Tamar Valley National Landscape

HERITAGE FUND

TAMARA LANDSCAPE PARTNERSHIP

Water Friendly Farming

Good Practice Guide

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It is not farming itself, but some intensive farming practices can have a detrimental impact on our rivers and streams. They can contribute to increased soil erosion, and pollution from pesticide and fertiliser run-off. These Water Friendly Farming techniques can help reduce the impacts:

Livestock and Rivers

Low level stocking can be beneficial for the wildlife on river banks, but excessive poaching can erode the bank, causing the channels to over-widen and lead to increased siltation. The compacted soil leads to increased run-off with fine silt deposits on the riverbed. This causes the oxygen on the riverbed to be reduced by blocking the pockets between the gravel – which in turn reduces the invertebrate numbers present and the gravel becomes unsuitable habitat for fish spawning.

Livestock faeces in the watercourse raises the nutrient levels, which causes increased algal growth which can smother aquatic wildlife, further reducing water quality.

Good Practice Tips:

- Establish buffers between the river and farming operations to intercept fertiliser and pesticide run-off
- Encourage bankside vegetation to overhang as cover and food for fish
- Place any fencing an appropriate distance from the riverbank
- Align fencing parallel to flow
- Strands of wire may be better than stock netting in high flood risk areas
- Allow gated access for topping or occasional grazing to manage invasive vegetation
- Water troughs should be used in preference to drinking bays, and should have hard bases to reduce poaching
- If required, livestock access to the river should be in fenced off drinking bays, on the inside of meanders or protected by upstream trees. The bay should not impede flow
- Access should be on slopes no more than 1:6 and surfaced with stone held in place with untreated timber

Controlling Run-off at Source

Clean and Dirty Water Separation:

- Make sure guttering, downpipes, and below ground pipework are in good working order. Consider storing clean water

Image © Alex Bebbington

- Divert rainwater from rooftops away from livestock gathering areas, tracks and manure stores
- Consider roofing over livestock yards to minimise dirty water production

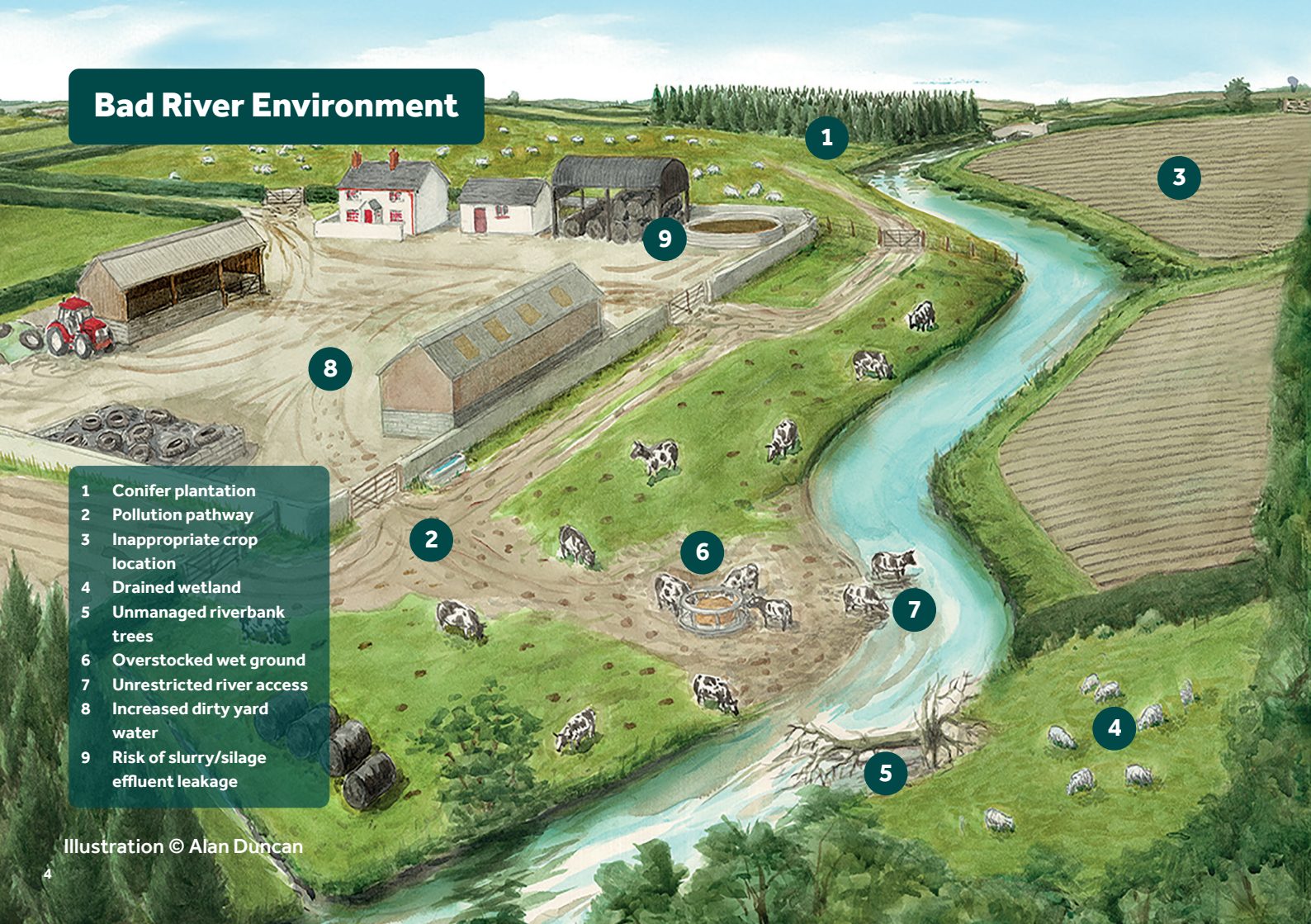
Vehicle and Livestock Movement:

