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EROSION AND SEDIMENT CONTROL

HYER STANDARD

PROCEDURE

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PURPOSE AND SCOPE

The purpose of this procedure is to ensure effective erosion and sediment controls are established from the commencement of construction projects and maintained throughout the project lifespan. The intent of these controls is to minimise the risk of harm to the surrounding environment, including waterways, non-natural (modified) waterways, and other sensitive areas. This document incorporates guidelines for both small construction sites (less than 2500m^2) and larger development sites (2500m^2 and greater).

RESPONSIBILITIES

PROJECT MANAGER

- Ensure an Erosion and Sediment Control Plan (ESCP) or Soil and Water Management Plan (SWMP) is developed, approved, and implemented for the project.

- If required, assist in the development and implementation of the ESCP or SWMP.
- Communicate erosion and sediment control requirements and changes to all relevant parties.

SITE MANAGER

- Conduct regular inspections and ensure corrective actions are taken promptly.
- Ensure subcontractors are informed of and comply with erosion and sediment control requirements.

SUBCONTRACTOR SUPERVISORS

- If responsible, implement and maintain erosion and sediment control measures as specified in the ESCP or SWMP.
- Report any damage to erosion and sediment controls to the Project Team immediately.

HAZARD IDENTIFICATION, RISK ASSESSMENT, AND CONTROL (HIRAC)

Project-specific requirements will be documented in the head contract, approved Development Approval (DA) issued by the local council, and/or within issued project specifications, including an ESCP that considers the site layout, topography, nearby drainage, and waterways.

Site conditions may change throughout the project, introducing new hazards related to sediment control. Any project-specific requirements are to be documented in the project's Environmental Management Plan (EMP). Controls are to be monitored during Site HSE inspections or dedicated environmental inspections and adjusted if necessary.

PLANNING AND DESIGN

The planning and design phase of erosion and sediment control (ESC) and soil and water management plans (SWMP) is crucial for ensuring effective environmental management during the land disturbance phase of construction

projects. These plans are developed to mitigate the impacts of soil erosion and sediment runoff, promoting sustainable development practices that comply with regulatory requirements and environmental standards.

Some local councils may specify inclusions that ESCPs and SWMPs need to cover based on the local ecosystem.

Changes to ESCPs/SWMPs are to be consulted with the client and involved stakeholders, including affected workgroups such as civil contractors, and approved by the civil engineer. The existing DA may need to be revised and reissued by council for documentation.

The ESCP/SWMP is to be taken into account when planning upcoming works that may impact controls or be impacted by erosion/water runoff, especially during wet weather. If controls must temporarily be removed or modified to allow for tasks for take place, it must be approved by the Site Manager and controls are to be reinstated per the approved ESCP/SWMP as soon as possible after works are complete.

ESC PLAN (ESCP)

An ESC Plan outlines specific measures and strategies to prevent soil erosion and manage sediment on construction sites ranging from 250 to 2500m^2. They typically include:

- Detailed site layout indicating erosion and sediment control measures.
- Specifications for erosion control structures (e.g., sediment fences, sediment traps).
- Procedures for maintenance and inspection of erosion controls.
- Roles and responsibilities of project stakeholders in implementing ESC measures.

The ESC Plan is typically developed by a Civil Engineer or Environmental Consultant. It must be approved by the Civil Engineer and issued ‘For Construction’ prior to site establishment. Updates to the plan are made as necessary during the project lifecycle to adapt to site changes and ensure continued effectiveness.

SOIL AND WATER MANAGEMENT PLAN (SWMP)

A SWMP is a comprehensive strategy designed for sites exceeding 2500m², focusing on sustainable soil and water management practices. They typically include:

- Soil erosion and sediment control strategies tailored to site-specific conditions.
- Design and implementation of sediment retention basins where required.
- Integration with other planning documents such as Integrated Water Cycle Plans (IWCP).
- Compliance with local council policies, environmental regulations, and community expectations.

