10  SEDIMENT AND EROSION CONTROL

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10 SEDIMENT AND EROSION CONTROL

10.1 INTRODUCTION

Construction Sites by their nature result in the disturbance of the on site natural materials as well as impacting on the surrounding areas. Sediment and erosion control measures are to be used on ALL construction sites to limit the effect of the proposed construction on the surrounding areas and infrastructure. The City of London requires an Erosion Sediment Control Plan (ESCP) be designed for most Development, Capital Works and Operational Projects. The complexity of the ESCP is determined by the sensitivity of the area that is to be protected.

10.2 REFERENCE

The following guidelines rely on the Ministry of Natural Resources Guidelines on erosion and sediment control for urban construction sites, unless otherwise noted. The Erosion and Sediment Control Guidelines for Urban Construction (CVC, December 2006) provides additional information on the design, installation and maintenance of erosion and sediment controls and is a resource that should be utilized.

Erosion Sediment Control Plan (ESCP)

The requirement for an ESCP within the City of London has developed through the City’s ongoing commitment to ensure adequate protection of water quality in open watercourses within the City’s boundaries. More background information relating to the ESCP can be found in:

i) Planning Committee Report, June 20, 2005, Agenda Item # 3; and
ii) Joint ETC/Planning Committee Report, June 18, 2007, Agenda Item # 12.

10.3 GENERAL INFORMATION REQUIREMENTS

10.3.1 ESC Plan

a) An ESC Plan for all Capital Works, Operational and Development Projects is to be designed, addressing all the requirements identified in the General Requirements for Erosion Sediment Control Plan (ESCP) chart (See Figure 10.1).

i) For Site Alterations, the ESCP is to be provided as part of the application.

ii) For Development related projects, the ESCP is to form part of the Functional SWM Servicing Report or the Servicing Report for the project.

iii) For reconstruction or resurfacing of existing roads, or for infill sites less than 3.0 ha in land area within existing urbanized areas, that are not in close proximity to an open watercourse, woodlands, ESA’s, steep slopes or other natural area, an ESCP is not required, unless otherwise directed by the City Engineer. Where an ESCP is not required, all reasonable protective measures must be taken during construction to control sediment and prevent erosion from occurring.
iv) For Capital Works and Operational Projects, the ESCP is to be submitted during detailed design.

The ESCP should address all potential issues on any given project, including, but not limited to:
- close proximity to an open watercourse;
- close proximity to woodlands, ESA’s and other natural areas;
- steep slopes; and
- high groundwater levels

The complexity of the project will determine the required complexity of the ESCP.

10.3.2 Servicing Drawings

Sediment and Erosion Control measures are to be identified on all lot grading plans, stormwater management ponds, channels and, where applicable, plan and profile drawings, and on detailed drawings. If extensive measures are required, or the scale of the drawing is such that the measures are not clear, then the sediment and erosion control measures must be identified on a separate plan. The measures shown on the servicing drawings are to reflect the requirements identified in the ESCP.

The complexity of the project will determine the required complexity of the ESCP.

10.4 REVIEW AND ACCEPTANCE

The City of London, Wastewater & Drainage Engineering Division and SWM Unit is responsible for reviewing and accepting the ESCP. As required, they will consult with the UTRCA and Parks Planning and Design.

For development projects, Development Services reviews the detailed design servicing drawings to ensure that the measures identified in the accepted ESCP are implemented, and that the ESCP addresses all the necessary areas of concern with respect to sediment and erosion control measures.

10.5 UTRCA

Approvals are to be obtained from the UTRCA for works which are in or adjacent to flood lines, fill lines and hazardous slopes, prior to the construction of services and approval of the engineering plan.

10.6 PARKS AND OPEN SPACES

Approvals are to be obtained from the Planning Division for sediment and erosion control measures adjacent to any open space areas – flood plain, Environmentally Significant Areas, natural areas, ravines, parks, etc, prior to “Site Alteration”, construction of services or approval of engineering plans.
10.7 SEDIMENT CONTROL MEASURE NOTES

The following sediment control measure notes are to be shown on the construction drawings, either on the plan that details the sediment and erosion control measures, or on the notes and details drawing.

