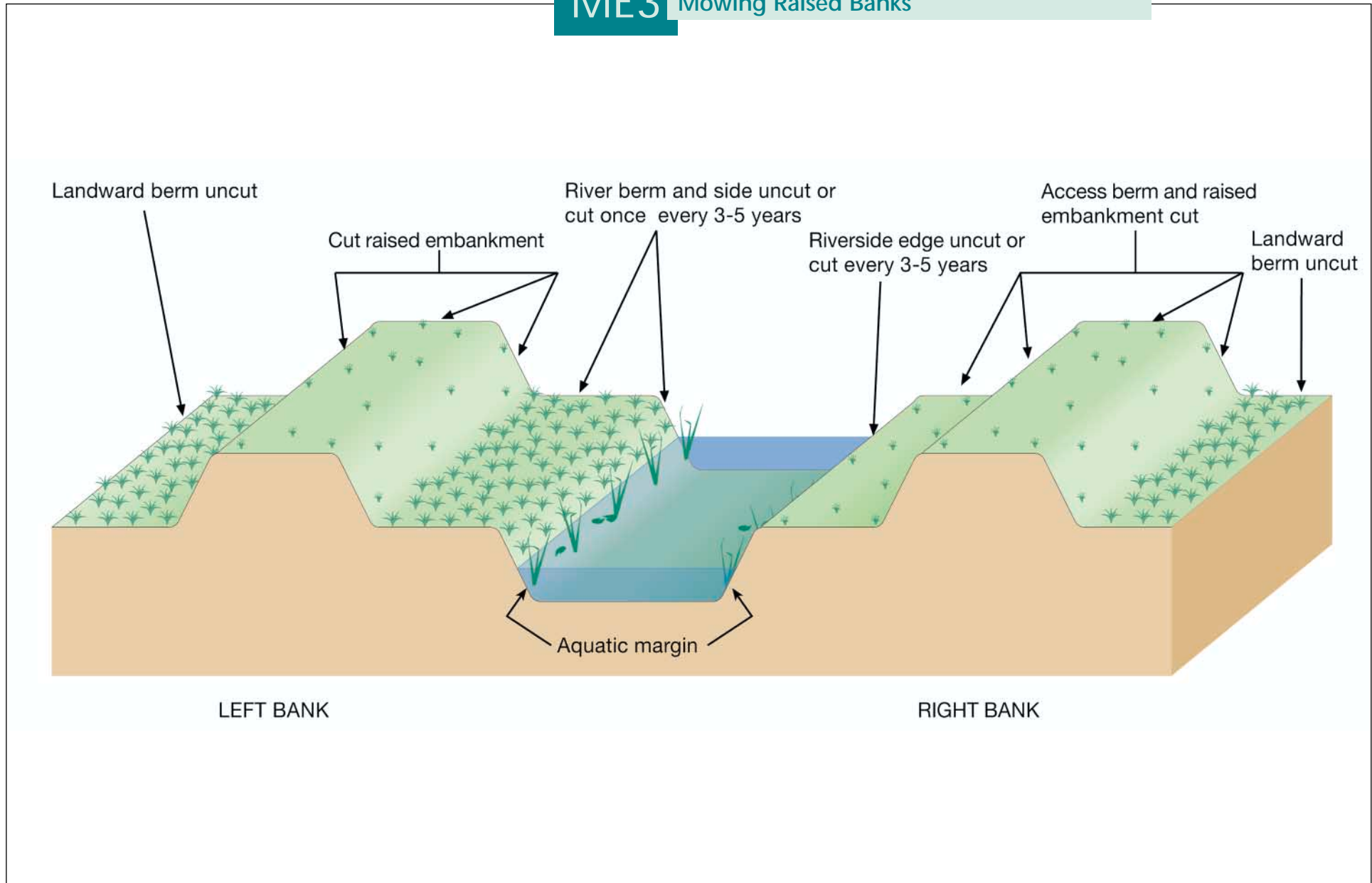


Use only where risk / limited capacity dictates. Look to enhance

ME2 Mowing Raised Banks



ME3 Mowing Raised Banks



ME4 Mowing Raised Banks

