A water table is a drain to channel and direct stormwater from cut banks or berms along a road or at a landing to an appropriate discharge point. A water table collects stormwater from across the road surface. This keeps the road subgrade drier, making a stronger road.

Stormwater needs to be regularly discharged from water tables to minimise scour. To help reduce scour, water tables can be rock armoured. Sediment traps and check dams can also assist in reducing water speed and its erosive power.

Water tables are one of a family of stormwater control measures that increase the life of a road or landing by reducing erosion and maintenance costs. They also reduce the likelihood of sediment delivery to rivers.
2.1 Water Tables

**Where and when to use**

1. Use water tables on all roads and at the back of landings (where stormwater needs to be diverted away from the landing).

**Where not to use**

Not applicable for this FPG.

**Design**

1. Stormwater needs to be regularly discharged from water tables to reduce quantity and velocity.
2. Ensure the road has adequate cross fall so that stormwater drains off the carriageway into the water table drains.

**Construction**

1. Construct water tables to an adequate depth.
2. Construct the bottom of the water table as flat as possible. “V” shaped water tables are more prone to erosion as the water is more concentrated.
3. Construct water table outlet control measures (i.e. culverts and cut-outs) at the same time as the water tables to minimise scour.

**Rock armouring**

4. Consider using rock armouring:
   a. Where the culvert or cut-out spacing distance is restricted by the terrain.
   b. In steep gradient water tables if concentrated water flow and potential culvert failure could lead to significant adverse environmental risk and infrastructure failure.
5. Rock armouring is placing larger aggregate (preferably fractured to avoid rolling) in the water table. This slows water flow and limits erosion, as the rock protects the water table by reducing the energy of the water.
6. Standard road aggregate can be used by applying it to the full width of the road, not just the driving surface.
7. Ensure the aggregate is both large enough and placed deep enough to take stormwater flow. This avoids aggregate being displaced or washed into culverts and blocking or partially blocking them.
8. Compact the water table aggregate, if possible.
9. If standard road aggregate is not suitable for lining the water table, use a different aggregate after the subgrade aggregate is applied to the road surface.
Erosion and Sediment Control Measures
2.1 Water Tables

**Construction** continued

**Check dams**

10. Consider using check dams (very small temporary or semi-permanent dams constructed across a water table), where water tables are prone to erosion, primarily due to water speed with a large volume flow. They may be used in tandem with rock armour.

11. Use larger aggregate to construct or use sand bags filled with aggregate.

12. Ensure water goes over the middle of the check dam and not around the edges, otherwise this will lead to scour.

13. Do not form check dams higher or wider than the water table itself.

**Polymers**


**Maintenance**

1. Prepare a routine maintenance plan including heavy rainfall response measures.

2. Maintain water tables. They can require regular maintenance due to cut bank slumping which can disrupt their drainage pathway.

3. Check them after a heavy rain event.

4. Ensure sufficient road drainage culvert spacing and cut-outs to control the stormwater run-off. If not, either construct additional culverts or cut-outs to reduce water table erosion, or build rock armour check dams or apply polymers in areas that drain to highly sensitive receiving areas.

**Other methods**

These are complementary measures: berms, cut-outs, road drainage culverts and flumes.
**Technical specification guidelines**

1. The lowest point of the water table should be below subgrade level, about 500 mm below the crown of the road.

2. **Check dam:**

   ![Rock check dam diagram](image)

   - Elevation
     - Rocksize to be 100 mm to 300 mm mix
     - Downstream face at a slope of 2.1
   - Cross Section
     - 200 mm minimum

<table>
<thead>
<tr>
<th>Slope</th>
<th>Spacing (m) between dams (450 mm centre height)</th>
<th>Spacing (m) between dams (600 mm centre height)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2% or less</td>
<td>24</td>
<td>30</td>
</tr>
<tr>
<td>2% to 4%</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>4% to 7%</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>7% to 10%</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>over 10%</td>
<td>Use stabilised channel</td>
<td>Use stabilised channel</td>
</tr>
</tbody>
</table>

**National Environmental Standards for Plantation Forestry**

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

Examples

A water table with a high flow of stormwater.

Scoured road edge after the water table was blocked by a slump from the cut batter.
Angular rock armoured water table.