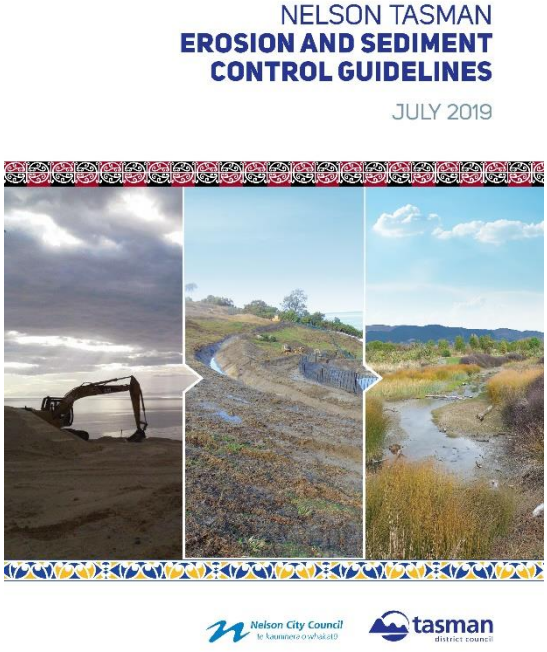
Chapter 7

DEVELOPING AN EROSION AND SEDIMENT CONTROL PLAN



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7 DEVELOPING AN EROSION AND SEDIMENT CONTROL PLAN

An Erosion and Sediment Control Plan (ESCP) should exist for all sites undertaking earthworks. The plan identifies the measures that will be implemented to minimise erosion and subsequent sediment yield from a site as a result of land disturbing activities. It has two parts, a written methodology and a site plan which can be combined into one document.

The written methodology contains information on various aspects of the project and proposed erosion and sediment controls. The site plan provides a visual understanding of the layout of what the site looks like and includes details such as the location of control devices and other relevant features.

7.1 When is an Erosion and Sediment Control Plan required?

Tasman District Council is encouraging all land disturbance sites to have an ESCP as a matter of best practice irrespective of the scale of the works and whether or not a resource consent is required. The scale of the plan should reflect the scale of the land disturbance and the risk of erosion and sedimentation (ie small site low risk = basic ESCP large site high risk = comprehensive ESCP). Erosion and sediment control and an ESCP are expected to be incorporated into the building consent process and building site management.

Draft ESCPs are generally required by Tasman District Council to support all resource consent applications for earthworks and land disturbing activities. Once consents have been granted a revision of the draft ESCP is normally required to take account of contractor input, design changes or specific consent requirements, prior to formal approval of the ESCP by Tasman District Council.

Land disturbance activities that do not require resource consents (ie Permitted Activities) should also have an ESCP, with the level of detail required appropriate to the nature of the site, the works proposed and the risk of erosion and sediment generation.

Developing an ESCP is one method of demonstrating compliance with the Permitted Activity rules of the respective Council Plans. If Permitted Activity standards cannot be complied with then a resource consent is required.

This guideline document should generally be used as a minimum standard for developing ESCPs. In some cases, the standards set out in these guidelines will need to be exceeded or adapted to reflect best practice for a particular site. For example, sites with sensitive watercourses, steep slopes and/or high clay content soils may need to have sediment retention devices with increased treatment capacities with flocculation treatment systems.

Chapter 6 outlines the key concepts and principles to follow in considering erosion and sediment controls on your site when developing your ESCP. Chapters 7.2 and 6.3 outline the contents required in a site plan and methodology. While these sections focus on development earthworks, they can be modified to suit any land disturbance activity.

Persons developing ESCPs should have appropriate experience or be appropriately qualified, particularly where these are developed for more complex sites, requiring more comprehensive plans.

A comprehensive plan will also allow contractors to adequately cost erosion and sediment control aspects of a job.

