APPENDIX 2

COUNCIL'S EROSION & SEDIMENT CONTROL STANDARD
(Version 9)
Brisbane City Council's

Erosion and Sediment Control Standard

Aim: This Standard explains Brisbane City Council’s requirements for the minimisation of erosion and control of sediment during land-disturbing development in the City.

Target Audience:
- Council staff or private certification bodies undertaking and regulating land-disturbing development (e.g., carrying out building work, carrying out plumbing and drainage work, carrying out operational work, reconfiguring a lot).
- Applicants for land-disturbing development in Brisbane.

Version 9

Waterways Program
Urban Management Division
Brisbane City Council
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1.0 GLOSSARY OF TERMS

**Accelerated erosion** - any increase over the rate of natural erosion from wind or water as a result of human activities.

**Applicant** - As defined in the *Integrated Planning Act 1997*.

**Assessing Authority** - As defined in Schedule 10 of the *Integrated Planning Act 1997*.

**City** - ‘The City’ in this Standard refers to the Local Government area of the Brisbane City Council as defined under the *Local Government Act 1993*.

**Controllable erosion** - accelerated soil erosion that can be controlled or prevented through reasonable and practicable measures while allowing the associated land-disturbing development to continue.

**Enforcement Authority** - The organisation that verifies compliance with development conditions that are imposed pursuant to the *Integrated Planning Act 1997*.

**ESC** - Erosion and sediment control.

**ESC Management Plan** - A site plan, including brief explanatory notes (usually on the plan) that simply explains to regulators and site personnel how erosion is going to be minimised and sediment runoff controlled.

**ESC Program** - A set of documents including ESC Management Plans, supporting documentation, specifications and construction details.

For minor developments, the ESC Program is usually an ESC Management Plan with detailed explanatory notes (see relevant Council guidelines – Chapter 6.0).

For other forms of development (e.g. subdivisions), the ESC Program may contain several ESC Management Plans, drawings of each ESC measure, a timetable for installation of ESC measures, etc. For major developments, the ESC Program is a flexible document that is outcome focussed and applies throughout the life of the development (not just at one point in time).

**ESC measures** - Practices and devices used to minimise erosion (e.g. retaining and/or establishing vegetation) and control sediment (e.g. installing a sediment fence or sediment basin).

**Land-disturbing development** - Any carrying out of building work, plumbing or drainage work, operational work (e.g. road building) or reconfiguring a lot (i.e. subdivision) where there is potential for accelerated erosion from wind or water and/or the discharge of sediment to drains or waterways.

**Natural erosion** - Erosion that occurs at a rate that would be expected if the ground surface had not experienced disturbance due to development.

**Person** - Includes a body of persons, whether incorporated or unincorporated.
Practical completion - The completion of works except of minor defects and omissions which do not prevent the works from being reasonably capable of being used for their intended purpose.

Sediment - Solids (typically sand, silt and mud) that are transported by water. Considered to be a ‘contaminant’ as defined in the Environmental Protection Act 1994.

Stormwater - Surface water runoff following a rain event (including piped flows).

Typical seasonal storm - A storm event that is likely to occur at least twice during that time of the year in which construction is occurring taking into consideration anticipated variations in weather from year to year. When forecasting, a typical seasonal storm may be assumed to be equal to 0.25 times the peak runoff from a critical duration, 1 in 1 year design storm.

Uncontaminated runoff - Stormwater runoff that has not been contaminated by sediment from the work site, or has not been directly or indirectly contaminated as a result of actions associated with the work site.

2.0 AIMS

This Standard explains Brisbane City Council’s requirements for the minimisation of erosion and control of sediment during land-disturbing development in the City.

The Standard aims to:

- minimise the amount of sediment entering Brisbane’s waterways and stormwater drains;
- provide consistency across the City in terms of Council’s ESC requirements on development;
- ensure Council’s own operations meet or exceed the standards expected of developers;
- minimise or prevent environmental harm to the City’s waterways and associated ecosystems;
- minimise localised flooding caused by sediment runoff;
- provide clear guidance to applicants as to the requirements and expectations of Council in relation to ESC measures; and
- minimise costs to ratepayers resulting from the desilting and dredging of the City’s waterways.

