Managing forest operations to protect the water environment

**Cultivation operations**

- Do not fill trenches created for mounding with fresh brash.
- Turn out the bottom 2 m length of each trench to alternate sides to dissipate flows.
- Orientate spoil trenches so that they cannot intercept or carry large volumes of water.
- Do not dig spoil trenches that can discharge directly into watercourses.
- Only use discontinuous forms of cultivation on steep slopes.
- Limit cultivation to hinge or inverted mounding within buffer areas.
- Do not apply inorganic fertiliser within buffer areas to hand applications.
- Do not apply pesticides when run-off from drains is sufficient to produce visible surface flow conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.
- Do not apply inorganic fertiliser within buffer areas to hand applications.
- Do not apply inorganic fertiliser within buffer areas to drainage systems.
- Do not apply concentrates within buffer areas.
- Do not apply pesticides when run-off from drains is sufficient to produce visible surface flow conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.
- Do not apply inorganic fertiliser within buffer areas to drainage systems.
- Do not apply pesticides when run-off from drains is sufficient to produce visible surface flow conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.
- Do not apply inorganic fertiliser within buffer areas to drainage systems.
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- Do not apply pesticides when run-off from drains is sufficient to produce visible surface flow conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.
- Do not apply inorganic fertiliser within buffer areas to drainage systems.
Applying buffer zones:

- Buffer areas are designed to protect the water environment from forestry activities and their impacts.
- Management operations should not take place within buffer areas to avoid erosion.
- Certain activities are exempt in the buffer zones under specific conditions.

Fertiliser applications:

- Only hand applications of inorganic fertiliser are permitted within buffer areas.
- Fertiliser applications must be performed to reduce run-off.
- Do not store fertiliser within buffer areas.
- Do not apply fertiliser when run-off from drains is sufficient to produce visible surface flow, or when the watercourse is already underwater.
- Do not apply organic fertiliser within buffer areas.
- Do not apply fertiliser on or near water supplies.

Pesticide applications:

- Pesticide applications within buffer areas are subject to specific conditions.
- Pesticides should be applied in a manner that minimises run-off to the watercourse.
- Do not apply pesticides within 2 m of any surface water, and within 5 m of any water supply.
- Do not apply pesticides within 2 m of any surface water, and within 5 m of any water supply.
- Do not apply pesticides unless there is no alternative, and they are approved for use in or near water.

Cultivation operations:

- Cultivation should be limited to areas with limited seedling impact and horticultural activities.
- Do not plant in areas where the soil has been disturbed by other activities.
- Do not apply lime to areas where the soil has been disturbed by other activities.
- Do not apply organic fertiliser within buffer areas.

Drainage operations:

- Drainage should be designed to minimise run-off to the watercourse.
- Do not apply lime to areas where the soil has been disturbed by other activities.
- Do not apply organic fertiliser within buffer areas.

Fertiliser applications:

- Fertiliser applications are subject to specific conditions.
- Do not apply fertiliser on or near water supplies.
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Pesticide applications:

- Pesticide applications are subject to specific conditions.
- Do not apply pesticides within 2 m of any surface water, and within 5 m of any water supply.
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Cultivation operations:

- Cultivation should be limited to areas with limited seedling impact and horticultural activities.
- Do not plant in areas where the soil has been disturbed by other activities.
- Do not apply lime to areas where the soil has been disturbed by other activities.
- Do not apply organic fertiliser within buffer areas.

Drainage operations:

- Drainage should be designed to minimise run-off to the watercourse.
- Do not apply lime to areas where the soil has been disturbed by other activities.
- Do not apply organic fertiliser within buffer areas.

Fertiliser applications:

- Fertiliser applications are subject to specific conditions.
- Do not apply fertiliser on or near water supplies.
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- Do not apply fertiliser on or near water supplies.

Pesticide applications:

- Pesticide applications are subject to specific conditions.
- Do not apply pesticides within 2 m of any surface water, and within 5 m of any water supply.
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Cultivation operations:

- Cultivation should be limited to areas with limited seedling impact and horticultural activities.
- Do not plant in areas where the soil has been disturbed by other activities.
- Do not apply lime to areas where the soil has been disturbed by other activities.
- Do not apply organic fertiliser within buffer areas.

Drainage operations:

- Drainage should be designed to minimise run-off to the watercourse.
- Do not apply lime to areas where the soil has been disturbed by other activities.
- Do not apply organic fertiliser within buffer areas.

Fertiliser applications:

- Fertiliser applications are subject to specific conditions.
- Do not apply fertiliser on or near water supplies.
- Do not apply fertiliser on or near water supplies.
- Do not apply fertiliser on or near water supplies.
**Applying buffers**

- Buffer areas are designed to protect the water environment from forestry activities and their by-products.
- Management operations should not take place in buffer areas. This includes operations that do not involve active treatments (e.g. ground preparation).
- The specified buffer/management requirements extend beyond 1-2 m for operations involving active treatments (e.g. ground preparation).
- The buffer areas should be maintained and managed appropriately.