7.2 Site Plan Contents

The site plan should provide a clear picture of the layout of the site, the erosion and sediment controls and any other relevant features. It is also useful to provide a second site (or on the same plan) plan showing the site topography and water drainage flow paths after re-contouring.

The Erosion and Sediment Control Plan should contain the information listed in Table 7-1 to a degree reflective of the size and potential risk of erosion and sediment transport of the project.

For small scale projects this may be shown on a single plan (refer to the Small Site Erosion and Sediment Control Guide), however larger more complex projects may require several plans to clearly show information. These might include a site plan, earthworks plan, erosion and sediment device plan, staging plans and design plans as required to effectively illustrate the evolution of the ESCP. Additional maps can also be used to provide a greater level of detail in high erosion risk or environmentally sensitive areas.

Standard symbols should be used on all ESCP maps. The symbols for E&SC devices are found in Appendix 13.2 and should be used for the site plan. If additional symbols are required a legend should be clearly provided on the plan detailing these.

Table 7-1 ESCP – Site Plan Contents Checklist

1	**GENERAL**
2	Plan Title: “Erosion and Sediment Control Plan”
3	Plan Date
4	Plan/Drawing Reference Number
5	North Arrow and Scale
6	Site Physical Address (street address, appellation or title etc) **and GPS Coordinates**
7	Legend
8	**SITE INFORMATION**
9	Site boundaries
10	Site entrances
11	Existing Contour lines with elevation labels
12	All watercourses and / or overland flow paths
13	All stormwater or sewer pipes which could act as sediment transport pathways
14	Catchment boundaries
15	Historical and cultural sites
16	Areas of high erosion risk (steep slopes or vulnerable geologies)
17	Vegetation and natural features
18	**EARTHWORKS INFORMATION**
19	Extent of soil disturbance (earthworks footprint)
20	Clearly marked areas of cut and fill and future contours
21	Areas of distinct work stages
22	Drainage lines and future reticulation
23	Identification of ‘no-go’ or buffer areas to be maintained on site
24	Location and extent of topsoil and material stockpiles
25	**EROSION AND SEDIMENT CONTROL INFORMATION**
26	Location of E&SC devices
27	Unique identification numbers for each erosion and sediment control structure
28	Extent and area (in m^2 or ha) of contributing catchments for each E&SC device
29	Arrows depicting the general flow path and direction of water within each contributing catchment
30	Areas to be temporarily stabilised (and type of stabilisation to be used)
31	Any monitoring sites for assessing discharge quality or device performance
32	**Any other relevant site information**

7.3 Methodology Contents

For small, short duration, low erosion risk sites, a basic methodology can be provided. This could be confined to an explanation about the site characteristics and aspects of works that limit site risks.

For sites with increasing risk of erosion and sediment yield a proportional increase in information will be required.

The methodology should contain:

- Project description
- Estimate of sediment loss (USLE)
- Principles to minimize erosion and sediment discharge from the site
- Design of erosion and sediment control devices
- Timetable and nature of site stabilisation
- Maintenance, monitoring and reporting procedures
- Heavy rainfall response and contingency measures
- Procedures for review and/or amendment to the ESCP
- Identification of specific site responsibilities
- Construction timetable.

7.3.1 Project description

Provide a description of the project, which should include information such as disturbed soil volumes, area of disturbance, and purpose for the works. The various construction components should be identified along with the sequence of events that will occur to complete the project from start to finish (eg construction staging and sequencing). A description of the existing site, including vegetation, topography, watercourses and other relevant matters, should also be included.

7.3.2 Estimate of sediment loss

A Universal Soil Loss Equation (USLE) should be used to estimate sediment yield from the site, especially for steep sites or sites with sensitive receiving environments. USLE will also serve the purpose of identification of higher sediment generation areas on the site and hence enable a focused approach to those areas of concern. Refer to Appendix 13.6 for USLE method and calculation

A brief analysis of the results of the USLE should be provided. This should include comment on the expected level of soil loss and any ‘hot spots” where higher volumes of soil loss have been identified on the site (eg steep slopes). The results of the USLE should be considered along with the sensitivity of the receiving areas to provide rationale for the proposed E&SC measures.