- Minimise poaching
- Position feeders on higher ground/hard standing, away from watercourses
- Identify points of erosion to reduce poaching; install cross drains, reposition or resurface gateways, resurface farm tracks, use watercourse crossings

Soil Management (the most valuable asset on the farm):

- Do not plough at right angles to watercourses
- Utilise nutrient, crop and soil management plans – useful to highlight areas at greatest risk of run-off and erosion.
- Regular soil nutrient testing to reduce fertiliser usage/costs
- Only cultivate when conditions are favourable
- Don't drive over wet soils
- Plan crop rotations to ensure year-round soil cover
- Consider alternative uses for ground with high erosion risk
- Consider permanent buffers on high risk ground such as steep slopes, long unbroken slopes, waterlogged field corners, riparian strips – hedges, woodland, permanent grass buffer strips

Bad River Environment



1 Conifer plantation
2 Pollution pathway
3 Inappropriate crop location
4 Drained wetland
5 Unmanaged riverbank trees
6 Overstocked wet ground
7 Unrestricted river access
8 Increased dirty yard water
9 Risk of slurry/silage effluent leakage

Illustration © Alan Duncan

Bad River Environment

CONIFER PLANTATIONS
Shallow rooted, non-native species provide less soil and bank stability

Monoculture plantations suppress biodiversity

Increased acidity of ground and watercourses

POLLUTION PATHWAYS
Wet and muddy tracks and ditches act as pollution pathways into watercourses

Lack of hardstanding adds to poaching

Livestock health and welfare issues

Gateways create pathways for runoff, consider relocating to lower risk areas

INAPPROPRIATE CROP LOCATION
Arable cropping on steep slopes with no buffer between the river and field
Increased risk of nutrient run-off directly into watercourse

Increased soil mobilisation and river sedimentation

Reduced natural buffering capacity of riverbank margins

Reduced natural biodiversity

DRAINED WETLAND
Reduced or lost capacity to store and release rainfall slowly

Lost wetland habitat and associated species/reduced biodiversity

UNMANAGED RIVERBANK TREES
Over mature trees resulting in heavy shaded banks with no vegetation on the banks leading to erosion

OVERSTOCKING WET GROUND
Livestock feeder positioned in area of poaching or close to river, stream or ditch

Areas around feeder become poached and soil compacted

Reduced grass production / nutritional value of land

High risk of mobilised sediment and nutrients

UNRESTRICTED RIVER ACCESS
Faecal and nutrient inputs contaminate water

Trampling and poaching erodes banks and loses soil downstream

Siltation smothers fish spawning gravels

INCREASED DIRTY YARD WATER
Poorly maintained yard and buildings with no rainwater goods, stock yards uncovered