**Cultivation operations**

1. **Do not** cultivate within 2 m of a watercourse or 5 m of a spring, well or borehole.
2. Limit cultivation to hinge or inverted mounding within buffer areas.
3. Leave 2–5 m breaks in plough lines (and any associated subsoiling) at regular intervals (e.g. every 40 m on moderate slopes and every 70 m on gentle slopes).
4. Avoid fording large streams and rivers, unless there is an existing purpose-built ford.
5. Do not use discontinuous forms of cultivation on steep slopes.
6. Consider the weather and aim to carry out cultivation operations during dry periods. Avoid operations during wet weather (or if heavy rain is forecast within 48 hours), if possible.

**Drainage operations**

1. Do not end drains in natural watercourses, ephemeral streams or old agricultural drains.
2. Do not end drains in natural watercourses, ephemeral streams or old agricultural drains.
3. Provide ‘cut-off’ drains so that plough furrows do not carry significant volumes of water and silt trap cleaning) during dry periods.
4. Do not prepare or store pesticides within buffer areas or spray within 10 m of watercourses unless the product is approved for use in or near water and you have appropriate authorisation.
5. Do not prepare or store pesticides within buffer areas or spray within 10 m of watercourses unless the product is approved for use in or near water and you have appropriate authorisation.
6. Read and comply with the instructions on the product label.
7. Do not apply pesticides during wet weather (or if heavy rain is forecast within 48 hours), unless the product is approved for use in or near water and you have appropriate authorisation.
8. Do not apply pesticides when run-off from drains is sufficient to produce visible surface flow or during high winds or near sensitive waters.
9. Treat drains that have become sizeable and stable watercourses and those that flow directly into streams (including road drains) as natural watercourses with their own buffer areas.
10. Do not apply fertiliser within 2 m of a watercourse or 5 m of a spring, well or borehole.

**Fertiliser applications**

1. Do not apply fertiliser during wet weather (or if heavy rain is forecast within 48 hours), unless the product is approved for use in or near water and you have appropriate authorisation.
2. Do not apply fertiliser during wet weather (or if heavy rain is forecast within 48 hours), unless the product is approved for use in or near water and you have appropriate authorisation.
3. Do not apply fertiliser during wet weather (or if heavy rain is forecast within 48 hours), unless the product is approved for use in or near water and you have appropriate authorisation.
4. Do not store fertiliser within buffer areas.
5. Do not puncture, bury, burn or otherwise leave empty pesticide containers, packaging, planting equipment used to store fertiliser, or other materials around a site.
6. Do not prepare or store pesticides within buffer areas or spray within 10 m of watercourses unless the product is approved for use in or near water and you have appropriate authorisation.
7. Do not prepare or store pesticides within buffer areas or spray within 10 m of watercourses unless the product is approved for use in or near water and you have appropriate authorisation.
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7. Do not prepare or store pesticides within buffer areas or spray within 10 m of watercourses unless the product is approved for use in or near water and you have appropriate authorisation.
8. Do not apply pesticides when run-off from drains is sufficient to produce visible surface flow or during high winds or near sensitive waters.
9. Do not apply pesticides when run-off from drains is sufficient to produce visible surface flow or during high winds or near sensitive waters.
10. Do not apply pesticides when run-off from drains is sufficient to produce visible surface flow or during high winds or near sensitive waters.

**Managing forest operations to protect the water environment**

<table>
<thead>
<tr>
<th>Buffer width (m)</th>
<th>Permits required for multiple operations within</th>
<th>Permits required for single operations within</th>
<th>Permits required for single operations within watercourse</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2</td>
<td>All (subject to the specified widths)</td>
<td>All (subject to the specified widths)</td>
<td>All (subject to the specified widths)</td>
</tr>
<tr>
<td>2–10</td>
<td>For multiple operations, only the dry planting of pretreated trees, unless the product is approved for use in or near water and you have appropriate authorisation.</td>
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</tr>
</tbody>
</table>

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[Note: The above table is an example of the buffer widths and permits required for different operations. The actual requirements may vary depending on the specific regulations and guidelines.]
Managing forest operations to protect the water environment

Operator cab card

1. Do not puncture, bury, burn or otherwise leave empty pesticide containers, packaging, planting stock or footwear.
2. Do not step into or walk along watercourses or drains while wearing contaminated spray suits or footwear.
3. Do not apply pesticides when run-off from drains is sufficient to produce visible surface flow into streams (including road drains) as natural watercourses with their own buffer areas.
4. Keep barefoot areas free from leaf litter and avoid bringing in large amounts of vegetation on footwear.
5. Do not store or soak treated planting stock within a drain or watercourse prior to planting.
6. Do not store treated planting stock within buffer areas.
7. Do not apply pesticides in or near media-based watercourses (including those on farmyards or landfills), stormwater inlets, surface water sumps, or open storage ponds.
8. Do not fill sprayers directly from watercourses or wash sprayers, containers, clothing or footwear.
9. Do not store or sprinkle pesticide products on or near watercourses.
10. Do not apply pesticides during wet weather (or if heavy rain is forecast within 48 hours), windy conditions, or if a thunderstorm is imminent.