Please note that the following sediment control measure notes are examples only, and may vary to suit the individual project:

a) Protect all exposed surfaces and control all runoff during construction.

b) All erosion control measures are to be in place before starting construction and remain in place until restoration is complete.

c) Maintain erosion control measures during construction.

d) All collected sediment must be disposed of at an approved location.

e) Minimize area disturbed during construction. All dewatering must be disposed of in an approved sedimentation basin.

f) Protect all catch basins, maintenance holes and pipe ends from sediment intrusion with geotextile (Terrafix 270R).

g) Keep all sumps clean during construction.

h) Prevent wind-blown dust.

i) Straw bales to be used in localized areas as shown and as directed by the engineer during construction for works which are in or adjacent to floodlines, fill lines and hazardous slopes.

j) Straw bales to be terminated by rounding bales to contain and filter runoff.

k) Obtain approval from UTRCA prior to construction for works which are in, or adjacent to floodlines, fill lines and hazardous slopes.

l) All silt fencing and details are at the minimum to be constructed in accordance with the Ministry of Natural Resources Guidelines on Erosion and Sediment Control for Urban Construction Sites.

m) All of the above notes and any sediment & erosion control measures are at the minimum to be in accordance with the Ministry of Natural Resources Guidelines on Erosion and Sediment Control for Urban Construction Sites.
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| 1   | Identify all types of “erosion/sediment control (ESC) devices” that are selected for the proposed construction activities. | - For Development Projects with a Functional SWM Report – the ESCP is to be included in the Functional SWM Servicing Works Report.  
- For Development Projects with no Functional SWM Report component – the ESCP is to be included in the Servicing Report for the Project  
- For Operational & Capital Works Projects – the ESCP is to be submitted prior to detailed design. | ESC devices/measures have to be listed and identified in detail including, but not be limited to:  
- the type of silt fences and/or link silt fences (silt/robust/heavy duty or others),  
- the proposed berms in relation to the identified areas  
All this information is required to be identified on the ESC’s attached plan of the section of the storm/drainage and SWM Functional Design Report. |
<p>| 2   | Identify the land slopes and proposed land alterations. | same | The relation of these recommended control devices to the proposed storm/drainage flow routes and grading on the attached plan shall be clearly established. All temporary fencing, rock check dams, and swales, where appropriate, are intended to attenuate flows and to provide sediment depositing. All these measures should be identified and attached to the ESCP in order to ensure that the ecological health of the system will be well protected and not compromised. During construction activities, any proposed diversion swales/channels, berms or silt fencing must direct all surface runoffs to the temporary sedimentation/settling basins or perimeter ditches in order to minimize sediment loading to the open watercourses or municipal system. |
| 3   | Identify when and where these devices are to be installed. | same | The relation of these identified control devices to the proposed storm/drainage flow routes and grading on the attached plan shall be clearly established. All recommended temporary swales shall be identified on the plan and the detailed information should be included in the report (locations, elevations, geotechnical conditions and separation distances should be identified). |</p>
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<td>4</td>
<td>Identify the potential downstream sensitivity of water resources.</td>
<td>same</td>
<td>All applicable and relevant background information related to the Official Plan (OP) Natural Heritage System (NHS) requirements, the Subwatershed Studies, Environmental Impact Studies, the City’s Design Standards and Requirements and the MOE and the UTRCA’s requirements must be identified.</td>
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<td>5</td>
<td>Identify the proximity to Environmental Significant/Sensitive Areas.</td>
<td>same</td>
<td>All applicable and relevant background information related to the Official Plan (OP) Natural Heritage System requirements (NHS), the Subwatershed Study, Environmental Impact Studies, the City’s Design Standards and Requirements and the UTRCA requirements must be identified.</td>
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<td>6</td>
<td>Identify the proposed infiltration measures and the existing groundwater levels, the relation to the surface flows, flood lines, base flows and provide all required calculations to support the recommended approach if it is warranted.</td>
<td>same</td>
<td>Compliance with the Hydrogeotechnical report recommendations for the subject lands.</td>
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<td>7</td>
<td>Identify dewatering requirements, the type of permits and existing groundwater and open watercourses levels.</td>
<td>same</td>
<td>Compliance with the Hydrogeotechnical report recommendations for the subject lands and the MOE’s CofA for the Permit to Take Water (if it is applicable).</td>
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<td>8</td>
<td>Identify the type(s) and predominant characteristics of the soils within the area (e.g. particle size/structure, moisture content and compactness).</td>
<td>same</td>
<td>Compliance with the Geotechnical report recommendations for the subject lands.</td>
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<td>9</td>
<td>Provide specific provisions for all disturbed areas that are left inactive for 30 days or more. These areas must be re-vegetated in order to minimize the soil to be exposed and washed out by the storm flows.</td>
<td>same</td>
<td>The areas where the vegetation was removed for the proposed construction activities should be minimized and the phasing approach should be considered and discussed. The time period between the initial vegetation removal and final grading/seeding should be kept to a minimum.</td>
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</table>
| 10  | Identify the need for enhanced ESC measures that may be warranted by the site conditions and/or the proximity to Environmental Significant/Sensitive Areas and/or open watercourses. | same   | The requirement to provide various levels of the enhanced ESC measures that encompass:                                                                                                           
