

# Ten Commandments of Erosion and Sediment Control

## 1. Minimise Disturbance - Fit land development to land sensitivity.

Land development should be fitted to land sensitivity and where possible, disturbance should avoid steeper slopes and other features such as streams and wetlands.

For any development, the total area of earthworks should be the minimum necessary to achieve the design outcome (including temporary works). The area of earthworks exposed to erosion at any given time should also be minimised through staging and progressive stabilisation.

## 2. Stage Construction

Carrying out bulk earthworks over the whole site maximises the time and area of soil that is exposed and prone to erosion. "Construction staging", where the site has earthworks undertaken in small units over time with progressive revegetation, limits erosion.

Careful planning is needed. Temporary stockpiles, access and utility service installation all need to be planned. Construction staging differs from sequencing. Sequencing sets out the order of construction to contractors.

## 3. Protect Steep Slopes

If slopes are worked and require stabilisation, simple vegetative covers such as topsoiling and seeding may not be immediately effective and additional measures may be required.

Disturbance of existing slopes should be avoided wherever possible, particularly steep slopes which have a higher risk of erosion. To minimise erosion, clean water runoff from above the site must be diverted away from the exposed slopes.

## 4. Protect receiving environments

Receiving environments including sensitive receiving environments, existing streams, watercourses and proposed drainage patterns need to be mapped. Earthworks and the removal of vegetation beside or within streams (including intermittent streams), wetlands and the coast, may require consents from Nelson City Council or Tasman District Council. Councils should be consulted on these matters prior to finalising project designs.

All receiving environments, limits of disturbance and protection measures should be mapped on the ESC Plan. In addition, all practices to be used to protect new drainage channels should be marked, as well as crossings, disturbances and associated construction methods

## 5. Stabilise Exposed Areas Rapidly

Disturbed soils should be progressively stabilised with vegetation, mulch, grassing or other stabilising methods after each earthworks stage and at specific milestones within stages

## 6. Install Perimeter Controls

Perimeter controls above the site keep clean runoff out of the worked area - a critical factor for effective erosion control. Perimeter controls can also retain or direct sediment laden

runoff within the site. Common perimeter controls are diversion drains, silt fences and earth bunds.

Detail the type and extent of perimeter controls in the E&SCP along with design parameters.

## **7. Employ Detention Devices**

Even with the best erosion and sediment practices, earthworks will discharge sediment-laden runoff during storms. Along with erosion control measures, sediment retention structures are needed to capture runoff so sediment generated can settle out. The presence of fine grained soils means sediment retention ponds are often not highly effective. Ensure the other control measures used are appropriate for the project and adequately protect the receiving environment.

The fine-grained nature of Moutere Clays and other local soils means sediment retention ponds will usually require flocculant treatment (flocculation) to maximise their efficiency

Include sediment retention structure design specifications, detailed inspection and maintenance schedules of structures in the E&SCP.

## **8. Get trained and develop experience**

As contractors are generally responsible for installing and maintaining ESC practices, a trained and experienced contractor is an important element of an ESC Plan. Trained and experienced staff can save projects time and money through proactive construction and maintenance of ESCs. Staff should be encouraged to become experienced in ESC. Key staff should also be assigned to provide that role, so that the appropriate level of experience and supervision is available for each new project.

## **9 Adjust the ESC Plan as needed**

An effective E&SCP is modified as the project progresses from bulk earthworks to project completion. Factors such as weather, changes to grade and altered drainage can all mean changes to planned erosion and sediment control practices.

Update the E&SCP to suit site adjustments in time for the pre-construction meeting and initial inspection of installed erosion and sediment controls, and make sure it is regularly referred to and available on site.

**Note: For sites with resource consents, adjustments to the ESC Plan may require sign-off from relevant Council.**

## **10. Assess and Adjust Inspect, monitor and maintain control measures.**

ESC measures need to be inspected, monitored and maintained.

Inspection and maintenance of controls is especially important prior to and following a storm event. A large or intense storm can leave ESC measures in need of repair, replacement, reinforcement or cleaning out. Maintaining and repairing measures as soon as possible after a storm event will maximise the ongoing efficiency of the measures and minimise adverse environmental effects.