3.0 SCOPE OF THE STANDARD

Erosion and sediment control requirements for class 1 buildings (houses) and class 10 buildings and structures (sheds, carports, etc) are being developed by the Department of Communication and Information, Local Government, Planning and Sport. An ESC Code is planned for implementation in 2000/2001. This Code will be referenced in either the Building Code of Australia or the standard Building Regulation.

As the proposed State Government Code will define the ESC requirements for most residential building works, this Standard will only address land-disturbing development that is subject to development assessment under Council’s City Plan.
4.0 BACKGROUND

4.1 THE SCIENCE

Scientific studies focussing upon the health of the Brisbane River and Moreton Bay have demonstrated that environmental harm is being caused by water-borne pollutants, and that urban stormwater is a major source of these pollutants (particularly sediment).

For example, in 1997 it was estimated that approximately 137000 tonnes of sediment was deposited in the Moreton Bay catchment per year just from urban stormwater. This sedimentation leads to impacts such as the loss of seagrass, which forms an important habitat in Moreton Bay for commercial fisheries and is a food source for dugong and green sea turtles.

Poor erosion and sediment control on many developments and building sites has been a major contributor to sedimentation of the City’s waterways, rivers and Bay. As well as causing environmental harm, sedimentation can lead to localised flooding problems, which have historically cost ratepayers several million dollars per year to manage through pipe desilting and channel dredging works.

Prior to the development of this Standard, Council undertook a series of quantitative erosion and sediment control audits across the City to assess the level of performance. The audits found that significant improvement was needed in all areas (eg building sites, commercial developments and subdivisions). This Standard aims to address this finding.

Council has also become increasingly aware of the importance of preventing fine sediment (eg clays) from entering the City’s waterways. This sediment:

- carries with it a high proportion of nutrients and toxicants;
- cannot be effectively trapped by regional stormwater quality improvement devices; and
- has the potential to kill seagrasses in the Bay.

Source control (eg by preventing erosion and using sediment basins with chemical treatment) is by far the most effective way of managing this problem. This Standard aims to encourage source controls.

It should be noted that this Standard is only one part of Council’s overall Program to minimise the release of sediment to the City’s waterways. Other components of the Program include training, auditing, the preparation of technical guidelines and fact sheets, trials, improved enforcement of legislation, the use of regional stormwater quality improvement devices and the employment of specialist Erosion and Sediment Control Officer(s).
4.2 THE LAW

All Queenslanders have a legally binding duty under the Environmental Protection Act 1994 to take all reasonable and practicable measures to minimise or prevent environmental harm. Such harm can be caused if sediment enters stormwater drains or waterways.

In addition, the Environmental Protection (Water) Policy 1997 defines specific offences for discharging sediment and building wastes to stormwater, or placing these materials in a location where they could pollute stormwater.

On the spot fines and/or prosecutions may result from offences committed under this legislation.

Note that financial penalties for major instances of poor erosion and sediment control can be significant under relevant environmental and planning legislation (these provisions provide maximum penalties up to $300000 for an individual). Even on the spot fines (ie hundreds of dollars) can be issued more than once for any given site.

Note also that persons who become aware of environmental harm in association with their work have a legally binding duty under the Environmental Protection Act 1994 to notify their employer. The employer must then notify the Environmental Protection Agency.

People who are concerned with management in a Corporation (eg principal contractors) have an additional duty under the Environmental Protection Act 1994 to ensure their Corporation complies with the Act.

4.3 THE BENEFITS

Sound ESC measures can help to make developments more visually appealing, foster a company’s image of environmental and social responsibility, minimise financial liability, and contribute to healthy waterways in the City. Growing community awareness of stormwater management is ensuring that the performance of developers is under close scrutiny.

5.0 STANDARD

5.1 GENERAL (APPLIES TO ALL LAND-DISTURBING DEVELOPMENT)

5.1.1 A person or persons conducting land-disturbing development must conduct such development in accordance with the requirements of relevant environmental legislation (eg the Environmental Protection Act 1994 and the associated Environmental Protection (Water) Policy 1997).