Rain adds to volume of slurry in yard

Increased time & costs to handle / disperse slurry

Reduced available slurry capacity in tank

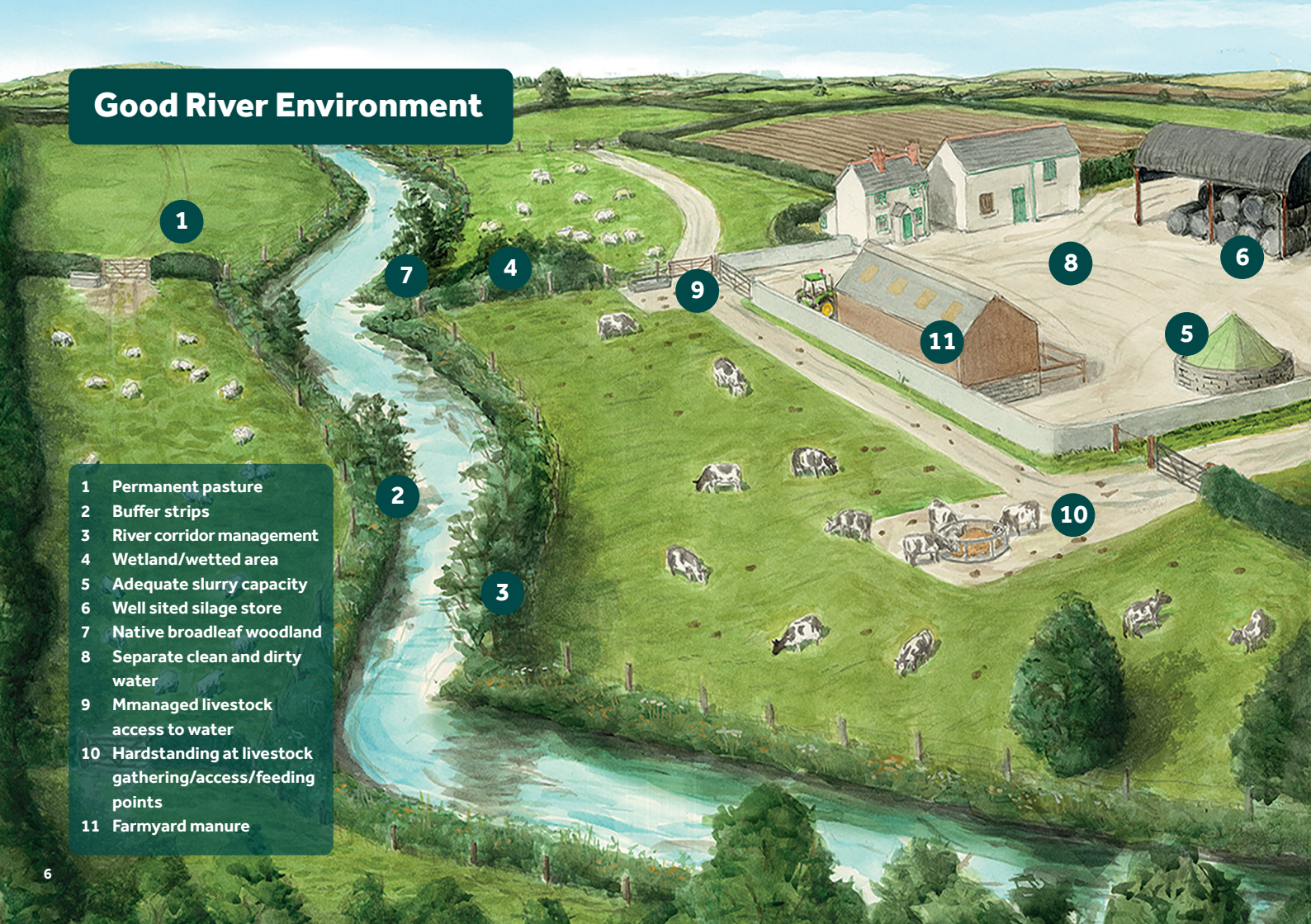
Continuously wet standing areas contribute to animal health & welfare issues and potential vet fees

RISK OF SLURRY / SILAGE EFFLUENT LEAK
Silage clamp/bale store situated next to ditch

Uncovered slurry store/not enough capacity of slurry store

High risk of serious water pollution incident from leakage

Good River Environment



1 Permanent pasture
2 Buffer strips
3 River corridor management
4 Wetland/wetted area
5 Adequate slurry capacity
6 Well sited silage store
7 Native broadleaf woodland
8 Separate clean and dirty water
9 Mmanaged livestock access to water
10 Hardstanding at livestock gathering/access/feeding points
11 Farmyard manure