Cultivation operations

1. Do not cultivate in or near existing water courses, including road drains, except during the period of wet weather (or if heavy rain is forecast within 48 hours), windy conditions, or if a thunderstorm is imminent.
2. Do not cultivate ground within 2 m of a watercourse or 5 m on moderate slopes and every 70 m on gentle slopes.
3. Limit cultivation to hinge or inverted mounding within buffer areas.
4. Do not cultivate ground within 2 m of spring, well or borehole; make sure this area is clearly marked.
5. Do not store or apply inorganic fertiliser within buffer areas.
6. Do not apply inorganic fertiliser within 2 m of any surface water, and within 5 m of any stream or river. Where this is not possible, apply as a spot treatment (e.g., on a hedge or embankment). Do not bundle or bag blocks of fertiliser.
7. Do not store or soak inorganic fertiliser in a drain or watercourse.
8. Do not apply inorganic fertiliser on roadways or tracks.
9. Do not apply inorganic fertiliser within 2 m of any natural watercourse.
10. Do not store inorganic fertiliser within 2 m of any water body.

Drainage operations

1. Install drains at the same time or immediately after cultivation operations.
2. Treat drains that have become sizeable and stable watercourses and those that flow directly into streams (including road drains) as natural watercourses with their own buffer areas.
3. Do not treat drains that are less than 5 m wide unless they are unobstructed and stable.
4. Do not cut drains to run at an even gradient of 2º (3.5%) or less leading towards the head of the drain.
5. Do not end drains in a shallow turnout.
6. Do not restrict the length of trenches to less than 30 m; if this is not possible, fully integrate drainage systems into existing or planned ground contouring.
7. Do not end drains in natural channels, ephemeral streams or old agricultural drains.
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10. Do not end drains in natural channels, ephemeral streams, or old agricultural drains.

Fertiliser applications

1. Do not apply fertilisers during wet weather (or if heavy rain is forecast within 48 hours), windy conditions, or if a thunderstorm is imminent.
2. Do not apply organic fertiliser or inorganic fertiliser to land draining to nutrient-sensitive waters.
3. Do not apply inorganic fertiliser within any buffer area. Do not apply any treatment that may cause erosion.
4. Do not apply organic fertiliser or inorganic fertiliser to land draining to nutrient-sensitive waters.
5. Do not apply organic fertiliser or inorganic fertiliser to land draining to nutrient-sensitive waters.
6. Do not apply organic fertiliser within a drain or watercourse, and do not use contaminated equipment on the same watercourse.
7. Do not apply organic fertiliser or inorganic fertiliser to land draining to nutrient-sensitive waters.
8. Do not apply organic fertiliser within 2 m of any natural watercourse.
9. Do not apply inorganic fertiliser within any buffer area. Do not apply any treatment that may cause erosion.
10. Do not apply any treatment that may cause erosion.

Pesticide applications

1. Do not apply pesticides during wet weather (or if heavy rain is forecast within 48 hours), windy conditions, or if a thunderstorm is imminent.
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Managing forest operations to protect the water environment

**Operator cab card**

### Fertiliser applications
- Buffers are designed to protect the water environment from forestry activities and their products.

**Pesticide applications**
- Treatment operations should not take place on riversides, stream sides, or in access areas.
- Treatment operations should not take place in the vicinity of watercourses and other water bodies, and the appropriate advice is given in the specific guidance.

**The specific guidance relates specifically to chalk streams**
- Watercourses and their buffer areas are protected by law.
- This guidance applies equally to both planning and building construction.

### Fertilisers
- **Not permitted** within or around buffer areas or other waterbodies.
- **Permitted activities within extended buffer areas around watercourses and water bodies**
  - Roads/quarries: No quarrying. Roads should be kept out of buffer areas.
  - Forest operations: Only hand applications of inorganic fertiliser.

### Pesticides
- **Not permitted** within or around buffer areas or other waterbodies.
- **Permitted activities within extended buffer areas around watercourses and water bodies**
  - Roads/quarries: No quarrying. Roads should be kept out of buffer areas.
  - Forest operations: Only hand applications of inorganic fertiliser.
  - Drainage operations: Do not apply pesticides during wet weather (or if heavy rain is forecast within 48 hours), windy conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.
  - Pest control: Read and comply with the instructions on the product label.
  - Ensure buffer areas around watercourses are extended to include adjacent boggy/wet ground.
  - Treat drains that have become sizeable and stable watercourses and those that flow directly into streams (including road drains) as natural watercourses with their own buffer areas.

### Cultivation operations
- **Do not apply pesticides** during wet weather (or if heavy rain is forecast within 48 hours), windy conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.
- **Do not apply pesticides** during wet weather (or if heavy rain is forecast within 48 hours), windy conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.

### Drainage operations
- Do not apply pesticides during wet weather (or if heavy rain is forecast within 48 hours), windy conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.
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### Flood water
- **Do not apply pesticides** during wet weather (or if heavy rain is forecast within 48 hours), windy conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.
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### Buffer areas
- Buffers are designed to protect the water environment from forestry activities and their products.

**Applying buffer zones**
- Buffers are designed to protect the water environment from forestry activities and their products.