7.3.3 Principles to minimise erosion and sediment discharge from the site

Principles for E&SC that will be applied to the project should be identified. It is recommended that plan developers become familiar with the underlying principles of erosion and sediment control contained within Chapter 6 and incorporate these into their ESCP.

7.3.4 Design of erosion and sediment control devices

Each catchment on the site should be separately listed and the E&SC devices within that catchment should be specified, and uniquely identified. Detailed design information for each E&SC device should be provided including the contributing catchment size for each device.

Design information should include aspects such as holding capacity and dimensions of E&SC devices, as well as details of associated parts of the devices such as decant outlets and emergency spillways. Annotated drawings of proposed E&SC devices should be provided. Supporting calculations for E&SC device design should also be included where relevant. “As-builts” may be required for key E&SC structures such as sediment retention ponds.

7.3.5 Timetable and nature of site stabilisation

Include timeframes and methods for achieving stabilisation of all disturbed areas. Proposed re-vegetation techniques should be identified, as well as instances where instant stabilisation methods will be used. Grass seed and fertiliser application details, including application rates should be specified. When planning site stabilisation, particular attention should be given to achieving stabilisation of all or most of the site prior to any shut down period. This is particularly relevant to steeper areas of the site or other areas which have been identified as ‘hot spots’ in a USLE.

7.3.6 Maintenance, monitoring and reporting procedures

Set out the regime for routine monitoring of the E&SC. Details should include the frequency of inspections, procedures for recording and reporting monitoring results, and the role description and qualifications of the personnel undertaking the monitoring. Site rehabilitation works and trigger levels for removing sediment from E&SC should be provided.

7.3.7 Heavy rainfall response and contingency measures

Information should include actions that will be taken in the event of heavy rainfall (to be defined). This could include aspects such as monitoring weather forecasts and undertaking additional inspections in the event of heavy rain warnings. Any additional control measures proposed in the case of heavy rain warnings should be identified here. For large or long duration sites consideration should be given to installing a rain gauge onsite and recording daily rainfalls to determine when any rainfall related trigger levels have been exceeded (eg discharge sampling requirements) and for assessing the effectiveness of the E&SC proposed. Contingency measures in the event of failure of any E&SC device should be identified.

7.3.8 Procedures for review and/or amendment to the E&SCP

An ESCP should be considered a “living document.” It is expected that amendments to the plan will be required as site construction proceeds.

Set out procedures for reviewing and amending the ESCP. Review procedures should include consultation with Tasman District Council as amendments to the plan will usually require Tasman District Council’s written approval.

7.3.9 Identification of specific site responsibilities

Identify the relevant personnel and chain of command for ensuring that the various aspects of the ESCP are implemented. This may include aspects such as routine monitoring and maintenance, provision of design details for E&SC devices, and ensuring that E&SC devices have been constructed correctly.

7.3.10 Construction timetable

Include the sequence and timing for construction of the E&SC and bulk earthworks. The length of time that the construction works will take should be specified.

7.4 Implementation of the ESCP

It is good practice to include detailed draft ESCPs (or if available, approved ESCPs) with contract documents. This assists contractors in understanding Council requirements and their responsibilities, as well as assisting with accurate pricing of works required to implement the ESCP.

ESCPs are generally prepared by engineers/consultants and implemented by contractors under the supervision of the engineer/consultants. Good communication between all parties during plan preparation will often result in a much improved ESCP and aid its subsequent implementation.

Ensure all contractors on site have viewed and understand and have had necessary input into the ESCP before their work begins.

