PRIMARY EROSION & SEDIMENT CONTROL PLAN

2-8 LANCELEY PLACE & 14 CAMPBELL STREET

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Authorisation

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GLOSSARY/ABBREVIATIONS

Abbreviation	Expanded Text
ANZECC	Australian and New Zealand Environment and Conservation Council
AMM	Amended Mitigation Measures
Blue book	Managing Urban Stormwater: Soils and Construction. Landcom, (4th Edition) March 2004
CEMP	Construction Environmental Management Plan
Construction	The demolition and removal of buildings or works, the carrying out of works for the purpose of the development, including bulk earthworks, and erection of buildings and other infrastructure permitted by the consent
CPESC	Certified Professional in Erosion and Sediment Control
DPHI	Department of Planning, Housing and Infrastructure
EIS	[Reference Project EIS]
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
Goodman	Goodman Property Services (Aust) Pty Ltd
Minister, the	Minister of the NSW Department of Planning, Housing and Infrastructure (DPHI)

1. INTRODUCTION

1.1 Project Description

Goodman lodged a State Significant Development Application (SSDA – 48478458) with an accompanying Environmental Impact Statement (EIS) with the Department of Planning, Housing, and Infrastructure (the Department) for the redevelopment of 2-8 Lanceley Place, Artarmon (the Site) in March 2023. The Site is legally described as Lots 11-15 in DP 233037 and covers an area of 14,025 square metres in the centre of the Artarmon Industrial Precinct. On 21 December 2023, consent was granted for the demolition of the existing buildings and the construction of a three-storey warehouse and distribution centre on the Site, including onsite car parking and ancillary offices.

Goodman plans to deliver the works in stages, as follows:

- Stage 1: Site establishment and demolition of buildings and structures (the Project). Stage 1 is anticipated to occur in the second half of 2024, with works expected to take approximately 8-12 weeks.
- Stage 2: Main works construction. Stage 2 will be paused until determination of a second development application (SSDA – 66777221) for the construction of a data centre on the Site. Should SSDA – 66777221 be approved, then Goodman will discontinue works under SSDA – 48478458 and instead develop data centre on the Site under that consent.

1.2 Purpose and objectives of the Plan

This Primary Erosion and Sediment Control Plan (ESCP)forms part of the Construction Environmental Management Plan (CEMP) for the Project. The Primary ESCP applies to Stage 1 construction (site establishment and demolition). A separate ESCP will be developed for the construction of the data centre (once approved).

The purpose of this Primary ESCP is to provide a framework for managing impacts to soils and water quality arising from soil loss (erosion) and deposition (sedimentation) during Stage 1 of the Project. This Plan sets out the process for the development of progressive ESCPs for different stages of construction as the site evolves through clearing and demolition.

The key objective of this ESCP is to ensure all Consent conditions, the Amended Mitigation Measures (AMMs) and applicable commitments are described, scheduled and assigned responsibility as outlined in:

- *Environmental Impact Statement State Significant Development Application (SSD-48478458) Lanceley Place Multi-level Warehouse 2-8 Lanceley Place & 14 Campbell Street, Artarmon, March 2023*
- *Submissions Report Lanceley Place Multi Level Warehouse, SSD-48478458,*
- *SSD-48478458 Development Consent, 21 December 2023*, and
- All relevant legislation and other requirements described in Section 2 of this Plan.

1.3 Environmental Performance Objectives

Table 1 identifies the Project performance objectives:

Table 1 Performance objectives

Objective	Target/Indicator	How Addressed
Project statutory compliance	The Project receives no Non-compliances	Non-Compliance Register
Environmental protection	No environmental incidents[1] occur throughout the Project delivery	Environmental Incident Register
Management plan conformity	The CEMP and associated sub-plans are implemented by all Project personnel, including contractors	Induction, Training, Audit and Inspection Records

[1] As defined by *SSD-48478458 Development Consent, 21 December 2023*

2. REQUIREMENTS

2.1 Relevant Legislation

2.1.1 Legislation

Legislation relevant to soil and water management for this project includes:

- *Protection of the Environment Operations Act 1997* (POEO Act)
- *Protection of the Environment Operations (Clean Air) Regulations 2010* (NSW)
- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Water Management Act 2000*
- *Contaminated Land Management Act 1997* (NSW), and
- *Dangerous Goods Act 1975* (NSW)

Relevant provisions of the above legislation are explained in the legal and compliance tracking register included in the CEMP.

2.1.2 Guidelines and Standards

The main guidelines, specifications and policy documents relevant to this plan include:

- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC and ARMCANZ 2000).
- ANZG (2018). Australian and New Zealand Guidelines for Fresh and Marine Water Quality (known as 'ANZG Guidelines'),
- *Department of Environment and Conservation (DEC): Bunding & Spill Management. Insert to the Environment Protection Manual for Authorised Officers - Technical section "Bu" November 1997.*
- *National Code of Practice for the Storage and Handing of Workplace Dangerous Goods* [NOHSC: 2017 (2001)]
- *Managing Urban Stormwater: Soils and Construction. Landcom, (4th Edition) March 2004* (the "BlueBook"). Volume 1 and Volume 2. - Volume 2A
- *Best Practice Erosion and Sediment Control* (International Erosion Control Association (IECA), 2008), and

2.2 Ministers Conditions of Consent

The requirements of the Consent relevant to this plan are shown in Table 2, with cross reference to indicate where each requirement is addressed within this Primary ESCP.

Table 2 Conditions requirements for this plan

Condition No.	Requirement	How Addressed
B11.	Prior to the commencement of any construction or other surface disturbance for the development, the Applicant must install suitable erosion and sediment control measures on-site, in accordance with the relevant requirements of the *Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book* (Landcom, 2004) guideline and the Erosion and Sediment Control Plan included in the CEMP required by condition C2.	Section 4
B12.	The Applicant must maintain the erosion and sediment control measures installed on-site in accordance with condition B11 for the duration of construction of the development.	Section 4
C3.	As part of the CEMP required under condition C2 of this consent, the Applicant must include the following: (b) Erosion and Sediment Control Plan	This Plan

2.3 Amended Mitigation Measures

The mitigation measures stated in Appendix 2 of the Development Consent are reproduced in Table 3.