**Fertiliser applications**
- Buffers are designed to protect the water environment from forestry activities and their products.

**Pesticide applications**
- Treatment operations should not take place on riversides, stream sides, or in access areas.
- Treatment operations should not take place in the vicinity of watercourses and other water bodies, and the appropriate advice is given in the specific guidance.

**The specific guidance relates specifically to chalk streams**
- Watercourses and their buffer areas are protected by law.
- This guidance applies equally to both planning and building construction.

### Fertilisers
- **Not permitted** within or around buffer areas or other waterbodies.
- **Permitted activities within extended buffer areas around watercourses and water bodies**
  - Roads/quarries: No quarrying. Roads should be kept out of buffer areas.
  - Forest operations: Only hand applications of inorganic fertiliser.

### Pesticides
- **Not permitted** within or around buffer areas or other waterbodies.
- **Permitted activities within extended buffer areas around watercourses and water bodies**
  - Roads/quarries: No quarrying. Roads should be kept out of buffer areas.
  - Forest operations: Only hand applications of inorganic fertiliser.
  - Drainage operations: Do not apply pesticides during wet weather (or if heavy rain is forecast within 48 hours), windy conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.
  - Pest control: Read and comply with the instructions on the product label.
  - Ensure buffer areas around watercourses are extended to include adjacent boggy/wet ground.
  - Treat drains that have become sizeable and stable watercourses and those that flow directly into streams (including road drains) as natural watercourses with their own buffer areas.

### Cultivation operations
- **Do not apply pesticides** during wet weather (or if heavy rain is forecast within 48 hours), windy conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.
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### Drainage operations
- Do not apply pesticides during wet weather (or if heavy rain is forecast within 48 hours), windy conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.
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### Flood water
- **Do not apply pesticides** during wet weather (or if heavy rain is forecast within 48 hours), windy conditions (more than a light breeze), or if the ground is frozen, waterlogged or snow-covered.
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### Buffer areas
- Buffers are designed to protect the water environment from forestry activities and their products.
### Buffer areas

- **Fertiliser applications**
  - Permitted activities within extended buffer areas around watercourses and water maintenance
  - Cultivation operations
    - Mechanised cultivation limited to hinge or inverted mounding
    - Concentric buffers for wells and boreholes but focus on the upslope/upstream area of springs and intakes.
    - The 20 m buffer width also applies to lakes, reservoirs, large ponds and wetlands, and should be measured from the edge of the standing water.
    - The specified widths extend the legally required buffer zones of 1–2 m and 5 m for operations exceeding 1 ha
  - Drainage operations
    - Do not dig spoil trenches that can discharge directly into watercourses.
    - Do not fill trenches created for mounding with fresh brash.
    - Do not turn out the bottom 2 m length of each trench to alternate sides to dissipate flows.
    - Do not bury or leave empty fertiliser bags on site.
  - Pesticide applications
    - Do not apply pesticides during wet weather (or if heavy rain is forecast within 48 hours), windy conditions are inappropriate, or if the ground is waterlogged, frozen or snow-covered.
    - Do not apply pesticides when run-off from drains is sufficient to produce visible surface flow across buffer areas.
    - Drain treatment is required following any storm event. If the 48-hour period has elapsed without rain, the sprayer may be used.

### Farmer advice

- Use of concentrated pesticides in watercourses or within buffer areas should be avoided or reduced to the minimum necessary.
- Trenches into the drainage system – do not exceed 2º gradient limit.
- Do not fill trenches created for mounding with fresh brash.
- Do not dig spoil trenches that can discharge directly into watercourses.
- Do not bury or leave empty fertiliser bags on site.

### Managing forest operations to protect the water environment

**Operator cab card**

- Fertiliser applications
- Pesticide applications
- Buffer areas

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**Managing buffer widths**

- **Fertiliser applications**
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**Guidance on buffer areas**

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    - Do not dig spoil trenches that can discharge directly into watercourses.
    - Do not fill trenches created for mounding with fresh brash.
    - Do not turn out the bottom 2 m length of each trench to alternate sides to dissipate flows.
    - Do not bury or leave empty fertiliser bags on site.
  - Pesticide applications
    - Do not apply pesticides during wet weather (or if heavy rain is forecast within 48 hours), windy conditions are inappropriate, or if the ground is waterlogged, frozen or snow-covered.
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    - Do not apply pesticides when run-off from drains is sufficient to produce visible surface flow across buffer areas.
    - Drain treatment is required following any storm event. If the 48-hour period has elapsed without rain, the sprayer may be used.
Harvesting operations

