

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Better Management Practice</p>	<p>Road maintenance.</p> <ul style="list-style-type: none"> • Crest road camber is maintained where necessary • Mitre drains are constructed where necessary • Water from district roads is diverted into stable waterways • Road drains and verges are kept clear of invading vegetation to allow free flow of surface water • Boundary breaks that are used as roads, are protected from erosion • Grasses on secondary and tertiary roads are maintained by slashing or chemical control • Primary road surfaces are protected by quarry, stone or cement 	<p>Roads are maintained to minimise soil loss</p> <ul style="list-style-type: none"> • Crest road camber should be maintained at all times, and mitre drains should be constructed where wash can be expected between conservation structures. • Road drains must be routinely maintained, cleared after grading and kept free of invading vegetation. In particular, the correct number of drains must be constructed to meet the slope requirements of the road. • Water from district roads should be diverted into stable waterways. • Road drains and verges should be kept clear of invading vegetation to allow free flow of surface water. • Boundary breaks that are used as roads must be protected to reduce erosion. • Maintenance of grasses on secondary and tertiary roads should be by slashing or chemical means. • Road surface protection will depend on the type of road and the density of traffic, and will take the form of quarry, stone or cement.
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Better Management Practice</p>	<p>Road culverts are in place to manage water discharge and minimise soil loss.</p> <ul style="list-style-type: none"> • Culverts can accommodate a 1:10 year flood • Diameter of culverts is a minimum of 600mm • Culverts and their discharge points are protected 	<p>Road culverts</p> <p>One large designed culvert is superior to two smaller culverts that equal the same capacity.</p> <ul style="list-style-type: none"> • To avoid choking, the diameter of a culvert should be at least 600 mm. • Culverts must be able to accommodate a 1:10 year flood. • Culverts should be protected by rock pitching where necessary and discharge points that are protected from scouring. <p>Should a culvert affect the watercourse in terms of section 21(c) and 21(i) of the National Water Act, 36 of 1998, it may be necessary to apply for a Water Use Licence. However, there is a provision under the General Authorisations which may ease the need for licensing under certain conditions.</p>

Maximum spacing between culverts on haulage roads:

Road gradient %	Spacing (moderate to resistant soils)	Spacing (erodible shallow soils: <500 mm, <15% clay)
1 – 5	150 m	120 m
6 – 10	120 m	90 m
11 – 15	95 m	70 m
16 – 20	50 m	35 m

Typical culvert sizes according to catchment area and run-off potential:

Catchment area (ha)	Diameter of culvert (mm) (high run-off potential*)	Diameter of culvert (mm) (medium runoff potential*)	Diameter of culvert (mm) (low runoff potential*)
1	600	600	600
2	600	600	600
3	600	600	600
4	600	600	600
5	600	600	600
6	675	600	600
7	750	600	600
8	750	600	600
9	825	600	600
10	825	600	600
15	1050	675	600
20	1050	750	600
30	1350	900	600
40	1350	1050	750
50	1500	1050	750
60	1800	1200	825
70	1800	1200	900
80	1800	1350	900
90	2000	1350	1050
100	2000	1500	1050

*Run-off potential is affected by slope, soil and vegetation.