Forest Practice Guide

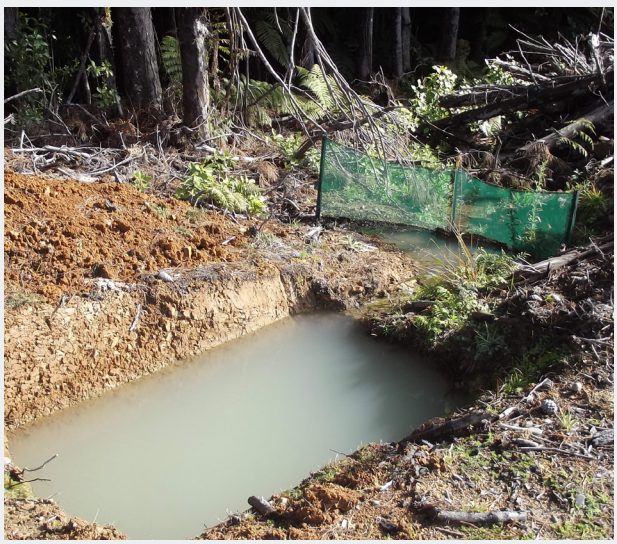
Non-Regulatory

Erosion and Sediment Control Measures 2.7 Silt Fences

Silt fences are designed to intercept sheet flow *sediment* laden stormwater *run-off* and filter out both the larger and smaller particles of *sediment*. Silt fences and the larger "super" silt fences are a short-term solution to reduce *sediment* movement until the site stabilises and vegetation re-establishes. Silt fences can be used in conjunction with other *sediment* treatment measures such as *sediment* traps or ponds.

Only use silt fences to intercept sheet flow water or in conjunction with soak holes. Silt fences should not be used in *stream* channels, gullies or *water table* drains (due to concentrated flows).

Silt fences are usually made from geotechnical fabric, but at times shade cloth can also be used to allow water to pass through it while filtering larger particle sizes.



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Erosion and Sediment Control Measures
2.7 Silt Fences

A Where and when to use

1. To reduce the risk of *sediment* entrained in sheet flow from entering sensitive sites such *water bodies*.
2. In conjunction with *sediment* traps and *sediment* ponds and *cut-outs* and *flumes*.
3. On low gradient sites or for confined areas where the contributing area is small and *sediment* can be contained by the fence.

B Where not to use

1. As a velocity check in *water tables* or in any other concentrated flow paths to capture *sediment* or reduce water flow velocity, as they are likely to fail in these situations.

C Design

1. Plan the location of silt fences to be constructed where they will not be overwhelmed by large flows (generally receiving less than 0.5 ha). Stormwater flow from large *catchments* may cause them to fill too rapidly, for water to bypass around them, or cause them to fail.

D Construction

1. Select the correct fabric for the silt fence. Silt fence fabric is a close weave and intended to capture fine *sediment*. Shade cloth and open weave fabrics will trap larger *sediment* grain sizes, but not fine *sediment*, and are suitable in some geologies.
2. Install the fence along the contour. If this is not possible, or where there are long sections of silt fence, install short silt fence returns projecting upslope from the silt fence, to minimise concentration of flow.
3. Construct silt fence wings at either end to contain *sediment* where there is a risk of it going around the sides.
4. Use longer 'super' silt fences for larger areas (e.g. *catchments* greater than 0.5 ha).

E Maintenance

1. Prepare a routine maintenance plan including heavy rainfall response measures.
2. Check silt fences regularly and after any moderate rainfall especially on new construction sites. They need regular maintenance because they can fill rapidly on very erodible soil sites.
3. Check that the silt fence is working correctly and is sized to the site. If not, enlarge if possible, or re-direct some of the flow to another stormwater control measure.
4. When cleaning the fence, remove *sediment* to a safe location where it cannot wash back into the fence, enter a sensitive area or be subject to further erosion.

F Other methods

1. Use in conjunction with *sediment* traps and soak holes, and *sediment* retention ponds.
2. Consider using other vegetative *stabilisation* methods (e.g. hydro-seed, grassing, logging *slash*) in conjunction with silt fences.