SWMPs are prepared by multidisciplinary teams including engineers, environmental consultants, town planners, and project managers. They are to be submitted during the Development Application (DA) stage to obtain necessary approvals and ensure alignment with project goals and environmental objectives.

SITE ESTABLISHMENT

In addition to ESCPs or SWMPs, project specifications and approved Development Applications from the local council or will document the requirements for establishing site boundary protection measures and any nominated environmental protection areas.

Upon site establishment, the Site Establishment inspection in HammerTech is to be completed to identify environmental requirements for the project. Client and project-specific requirements are to be considered during site establishment and documented in the Project's EMP.

When developing or making changes to the site layout plan, consider the site's ESCP/SWMP and the below requirements for common controls as these may have an impact on placement of material laydown areas, walkways etc.

CONTROLS AND BARRIERS

Stakeholders responsible for establishing and maintaining erosion and sediment controls in accordance with controls are to be specified in the ESCP/SWMP. Types of controls include, but are not limited to:

- Sediment fences/geotextile fabric barriers
- Sediment traps
- Retention Basins
- Kerbs, channels, and drains to redirect runoff
- Sandbags
- Filter socks
- Crushed rock
- Rock pads or cattle grids at vehicle entries
- Mulching
- Erosion control blankets
- Dedicated sediment basins
- Retention/detention tanks

Upslope and downslope considerations are critical for designing and maintaining effective erosion and sediment control measures:

- Upslope measures might include diversion channels, berms, or sediment traps to intercept and manage runoff before it reaches sensitive downslope areas or stormwater systems.
- Downslope measures often involve installing barriers like sediment fences, silt traps, or vegetated buffer strips to capture sediment and prevent it from entering waterways or storm drains.

Ensure that diverted stormwater does not discharge onto neighbouring properties without prior written consent from landowners. Avoid directing runoff towards the entry/exit points of the site to prevent sediment tracking onto public roads.

Stormwater grates, pit risers, and open sewer infrastructure should always be protected (covered and/or fence-surround) to prevent sediment ingress. This applies even when the stormwater pits connect to onsite retention tanks/basins rather than direct to in-public stormwater infrastructure.

SITE ENTRY/EXITS AND INTERNAL ROADS

The ESC Plan will nominate which controls are required for designated vehicle entries to the site. Commonly, cattle grids (rumble bars) and/or rock pads are established, designed to cause slight vibrations and dislodge mud or dirt from vehicles as they move over the controls.

If vehicles are visibly muddy or dirty upon leaving site, efforts must be made to remove as much mud/dirt as possible. Suitable means may include hosing the vehicle's wheels over the grid/rock pad where sediment is easily controlled, or a dedicated wheel washdown area.

If practicable, internal haul roads may use additional surface materials (either temporary – such as crushed rock, or semi-permanent such as asphalted road) to ensure vehicles moving around the site do not track soil/mud widely across the site. Surface material is to be specified and approved by the Civil Engineer and installed by the civil subcontractor.

If required, street sweepers may be utilised to clean public roads affected by dirt tracked out by vehicles exiting the site.

STOCKPILE MANAGEMENT

Stockpiles and building materials should be stored within the sediment-controlled zone and protected from run-on water by placing diversion banks up-slope and sediment control structures immediately down-slope.

Stockpiles should ideally be located at least 2 metres away from hazard areas such as waterways, kerb inlet pits, paved areas, and driveways. If required, cover stockpiles with impermeable covers or tarpaulins to prevent rainwater from washing contaminants into drainage systems.

SEDIMENT FENCES

Sediment fences are one of the most common types of erosion/sediment controls. Note that sediment fences are not appropriate within drainage lines. The following is required when establishing sediment fencing:

- Support posts to be spaced a maximum of 2m apart unless the fence is supported by a top wire or wire mesh backing, in which case 3m maximum spacing applies.
- The bottom of the fence fabric is to be secured by burial (at least 200mm deep) or other effective means such as weighed down with aggregate socks.
- Minimum 4 staples or tie wires per stake (evenly spaced vertically) are required to secure the fabric top to the supporting posts.

