Berms are low embankments typically on the outside edge of a road or landing. They are constructed to channel stormwater to cut-outs and act as additional erosion and sediment control measures.

Berms are part of a family of stormwater control measures that can increase the life of a road or landing and associated fill slopes, by reducing erosion.
A Where and when to use

1. Use berms to direct stormwater:
   a. Away from erosion prone fill slopes and old slip faces.
   b. Onto stable ground (this may be via additional stormwater control measures such as cut-outs or flumes).
   c. To stormwater and sediment control measures including sediment traps, or sediment retention ponds, where necessary.

B Where not to use

1. Most roads do not require berms, especially roads constructed though rock or stable material.

C Design

1. Plan berm location as part of the overall road or landing engineering design. If they are added as an afterthought, they may narrow the carriageway or result in over-steepening the fill face.

D Construction

1. Use appropriate equipment. An excavator can compact and shape the berm.
2. Construct berms at the same time as the road/landing.
3. Ensure the outside edge of the road has been compacted and the fill slope has not been over-steepened. Fills that are too steep are more prone to failure if the soil’s natural angle of repose has been exceeded. Adding a berm will increase the load on the outside road edge and may create an additional risk in highly erodible soils (exceed shear strength).
4. Oversow or hydro-seed berms to protect them in sensitive areas, if necessary, to minimise erosion.

E Maintenance

1. Prepare a routine maintenance plan including heavy rainfall response measures.
2. Check berms are still functioning after a heavy rain event.
3. Do not dump spoil (e.g. road bank slump material) on top of an existing berm during maintenance. This can overload the outside edge and cause fill failure.
4. If machinery has been driven/sited on the berm, repair the damage as soon as practicable.
5. Where practicable, avoid spraying vegetation on the berm when pre-plant desiccation spraying.

F Other methods

1. Other construction practices such as water bars or broad-based rolling dips can effectively drain water from the cut slope on the inside of the road to the outside edge. These require the right soil type and careful construction to work effectively and are generally more suited to low-volume roads.

National Environmental Standards for Plantation Forestry

Relevant regulations for sedimentation are 26, 27, 31, 33, 56.
Erosion and Sediment Control Measures

2.3 Berms

Examples

Well-compacted berms were used to protect a large fill slope by directing stormwater away from the more vulnerable earthworks.

Un-compacted berm.
Berm with hydro-seeding.

This berm is too large for the slope and road verge. Material is spilling from it.
Erosion and Sediment Control Measures

2.3 Berms

Other Practice Guides in this series

2.1 Water Tables
2.2 Cut-outs
2.3 Berms
2.4 Road Drainage (Stormwater) Culverts
2.5 Flumes
2.6 Sediment Traps and Soak Holes
2.7 Silt Fences
2.8 Sediment Retention Ponds

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