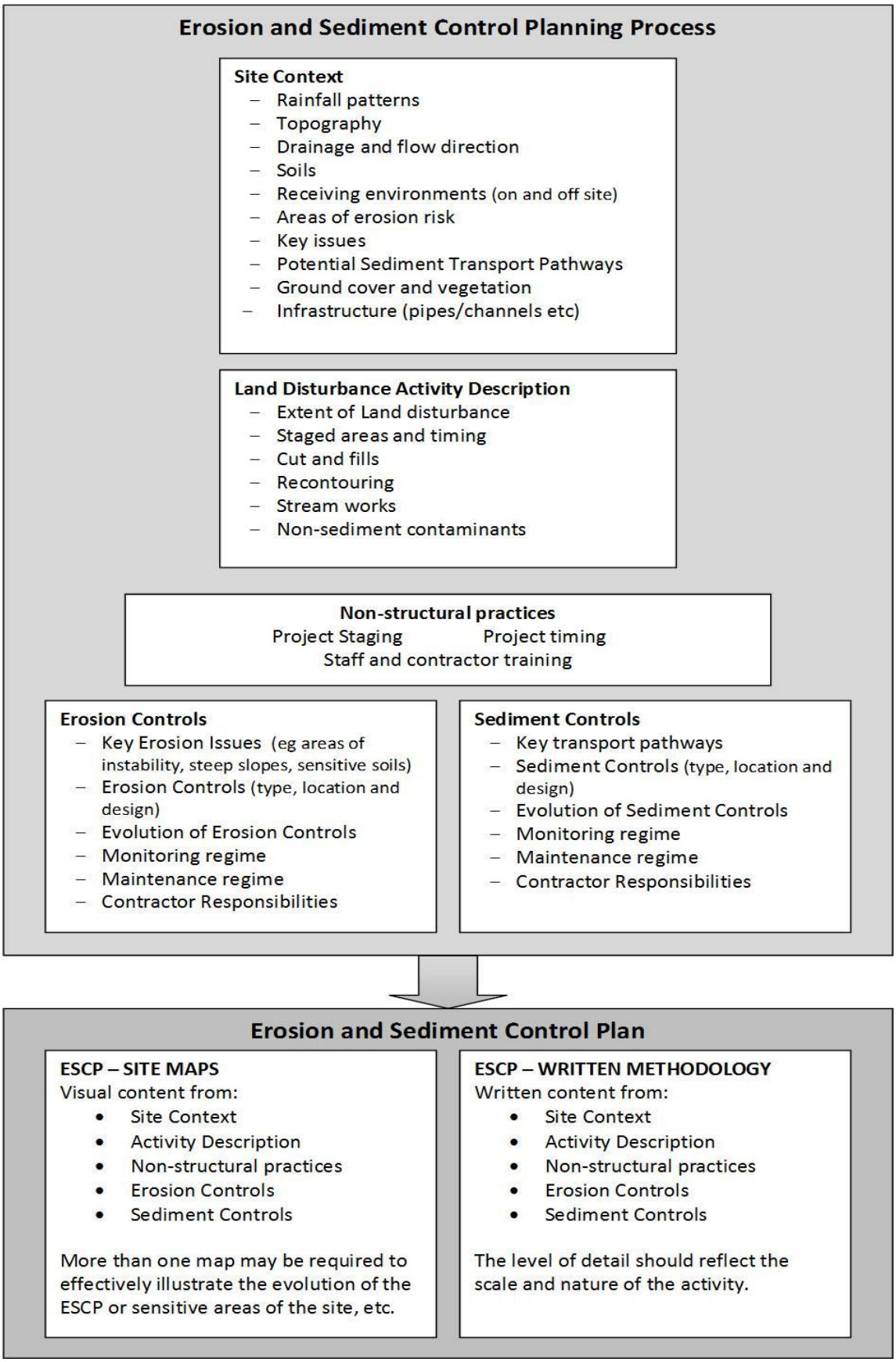

Figure 7-1 Erosion and Sediment Control Planning Process