1. Avoid significant road construction work on water courses in wet weather.
2. Keep all machinery and vehicles within drainage channels and access roads. Do not allow them to be washed into water courses.
3. Keep all surface drainage channels and surface run-off from quarries or borrow pits directed to a buffer area. Do not install hanging culverts in fish-bearing watercourses. The use of culverts may be necessary on the same alignment as the watercourse channel.
4. Where natural watercourses are intercepted by a road they should be culverted or bridged at regular intervals along roads to prevent a build-up of water. Do not use culverts with a small diameter. Culverts should be installed on the same alignment as the watercourse channel. Use stone ramps to protect main access routes.
5. Avoid exposing conifer crops on the bank of a watercourse opposite the felling site, where these are vulnerable to windblow. Where practical, try to replace any upturned root plates.
1. Avoid significant construction work on watercourses in wet weather.
2. Minimise the amount of sediment released to watercourses in wet weather.
3. Ensure silt traps are in good working order and are of the correct type and design for the sediment issue.
4. Use geotextile barriers for larger sediment problems; ensure these are well dug into the ground.
5. Locate barriers or traps as close to sediment sources as possible; use brash bunds to reduce seepage waters or surface run-off from quarries or borrow pits to a buffer area.
6. Use smaller silt traps formed from straw bales or other materials to try to retain sediment within drains; secure these traps in place to prevent movement or washout.
7. Consider potential threats posed to water from the handling of fuel oils and lubricants.
8. Regularly check to ensure there is no leak of fuel or lubricants from machinery and equipment.
9. Use appropriate bowsers or drums for fuel transport and do not overfill; secure drums within a working area of machinery.
10. Always use a transfer hose when refuelling.
11. Do not store or handle oils and lubricants, or refuel, wash or repair machinery, within buffer areas.
12. Do not park vehicles, machinery or bowsers or locate un-bunded tanks on bridges or near to watercourses; excavate any significant sediment deposits and dump silt outside buffer areas.

- **Harvesting operations**

1. Monitor weather forecasts daily and amend work plans accordingly. Suspend operations if a sediment problem is identified; walk the site to identify the source and the amount of sediment run-off from the land.
2. Suspend operations if heavy rainfall leads to a build-up of mud on timber stacking and loading areas, especially where there is a risk of run-off reaching local watercourses.
3. Use available materials and equipment to create a barrier.
4. Wear personal protective equipment if the spill is hazardous.
5. Record the extent of the spill.
6. Grid reference and/or GPS co-ordinates.
7. Apply first aid and summon the first aid and site manager whether water sampling is needed.
8. Bag contaminated materials and soil.
10. Contain spillages by using available materials and equipment to prevent water entering watercourses; disconnect road drains.
11. Use geotextile barriers to prevent water entering watercourses; excavate any significant sediment deposits and dump silt outside buffer areas.
12. Make immediate action if there is a marked change in water clarity, e.g. by suspending operations, modifying operating procedures and/or constructing silt traps.

- **Pollution control measures for sediment release**

- **Roads and quarries**

1. Ensure roads are not used as temporary access byNX to what is likely to identify the source and the amount of sediment run-off from the land.
2. Use a road header or similar equipment to excavate and remove sediment from watercourses; place it in a suitable licensed site; do not puncture, bury, burn or leave empty containers on site.
3. Avoid using skidders on soft ground.
4. Avoid long, straight extraction routes and ensure brash mats are maintained.
5. Avoid significant road construction work near watercourses in wet weather.
6. Use geotextile barriers to prevent water entering watercourses; excavate any significant sediment deposits and dump silt outside buffer areas.
7. Monitor weather forecasts daily and amend work plans accordingly. Suspend operations if a sediment problem is identified; walk the site to identify the source and the amount of sediment run-off from the land.
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- **Vehicle and machine maintenance**

1. Do not store or handle oils and lubricants, or refuel, wash or repair machinery, within buffer areas.
2. Avoid long, straight extraction routes and ensure brash mats are maintained.
3. Avoid significant road construction work near watercourses in wet weather.
4. Use geotextile barriers to prevent water entering watercourses; excavate any significant sediment deposits and dump silt outside buffer areas.
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12. Use a road header or similar equipment to excavate and remove sediment from watercourses; place it in a suitable licensed site; do not puncture, bury, burn or leave empty containers on site.

- **Pollution control checklist for spillages**

1. Take an initial reading of dissolved oxygen and suspended solids in the watercourse to confirm the condition.
2. Take a water sample to check the water clarity.
3. Prepare a site management plan.
4. Establish a timeline for cleaning up spillages.
5. Communicate with the site manager of any potential risks.
6. Organise back-up materials.
7. Contain spillages by using available materials and equipment to prevent water entering watercourses; disconnect road drains.
8. Use geotextile barriers to prevent water entering watercourses; excavate any significant sediment deposits and dump silt outside buffer areas.
9. Monitor weather forecasts daily and amend work plans accordingly. Suspend operations if a sediment problem is identified; walk the site to identify the source and the amount of sediment run-off from the land.
10. Use a road header or similar equipment to excavate and remove sediment from watercourses; place it in a suitable licensed site; do not puncture, bury, burn or leave empty containers on site.
11. Avoid using skidders on soft ground.
12. Avoid long, straight extraction routes and ensure brash mats are maintained.