5.1.2 A person or persons conducting land-disturbing development must take all reasonable and practicable measures to:

- allow stormwater to pass through the site in a controlled manner and at non erosive flow velocities;
- minimise soil erosion from water and wind;
- minimise adverse effects of sediment runoff;
minimise or prevent environmental harm associated with discharges from the site (eg the effects of sedimentation on the environmental values of receiving waters); and
ensure that the value and use of residential properties adjacent to the development (such as drainage and roads) are not diminished as a result of the migration of sediment from the development.

5.1.3 The following types of land-disturbing development require an ESC Program to be prepared as part of the development application/approval process:
- construction of subdivisions (ie 'reconfiguring a lot'), multi-unit dwellings, commercial and industrial developments;
- any land-disturbing development subject to Code Assessment (eg multi-unit dwellings, commercial and industrial developments, filling and excavation); and
- any other land-disturbing development that is deemed to be high risk by the Assessing Authority as a consequence of impact assessment under the Integrated Planning Act 1997.

5.1.4 ESC Programs required under this Standard will include plan(s) (no larger than 1:1000), supporting documentation, and construction specifications, which can be readily understood and applied on site. They will include all aspects of site disturbance, temporary drainage works, erosion and sediment control, construction methods, staging details and site rehabilitation for the duration of the project (including the rehabilitation or revegetation stage after the construction phase is complete). They will include an assessment of erosion hazard (considering soil type, slope, time of year, style of development, etc).

Items contained within the plan(s) must include:
- existing and final contours;
- location of all earthworks including roads, areas of cut and fill and re-grading;
- location and design criteria of ESC measures;
- location of critical areas (drainage lines, waterways, and field inlets);
- diversion of uncontaminated up-slope runoff around areas to be disturbed when appropriate;
- revegetation/rehabilitation program where appropriate;
- procedures for maintenance of ESC measures;
- details of the construction sequence for specified ESC measures; and
- any other relevant information the Assessing Authority may require to properly assess the ESC Plan(s).

The level of detail supplied in the ESC Program and the extent of controls must be commensurate with the degree of environmental risk that the site poses to neighbouring environments (for example, sites that have a low erosion hazard need fewer controls and less detailed ESC Program documents).

5.1.5 When issuing a development approval that is subject to this Standard, the Assessing Authority or its representative may attach conditions to the approval as long as they are reasonable, practicable and relevant to erosion and sediment control.

5.1.6 The Assessing Authority (ie the Team Leader of the relevant Development Assessment Team) or its representative may allow a relaxation of on-site ESC measures where it can be demonstrated by the applicant that downstream sediment control devices are sufficient to achieve the aims of this Standard.

Gazetted 8 February 2008
5.1.7 No land-disturbing development subject to assessment against this Standard can commence prior to a development approval having been obtained, including the approval of an ESC Program (where such a Program is required and approval of the Program is required).

5.1.8 All works that are subject to an approved ESC Program must be carried out in accordance with the approved Program (including any approved amendments) unless circumstances arise where:
   1. compliance with the ESC Program would increase the potential for environmental harm and the applicant has obtained written confirmation that this is the case from the Enforcement Authority (ie the Team Leader of the relevant Licensing and Compliance district); and/or
   2. where Section 5.1.9 applies.

5.1.9 Whenever the Enforcement Authority (ie the Team Leader of the relevant Licensing and Compliance district) or its representative determines that unacceptable off-site sedimentation is occurring as a result of a land-disturbing activity, the person(s) responsible may be required to take additional or alternative protective action and/or undertake reasonable restoration works.

5.1.10 Where there is a high probability that serious or material environmental harm (as defined in the Environmental Protection Act 1994) may occur as a result of sediment leaving the site, a new or amended ESC Program may be required to be submitted to the Enforcement Authority (ie the Team Leader of the relevant Licensing and Compliance district). If this occurs, only those works necessary to minimise or prevent environmental harm must be conducted on-site prior to approval of the new or amended ESC Program.

5.1.11 ESC measures must be provided at vehicular access points to the site, so as to minimise tracking of sediment onto adjoining roadways, particularly during wet weather or when the site is muddy. These measures may include shakedown facilities or coarse aggregate pads.

5.1.12 All reasonable and practicable measures must be taken to prevent or minimise sediment from discharging onto sealed roadways (internal or external to the site).