Table 3 Amended Soil and Water Mitigation Measures

Impact Area	Mitigation Measure	Relevant Section
Soils and Water	Soil and Water Management Plan (SWMP) and Erosion and Sediment Control Plan (ESCP), or equivalent, would be implemented for the construction of the Proposal. The SWMP and ESCPs would be developed in accordance with the principles and requirements of Managing Urban Stormwater – Soils & Construction Volume 1 ('Blue Book') (Landcom, 2004) with a staged approach.	This Plan
	Measures will include sediment basins, construction entry/ truck shakers, sediment fences, diversion drains and drainage pit protection	Section 4
Stormwater Management	Installation of sediment basin	Section 4
	Sediment fences and diversion drains located around perimeter of site	Section 4
	Stabilised site access at the entry to the works area	Section 4
	Minimising extent of disturbed areas on site at once time	Section 4
	Progressive stabilisation of disturbed areas or previously completed earthworks	Section 4
	Regular monitoring and implementation of remedial works to maintain efficiency of all controls	Section 4

3. ENVIRONMENTAL ASPECTS AND IMPACTS

3.1 Existing Environment

The following sections summarise what is known about factors influencing soils and water within and adjacent to the Project corridor. The key reference documents are the:

- EIS
- RtS
- Consent
- EIS Appendix 18A
- RtS Appendix 6
- RtS Appendix 10.

3.1.1 Topography and soil characteristics

The site is noted to have an existing topography consisting of a fall of approximately 5m across the site. The fall is in a generally easterly direction towards Lanceley Place. It is noted that the site has a highpoint at approximately PL 85m AHD located at the southern corner of the site, The site RL ranges from 85m to RL 71m AHD. There is a significant drop in elevation located on the western border of the site consisting of a shotcrete retaining wall.

The 1:100 000 Sydney Geological Map (1983) indicates that the site is underlain by Ashfield Shale (Rwa) comprising black to dark-grey shale and laminate.

As noted within the detailed site investigation (1 October 2021, Tetra Tech Coffey), fill present on site does not contain widespread of significant sources of contamination, however minor contamination, including trace ash and slag and asbestos contaminated material (ACM) was identified in a number of locations. This material will be managed in accordance with the unexpected contamination finds procedure within the CEMP and the Hazardous Materials Management Plan to be prepared by the selected contractor.

3.1.2 Surface Water

The Project is located within a highly disturbed, industrial area within the Flat Rock Creek Catchment. Rainwater from the site is collected in street stormwater drainage and directed east through a series of open channels and piped drainage system into Flat Rock Creek and subsequently Long Bay in Middle Harbour.

3.1.3 Groundwater

As outlined in the amended groundwater assessment report (21 August 2023, PSM) prepared in response to submissions, groundwater inflows are expected during the excavation phase of the project. Groundwater inflows during construction have been modelled with results summarised in Table 5 below.

Table 54 Construction groundwater inflows

	Best estimate	Long term – lower bound	Long term – upper bound
Estimated inflow (L/s)	0.005	0.004	0.084
Total estimated inflow (ML/year)	0.14	0.12	2.65

Measurements indicated that groundwater within the site has a slightly acidic to neutral pH and indicative of freshwater. Moderate levels of dissolved oxygen levels were recorded in groundwater with the exception of boreholes that are located along the northern boundary of the site. Redox potential measurement indicate oxidising groundwater conditions within the site. Analysis of groundwater samples collected from the shale aquifer beneath the site identified heavy metals (nickel, copper, zinc) and dichloromethane. However, the assessment concludes that these analytes are unlikely to pose a significant risk to health or ecological receptors.

A search of groundwater bore licences for the area identified three registered groundwater bores within a 500m radius of the site. The North Shore Hospital abstracts groundwater for 'domestic' purposes from a bore located approximately. 150m southeast of the site, and a depth of 180m. The other two bores were registered as monitoring bores.

Stage 1 works (involving clearing and demolition) will not intercept with groundwater and therefore groundwater is not discussed further.

3.1.4 Rainfall

Historical rainfall statistics of the locality summarised in Table 6 have been obtained from the nearest BoM Station 66062 previously located at Sydney Observatory Hill approximately 4.8km south east of the project. Mean rainfall is highest during late summer through to early winter peaking in June. The lowest average rainfall is in late winter and early spring. Seasonal rainfall is unpredictable. Average annual rainfall for the site is 1211.1mm.

Table 65 Summary of rainfall records

Stat	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
	Summer		Autumn			Winter			Spring			Summer	
Mean rainfall (mm)	101.2	119.3	131.6	126.5	117.4	133.1	96.3	80.2	68.1	76.7	83.8	77.1	1211.1
Median rainfall (mm)	78.2	93.6	101.9	95.2	90.2	102.8	72.2	54.9	51.9	55.4	66.8	59.7	1164
Mean number of days of rain ≥ 1 mm	8.6	9	9.9	8.9	8.6	8.8	7.4	7.1	7.1	7.9	8.3	7.9	99.5

Red = highest values, blue = lowest values

Rainfall erosivity factor design rainfall depth

The rainfall erosivity factor is a measure of the ability of rainfall to cause erosion (referred as “R” in the Revised Universal Soil Loss Equitation RUSLE). The rainfall erosivity factor is used to determine the soil loss in tonnes per hectare over one year and is used in calculations when sizing construction sediment basins.

The rainfall erosivity factor which is referred to as the ‘R’ Factor has been assessed from an Intensity Frequency Duration Table prepared for the site based on the 2-year, 6 hours storm event of 12.8mm/hour. The R Factor value of 3540 is calculated from the 2-year ARI, 6 Hour storm of 12.8mm/hour being ‘S’, where $R = 164.74(1.1177)^{s}S0.6444$, as per the Blue Book - Appendix A2.

