

# *erosion/sediment control measures appendix*



## EROSION AND SEDIMENT CONTROL MEASURES

For *Earthworks* the following erosion/sediment control measures are to be employed.

### EROSION AND SEDIMENT CONTROL MEASURES

1. Mitigate sediment runoff by employing erosion/sediment control measures as follows:
  - expose only as much ground as needed at any one time
  - provide run off diversion channels or contour drains to divert clean water away from the *site* onto stable ground (grassed or sealed)
  - Install a stabilised entrance way
  - where a *building* is constructed, ensure that stormwater from the roof is appropriately connected to stormwater systems as soon as the roof is constructed.
  - regrass/revegetate/stabilise all exposed areas that are not to be worked for more than a 7 day period.
2. Use one or more of the following erosion or sediment control measures for the capturing of silt (see diagrams in part B of this Appendix):
  - Silt *fences*
  - *vegetation* buffer strips
  - Earth bunds
  - Sediment ponds
  - Pit dewatering (pumping water from the site)
3. Ensure that any sediment control measure is cleaned out before it is 50% full of sediment, and make sure that this material is deposited in a manner that ensures that it cannot runoff into any **water bodies** or coastal waters.
4. Ensure that maintenance of all erosion and sediment control measures is undertaken as required.
5. Ensure stockpiles of earth are wholly on the *construction site* and are placed behind a sediment control measure.
6. All silt control measures to be put into place prior to the commencement of the *earthworks* and to be retained until the *site* is permanently protected against erosion. (Note: While it is

desirable that most controls will be put into place prior to works commencing, there will be some measures that will need to be installed and maintained during the activity).

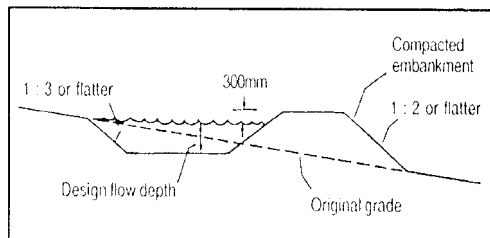
7. Replace topsoil and regrass/revegetate the exposed ground, or cover up with a mulch, as soon as possible. If working during the winter months (May to September) then mulching will be necessary to ensure a satisfactory vegetative cover is established.

## DIAGRAMS OF EROSION AND SEDIMENT CONTROL MEASURES

### EROSION CONTROL METHODS

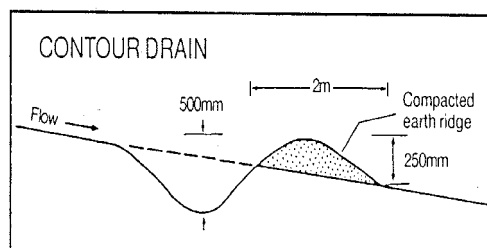
#### RUN OFF DIVERSION CHANNELS

- used to protect work areas from up-slope run off
- water from channel can be discharged to areas of *vegetation*
- can be used to divert water to other sediment retention systems
- have shallow grades on channel to prevent scouring (1% - 2%)
- may need to be stabilised against erosion by regrassing



#### CONTOUR DRAINS

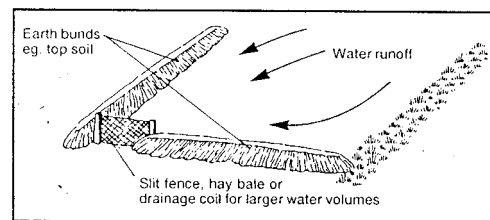
- use across *earthworks* to break up slope
- use more than one drain on steeply sloping *sites*
- decrease spacing of drains as slope increases
- water can be discharged to *vegetation* or into sediment control structures