INSPECTIONS AND MAINTENANCE

Erosion and sediment controls are to be inspected for suitability during Site HSE Inspections and any internal audit processes (e.g., HSE Mobilisation Audit), documented in HammerTech. Observations are to be raised where appropriate and assigned to the relevant subcontractor for rectification.

SITE CLEAN-UP AND REHABILITATION

Accidental spills of soil or other materials onto the road or gutter should be removed at the end of each workday. Materials should be swept from the road, not washed down the gutter into drains.

HEAVY RAIN EVENTS

During and after heavy rain events, promptly assess potential flooding areas across the site, focusing on low-lying zones and drainage paths. Conduct thorough inspections of sediment controls such as fences and filters following rain events to ensure they are intact and functioning optimally. If required, dewatering methods such as pump trucks are to be employed to remove water from recessed areas and excavations inundated with water.

If required, consult with geotechnical engineers and civil contractors to evaluate the need for maintenance or reinstatement of erosion and sediment controls.

To prevent sediment from leaving site in stormwater runoff, consider implementing temporary measures like installing additional downpipes to redirect water away from vulnerable structures and prevent soil erosion.

Monitor walkways and access points for accumulated water or sediment and clear as necessary to maintain safety and prevent further runoff.

Geotechnical Reports may be obtained if construction activities or inclement weather affect the conditions of soil in work area, shared zones, or internal roads.

Geotechnical Engineer advice should be sought on how to maintain the area if inclement weather persists (i.e., periods of heavy rain or flooding on site). If this advice has been obtained, maintenance and excavation activity in the area should only be carried out in accordance with that advice.

POST-CONSTRUCTION AREA STABILISATION

As stages of work are completed, areas disturbed by construction should be stabilised, including those areas previously occupied by temporary erosion and sediment control structures. This can be done through revegetation to prevent exposed areas from acting as sources of sediment. Sediment control devices must remain in place until 70% revegetation cover has been established or until other measures have been installed in accordance with local council requirements. Revegetation and landscaping are to be in accordance with project plans and specifications.

DEFINITIONS AND ABBREVIATIONS

- **EMP** – Environmental Management Plan
- **ESC** – Erosion and Sediment Control
- **ESCP** – Erosion and Sediment Control Plan
- **SWMP** – Soil and Water Management Plan
- **Upslope** – Refers to the higher ground or the area of the site where water flows towards the construction area or disturbed land. Measures taken upslope are aimed at preventing runoff from carrying sediment downhill towards lower lying areas or stormwater systems.
- **Downslope** – Refers to the lower ground or the area where water naturally flows after coming downhill or after rainfall. Downslope areas are more susceptible to receiving sediment-laden runoff from upslope areas if proper controls are not in place.

REFERENCES

- Environmental Protection and Biodiversity Conservation Act 1999 (Cth)
- Protection of the Environment Operations (POEO) Act 1997 (NSW)
- Environmental Protection Act 1994 (QLD)
- Procedural guide, Releases to waters from building sites and small construction sites (less than 2500m^2)
- Procedural guide, Releases to waters from land development sites and construction sites (2500m^2 and greater)

ASSOCIATED DOCUMENTS

- Ground Works Procedure and HYer Standard (https://www.hyworkzone.com.au/ground-works-procedure/)
- Mobile Plant Procedure and HYer Standard (https://www.hyworkzone.com.au/mobile-plant-procedure/)
- Environmental Management Plan (https://hansenyuncken.sharepoint.com/:w:/r/sites/HYProcesses/Environment/Shared%20Documents/PLN-CORP-HSE-011%20Environmental%20Management%20Plan%20Template.docx?d=w55a3fc277b00473ea409fe2dc755f638&csf=1&web=1&e=jl1GZc)

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