The nearest ‘Blue Book’ centre for detailed rainfall depths is Sydney which is approximately 6kms south-east of The Project (Blue Book Volume 1- Table 6.3a). As the Project runoff flows to Middle Harbour, it has been assessed as ‘sensitive’ in accordance with Blue Book Volume 1- Sect. 6.3.4 – (f), therefore, the Project has adopted the 5-day 80th percentile rainfall depth for Sydney of 29.7mm.[2]

3.1.5 Flooding

The Civil Engineering Report Incorporating Water Cycle Management Strategy (Costin Roe Consulting, 2 June 2023) prepared in response to submissions to the EIS included a review of available flood studies to determine flood behaviour in relation to the project (Section 7). Review of the available information, including Councils adopted flood study, showed that the site is not subject to flooding. As such, flooding is not discussed further.

3.1.6 Erosion Risk

The Project is located on disturbed and Glenorie Soils Landscapes Soil erosion hazard refers to the susceptibility of a parcel of land to erosion. The control of the soil erosion hazard at a construction site is a primary tool in the development of the ESCP. Soils within the Glenorie soil landscape have high soil erosion hazard; with soil texture assumed to be Type D (dispersible), containing a significant portion of fine material that will not settle unless flocculated.

3.1.7 Acid Sulfate Soils

An assessment of the potential for salinity and acid sulphate soils was undertaken as part of the EIS. Salinity results were outlined in the Geotechnical Report (referenced PSM4669- 003L) completed by PSM. PSM confirmed that the soils on the site are classified as “non saline”. An assessment on acid sulphate soils was not conducted by PSM noting the location and geology the potential for acid sulphate soils is low. The site is not identified as being acid sulfate affected on any known registers. As such Acid Sulfate Soils are not discussed further.

[2] Disturbance period <6months as per section 5.2 of the Blue Book.

3.2 Construction activities

Site clearing and demolition could result in adverse impacts to soils and water if not properly managed. The potential for impacts on soil and water will depend on a number of factors. Primarily, impacts will be dependent on the nature, extent and magnitude of construction activities and their interaction with the natural environment. Potential impacts attributable to Stage 1 construction might include:

- Reduction in water quality
- Increased turbidity and eutrophication of receiving water bodies
- Smothering of terrestrial and aquatic flora and fauna
- Promotion of weed growth (through increased nutrient loading)
- Exposure and mobilisation of contaminated materials

Section 4 of this Primary ESCP provides the mitigation measures that will be implemented to avoid or minimise the impacts.

4. ENVIRONMENTAL CONTROL MEASURES

4.1 Key Management Strategies

An initial ESCP has been developed for Stage 1 of the Project and is included in Appendix A. Progressive ESCP will be developed and updated as required as the work progresses and the sites changes, in accordance with Section 4.3.

The following strategies and principles are to be employed in developing and implementing progressive ESCPs.

Training and awareness

Training and awareness of risks associated with erosion and sedimentation, controls and management practices and the purpose and implementation of ESCP's will be provided consistent with the training commitments within the CEMP.

Minimising the extent and duration of disturbance

Minimising the extent of soil disturbance and exposure will be undertaken by employing the following principles:

- Staging of clearing and demolition operations were possible.
- Maximising and maintaining surface vegetative cover.
- Special emphasis on management of construction activities adjacent to creeks or areas of concentrated flows (e.g. drains).
- Use of temporary covers on stockpiles and temporarily exposed soil surfaces.

Stormwater flow controls

Stormwater flow controls into and off the site will be managed by:

- Separating 'clean' run-on water from 'dirty' (e.g. turbid) construction area run-off
- Constructing permanent drainage structures early in the project including:
    - Detention sumps and traps
    - Catch drains with linings (e.g. concrete, rock, bidum. grass or jute mesh)
    - Culverts and associated inlet and outlet protection (e.g. dissipaters)
- Controlling runoff during the construction of embankments (e.g. fill shaping and the construction of temporary dykes and batter drains)
- Maximising the diversion of turbid construction runoff into sediment controls
- Diverting formation runoff through sediment traps and into pits and the stormwater drainage system as soon as practical to reduce surface flow lengths and velocities
- According to the Blue Book, sites with less than 2,500 m^2 of disturbed area, or those with an average annual soil loss from the total area of land disturbance that is less than

150 m^3 per year are not required to have a sediment basin. On this basis, assessment has determined that a sediment basin is not required for the Project.

Erosion control measures to prevent on-site damage

The following measures will be undertaken to prevent on-site damage:

- Implementing erosion controls such as sand bags and silt fences within the various sub-catchments to reduce flow velocities and increase the effectiveness and efficiency of sediment controls in the lower areas (e.g. weir type structures, diversion banks, progressive revegetation).
- Ensure stockpiles are covered/stabilised if rain is expected.
- Ensure stockpiles are located:
    - So that the appropriate erosion and sediment control measures can be installed and will operate effectively
    - Outside of the tree protection zone (in accordance with AS 4970-2009) of trees identified for retention.
- Implementing appropriate measures for haul roads and access tracks to reduce potential erosion hazard. Such measures may include:
    - Ensuring the access tracks are stabilized (e.g. utilising existing hardstand, selection of stable material such as road base or the use of geo binding agents);
    - Breaking up the slope.

Sediment control measures to prevent off-site damage

The following measures will be undertaken to prevent off-site damage:

- Constructing control measures as close to the potential source of sediment as possible.
- If reasonable and feasible, temporary sediment basins should be installed in accordance with the details provided in "*Stormwater flow controls'* above.
- Ensuring turbid water captured on site is managed in accordance with the 'Blue Book' after cessation of rainfall with one or a combination of:
    - Flocculation with gypsum (or approved alternative flocculant)
    - Pump-out for construction purposes or dust control.
- Stormwater pits to be lined with appropriate controls to prevent sediment entering stormwater drains.
- Water not to be released from site without achieving acceptable water quality standards and subsequent issue of dewatering permit.
- Implement measures to control waste water from plant wash down, saw cutting, drilling or other activities that have the potential to release pollutants into clean water streams (e.g. water recycling, sediment traps or sand bags).