Good River Environment

PERMANENT PASTURE
Increased soil stabilisation reduces soil loss and retains land value

Permanent pasture increases ability to absorb rainfall and run off, especially on higher risk, steeper ground

Buffers watercourses and protects water quality

Locate feeders on hardstanding, away from areas of poaching and riverbanks

BUFFER STRIPS
Natural systems to strip nutrients and slow sediment from entering rivers

Vegetation helps stabilise riverbanks and reduce soil erosion

Enhanced riparian habitat and reconnects wildlife corridors

Increased biodiversity and protection of threatened species or habitats

RIVER CORRIDOR MANAGEMENT
Vegetation along riverbank to intercept runoff

Coppice and pollard riverbank trees, with veteran trees retained to create mosaic of light and shade

WETLANDS AND WETTED AREAS
Helps regulate the water cycle

Increased capacity to store and slowly release water

Reduces flood – drought extremes

Strips nutrients and traps sediment inputs

Boosts biodiversity and provides wetland habitat for numerous unique species

ADEQUATE SLURRY CAPACITY
Appropriate capacity and freeboard eliminates risk of spill, leak or breach

Buffered area better protects water quality and river ecosystem

WELL SITED SILAGE STORE
Located for good drainage and appropriately buffered for control of leachate.

Reduced risk of pollution events

NATIVE BROADLEAVED WOODLAND
Native broadleaves help secure banks via root systems

Absorb rainfall

Natural dappled shading for riverbank vegetation and cool water pools for fish

Supports native biodiversity

SEPARATE CLEAN AND DIRTY WATER
Well maintained yard and buildings – rainwater storage and covered livestock gathering areas

