



Erosion Hazard Assessment

Supporting Technical Notes – June 2014

Introduction

These technical notes must be read in conjunction with the *Erosion Hazard Assessment* form June 2014 (or later version). These technical notes have been provided to assist users in understanding and completing the *Erosion Hazard Assessment* form, with respect to the Council's requirements^[1] for Erosion and Sediment Control (ESC) during land-disturbing activities.

^[1] For information on the Council's requirements for stormwater management with respect to erosion and sediment control, refer to Section 7.11 of the *Infrastructure Design Planning Scheme Policy*, which is in *Schedule 6 of the Brisbane City Plan 2014*.

Explaining the Erosion Hazard Assessment form

There are many conditions on a construction site that contribute to the overall hazard and risk of soil erosion and sediment pollution to the environment. The *Erosion Hazard Assessment* (EHA) determines whether that risk is 'low', 'medium' or 'high' by using a series of questions to assess the risk to the environment, based on the Council's requirements for stormwater management and Erosion and Sediment Control (ESC).

The front page of the *Erosion Hazard Assessment* form briefly describes what an *Erosion Hazard Assessment* is, and when it is required by Council. The front page also includes a five step process explaining the completion and certification requirements of the form.

The back page of the *Erosion Hazard Assessment* form provides a list of potential site condition 'hazards' affecting erosion and sediment pollution potential. The questions in the Assessment Table determine whether your site's risk is 'low', 'medium' or 'high'.

Technical Notes

The *Erosion Hazard Assessment* form must be certified by a person with suitable qualifications and/or experience in soil erosion and sediment control. A suitably qualified and/or experienced professional in erosion and sediment control is defined as a person with:

1. Professional affiliations with an engineering, environmental engineering, soil science, or scientific organisation (eg. International Erosion Control Association, Engineers Australia, Australian Water Association, Stormwater Queensland); or
2. At least two years experience in the management of soil erosion and sediment control that can be verified by an independent third party.

When is the EHA required?

An *Erosion Hazard Assessment* form must be completed and lodged with the BCC for any Development Application (ie. MCU or ROL), that will result in soil disturbance **or** Operational Works or Compliance Assessment Application for filling or excavation.

Explanation of Terms used in the Erosion Hazard Assessment form

REQUIREMENTS are specific issues and/or actions required to be addressed by the Applicant.

WARNINGS are advices and/or advance notices of issues that should be considered or addressed by the Applicant during the process (the timing of this may vary).

COMMENTS are provided as general information that is relevant to the issue being discussed and may be of assistance to the Applicant.

Technical Notes

Technical Note [1]

Slope of Site

REQUIREMENTS:

Applicants must demonstrate that adequate ESC measures and practices can be implemented on-site to protect downstream environmental values throughout the construction period, and until the site is adequately stabilised against erosion. This particularly applies to sites involving cut and fill earthworks, benching of allotments, allotment batters and/or retaining wall construction.

Sites with any slope that is steeper than 5% and longer than 3 metres in length (before, during or after construction) has a higher risk of soil erosion and sediment pollution and is classified as either a 'medium' or 'high' risk site. Whether the site is actually 'medium' or 'high' risk depends on the presence of other hazards at the site, summarised in Table 2 and 3 of the *Erosion Hazard Assessment*.

If there is any slope on the site that is steeper than 15% and longer than 3 metres in length (before, during or after construction), and the site is greater than 1 hectare in area, the site is 'high' risk with respect to erosion & sediment control.

For medium and high risk sites the applicant will need to engage a Registered Professional Engineer (RPEQ) to prepare an ESC Program and Plan and supporting documentation - in accordance with the requirements of the Infrastructure Design Planning Scheme Policy. For high risk sites, the plans and program will need to be certified by a Certified Professional in Erosion and Sediment Control (CPESC).

WARNINGS:

Steep sites are likely to require more stringent drainage and erosion controls than flatter sites.

COMMENTS:

As a 'rule of thumb' the steeper the land, the greater the need for adequate drainage control to minimise erosion and prevent mulch from being washed from the site.

Technical Note [2]

Area of Disturbance

REQUIREMENTS:

Sites with an expected soil disturbance in excess of 1000 m² must submit an *ESC Program and Plan* to the Council.

The area of disturbance refers to the total area of soil exposed to rainfall either as a result of:-

- (a) the removal of existing vegetation, mulch or sealed surfaces (eg. concrete, bitumen);
- (b) as a result of past practices; and/or
- (c) natural conditions.