- Controlling the deposition of mud and soil material onto local roads with the use of a ‘cattle grid’.
- Dust suppression via water carts, restricting plant and vehicle movements to designated routes and limiting vehicle speeds etc.

Stabilisation

To temporarily stabilise areas, the following principles will be followed during construction:

- Disturbed areas that are inactive or shut down for more than 14 days (works may continue later) must be stabilised to prevent erosion
- Temporary stabilisation methods for these areas should achieve a cover factor of 0.1 or less.

Specific measures and requirements to meet the objectives of this Plan and to address impacts on soil and water are outlined in Table 76. These measures will be the responsibility of the selected contractor.

Dewatering

Assessment in accordance with the Blue book has determined that a sediment basin is not required for Stage 1 works. Nevertheless, any active discharge of water from the Project (i.e., where water is moved offsite via direct action such as pumping rather than flowing off the project as a result of heavy rainfall) is to achieve.

- TSS < 50 mg/L; and
- pH 6.5 to 8.5 and
- no visible oil and grease
- Or as required by DPHI.

Water can be treated using gypsum or alternative flocculating agents as approved by Council. The general recommended dosage is 30kg/100m^3. Spreading it very evenly over the entire pond surface is essential for proper treatment of sediment-laden water.

If the water is going to be used within the construction site for dust suppression and will drain back into a capture system or evaporate (i.e., no runoff will leave the site boundary), it does not require treatment.

4.2 Erosion and Sediment Management Measures

Specific measures and requirements to meet the objectives of this ESCP and to manage the generation, handling and disposal of waste are outlined in Table 7.

Table 76 Erosion and Sediment Measures

ID	Measure/Requirement	When to implement	Responsibility	Reference	Evidence
	General				
SW1	Soil and Water Management Plan (SWMP) and Erosion and Sediment Control Plan (ESCP) will be implemented for the construction of the Project. The SWMP and ESCPs would be developed in accordance with the principles and requirements of *Managing Urban Stormwater – Soils & Construction Volume 1 ('Blue Book') (Landcom, 2004)* with a staged approach.	Pre-construction Construction	Contractor	Conditions B11 and B12 Development consent Appendix 2 (AMM)	This Plan
SW2	Training will be provided to all project personnel, including relevant sub-contractors on sound erosion and sediment control practices	Pre-construction Construction	Project manager/ environmental site representative	Managing Urban Stormwater: Soils and Construction Volumes 1	Training records, toolboxes, pre-starts
	Erosion and sediment control				

ID	Measure/Requirement	When to implement	Responsibility	Reference	Evidence
SW3	An initial erosion and sediment control plan has been prepared for the site (Appendix A). Progressive Erosion and Sediment Control Plans (PESCPs) will be prepared and implemented in advance of construction. PESCPs will be updated as required and may include: • Installation of sediment basin • Sediment fences and diversion drains located around perimeter of site • Stabilised site access at the entry to the works area (e.g. shakers) • Pit protection • Minimising extent of disturbed areas on site at once time • Progressive stabilisation of disturbed areas or previously completed earthworks • Regular monitoring and implementation of remedial works to maintain efficiency of all controls	Pre-construction Construction	Contractor	Conditions B11 and B12 Development consent Appendix 2 (AMM) Managing Urban Stormwater: Soils and Construction Volumes 1	ESCPs, inspection checklists, photos
SW4	Hardstand material, rumble grids or similar will be provided at exit points from construction areas onto public roads to minimise the tracking of soil and particulates onto public roads	Pre-construction Construction	Contractor	Conditions B11 and B12 Development consent Appendix 2 (AMM) Managing Urban Stormwater: Soils and Construction Volumes 1	ESCPs, inspection checklists, photos

ID	Measure/Requirement	When to implement	Responsibility	Reference	Evidence
SW5	Site compounds, access tracks, stockpile sites and temporary work areas will be designed and located to minimise erosion	Pre-construction Construction	Contractor	Managing Urban Stormwater: Soils and Construction Volume 1	ESCPs
SW6	Works will be programmed to minimise the extent and duration of unstabilised soil surfaces.	Pre-construction Construction	Contractor	Managing Urban Stormwater: Soils and Construction Volume 1	Works programs, ESCPs
SW7	Clean and dirty water runoff will be adequately separated to avoid mixing where possible through the use of diversions, clean water drains, and the early installation of permanent drainage infrastructure	Pre-construction Construction	Contractor	Managing Urban Stormwater: Soils and Construction Volume 1	ESCPs
SW8	Stabilisation will be implemented for dormant areas exposed for four weeks or more (including stockpiles and batters); by providing soil surface protection (i.e. geotextile fabric, stabilised mulch, soil binder or spray grass)	Construction	Contractor	Managing Urban Stormwater: Soils and Construction Volume 1	ESCPs, inspection checklists, photos
SW9	Drains, banks or diversions will be formed (and stabilised where required) to direct runoff from disturbed areas to areas with adequate sediment control devices, and away from drainage lines.	Construction	Contractor	Managing Urban Stormwater: Soils and Construction Volume 1	ESCPs, inspection checklists, photos
	Site stabilisation and restoration				
SW10	Management and procedures for site stabilisation will be in accordance with the ESCP	Construction	Contractor	Managing Urban Stormwater: Soils and Construction Volume 1	ESCPs