Free clean water collected is reused in yard for washing down, drinking etc

Improved animal health & welfare

Less risk of run off and pollution

Reduced clean water inputs to yard areas and slurry storage

MANAGED LIVESTOCK ACCESS TO WATER
Fence off river from livestock

Improved river water quality

Good River Environment cont'd

Fewer poached areas and less run off

Reduced soil erosion or land loss

Reduce trampling of river habitat

HARDSTANDING AT LIVESTOCK GATHERING / ACCESS / FEEDING POINTS

Reduce poaching of waterlogged land

Reduced direct inputs to watercourse

FARMYARD MANURE

Storage sited for better protection of watercourses and improved water quality

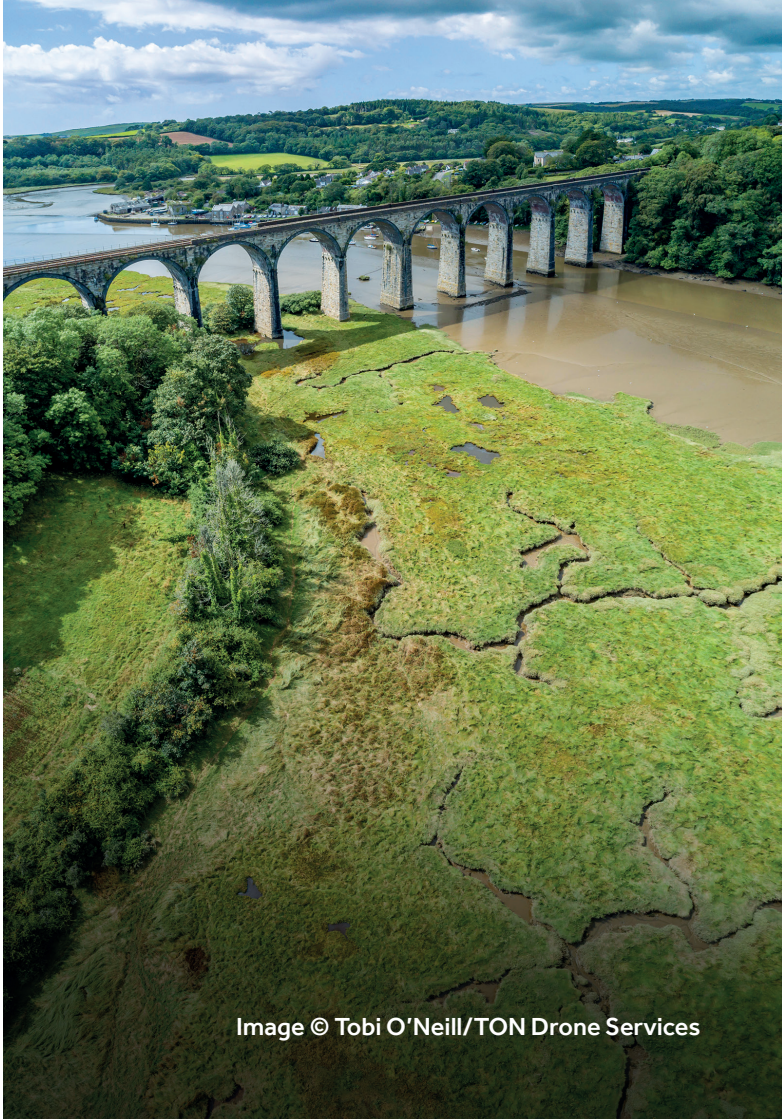


Image © Tobi O'Neill/TON Drone Services

Himalayan Balsam

This Invasive Non-Native Species (INNS) colonises riverbanks, suppressing our native grasses and wildflowers. It reproduces very successfully and spreads quickly. As it dies off in the autumn, banks are left with bare soil prone to erosion.

Plants can be easily hand pulled, in late May/early June and piled on higher ground away from the watercourse where they will breakdown in to compost fairly rapidly.

Dense stands can be strimmed to ground level several times during the growing season.

Managing Watercourses

On-farm ditches are often a direct link between the farmyard and the river. It can be the route via which sediment, chemicals and fertilisers enter the river. Ditches can act as a buffer to filter these pollutants however, frequent ditch clearing can affect this filter.

Good Practice Tips:

- Wide buffers will act as sediment and pollutant traps and intercept run-off
- Slow the flow of water by creating online ponds to encourage sediment to settle out
- Phase the dredging/clearing of ditches over a few years to reduce disturbance to the filtering system
- Use a minimum of a 6m buffer avoiding applications of fertilisers and sprays within the area

Managing Riverbank Erosion

Riverbanks naturally erode over time, but due to the loss of riverbank trees and high stocking densities the process can be accelerated.

Works to protect riverbanks require careful consideration before commencing. Seek advice regarding consents that may be required from Environment Agency (Flood Risk Activity Permit) or County Council (Land Drainage Consent) for any in-channel works.

- Use soft revetment where possible - willow spilling, brash, coir matting
- Try to maintain existing wildlife features, such as burrowing opportunities for water voles or sand martins
- Follow the natural path of the river

Managing Riverbank Trees

The traditional management of trees along a riverbank included pollarding and coppicing. The timber produced was used for fencing material, charcoal and firewood. The practice is now reduced due to declining markets, leaving unmanaged mature riverbank trees of uniform age, which block sunlight from rivers and their banks.

Benefits:

- Mosaic of light and shade is created which benefits a range of species
- Diseased and over-mature trees are brought back into management, which helps to stabilise riverbanks
- Allows shrubby growth and grasses to develop to protect the banks
- Prevents banks being undercut and widened, so reduces erosion
- Helps to revegetate the banks, helping to narrow the channel, which in turn increases the velocity of flow which helps to scour silt from the riverbed

Good Practice:

- Coppicing should be undertaken during the winter months of October to March
- Assess for the presence of protected species before work is undertaken
- Aim for more light over the shallows and more light over the deeper pools for maximum habitat benefit
- Do not burn brash near the river, dispose of it carefully removing ash from site
- For wildlife habitat and landscape value, leave veteran trees

How will this benefit the farming business?

- Increased capital value of the farm
- The risk of pollution and run-off is reduced – improved water quality
- Fertiliser losses are reduced – lower fertiliser bill, less nutrient losses
- Reduced lameness in stock, lower infection levels – reduced vet and med costs
- Promotes good relationships with neighbours with the catchment
- Sustainable timber and firewood can be produced
- Improved wildlife
- Improved recreational value of the watercourses

Legal Considerations:

Before any work is undertaken, consider if any relevant authorities should be consulted.

Natural England may require consulting if;

- It is a designated site - Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), Scheduled Monument (SM), Local Wildlife Site
- Protected Species may be affected – otters, bats, beavers, water vole etc.

Environment Agency if;

- Work is planned on a main river or designated floodplain
- Work is to be done in-channel or bank profiling
- Herbicide application is planned near to a watercourse.

Local Authority if;

- Work is planned to impede flow on a non-main river.

Forestry Commission if;

- More than 5 cubic metres of timber is to be felled in any calendar quarter – a felling licence is required

Always clean and dry/disinfect clothing and equipment prior to arriving and leaving site. This will prevent to spread of invasive species.

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