### SEDIMENT CONTROL MEASURES

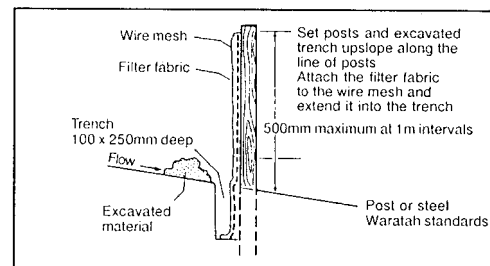
#### EARTH BUNDS

- construct across slope to control and detain run-off
- use near edge of *site* to prevent sediment from leaving area
- can use topsoil from site to create bund



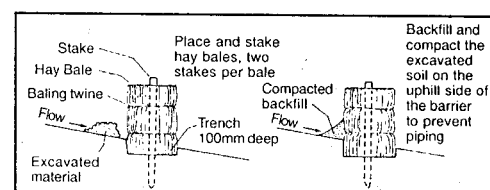
#### SILT FENCES

- for small disturbed areas or low slope angles
- use more than one on steeply sloping *sites*
- decrease spacing between *fences* with increasing *site* slope
- filter fabric is stretched between posts at max spacing of 1 metre



#### HAY BALES

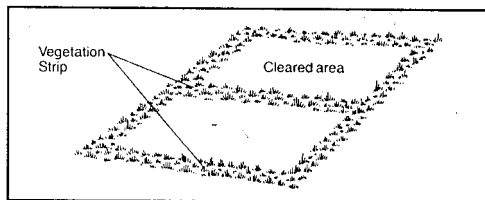
- for small *sites* and short term control
- should be dug into ground, tied together and anchored by staking
- regular inspection and maintenance is essential



## DIAGRAMS OF EROSION AND SEDIMENT CONTROL MEASURES

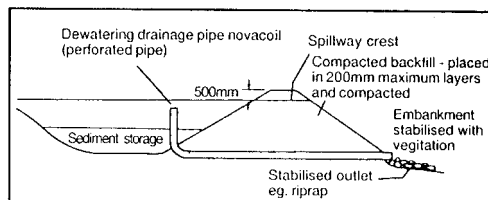
### VEGETATION BUFFER STRIPS

- should always be provided along watercourses
- to filter sediment from overland flow where run off rates are low and not concentrated
- use more than one buffer strip on steep slopes
- decrease buffer strip spacing with increasing slope
- to keep machinery away from watercourses



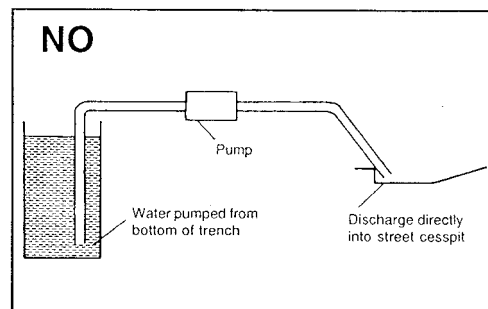
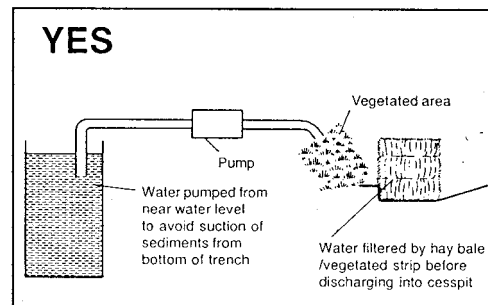
### SEDIMENT PONDS

- do not construct in streams
- size at 1-2% of *site area* (ie.  $1.2\text{m}^3 / 100\text{m}^2$ )
- clean out sediment regularly
- must have dewatering/drainage facility



### PUMPING WATER FROM THE SITE

If it is necessary to remove water from trenches or other areas of the *site*, then this should be done in a manner to prevent sediment in the water from entering any drain or watercourse. Water should not be taken from the bottom of any trench and sediment should be properly filtered out from the dirty water by an appropriate means (e.g., vegetative buffer strips). Once the sediment has settled within the trenches water can then be discharged to a cesspit or grassed area, or a watercourse if no other disposal point is available.