ID	Measure/Requirement	When to implement	Responsibility	Reference	Evidence
SW11	The rehabilitation of disturbed areas will be undertaken progressively as construction stages are completed	Construction	Contractor	Managing Urban Stormwater: Soils and Construction Volume 1	ESCPs, inspection checklists, photos
	Spill prevention and response				
SW12	Management for spill prevention and response will be in accordance with the CEMP.	Pre-construction Construction	Contractor	Best practice	Spill response procedure
SW13	Emergency spill kits will be kept on site at locations. All personnel will be made aware of the spill kit locations and will be trained in their use	Construction	Contractor	Managing Urban Stormwater: Soils and Construction Volume 1	ESCPs, inspection checklists, photos
SW14	A schedule of all hazardous materials and their SDS's kept on site during construction will be maintained for the duration of the project.	Construction	Contractor	Best practice	Hazardous materials schedule
SW15	The ancillary facilities will be managed within the ESCP. The following measures will be included to limit sediment and other contaminations entering receiving waterways: • Chemicals will be stored within a sealed or bunded area not any areas of concentrated water flow or poorly drained areas, or on slopes steeper than 1:10 • Vehicle movements will be restricted to designated pathways where feasible and appropriate controls will be in place where plant is stored • Areas that will be exposed for extended periods, such as car parks and main access roads, will be stabilised where feasible	Construction	Contractor	Managing Urban Stormwater: Soils and Construction Volume 1	ESCPs

ID	Measure/Requirement	When to implement	Responsibility	Reference	Evidence
SW16	All spills and associated environmental incidents are to be reported in accordance with the CEMP	Construction	Contractor	Best practice	Incident reports
	Monitoring and inspections				
SW17	Nominated project personnel will conduct site inspections of erosion and sedimentation controls in accordance with the CEMP.	Construction	Contractor	Managing Urban Stormwater: Soils and Construction Volume 1	Inspection checklists, photos
SW18	Any rectification measures which are identified will be addressed and / or recorded to ensure appropriate rectification within the nominated timeframe.	Construction	Contractor	Managing Urban Stormwater: Soils and Construction Volume 1	Inspection checklists, photos
SW19	Monitoring of rainfall events will be undertaken daily during normal work days.	Construction	Contractor	Managing Urban Stormwater: Soils and Construction Volume 1	Observation only.

4.3 Guidelines for Progressive ESCPS

Progressive ESCPs will be prepared for the sites in accordance with the Blue Book. ESCPs will be implemented in advance of site disturbance and will be updated as required as the work progresses and the sites change.

The management of soil erosion on site will require adaptive management as construction and work activities change. Changing rainfall and wind conditions during the life of the project will require constant monitoring. Adaptive management principles and contingency planning for likely events (such as summer storm events) are to be incorporated into the development and review of progressive ESCPs. Weekly monitoring of short to medium-term weather forecasts for planning and site 'securing' purposes is essential.

Progressive ESCP's will be prepared by the suitably qualified and experienced professional, in consultation with site environmental representative and Site Supervisors, and they will formulate practical documents for implementation in the field. ESCPs will be developed with consideration to other environmental aspects (e.g. sensitive vegetation, contaminated soils).

The Blue Book outlines the requirements of all ESCP's:

- All ESCPs should contain a drawing that clearly shows the site layout and, where appropriate, the approximate locations of best management practices.
- Where these drawings are to scale, the scale should be at 1:500 or larger. A narrative should accompany the drawing that describes how erosion control and soil and water management will be achieved on site, including ongoing maintenance of structures.
- The following background information should be presented on the drawing(s):
    - Location of site boundaries and adjoining roads
    - Approximate grades and indications of direction(s) of fall
    - Approximate location of trees and other vegetation, showing items for removal or retention (consistent with any other plans attached to the application)
    - Location of site access, proposed roads and other impervious areas (e.g. parking areas and site facilities)
    - Existing and proposed drainage patterns with stormwater discharge points north point and scale.
- On the drawing or in a separate commentary, show how the various soil conservation measures will be carried out on site, including:
    - Timing of works
    - Locations of lands where a protective ground cover will, as far as is practicable, be maintained access protection measures
    - Nature and extent of earthworks, including the amount of any cut and fill
    - Where applicable, the diversion of runoff from upslope lands around the disturbed areas

- Location of all soil and other material stockpiles including topsoil storage, protection and reuse methodology
- Location and type of proposed erosion and sediment control measures
- Site rehabilitation proposals, including schedules
- Frequency and nature of any maintenance program
- Other site-specific soil or water conservation structures.

5. COMPLIANCE MANAGEMENT

5.1 Roles and Responsibilities

The Goodman Project Team's organisational structure and overall roles and responsibilities are outlined in the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Table 8.

Table 87 Roles and responsibilities

Role	Responsibilities
Contractor Project Manager	• Ensuring appropriate resources are available for the implementation of this ESCP • Assessing data from inspections and providing project-wide advice to ensure a consistent approach and outcomes are achieved • Providing necessary training for project personnel to cover erosion and sediment control • Reviewing and update of this ESCP, where necessary
Site Environmental Representative	• Implementation of this Plan • Communicating and inspecting all erosion and sediment controls in accordance with the ESCP • Administering training on erosion and sediment control
Supervisor	• Implementation and maintenance of erosion and sediment controls in accordance with the ESCP • Daily monitoring of weather forecast and conditions • Daily monitoring of dust, sediment tracking and erosion controls
All personnel	• No personnel are to move or alter erosion and sediment control devices without direction from site environmental representative or site supervisor

5.2 Training

All project personnel, contractors and sub-contractors working on site will undergo training relating to Project specific erosion and sediment control issues. The training will include:

- Existence of this ESCP within the CEMP

- Requirement A22 for compliance with the conditions of the SSD Consent as relates to their work
- Key requirements around implementation and maintenance of erosion and sediment controls
- Roles and responsibilities
- Corrective actions, management and reporting, and

Further details regarding staff induction and training are outlined in the CEMP.

5.3 Monitoring and Inspections

Inspections would be undertaken to verify the implementation of the control measures specified in the ESCP.

Inspection and monitoring requirements relevant to soil and water management for the Project are identified in Table 9. Inspections are to be undertaken site wide at the frequencies identified, so long as it is safe to do so.