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G Technical specification guidelines

1. Silt fence returns should be a minimum of 2 m in length and can incorporate a tie-back if required. Continue the silt fence around the return and double back to eliminate joins.
2. Use support posts or Y-post (waratah or similar) steel standards at a maximum 2 m apart unless tensioned wire (2.5 mm HT along the top of the silt fence) is used between posts top and bottom. If tensioned, the distance can be widened to 4 m.
3. Double the silt fence fabric over and fasten to the wire and posts with wire ties or cloth fastening clips at 150 mm spacing.
4. Join lengths of fabric by doubling over fabric ends around a wooden post or batten or by stapling the fabric ends to a batten and butting the battens together.
5. Maximum slope lengths, spacing of returns and angles for silt fences are:

Silt fence design criteria

Slope steepness %	Max slope length (m)	Spacing of returns (m)	Max silt fence length (m)
Flatter than 2%	Unlimited	N/A	Unlimited
2 – 10%	40	60	300
10 – 20%	30	50	230
20 – 33%	20	40	150
33 – 50%	15	30	75
Over 50%	6	20	40

6. Excavate a trench at least 100 mm wide and 200 mm deep along the proposed line of the silt fence.
7. Install the support posts (tanalised timber a minimum of 50 mm square, or waratahs at least 1.5 m in length) on the downslope edge of the trench. Drive in until solid, at least 400 mm deep.
8. Tie silt fence fabric on the upslope side of the support posts to the full depth of the trench.
9. Silt fence height should not exceed 300 – 400 mm above ground level.
10. Backfill the trench with *compacted fill*.
11. Use angled waratahs at the end of the silt fence to tension wires.
12. Reinforce and tension the top of the silt fence with a 2.5 mm support wire.
13. Double the silt fence fabric over and fasten to the wire and posts with wire ties or cloth fastening clips at 150 mm spacing.
14. Where ends of silt fence fabric come together, ensure they are overlapped, folded and stapled to prevent *sediment* bypass.
15. Construct extra tie-backs, on the upward side, where water may pond behind the silt fence.

National Environmental Standards for Plantation Forestry

Relevant regulations for *sedimentation* are 26, 27, 31, 33, 56.

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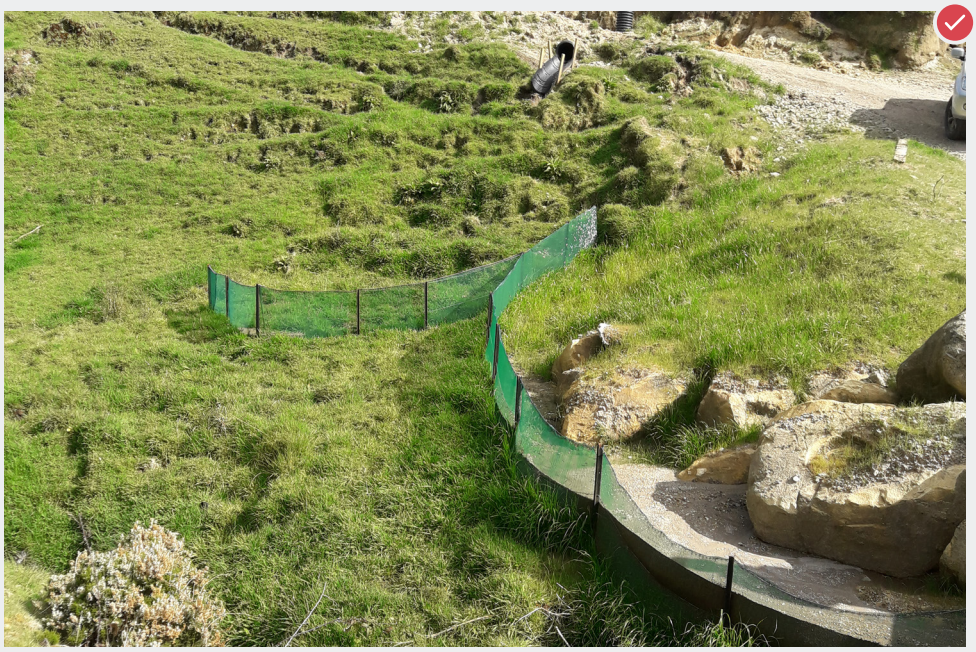
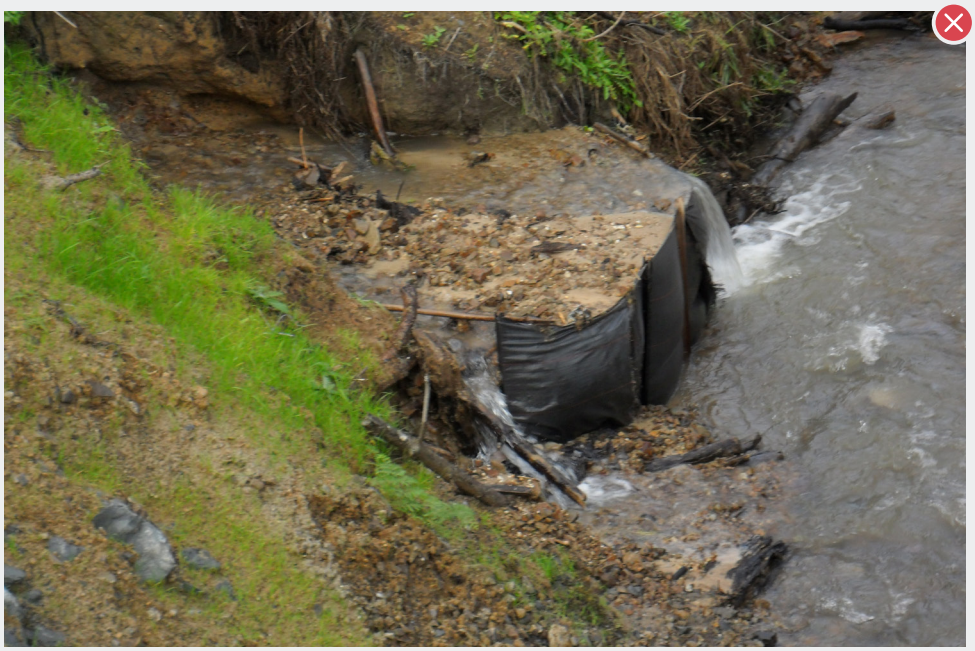
Examples