- **Assessing the effectiveness of measures**

1. Report contamination to the Environment Agency. If the site is likely to have an adverse impact on a watercourse, please inform us immediately.
2. Use water quality monitoring measurements to assess the impact of forest management practices on watercourses, ensuring any significant sediment deposits and dump silt outside buffer areas.
3. Review the contingency plan and ensure you know how to correctly use diesel-handling equipment.
4. Consider potential threats posed to water from the handling of fuel oils and lubricants.
5. Regularly check to ensure there is no leak of fuel or lubricants from machinery and equipment.
6. Use appropriate bowsers or drums for fuel transport and do not overfill; secure drums within a working area of machinery.
7. Always use a transfer hose when refuelling.
8. Do not store or handle oils and lubricants, or refuel, wash or repair machinery, within buffer areas.
9. Do not park vehicles, machinery or bowsers or locate un-bunded tanks on bridges or near to watercourses; excavate any significant sediment deposits and dump silt outside buffer areas.
10. Use geotextile barriers to prevent water entering watercourses; excavate any significant sediment deposits and dump silt outside buffer areas.
11. Monitor weather forecasts daily and amend work plans accordingly. Suspend operations if a sediment problem is identified; walk the site to identify the source and the amount of sediment run-off from the land.
12. Use a road header or similar equipment to excavate and remove sediment from watercourses; place it in a suitable licensed site; do not puncture, bury, burn or leave empty containers on site.

- **Roads and quarries**

1. Ensure roads are not used as temporary access byNX to what is likely to identify the source and the amount of sediment run-off from the land.
2. Use a road header or similar equipment to excavate and remove sediment from watercourses; place it in a suitable licensed site; do not puncture, bury, burn or leave empty containers on site.
3. Avoid using skidders on soft ground.
4. Avoid long, straight extraction routes and ensure brash mats are maintained.
5. Avoid significant road construction work near watercourses in wet weather.
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10. Avoid long, straight extraction routes and ensure brash mats are maintained.
11. Avoid significant road construction work near watercourses in wet weather.
12. Use geotextile barriers to prevent water entering watercourses; excavate any significant sediment deposits and dump silt outside buffer areas.
Assessing water turbidity

- The turbidity of a water sample is a good indicator of the fine sediment content.
- Suspended sediment contains an important component of a water sample, showing the amount of sediment run-off from the land.
- The drinking water standard is 4 NTU so any visible water turbidity is an issue for water supplies.
- Freshwater life can be adversely affected by turbidity levels of between 10 and 50 NTU so surface waters cloudier than this require attention to check whether forest operations are the cause.
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1. Assess the effectiveness of actions
2. Contain the spillage
3. Take action to stop the leak/prevent further spillage at source.
4. Use available absorbent materials and equipment from spill kit.
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6. Use available absorbent materials and equipment from spill kit.
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Assessing effectiveness of actions

- Is anyone injured?
- Check site/watercourse(s) are clean
- Bag contaminated materials and soil
- Contain spills
- Stop the spill from spreading
- Downstream water users
- What is the spillage?
- Where is the site?
- Montgomery office
- Local law enforcement
- Consider appropriate actions.
- Local emergency services
- Mobile:
- Apply the appropriate spillage in good conditions.
- Consider the risk from spillage.
- Contain the spillage.
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Clean up

1. Apply spill kits.
2. Bag contaminated materials and soil.
3. Contain spills.
4. Use available absorbent materials and equipment from spill kit.
5. Stop the spill from spreading.
6. Contain spills.
7. Stop the spill from spreading.
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9. Stop the spill from spreading.
10. Contain spills.
**Pollution control measures for sediment release**

**Assessing water turbidity**

- **Particulate material in a water sample** and a good indicator of the level of sediment contamination.
- **Use turbidity to assess and monitor** the impact of forestry management practices and to ensure effective application of sediment control measures.
- **Use turbidity to identify** and locate the source of pollution whenever it is suspected to be from sediment release (e.g., by locating sediment scours, gullies or blockages to watercourses).
- **Use turbidity by filling a clear and shallow bottle from the watercourse**—taking care not to block the drainage of the channel by installing any dams or weirs.

**Roads and quarries**

1. Avoid significant construction or excavation work in sensitive areas during the winter season. (Fig. 2a, b, c)
2. Avoid building and maintaining embankments in natural watercourses in wet weather. (Fig. 2a, b, c)
3. Ensure that all silt traps are regularly maintained and checked and that they are not blocked up with sediment.
4. Store fuel oils or lubricants on site; provide a cover to reduce the build-up of contaminated water.
5. Keep containers of fuel oils or lubricants on flat ground and away from the immediate working area of machinery.
6. Avoid using skidders on soft ground.
7. Avoid long, straight extraction routes and ensure brash mats are maintained.
8. Keep extraction routes outside buffer areas and valley bottoms wherever possible.
9. Avoid exposing conifer crops on the bank of a watercourse opposite the felling site, where the felling is taking place. (Fig. 2a, b, c)
10. Review the contingency plan and ensure you know how to correctly use diesel-handling equipment. (Fig. 2a, b, c)