Table 98 Inspection and monitoring requirements relevant to soil and water management

Item	Frequency	Standards	Records	Responsibility
Environmental site inspections	Weekly	Inspection to be undertaken by environment site representative	Environmental inspection checklist	Contractor
Rainfall inspections (10mm or greater rainfall in 24hrs)	Within 24hours after the event	Inspection to be undertaken by environment site representative	Environmental inspection checklist	Contractor
Shutdown inspection	Prior to site closure longer than 3 days	Inspection to be undertaken by environment site representative	Environmental inspection checklist	Contractor
Visual surveillance	Daily	Dust monitoring Sediment tracking Erosion and sediment controls	Site diary and photos as relevant	Contractor

5.4 Weather monitoring

Forecasts are to be monitored daily and the site managed to avoid erosion and sedimentation and to minimise the impact of heavy rainfall and wind.

Weather may also be monitored via the nearest BoM Station located at Observatory Hill (Station ID: 066214), approximately 4.8km south east of the project, which provides 30min data on temperature, wind and rainfall.

5.5 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this Plan, Conditions, AMMs and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in the CEMP.

5.6 Reporting

Reporting requirements are documented in [the CEMP.

6. REVIEW AND IMPROVEMENT

6.1 Continuous Improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance,
- Determine the cause or causes of non-conformances and deficiencies,
- Develop and implement a plan of corrective and preventative action to address any non- conformances and deficiencies,
- Verify the effectiveness of the corrective and preventative actions,
- Document any changes in procedures resulting from process improvement identified through the following:
    - As a result of any investigations into any exceedances or non-conformances that determine changes to this Plan are required to prevent reoccurrences,
    - To take into account changes to the Environment or generally accepted environmental management practices, new risks to the Environment, any Hazardous Substances, Contamination or changes in Law, and
    - In response to internal or external audits or annual management reviews.
    - Where requested or required by the DPHI or any other Authority,
    - Make comparisons with objectives and targets, and
    - Meet approval requirements and conditions such as EPL requirements.

6.2 Update and Amendment

Any revisions to the ESCP will be in accordance with the process outlined in the CEMP. A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure in the CEMP.

APPENDIX A EROSION AND SEDIMENT CONTROL PLAN (ESCP)

LANCELEY PLACE MULTI-LEVEL WAREHOUSE EROSION SEDIMENT CONTROL PLAN

General Notes:

BACKGROUND

1. This Erosion and Sediment Control Plan (ESCP) has been prepared to enable field staff to be aware of onsite environmental constraints and to provide guidance on the installation of environmental controls measures.
2. This ESCP should be read in conjunction with the Construction Environmental Management Plan (CEMP), including sub-pans, and supporting environmental documentation.
3. All erosion and sediment controls generally to be constructed and maintained in accordance with the 'blue book'.
4. Weather should be monitored, and controls inspected:
    a. After rainfall (>10mm in 24hours);
    b. at minimum weekly,

    where safe to do so. Maintenance to be carried out as required.
5. Controls shown on plan are indicative only. Exact location and type will be modified to suit site conditions provided they are located within the boundaries of this ESCP and outside of sensitive areas.
6. Any chemicals to be stored in a bunded area which can hold 110% of the largest containers volume or 200% of the total volume contained within the bund (whichever is greater).
7. Spill kits are to be located as marked on this ESCP. Contain and report all spills immediately.
8. This plan is to be revised as site conditions or construction methods are determined.

INSTRUCTIONS AND STAGING

Install erosion and sediment controls as noted on this ESCP and in the order outlined below. Ensure the necessary erosion and sediment controls are in place prior to utilisation, ground disturbance or construction works in the area.

1. Minimise disturbance to only that necessary. Install and maintain barrier fence, flagging or tape to define project limits
2. Ensure offsite clean water is diverted around the works via the existing street stormwater infrastructure.
3. All vehicle access is to be through the dedicated, stabilised access points are to be established. They are to be installed in accordance with typical layout on page 3.
4. Install controls around active stormwater pits with potential to receive flow from construction water.
5. Install sediment fence downslope of the area as depicted on page 2 in accordance with SD 6-8 (page 3). These perimeter controls must remain in place until all upslope works are competed and stable or until alternative sediment controls are provided.
6. Once all of the above measures are complete and stable, construction works, and utilisation of the area can proceed.

DEWATERING AND DIRTY WATER TREATMENT REQUIREMENTS

1. Any active discharge of water from the project (i.e., where water is moved offsite via direct action such as pumping rather than flowing off the project as a result of heavy rainfall) is to achieve.
    a. TSS < 50 mg/L; and
    b. pH 6.5 to 8.5 and
    c. no visible oil and grease

    Or as required by DPHI.
2. Water can be treated using gypsum or alternative flocculating agents as approved by Council. The general recommended dosage is 30kg/100m^3. Spreading it very evenly over the entire pond surface is essential for proper treatment of sediment-laden water.
3. If the water is going to be used within the construction site for dust suppression and will drain back into a capture system or evaporate (i.e., no runoff will leave the site boundary), it does not require treatment.

Project Number	Revision	Revision Description	Prepared By	Position	Signature	Approved By	Position	Signature	Date
1089	1.0	Prepared for commencement of demolition works	Melanie Kleine	Senior Environmental Consultant		Derek Low	Principal		31/05/24

Figure 1. Area covered by this ESCP (source: Nearmap).