5.1.13 Topsoil that is temporarily stockpiled on site must be protected from wind and water erosion. Sediment-laden runoff from the stockpile must be controlled by appropriate sediment control measures.

5.1.14 Unless otherwise stated in the ESC Program, ground cover sufficient to restrain erosion (minimum 70% coverage of all soil) must be provided within 30 calendar days from completion of any works where the soil is at risk of accelerated erosion. During the interim period between completion of works and the establishment of at least 70% ground cover, temporary ESC measures will be required (eg sediment fences). Examples of how a 70% coverage may be achieved include seeding and mulching with straw, or turfing. Note that watering of recently vegetated areas may be required to meet this standard.
5.1.15 Unless otherwise specified in the ESC Program, all ESC measures must be designed, constructed and maintained in a manner that is commensurate with the site’s erosion risk. Erosion risk for the land-disturbing development will be a function of the time of year, slope, soil type, construction methods, drainage paths, duration of site disturbance, etc.

5.1.16 For land-disturbing development that does not drain to a sediment basin:
- all drainage channels must be designed to have a minimum non erosive hydraulic capacity equal to 0.25 times the critical 1 in 1 year design storm (approximately Q_{3 \text{ months}}) for sites where soils are exposed to rainfall for a period less than 6 months; or
- all drainage channels must be designed to have a minimum non erosive hydraulic capacity equal to the critical 1 in 1 year design storm (Q_{1}) for sites where soils are exposed to rainfall for a period greater than 6 months.

5.1.17 For land-disturbing development that drains to a sediment basin:
- all sediment basins must be designed and maintained in accordance with Council’s Sediment Basin Design Guidelines;
- the use of chemical flocculants must be in accordance with these guidelines; and
- all drainage channels must be designed to have a minimum non erosive hydraulic capacity equal to 0.25 times the critical 1 in 1 year design storm (approximately Q_{3 \text{ months}}).

5.1.18 ESC measures to control wind-borne erosion must be designed to adequately manage a typical seasonal wind event in terms of wind direction and strength.

5.1.19 Trenches must be backfilled, capped with topsoil and compacted to a level at least 100 mm above adjoining ground level. Unless sealing of the area will occur within 30 calendar days, the disturbed area must be turfed or sown with an appropriate seed and fertiliser mix (unless otherwise specified in the ESC Program).

5.1.20 All ESC measures must be inspected:
- at least daily (when work is occurring on site) or weekly (when work is not occurring on site);
- within 24 hours of expected rain; and
- within 18 hours of a rainfall event (ie an event of sufficient intensity and duration to mobilise sediment on site).

Maintenance of ESC measures must occur in accordance with the following table:

<table>
<thead>
<tr>
<th>ESC Measure</th>
<th>Maintenance Trigger</th>
<th>Timeframe for Completion of Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sediment basins</td>
<td>When settled sediment exceeds the volume of the sediment storage zone (see Council’s Sediment Basin Design Guidelines).</td>
<td>Within 7 days of the inspection.</td>
</tr>
<tr>
<td>Other ESC measures</td>
<td>The capacity of ESC measures falls below 75%.</td>
<td>By the end of the day.</td>
</tr>
</tbody>
</table>

5.1.21 Where reasonable and practicable, brick, tile or masonry cutting must be carried out on a pervious surface (such as grass or open soil) or in such a manner that sediment-laden runoff is prevented from discharging into stormwater drains or waterways.
5.1.22 All reasonable and practicable ESC measures must be taken to prevent the discharge of sediment-laden runoff produced from the formation of exposed aggregate surfaces to stormwater drains or waterways.

5.1.23 Washing/flushing of streets must only occur where sweeping has failed to collect the sediment and there is a compelling need to remove the remaining sediment (e.g., for safety reasons). In such circumstances, sediment control in the kerb and channel or at the gully trap inlet should be implemented where it is safe, practicable, and where there is no significant risk of causing localised flooding. Sediment removed from roads or from controls at gully trap inlets must be placed in a controlled area (e.g., above a sediment fence).

5.1.24 Where waterways and drains must be modified or disturbed and where this is an ESC risk, work must occur in accordance with applicable State Government approvals and Erosion Treatment for Urban Creeks – Guidelines for Selecting Remedial Works (BCC, 1997, or later version).