**Rivers and streams**

1. Install a cut-off ditch to reduce the flow of surface water draining to sediment sources where watercourse interception is not possible (Fig. 2a, b, c).
2. Use geotextile barriers for larger sediment problems; ensure these are well dug into the banksides.
3. Use smaller silt traps formed from straw bales or other materials to try to retain sediment within drains; secure these traps in place to prevent movement or washout.
4. Use log steps where rutting occurs to split run-off and divert it to unbroken ground.
5. Locate brash heaps outside buffer areas and ensure run-off does not drain directly into watercourses or drains.
6. Avoid long, straight extraction routes and ensure brash mats are maintained.
7. Keep extraction routes outside buffer areas and valley bottoms wherever possible.
8. Avoid using skidders on soft ground.
9. Avoid long, straight extraction routes and ensure brash mats are maintained.
10. Keep containers of fuel oils or lubricants on flat ground and away from the immediate working area of machinery.
Roads and quarries

1. Avoid significant road construction with wet weather (e.g. wet weather may last 100 m). Do not install hanging culverts in fish-bearing watercourses.
2. Minimise water seepage or surface run-off from quarries or borrow pits to a buffer area. Use stone ramps to protect main access routes.
3. Temporarily divert flows or install a downstream silt trap when removing barriers or traps from watercourses; excavate any significant sediment deposits and dump silt outside buffer areas.
4. Monitor site and condition of water. Use available materials and equipment to create a barrier.
5. Discuss with the emergency services and summon the appropriate help if needed.
6. Take action to stop the leak/prevent further spillage at source.
7. Act to contain spillage. If it is not possible, notify the agreed emergency services and summon the appropriate help if needed.
8. Send for extra pollutant absorbing materials from nearest store.
9. Wear personal protective equipment if the spill is hazardous.
10. Stop the spill from spreading.
11. Contain the spill as best as possible.
12. Bag contaminated materials and soil.

Harvesting operations

1. Ensure roads and quarries buffer area. Install silt traps when cleaning connected drains.
2. Minimise seepage or surface run-off from logging areas, especially where there is a risk of run-off reaching local watercourses.
3. Locate small heads or sink holes on flat ground and away from the immediate working area of machinery.
4. Use appropriate bowsers or drums for fuel transport and do not overfill; secure drums within working area of machinery.
5. Avoid exposing conifer crops on the bank of a watercourse opposite the felling site, where necessary.
6. Consider felling crops but not extracting timber where this would cause major damage to watercourses or drains.
7. Stop all illicit waste from entering the flow of surface water during harvesting operations where there is a risk of sediment reaching watercourses.
8. Use geotextile barriers for larger sediment problems; ensure these are well dug into the banksides. Match the type and design of any geotextile barrier to the nature of sediment issue.
9. Use smaller silt traps formed from straw bales or other materials to try to retain sediment and the amount of sediment run-off from the land.
10. Locate barriers or traps as close to sediment sources as possible; use brash bunds to reduce seepage waters or surface run-off from quarries or borrow pits to a buffer area.

Vehicle and machine maintenance

1. Use geotextile barriers for larger sediment problems; ensure these are well dug into the banksides. Match the type and design of any geotextile barrier to the nature of sediment issue.
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Pollution control measures for sediment release

1. The turbidity of a water sample is a good indicator of the flow of sediment into watercourses.
2. Regularly check to ensure there is no leak of fuel or lubricants from machinery and equipment. Do not park vehicles, machinery or bowsers or locate un-bunded tanks on bridges or near to watercourses or drains.
3. Do not install hanging culverts in fish-bearing watercourses.
4. Keep containers of fuel oils or lubricants on flat ground and away from the immediate working area of machinery.
5. Use double-skinned or bunded, securely lockable tanks where there is a need to temporarily store fuel oils or lubricants on site; provide a cover to reduce the build-up of contaminated systems and what to do in the event of a spillage.
6. Use appropriate bowsers or drums for fuel transport and do not overfill; secure drums within working area of machinery.
7. Avoid exposing conifer crops on the bank of a watercourse opposite the felling site, where necessary.
8. Consider felling crops but not extracting timber where this would cause major damage to watercourses or drains.
9. Stop all illicit waste from entering the flow of surface water during harvesting operations where there is a risk of sediment reaching watercourses.
10. Use geotextile barriers for larger sediment problems; ensure these are well dug into the banksides. Match the type and design of any geotextile barrier to the nature of sediment issue.
11. Use smaller silt traps formed from straw bales or other materials to try to retain sediment and the amount of sediment run-off from the land.
12. Use geotextile barriers for larger sediment problems; ensure these are well dug into the banksides. Match the type and design of any geotextile barrier to the nature of sediment issue.

Assessing water turbidity

• Turbidity of a water sample is a good indicator of the flow of sediment into watercourses.
• Use geotextile barriers to avoid the impact of forest management practices and other activities on watercourses.
• Use geotextile barriers to avoid the loss of pollutant; sediment release from forest management.

The diagram shows a range of turbidity values (NTUs): (a) Clear, (b) Slightly turbid, (c) Moderately turbid, (d) Very turbid, (e) Extremely turbid.

Clean up

1. Monitor site and condition of water. Use available materials and equipment to create a barrier.
2. Act to contain spillage. If it is not possible, notify the agreed emergency services and summon the appropriate help if needed.
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8. Act to contain spillage. If it is not possible, notify the agreed emergency services and summon the appropriate help if needed.
9. Act to contain spillage. If it is not possible, notify the agreed emergency services and summon the appropriate help if needed.
10. Act to contain spillage. If it is not possible, notify the agreed emergency services and summon the appropriate help if needed.