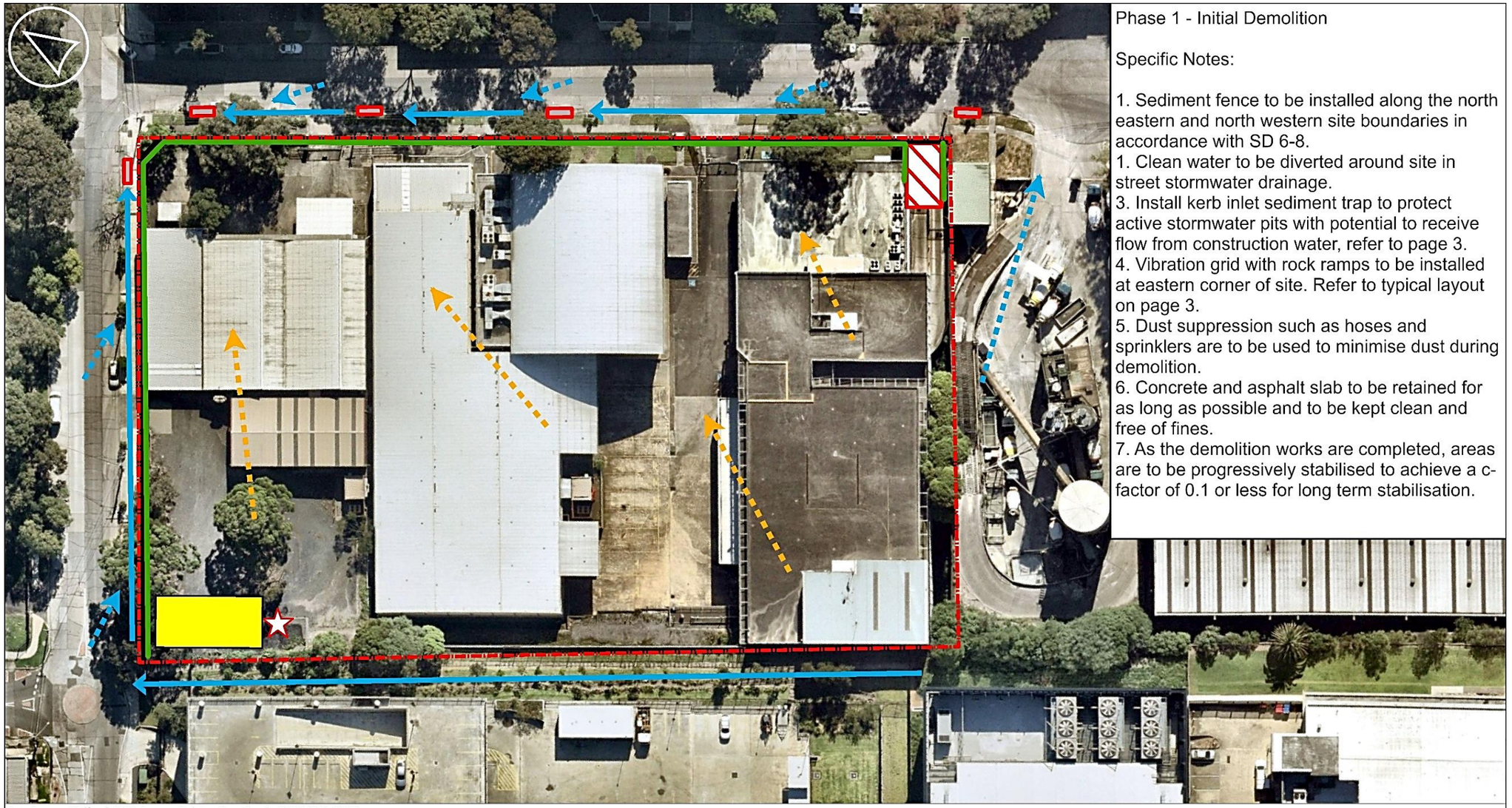
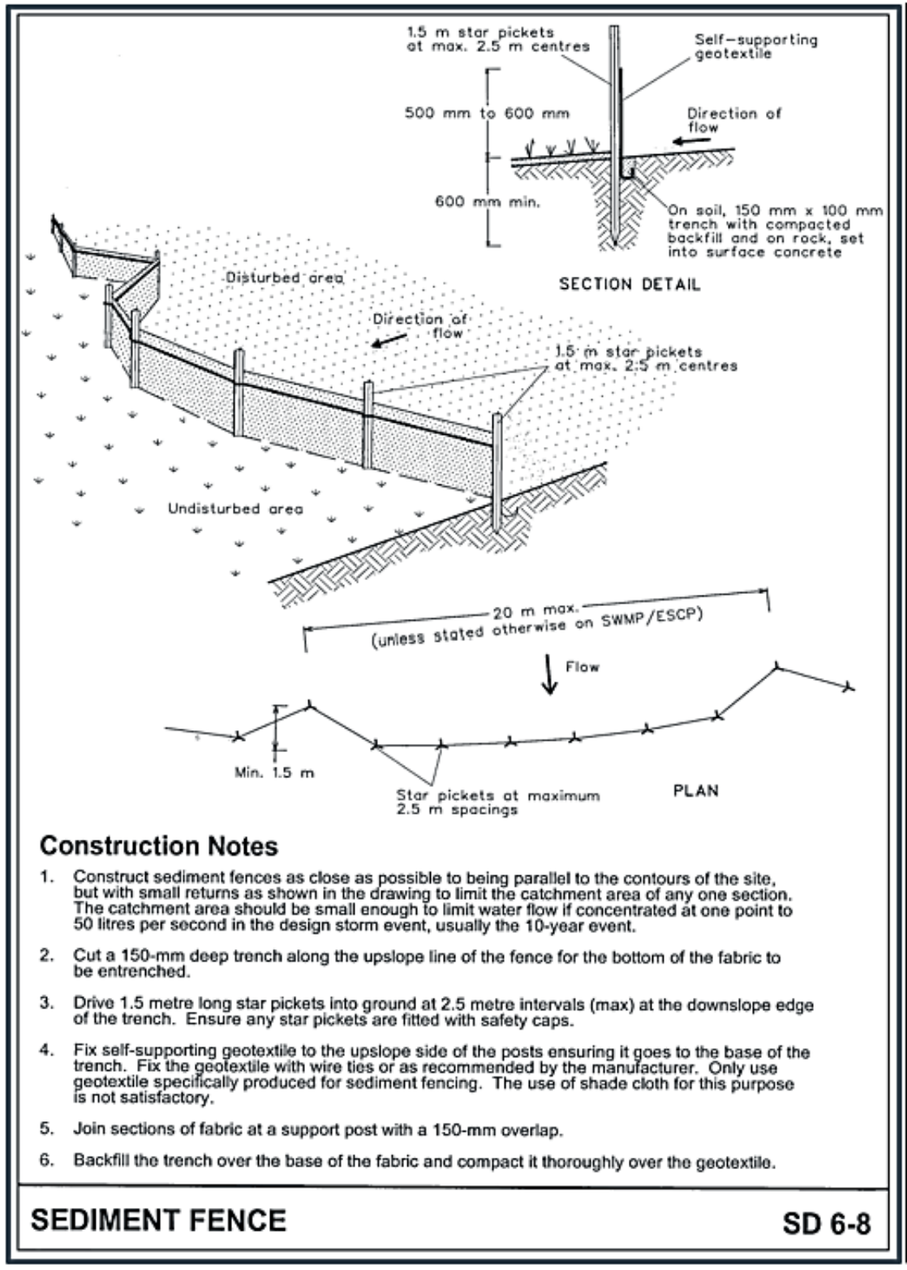