<p>|     |                                                                                                       |        | a multi-barrier approach that will collect the sediment at the source first rather than through conveyance; and end-of-pipe controls that will collect the sediment within the proposed perimeter ditches and settling/contingency detention basins to protect ecological health of the system. |
|     |                                                                                                       |        | Enhanced ESC measures should include the use of sediment control socks (or equivalent filtration system) adjacent to watercourses and other critical areas as part of the multi-barrier approach.                                                                 |
| 11  | A Contingency Plan must be included in the ESCP and is required to address potential non-typical site and weather conditions, the efficient reporting system and the emergency contact list including all applicable agencies. | same   | The need for enhanced and sustainable ESC measures using the multi-barrier approach should be implemented. The main objectives of these measures are to provide the required control and containment of the sediment at the source within the proposed perimeter ditches and settling/contingency detention basins. The by-pass channels must be designed for a minimum of the 10 year storm event unless otherwise agreed to in writing. |
| 12  | The Owner’s Engineer will be responsible to develop and obtain all approvals for the                  | same   | The commencing of any construction activity at the subject lands is not allowed to proceed without all approvals being in place including the ESC Plan and the                                                                                     |</p>
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<td>ETC report on July 18/07</td>
<td>proposed ESC Plan (including a Contingency Plan) for any construction sites/subdivisions.</td>
<td>same</td>
<td>dewatering permits</td>
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<td>13</td>
<td>A cost estimate for the ESCP’s security allocations for potential remediation works is required to be calculated based on approximately 15% of the total projected cost for the Storm/Drainage and SWM Servicing Works.</td>
<td>same</td>
<td>It is required that the ESCP’s security allocations for potential restoration works be collected independently from the Subdivision security and should the Owner fail to provide the adequate implementation of the approved ESC Plan, the City would undertake remediation works.</td>
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<td>14</td>
<td>The Owner’s Engineer will be required to obtain all required approvals for any proposed modifications that will compromise the effectiveness of the originally approved ESCP and obtain the acceptance by the Contractor.</td>
<td>same</td>
<td>The Owner’s Engineer will be required to discuss the recommended modifications and obtain approval from EESD staff. These suggested changes must be supported by the presented justification merits and required to include, but not be limited to: the subject site conditions, sensitivity and proximity to watercourses and/or Environmental Significant Areas (ESA) well the acceptance of by Contractor to implement the suggested modifications. Should these recommended modifications be considered: Minor changes- Upon discussing the presented justifications, and if the City agrees with the Engineer’s definition, the ESCP’s recommended modifications may be implemented by Contractor; Major changes-The Owner’s Engineer must submit the ESCP’s recommended modifications for review and acceptance by the City Engineer and implemented by the Contractor, all to the specification of the City Engineer.</td>
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<td>15</td>
<td>The Owner’s Engineer will be required to ensure the implementation of the ESCP and to assign inspection throughout all construction stages, as well as to undertake decommissioning of these ESC measures upon completion of construction activities on these sites.</td>
<td>same</td>
<td>Control features that fail should be repaired and evaluated as to whether or not additional measures are required, and prior to removal of ESC measures, joint inspection is required to be conducted with the City’s staff.</td>
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<td>16</td>
<td>The Owner’s Engineer will be required to incorporate the following main components of the ESCP’s reporting system: Inspection on all days of the construction (failure of any ESCP shall be reported immediately within a period of 2-3 hours), Inspect if the precipitation exceeds the 25 mm storm event; Inspection logs must be reviewed on a regular monthly basis; The semi-annual summary status reports are required to be provided to the City; and The inspection reports shall be submitted to the City every three months.</td>
<td>same</td>
<td>The Owner/Subdivider to implement, maintain and ultimately decommission the ESC measures contained in the approved ESC Plan and their Consulting Engineer will be required to comply with the following requirements: “Certify” that all ESC measures were installed prior to construction; “Certify” that all ESC measures are being maintained and operating as intended; Submit ESC monitoring reports. They are to be submitted by April 1, July 1, and November 1 of each year until all works and services of the plan are assumed; Submit semi-annual SWM monitoring reports for a minimum period of two years (implemented in 1996 and updated in February of 2002) and ensure that ESC measures are decommissioned at the various stages of the project.</td>
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EESD suggests that the Site Alteration agreement for new subdivisions/developments to be used only for a limited number of site applications and only in emergency cases.

At the site alteration agreement stage, the site alteration agreement shall include:

A proposed temporary site grading and drainage design that identifies site alteration parameters and any impacts on the adjacent lands and must be reviewed and accepted by EESD, prior to the agreement being finalized.

The proposed site grading and drainage design that will incorporate the hydrogeotechnical study recommendations;

The proposed site alteration activities that will be in compliance with hydrogeotechnical study recommendations; and

The Consulting Engineer provides formal “certification” that ESC measures were properly installed and were regularly maintained.

At the final servicing drawings review stage for various land development applications, all required ESC measures and procedures are identified on these drawings, and are to be in compliance with the approved ESCP and applicable standards, all to the specifications and satisfaction of the City Engineer.