Areas of exposed, non-erodible material such as rock, have not been included. However, some highly weathered rocks can become a source of sediment and turbidity, and thus should not be counted as 'non-erodible' material. For site works where significant volumes or areas of excavation are likely to be encountered (eg. underground car parks, known 'shallow rock' areas), ESC issues must be adequately addressed. If in doubt seek advice from a suitably qualified and experienced geotechnical engineer and/or soil scientist.

Applicants must account for, and comply at all times with any water restriction requirements imposed under the *Water Act 2000*.

WARNINGS:

A sediment basin will usually be required by Council if:

- (a) the disturbed area exceeds 1 hectare; or
- (b) the disturbed soils are dispersive^[3]; and/or
- (c) there is a need to control run-off turbidity (eg. the local waterway management plan indicates a high priority for turbidity control).

Note that soil type or site location can affect whether Council will require a sediment basin, even if the disturbed area is less than 1 hectare.

Refer also to **Technical Note 4** for explanation of the effect of undiverted 'clean' catchments in sediment basin design.

COMMENTS:

For soil disturbances greater than 1 hectare in area, the stabilisation phase should be staged to minimise the duration that soil is exposed to rain.

^[3] Dispersive soils release a cloud of fine clay particles when brought into contact with water. These clay particles may stay suspended for an indefinite period of time, resulting in turbid 'dirty' water, which impacts on plant and animal life in our waterways, including Moreton Bay's vital seagrass meadows, and causes environmental harm.

Technical Note [3] Waterway Corridor Disturbance

REQUIREMENTS:

All developments that involve the disturbance of land within a BCC mapped waterway corridor are classified as a 'medium' or 'high' risk site and the applicant must prepare an *ESC Program and Plan* which must be certified by an RPEQ and/or a CPESC. Adequate instream sediment control structures are required in order to manage the potential environmental harm associated with such activities. Flow bypassing for the maintenance of environmental flows or construction management, temporary lining of exposed 'live' excavations (ie. within the functioning stormwater system) must also be determined in accordance with best practice ESC guidelines.

WARNINGS:

Permits and/or licences may be required from the State Government for works that disturb waterways, including possible submission of the *ESC Program* to the relevant State Government Department. There can be considerable timeframes for obtaining such approvals.

COMMENTS:

Soil disturbances and/or works within a waterway (whether flowing constantly or only during wet weather) can cause significant erosion and sedimentation problems, leading to environmental harm if not properly managed.

Technical Note [4] External Catchments

REQUIREMENTS:

Upstream catchments that pass through the site increase risk of soil erosion and sediment pollution.

External catchments must be diverted past areas of soil disturbance whenever possible. Where external catchments cannot be diverted past areas of soil disturbance, then such catchment areas must be included in the disturbance area calculations for the design of temporary drainage and sediment control measures, such as Catch Drains, Diversion Channels and Sediment Basins.

When external catchments are diverted around the area of soil disturbance, this must occur in a non-erosive manner. This may be achieved by, but not limited to, the use of geotextile fabric, erosion control matting, turf lining, and stabilised outlet protection. The outlet point of such diversions must not cause an increase in erosion downslope of the outlet point.

COMMENTS:

The ability to separate 'clean' external catchment stormwater run-off from 'polluted' site run-off can significantly affect the extent and cost of the temporary drainage and sediment control measures (especially sediment basins) required on the site. The greater the extent of external catchment, the greater the need to divert run-on flows past any soil disturbance.

Technical Note [5] Land Disturbance Below 5 m AHD

REQUIREMENTS:

A site with land disturbance below 5 m AHD has a higher risk of exposure of Acid Sulphate Soils and is therefore classified as a 'medium' or 'high' risk site by the *Erosion Hazard Assessment*.

When preparing an *ESC Program and Plan*, the soil pH must be determined by testing in accordance with the requirements of *Section 7.11.3.3* of the *Infrastructure Design Planning Scheme Policy (City Plan 2014)*.

WARNINGS:

Soil pH can have a significant effect on the success of vegetative stabilisation on-site. A soil pH less than 6 or greater than 8 will usually require treatment in order to achieve adequate revegetation and to effectively stabilise the site against erosion.

Soils with a pH of less than 5.5 (whether naturally acidic or in acid sulfate soil areas) may also limit the choice of chemical flocculants (eg. Alum) for use in the flocculation of sediment basins.