5.2 REQUIREMENTS FOR CLEARING OF VEGETATION

5.2.1 Vegetation Protection Orders on the site must be observed at all times.

5.2.2 All reasonable and practicable efforts must be taken to minimise the removal or disturbance of trees, shrubs and particularly ground cover on the site prior to, and during land-disturbing development.

5.2.3 Where some clearing is inevitable, it should be delayed as long as practicable and staged where possible to minimise the erosion potential.

5.2.4 No clearing can be undertaken unless preceded or accompanied by installation of adequate runoff and sediment control measures.

5.2.5 Consideration should be given to the fencing-off, or otherwise clear marking of vegetation that is not to be disturbed at any given stage of the proposed works (including along access/entry tracks).

5.2.6 Where rehabilitation of vegetation is required, similar indigenous species must be used where possible.

5.3 ROAD WORKS

5.3.1 Newly constructed spray-sealed roads must be swept thoroughly as soon as possible after gravelling to prevent excess gravel entering street drains.

5.3.2 In locations where road shoulders are not sealed and kerb and guttering is not constructed, the shoulders must be bordered by grassed table drains (where practicable) having dimensions which facilitate maintenance mowing.

5.3.3 Maintenance mowing of road shoulders, table drains, batters and other surfaces likely to erode must aim to leave the grass length no shorter than 50 mm where practicable.
5.4 SUBDIVISIONS (RECONFIGURING LOTS)

5.4.1 For multi-staged subdivisions, clearing must only be undertaken in conjunction with development of each stage unless approval is granted to do otherwise.

5.4.2 Where increased stormwater runoff from a proposed subdivision is likely to accelerate erosion of any watercourse, the Assessing Authority may require appropriate measures to prevent this.

5.4.3 The potential for wind-borne erosion as well as water-borne erosion must be managed. Where spraying of water is used as a dust suppression method, care must be taken at all times to ensure that sediment-laden runoff is controlled and surface water does not create a traffic hazard (e.g., on adjoining roads).

5.4.4 It is the responsibility of the subdivision developer to clearly define and document who is the responsible person for maintaining those ESC measures that have been installed during the subdivision phase but are being used during the subsequent building phase. Where there is no documented description of who is responsible, responsibility for maintenance must rest with the subdivision developer.

5.5 PERMANENT ESC MEASURES

5.5.1 For permanent ESC measures (e.g., sediment basins that become stormwater treatment ponds) that Council has ‘accepted on maintenance’, responsibility for maintenance must remain with the applicant up until subdivision is declared to be ‘off maintenance’. After that point, responsibility lies with Council.

5.6 COUNCIL WORKS

5.6.1 All aspects of this Standard apply to Council-managed works.
6.0 RELEVANT GUIDELINES AND RELATED PRODUCTS


6.2 Guidelines for the Control of Stormwater Pollution from Building Sites and accompanying fact sheets, Brisbane City Council and Gold Coast City Council, 2000, or later version.

Fact sheets include:
- Environmental Law (Brisbane City Council, 1999).
- Erosion Control (Brisbane City Council, 1999).
- Sediment Control (Brisbane City Council, 1999).
- Drainage Control (Brisbane City Council, 1999).
- Erosion Hazard Assessment Form (Brisbane City Council, 1999).
- Erosion and Sediment Control Management Plans (Brisbane City Council, 1999).
- Building Operations (Brisbane City Council, 1999).
- Grouped Building Lots (Brisbane City Council, 2000).
- Material Storage on Hard Surfaces (Brisbane City Council, 2000).


6.4 Stormwater Quality Control Guidelines for Local Government. Queensland Department of Natural Resources and the Department of Environment, 1998, or later version.

6.5 Temporary signage for ESC measures. Brisbane City Council, 1999 or later version.


6.7 Educative pamphlet: Erosion and Sediment Control on Residential Building Sites. Brisbane City Council, 1999, or later version.


For further information on this Standard, please contact:

For technical advice:
- Council Stormwater Management (Erosion and Sediment Control) Officer(s), telephone 3403 8888.

For policy advice:
- Waterways Program, Urban Management Division, Brisbane City Council, GPO Box 1434, BRISBANE QLD, 4001.