Figure 2. Primary erosion and sediment control plan



Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

SEDIMENT FENCE **SD 6-8**

The recommended spacing of multiple sandbag sediment traps along the road kerb is presented in Table 1:

Table 1: Typical spacing of sediment traps along a road kerb [1]

Kerb grade (%)	Spacing (m)
0.5	30
1.0	15
2.0	8
3.0	5
4.0	4
5.0	3

[1] Sourced from Fifield (2001) *Designing for Effective Sediment and Erosion Control on Construction Sites*. Forester Communications, California.

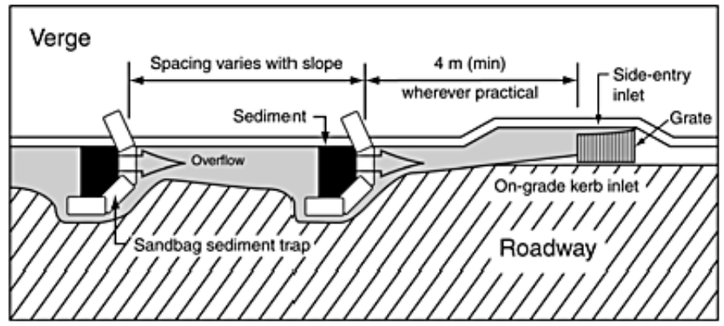


Figure 1 – Placement of sandbag sediment traps along an on-grade roadway kerb

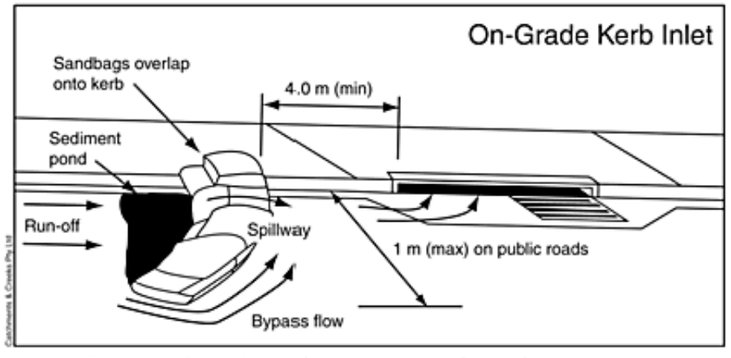


Figure 2 – On-grade kerb inlet sediment trap formed from sandbags

Figures 1 and 2 show the typical layout of a vibration grid within an extended rock pad. The rock pad normally needs to be formed above natural ground level to accommodate the sediment collection chamber beneath the vibration grid.

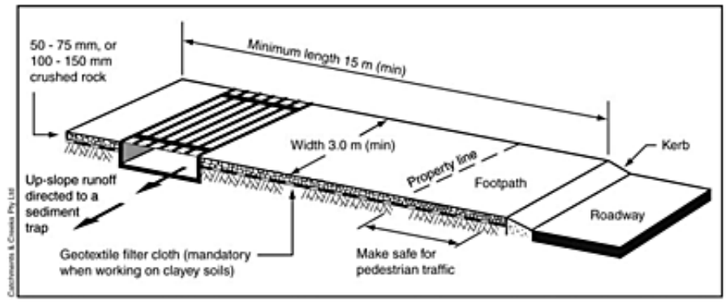


Figure 1 – Typical layout of vibration grid with rock ramps

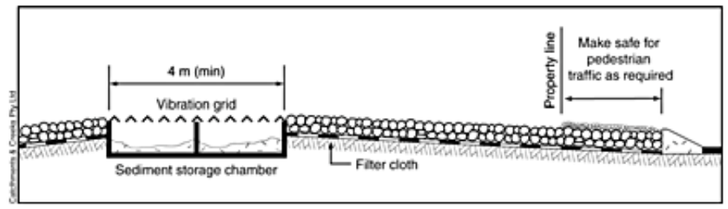


Figure 2 – Typical layout of vibration grid with rock ramps

There are many variations in the design of vibration grids as can be seen in Photos 2, 3 and 4. Figure 3 shows the typical dimensions of a vibration grid formed from metal angles.

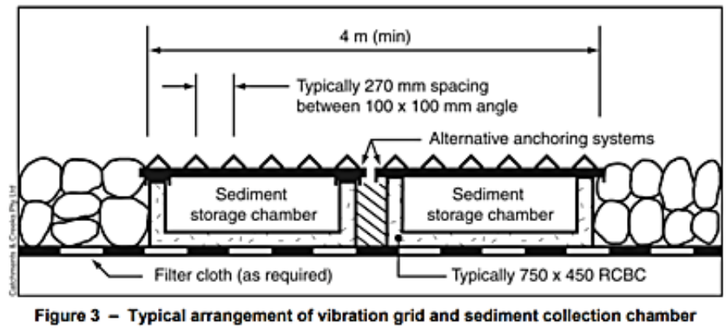


Figure 3 – Typical arrangement of vibration grid and sediment collection chamber

Figure 3. SD 6-8 sourced from Managing Urban Stormwater: Soils & Construction (4th edition, Landcom 2004) 'blue book', On-grade kerb inlet sediment trap and typical layout of vibration grid sourced from IECA Best Practice Erosion and Sediment Control (BPESC)

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