Pollution control for spillages

Assess

• Is the scene safe?
• What is the spillage?
• How much has spilled?
• Where is the spillage?
• Is there any harm to the environment?
• Is the spillage contained?

Plan

• Contain spillage
• Organise back-up materials
• Deal with spillage

Act

• Isolate the spill
• Contain spillage
• Deal with spillage
• Organise back-up materials

Reinstate

• Reinstate site when confirmed clean
• Bag contaminated materials and soil
• Organise back-up materials
• Deal with spillage
• Contain spillage

Out of hours contact

• Forestry site manager
• Mobile:
• Mobile:
• Mobile:
• Mobile:

Enquiries and comments

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1. Assess if possible to re-route works away from watercourses.
2. Start works away from the watercourse and when working safely beyond 100 m. Ensure operations are not impacting on watercourses.
3. Install barriers on roads and access to watercourses.
4. If roads and access to watercourses are being constructed, ensure that barriers are installed on the same alignment as the watercourse channel.
5. Prevent seepage waters or surface run-off from quarries or borrow pits to a buffer area.
6. Locate small quarries, roadsides and areas that drain close to natural watercourses.
7. Keep extraction routes outside buffer areas and valley bottoms wherever possible.
8. Avoid using skidders on soft ground.
9. Avoid long, straight extraction routes and ensure brash mats are maintained.
10. If operations cannot be halted due to weather conditions, try to avoid long breaks in working.

Harvesting operations

- Roads and quarries
- Harvesting operations
- Vehicle and machine maintenance
- Pollution control measures for sediment release

Pollution control measures for sediment release

Agricultural activities are a significant source of water pollution, particularly of sediment. The diagram shows the typical stages in a forest management operation. Note: The diagram is not to scale. The actual sequence may vary depending on the type of operation.

1. Identify operations that are likely to contribute sediment:
   - Identify potential sediment sources on the farm and match against the samples below.
   - Measure turbidity by filling a clear-sided and clean bottle from the watercourse – taking care not to mix the sample with other sediment.
   - Measuring turbidity can be used to assess the impact of forest management practices and to trace the source of pollution when someone first notices a change in water clarity.
   - Measuring turbidity can also be used to assess the impact of emergency measures.

2. Take immediate action if there is a marked change in water clarity, e.g. by suspending operations, monitoring or implementing short-term control measures.

Assessing operations

- The turbidity of a water sample is a good indicator of the likelihood of sediment entering the watercourse.
- Observations of sediment-laden water can indicate the extent of sediment run-off from the harvest.
- Observations can be made of potential sediment sources on the farm and matched against the samples below.
- Observations can also be made of potential sediment sources on the farm and matched against the samples below.

Communicate

- In case of an accident:
  - Grid reference
  - Site manager
  - Mobile:
  - Forestry site manager
  - Consider felling crops but not extracting timber where this would cause major damage to watercourses.
  - Avoid making any changes on the banks of watercourses opposite the polluted watercourse.

Consider potential threats posed to water from the handling of fuel oils and lubricants.

- Regularly check to ensure there is no leak of fuel or lubricants from machinery and equipment.
- Always use a transfer hose when refuelling.
- Do not store or handle oils and lubricants, or refuel, wash or repair machinery, within buffer zones.
- Provide a cover to reduce the build-up of contaminated systems and what to do in the event of a spillage.
- Remove waste or recovered oil from the site in an impermeable container and dispose of at a suitable licensed site; do not puncture, bury, burn or leave empty containers on site.
- Incorporate cleaning products into plans to ensure containment areas are cleaned.

Roads and quarries

1. Roads and quarries
2. Install barriers on roads and access to watercourses.
3. If roads and access to watercourses are being constructed, ensure that barriers are installed on the same alignment as the watercourse channel.
4. Keep extraction routes outside buffer areas and valley bottoms wherever possible.
5. Avoid using skidders on soft ground.
6. Avoid long, straight extraction routes and ensure brash mats are maintained.
7. If operations cannot be halted due to weather conditions, try to avoid long breaks in working.
8. Monitor weather forecasts daily and amend work plans accordingly. Suspend operations if heavy rainfall leads to a build-up of mud on timber stacking and loading areas, especially where there is a risk of run-off reaching local watercourses.
9. Suspend operations if heavy rainfall leads to a build-up of mud on timber stacking and loading areas, especially where there is a risk of run-off reaching local watercourses.
10. Locate brash heaps outside buffer areas and ensure run-off does not drain directly into watercourses.

Clean up

- Contain spillage
- Communicate
- Assess
- Deal with spillage
- Stop the spill from spreading
- Contain
- Where is the site?
- Is anyone injured?
- What is the spillage?
- Communicate
- Assess
- Deal with spillage
- Stop the spill from spreading
- Contain
- Where is the site?
- Is anyone injured?
- What is the spillage?
- Communicate
- Assess
- Deal with spillage
- Stop the spill from spreading
- Contain
- Where is the site?
- Is anyone injured?
- What is the spillage?