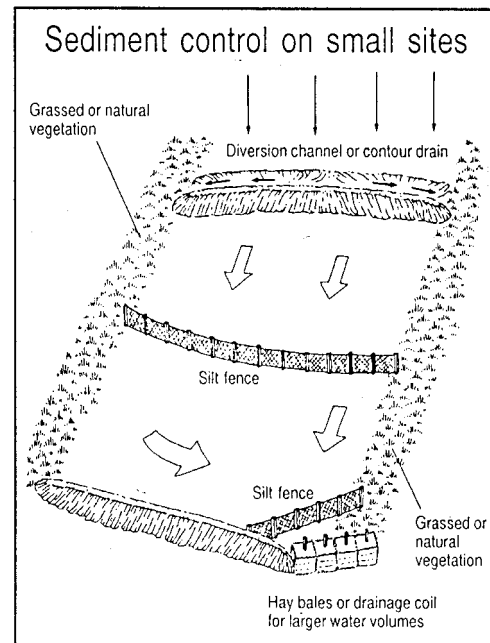
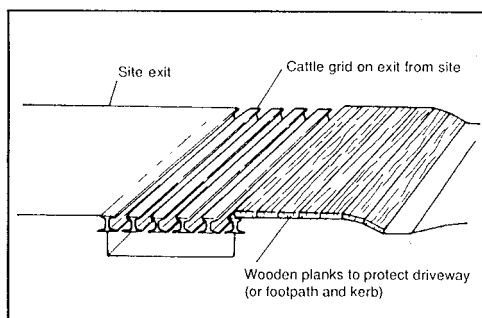
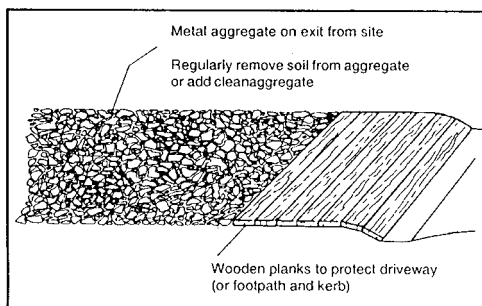


## DIAGRAMS OF EROSION AND SEDIMENT CONTROL MEASURES

### KEEPING THE ROADS CLEAN

It is important that soil from the site is not spread onto the *road* by vehicle tyres. To prevent this from occurring a stabilised entranceway must be built. The simplest method is to spread metal aggregate on all exit ways from the *site* where soil will have a chance to gall off before the vehicle enters the *road*. Other methods for larger *sites* are cattle grids or a wheel wash. The *site* manager or *site* owner is responsible for cleaning up any spilt soil or other materials that get onto the *road* from the *site*.

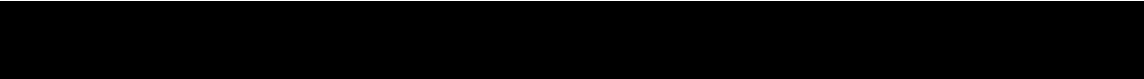
Remember also to protect the footpath, berm and kerb from damage by crossing vehicles.



### EXPLANATION

*Earthworks* of *Permitted Activity* status are those associated with a *building platform* within any *Natural Area* or up to 50m<sup>3</sup> within the *General Natural Area*. Apart from *building platform* formation, such 'small site' *earthworks* are generally for the purpose of *driveways*, landscaping, paving, or tracking for rural tracks. Small *site* activities are of concern if no erosion or sediment controls are in place because any sediment generated eventually discharges onto nearby properties, to waterways, or to drains and stormwater systems.

Depending on the location of these works, they can have a direct influence on the receiving *environment*, an *effect* that is compounded by the cumulative impact of many operations. In most cases the volume of sediment discharges may be minor, however, it is the cumulative *effects* that have the potential to be significant to particular environmental qualities. For example, after the Auckland Regional Council has consented *earthworks* of a 100 lot subdivision,



accommodate house platforms, *driveways*, paths etc. The impact of one property owner re-earthworking their *site* without proper controls is minor however, the cumulative impacts from 100 property owners re-earthworking without controls can be significant in terms of sediment generated. It is this cumulative *effect* that is of most concern.