Sediment trapped by a silt fence.



Silt fence in the wrong location – a *river* bed.



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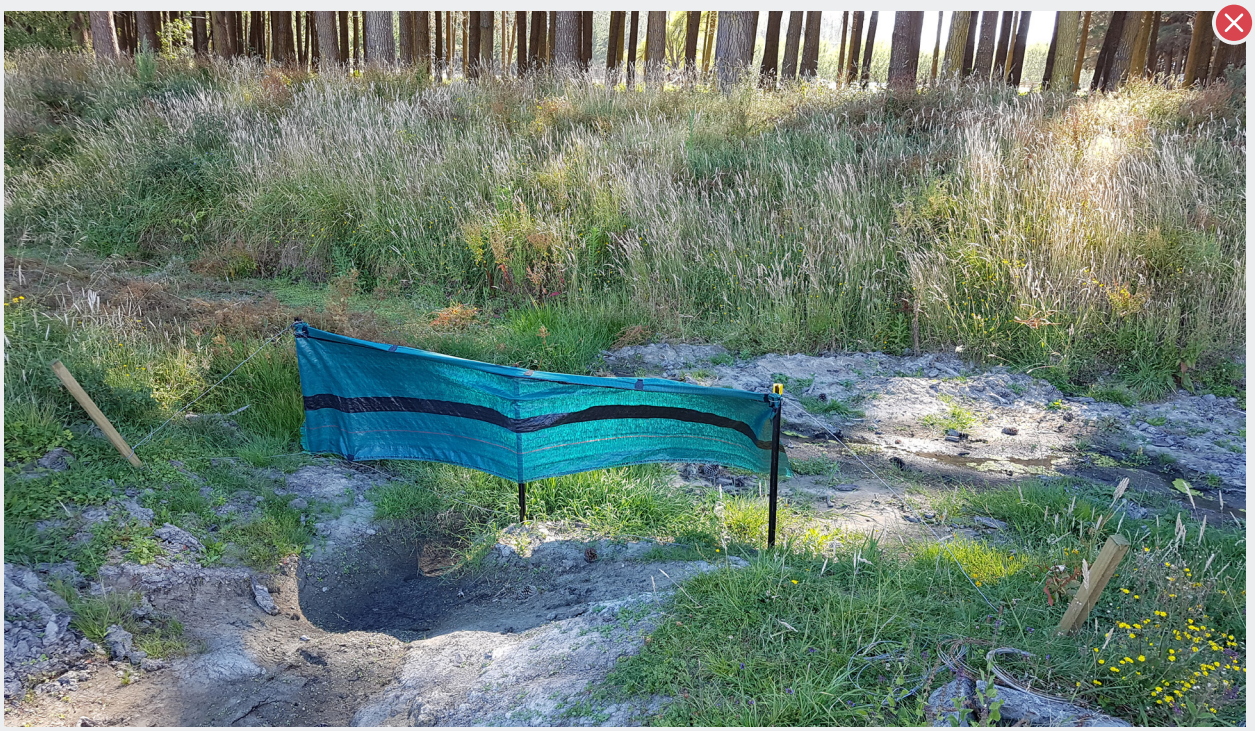

Poorly constructed silt fence.

Contact

Forest Owners Association
Level 9, 93 The Terrace
Wellington 6143

www.nzfoa.org.nz

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